

ORNITHOLOGICAL BIOGRAPHY,

OR AN ACCOUNT OF THE HABITS OF THE

BIRDS OF THE UNITED STATES OF AMERICA,

ACCOMPANIED BY DESCRIPTIONS OF THE OBJECTS REPRESENTED
IN THE WORK ENTITLED

THE BIRDS OF AMERICA,

TOGETHER WITH AN ACCOUNT OF THE DIGESTIVE ORGANS OF MANY
OF THE SPECIES, ILLUSTRATED BY ENGRAVINGS ON WOOD.

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INTRODUCTION.

How often, Good Reader, have I longed to see the day on which my labours should be brought to an end! Many times, when I had laid myself down in the deepest recesses of the western forests, have I been suddenly awakened by the apparition of dismal prospects that have presented themselves to my mind. Now, sickness, methought, had seized me with burning hand, and hurried me away, in spite of all my fond wishes, from those wild woods in which I had so long lingered, to increase my knowledge of the objects which they offered to my view. Poverty, too, at times walked hand in hand with me, and on more than one occasion urged me to cast away my pencils, destroy my drawings, abandon my journals, change my ideas, and return to the world. At other times the Red Indian, erect and bold, tortured my ears with horrible yells, and threatened to put an end to my existence; or white-skinned murderers aimed their rifles at me. Snakes, loathsome and venomous, entwined my limbs, while vultures, lean and ravenous, looked on with impatience. Once, too, I dreamed, when asleep on a sand-bar on one of the Florida Keys, that a huge shark had me in his jaws, and was dragging me into the deep.

But my thoughts were not always of this nature, for at other times my dreams presented pleasing images. The sky was serene, the air perfumed, and thousands of melodious notes, from birds all unknown to me, urged me to arise and go in pursuit of those beautiful and happy creatures. Then I would find myself furnished with large and powerful wings, and, cleaving the air like an eagle, I would fly off and by a few joyous bounds overtake the objects of my desire. At other times I was gladdened by the sight of my beloved family, seated by their cheerful fire, and anticipating the delight which they should experience on my return. The glorious sun would arise, and as its first rays illumined the earth, I would find myself on my feet, and while preparing for the business of the day, I would cheer myself with the pleasing prospect of the happy termination of my labours, and hear in fancy, the praises which kind friends would freely accord. Many times, indeed, have such thoughts enlivened my spirits; and now, good reader, the task is accomplished. In health and in sickness, in adversity and prosperity, in summer and winter, amidst the cheers of friends and the scowls of foes, I have depicted the *Birds of America*, and studied their habits as they roamed at large in their peculiar haunts.

Few persons can better than myself appreciate the pleasures felt by the weary traveller when he sees before him the place of repose for which he has long been seeking. Methinks I see him advance with a momentary renovation of vigour, and, although heavily laden, with expanded chest and brightened eye. He has now reached his home, embraced his family, laid aside his gun, and thrown off his knapsack; while his faithful dog, glad too no doubt, lays himself down, wags his tail, and

casting glances of friendship around, kindly licks the hands of the children who are caressing him. Anxiety of another nature now prevails among the members of the happy group; the contents of the traveller's wallet are sought for, and arranged in view of the whole family. One looks at this and likes it, another has caught hold of a different object, the oldest perhaps reads the "journal," while some prefer gazing on the sketches "from nature." Meanwhile the traveller and his dearest friend feel perfectly happy in being once more together—never again to part.

Now, Reader, you may well imagine how happy I am at this moment, when, like the traveller alluded to, I find my journeys all finished, my anxieties vanished, my mission accomplished; and when I expect soon to see myself and my dearest friends seated beneath lofty and fragrant trees, listening to the gay carollings of the Mocking Bird, or the sweet though perhaps melancholy song of my favourite the Wood Thrush. Fishing-tackle, bird-nets, and a good gun, will then be often exchanged for the pencil and the pen; and, although I can never entirely relinquish the pleasure of noting new facts in zoology, or of portraying natural objects, whether on canvass or on paper, I shall undertake few journeys, save short rambles for amusement. If I have a regret at this moment, it is that I cannot transfer to you the whole of the practical knowledge which I have acquired during so many years of enthusiastic devotion to the study of nature.

You will perceive that the number of species of birds which have been discovered, figured, and described, since the publication of the *American Ornithology*, by ALEXANDER WILSON, is very great. Indeed, the list is now extended to double the

length that it shewed, at the period of his death, or even when his work was completed by the addition of the ninth volume. Yet I am confident that very many species remain to be added, by future observers, who shall traverse the vast wastes, extending northward and westward from the Canadas, and along the western slopes of the Rocky Mountains, from Nootka to California. Nay, I look upon the whole range of those magnificent mountains, as being yet unexplored, for the few scientific travellers who have traversed it, have merely, as it were, picked up the scattered objects that crossed their path. Of this I am persuaded, in consequence of the many conversations I have had with my friend THOMAS NUTTALL, and the notices which I have received from Dr TOWNSEND, as well as the valuable observations transmitted in a letter to me by my friend Dr RICHARDSON. Both Captain JAMES ROSS, and Captain BACK, of the British Navy, have assured me that they saw curious birds, which they were unable to procure. Indeed, this has been the case with myself, even in some of the inhabited portions of the United States, as well as in Labrador and Newfoundland. Therefore, Reader, I would strongly advise you to make up your mind, shoulder your gun, muster all your spirits, and start in search of the interesting unknown, of which I greatly regret I cannot more go in pursuit,—not for want of will, but of the vigour and elasticity necessary for so arduous an enterprise. Should you agree to undertake the task, and prove fortunate enough to return, full of knowledge, laden with objects new and rare, be pleased, when you publish *your* work, to place my name in the list of subscribers, and be assured that *I* will not “leave you in the lurch.”

Now, supposing that you are full of ardour, and ready to proceed, allow me to offer you a little advice. Leave nothing to memory, but note down all your observations with *ink*, not with a black-lead pencil; and keep in mind that the more particulars you write at the time, the more you will afterwards recollect. Work not at night, but anticipate the morning dawn, and never think for an instant about the difficulties of ransacking the woods, the shores, or the barren-grounds, nor be vexed when you have traversed a few hundred miles of country without finding a single new species. It may, indeed it not unfrequently does happen, that after days or even weeks of fruitless search, one enters a grove, or comes upon a pond, or forces his way through the tall grass of a prairie, and suddenly meets with several objects, all new, all beautiful, and perhaps all suited to the palate. Then, how delightful will be your feelings, and how marvellously all fatigue will vanish! Think, for instance, that you are on one of the declivities of the Rocky Mountains, with shaggy and abrupt banks on each side of you, while the naked cliffs tower high over head, as if with the wish to reach the sky. Your trusty gun has brought to the ground a most splendid "American pheasant," weighing fully two pounds! What a treat! You have been surprised at the length of its tail, you have taken the precise measurement of all its parts, and given a brief description of it. Have you read this twice, corrected errors, and supplied deficiencies? "Yes," you say. Very well; now you have begun your drawing of this precious bird! Ah! you have finished it. Now, then, you skin the beautiful creature, and are pleased to find it plump and fat. You have, I find, studied comparative anatomy under my friend MACGILLIVRAY,

and at last have finished your examination of the œsophagus, gizzard, cœca, trachea, and bronchi. On the ignited dry castings of a buffalo, you have laid the body, and it is now almost ready to satisfy the longings of your stomach, as it hisses in its odorous sap. The brook at your feet affords the very best drink that nature can supply, and I need not wish you better fare than that before you. Next morning you find yourself refreshed and reinvigorated, more ardent than ever, for success fails not to excite the desire of those who have entered upon the study of nature. You have packed your bird's-skin flat in your box, rolled up your drawing round those previously made, and now, day after day, you push through thick and thin, sometimes with success, sometimes without; but you at last return with such a load on your shoulders, as I have often carried on mine. Having once more reached the settlements, you relieve your tired limbs by mounting a horse, and at length gaining a sea-port, you sail for England, if that be your country, or you repair to Boston, New York, or Baltimore, where you will find means of publishing the results of your journey.

When I presented you with the fourth volume of this work, I was in fair Edina; and now, when I offer you the fifth, I am in Edina still. What beautiful walks there are, Reader, around that superlatively beautiful city! The oftener I have rambled along them, the more I have thought with deep regret, that now at last I am on the eve of bidding those walks, and the friends whom I know I possess there, a last adieu. No man, methinks, can ever leave a country where he has been kindly treated, without a deep feeling of sorrow. When I left England, and all my dear friends there, that feeling was as pungent as it is at this moment, when I am about being thrust

into a coach, to travel as fast as horses can speed, towards Bristol, there to place myself on board that leviathan of the Atlantic, "the Great Western," to be paddled to my own native shores. But then, Reader, the remembrance of much kindness, and the gratitude resulting from it, will ever warm my heart. Whether far or near, I will ever try to communicate with those dear friends, and with you too, good Reader, should you be desirous of my doing so.

Late in the month of July last, whilst I was engaged in arranging the notes now in this volume, under the title of an Appendix, I had the great pleasure, one evening, of finding myself in the company of my worthy friend Dr BACHMAN, of Charleston, and of my eldest son, whose name you cannot fail to recollect. The former had crossed the Atlantic, with the view of re-establishing his health by rambling over Europe, the latter had come from London to be my constant companion. The days which we enjoyed together were few, but delightful; and when, at the end of a fortnight, my friend left us, I felt as if almost alone, and in the wilderness. August came in course, and in that month my beloved wife and the rest of my family joined me. My friend MACGILLIVRAY and myself were up to the elbows among the birds which I had brought in spirits with me from America, I acting as secretary, he as prime minister. Under his kind tuition, I think I have learned something of anatomy, which may enable me, at some future period, to produce observations that may prove interesting even to you, good Reader, for I promise that no sooner shall I have returned to America, and procured specimens of any of the species, whose digestive and respiratory organs have not been described in this work, than I will try to examine them

in detail, and publish the results in the Journals of some of our scientific institutions.

When September had mellowed the general aspect of nature, the long-cherished desire of obtaining a glimpse of the Highlands of Scotland filled our hearts anew, and we resolved to visit the mountains and lakes so beautifully described by the illustrious SCOTT. The weather was as fine as we could wish. My good friend MACGILLIVRAY, by way of obtaining a holiday, accompanied us, and, independently of the pleasure derived from his conversation, we found him useful in pointing out objects with which he was familiar, and of which we might otherwise not have learned the history. Early one morning we started, seven in number, for I took with me my dear little grandchild, not above two months old, with the desire, perhaps, of letting her breathe the mountain air. Every one acquainted with Edinburgh, knows the Chain-Pier at Newhaven. There, then, at eight o'clock we were, walking along its tremulous planks with a feeling of giddiness, and presently after found ourselves seated in the stern of a small steamer, bound for Stirling. There was no wind, the skies were serene, and the smooth waters were alive with shoals of young herrings, over which hovered gulls of various species. On some bare rocks near Aberdour, on the opposite coast, stood numerous cormorants, while along the shore, guillemots and auks dived or flew, as our boat approached them. After passing many beautiful spots, we entered the narrow passage of the "Queen's Ferry," and presently obtained a view of the distant hills. At length we reached what I thought a very remarkable place for Scotland, a considerable extent of land embanked, and so much resembling some portions of the shores of the lower Mississippi,

that, had the thermometer been at 86°, I should have looked upon it as well adapted for the cultivation of sugar, cotton, or tobacco. But the steamer, slow as was its progress, moved too fast for me; and if ever I again visit the Highlands, it shall be on foot, for no man, with nerve and will, and an admirer of the beauties of nature, can ever truly enjoy the pleasures of travelling, unless he proceed in that manner. After a while, we entered what I would call a singular narrow and tortuous bayou, winding amongst green meadows and corn-fields, and on whose margins some herons walked with measured steps, while groups of lapwings flew over us so merrily, that we thought they had a holiday too. From the willows and ash-trees on the banks, "cushats" started in great numbers, alarmed by the noise of our paddles. Narrower and more shallow became the bayou, and at length our boat stuck in the mud. After a while, however, the sound of oars came on our ears, and, ere half an hour elapsed, the party from Edinburgh was, amidst much mirth and some sorrow, exchanged for the party from the hills of the north, as anxious apparently to reach their home, as we were to leave it farther behind. Now see us packed close in two great boats, rowed vigorously for a while, then towed along the margin, just in the way that Canadian boatmen still proceed, by means of a cordelle, or as the Kentuckians were wont to do thirty years ago on the Ohio and Mississippi. But, Reader, here we all are at Stirling.

Nature must, I think, at one time have felt, as I would call it, "quite pleasant;" for in this place she has produced a marvelously close imitation of one of her own works. At least, such was my impression when I found myself walking around the walls of Stirling Castle, so much did the rock at first resemble that.

of Edinburgh; although in the details the two crags are very different. With delight we gazed on the beautiful valley beneath us, until our eyes meeting with the wall of dark-blue mountains in the distance, we wished that CLAUDE LORRAINE had transferred the landscape to canvass, as he had done hundreds of others far less beautiful or grand.

At Stirling we had a good dinner, for which a good price was paid. Soon after we were on our way to the hills, comfortably enough stowed into a large post-chaise. Before we arrived at the village of Doun, however, darkness overtook us, so that we did not until nine reach Callender. There, we found a good house, kept by a good woman of the name of STEWART. Our friend MACGILLIVRAY had stopped there before; and, although there may be equally good taverns or hotels in Callender, we found no reason to regret our having taken his advice, for in Mrs STEWART'S we spent the night very comfortably.

If travellers are sluggards, I pity them in my heart; for, depend upon it, nature is never more beautiful than whilst she bathes herself, in the morn, in her own dewy waters. Then, traveller, whoever you may be, arouse yourself, leave your couch, emerge from good Mrs STEWART'S house, walk to the bridge opposite, and gaze upon the magnificent landscape around; then lean over the parapet, and trace the nimble trout balancing itself in the pure stream that here slowly moves toward the rapids below. The meadows, though it was autumn, were yet green, the hills purpled with heather; and, as the sun's rays dispelled the mist that lingered on the summits of the mountains, I thought that, in all my life, I had never beheld scenery that interested me more. Delightful country! said I, how I should like to spend a summer here, amid clouds

and mists, sunshine and pleasant showers ! Fresh eggs, new milk, excellent ham, capital Scotch " porridge," with bread, butter, and tea, constituted our breakfast, after which we marched in a body to the Falls of Bracklin, guided by a rosy-cheeked Highland lassie, stopping now and then by the way to pick up a wild flower, a blue bell, a "gowan," or a dog-rose, or to listen to the magpies and titmice. Pretty high we have climbed to a piece of moorland, where, no doubt, had we dogs and guns, with privilege to shoot, we might maim perhaps a grouse, perhaps a black-cock. But list ! The roar of the cataract comes faintly on the ear ; there is the very stream which, descending turbulently into the ravine, hurries to join the river below. Descend that narrow rocky pass with care, and trip lightly along that crazy bridge, wind to the right, reach the jutting angle of that rock, and now gaze upon the scene ! I have looked at hundreds of streamlets in America equally turbulent, but I doubt if, after all, I have seen one so curiously confined within its rocky shores, or so abrupt in its various jets. Clusters of the bright-red berries of the mountain ash hung over the rocks, which were crusted with lichens ; and, as I looked around on that sequestered spot, I thought what a secure retreat it might afford on occasions to some of the wild Celts of the olden times, who lived at variance with their Saxon neighbours in the valley below. I felt as if I were amongst them, enjoying the pleasure of living in the wilds, and then bethought me of the many similar spots yet belonging to our own Sons of the Forest.

Returning towards Callender, and emerging from the wood, we were surprised to see some hundreds of cows, all belonging to the village below, grazing on what might well be called the

finest of fore-grounds. The sun, now high, had considerably enriched the tints of the distance, which were mellowed into a hue bordering on the softest of modest purple ; the small birds were rejoicing in the trees, the blue peat smoke of the village curled in spiry streams, and all nature seemed as happy as ourselves. But now, here we all are, on board our post-chaise, bound for the Pass of Leny and Loch-Lubnig. On proceeding, we found on the left side a brook, hurrying along to reach the level of the meadows of Callender vale, and passed some curiously grouped masses of blocks, amongst which, as our conductor informed us, badgers and foxes had often been bayed and worried. At the top of this beautiful pass, which is covered with brushwood, the country opens a little, and we saw on the creek the pretty Dipper, now skimming along, now perched on a stone in the water, in which it plunged at intervals in search of the food best suited to its appetite. On the opposite side the hills rose to a considerable height, here and there pleasantly sprinkled with black-faced sheep, and at length the lake opened to our view, flanked by an abrupt crag on one side, and long ferny slopes on the other. Beautiful miniature of grander objects of the same nature, how pleasant to me seemed, from the spot where I stood and gazed upon you, the green valley around, and how singularly well adapted to the scene was the white lodge in the distance, as contrasted with the pure tints of the sky above and the waters beneath ! Were I wealthy enough, I should spend at least a month here every summer. The lake, we were told, abounds in fine trout, the hills around afford grouse of different species, and the neighbouring forest is well stocked with roe and red-deer. Here we took our lunch ; and, while we were refreshing ourselves with the water of the lake, and a few drops of

mountain-dew, our friend MACGILLIVRAY pointed out to us the ridges on which he had rambled the previous winter when they were covered with snow.

Retracing our way, we again approached Callender, and crossing the stream, drove through a lane in the direction of the Trosachs. Finding it rather tiresome to ride all day, some of us threw off our coats, and footed it pleasantly. Two small lakes were passed, and we were admiring the purple blossoms of the heather, when we overtook an artist and his beloved on foot, both from London. Putting their extra luggage in our carriage, we continued our march and reached, nearly all at the same moment, the tavern of the Trosachs.

Here we met with many people from different parts of the world : Cockneys, Irishmen, and " Blue-noses," some very thin, others over thick, some low, and some high in figure and manners. It was quite strange to me to hear a group of Englishmen talking, not of the scenery, but of the precious qualities of their wines in Middlesex. Some who had navigated Virginia Water, wondered whether Loch Lomond and Loch Katherine, were to be compared with Lake Huron and Lake Superior. They sucked their cigars in front of the tavern, walked nowhere, and thought of little else than their dinner.

The traveller, who has passed over vast tracks of densely covered woodland, cannot be expected to gaze on trees of moderate size with much admiration, and perhaps on this very account I did not look upon the wooded crags of the Trosachs, as I should have done had they been naked, rough, and angular, for I felt satisfied that they were abrupt and high enough to produce quite a sensation on the mind. The Trosachs, how-

ever, are admired by the many, chiefly or entirely on account of Scott's description of them, and I am far from being sorry for this. To me, the peep of Loch Katherine obtained from the landing-place, after running and frisking along, and rolling myself among the heather, was absolutely delightful. With that most curious innate desire which there is in us of becoming older, for the purpose of enjoying the morrow, I went to rest, anxious to see the morn, and discover what existed beyond the crags that had bounded my view.

Thus, Reader, we spent half a day and a whole night at the inn on Loch Achray, and rose betimes expecting an early breakfast and an early departure; but no, the breakfast was late and hurried, the whole house, one might have thought, had just caught fire, every one called for the waiter, for his luggage, his bill, and the boat; and when the bustle was over, you might have seen a long procession issue from the hostelry. Giving way to the anxious, we lagged a little behind, and thus had a nice boat to ourselves, while the rest were uncomfortably crammed into another.

Loch Katherine, in my humble opinion, is a beautiful sheet of water. We were told that some parts of it are of extreme depth; but what rendered it so pleasingly welcome to me, was the prospect ever-changing, enlarging, and becoming more and more grand, as the ridges of hills came successively into view. Methinks, Reader, I am at this very instant gazing upon the heathery knolls and bracken-covered slopes of those rude mountains, for to me wild, melancholy, and sublime scenery is ever the most pleasing, and as we passed the jutting headlands of the lake, I could not help giving it a few drops more than it already contained. I wished, indeed, that the wind had proved

contrary, or that we had been forced to stand still until darkness had closed the magnificent landscape gradually and peacefully from the view. Would that I could once more gaze on the beauties of Loch Katherine! Our rowers, however, indifferent to all save the shillings looked for, pulled uncommonly well, and in due time brought us to a very dirty landing, crowded with small ponies, ready-saddled, and standing by the side of a smoky hut, in which they who had not eaten enough at the Trosachs gorged themselves anew.

Now, our ladies, the maid, and our sweet babe are all mounted, while my friend MACGILLIVRAY, my sons, and your humble servant, are going ahead on foot. The road is rough enough, but the sun shines brightly, and all are merry. When heated, we drink from a brook, and when hungry munch the contents of our pockets. Overtaking and leaving behind a very fat Englishman, we laugh, and seeing a broad-shouldered and sturdy Celt ahead, we strive to make up to him. Of the Gaelic language I know nothing, and yet it gives me great pleasure to hear it spoken by our friendly companion and the mountaineers, as we trudge along. Now down a very steep and narrow pass we wind, and unexpectedly as it were find ourselves on the rocky shores of the famed Loch Lomond. How beautiful those three rugged and peaked mountains opposite, those green and wooded slopes, and that placid blue lake that stretches out before us, narrowing to the westward and expanding in the opposite direction.

Here we found a few small stone cabins, some fat bairns, abundance of ale, and a sufficiency of capital whisky. The artist and his beloved were sketching a little cataract that tumbled over a crag into the lake. Pony after pony, and one

pedestrian after another, are seen descending the pass, and in the rear, puffing and melting is the rubicund and ample-bodied admirer of Burgundy wine. All eyes are directed down the lake, so anxious are all for the arrival of the steamer. For my part, I really care not, but would gladly camp among the heather, or go in search of a Polecat or a Blackcock. We eat, we drink, we laugh, and now Rob Roy is talked of, and we all know that there is one of his hiding-places close by. Here then we are, on this craggy point, from which a heap of great blocks has fallen, and now we ascend toward a small triangular hole, which seems more fitted for the retreat of a badger than of "an honest man" like the Red Rob. Ladies can hardly venture here, but men may easily ascend, and now, "one after another, gentlemen, if you please," says the guide, this advice being here quite as necessary as for a person to tell another that a goose is not a turkey. With the aid of a very old and crazy ladder we descend into the hole; and now, Reader, being positively in Rob Roy's Cave, open your eyes, stare around, and, if you please, tell us what you see. Why nothing! all is darkness, damp, and slime. Were I the keeper of this celebrated spot, I would have it quite a different place before next September.

"Pull away for the opposite shore, good men, and you JOHN WOODHOUSE, take the tiller." Now we proceed slowly but steadily toward the landing-place of Tarbet. Friend MACGILLIVRAY and I are put ashore, and we stride along a beautiful turnpike road to the house. It is a commodious house, and I should be well pleased to reside here a while every summer. We had scarcely been comfortably settled, when the steamer's cargo of wayworn travellers came in thick upon us,

excepting the Burgundy-wine admirer, who somewhere gave us the slip. For the better part of two days we enjoyed ourselves in walking, riding, and visiting the neighbouring inlet of Loch Long, with the romantic valley of Glen Croe.

Our voyage to the head of Loch Lomond, and subsequently to its lower extremity, was very pleasant. From Balloch we were carried in crowded coaches to Dumbarton, where we arrived just in time to be hurried on board of a Glasgow steamer, which for half an hour stuck in the mud at the mouth of the Leven, affording us more time than was necessary to see the strangely abrupt crag on which Dumbarton Castle is built. At length we arrived at the far-famed Broomielaw.

Next day it rained, but we were assured that rain is of no importance in Glasgow, and we congratulated ourselves on the beautiful weather which we had in the Highlands. Having visited the Museum of the University, and that of the Andersonian Institution, in both which we were treated with kindness, as well as the Cathedral with its multitudinous tombs, the necropolis, the bridges, and the principal streets, not forgetting the Salt Market, for the sake of honest Bailie Nicol Jarvie, we left the mercantile metropolis of Scotland, and posted toward Lanark. The scenery of the beautiful and fertile valley of the Clyde is of a very different nature from that of the hills which we had just visited, and the contrast was agreeable; but, excepting the celebrated Falls, which have so often been described, and the Cave in which the Patriot WALLACE concealed himself from his many foes, this tract did not present objects on which I love to dwell. Still less does the barren moor that occupies the heights between Lanark and the plain of the Lothians, over which we passed, until the beauti-

ful city of the north, with its picturesque " Craigs," again gladdened our sight.

Pleasant as our trip had been, it seemed not to have benefited the health of my good wife, for in a few days after our return to Edinburgh, she was again taken ill. There is no lack of excellent physicians in that city, and we had the good fortune to fall upon one who not only restored her to health, but who has become a truly excellent and most valued friend. To this gentleman, Dr JOHN ARGYLE ROBERTSON, of 58 Queen Street, for his most efficient aid, and most kind and gentle treatment, we can never cease to cherish the most lively feelings of affection. It is a curious part of my history, that during the whole time of my sojourn in Britain, none of the principal medical advisers whom we had occasion to employ would receive any recompense from us. In London, Mr BELL, and in Edinburgh Mr NASMYTH, the most dexterous and celebrated dentists of their respective cities, thus afforded us their aid; and in the former place Mr PHILLIPS, Dr CARSWELL, and Dr ROSCOE treated us with as much attention as if they had expected the most liberal fees. To all these excellent friends, whose liberality we have thus experienced, and whose professional aid has been so beneficial to us, we shall ever prove most grateful.

Here I have had the pleasure of meeting with several of my American friends, and some of my patrons; among others, EDWARD HARRIS, long since introduced to you, AUGUSTUS THORNDYKE, Esq. of Boston, Messrs COOLEGE and DIXWELL of the same city, Mr KRUGER and his Lady from New York. Of our English friends several have also visited us: Lady RAVENSWORTH, Lady GEORGIANA LIDDELL, the Honourable THOMAS LIDDELL, Miss FOTHERGILL of York, and JONATHAN BRAM-

WELL, Esq. of Sheffield. But now, Reader, let us change the subject.

The measurements of the specimens described in all the volumes now in your hands, have been taken after the same plan. The length has been measured while the bird was lying flat and extended on its back, from the point of the bill to the tip of the tail, to the extremities of the wings, naturally closed by the sides, and to the end of the longest toe, the legs and feet being stretched to the full length. In Owls and other birds whose heads are large and rounded, the same method has been followed, the measurement not having been taken along the curvature of the parts, as is the practice with other persons. The wings have been measured from the carpal joint or flexure to the tip of the longest quill; the bills from the base of the ridge to the tip, and from the opening of the mouth to the end of the lower mandible; the tarsi from joint to joint; the toes from their base to the root of the claws, and the latter along their back, following the curve. The colours of the bills, eyes, legs, and claws have been given from fresh specimens, unless in a few instances where skins only have been seen by me. This is especially the case with the species received from Mr NUTTALL and Dr TOWNSEND. Many specimens of the digestive organs, and other parts, of the birds described, have been deposited in the Museum of the Royal College of Surgeons of Edinburgh, from the President of which I have received letters of thanks.

Besides the species described in this volume, and portrayed in the fourth volume of my Illustrations, I have presented you with several which reached me in London, and even in Edinburgh, after the "Birds of America" were finished. A

rather voluminous Appendix contains corrections and additional facts, together with an account of the digestive and respiratory organs. At the end of the volume you will find the names of all my subscribers who have continued to receive the fasciculi of my plates until the work has been completed. Those who have stopped short, and discontinued their subscriptions, it is unnecessary to mention ; but of them there are now upwards of one hundred and twenty.

To Professor TRAILL and the Curators of the Library of the University of Edinburgh, for the liberality of which they have allowed me the use of many valuable works not otherwise to be procured, I offer my sincere thanks ; as well as to Professor JAMESON for the specimens sent to him by the late Dr MEREDITH GAIRDNER, which he has had the kindness to lend me from the rich Museum under his charge. Allow me also to mention the names of a few friends to whom I shall ever feel most deeply indebted. The first on the list is WILLIAM MACGILLIVRAY, and I wish that you, Reader, and all the world besides, knew him as well as I do. The next is WILLIAM CUTHBERTSON, Esq., originally of London, but now a citizen of New York. I have to offer my most sincere thanks also to B. F. DUNCAN, Esq. of Charleston in South Carolina, for his valuable and friendly assistance ; and to CHARLES EDMONDSTON, Esq. of the same city, for his exertions in procuring specimens in spirits.

I have pleasure in saying that my enemies have been few, and my friends numerous. May the God who granted me life, industry, and perseverance to accomplish my task, forgive the former, and for ever bless the latter !

Should you feel inclined to read the little book, which will

immediately follow this under the appellation of a Synopsis of the Birds of North America, call on my friends, Messrs ADAM and CHARLES BLACK, on the North Bridge of Edinburgh, and they will hand it to you. Now, Reader, farewell! may you be successful in all your undertakings! may you be happy abroad and at home! and may the study of the admirable productions of Nature ever prove as agreeable to you as it has been to me.

JOHN J. AUDUBON.

EDINBURGH, *1st May* 1839.

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RED-AND-WHITE-WINGED TROOPIAL.

ICTERUS TRICOLOR.

PLATE CCCLXXXVIII. MALE.

How delightful, I have often exclaimed, must have been the feelings of those enthusiastic naturalists, my friends NUTTALL and TOWNSEND, while traversing the ridges of the Rocky Mountains! How grand and impressive the scenery presented to their admiring gaze, when from an elevated station they saw the mountain torrent hurling its foamy waters over the black crags of the rugged ravine, while on wide-spread wings the Great Vulture sailed overhead watching the departure of the travellers, that he might feast on the salmon, which in striving to ascend the cataract had been thrown on the stony beach! Now the weary travellers are resting on the bank of a brawling brook, along which they are delighted to see the lively Dipper frisking wren-like from stone to stone. On the stunted bushes above them some curious Jays are chattering, and as my friends are looking upon the gay and restless birds, they are involuntarily led to extend their gaze to the green slope beneath the more distant crags, where they spy a mountain sheep, watching the movements of the travellers, as well as those of yon wolves stealing silently toward the fleet-footed animal. Again the pilgrims are in motion; they wind their pathless way round rocks and fissures; they have reached the greatest height of the sterile platform; and as they gaze on the valleys whose waters hasten to join the Pacific Ocean, and bid adieu, perhaps for the last time, to the dear friends they have left in the distant east, how intense must be their

feelings, as thoughts of the past and the future blend themselves in their anxious minds ! But now I see them, brother-like, with lighter steps, descending toward the head waters of the famed Oregon. They have reached the great stream, and seating themselves in a canoe, shoot adown the current, gazing on the beautiful shrubs and flowers that ornament the banks, and the majestic trees that cover the sides of the valley, all new to them, and presenting a wide field of discovery. The melodies of unknown songsters enliven their spirits, and glimpses of gaudily plumed birds excite their desire to search those beautiful thickets ; but time is urgent, and onward they must speed. A deer crosses the stream, they pursue and capture it ; and it being now evening, they land and soon form a camp, carefully concealed from the prying eyes of the lurking savage. The night is past, the dawn smiles upon the refreshed travellers, who launch their frail bark ; and as they slowly float on the stream, both listen attentively to the notes of the Red-and-White-winged Troopial, and wonder how similar they are to those of the "Red-winged Starling : " they think of the affinities of species, and especially of those of the lively birds composing this beautiful group.

Indeed it is not a little interesting to the practical ornithologist to see the amalgamation as it were of species belonging to certain families, and of none more than of the birds formerly known by the names of *Quiscalis* and *Icteri*. He who attends to the manners of these birds will be inclined to assimilate them on the one hand to the Crows, and on the other to the Finches, while many of their habits indicate that they are quite different from either.

The first striking resemblance between *Quiscalus major*, *Q. versicolor* ; *Icterus tricolor*, *I. phœniceus*, *I. Gubernator*, *I. ferrugineus*, and the Cow Bird, is found in the circumstances of their all moving in flocks, mixing more or less with one another, and shewing a decided attachment to man, founded entirely on self-interest, and the benefit which results to them from his agricultural labours. They are all loquacious, fly in dense whirling masses, alight equally well on trees, poles, or fences proper for roosting, as well as on the rank plants of marshes and meadows. They *walk* with ease, indeed with a considerable degree of grace, and are never seen to hop or leap. Although some of these species may give a preference to the more immediate neighbourhood of

the sea than others are wont to do, those which go farthest inland will rarely spend a night anywhere else than on the sedges surrounding the ponds or lakes of the interior. In this respect, these different species remind you of a similar habit in our Common American Crow, which differs from the Fish Crow, the latter, as I have already informed you, retiring to the tops of low trees in the midst of swamps to spend the night, and often at a considerable distance from any open water.

The birds of which I now particularly speak are all in a manner omnivorous, and although their bills differ considerably in shape, some being stouter or less conical, or less pointed than others, they are all fond of grain, and in a greater or less degree are looked upon by the husbandman as depredators. Their notes are more chattering than musical, and they are exceedingly prone to be garrulous at all seasons of the year. Fond of flesh, they not unfrequently devour the young of birds weaker than themselves; and they have a habit of perching on cattle, to search for the insects among their hair. While the Boat-tailed Grakle is fond of seeking for crayfish, fiddlers, or fry that have been cast on the shore, or of watching the dying oyster on the exposed bank, the Crow Blackbird will be found following the plough, picking up grubs and worms, or tearing the tender blades of the maize, in company with Redwings, Cow Buntings, and Ferruginous Grakles. All these species form their nests pretty much alike, and when they are placed on trees introduce into their composition some dung or earth, in which respect they resemble the American Crow. Lastly, I may state, that, to my taste, their flesh is very far from excellent.

The beautiful species of this group which forms the subject of the present article was discovered in Upper California by my friend THOMAS NUTTALL, Esq., from whom I received the specimen represented in the plate, together with the following account. "Flocks of this vagrant bird, which, in all probability, extends its migrations into Oregon, are very common around Santa Barbara in Upper California, in the month of April. Their habits are similar to those of the Red-winged Icterus, but they keep in large flocks apart from that species, which also inhabits this country as well as Mexico. They are seldom seen but in the near suburbs of the town, feeding at this time almost exclusively on the maggots or larvæ of the blow-flies, which are generated in the offal of the cattle constantly killed around the town for the sake of the hides. In large whirling flocks they are

seen associated with the Cow Birds, Common Grakles, Red-wings, and a small species with an orange-yellow head, flitting about in quest of food, or perching on the orchard trees in the town, where they keep up an incessant chatter and discordant confused warble, much more harsh or guttural than the note of the Cow-bird. They are also common around Monterey. With the female, and the circumstances of breeding, I am not acquainted."

ICTERUS TRICOLOR.

Adult Male. Plate CCCLXXXVIII. Fig. 1.

Bill nearly as long as the head, conical, straight, moderately stout, tapering to a fine point; upper mandible with the dorsal line nearly straight, being a little convex at the base, the ridge a little flattened toward the base, where it runs into a short tapering process, the sides rounded, the edges inflected, the tip a little depressed; lower mandible higher at the base than the upper, with the angle rather short and wide, the sides rather flat at the base, convex toward the end, the edges inflected, the tip acute; the gape-line straight, but at the base deflected. Nostrils oval, in the fore part of the short nasal depression.

Head of moderate size, ovate, with the forehead flattened; neck short; body moderately stout. Feet of ordinary length; tarsus rather stout, compressed, with seven large anterior scutella, of which the upper are blended, and two lateral plates meeting at an acute angle behind; toes rather large, compressed, the first much stronger, the outer a little shorter than the inner; claws large, arched, compressed, acute.

Plumage soft, blended, glossy, the feathers ovate and rounded. Wings of ordinary length, the second and third quills longest and equal, the first shorter than the fourth; the outer secondaries abrupt, and slightly repand. Tail of twelve broadly rounded feathers, rather long, almost even, the lateral feathers being only two-twelfths of an inch shorter than the longest.

Bill and feet black, iris hazel. The general colour of the plumage is glossy bluish-black; the smaller wing-coverts deep carmine, their lower row white.

Length to end of tail 9 inches; bill along the ridge $\frac{1}{2}$; wing from flexure 5; tail $3\frac{7}{2}$; tarsus $1\frac{2}{2}$; hind toe $\frac{6}{2}$, its claw $\frac{7}{2}$; second toe $\frac{8}{2}$, its claw $\frac{4}{2}$; third toe $\frac{10}{2}$, its claw $\frac{5}{2}$; fourth toe $\frac{17}{2}$; its claw $\frac{4}{2}$.

This species is very intimately allied to the Red-winged Starling, *Icterus phoeniceus*, being of the same size, and almost entirely of the same colour. The bill is a little more slender, and has the ridge at the base rather elevated and convex, that part being flattened in the other species; the tail in the present is even, but in the other well rounded; the red on the wing is deep carmine, edged behind with pure white, whereas in the other it is scarlet, edged with pale orange yellow.

Another species very intimately allied to both, *Psarocolius Gubernator* of WAGLER, has the bill considerably shorter and higher, the wings longer, and the tail slightly rounded. It is similar in size, and of the same black colour; but differs in having the feathers of the head and neck abrupt at their extremities, and presenting a velvety texture, as well as in being furnished with a uniform scarlet patch on the wing, neither edged with white, as in *Icterus tricolor*, nor with yellow, as in *Icterus phoeniceus*.

YELLOW-HEADED TROOPIAL.

ICTERUS XANTHOCEPHALUS, BONAP.

PLATE CCCLXXXVIII. MALE, FEMALE, AND YOUNG.

THIS species was first made known as an inhabitant of North America by the naturalists of Major LONG's expedition to the Rocky Mountains. According to Dr RICHARDSON, "the species ranges in summer to about the fifty-eighth parallel," but has not been found to the eastward of the Mississippi, where it "arrives from the southward in the middle of May, and by the 20th of the same month reaches the Saskatchewan, where it associates with the Redwing, and, being more numerous, commits even greater havoc in the corn-fields. Mr NUTTALL has favoured me with the following notice respecting it. "On the 2d of May, around the Kansa (Texian) Agency, we now saw abundance of the Yellow-headed Troopial, associated with the Cow-bird. They kept much on the ground in companies, the males (at this time) by themselves. In arable or loose soil they dig into the earth with their bills in quest of insects and larvæ, are very active, and straddle about with a quaint gait, and now and then, while on the ground, which they wholly frequent, in the manner of the Cow-bird, whistle out with great effort, a chuckling note sounding like *ko-kukkle-ait*, often varying into a straining squeak, as if using their utmost endeavour to make some kind of noise in token of sociability. Their music, if such it deserves to be called, is however even inferior to the harsh note of the Cow-bird. Are they also polygamous? Afterwards, in the month of June, by the edge of a grassy marsh, in the open plain of the Platte, several hundred miles inland, we met with the nest of this bird containing several spotted and blotched greenish-white eggs, not much unlike those of the Red-winged Icterus." To this Dr TOWNSEND adds:—" *Icterus xanthocephalus* inhabits the western plains of the Missouri and banks of the Platte River to the Black Hills. The nest of this species is built under a tussock in marshy ground, formed of fine grasses, and canopied over like that of the Meadow Lark. The eggs, from two to four, are of a bluish-white, covered all over with minute specks of purple, largest and most numerous at the great end. It associates

with the Cow-bunting, and alights on the backs of the horses. Its note is very harsh and grating, and does not resemble that of the Red-winged Blackbird.”

I have represented a male, a female, and the head of a young bird approaching towards maturity.

ICTERUS ICTEROCEPHALUS, *Ch. Bonap.* Amer. Ornith. vol. i. p. 27. pl. 3, fig. 1, 2.

ICTERUS XANTHOCEPHALUS, Synopsis of Birds of United States, p. 52.

AGELAIUS XANTHOCEPHALUS, *Swains.*—SAFFRON-HEADED MAIZE-BIRD, *Richards.* and *Swains.* Fauna Bor.-Amer. vol. ii. p. 281.

YELLOW-HEADED TROOPIAL, *Nuttall*, Manual, vol. i. p. 176.

Adult Male. Plate CCCLXXXVIII. Fig. 2.

Bill shorter than the head, stout, straight, conical, tapering to a fine point; upper mandible with the dorsal line nearly straight, being slightly convex at the base, the ridge a little flattened toward the base, where it runs into a short tapering process, the sides rounded, the edges inflected, the tip a little depressed; lower mandible rather higher at the base than the upper, with the angle short and wide; the sides convex at the base, toward the end rounded, the edges involute, the tip acute; the gape-line straight, but at the base deflected. Nostrils oval, in the fore part of the short nasal depression.

Head of moderate size, ovate, with the forehead flattened; neck short; body moderately stout. Feet of ordinary length; tarsus rather stout, compressed, with seven large anterior scutella, and two lateral plates, meeting behind at an acute angle; toes rather large, compressed, the first much stronger, the outer a little shorter than the inner and united with the third as far as the second joint; claws long, little arched, compressed, laterally grooved, very acute.

Plumage soft, blended, glossy; the feathers generally ovate; those on the upper part of the head stiffish and somewhat silky. Wings of ordinary length, the first, second, and third quills almost equal, the second being longest; outer secondaries slightly emarginate. Tail rather long, rounded, the lateral feathers four-twelfths of an inch shorter than the longest.

Bill and feet black; iris hazel. The head, the upper part of the hind neck, the fore neck and part of the breast, orange-yellow, the throat paler; the feathers along the base of the bill, the loreal space, a

band below the eye, and a narrower one above it, black. The rest of the plumage is glossy black, excepting two bands on the outer part of the wing, formed by some of the smaller coverts, and the primary coverts, which are white.

Length to end of tail 9 inches; bill along the ridge $\frac{10}{12}$; wing from flexure $5\frac{10}{12}$; tail $4\frac{4}{12}$; tarsus $1\frac{5}{12}$; hind toe $\frac{7}{12}$, its claw $\frac{8}{12}$; second toe $\frac{8}{12}$, its claw $\frac{5\frac{1}{2}}{12}$; third toe $\frac{1\frac{1}{2}}{12}$, its claw $\frac{5\frac{1}{2}}{12}$; fourth toe $\frac{7\frac{1}{2}}{12}$, its claw $\frac{5}{12}$.

Female. Plate CCCXXXVIII. Fig 3.

The female, which is much smaller, is of a uniform greyish-brown colour, with the feathers at the base of the upper mandible, a band over the eye, and the fore part of the neck light yellow; the throat dull white, and the feathers on the middle of the breast margined with white toward the end. The bill and feet are dusky brown.

Young. Plate CCCLXXXVIII. Fig. 4.

The head represented is that of a young male assuming the plumage of the adult.

BULLOCK'S TROOPIAL.

ICTERUS BULLOCKII, SWAINS.

PLATE CCCLXXXVIII. MALE.

ACCORDING to Mr NUTTALL, who has favoured me with so many observations relative to the birds described in this and the preceding volume, "BULLOCK'S Oriole occurs in nearly the same localities as the Yellow-headed Troopial. About fifty or sixty miles to the north-west of the usual crossing-place of that branch of the La Platte called Larimie's Fork, we observed it making a nest quite similar to that of the Baltimore Bird. This species, which I have since seen in upper California, where it arrives (around Santa Barbara) in the beginning of May, has the same plaintive piping warble, but more brief and less varied. The males also, as usual, arrive in flocks considerably before the females. They have likewise the same habit of concealing themselves for a length of time while carefully gleaning for small larvæ, or sipping the nectareous juices of the opening blossoms of the trees they delight to frequent. On the Platte, the only trees they can resort to are the Balsam poplars, which border the stream. In all respects this species resembles the Common Baltimore Bird, which it supersedes from the first great bifurcation of the Platte, to the shores of the Columbia, extending at least as far as the borders of Old California. Mr BULLOCK, its discoverer, also met with it throughout the table-land of Mexico."

Since the above notice was transmitted to me, I have received another from Dr TOWNSEND, along with a female and a young male, both of which I have figured in Plate CCCCXXXIII. "It inhabits the Rocky Mountains near the Black Hills and the forests of the Columbia River. In the latter place it is a rather plentiful species. Its usual note consists of a single quavering call somewhat like one of the notes of the Scarlet Tanager, *Tanagra rubra*. At other times it warbles a little, but not with half the sweetness or compass of its near relative the Baltimore. It is a very active species, so much so indeed that it is very difficult to get a shot at it while sitting, but it is easily killed on the wing. It evidently breeds here, and has probably now a nest (June 16th), but I

have not been able to find it. The female is rarely seen, and is particularly shy and noiseless."

XANTHORNIUS BULLOCKII, *Swainson*, Synopsis of Mexic. Birds, Phil. Mag. 1827, p. 436.

Adult Male. Plate CCCLXXXVIII. Fig. 5.

Bill a little shorter than the head, conical, very slightly decurved, compressed, tapering to a very attenuated point; upper mandible with the dorsal line almost straight, being very slightly convex, the ridge narrow, its basal extremity tapering, the sides convex, the edges overlapping, the tip extremely sharp; lower mandible with the angle long and of moderate width, the dorsal line and that of the crura slightly concave, the sides erect and nearly flat at the base, convex toward the end, the edges slightly inflected, the tip extremely slender; gape-line straight, declinate at the base. Nostrils elliptical, with a small operculum above, in the fore part of the nasal membrane, half-way between the ridge and the margin.

Head ovate, of moderate size; neck short; body rather slender. Feet of moderate length, rather stout; tarsus much compressed, with seven large anterior scutella, and two longitudinal plates behind forming a very thin edge; toes of moderate size, the hind toe much stronger, the lateral about equal, the third and fourth united at the base. Claws rather long, moderately arched, much compressed, laterally grooved, very acute.

Plumage soft and blended, the feathers ovate and rounded. Wings of moderate length, the first four quills nearly of equal length, the first being scarcely two-twelfths shorter than the second, which is the longest, but scarcely exceeds the third. Tail rather long, straight, rounded and slightly emarginate, the middle feathers being one-twelfth, and the lateral three-twelfths shorter than the longest.

Bill greyish-blue, dusky along the ridge; feet and claws light blue. The upper part of the head, the hind neck, and the anterior portion of the back, with the loreal space, some feathers at the base of the lower mandible, and a rather narrow longitudinal band on the fore neck, deep black; the anterior part of the forehead, a band over the eye, the cheeks, sides of the neck, and the breast rich orange-yellow; the rest of the lower parts paler; the lower wing-coverts and the anterior

edge of the wing pale yellow; the hind part of the back and the upper tail-coverts yellow, tinged with olive, purer on the rump; wings brownish-black, with a large patch of white formed by the outer small coverts, and the edges of the secondary coverts, besides which the quills are all margined externally with white, the secondaries more broadly. The four middle tail-feathers are black, all the rest orange-yellow, with a dusky patch near the end, broader on the inner, narrower and fainter on the outer.

Length to end of tail $7\frac{1}{4}$ inches; bill along the ridge $\frac{9}{12}$; wing from flexure $4\frac{1}{12}$; tail $3\frac{5}{12}$; tarsus $\frac{10\frac{3}{4}}{12}$; hind toe $\frac{4\frac{1}{2}}{12}$; its claw $\frac{4}{12}$; second toe $\frac{5}{12}$, its claw $\frac{3}{12}$; third toe $\frac{7\frac{1}{2}}{12}$, its claw $\frac{4}{12}$; fourth toe $\frac{5}{12}$, its claw $\frac{2\frac{3}{4}}{12}$.

Adult Female. Plate CCCXXXIII. Fig. 2.

The Female is smaller and differs greatly in colouring. The bill and feet are as in the male. The upper parts are greyish-olive, lighter on the rump, on the head and upper tail-coverts tinged with yellow; the loreal space dusky, the anterior part of the forehead, a band over the eye, the cheeks, and sides of the neck, with the fore part of the breast light greenish-yellow; the throat dull white, the lower wing-coverts and edge of the wing very pale yellow, the rest of the lower parts greyish-white, slightly tinged with olive. The wings are dark brown, the larger small-coverts tipped with greyish-white, the secondary coverts and quills edged with the same. The tail dull olivaceous yellow. This description is taken from an individual killed on the 21st June 1836, on the Columbia River.

Length to end of tail 7 inches.

Young Male. Plate CCCXXXIII. Fig. 1.

A young male, killed on the Columbia River, on the 21st June 1836 and in its first plumage, resembles the female in all the upper parts, including the tail, of which the four outer feathers, however, are more yellow. The loreal space, and a streak on the throat, shorter and narrower than in the old male, are black, the band on the eye, the cheeks, the fore neck, and part of the breast, pale yellow; the rest of the lower parts as in the female.

RED-COCKADED WOODPECKER.

PICUS QUERULUS, WILS.

PLATE CCCLXXXIX. MALE AND FEMALE.

THIS species, which was first described by WILSON, is found abundantly from Texas to New Jersey, and inland as far as Tennessee. Pine-barrens suit it best, and it is nowhere more numerous than in those of the Floridas, Georgia, and South Carolina, where, at any time of the year, one is sure to be saluted by its peculiar note, or to see it busily and cheerfully engaged in searching for food, or flitting from one tree to another.

In quickness of motion it approaches more to the Common Three-toed Wookpecker, than any other with which I am acquainted. It glides upwards and sidewise along the trunks and branches, on the lower as well as the upper side of the latter, moving with astonishing alertness, and at every motion emitting a short shrill and clear note, which can be heard at a considerable distance. While on wing it also emits this note at the commencement of each curve of its undulated flight. Often when alighted it issues a tremulous note, which is also short, sharp, and shrill, and during the love season its cries resound through the pine-woods. Near Bayou Sara in Louisiana, I once slightly wounded two males, which I put into my hat in order to carry them home. The first, on being brought to the ground, was easily secured, but the case was different with the other, for it at once hopped off toward the nearest tree, crying loudly all the while, and on reaching it ascended as if unhurt. However I obtained it by accidentally knocking off the bark with a clod of earth. It defended itself courageously, and pecked at my fingers with so much vigour that I was obliged to let it drop several times out of my hand. Confined in my hat, they remained still and sullen, and when I looked at them they both hid their heads, as if ashamed of their situation. Whenever I chanced to fire my gun, it alarmed them, and they uttered a plaintive cry, differing from their usual note while at liberty. One of them died before I reached the house, probably through the great heat; the other however was well, and I put it into a cage, every part of which it examined,

until finding a spot by which it thought it might escape, it began to work there, and soon made the chips fly off. In a few minutes, it made its way out, and leaped upon the floor, uttering its common *cluck*, hopped to the wall, and ascended as if it had been on the bark of one of its favourite trees. The room being unfinished, the bricks were bare, and as it passed along, it peeped into the interstices, and seized the spiders and other insects which it found lurking in them. I kept this bird two days, but when I found that the poor thing could procure no food, I gave it its liberty, and was glad to find that its wounded wing was so far healed as to allow it to fly thirty or forty yards at a time, so that it had a good chance of being able to reach its favourite pines again, with the scent of which it was strongly imbued.

When on a high tree, it looks as if entirely black. Generally too, even when seen close at hand, the red line over the eye is covered by the adjacent feathers; at least this was the case with the two individuals mentioned above. The one which died had its gizzard crammed with the heads of small ants and a few minute coleopterous insects. It is fond of the company of our small Woodpeckers, as well as of *Sylvia pinus* and *Parus Carolinensis*.

I have found this bird mated in January in the Floridas, and engaged in preparing a breeding place in February. The nest is not unfrequently bored in a decayed stump about thirty feet high, the wreck of a noble pine, destroyed by the irresistible fury of a hurricane. The eggs, which are usually four, although I have found as many as six, are smooth and pure white. The young, like those of our other species, crawl out of their holes, and on the branches around wait for the food brought by their parents, until they are able to shift for themselves.

In the winter months, I have seen several of these birds enter a hole at dusk, where they probably remained all night; and in cold drizzly weather I have observed them doing the same at various hours of the day. When wounded, I have several times seen them making toward these retreats. There is little difference between the sexes, excepting that the red line over the eye is wanting in the female. WILSON'S measurements are less than those of any individuals which I have examined.

It is generally believed that all Woodpeckers are strictly insectivorous; but this opinion is by no means correct, for many species

feed on grain and fruits of various kinds. Some of them even come to the ground to search for those which have fallen from the trees, as I found to be the case with the present species, which I repeatedly observed so occupied in the Pine Barrens of the Floridas. On such occasions it is always silent. It moves in pairs at all seasons, and is extremely pugnacious during the period of incubation, when each male is constantly giving chase to intruders of its own kind. During these encounters, its cries are incessant, and much louder and sharper than on more ordinary occasions.

RED-COCKADED WOODPECKER, *PICUS QUERULUS*, *Wils. Amer. Ornith.* vol. ii. p. 103, pl. 15, fig. 1, male.

PICUS QUERULUS, *Ch. Bonaparte*, *Synopsis of Birds of United States*, p. 46.

RED-COCKADED WOODPECKER, *Nuttall*, *Manual*, vol. i. p. 577.

Adult Male. Plate CCCLXXXIX. Fig. 1.

Bill somewhat shorter than the head, straight, rather slender, tapering, angular, at the point compressed and abrupt; upper mandible with the dorsal line straight, the ridge sharp, the sides sloping, the nasal groove with a prominent narrow ridge, rather nearer the ridge than the edge at its commencement, but joining the latter about a third from the tip, the edges sharp and direct; lower mandible with the angle rather short and narrow, the dorsal line straight, the ridge sharp, the edges convex toward the end, the tip compressed, but abrupt. Nostrils basal, lateral, linear-oblong, broader at the base.

Head of moderate size, ovate, convex above; neck rather short; body moderate. Feet short, rather slender; tarsus short, anteriorly scutellate, laterally covered with angular scales, posteriorly with a row of narrow scutella; toes four; the first short, the second next in length, the fourth directed outwards and backwards, and longer than the third; claws large, strongly arched, compressed, deeply grooved on the sides, tapering to a very acute point.

Plumage very soft and blended; feathers at the base of the bill bristly and directed forwards so as to cover the nostrils. Wings long; the first quill extremely small, being only ten-twelfths long; the second four-twelfths shorter than the third, which is one-twelfth shorter than the fourth, this being the longest. Tail long, cuneate, of twelve feathers, the lateral very small, weak, and rounded, the rest

strong, with the barbs worn at the end, the tip emarginate, the shafts being worn.

Bill greyish-blue, with the upper mandible dusky toward the ridge. Iris hazel. Feet greyish-blue, claws of the same colour, dusky along the ridge. The upper part of the head, the hind neck, the loreal space, and a band down each side of the neck glossy black; feathers at the base of the bill, a band over the eye, and a large patch on the side of the head white. Margining the black behind the eye, is a streak of bright carmine, formed by a series of very slender feathers. All the upper parts, including the wings, are blackish-brown, transversely banded with white. Tail black; the fourth feather obliquely white on the outer web toward the end, the next with the white extended to the inner webs toward the end, it being barred with black on the inner; the second white, with five black bands on the inner web and one on the outer; the first or lateral feather white, with a black patch near the base of the inner web. The lower parts are white, the sides of the lower part of the neck, and of the body, marked with oblong black spots.

Length to end of tail $8\frac{1}{2}$ inches; extent of wings $14\frac{1}{2}$; bill along the ridge $\frac{10}{12}$; wing from flexure $4\frac{8}{12}$; tail $3\frac{5}{12}$, the lateral feathers $1\frac{1}{12}$; tarsus $\frac{8}{12}$; hind toe $\frac{2\frac{1}{2}}{12}$, its claw $\frac{2\frac{1}{2}}{12}$; inner toe $\frac{5\frac{1}{2}}{12}$, its claw $\frac{5\frac{1}{2}}{12}$; middle toe $\frac{6}{12}$, its claw $\frac{6}{12}$; outer toe $\frac{7\frac{1}{2}}{12}$, its claw $\frac{6}{12}$.

Female. Plate CCCLXXXIX. Fig. 2.

The Female is somewhat smaller, but resembles the male in colour, with the exception of wanting the red streak behind the eye.

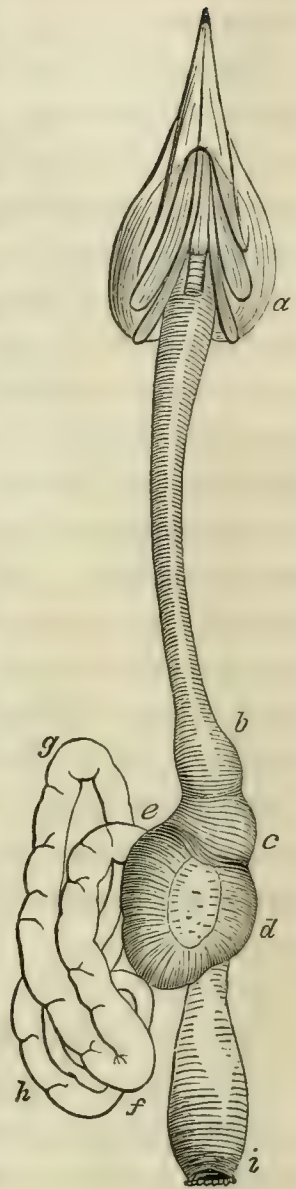
Length to end of tail $7\frac{3}{8}$ inches, to end of wings $6\frac{3}{8}$, to end of claws $6\frac{3}{8}$; extent of wings $13\frac{1}{4}$.

The roof of the upper mandible is slightly concave, with a prominent middle ridge; the lower mandible more concave, with two ridges and a median groove. The tongue is $10\frac{1}{2}$ twelfths long, slender, its breadth 1 twelfth, its sides parallel; it tapers to a point at the end, where it is margined with acicular bristles directed backwards. The hyoid bones curve round the back of the head, converge, and run along the middle of the skull to the base of the bill, without curving to either side. The palate is flattened, the posterior aperture of the nares linear, with an anterior slit, which is margined with papillæ. The aperture

of the mouth is $4\frac{1}{2}$ twelfths in width. The œsophagus, *ab*, is 2 inches 8 twelfths long, narrow, uniform, its breadth 2 twelfths. The proventricular belt, *b*, is $4\frac{1}{2}$ twelfths long. The stomach, *cde*, is of moderate size, oblong, $8\frac{1}{2}$ twelfths in length, 6 twelfths in breadth; its muscles rather strong, its tendons large, the epithelium dense, longitudinally rugous, and of a reddish colour. The intestine, *efgh*, is 9 inches long, its upper portion 2 twelfths in diameter, its narrowest part $1\frac{1}{4}$ twelfth; the rectum 3 twelfths in diameter, gradually enlarging into the cloaca, *i*.

The trachea, which is 1 inch 8 twelfths long, and of about 65 rings, measures 1 twelfth across at the upper part, gradually contracts a little, and is furnished with strong contractor and sterno-tracheal muscles. The bronchi are of moderate length, with about 15 half-rings.

The contents of the stomach were remains of insects, and small round very hard dark-brown seeds. During the autumnal and winter months, this species is wont to feed on the berries of several species of Smilax, on grapes, and at times even on the common Poke-berries. I am also persuaded that whilst the Pines are in bloom, much of their flowers is used, perhaps more as a relish, than as an essential article of food.



LARK FINCH.

FRINGILLA GRAMMACA, SAY.

PLATE CCCXC. MALE.

THIS beautiful species is another of those of which we owe our first knowledge to Colonel LONG's party, who discovered it on their expedition to the Rocky Mountains. To the Prince of MUSIGNANO we are indebted for the first figure of it. That naturalist states, in the short account he has given of it, that "it sings sweetly, and often continues its notes while on the wing," and to this I can only add the following statement with which I am favoured by my friend Mr NUTTALL :

"This species, in small flocks, in the spring season, when we saw it, appears rather frequent on the ground, resting on it in silence, or merely uttering a feeble chirp. They do not appear on the central table-land, or on the western plains. We therefore had no opportunity of learning any thing of their habits in the breeding season. I believe they are occasionally seen at no great distance from the upper settlements of the Missouri."

FRINGILLA GRAMMACA, SAY, *Ch. Bonaparte*, Amer. Ornith. vol. i. p. 47, pl. 5, fig. 3.

LARK FINCH, *Nuttall*, Manual, vol. ii. p. 480.

Adult Male. Plate CCCXC. Fig. 1.

Bill short, stout, conical, compressed toward the end; upper mandible with the dorsal line very slightly convex, the ridge extending but a short way on the forehead, where it tapers to a point, the sides rounded, the edges direct and overlapping, the tip pointed, the gape-line nearly straight, a little deflected at the base; lower mandible of the same breadth as the upper, with the angle very short and broad, the dorsal line ascending and straight, the back broad, the sides rounded, the edges inflected, the tip acute. Nostrils basal, small, roundish, concealed by the feathers.

Head of moderate size, ovate; neck short, body full. Feet of moderate length and rather slender; tarsus rather short, compressed, anteriorly covered with seven scutella, posteriorly with two longitudinal

plates meeting so as to form a very sharp edge ; toes moderate, the first strong, the lateral equal ; claws rather long, slender, much compressed, laterally grooved, moderately arched, very acute.

Plumage soft and blended, the feathers ovate. There are short bristles at the base of the upper mandible. Wings of moderate length ; the outer three quills nearly equal, the third longest, but exceeding the first only by one-twelfth of an inch, and the second by a quarter of a twelfth ; the fourth not much shorter, the rest slowly decreasing ; the outer secondaries emarginate, the inner tapering to a blunt point, one of them considerably elongated. Tail rather long, rounded.

Bill reddish flesh-colour, the upper mandible tinged with dusky. Feet and claws flesh-colour. On the upper part of the head are three longitudinal bands of white separated by two of light red, the anterior part of which is black. The upper parts are light greyish-brown, longitudinally streaked with dusky, the central part of each feather being of the latter colour, the hind part of the back and the rump without streaks. On the wing are two faint bands of yellowish-white, formed by the tips of the first row of small coverts, and those of the primary coverts, and a patch of the same formed by the bases of the outer primaries ; the quills dusky brown, slightly margined with whitish, the inner secondaries with light red ; the tail darker, all the feathers excepting the middle terminated by white, which on the outer occupies more than a third of its length, and extends nearly to the base of the outer web. Below the eye is a white streak ; the cheeks are light red, with an anterior black spot ; under them a broad white band extends from the lower mandible and curves upwards, separated from the throat which is white by a short line of black on each side. The lower parts are yellowish-white, the lower part of the neck greyish, the sides tinged with greyish-brown, the lower wing-coverts greyish-white.

Length to end of tail $6\frac{1}{2}$ inches ; extent of wings $8\frac{1}{4}$; bill along the ridge $\frac{6\frac{1}{2}}{1\frac{1}{2}}$, along the edge of lower mandible $\frac{7}{1\frac{1}{2}}$; wing from flexure $3\frac{8}{1\frac{1}{2}}$; tail 3 ; tarsus $1\frac{1}{2}$; hind toe $\frac{4\frac{1}{2}}{1\frac{1}{2}}$, its claw $\frac{3\frac{1}{2}}{1\frac{1}{2}}$; middle toe $\frac{7\frac{1}{2}}{1\frac{1}{2}}$, its claw $\frac{5}{1\frac{1}{2}}$.

PRAIRIE FINCH.

FRINGILLA BICOLOR, TOWNSEND.

PLATE CCCXC. MALE AND FEMALE.

This species, of which there are in my possession several specimens, presented to me by my friend Mr NUTTALL, was discovered by that zealous naturalist and his companion Dr TOWNSEND on the plains of the Platte, and briefly characterized in the Journal of the Academy of Natural Sciences of Philadelphia. From its general appearance, and especially from what is known of its habits, I consider it closely allied to the Rice Bunting, *Emberiza oryzivora*; but as my object has always been to describe our birds, without caring much how they are named, I here adopt the appellation given by its discoverers, the latter of whom has favoured me with the following notice respecting it.

“The Prairie Finch inhabits a portion of the Platte country, in large flocks. It is strictly gregarious, and feeds upon the ground, along which it runs like the Grass Finch, *Fringilla graminea*, to which it is somewhat allied. As the large flocks, consisting of from sixty to a hundred individuals, were started from the ground by our caravan in passing, the piebald appearance of the males and females promiscuously intermingled, presented a curious, but by no means displeasing, effect. While the flock is engaged in feeding, the males are frequently observed to rise suddenly to a considerable height in the air, and poising themselves over their companions, with their wings in constant and rapid motion, they become nearly stationary. In this situation they pour forth a number of very lively and sweetly modulated notes, and at the expiration of about a minute descend to the ground, and course about as before. I never observed this bird to the west of the Black Hills.”

Mr NUTTALL's notice respecting it is as follows:—“On the 24th of May, soon after crossing the north branch of the Platte, we met with this very interesting species of *Fringilla*. The males associated in flocks with the Cow Birds, uttering a most delightful song. Towards evening in particular, we sometimes saw them in all directions around us on the hilly grounds, rising to a little height, hovering and flapping

their wings, at the same time singing something like *weet, weet, wt, wt, wt*, notes betwixt the hurried warble of the Bob-o-link, and the melody of the Sky Lark. It is in short one of the sweetest songsters of the prairie, is tame and unsuspecting, the whole employment of the little band being an ardent emulation of song."

FRINGILLA BICOLOR, PRAIRIE FINCH, *Townsend*, Journal of Acad. of Nat. Sciences of Philadelphia, vol. vii. p. 189.

Adult Male. Plate CCCXC. Fig. 2.

Bill short, robust, conical, compressed; upper mandible a little narrower, with the dorsal line very slightly convex, the ridge slightly prolonged on the forehead, the sides convex and bulging, the edges direct, the gape-line nearly straight, deflected at the base, the tip sharp and a little exceeding that of the lower mandible; the angle of the latter short and very broad, the dorsal line ascending and slightly convex, the back broad, the sides rounded, the edges inflected, the tip pointed. Nostrils basal, oval, in a very short deep depression, nearly concealed by the feathers.

Head rather large; neck short; body full. Feet of ordinary length, rather strong; tarsus of moderate length, compressed, anteriorly covered with seven scutella, behind with two plates meeting so as to form a very thin edge; toes of moderate size, the hind toe stouter, the lateral equal. Claws rather long, arched, much compressed, laterally grooved, tapering to a very acute point.

Plumage soft and blended, the feathers ovate and rounded. There are distinct but small bristles at the base of the upper mandible. Wings of moderate length; the outer three quills nearly equal, the second being longest, the fourth slightly shorter than the third; outer secondaries broadly rounded and emarginate; inner tapering to a rounded point, one of them, when the wing is closed, little shorter than the outer primaries. Tail of moderate length, a little rounded, the lateral feathers shorter than the longest by two and a half twelfths.

The bill is light blue, the upper mandible somewhat dusky along the ridge; the feet and claws reddish-brown. The general colour of the plumage is greyish-black, the rump blackish-grey. The quills are blackish-brown, the inner secondaries black. There is a large patch of

white on the wing including some of the smaller coverts, the tips of the first row, and the secondary coverts; the primaries and outer secondaries are narrowly, the inner secondaries broadly margined with white, with which most of them are also tipped. The middle tail-feathers are black, the rest brownish-black, all narrowly edged with white, and having a narrow speck of the same at the end of the inner web. Some of the feathers on the abdomen and the lower tail-coverts are also tipped with white.

Length to end of tail 7 inches; bill along the ridge $7\frac{1}{2}$, along the edge of lower mandible $\frac{7}{12}$; wing from flexure $3\frac{5}{12}$; tail $2\frac{8}{12}$; tarsus $\frac{11\frac{1}{2}}{12}$; hind toe $\frac{4\frac{1}{2}}{12}$, its claw $\frac{4\frac{1}{2}}{12}$; middle toe $\frac{8}{12}$, its claw $\frac{3}{12}$.

Adult Female. Plate CCCXC. Fig. 3.

The Female, which is smaller than the male, differs greatly in colour. The bill is dusky above, pale beneath; the feet as in the male. The upper parts are greyish-brown, streaked with dusky brown, the lower white, with oblong spots of brownish-black, the abdomen nearly pure, the sides tinged with reddish-brown. The quills are dark brown, edged and tipped with reddish-white, and the patch on the wing is of the same tint. The tail feathers are also dark brown, the outer externally edged, and all tipped with white on the inner web.

Length to end of tail $6\frac{1}{2}$ inches; bill along the ridge $\frac{5\frac{1}{2}}{12}$; wing from flexure $3\frac{1}{2}$; tail $2\frac{5}{12}$; tarsus $\frac{11}{12}$; hind toe $\frac{4}{12}$, its claw $\frac{4}{12}$; middle toe $\frac{7\frac{1}{2}}{12}$, its claw $\frac{3\frac{1}{2}}{12}$.

BROWN SONG SPARROW.

FRINGILLA CINEREA, GMEL.

PLATE CCCXC. MALE.

OF this bird I have received the following account from Mr NUTTALL :—“ This species, so much allied to *Fringilla iliaca* by its brown colour, inhabits the woody districts of the Columbia, very generally as far as the sea-coast, and continues as far south as Upper California. It is a somewhat familiar and agreeable songster, mounting some low bush, and singing, at intervals, for hours together, much in the manner of the Song Sparrow, but with a sweeter and more varied tone. We heard their cheerful notes throughout the summer ; and every fine day in winter till the month of November, particularly in the morning, their song was still continued. The nest and eggs are scarcely distinguishable from those of the Song Sparrow, the former being chiefly formed of dry grass, and lined with finer blades of the same, or with deer hair. They keep much in low ground and alluvial situations, amidst rank weeds and brambles, where they are frequently to be seen hopping and searching after insects, like so many Wrens or Swamp Sparrows, which they so much resemble also in plumage. They are as usual very solicitous for the safety of their young or eggs, keeping up an incessant chirp, and are nearly the whole summer, like the Song Sparrow, engaged in the cares of breeding. We have found this species also very common in Upper California.

Dr TOWNSEND speaks of it as follows :—“ This species inhabits several hundred miles of the Platte country in great numbers, as well as the banks of the Columbia River. It affects generally the low bushes of wormwood (*Artemisia*), from the summit of which it pours forth a variety of pretty notes. It appears to be a very pugnacious species. Two of them, probably males, are often observed fighting in the air ; the beaten party goes off crest-fallen, and the conqueror repairs to the nearest bush, where he tunes his pipe to a lively and triumphant stave in honour of his victory. I again met with this bird, though not plentiful, in June 1825, on the waters of the Columbia River near the mouth of Lewis River. I never observed it in the vicinity of the lower settlements. The sexes are almost precisely alike in plumage.

FRINGILLA CINEREA, *Gmel. Syst. Nat.* vol. i. p. 922.—*Lath. Ind. Ornith.* vol. i. p. 445.

CINEREOUS FINCH, *Arct. Zool.* vol. ii. No. 260.

Adult Male. Plate CCCXC. Fig. 4.

Bill short, stout, conical, compressed toward the end; upper mandible with the dorsal line very slightly convex, at the base and toward the tip, the ridge narrow, and extending a short way on the forehead, where it tapers to a point, the sides rounded, the edges inflected, the tip pointed, the gape-line nearly straight, a little deflected at the base; lower mandible of the same breadth as the upper, with the angle very short and broad, the dorsal line ascending and straight, the back broad at the base, the sides rounded, the edges involute, the tip pointed.

Head of moderate size, ovate; neck short; body full. Feet of moderate length and rather stout; tarsus rather short, compressed, anteriorly covered with seven scutella, posteriorly with two longitudinal plates meeting so as to form a very sharp edge; toes moderate, the first strong, the lateral equal; claws rather long, slender, much compressed, laterally grooved, moderately arched, very acute.

Plumage soft and blended, the feathers ovate. There are no distinct bristles at the base of the upper mandible. Wings short, concave, broad, much rounded; the first quill four-twelfths and three-fourths shorter than the fourth, which is the longest, the rest very little graduated, the outer secondaries slightly emarginate, the inner not elongated. Tail rather long, slender, much rounded, the lateral feathers being five-twelfths of an inch shorter than the longest.

Bill dusky, the lower mandible reddish-brown toward the base. Feet and claws dusky reddish-brown. The general colour of the upper parts is dark olivaceous brown, all the feathers dusky in the centre; the wing-coverts, inner secondaries and tail-feathers more or less tinged with red on the margins. Over the eye is a dusky greyish line; on the cheek a whitish line, and beneath it a dusky brown band; the throat and fore part of the neck white, with longitudinal brown streaks, the middle of the breast brownish-white, the sides dark greyish-brown, as are the lower tail-coverts.

Length to end of tail 6 inches; extent of wings 8; bill along the ridge $\frac{5\frac{3}{4}}{1\frac{1}{2}}$; wing from flexure $2\frac{7}{12}$; tail $2\frac{10}{12}$; tarsus $\frac{11}{12}$; hind toe $\frac{4\frac{3}{4}}{1\frac{1}{2}}$, its claw $\frac{4\frac{1}{2}}{1\frac{1}{2}}$; middle toe $\frac{7\frac{1}{2}}{1\frac{1}{2}}$, its claw $\frac{3\frac{1}{2}}{1\frac{1}{2}}$.

The Female is similar to the male.

BRENT GOOSE.*ANSER BERNICLA*, BONAP.

PLATE CCCXCI. MALE AND FEMALE.

THE extent of the migrations of this species remains as yet unknown. Its progress along our Atlantic shores in October, November, and December, is varied, and in a great measure uncertain, it being apparently induced to tarry or to proceed by the changes which may happen in the temperature. It in fact appears to remain along the coast until forced away by the intensity of the cold, when it resumes its flight, and removes to countries beyond the southern limits of the United States.

The Brent Goose may be considered as a salt-water bird, for it never ascends our rivers beyond the influence of the tides, nor is found on inland lakes or ponds, unless it be wounded, and happen to alight accidentally in such places. To this natural predilection for salt-water may be attributed its habit of flying round the projections of capes and headlands: it very seldom passing directly over a neck of land, unless suddenly surprised and alarmed by the gunner.

This species has never been seen by my friend Dr BACHMAN in South Carolina. I never observed any on the lakes or shores about the mouths of the Mississippi, nor any where in the course of my route to the Texas. While I was in that country, I did not find any person who could give me sufficient reasons for believing that it ever tarries there. Where it may go in winter is therefore to me unknown.

The flesh of this bird I consider as excellent food. The young in autumn, or about the time of their first appearance on our eastern coast, Massachusetts for example, are tender, juicy, and fat; and are as well known to the epicures of Boston as the more celebrated Canvass-back is to those of Baltimore.

Its flight resembles that of our other Geese, being in ordinary circumstances rather slow and sedate. As to its cry, although I have often seen hundreds of individuals at a time, I have not been able to tune my ears so as to liken its cacklings to the sounds produced by "a pack of hounds in full cry," as alleged by WILSON. The Brent Goose

is a shy bird, not easily approached; it swims well, and when wounded can dive with great expertness, as I have more than once witnessed. Its food consists of marine plants, which I have often found in its gizzard, along with coarse gravel and fragments of shells, which latter were so thick as to lead me to think that the bird had not broken them for the purpose of getting at the animal. In walking it moves with lighter and quicker steps than even the Barnacle Goose, *Anser leucopsis*. It is very easily tamed, and when thus subjugated eats any kind of grain, and crops the grass well with its head slightly inclined to one side. It has been known to produce young in captivity.

Of its manner of breeding I am ignorant; and all that has been stated on the subject is, that it breeds in great numbers in northern latitudes, for example, on the coasts and islands of Hudson's Bay and the Arctic Sea, and that it lays white eggs.

I have represented a pair which were shot in spring, when their migratory movements are more regular than in autumn.

ANAS BERNICLA, *Linn. Syst. Nat.* vol. i. p. 198.—*Lath. Ind. Ornith.* vol. ii. p. 844.

BRANT, ANAS BERNICLA, *Wils. Amer. Ornith.* vol. viii. p. 131, pl. 72, fig. 1.

ANSER BERNICLA, *Ch. Bonap., Synops. of Birds of United States*, p. 378.

ANSER BERNICLA, BRENT GOOSE, *Richards. and Swains. Fauna Bor.-Amer.* vol. ii. p. 469.

BRANT OR BRENT GOOSE, *Nuttall, Manual*, vol. ii. p. 358.

Adult Male. Plate CCCXCI. Fig. 1.

Bill much shorter than the head, higher than broad at the base, somewhat conical, slightly depressed toward the end, narrowed and rounded at the tip. Upper mandible with the dorsal line sloping, the ridge a little flattened at the base, convex toward the end, the sides sloping, the edges soft, the oblique marginal lamellæ short, transverse, about 25 on each side, the unguis round, convex, striato-denticulate on the inner edge. Nasal groove elliptical, commencing at the base, and extending to beyond the middle of the bill; nostrils lateral, medial, longitudinal, narrow-elliptical, open, pervious. Lower mandible straight, depressed, with the angle very long, rather wide, somewhat rounded, the sides sloping outwards, the edges soft, with about forty lamellæ.

Head small, oblong, compressed. Neck rather long and slender. Body full, slightly depressed. Feet short, stout, placed a little behind the centre of the body; legs bare a little above the tibio-tarsal joint

Tarsus short, compressed, covered all round with angular reticulated scales, which are smaller behind. Hind toe extremely small, with a very narrow membrane; third toe longest, fourth a little shorter, but longer than the second; all the toes reticulated above at the base, but with narrow transverse scutella towards the end; the three anterior connected by a reticulated membrane; the outer with a thick margin, the inner with the margin extended into a two-lobed web. Claws small, arched, rather depressed, especially that of the middle toe, which has the inner margin expanded.

Plumage close, rather short, compact above, blended on the head, neck, and lower parts of the body. The feathers of the head and neck small and oblong, of the back very broad and abruptly rounded, of the breast and belly broadly rounded. Wings when closed extending a little beyond the end of the tail; primaries very strong, decurved, the first longest, the second almost equal; secondaries long, broad, rounded. Tail very short, rounded, of sixteen feathers.

Bill and feet black. Iris hazel. Head and neck all round black, glossed with blue. A small streak under the eye, and a spot on the chin, white; on each side of the neck a patch of the same formed by a number of the feathers which have a white band near the end. The general colour of the upper parts is brownish-grey, the feathers terminally margined with light greyish-brown; the quills, and primary coverts greyish-black, the primaries darker; the upper tail-coverts white, the tail greyish-black. The fore part of the breast is light brownish-grey, the feathers terminally margined with greyish-white; the grey tint gradually fades into white, which is the colour of the abdomen, sides of the rump and lower tail-coverts; the sides of the body grey, the feathers broadly tipped with white; axillar feathers and lower wing-coverts grey

Length to end of tail $24\frac{1}{2}$ inches, to end of claws $25\frac{1}{2}$; extent of wings 48; bill along the ridge $1\frac{4}{12}$, along the edge of lower mandible $1\frac{4}{12}$; wing from flexure 13; tail $4\frac{1}{2}$; tarsus $1\frac{1}{4}$; hind toe $\frac{3\frac{1}{2}}{12}$, its claw $\frac{3\frac{1}{2}}{12}$; middle toe $1\frac{8}{12}$, its claw $\frac{4\frac{1}{2}}{12}$. Weight $3\frac{1}{4}$ lb.

Adult Female. Plate CCCXCI. Fig. 2.

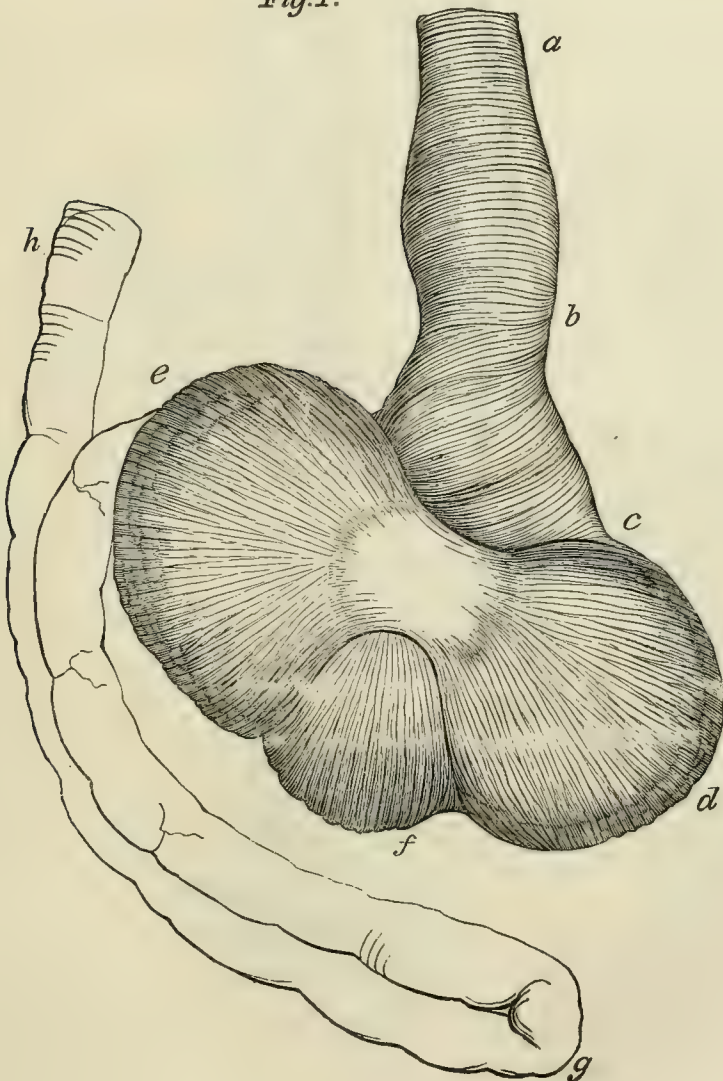
The Female, which is somewhat smaller, is similar to the male.

Length to end of tail 23 inches, to end of wings 24, to end of claws $23\frac{3}{4}$; extent of wings $44\frac{1}{2}$. Weight $2\frac{1}{4}$ lb.

An adult female procured by Dr THOMAS M. BREWER of Boston.

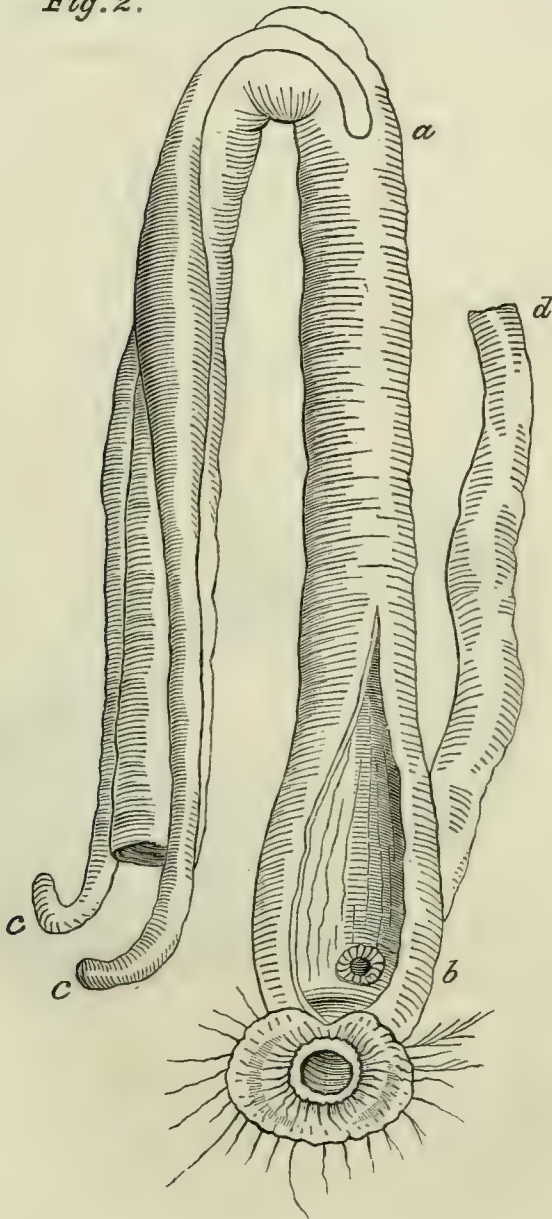
The roof of the mouth is concave, with a median row of short papillæ, two lateral series of flattened laminæ, and some irregularly scattered intermediate prominences, the lower mandible more concave. The tongue is fleshy, with the base papillate, the sides parallel and furnished with recurved papillæ, the tip rounded and thin, the entire length 1 inch 5 twelfths. The œsophagus, *a*, which is 13 inches long, is exceedingly slender, its diameter when contracted not being greater than that of the windpipe, or about 4 twelfths, but it is capable of being dilated to 6 twelfths; its inner coat thrown into prominent longitudinal rugæ. The proventriculus, *ab*, is enlarged to the breadth of 11 twelfths, its glandules simple, cylindrical, 2 twelfths long. The stomach, *cdef*, is a very highly developed muscular gizzard, placed

Fig. 1.



obliquely, and of an elliptical form, its length being 1 inch 9 twelfths, its breadth 2 inches 11 twelfths. This great breadth is caused, as in other birds of this family, by the vast size of the lateral muscles, of which the left, *d*, has a thickness at the middle of 1 inch $4\frac{1}{2}$ twelfths, the right, *e*, of 1 inch 3 twelfths, this leaving but a very small space between the two grinding surfaces, which are placed obliquely. The lower muscle, *f*, is narrow and of moderate thickness. The epithelium is soft unless on the two grinding plates, which are of an elliptical form, a little concave, smooth in the middle, longitudinally grooved toward the margins. The proventricular belt of glandules is 1 inch 3

Fig. 2.



twelfths in breadth. The stomach contained a large quantity of pure quartz sand. The pylorus is destitute of valve. The duodenum *egh*, has a diameter of $4\frac{1}{2}$ twelfths, and curves at the distance of 5 inches; the intestine is disposed in longitudinal folds, there being 16 turns, and measures 5 feet 11 inches in length. It retains a pretty uniform breadth as far as the rectum, Fig. 2, *ab*, which enlarges to 7 twelfths. The cœca, *acc*, which come off at the distance of 5 inches from the extremity, are $5\frac{1}{4}$ inches in length, very narrow, their diameter at the base being about 1 twelfth, towards the end 2 twelfths, and their greatest breadth toward the middle $3\frac{1}{2}$ twelfths. In Fig. 2 is seen part of the oviduct, *db*, which opens at the distance of $\frac{1}{2}$ inch from the anus, opposite *b*, and above or anterior to the ureters. In this bird there is no decided cloaca, which is equally the case with other species of this family, and with such birds generally as pass their fæces in a compact cylindrical form. In this respect, Swans, Geese, and Ducks are analogous to Pheasants, Grouse, and Partridges; they being in fact aquatic Gallinacæ.

The trachea is 11 inches long, its diameter at the upper part $4\frac{1}{2}$ twelfths. It is a little flattened above, less so in the middle, and somewhat compressed at the lower extremity, where its diameter is 3 twelfths. There are 150 free osseous rings, and 15 additional united rings at the lower part. The inferior larynx is destitute of muscles. The space between the last ring of the trachea and the first bronchial ring is large, being $4\frac{1}{2}$ twelfths in length. The bronchi are very short, rather wide, with about 10 incomplete rings, the extremities of which nearly meet. The lateral muscles are strong, and there is a pair of cleido-tracheal, and a pair of sterno-tracheal muscles, the former coming off at the distance of $2\frac{1}{2}$ inches, the latter at that of 1 inch 2 twelfths, from the inferior larynx. The cleido-tracheal muscle is a direct continuation of part of the contractor, but the sterno-tracheal is independent of them, and attached to two rings of the trachea. The contractor muscle terminates in the solid tube, at the distance of 9 twelfths from the inferior larynx.

LOUISIANA HAWK.

FALCO HARRISII.

PLATE CCCXCII. FEMALE.

THE varying modes of flight exhibited by our diurnal birds of prey have always been to me a subject of great interest, especially as by means of them I have found myself enabled to distinguish one species from another, to the farthest extent of my power of vision. On considering this matter, I have become fully convinced that a greater length of the wings in any one species is not, as most naturalists have imagined, an indication of its greater power of flight. Writers of the present day who, judging of the flight of birds from such circumstances, think that those species which have longer and, as they suppose, more complete wings, fly with more rapidity than those whose wings are comparatively short, are, in my opinion, quite mistaken. They judge in this matter, not from experience, but from appearance, having previously determined theoretically that a long wing is a more efficient instrument than a short one; and being acquainted with birds only through the medium of skins and feathers, presume to inform us as to their comparative agility. The power of flight in birds of any kind depends not upon the length, amplitude, or shape of the wings, but upon the rapidity with which these members are moved, and the muscular energy applied to them. It is not a little surprising to me that not one of the authors who has written on this subject, has spoken of the mode of flight of our Turkey Buzzard, which, notwithstanding its very ample wings, is one of the very slowest birds; for, although it manages to rise to a great height, all its movements are laborious and heavy, unless when it is at some considerable elevation. The amplitude of its wings serves it in sailing only, never in enabling it to pass swiftly through the air, as birds of much shorter wings, but greater muscular energy, are wont to do.

The Golden Eagle, which has universally been considered as a bird of most extraordinary powers of flight, is in my estimation little more than a sluggard, though its wings are long and ample. It is true that it can sustain itself for a very considerable time on wing, but the observer

cannot fail to see that, instead of being swift, it moves slowly and somewhat heavily. For this reason it is rarely seen to give chase on wing, but depends more on the weight of its body while falling or swooping on its prey from a certain height than upon any dexterity or velocity of flight. Eagles while swooping do not use their wings as a medium of propelling themselves farther than by nearly closing them, that they may descend with more rapidity, in doing which they produce a loud rustling noise, which I have often thought has a tendency to frighten the quarry so much as to render it unable to seek for safety by flight or speed of foot. The Golden Eagle can, indeed, soar to a very great height, but this it accomplishes by a circling or gyratory flight of a very slovenly character, and not much superior to that of Vultures or birds still more nearly allied to itself. Thus, Reader, I would look on this celebrated bird as one of the slowest and heaviest of its tribe; and would place next in order our Red-tailed Hawk, *Falco borealis*, which being also possessed of ample wings, of considerable length, moves through the air, and pounces upon its prey in a similar manner. Then in succession will come the Black Warrior, *Falco Harlani*; the Broad-winged Hawk, *F. Pennsylvanicus*; the Red-shouldered Hawk, *F. lineatus*; the Common Buzzard, *F. Buteo*; and the Rough-legged Falcon, *F. lagopus* or *F. Sancti-Johannis*, which is in a manner the very counterpart of the Golden Eagle, as well as every other species endowed with no greater powers, and furnished with wings and tails of similar size and form; although, of course, some slight differences are to be observed in these different species, on all of which I would willingly bestow the distinctive name of *Swoopers*. All these birds are more or less indolent; one might say they are destitute of the power of distinguishing themselves in any remarkable manner, and none of them shew a propensity to remove to any great distance from the place of their birth, unless, indeed, when very hard pressed either by want of food or by very intense cold.

The next group which attracts the attention of the American ornithologist is that composed of such birds as are provided with longer and almost equally broad wings, but assisted by more or less elongated and forked tails. Of this kind are our Swallow-tailed Hawk, *Falco furcatus*; the Black-shouldered Hawk, *F. dispar*; and the Mississippi Kite, *F. Mississippiensis*. These species assume what I would call a flowing manner of flight, it being extremely graceful, light, buoyant,

and protracted beyond that of most other hawks. They are, however, devoid of the power of swooping on their quarry, which they procure by semicircular glidings of greater or less extent, according to the situation or nature of the place, over the land or the water, on the branches or trunks of trees, or even through the air, while in the latter they are wont to secure large coleopterous insects. These species are provided with short, strong tarsi, are scarcely able to walk with ease, wander to great distances, and possess very little courage.

After these long-winged fork-tailed hawks, comes the Marsh Hawk, *Falco cyaneus*, which, by its easy manner of flying, it being supported by ample wings and tail, is in some degree allied to them, though it is by no means a bird of rapid flight, but one which procures its food by patient industry, and sometimes by surprising its prey. Its style of chase is very inferior to that of those species which I consider as not only the swiftest, but the most expert, active, and persevering marauders. The Marsh Hawk is connected with these by its long and slender tail, and also by its propensity to wander over vast tracts of country. It may be said to swoop or to glide in procuring its prey, which consists both of birds and small quadrupeds, as well as insects, some of the latter of which it even seizes on wing.

Taking somewhat into consideration the usual low flight of the latter species, I feel induced to place next it the very swiftest of our Hawks, as I am convinced you would consider them, had you witnessed, like me, their manners for many successive years. These are the Goshawk, *F. palumbarius*, Cooper's Hawk, *F. Cooperi*, the Pigeon Hawk, *F. columbarius*, and the Sharp-shinned Hawk, *F. fuscus*. Though their wings are comparatively short, somewhat rounded, and rather concave, they have longer bodies and larger tails than any other of our hawks. The tail is used as a rudder, and appears most effectually to aid them in their progress on wing. None of these birds ever pounce on their prey, but secure it by actual pursuit on wing. Industrious in the highest degree, they all hunt for game, instead of remaining perched on a rocky eminence, or on the top branch of a tall tree, waiting the passing or appearance of some object. They traverse the country in every direction, and dash headlong in the wildest manner, until their game being up they follow it with the swiftness of an arrow, overtake it, strike it to the ground with wonderful force, and at once fall to and devour it. Although the flight of our Passenger Pigeon is rapid and protracted almost beyond

belief, aided as this bird is by rather long and sharp wings, as well as an elongated tail, and sustained by well regulated beats, that of the Goshawk or of the other species of this group so very far surpasses it, that they can overtake it with as much ease as that with which the pike seizes a carp. I have often thought that the comparatively long tarsi of these Hawks, as well as their elongated and padded toes, are of considerable assistance in securing their prey on wing, as they throw these members to the right and left, upward or downward, when about to come into contact with the object of their pursuit. In boldness and ferocity they probably surpass all other birds of prey.

The next race is composed of the species called "True Falcons," of which we have the Jer Falcon, *Falco Islandicus*, the Peregrine Falcon, *F. Peregrinus*, the Pigeon Hawk, *F. Columbarius*, and the Sparrow Hawk, *F. Sparverius*. These birds are probably the most highly organized of the series. Their wings are pointed and somewhat broad; their tail is not only considerably elongated, but has a firmness and elasticity not seen in that of the other species. While in Eagles and other sluggish birds of prey, the motions of the wings are slow, in the species now under consideration they are strong and quickly repeated. They moreover possess the power of swooping in a higher degree than even the Eagles, for although much smaller birds, they are if any thing still more compactly formed, whilst they are at the same time endowed with at least a fair power of flight, so that they give chase to the swiftest birds, and not unfrequently overtake and destroy them. In their migrations they differ from the slow-flying species, which seldom remove far from the place of their birth, for they appear to delight in following the myriads of the feathered tribes from which they have derived their subsistence during summer in the northern regions, to those southern countries in which they are sure of obtaining an ample supply, each species pursuing those on which it more usually preys. Thus, some, as the Peregrine Falcon, will remove as far as the confines of Mexico or the extreme portions of California. The Jer Falcon, which mostly feeds on hares and grouse, belonging to northern countries, and which of course migrate southward to a very short extent, rarely advances far; while the Pigeon Hawk, as daring as the Peregrine, follows the Red-wings, Rice-Birds, and other small migratory species, with a pertinacity not in the least surpassed by that of the Peregrine Falcon itself.

The group of our American birds of prey of which the species differ most strikingly from the rest, contains the Bird of Washington, *Falco Washingtonii*, the White-headed Eagle, *F. leucocephalus*, and the Fishing Hawk or Osprey, *F. Ossifragus*. Looking upon these three species as more or less connected in respect to their general habits, while each of them differs from the rest, I hope you will excuse me, Reader, if I now take a glance at them separately. He who generalizes at random might perhaps be induced to compare the Fishing Hawk to nothing else than a very large and clumsy Tern, for like most birds of that group, it is known to range in a desultory manner over the waters of our bays and estuaries, and along the shores of the Atlantic and Pacific Oceans. It poises itself a while on spying its prey just beneath the surface of the water, glides or plunges headlong upon it, and thus secures it at once, or experiences the same disappointment that Terns themselves do on many occasions. It is true, however, that the Fishing Hawk does not, Tern-like, secure its finny prey with its bill; but what of that, if it plunges into the deep and seizes its quarry there? The Bird of Washington which is also a fishing Eagle, glides over its prey, and seizes it mostly in the manner exhibited by Gulls. The White-headed Eagle, which, as I have told you before, also dives after fish on some occasions, and pursues the smaller kinds in shallow water by wading after them, will also attack birds and quadrupeds of various species, and thus may be looked upon as one of the most singularly gifted of our diurnal birds of prey.

The species now before you belongs to the group of what may be called indolent or heavy-flying Hawks. The specimen from which I made my drawing, was procured by a gentleman residing in Louisiana, who shot it between Bayou Sara and Natchez. A label attached to one of its legs authorizes me to say that it was a female; but I have received no information respecting its habits; nor can I at present give you the name of the donor, however anxious I am to compliment him upon the valuable addition he has made to our Fauna, by thus enabling me to describe and portray it. I have much pleasure in naming it after my friend EDWARD HARRIS, Esq., a gentleman who, independently of the aid which he has on many occasions afforded me, in prosecuting my examination of our birds, merits this compliment as an enthusiastic Ornithologist.

FALCO HARRISII.

Adult Female. Plate CCCXCII.

Bill short, robust, as broad as high at the base, compressed toward the end ; upper mandible with its dorsal outline sloping a little at the base, then decurved, the sides nearly flat, the edge with a slight festoon, the tip prolonged, trigonal, descending, acute ; lower mandible with the angle rather long and wide, the dorsal line convex, the edge decurved toward the end, the tip obtuse. Nostrils rather large, ovate, oblong, oblique.

Head large, ovate, flattened above, with the superciliary ridges projecting. Neck of moderate length ; body full. Feet of ordinary length, very robust ; tarsus strong, roundish, feathered anteriorly for somewhat more than a third, and having thirteen scutella, covered behind with sixteen scutella, reticulated on the sides and at the lower part ; toes strong, of moderate length, the first and second thickest, and nearly equal ; the first with four, the second with five, the third with eight, the fourth with six entire scutella, the parts toward the base with transverse series of rectangular scales ; claws long, stout, arched, moderately compressed, flat beneath, tapering to a very acute point ; the inner edge of that of the middle toe sharp.

Plumage rather compact, the feathers broadly ovate and rounded ; the space between the bill and the eye covered with small bristle-pointed feathers ; the feathers on the outer side of the leg not much elongated. Wings long, broad, much rounded ; the first quill four inches shorter than the fourth, which is longest, the fifth longer than the third, and the seventh longer than the second ; the first four having the inner web cut out ; secondaries broad and rounded. Tail long, broad, slightly rounded, the lateral feathers three-quarters of an inch shorter than the longest.

Bill light blue at the base, black toward the end ; cere and feet yellow ; claws black. The general colour of the plumage is deep chocolate brown ; the quills darker ; the upper and lower wing-coverts, and the feathers of the legs brownish-red, the wing-coverts with a central dusky streak, which is enlarged on those toward the edge beyond the carpal joint, and on the secondary coverts, so as to leave only the margins red. The feathers of the rump are faintly margined with red,

and the upper tail-coverts are barred and tipped with white. The tail is brownish-black, with two broad bands of white, the one at the base, the other terminal.

Length to end of tail 24 inches; bill along the ridge $1\frac{1}{2}$; cere $\frac{7}{8}$; wing from flexure $15\frac{1}{4}$; tail $10\frac{1}{4}$; tarsus $3\frac{7}{8}$; hind toe $1\frac{9}{16}$, its claw $1\frac{5}{16}$; second toe $1\frac{4}{16}$, its claw $1\frac{3}{16}$; third toe 2, its claw $\frac{1}{2}$; fourth toe $1\frac{5}{16}$, its claw $\frac{9}{16}$.

TOWNSEND'S WARBLER.

SYLVIA TOWNSENDI, NUTTALL.

PLATE CCCXCIII. MALE.

MR NUTTALL has honoured this beautiful Warbler with the name of his friend and companion Dr TOWNSEND. It was procured about the Columbia River. All the information respecting it that I possess is contained in the following brief notice by the former of these celebrated naturalists. "Of this fine species, we know very little, it being one of those transient visitors, which, on their way to the north, merely stop a few days to feed and recruit, previous to their arrival in the higher latitudes, or afterwards disperse in pairs, and are lost sight of till the returning wants and famine of the season impel them again to migrate, when, falling on the same path, they are seen in small silent flocks advancing toward the retreat they seek out for their temporary residence. As this species frequents the upper parts of the lofty firs, it was almost an accident to obtain it at all. The female remains unknown."

SYLVIA TOWNSENDI, (*Nuttall*), TOWNSEND'S WARBLER, *Towns. Journal of Acad. of Nat. Sciences of Philadelphia*, vol. vii. p. 191.

Adult Male in Autumn. Plate CCCXCIII. Fig. 1.

The specimen here described was shot by Dr TOWNSEND on the 28th October 1835, on the Columbia River, and is in perfect plumage.

Bill short, slender, somewhat conical, compressed, straight, pointed, upper mandible with its dorsal outline slightly convex toward the end, the ridge narrow, the sides convex, the edges a little inflected, with a very slight sinus in the place of the notch, the tip slightly declinate and acute; lower mandible with the angle short and narrow, the dorsal line ascending, and very slightly convex, the sides rounded, the edges involute. The gape-line is straight; the nostrils basal, oblong, operculate, partially concealed by the feathers.

Head rather small, ovato-oblong; neck short; body rather slender. Feet of moderate length, slender; tarsus longish, slender, compressed, anteriorly with seven scutella, posteriorly with two longitudinal plates meeting at a very acute angle behind; toes rather small, the hind toe stouter, the lateral equal; claws of moderate length, well curved, much compressed, laterally grooved, very acute.

Plumage soft and blended. Wings of moderate length, rather pointed; the first quill one-twelfth of an inch shorter than the second, which is almost as long as the third, and about half a twelfth longer than the fourth; the other primaries slowly graduated; the outer secondaries emarginate, the inner not elongated. Tail of moderate length, even.

Bill dusky. Feet and claws flesh-coloured. The upper parts are light olive, anteriorly tinged with grey, on the rump with yellow; all the feathers dusky in the centre; the cheeks, ear-coverts and throat are black, the feathers on the latter edged with yellow; a band over the eye, from the bill to behind the ear, a broader band on the side of the neck running into the former, and a patch on the fore part of the breast, bright yellow; the rest of the lower parts white, but the sides marked with oblong dusky spots. The wings are blackish-brown, with two conspicuous white bands, formed by the tips of the first row of coverts and by those of the secondary coverts. The tail-feathers are blackish-brown, edged with greyish-yellow; the two lateral on each side white, excepting a dusky band occupying the terminal half of the outer web, and a small portion of the inner; there is also a white spot near the end of the inner web of the next feather.

Length to end of tail $4\frac{1}{2}$ inches, bill along the ridge $\frac{4}{12}$; wing from flexure $2\frac{8}{12}$; tail $\frac{5}{12}$; tarsus $\frac{9}{12}$; hind toe $\frac{23}{12}$, its claw $\frac{5}{12}$; middle toe $\frac{5}{12}$, its claw $\frac{2}{12}$.

ARCTIC BLUE BIRD.

SYLVIA ARCTICA.

PLATE CCCXIII. MALE AND FEMALE.

THIS beautiful species, first introduced to the notice of ornithologists by Dr RICHARDSON, who procured a single specimen at Fort Franklin, in July 1825, is merely a summer visitor to the Fur Countries. Both the male and the female are represented in my plate. The latter I believe has not hitherto been figured. Mr NUTTALL's notice respecting this interesting bird, so closely allied to *Sylvia Sialis*, is as follows :

“*Sialia arctica*. Ultramarine Blue-bird. About fifty or sixty miles north-west of the usual crossing place of that branch of the Platte called Larimie's Fork, in the early part of June, this species of *Sialia* is not uncommon. The female utters a low plaint when her nest is approached, the place for which is indifferently chosen in a hole in a clay cliff, or in that of the trunk of a decayed cedar. At this time the young were hatched. The nest is made of the usual material of dry grass in very insignificant quantity. They are more shy than the common species, and have the same mode of feeding by watching on some low bush or plant, and descending for an insect. We afterwards saw a nest of this species on a cliff of the Sandy River, a branch of the Colorado of the West. The female and male were both feeding their brood. The former chirped and appeared uneasy at my approach, and at intervals uttered a plaintive *yéow*. The male sings more quaintly and monotonously than the common kind, but in the same general tone and manner.”

To this Dr TOWNSEND adds that it is found in the “ Forests on the banks of the Platte River, in the vicinity of the Black Hills, and in the same situations on the banks of the Columbia. This species,” he continues, “ was observed in the winter at Fort Vancouver, associating with *S. occidentalis*. They confine themselves chiefly to the fences in the neighbourhood of the Fort, occasionally flying to the ground, and scratching in the earth for minute insects, the fragments of which were found in their stomachs. After procuring an insect, the male

usually returned to the fence, and warbled for a minute most delightfully. Its note, although like that of our common *Sialis*, is still so different as to be easily recognised. It is equally sweet and clear, but of so little power (at least at this season) as to be heard only at a short distance. In the spring it is louder and bolder, but is at all times much less strong than that of the common species."

ERYTHACA (SIALIA) ARCTICA, *Swainson*. THE ARCTIC BLUE-BIRD, *Richards*. and *Swains*. Fauna Bor.-Amer. vol. ii. p. 209.

ARCTIC BLUE BIRD, SIALIA ARCTICA, *Nuttall*, Manual vol. ii. p. 573.

Adult Male. Plate CCCXCIII. Fig. 2.

Bill of ordinary length, nearly straight, broader than high at the base, compressed towards the end; upper mandible with the dorsal line straight and declinate, until near the end when it becomes convex, the ridge narrow, the sides convex towards the end, the edges direct and overlapping, with a distinct notch close to the narrow deflected tip; lower mandible with the angle of moderate length and narrow, the dorsal line straight, the sides convex, the edges direct, the tip narrow. Nostrils basal, oval.

Head rather large; neck short; body moderately full. Feet of ordinary length, slender; tarsus compressed, covered anteriorly with seven long scutella, posteriorly with two very long plates meeting so as to form a sharp edge; toes of moderate length; the first stouter, the second and fourth nearly equal, the third much longer; claws moderate, well curved, slender, compressed, laterally grooved, tapering to a fine point.

Plumage soft and blended, with considerable gloss; short bristles at the base of the upper mandible. Wings very long; the first quill very small, being only seven-twelfths of an inch long, the second one-twelfth shorter than the third, which is longest, but exceeds the fourth only by half a twelfth, the other primaries rapidly graduated; the outer secondaries emarginate, the inner not elongated. Tail long, deeply emarginate, of twelve strong feathers, of which the medial are five-twelfths shorter than the lateral.

Bill and feet black; iris brown. The general colour of the upper parts is light azure blue, approaching to smalt blue; the quills and larger coverts dark greyish-brown, the outer tinged with blue, the pri-

maries broadly margined with light blue, the secondaries with greyish-blue, the inner chiefly with dull white. The tail feathers are also brown, gradually more blue toward the base, and all broadly margined externally with that colour. The sides of the head, the fore part and sides of the neck, and the anterior half of the breast, light greenish-blue; that colour gradually fading on the hind part of the breast; the abdomen and lower tail-coverts greyish-white.

Length to end of tail $7\frac{1}{4}$ inches; bill along the ridge $\frac{6}{12}$, along the edge of lower mandible $\frac{7\frac{3}{4}}{12}$; wing from flexure $4\frac{7\frac{1}{2}}{12}$; tail $2\frac{1\frac{1}{2}}{12}$; tarsus $\frac{10\frac{1}{2}}{12}$, hind toe $\frac{4}{12}$, its claw $\frac{4}{12}$; middle toe $\frac{7\frac{1}{2}}{12}$, its claw $\frac{2\frac{3}{4}}{12}$.

Adult Female. Plate CCCXCIII. Fig. 3.

The Female differs greatly. The parts which retain the same colour are the rump, wings, and tail, of which, however, the blue edgings are less pure and of less extent, and the outer primary and outer tail-feathers are margined externally with white. The upper part of the head, the hind neck, the back, scapulars, and wing-coverts are light greyish-brown, margined with pale greenish-blue; the cheeks and sides of the neck are paler; the fore part of the neck and the anterior portion of the breast are light greyish-brown, on the breast tinged with red; the rest of the lower parts of an undecided brownish-white tint; the lower wing-coverts pale greyish-brown, edged with white, the lower tail-coverts with a medial dusky streak.

Length to end of tail $6\frac{3}{4}$ inches; bill along the ridge $\frac{6\frac{1}{2}}{12}$; wing from flexure $4\frac{2}{12}$; tail $2\frac{7}{12}$; tarsus $\frac{10}{12}$; hind toe $\frac{4}{12}$, its claw $\frac{4\frac{1}{2}}{12}$, middle toe $\frac{6\frac{3}{4}}{12}$, its claw $\frac{3\frac{1}{2}}{12}$.

The above descriptions are taken from skins procured by Dr TOWNSEND on the Columbia River. That of the male is from a specimen shot in June 1835; and that of the female from one shot on the 26th of the same month and year. Of two other specimens in my possession, a male agrees with that described, but has the blue of the upper parts deeper, and of a tint approaching to that of the common species. The female is also similar to that described, but has a dull white spot before the eye, and the upper part of the throat brownish-white.

There are some slight errors in Mr SWAINSON's description of this bird in the *Fauna-Boreali Americana*, which, however, may be excused, as he had only a single skin. Instead of the bill being more

faintly notched than in "*Sialia Wilsoni*," it is more decidedly so; and although somewhat more elongated, it is not less broad at the base. It is stated that "the second quill-feather is the longest; the first and third are equal, and about a line shorter; the tenth is an inch and a half shorter than the second." Now in all my four specimens, the first quill is diminutive or rudimentary, little more than half an inch long, as it is in "*Sialia Wilsoni*," although it has been overlooked in the description of that bird in my second volume; the second quill is a little shorter than the third, which is the longest, and the tenth is one inch and seven-twelfths shorter than the third, in another, half a twelfth less, in a female an inch and three-twelfths. I have not seen any specimens having the upper parts "ultramarine blue," and I think an approximation to that tint belongs to younger birds, while the old males are rather smalt-blue.

This species is distinguished from the Common Blue Bird by having the wings longer, straighter and more pointed. In the male the fore-neck and breast are light greenish-blue, whereas in the other species they are brownish-red. The two species, however, are very intimately allied, as they also are with that which comes next to be described.

WESTERN BLUE BIRD.

SYLVIA OCCIDENTALIS.

PLATE CCCXCIII. MALE AND FEMALE.

OF this handsome bird, which was discovered by Dr TOWNSEND, and described in his name under the denomination of *Sialia occidentalis*, Mr NUTTALL has favoured me with the following notice:—"The Western Blue Bird possesses many of the habits of our common kind. The male is equally tuneful throughout the breeding season. Mounting some projecting branch of an oak or low pine, he delivers his delightful ditty with great energy, extending his wings, and exerting all his powers as it were to amuse his sitting mate, or to allure attention to his short, often-repeated, but thrilling lay. In the midst of all this charming employment economy is rarely forgotten, and a crawling

beetle or busy insect is no sooner seen than snatched up by our still watchful songster, who resumes his wonted perch, to be again interrupted by the cares of providing a subsistence; or, reiterating his melody, strives to drown the song of some neighbouring rival by tender strains and more earnest endeavours. He appears also equally solicitous with our common species to shew his affection for his mate, whom he constantly accompanies, feeds, and caresses, with an ardour of affection seldom rivalled. His song is more varied, sweet and tender than that of the common *Sialia*, and very different in many of its expressions. In the small rocky prairies of the Columbia, near its bank, where I first heard and saw this species, they were exceedingly shy, probably in consequence of the presence of birds of prey, which prowled around, and it was with difficulty that we got sight of them, but afterwards, in the vicinity of Santa Barbara, in Upper California, I saw them in considerable numbers, and very familiar, making at this time (April) their nests in the knot-holes of the oaks which abound in the neighbouring plains. We first met a flock of young birds alone, in the winter, near to Fort Vancouver, flitting through the tall fir trees, like so many timorous and silent winter passengers. These had so much the appearance of young of the common species, that for some time we paid little attention to them; but their silence, the absence of the usual complaints of *t shaye vit*, &c., and at length their different notes, convinced me of their being distinct, previous to any examination of their plumage. This species, unlike *Sialia arctica*, does not extend to the mountains, but seems constantly to affect similar situations with our common kind, along the coast of the Pacific, as ours does along that of the Atlantic."

I have given figures of both the male and the female in their spring dress.

SIALIA OCCIDENTALIS, WESTERN BLUE BIRD, *Townsend*, Journal of Acad. of Nat. Sciences of Philadelphia, vol. vii. p. 183.

Adult Male in summer. Plate CCCXCIII. Fig. 4.

This species in size and form, as well as in colour, is very similar to the Common Blue Bird. Its bill is of ordinary length, nearly straight, broader than high at the base, compressed toward the end; upper mandible with the dorsal line straight and a little declinate at the base, convex toward the end, the ridge narrow, the sides convex toward the

end, the edges direct and overlapping, with a slight notch close to the narrow deflected tip ; lower mandible with the angle of moderate length and narrow, the dorsal line straight, the sides convex, the edges direct, the tip narrow. Nostrils basal, elliptical, operculate, partially concealed by the feathers.

Head rather large ; neck short ; body moderately full. Feet of ordinary length, slender ; tarsus compressed, covered anteriorly with seven scutella, behind with two long plates meeting so as to form a thin edge ; toes of moderate length ; the first stouter, the second and fourth nearly equal, the third much longer ; claws moderate, well curved, compressed, laterally grooved, tapering to a fine point.

Plumage soft and blended, with considerable gloss. Short bristles at the base of the upper mandible. Wings very long ; the first quill very small, being only seven-twelfths of an inch long, the second half a twelfth shorter than the third, which is longest, but only exceeds the fourth by three-fourths of a twelfth ; the other primaries rapidly graduated ; outer secondaries emarginate, inner not elongated. Tail rather long, deeply emarginate, the middle feathers being four-twelfths of an inch shorter than the longest.

Bill and feet black ; iris brown. The general colour of the upper parts is bright blue of a tint approaching to ultramarine ; a broad band across the fore part of the back, and the scapulars, chestnut-red ; the quills and larger coverts dark greyish-brown, the outer webs blue, the primaries light brown at the end, the secondaries faintly margined with whitish. The tail-feathers are also brown toward the end, but blue toward the base ; the lateral with the margin of the outer web whitish. The sides and fore part of the neck are light blue, tinged with grey, the fore part of the breast and the sides of the body light chestnut-red ; the rest of the lower parts greyish-white tinged with blue.

Length to end of tail 7 inches ; bill along the ridge $\frac{5\frac{1}{2}}{12}$, along the edge of lower mandible $\frac{7\frac{1}{2}}{12}$; wing from flexure $4\frac{5}{12}$; tail $2\frac{10}{12}$; tarsus $\frac{10}{12}$, hind toe $\frac{4}{12}$, its claw $\frac{4}{12}$; middle toe $\frac{8}{12}$, its claw $\frac{5}{12}$.

Adult Female in summer. Plate CCCXCIII. Fig. 4.

The Female differs from the male in the same degree as that of the Arctic Blue Bird from its male ; the upper parts being light greyish-brown tinged with blue, which is brighter on the rump ; the wings and tail are as in the male, but with less blue ; the lower parts are bluish-grey, the breast and sides light brownish-red tinged with grey.

Length to end of tail $6\frac{3}{4}$ inches ; bill along the ridge $\frac{5\frac{3}{4}}{1\frac{1}{2}}$; wing from flexure $4\frac{1}{4}$; tail $2\frac{8}{12}$; tarsus $\frac{1\frac{0}}{1\frac{1}{2}}$; hind toe $\frac{4}{1\frac{1}{2}}$, its claw $\frac{3\frac{1}{2}}{1\frac{1}{2}}$; middle toe $\frac{8}{1\frac{1}{2}}$; its claw $\frac{2\frac{3}{4}}{1\frac{1}{2}}$.

In size and form there is little difference between the three species of Blue Bird, namely, *Sylvia* (or *Sialia*) *Sialis*, *arctica*, and *occidentalis*. The first of these species has the wings shorter than the other two, in which the primary quills are remarkably elongated ; its bill is also shorter, and its general habit seems to be somewhat more robust. Males of the three species are easily distinguished by their colours. *S. Sialis* is of a rich bright blue above, brownish-red beneath anteriorly ; *S. arctica*, is of a light smalt or greenish-blue above, and of a paler tint of the same beneath anteriorly ; *S. occidentalis* is of an intermediate tint of blue, approaching to ultramarine, with a chestnut band across the back, the throat also blue, but the fore part of the breast red. The intimate affinity of the three species affords one of the most striking instances of this kind that are met with.

The plant represented *Calycanthus floridus*, the Carolina Alespice, much esteemed on account of the fragrance of its large purple flowers, abounds in the Southern States, growing on the margins of swamps and rivulets.

CHESTNUT-COLLARED LARK-BUNTING.

EMBERIZA ORNATA.

PLATE CCCXCIV. MALE.

Dr TOWNSEND procured a single male of this new species, respecting which he has sent me the following notice. “ It is by no means a common bird ; keeps in pairs, and appears to live exclusively upon the ground ; is remarkably shy, and although I saw the female several times I was unable to procure it.” Were my young friend at my elbow, I would certainly ask him a few questions, and in particular where he procured this species.

PLECTROPHANES ORNATA, CHESTNUT-COLLARED FINCH; *Townsend*, Journal of Acad. of Nat. Sciences of Philadelphia, vol. vii. p. 189.

Adult Male in spring. Plate CCCXCIV. Fig. 1.

Bill short, conical, pointed; upper mandible with the dorsal line almost straight, the sides convex, the edges a little inflected, the tip slightly declinate; lower mandible with the angle short and rounded, the dorsal line ascending and very slightly convex, the edges inflected, the tip acute; the gape-line ascends a short way at first, and is afterwards nearly straight, and there is a small narrow prominence on the palate.

Head of moderate size, ovate; neck short; body full. Feet of moderate size; tarsus compressed, covered anteriorly with seven scutella, behind with two longitudinal plates meeting so as to form a very thin edge; hind toe stout, lateral toes nearly equal; claws long, slender, compressed, little curved, that of the hind toe elongated.

Plumage soft, full, blended, on the back somewhat compact. Wings rather long and pointed, the first quill longest; tail rather long, nearly even.

Bill yellow, with the tips dusky. Feet and claws yellowish flesh-colour. The upper part of the head, a streak and some spots behind the ear, and the breast, black; a broad band over the eye, the throat and sides of the neck, the abdomen, lower tail-coverts, and three lateral tail-feathers white, the latter edged externally with dusky. There is a broad transverse band of yellowish-red on the hind neck; the upper parts are yellowish-grey, the feathers dusky in the centre; the quills and larger coverts dusky with yellowish-grey margins, as are the four middle tail-feathers.

Length to end of tail $5\frac{1}{4}$ inches; bill along the ridge $\frac{4\frac{1}{2}}{1\frac{1}{2}}$; wing from flexure $3\frac{2}{1\frac{1}{2}}$; tail $1\frac{10}{1\frac{1}{2}}$; tarsus $1\frac{1}{1\frac{1}{2}}$; hind toe $\frac{4\frac{1}{2}}{1\frac{1}{2}}$, its claw $\frac{5}{1\frac{1}{2}}$.

BLACK-HEADED SISKIN.

FRINGILLA MAGELLANICA, VIEILL.

PLATE CCCXCIV. MALE.

WHILE residing at Henderson, on the Ohio, I, one cold morning in December, observed five males of this species on the heads of some sunflowers in my garden, and, after watching them for a little time, shot two of them. The rest rose high in the air, and were soon out of sight. Considering the birds very nearly allied to our Common American Goldfinch, I was surprised to find the head black at that season. Their notes resembled those of the Pine Finch, *Fringilla pinus*, but in their manner of feeding, as well as in their flight, they precisely resembled the American Goldfinch, *Fringilla tristis*. All my subsequent endeavours to meet with this species failed, and I am unacquainted with the female.

FRINGILLA MAGELLANICA, Vieill.

Adult Male. Plate CCCXCIV. Fig. 2.

Bill short, conical, compressed toward the end, very acute; upper mandible a little broader than the lower, with the dorsal outline slightly convex, the sides convex, the edges a little inflected and overlapping, the tip slightly declinate; the gape-line straight, but a little deflected at the base; lower mandible with the angle short and rounded, the dorsal line straight, the sides convex, the tip acute. Nostrils basal, roundish, concealed by the feathers.

Head of moderate size, roundish-ovate. Neck short. Body rather full. Legs of moderate length; tarsus short, compressed, slender, covered anteriorly with seven scutella, and thin-edged behind; toes slender, compressed, scutellate, the first large and stouter, the lateral nearly equal; claws long, compressed, moderately curved, very acute.

Plumage soft and blended. Wings rather long, pointed; the first and second quills equal, the third one-twelfth shorter, the other primaries rapidly graduated; the outer secondaries emarginate. Tail rather short, emarginate.

Bill dusky; feet and claws reddish-brown. The head and throat are black; the back yellowish-green, the rump and lower parts greenish-yellow; the wings black, with two bands of yellowish-green terminating the first row of small coverts, and the secondary coverts, and a conspicuous band of yellow on the basal portion of all the quills, most of which are margined toward the end with the same. Tail yellow at the base, black toward the end.

Length to end of tail $4\frac{3}{4}$ inches, bill along the ridge $4\frac{4}{12}$; wing from flexure $2\frac{0}{12}$; tail $1\frac{0}{12}$; tarsus $\frac{6\frac{1}{2}}{12}$; hind toe $\frac{5}{12}$, its claw $\frac{4}{12}$; middle toe $\frac{4\frac{1}{2}}{12}$, its claw $\frac{5}{12}$.

BLACK-AND-YELLOW-CROWNED FINCH.

EMBERIZA ATRICAPILLA, GMEL.

PLATE CCCXCIV. MALE.

THE only account which I have received of this handsome Finch, long since known to the ornithologist, is from Mr NUTTALL:—"We first observed the young of this species on the central table-land of the Rocky Mountains, in the prairies, and mostly running on the ground. We heard no note from them. We afterwards saw a few stragglers, in the early part of winter, in the thickets of the forests of the Columbia River, near Fort Vancouver, accompanying the *Fringilla leucophrys*. It is probable that they come there to pass the cold season. They are equally seen at this time, and until late in the spring, in the woods and thickets of Upper California.

EMBERIZA ATRICAPILLA, Gmel. Syst. Nat. vol. i. p. 875.—Lath. Ind. Ornith. vol. i. p. 415.

Adult Male. Plate CCCXCIV. Fig. 3.

Bill short, stout, narrower than the head, conical, somewhat compressed toward the end, acute; upper mandible with its dorsal outline nearly straight, the ridge convex and obscure, the sides rounded, the edges somewhat inflected, with a very small notch at the end, the

tip a little declinate ; lower mandible with the angle short and rounded, the dorsal line slightly convex, the sides rounded, the edges involute, the point acute. The gape-line nearly straight, at the base a little declinate ; the palate concave. Nostrils basal, roundish, open, partially concealed by the feathers.

Head rather large, ovate ; neck short ; body full. Legs of moderate length, rather stout ; tarsus of moderate length, compressed, covered anteriorly with seven scutella ; toes rather large, scutellate above, the first stronger, the lateral nearly equal, the third and fourth connected at the base. Claws rather long, moderately arched, slender, compressed, laterally grooved, acute.

Plumage full, soft, and blended. Wings of ordinary length ; the first quill two and a half twelfths shorter than the second, which is longest, but scarcely exceeds the third, which in like manner is very slightly longer than the fourth, the other primaries moderately graduated ; the outer secondaries slightly emarginate, the inner not elongated. Tail long, rounded.

Bill reddish-brown, dusky toward the point ; feet flesh-coloured, claws dusky. The upper part of the head is black, with a longitudinal median band of yellow, changing behind to grey ; upper parts yellowish-brown, tinged with grey, the feathers of the fore part of the back, scapulars, and wing-coverts with a central dusky spot ; quills and larger coverts dark brown, bordered with reddish-brown, paler on the primaries ; the tips of the first row of small coverts, and of the secondary coverts, white, forming two bands across the wing. Tail greyish-brown, the feathers edged with yellowish-grey. The sides of the head, throat, fore part and sides of the neck, sides of the body, and fore part of the breast, light grey, the sides tinged with yellow, the rest of the lower parts brownish-white.

Length to end of tail 8 inches ; bill along the ridge $\frac{5\frac{3}{4}}{1\frac{1}{2}}$; wing from flexure $3\frac{5}{12}$; tail $3\frac{5}{12}$; tarsus $\frac{11\frac{1}{2}}{1\frac{1}{2}}$; hind toe $\frac{4\frac{1}{2}}{1\frac{1}{2}}$, its claw $\frac{4\frac{1}{2}}{1\frac{1}{2}}$; middle toe $\frac{8}{1\frac{1}{2}}$, its claw $\frac{3\frac{1}{2}}{1\frac{1}{2}}$.

A young male, shot by Dr TOWNSEND, on the Rocky Mountains, on the 12th of July 1834, has all the upper parts dull yellowish-grey, streaked with dusky ; the wings and tail dusky brown, the quills edged with reddish-brown, the two bands on the coverts light reddish-brown ; the lower parts whitish, streaked with dusky, the throat white, with a band of dusky spots on each side from the lower mandible.

ARCTIC GROUND-FINCH.

FRINGILLA ARCTICA, SWAINS.

PLATE CCCXCIV. MALE AND FEMALE.

THIS handsome species was first described by Mr SWAINSON in the *Fauna Boreali-Americana*. Dr RICHARDSON in the same work states, that it was observed only on the plains of the Saskatchewan, where he supposes it breeds, as one specimen was obtained late in July. It arrives there in the end of May, and frequents shady and moist clumps of wood, being generally seen on the ground. It feeds on grubs, and is solitary and retired. My friend Mr NUTTALL has furnished me with the following account of it:—

“ We found this familiar bird entirely confined to the western side of the Rocky Mountains. Like the common Towee, it is seen to frequent the forests amidst bushes and thickets, where, flitting along or scratching up the dead leaves, it seems intent on gaining a humble subsistence. It is much more shy than the common kind, when observed flying off or skulking in the thickest places, where it is with difficulty followed. In a few minutes, however, the male, always accompanying his mate, creeps out, and at first calls in a low whisper of recognition, when, if not immediately answered, he renews his plaintive *par par* or *pay payay*, until joined by her; when, if the nest be invaded, he comes out more boldly, and reiterates his complaint, while there remains around him the least cause of alarm. When undisturbed during the period of incubation, he frequently mounts a low bush in the morning, and utters at short intervals, for an hour at a time, his monotonous and quaint warble, which is very similar to the notes of the Towee; but this latter note (*towee*) so continually repeated by our humble and familiar Ground Robin, is never heard in the western wilds, our present species uttering in its stead the common complaint, and almost mew, of the Cat Bird. On the 14th of June, I saw the nest of this species, situated in the shelter of a low undershrub, in a depression scratched out for its reception. It was made of a rather copious lining of clean wiry grass, with some dead leaves beneath, as a foundation. The eggs were four, nearly hatched, very closely resembling those of

the Towee, thickly spotted over, but more so at the larger end, with very small, round, and numerous reddish chocolate spots. As usual, the pair shewed a great solicitude about their nest, the male in particular approaching boldly to scold and lament at the dangerous intrusion. This species extends into Upper California, and is occasionally seen there with the brown species of Swainson, *Pipilo fusca*."

Dr TOWNSEND informs me, that it is called "Chlawath'l" by the Chinook Indians, and is abundant on the banks of the Columbia where it is found mostly on the ground, or on bushes near the ground, rarely ascending trees. His description of the nest and eggs agrees precisely with that of Mr NUTTALL.

The eggs of this bird in my possession measure an inch and an eighth in length, and seven-eighths in breadth. They are broadly rounded at the larger end, and fall off rather abruptly at the other extremity. The spots and markings are vermilion, intermixed with larger spots of neutral tint, on a pure white ground.

PYRGITA (PIPILO) ARCTICA, *Swainson*, ARCTIC GROUND-FINCH, *Richards*. and *Swains*.

Fauna Bor.-Amer. vol. ii. p. 260.

ARCTIC GROUND-FINCH, *Nuttall*, Manual, vol. ii. p. 589.

Adult Male. Plate CCCXCIV. Fig. 4.

Bill short, robust, narrower than the head, conical, somewhat compressed toward the end, acute; upper mandible almost straight in its dorsal outline, being very slightly convex, the ridge narrow and well-marked, the sides convex, the edges somewhat inflected, the tip a little declinate; lower mandible with the angle short and broad, the dorsal line slightly convex, the sides rounded, the edges involute, the point acute. The nostrils basal, roundish, open, partially concealed by the feathers. The gape-line nearly straight, a little deflected at the base.

Head rather large, ovate; neck shortish; body robust. Legs of moderate length, rather stout; tarsus of moderate length, compressed, covered anteriorly with seven scutella; toes rather large, scutellate above, the first stronger, the lateral nearly equal, the third and fourth connected at the base. Claws rather long, moderately arched, slender, compressed, laterally grooved, acute.

Plumage full, soft, and blended. Wings of ordinary length, the fourth quill the longest, the third and fifth next and nearly equal, the

second shorter than the sixth, the first seven and a half twelfths of an inch shorter than the fourth. Tail long, rounded, of twelve strong feathers.

Bill brownish-black. Iris red. Feet and claws reddish-brown. The general colour of the plumage is black, that colour extending over part of the breast, the sides and lower tail-coverts orange-red, the central part of the breast and abdomen white, the feathers of the tibiae dusky, margined with whitish. An elongated patch on the outer web of all the scapulars; a small terminal spot of the same on the first row of small coverts and on the secondary coverts, and a large patch at the end of the inner web of the outer three tail-feathers on each side, white.

Length to end of tail $8\frac{1}{2}$ inches, bill along the ridge $\frac{7}{12}$, along the edge of lower mandible $\frac{8\frac{1}{2}}{12}$; wing from flexure $3\frac{1}{2}$; tail $4\frac{2}{12}$; tarsus $1\frac{1}{12}$; hind toe $\frac{5}{12}$, its claw $\frac{4\frac{1}{2}}{12}$; middle toe $\frac{9\frac{1}{2}}{12}$, its claw $\frac{5}{12}$.

Adult Female. Plate CCCXCIV. Fig. 5.

The Female is smaller. The parts which are black in the male, are blackish-grey, which on the fore part and sides of the neck is tinged with reddish-brown. In other respects there is not much difference in the plumage.

Length to end of tail 8 inches; bill along the ridge $\frac{7}{12}$; wing from flexure $3\frac{1}{4}$; tail 4; tarsus 1; hind toe $\frac{4\frac{3}{4}}{12}$, its claw $\frac{5\frac{1}{4}}{12}$; middle toe $\frac{8\frac{1}{2}}{12}$, its claw $\frac{4\frac{1}{2}}{12}$.

The male above described was shot by Dr TOWNSEND on the Columbia River, on the 14th May 1835; the female on the 11th October 1834.

In form, size, and colour, this bird is most closely allied to the Towhe Finch, *Fringilla erythrophthalma* of Linnæus, from which, however, it is at once distinguishable by the spots of white on the scapulars and wing-coverts which are wanting in that species. The latter on the other hand has a patch of white on the basal part of the outer webs of the primaries, that part being black in the present species.

AUDUBON'S WARBLER.

SYLVIA AUDUBONI, TOWNSEND.

PLATE CCCXCV. MALE AND FEMALE.

THIS species, so very intimately allied to *Sylvia coronata*, that an observer might readily mistake the one for the other, was discovered by Dr TOWNSEND, who has done me the honour of naming it after me. He states, that “ the Chinook Indians know it by the name of ‘ *Foutsah*,’ and that it is very numerous about the Columbia River, arriving there in the middle of March, and remaining to breed, but disappearing in the end of June. In the beginning of October it is again seen, with its plumage renewed. Its voice so nearly resembles that of the Chestnut-sided Warbler as to render it difficult to distinguish them. It keeps in the most impervious thickets, and is always silent when engaged in seeking its food.” Mr NUTTALL has favoured me with the following animated account of it.

“ This elegant species, one of the beautiful and ever-welcome harbingers of approaching summer, we found about the middle of April, accompanying its kindred troop of Warblers, enlivening the dark and dreary wilds of the Oregon. The leaves of the few deciduous trees were now opening rapidly to the balmy influence of the advancing spring, and flowers but rarely seen even by the botanist, sent forth their delicious fragrance, and robed in beauty the shady forests and grassy savannahs. But nothing contributes so much life to the scene as the arrival of those seraphic birds, the Thrushes and Warblers, which, uniting in one wild and ecstatic chorus of delight, seemed to portray, however transiently, the real rather than the imaginary pleasures of paradise. Nor in those sad and distant wilds were the notes of the gilded messenger of summer (*Sylvia æstiva*) the less agreeable that I had heard them a thousand times before. The harmonies of Nature are not made to tire, but to refresh the best feelings of the mind, to recall the past, and make us dwell with delight upon that which best deserves our recollection. But what was my surprise to hear the accustomed note of the Summer Yellow-Bird delivered in an improved state by this new Warbler, clad in a robe so different but yet so beautiful. Like that species, also he was destined to become our summer acquaintance, breed-

ing and rearing his offspring in the shady firs by the borders of the prairie openings, where he could at all times easily obtain a supply of insects or their larvæ. On the 8th of June the young of this species, at that time so much like those of the Yellow-Rump, were already out in small roving and busy flocks, solicitously attended and occasionally fed by the still watchful parents. We may notice in this species as a habit, that, unlike many other birds of its tribe, it occasionally frequents trees, particularly the water oaks and the lower branches of those gigantic firs, which attain not uncommonly a height of 240 feet. In the branches of the latter, near a cliff, opening on a prairie by the banks of the river Columbia, I have reason to believe that a pair of this fine species had a nest, as great solicitude was expressed when I several times accidentally approached the place."

I have given figures of the male and female, taken from specimens obtained by Dr TOWNSEND on the Columbia.

SYLVIA AUDUBONI, AUDUBON'S WARBLER, *Townsend*, Journal of Acad. of Nat. Sciences of Philadelphia, vol. vii. p. 190.

Adult Male. Plate CCCXCV. Fig. 1.

Bill short, straight, rather strong, tapering, compressed toward the end; upper mandible with its dorsal outline slightly convex toward the slightly declinate acute tip, the sides convex, the edges sharp and overlapping with a slight notch near the tip; lower mandible with the angle rather short and of moderate width, the dorsal line ascending and almost straight, the edges a little inclinate, the tip acute. Gape-line straight; nostrils basal, oval, operculate, partially concealed by the feathers.

Head of ordinary size, ovate; neck short; body rather slender. Feet of ordinary length, rather slender; tarsus compressed, covered anteriorly with a few long scutella, sharp behind; toes slender, free, the outer united as far as the second joint; the hind toe proportionally large; claws arched, of moderate length, slender, much compressed, tapering to a fine point.

Plumage soft, blended, without gloss. Wings rather long, little curved; second and third quills longest, fourth almost equal, and slightly longer than the first, which is scarcely a twelfth of an inch shorter than the second; outer secondaries slightly emarginate; inner not elongated. Tail rather long, slightly emarginate, the lateral feathers bent outwards.

Bill and feet black. Iris brown. The general colour of the plumage above is ash-grey, streaked with black; the crown, rump, upper part of the throat and a patch on the sides, rich yellow; first row of small coverts largely tipped, and secondary coverts broadly margined with white, which thus forms a conspicuous patch on the wing. Quills and tail brownish-black, narrowly margined with brownish-grey; outer margin of the two outer tail-feathers on each side white, and a patch of the same colour on the inner webs of the outer three towards the end. There is a small white spot on each of the eyelids; the loreal space and cheek are black; the lower part of the neck anteriorly, the fore part of the breast, and the sides, are variegated with black and white, the latter colour margining the feathers, the rest of the lower parts white.

Length to end of tail $5\frac{3}{4}$ inches; bill along the ridge $\frac{4\frac{3}{4}}{1\frac{1}{2}}$; wing from flexure $3\frac{1}{2}$; tail $2\frac{5}{2}$; tarsus $\frac{8}{1\frac{1}{2}}$; hind toe $\frac{5}{1\frac{1}{2}}$, its claw $\frac{2\frac{3}{4}}{1\frac{1}{2}}$, middle toe $\frac{1}{2}$, its claw $\frac{2\frac{3}{4}}{1\frac{1}{2}}$.

Adult Female. Plate CCCXCV. Fig. 2.

The female is rather less, and wants the yellow spot on the crown, although the feathers there are tinged with that colour at the base. The upper parts are light brownish-grey, streaked with dusky; the lower parts whitish, tinged with brown, and streaked with dusky; the throat and rump are yellow, but of a paler tint than in the male, and there are but slight indications of the yellow patch on the sides. The wings and tail, are as in the male; but the two rows of coverts have much less white on their outer edges, and the white patches on the tail-feathers are of less extent.

Length to end of tail $5\frac{1}{2}$ inches; bill along the ridge $\frac{4\frac{3}{4}}{1\frac{1}{2}}$; wing from flexure $2\frac{1\frac{1}{2}}{1\frac{1}{2}}$; tail $2\frac{1}{4}$.

In size, form, and proportions of parts *Sylvia Auduboni*, and *S. coronata* are, it may be said precisely similar, the differences that can be pointed out being extremely insignificant. Thus the bill is slightly longer, and the tarsus slightly shorter in *S. Auduboni*. The colours of the two species are also exactly alike, the only difference in this respect being that the throat of this new species is yellow, while that of the other is white.

HERMIT WARBLER.

SYLVIA OCCIDENTALIS, TOWNSEND.

PLATE CCCXCV. MALE AND FEMALE.

OF this species discovered by Dr TOWNSEND and Mr NUTTALL, in the forests of the Columbia River, all that I know is contained in the following notes from these enterprising naturalists:—"The Hermit Warbler," says Mr NUTTALL, "I have little doubt, breeds in the dark forests of the Columbia, where we saw and heard it singing in the month of June. It is a remarkably shy and solitary bird, retiring into the darkest and most silent recesses of the evergreens, where, gaining a glimpse of light by ascending the loftiest branches of the gigantic firs, it occupies in solitude a world of its own, but seldom invaded even by the prying Jay, who also retreats, as a last resort, to the same sad gloom. In consequence of this eremitic predilection, it is with extreme difficulty that we ever got sight of our wily and retiring subject, who, no doubt breeds and feeds in the tops of these pines. Its song, frequently heard from the same place, at very regular intervals, for an hour or two at a time, is a soft, moody, faint, and monotonous note, apparently delivered chiefly when the bird is at rest on some lofty twig, and within convenient hearing of its mate and only companion of the wilderness."

Dr TOWNSEND's note is as follows:—"I shot this pair of birds near Fort Vancouver, on the 28th of May 1835. I found them flitting among the pine trees in the depth of a forest. They were actively engaged in searching for insects, and were frequently seen hanging from the twigs like Titmice. Their note was uttered at distant intervals, and resembled very much that of the Black-throated Blue Warbler, *Sylvia canadensis*."

SYLVIA OCCIDENTALIS, HERMIT WARBLER, *Townsend*, Journal of Acad. of Nat. Sciences of Philadelphia, vol. vii. p. 190.

Adult Male in Summer. Plate CCCXCV. Fig. 3.

Bill short, straight, rather strong, tapering, acute, its dorsal outline very slightly convex, the sides convex, the gape-line straight. Head of ordinary size, ovate; neck short; body rather slender. Feet of or-

dinary length, rather slender; tarsus compressed, covered anteriorly with seven scutella, sharp behind; toes slender, free, the outer united as far as the second joint; the hind toe proportionally large; claws arched, of moderate length, slender, much compressed, tapering to a fine point.

Plumage soft, blended, without gloss. Wings of moderate length, rather convex; the outer three quills almost equal, the third longest; the inner secondaries not elongated. Tail of moderate length, slightly emarginate.

Bill black; iris brown; feet yellowish-brown. The general colour of the upper parts is bluish-grey, spotted with black; the upper part of the head, which is similarly spotted, the cheeks, and the sides of the neck are bright yellow; the throat black, the rest of the lower parts white. The feathers of the wings are dusky, edged with greyish-white; and there are two transverse bands of white, formed by the tips of the first row of small coverts and the outer webs of the secondary coverts. The tail-feathers are brown, excepting the two lateral on each side, which are white.

Length to end of tail $5\frac{5}{12}$ inches; bill along the ridge $\frac{4}{12}$; wing from flexure $2\frac{8}{12}$; tail $1\frac{9}{12}$; tarsus $\frac{8}{12}$; hind toe $\frac{5}{12}$, its claw $\frac{5}{12}$; middle toe $\frac{6}{12}$, its claw $\frac{2\frac{1}{2}}{12}$.

Adult Female. Plate CCCXCV. Fig. 4.

The bill and feet as in the male. The upper parts are of a duller grey, tinged with brown; the yellow of the head is less extended and not so bright; the throat is whitish, spotted with dusky; the other parts are similar.

THE STRAWBERRY TREE.

EUONYMUS AMERICANUS, Willd. Sp. Pl. vol. i. p. 1132.—PURSH, Flora Amer. vol. i. p. 168.

This beautiful shrub, which attains a height of five or six feet, is common in most parts of the United States, growing in low or swampy ground, and in shady places, is characterized by having the branches quadrangular, the leaves sessile, elliptico-lanceolate, acute, and serrate. The fruit is large, round, tuberculate, of a scarlet colour, and very ornamental.

BLACK-THROATED GREY WARBLER.

SYLVIA NIGRESCENS, TOWNSEND.

PLATE CCCXCV. MALE.

THIS is another of the interesting species discovered and named by Dr TOWNSEND, who informs me that it is called "*Ah Kah a qual*" by the Chinook Indians; that it is abundant in the forests of the Columbia, where it breeds and remains until winter; and that the nest, formed externally of fibrous green moss, is generally placed on the upper branches of the oak, suspended between two small twigs. Mr NUTTALL's notice respecting it is as follows:—"This curious species, so much resembling *Sylvia striata*, was seen to arrive early in May; and from its song more regularly delivered at intervals, in the tops of deciduous-leaved trees, we have little doubt but that they breed in the forests of the Columbia. On the 23d of May I had the satisfaction of harkening to the delicate but monotonous song of this bird, as he busily and intently searched every leafy bough and expanding bud for larvæ and insects in a spreading oak, from whence he delivered his solitary note. Sometimes he remained a minute or two stationary, but more generally continued his quest for prey. His song, at short and regular intervals, seemed like '*t shee 't shay t shaitshee*', varying the feeble sound very little, and with the concluding note somewhat slenderly and plaintively raised."

For the drawing of the plant represented in this plate, and noticed in the preceding page, I am indebted to my much esteemed friend Miss MARTIN.

SYLVIA NIGRESCENS, BLACK-THROATED GREY WARBLER, *Townsend*, Journ. of Acad. of Nat. Sciences of Philadelphia, vol. vii. p. 191.

Adult Male. Plate CCCXCV. Figs. 5, 6.

Bill shortish, straight, rather strong, tapering, compressed toward the end; upper mandible with the dorsal outline convex and declinate toward the acute tip, the sides convex, the edges sharp and overlapping, without notch; lower mandible with the angle short and rounded, the dorsal line very slightly convex, the edges a little inclinate, the

tip acute. Gape-line slightly arched; nostrils basal, oval, operculate, partially concealed by the feathers.

Head of ordinary size, ovato-oblong; neck short; body slender. Feet of ordinary length, slender; tarsus rather long, compressed, anteriorly covered with seven long scutella, of which the upper are blended behind with two long plates, meeting so as to form a sharp edge; toes short, slender, free, the outer united as far as the second joint; the hind toe proportionally large, the inner toe shorter than the outer; claws arched, of moderate length, much compressed, laterally grooved, very acute, that of the hind toe much stouter.

Plumage soft, blended, without gloss. Wings of moderate length, little convex, pointed; the outer three quills nearly equal, the second longest, the fourth little shorter than the third, the outer primaries rapidly graduated; secondaries narrow, the outer rounded and slightly emarginate, the inner not elongated. Tail rather long, slightly rounded and emarginate, of twelve rather narrow and weak feathers.

Bill and feet black. Iris brown. The general colour of the upper parts is bluish-grey, streaked with black, of the lower white, the sides marked with narrow black streaks; the upper part of the head and nape, the loreal space and cheeks, and the fore part of the neck, with a small portion of the breast, black; a band from near the nostrils to near the eye yellow; a band of white over the eye, and another from the lower mandible along the side of the neck, white. The wings, and tail are blackish-brown, the feathers edged with bluish-grey; two bands of white on the wing, formed by the tips of the first row of primary coverts, and the outer edges of the secondary coverts; the outer margin of the first quill is also white; as are those of the outer two feathers of the tail, with the greater part of the inner web of the outer three.

Length to end of tail 5; bill along the ridge $\frac{5}{12}$; wing from flexure $2\frac{8}{12}$; tail 2; tarsus $\frac{9}{12}$; hind toe $\frac{23}{12}$, its claw $\frac{5}{12}$; middle toe $\frac{43}{12}$, its claw $\frac{23}{12}$.

The above description is taken from a male shot by Dr TOWNSEND, on the 16th June 1835, on the Columbia River. A male shot by him on the 28th October of the same year, differs only in being of a more uniform bluish-grey above, the black spots being concealed by the elongated filaments, and there being more grey than black on the head.

The black on the throat is in like manner partially concealed by the white tips and margins of the feathers. Another male, shot on the 14th May, is intermediate in colouring.

In its colours this species has a considerable resemblance to *Sylvia varia*, as well as to *S. coronata* and *S. Auduboni*, to which latter two species it is more allied in form than to the former, which differs in having the bill much longer and more compressed, the tarsus shorter, and the hind toe much longer.

GLAUCOUS GULL OR BURGOMASTER.

LARUS GLAUCUS, BRUNN.

PLATE CCCXCVI. ADULT MALE AND YOUNG.

I FOUND this species on the coast of Labrador in very small numbers, all paired, in the month of July; but our endeavours to discover their nests were unavailing, and their shyness, which surpassed even that of the Great Black-backed Gull, prevented us from seeing much of their habits. I have never met with one on any part of our Atlantic coast, and I am much disposed to believe that those which may retire from the Arctic regions, where they are numerous, follow the north-west shores of America, as is indeed the case with many of the hyperborean birds, they giving an unaccountable preference to that side of the continent. It is true that I have often been told at Boston and New York that the Glaucous Gull had not unfrequently been procured there; but in no instance could I place any reliance upon the report, for when the supposed Glaucous Gull was shown to me, it proved to be merely a large specimen of the Herring Gull, *Larus argentatus*. Dr RICHARDSON, who had good opportunities of observing this bird, speaks of it as follows:—

“This large and powerful Gull inhabits Greenland, the Polar Seas, Baffin’s Bay, and the adjoining straits and coasts, in considerable numbers, during the summer. Its winter resorts in America have not been mentioned by authors; and the Prince of MUSIGNANO informs us, that it is exceedingly rare in the United States. It is notoriously

greedy and voracious, preying not only on fish and small birds, but on carrion of every kind. One specimen killed on Captain Ross's expedition disgorged an auk when it was struck, and proved, on dissection, to have another in its stomach. Unless when impelled to exertion by hunger, it is rather a shy inactive bird, and has little of the clamorousness of others of the genus. There is a considerable variety in the size of individuals. Captain SABINE found most of his specimens smaller than the *L. marinus*, but the largest individual of either species which he met with, was a male of *L. glaucus*, killed in Barrow's Strait. Its length was thirty-two inches; extent of wing sixty-five inches; weight four pounds and a quarter. Its tarsus was three inches and a half long, and its bill, which was prodigiously strong and arched, measured upwards of four inches. The eggs of this Gull are pale purplish-grey, with scattered spots of umber-brown, and subdued lavender-purple."

My figures were taken from specimens kindly presented to me by my friend Captain JAMES CLARKE ROSS, R. N.

LARUS GLAUCUS, *Gmel. Syst. Nat.* vol. i. p. 600.—*Lath. Ind. Ornith.* vol. ii. p. 814.—

Ch. Bonaparte, Synopsis of Birds of United States, p. 361.

LARUS GLAUCUS, BURGOMASTER GULL, *Richards. and Swains. Fauna Bor.-Amer.* vol. ii. p. 416.

GLAUCOUS GULL, or BURGOMASTER, *Nuttall, Manual*, vol. ii. p. 306.

Adult Male. Plate CCCXCVI. Fig. 1.

Bill shorter than the head, stout, compressed, higher near the end than at the base. Upper mandible with the dorsal line nearly straight for half its length, declinate and arched towards the end, the ridge convex, the sides very rapidly sloping and slightly convex, the edges sharp and somewhat inflected, the tip rather obtuse. Nasal groove rather long and narrow; nostrils in its fore part, lateral, longitudinal, linear-oblong, wider anteriorly, pervious. Lower mandible with the angle long and narrow, the outline of the crura decurved toward their junction, where there is a prominence, beyond which the outline ascends and is slightly concave, the sides erect and nearly flat, the edges sharp and a little inflected.

Head large, ovato-oblong, narrowed anteriorly. Neck of moderate length, strong. Body full. Feet of moderate length, rather slender;

tibia bare for three quarters of an inch ; tarsus somewhat compressed, covered anteriorly with numerous much curved scutella, laterally with angular scales, behind with numerous small rectangular scales ; hind toe very small and elevated, the fore toes of moderate length, slender, the fourth longer than the second, the third longest, all scutellate above, and connected by reticulated entire membranes, the lateral toes margined externally with a thick narrow membrane. Claws small, slightly arched, depressed, rounded, that of the middle toe with an expanded thin inner margin.

The plumage is very full, close, elastic, soft, and blended, on the back somewhat compact. Wings very long, rather broad, acute ; the first quill scarcely two-twelfths of an inch shorter than the second, which is longest, the rest of the primaries rapidly graduated ; secondaries broad and rounded. Tail of moderate length, nearly even, being slightly rounded, of twelve broad rounded feathers.

Bill gamboge yellow, with a carmine patch towards the end of the lower mandible, and the edges of both mandibles at the base of the same colour. Edges of eyelids red, iris yellow. Feet flesh-coloured, claws yellowish. The head, neck, lower parts, rump, and tail, are pure white ; the back and wings light greyish-blue ; the edges of the wing, and a large portion toward the end of all the quills, white.

Length to end of tail 30 inches ; bill along the ridge $2\frac{9}{12}$, along the edge $3\frac{1}{2}$; wing from flexure $19\frac{1}{2}$; tail $8\frac{3}{4}$; tarsus $2\frac{1\frac{1}{2}}{2}$; hind toe $\frac{2\frac{1}{2}}{1\frac{1}{2}}$, its claw $\frac{5}{12}$; second toe $\frac{10}{12}$, its claw $\frac{5\frac{1}{2}}{12}$; middle toe $2\frac{7}{12}$, its claw $\frac{6\frac{1}{2}}{12}$; outer toe $2\frac{1}{4}$, its claw $\frac{4}{12}$.

The Female, which is somewhat less, resembles the male.

Young in full plumage. Plate CCCXCVI. Fig 2.

The bill is yellow to a little beyond the nostrils, black at the end ; the feet flesh-coloured, the claws dusky. The iris brown. The general colour of the plumage is very pale yellowish-brown ; the feathers of the back with a large dusky spot towards the end ; the quills and tail-feathers barred with the same.

SCARLET IBIS.

IBIS RUBRA, VIEILL.

PLATE CCCXCVII. ADULT MALE AND YOUNG.

It was supposed by WILSON, and since his time by others, that this brilliantly coloured Ibis is not uncommon in the southern parts of the United States. This opinion however is quite erroneous, and I have found the Scarlet Ibis less numerous than even the Glossy Ibis; indeed I have not met with more than three individuals in a state of liberty, in the whole range of the United States. These birds occurred at Bayou Sara, in Louisiana, on the 3d of July 1821. They were travelling in a line, in the manner of the White Ibis, above the tops of the trees. Although I had only a glimpse of them, I saw them sufficiently well to be assured of their belonging to the present species, and therefore I have thought it proper to introduce it into our Fauna. WILSON'S figure, I believe, was taken from a living specimen, not however procured within the limits of the United States, and which was kept for some time in Peale's Museum in Philadelphia. My drawing of the adult male, and that of the immature bird, were made from specimens also procured beyond our limits. It is said that the habits of this bird are very similar to those of the White Ibis, of which I have given you a long account; but, as I have not had opportunities of observing them, I judge it better to abstain from offering any remarks on this subject.

TANTALUS RUBER, *Linn. Syst. Nat.* vol. i. p. 241.—*Lath. Ind. Ornith.* vol. ii. p. 703.

SCARLET IBIS, TANTALUS RUBER, *Wils. Amer. Ornith.* vol. viii. p. 41, pl. 66, fig. 2.

IBIS RUBRA, *Ch. Bonaparte, Synopsis of Birds of United States*, p. 311.

SCARLET IBIS, *Nuttall, Manual*, vol. ii. p. 84.

Adult Male. Plate CCCXCVII. Fig. 1.

Bill very long, slender unless at the base, deeper than broad, compressed, tapering, arcuate, obtuse at the tip. Upper mandible with the dorsal line arched in its whole length, the ridge convex, broader toward the end, the sides at the base nearly erect, towards the end very convex and narrow, the ridge separated in its whole length from the

sides by a deep narrow groove, the edges inflected and sharp. Nostrils basal, dorsal linear, direct. Lower mandible nearly equal to the upper, narrower toward the end, its angle long, very narrow, and protracted in the form of a groove to the tip, the dorsal line decurved, the sides erect on the crura, convex toward the end, the edges sharp but strong, like those of the upper.

Head small, compressed; neck long and slender; body rather full, deeper than broad. Feet very long, stout; tibiæ bare about a third of their length, and covered all round with hexagonal scales; tarsi long, moderately compressed; anteriorly covered with numerous broad scutella, the rest with hexagonal scales, toes long, the first small and slender, the third longest, the fourth considerably shorter, the second shorter than the fourth, all covered above with numerous scutella, laterally with angular scales, beneath flattened, with thick soft margins; the anterior connected at the base by membranes, of which the outer is larger; claws small, arched, compressed, obtuse, that of the middle toe with a sharp thin edge.

Anterior part of the forehead, sides of the head to beyond the eyes, skin at the base of the lower mandible, and the upper part of the throat bare. Plumage in general soft, rather blended; the feathers of the head and neck narrow, of the other parts ovate. Wings long, ample; primaries very strong, the third longest, the fourth longer than the second, the first longer than the fifth; secondaries broad and rounded. Tail short, arched, nearly even, of twelve rounded feathers.

Bill, feet, and bare parts of the head, pale lake. Iris yellow. The plumage is of a nearly uniform bright scarlet, excepting the shafts of the quills and tail-feathers, which are white, and the terminal portion of the outer four primaries, which are bluish-black.

Length to end of tail 29 inches; bill along the ridge $6\frac{1}{2}$; along the edge of lower mandible $6\frac{1}{4}$; wing from flexure $11\frac{1}{4}$; tail $3\frac{4}{12}$; bare part of tibia $1\frac{11}{12}$; tarsus $3\frac{8}{12}$; hind toe $1\frac{1}{12}$, its claw $\frac{6}{12}$; second toe $1\frac{9}{12}$, its claw $\frac{6}{12}$; third toe $\frac{7}{12}$, its claw $\frac{7}{12}$; fourth toe $2\frac{1}{12}$, its claw $\frac{4}{12}$.

Young assuming the plumage of the adult. Plate CCCXCVII.

In its first plumage the young has the bill and feet brownish-grey, the bare parts of the head pale flesh-colour; the plumage of the head, neck, and upper parts of a uniform brownish-grey; that of the lower white; the quills and tail-feathers dusky.

Individuals of this species differ much in size.

LAZULI FINCH.

FRINGILLA AMENA, BONAP.

PLATE CCCXCVIII. MALE.

THE Lazuli Finch, one of the handsomest of its tribe, and allied to the Indigo Bird, *Fringilla cyanea*, was added to our Fauna by THOMAS SAY, who procured it in the course of LONG's expedition already mentioned. A figure of the only specimen then obtained was given in the continuation of WILSON's American Ornithology by the Prince of MUISIGNANO. It has been my good fortune to procure a fine pair from DR TOWNSEND, who shot them on the Columbia River, on the 3d of June 1836, so that I have been enabled to represent the female, which has not hitherto been figured, as well as the male. That enterprising naturalist has informed me, that "the Chinook Indians name this species *Tilkonapooks*, and that it is rather a common bird on the Columbia, but is always shy and retiring in its habits, the female being very rarely seen. It possesses lively and pleasing powers of song, which it pours forth from the top branches of moderate-sized trees. Its nest, which is usually placed in the willows along the margins of the streams, is composed of small sticks, fine grasses, and cow or buffalo hair."

A nest of this species presented to me by MR NUTTALL, who found it on the Columbia River, is fastened between the stem and two branches of a large fern, round which many of the fibres are woven. It is funnel-shaped, six inches in length, three inches in breadth externally at the mouth, from which it gradually tapers. Internally its diameter at the mouth is two inches, and its depth three. It is composed of fibrous lichens, mosses, decayed leaves and grasses, of coarse texture and rudely interwoven. It is lined with finer fibres and a few horse hairs.

The figure of the female will be seen in Plate CCCCXXIV, Fig. 1.

LAZULI FINCH, *FRINGILLA AMENA*, *Ch. Bonaparte*, Amer. Ornith. vol. i. p. 61, pl. 6, fig. 4.

FRINGILLA AMENA, *Ch. Bonaparte*, Synopsis of Birds of United States, p. 106.

LAZULI FINCH, *Nuttall*, Manual, vol. i. p. 473.

Adult Male in summer. Plate CCCXCVIII. Fig. 1.

Bill short, robust, conical, a little bulging, straight, acute; upper mandible broader, its dorsal outline somewhat convex, the ridge narrow, the sides sloping and a little convex, the edges sharp, with a slight notch close to the narrow declinate tip; gape-line a little deflected at the base; nostrils basal, roundish, partly concealed by the feathers; lower mandible with the angle short and rounded, the dorsal line ascending and very slightly convex, the sides rounded, the edges involute, the tip acute.

Head of moderate size, broadly ovate; neck short; body rather full. Feet of ordinary length; tarsus much compressed, covered anteriorly with seven scutella, of which the upper are blended, posteriorly with two long plates, meeting so as to form a very thin edge; toes free, of moderate size, the first large, the lateral equal, the middle toe longer than the first. Claws slender, compressed, well arched, acute.

Plumage full, soft, blended. Wings of ordinary length, the second and third quills longest, the first nearly one-twelfth of an inch shorter and about equal to the fourth; outer secondaries slightly emarginate, inner not elongated. Tail of moderate length, emarginate, of twelve obtuse feathers.

Bill and feet brownish-black. The head and neck all round are of a beautiful greenish-blue, as are the hind part of the back and rump; the loreal space black; the fore part of the back, the scapulars, the wings and tail are brownish-black, all the feathers margined with blue; the wing crossed by a conspicuous white band formed by the first row of small coverts, and an obscure band of bluish-white formed by the tips of the secondary coverts. On the fore part of the breast is a broad band of light brownish-red; the sides, lower wing-coverts, and tibial feathers are bluish-grey; the rest of the lower parts white.

Length to end of tail $5\frac{6}{12}$ inches; bill along the ridge $\frac{43}{12}$; wing from flexure $3\frac{1}{12}$; tail $2\frac{41}{12}$; tarsus $\frac{8}{12}$; hind toe $\frac{5}{12}$, its claw $\frac{5}{12}$; middle toe $\frac{61}{12}$, its claw $\frac{23}{12}$.

Adult Female. Plate CCCCXXIV. Fig. 1.

The Female has the bill and feet like those of the male; the upper parts light greyish-brown, the hind part of the back and the rump greenish-blue, but of a faint tint; the cheeks and throat pale reddish-

grey; the lower part of the neck, and the fore part of the breast light greyish-red, the sides, lower wing-coverts, and tibial feathers light brownish-grey, the rest of the lower parts white. The wings and tail are blackish-brown, the feathers slightly edged with blue; the transverse bar on the wing narrower than in the male, and brownish-white.

Length to end of tail $5\frac{4}{12}$ inches; bill along the ridge $\frac{43}{12}$; wing from flexure $2\frac{10}{12}$; tail $2\frac{1}{4}$; tarsus $\frac{7\frac{1}{2}}{12}$, hind toe and claw $\frac{6}{12}$; middle toe and claw $\frac{10}{12}$.

CLAY-COLOURED BUNTING.

EMBERIZA PALLIDA, SWAINSON.

PLATE CCCXCVIII. MALE.

THIS homely-looking little bird was discovered by Dr RICHARDSON, who states that it "visits the Saskatchewan in considerable numbers, frequents the farm-yard at Carlton House, and is as familiar and confident as the common house-sparrow of England." My friend Mr NUTTALL, in speaking of it as allied to *Fringilla pusilla* of WILSON, states that it is distinct in its habits, it being a prairie bird, not seen in the woods, and occurring only in spring, although in all other points it agrees with the species just mentioned. It was not met with by him far up the Platte, but is supposed to visit the prairies of the Missouri down to the line of settlements. My drawing represents a male. A female in my possession differs only in being rather smaller.

EMBERIZA PALLIDA, CLAY-COLOURED BUNTING, *Richards.* and *Swains.* Fauna Boreali-Americana, vol. ii. p. 251.

CLAY-COLOURED BUNTING, *Nuttall*, Manual, vol. ii. p. 584.

Adult Male. Plate CCCXCVIII. Fig. 2.

Bill short, strong, conical, compressed toward the end, acute; upper mandible rather broader than the lower at the base, but less deep beyond the nostrils, its dorsal line declinate and slightly convex, the sides convex, the edges direct, the gape-line ascending to beyond the nos-

trils, afterwards straight, the tip acute; lower mandible with the angle short and rounded, the dorsal line almost straight, the sides rounded; the edges inflected, the tip acute. Nostrils basal, roundish, partially concealed by the feathers.

Head ovate, of moderate size; neck short; body rather slender. Feet of moderate length, slender; tarsus compressed, with seven anterior scutella, and two plates behind, meeting so as to form a sharp edge; toes free, the first stronger, the third much longer than the lateral, of which the inner is somewhat shorter than the outer; claws of moderate length, arched, much compressed, laterally grooved, acute.

Plumage soft and blended, on the back rather compact. Wings of moderate length, rather rounded, the first quill two-twelfths of an inch shorter than the second, which is scarcely longer than the third and fourth, the other primaries slowly graduated; the secondaries rounded, the inner not elongated. Tail long, emarginate, of twelve narrow feathers, of which the middle are three-twelfths of an inch shorter than the outer.

Bill yellow, greyish-brown toward the end. Feet flesh-coloured, claws dusky brown. The general colour of the upper parts is light yellowish-brown, each feather having a central streak of brownish-black; the streaks on the rump are fainter and more slender. The quills and tail-feathers greyish-brown, narrowly margined with brownish-white. Over the eye is a long band of brownish-white; the cheeks are pale brown, the sides of the neck are very light buff, the rest of the lower parts greyish-white, the sides of the body tinged with greyish-brown.

Length to end of tail $5\frac{2}{12}$ inches; bill along the ridge $\frac{4\frac{1}{2}}{12}$; wing from flexure $2\frac{7}{12}$; tail $2\frac{8}{12}$; tarsus $\frac{8\frac{1}{2}}{12}$; hind toe $\frac{3\frac{1}{2}}{12}$, its claw $\frac{5}{12}$; middle toe $\frac{5\frac{1}{2}}{12}$, its claw $\frac{2\frac{1}{2}}{12}$.

The Female is similar to the male, but has less yellow on the sides of the neck, and is somewhat smaller.

Length to end of tail $5\frac{2}{12}$ inches; bill along the ridge $\frac{4\frac{1}{2}}{12}$; wing from flexure $2\frac{7\frac{1}{2}}{12}$; tail $2\frac{6}{12}$; tarsus $\frac{8}{12}$; hind toe and claw $\frac{6}{12}$; middle toe and claw $\frac{8}{12}$.

This species has some resemblance to *Fringilla pusilla*, from which, however, it is easily distinguishable. The bill is longer and much more slender, its wings and tail also longer, and the latter more deeply emarginate. There are none of the reddish-brown tints conspicuous

in the Field Sparrow, which, moreover, has the gape-line less deflected at the base, and has the palate concave, in place of being knobbed. The specimens from which the above descriptions have been taken were procured on the 15th of June 1834, on the Rocky Mountains, by Dr TOWNSEND.

OREGON SNOW-FINCH.

FRINGILLA OREGONA, TOWNSEND.

PLATE CCCXCVIII. MALE AND FEMALE.

THIS species, which is so nearly allied to our Common Snow Bird, *Fringilla nivalis*, is another of those recently added to our Fauna by Dr TOWNSEND, from whom I purchased several specimens. All that I know of its habits is derived from the following notice given me by Mr NUTTALL. "It was first seen by us in the woods of the Columbia, in the autumn and winter, flitting about in small flocks, always in the forest, never in the open fields, or on the way-sides. At this time they rarely utter an occasional chirp, or remain wholly silent. We afterwards saw them inhabiting the same woods throughout the summer, in diminished numbers, or in pairs, but I do not recollect hearing them utter any song, though they are probably not silent in the season of breeding. With the nest, eggs, and young I am not acquainted."

I have represented the male and female from specimens procured by Dr TOWNSEND on the Columbia River, on the 5th October 1834.

FRINGILLA OREGANA OREGAN SNOW FINCH, *Townsend*, Journ. of Acad. of Nat. Sciences of Philadelphia, vol. vii. p. 188.

Adult Male. Plate CCCXCVIII. Fig. 3.

Bill short, rather small, conical, considerably compressed, acute; upper mandible a little broader than the lower, its dorsal line straight, slightly declinate at the tip, the sides convex, the edges slightly inflected, but overlapping; the gape-line straight; lower mandible with the angle short and rounded, the dorsal line straight, the sides convex,

the edges a little inflected, the tip acute. Nostrils basal, roundish, concealed by the feathers.

Head rather large, broadly ovate; neck short; body full. Feet of moderate length; tarsus rather short, stout, with seven anterior scutella, of which the upper are blended, sharp-edged behind; toes rather strong, the first stout, the middle one considerably longer than the lateral, which are equal; claws rather long, arched, compressed, laterally grooved, tapering to a fine point.

Plumage very soft and blended. Wings shortish, curved, rounded, the first quill three and a half twelfths of an inch shorter than the second, which is half a twelfth shorter than the third, and about the same length as the fourth; the secondaries rounded. Tail rather long, slightly emarginate.

Bill reddish-white, the tip dusky. Iris hazel. Feet and claws flesh-coloured. The head, neck all round, and a portion of the breast black, the feathers faintly margined with grey; the rest of the lower parts white, excepting the sides, which are tinged with brown. The fore part of the back is dark reddish-brown, the hind parts dull grey. The smaller coverts, secondary coverts, and inner secondaries are dusky, with broad light-brown margins; the primary coverts, and the rest of the quills brownish-black, narrowly edged with brownish-white. The tail is of the same dark colour as the wings, excepting the two outer feathers on each side, which are white, the second, however, having a part of the outer web dusky, and the third having a white streak on the inner web toward the end.

Length to end of tail $6\frac{1}{4}$ inches; bill along the ridge $\frac{4\frac{3}{4}}{1\frac{1}{2}}$; wing from flexure $3\frac{1}{12}$; tail $2\frac{7\frac{1}{2}}{1\frac{1}{2}}$; tarsus $\frac{1\frac{0}}{1\frac{1}{2}}$; hind toe $\frac{4}{1\frac{1}{2}}$, its claw $\frac{4\frac{1}{2}}{1\frac{1}{2}}$; middle toe $\frac{7\frac{1}{2}}{1\frac{1}{2}}$, its claw $\frac{3\frac{3}{4}}{1\frac{1}{2}}$.

Adult Female. Plate CCCXCVIII. Fig. 4.

The Female has the bill and feet coloured like those of the male. The head and neck are blackish-grey, the feathers edged with paler; the back and wing-coverts dull reddish-brown; the wings and tail as in the male; the breast and abdomen white, the sides pale reddish-brown.

Length to end of tail $5\frac{3}{4}$ inches; bill along the ridge $\frac{5}{1\frac{1}{2}}$; wing from flexure 3; tail $2\frac{7}{1\frac{1}{2}}$; tarsus $\frac{9\frac{1}{2}}{1\frac{1}{2}}$; hind toe and claw $\frac{6\frac{1}{2}}{1\frac{1}{2}}$; middle toe and claw $\frac{9\frac{1}{2}}{1\frac{1}{2}}$.

THE LIBERTY BUSH.

AZALEA NUDIFLORA, *Willd.* Sp. Pl. vol. i. p. 831.—PURSH, Fl. Amer. vol. ii. p. 152.
—PENTANDRIA MONOGYNIA, *Linn.*

This plant, of which the drawing was made by Miss MARTIN, occurs in dry situations in most parts of the United States, from their northern limits to Florida, and exhibits many varieties in the colour and size of its flowers. It is characterized by having the flowers nearly naked; the leaves lanceolato-oblong, smoothish on both sides, ciliated on the margins; the flowers large, not viscid, with the tube longer than the segments; the teeth of the calyx short and roundish, the stamens very long.

BLACK-THROATED GREEN WARBLER.

SYLVIA VIRENS, LATH.

PLATE CCCXCIX. MALE AND FEMALE.

I HAVE traced this species from the Texas to Newfoundland, although at considerable intervals, along our Atlantic coasts, it being of rare occurrence or wanting in some parts, while in others it is abundant; but in no portion of the United States have I met with it so plentiful as around Eastport in Maine, where I saw it in the month of May. Many remain all summer in that State, as well as in Massachusetts, and the northern parts of New York; and some are found at that season even in the higher portions of Pennsylvania. On the coast of Labrador it was not observed by me or any of my party, and it is not mentioned by Dr RICHARDSON as having been seen in the Fur Countries. Its habits are intermediate between those of many of our Warblers and the Vireos, the notes of which latter it in a great measure assumes. It usually makes its appearance in Maryland and New Jersey about the first week of May, when it is observed to be actively engaged in

searching for food, regardless as it were of the presence of man. Its movements when proceeding northward are rapid, and it advances through the woods solitarily or nearly so, it being seldom that more than two or three are found together at this time, or indeed during the breeding season, at which period each pair appropriates to itself a certain extent of ground. Its retrograde march is also rapid, and by the middle of October they all seem to have passed beyond the limits of our most southern States.

The food of this species consists during the summer months of various kinds of flies and caterpillars, many of the former of which it captures by darting after them from its perch, in the manner of Flycatchers and Vireos, emitting like them also a clicking sound from its bill. In the autumn it is often seen feeding on small berries of various sorts, in which respect also it resembles the birds just mentioned. I never found the nest of this bird, of which, however, Mr NUTTALL has given a minute description, which I shall here, with his permission, place before you. "Last summer (1830), on the 8th of June, I was so fortunate as to find a nest of this species in a perfectly solitary situation, on the Blue Hills of Milton. The female was now sitting, and about to hatch. The nest was in a low, thick, and stunted Virginia juniper. When I approached near to the nest, the female stood motionless on its edge, and peeped down in such a manner that I imagined her to be a young bird; she then darted directly to the earth and ran, but when, deceived, I sought her on the ground, she had very expertly disappeared; and I now found the nest to contain four roundish eggs, white, inclining to flesh-colour, variegated, more particularly at the great end, with pale purplish points of various sizes, interspersed with other large spots of brown and blackish. The nest was formed of circularly entwined fine stripes of the inner bark of the juniper, and the tough white fibrous bark of some other plant, then bedded with soft feathers of the Robin, and lined with a few horse hairs, and some slender tops of bent grass (*Agrostis*)."

My friend describes the notes of this species as follows:—"This simple, rather drawling, and somewhat plaintive song, uttered at short intervals, resembles the syllables *'te de' territica*, sometimes *tederisca*, pronounced pretty loud and slow, and the tones proceeding from high to low." These notes I am well acquainted with, but none can describe the songs of our different species like NUTTALL.

I have represented the male and female; the latter, I believe, has not been hitherto figured.

SYLVIA VIRENS, *Lath.* Ind. Ornith. vol. ii. p. 537.

BLACK-THROATED GREEN WARBLER, *SYLVIA VIRENS*, *Wils.* Amer. Ornith. vol. ii. p. 127, pl. 17, fig. 3.

SYLVIA VIRENS, *Ch. Bonaparte*, Synopsis of Birds of United States, p. 80.

BLACK-THROATED GREEN WARBLER, *Nuttall*, Manual, vol. i. p. 376.

Adult Male. Plate CCCXCIX. Fig. 4.

Bill short, straight, rather strong, tapering, compressed toward the end, acute; its dorsal line very slightly convex, the sides convex, the notch extremely small, the gape-line straight; lower mandible with the angle short and broad, the dorsal line ascending and nearly straight, the edges a little inflected, the tip acute. Nostrils basal, oblong.

Head of moderate size, ovate; neck short; body slender. Feet of ordinary length, slender; tarsus extremely compressed, covered anteriorly with seven scutella, of which the upper are blended, sharp behind; toes slender, free; the first proportionally stout, the third much longer than the lateral, which are nearly equal; claws arched, of moderate length, slender, much compressed, tapering to a fine point.

Plumage soft, blended. Slight bristles at the base of the upper mandible. Wings of moderate length; the outer three quills nearly equal, the second, which is longest, exceeding the first by only a quarter of a twelfth; the outer secondaries faintly emarginate, the inner rounded. Tail of moderate length, slightly emarginate, the middle feathers being two twelfths of an inch shorter than the longest.

Bill black; feet dusky. Iris hazel. The general colour of the upper parts is yellowish-green; the anterior part of the forehead, a band over the eye, the cheeks and the sides of the neck, bright yellow; the fore part of the neck, the anterior part of the sides, and some spots on the hind part of the latter, black; the rest of the lower parts white. Quills and tail-feathers brownish-black; two bands of white on the wing, formed by the first row of small coverts, and the tips of the secondary coverts. The quills are margined with greenish-white; the greater part of the outer two tail-feathers, and a patch on the inner web of the next, white.

Length to end of tail $4\frac{1}{2}$ inches; bill along the ridge $\frac{4}{12}$; wing from

flexure $2\frac{1}{2}$; tail $2\frac{1}{2}$; tarsus $\frac{9}{12}$; hind toe $\frac{23}{12}$; its claw $\frac{5}{12}$; middle toe $\frac{5}{12}$, its claw $\frac{2}{12}$.

Adult Female. Plate CCCXCIX. Fig. 2.

The Female; which is somewhat smaller than the male, has the upper parts similar, with less yellow on the forehead, the loreal space, a band under the eye and the auriculars greenish; the yellow band over the eye less bright, and the yellow on the sides of the neck of less extent. The fore part of the neck is white, tinged with yellow above, and with grey beneath; the lower parts are white as in the male, and the sides are streaked with black; the white markings on the wings and tail, as in the male, but of less extent.

Length to end of tail $4\frac{1}{2}$ inches; bill along the ridge $\frac{4}{12}$; wing from flexure $2\frac{5}{12}$; tail 2; tarsus $\frac{8}{12}$; hind toe $\frac{2}{12}$, its claw $\frac{5}{12}$; middle toe $\frac{8}{12}$, its claw $\frac{2}{12}$.

BLACKBURNIAN WARBLER.

SYLVIA BLACKBURNIÆ, LATH.

PLATE CCCXCIX. FEMALE.

I HAVE nothing to add to the account given in vol. ii. p. 208, of the habits of this species. It was not observed by either Mr NUTTALL or Dr TOWNSEND on the Rocky Mountains or on the shores of the Pacific Ocean. My young friend Dr THOMAS BREWER of Boston, having kindly furnished me with a description of a nest of this Warbler found by him, I introduce it here, as illustrative of the differences as to construction and materials which these fabrics often exhibit. In a letter, dated October 30. 1837, he says, "I had the extreme good fortune to obtain the nest and eggs of this bird the past summer. I presume a short account of them will not be amiss, it being extremely rare in this part of the country so far to the south. The nest is rather slovenly built of dry grass, leaves, and strips of the bark of the grape-vine

loosely put together, and is lined with a few horse hairs and fine grass. It measures three inches in external breadth, two internal, and is two and a half inches deep externally, and two inside. The eggs are extremely beautiful, having on a crystal white ground dots and lines of a reddish-brown, chiefly disposed at the larger end. They measure eleven-sixteenths of an inch in length, by seventeen thirty-second parts in breadth. They are in the shape of an abrupt cone, and at slight view would seem to be oval. This is the only instance in which I have known them breed in Massachusetts."

The Female is here represented, I believe, for the first time.

SYLVIA BLACKBURNIÆ, *Lath. Ind. Ornith. vol. ii. p. 257.*

Adult Female. Plate CCCXCIX. Fig. 3.

The Male having been minutely described in the second volume, it is unnecessary to give the proportions of the female, which are similar. The bill and feet are of a lighter tint; the general colour of the upper parts is light olivaceous, each feather dusky in the centre, those on the middle of the back and the upper tail-coverts with a more distinct blackish patch, the former margined externally with white; the wings and tail are marked with white like those of the male, but are of a lighter or dusky brown tint. There is a faint greenish-yellow spot on the top of the head, the feathers on which part are tipped with dusky; the band over the eye is dull yellow, that on the lore and cheek brown, the fore part of the neck is also yellow, tinged however with orange; the sides are less strongly streaked with black.

Length, to end of tail, $4\frac{8}{12}$ inches; bill along the ridge $\frac{4\frac{1}{2}}{12}$; along the edges of lower mandible $\frac{6\frac{1}{2}}{12}$; wing from flexure $2\frac{7\frac{1}{2}}{12}$; tail $2\frac{1}{12}$; tarsus $\frac{8}{12}$; hind toe $\frac{5}{12}$, its claw $\frac{2\frac{1}{2}}{12}$; middle toe $\frac{5}{12}$, its claw $\frac{2\frac{1}{2}}{12}$.

MACGILLIVRAY'S WARBLER.

SYLVIA MACGILLIVRAYI.

PLATE CCCXCIX. MALE AND FEMALE.

WHEN I first saw the specimens of this bird, which had been transmitted by Dr TOWNSEND to the Academy of Natural Sciences of Philadelphia, I considered them as identical with *Sylvia Philadelphia* of WILSON; but on subsequently comparing them with a number of individuals of the latter species, procured by my friend EDWARD HARRIS, Esq. in our Middle and Eastern Districts, I found differences sufficient to indicate their being specifically distinct. In consequence of this first impression, the two figures in the plate representing a male and a female procured on the Columbia River, were erroneously named "Mourning Warbler, *Sylvia Philadelphia*." But now, thinking that I cannot do better than dedicate this pretty little bird to my excellent friend WILLIAM MACGILLIVRAY, Esq., I feel much pleasure in introducing it to the notice of the ornithological world, under a name which I trust will endure as long as the species itself.

Dr TOWNSEND, who found it on the banks of the Columbia, states that it is "mostly solitary and extremely wary, keeping chiefly in the most impenetrable thickets, and gliding through them in a cautious and suspicious manner. It may, however, sometimes be seen towards mid-day perched upon a dead twig over its favourite places of concealment, and at such times warbles a very sprightly and pleasant little song, raising its head until its bill is almost vertical, swelling its throat in the manner of its relatives."

Mr NUTTALL has also favoured me with the following interesting account of it.—"This species is one of the most common summer residents of the woods and plains of the Columbia, appearing early in May, and remaining until the approach of winter. After the manner of the Maryland Yellow-throat, it keeps near the ground in low bushes, where it gleans its subsistence. When surprised or closely observed, it is shy and jealous, immediately skulking off, and sometimes uttering a loud snapping clink. Its note has occasionally the hurried rattling sound of *Turdus aurocapillus*, resembling *t'tsh t'tsh ttsh tsheetee*, alternating into

tsh tsh tsh teet 'shee. Another male, on the skirts of a thicket, called out at short intervals *vish vishtyu*, changing to *vit vit vit vityu* and *vit vit vityu*, sometimes, when approached, dropping his voice and abbreviating his song. Another had a call of *visht visht*, *visht e visht t'shew* and *visht visht vishteshew* or *vititshee*. On the 12th of June, a nest of this species was brought to me, containing two young birds nearly quite fledged, in the garb of the mother, pale yellow beneath, and brightish yellow-olive above. The nest was chiefly made of stripes of the inner scaly bark of probably the White Cedar, *Thuja occidentalis*, lined with slender wiry stalks of dry weeds, and concealed near the ground in the dead mossy limbs of a fallen oak, and further partly hidden by a long tuft of *Usnea*. It was less artificial than the nest of the Yellow-throat, but of the same general appearance, and concealed in a similar situation, probably in a thicket near the ground. On returning the nest to the place it had been taken from, I had almost immediately the satisfaction of seeing the anxious parents come to feed their charge, and for some days they shewed great anxiety on being approached."

"This," says my friend Mr HARRIS, "is the warbler that so closely resembles the *S. Philadelphia*. Mr TOWNSEND has brought in more specimens, which agree with the others in the very distinctive mark of the white eyelids, with dark spots from the base of the bill to the eyes, and also dark on the front at the root of the upper mandible. I cannot but think it entirely distinct."

SYLVIA MACGILLIVRAYI.

Adult Male in Summer. Plate CCCXCIX. Fig. 4.

Bill short, straight, conico-subulate, compressed toward the end, acute; upper mandible with the dorsal line declinate, straight, a little convex at the end, the ridge narrow, the sides convex, the edges direct and overlapping, with a slight notch, the tip narrow; lower mandible with the angle of moderate length and narrow, the dorsal line ascending and slightly convex, the sides rounded, the edges inflected, the tip acute; the gape-line straight. Nostrils basal, lateral, oblong, operculate, exposed.

Head of moderate size, ovato-oblong; neck short; body rather slender. Feet rather long; tarsus slender, longer than the middle toe,

much compressed, covered before with seven scutella, behind with two longitudinal plates meeting so as to form a thin edge; the lateral toes nearly equal, the third much longer, and united at the base to the fourth, hind toe stronger and rather large; claws moderately arched, extremely compressed, laterally grooved, acute.

Plumage soft and blended, with little gloss; wings rather short, somewhat concave; the second, third, and fourth primaries having the outer web cut out toward the end; the second quill is longest, the third a quarter of a twelfth of an inch shorter, the fourth half a twelfth shorter than the third, and one-twelfth longer than the first; the other primaries very slowly graduated, the longest or second being only five and a half twelfths longer than the first secondary. All the quills, primary as well as secondary, are rounded; and there are only nine primaries. Tail rather long, rather narrow, slightly divaricate and considerably rounded, the lateral feathers a quarter of an inch shorter than the middle, which are longest; all the feathers rather narrow, but scarcely pointed.

Upper mandible brownish-black, its edges in their whole length pale yellowish flesh-colour, as is the lower mandible, which, however, is a little dusky at the end. Iris hazel. Feet and claws flesh-coloured. The upper part of the head, the hind part and sides of the neck, are deep ash-grey, tinged with blue; the back, scapulars, and rump light olive-green; the wings and tail greyish-brown, the edge of the wing and the outer margin of the first quill bright yellow, the other primaries narrowly edged with greenish-yellow, the secondaries of a paler brown externally, as are the tail-feathers. From the ridge of the upper mandible to the eye is a broad band of velvet-black, which extends a little way under the eye; on each eyelid is a distinct patch of pure white, but that colour does not surround the eye, the marginal feathers of the eyelids being black before and behind. The fore part of the neck and a portion of the breast, to the distance of an inch and five-twelfths from the bill, are greyish-black, with lunulate greyish-white markings, each feather being margined with that colour; the breast, abdomen, lower tail-coverts, and lower wing-coverts, are bright yellow, the sides of the body yellowish-green.

Length to end of tail 5 inches, extent of wings $6\frac{1}{2}$; bill along the ridge $\frac{5}{12}$, along the edge of lower mandible $\frac{7\frac{1}{2}}{12}$; wing from flexure $2\frac{5}{12}$; tail $2\frac{4}{12}$; tarsus $\frac{10}{12}$; hind toe $\frac{3\frac{1}{2}}{12}$, its claw $\frac{5}{12}$; middle toe $\frac{6}{12}$, its claw $\frac{2\frac{1}{2}}{12}$.

Adult Female. Plate CCCXCIX. Fig. 5.

The Female, which is scarcely smaller, resembles the male in the upper parts, but has the head and sides of the neck of a lighter grey, which colour also extends over the lower part of the fore neck and a portion of the breast, leaving the throat greyish-white. The eyelids are edged with white, as in the male; and the lower parts are, as in it, bright yellow. The bill and feet have the same colours as those of the male.

Length to end of tail 5 inches; bill along the ridge $\frac{5}{1\frac{1}{2}}$; wing from flexure $2\frac{4\frac{1}{2}}{1\frac{1}{2}}$; tail $2\frac{5}{1\frac{1}{2}}$; tarsus $\frac{1\frac{0}{2}}$; hind toe and claw $\frac{6}{1\frac{1}{2}}$; middle toe and claw $\frac{8\frac{1}{2}}{1\frac{1}{2}}$.

The above descriptions are taken from a male and a female obtained by Dr TOWNSEND on the Columbia River, in May 1835. Three other males shot at the same time agree with that described in size, proportion of parts, and colours, but vary a little in the tint of the head, which in some is of a lighter grey. In all, the black loreal band is very conspicuous, as are the white marks on the eyelids.

The young are stated by Mr NUTTALL to resemble the female.

This species, as has already been observed, is very intimately allied in form, proportions, colours, and habits, with that described by WILSON, under the name of "Mourning Warbler, *Sylvia Philadelphia*." His account of it is as follows:—"The bird from which the figure in the plate was taken, was shot in the early part of June, on the border of a marsh, within a few miles of Philadelphia. It was flitting from one low bush to another, very busy in search of insects, and had a sprightly and pleasant warbling song, the novelty of which first attracted my attention. I have traversed the same and many such places, every spring and autumn since, in expectation of again meeting with some individual of the species, but without success. I have, however, the satisfaction to say, that the drawing was done with the greatest attention to peculiarity of form, markings, and tint of plumage; and the figure on the plate is a good resemblance to the original.

The Mourning warbler is five inches long, and seven in extent; the whole back, wings, and tail, are of a deep greenish-olive, the tips of the wings, and the centre of the tail-feathers excepted, which are brownish; the whole head is of a dull slate-colour, the breast is orna-

mented with a singular crescent of alternate transverse lines of pure glossy white, and very deep black ; all the rest of the lower parts are of a brilliant yellow ; the tail is rounded at the end ; legs and feet, a pale flesh-colour ; bill brownish-black above, lighter below ; eye hazel."

This single bird, thus procured and described, was supposed by some to be merely a variety of another species. But several individuals have been found since, and I have in my possession two males, presented to me by Mr HARRIS, who procured them near Philadelphia, This species I have not represented in my Illustrations, having at first conceived it to be identical with the specimens from the Columbia River ; but its description may here be introduced with propriety.

MOURNING WARBLER.

SYLVIA PHILADELPHIA, WILS.

MOURNING WARBLER, *SYLVIA PHILADELPHIA*, *Wils.* Amer. Ornith. vol. ii. p. 101, pl. 14, fig. 6.

SYLVIA PHILADELPHIA, *Ch. Bonaparte*, Synopsis of Birds of United States, p. 85.

MOURNING WARBLER, *Nuttall*, Manual, vol. i. p. 404.

Bill short, straight, conico-subulate, compressed toward the end, acute ; upper mandible with the dorsal line declinate, straight, a little convex at the end, the ridge narrow, the sides convex, the edges direct and overlapping, with a slight notch, the tip narrow ; lower mandible with the angle of moderate length and narrow, the dorsal line ascending and slightly convex, the sides rounded, the edges inflected, the tip acute ; the gape-line straight. Nostrils basal, lateral, operculate, exposed.

Head of moderate size, ovato-oblong ; neck short ; body rather slender ; feet rather long ; tarsus slender, longer than the middle toe, much compressed, covered before with seven scutella, behind with two longitudinal plates meeting so as to form a thin edge ; the lateral toes meeting so as to form a thin edge ; the lateral toes nearly equal, the third much longer, and united at the base to the fourth, hind toe

stronger and rather large ; claws moderately arched, extremely compressed, laterally grooved, acute.

Plumage soft and blended, with little gloss ; wings of moderate length, somewhat concave ; the second, third, and fourth primaries having the outer web cut out toward the end ; the second quill is longest, the third scarcely a quarter of the twelfth of an inch shorter, the fourth half a twelfth shorter than the third, and a quarter of a twelfth shorter than the first ; the other primaries slowly graduated, the longest or second being only eight and a half twelfths longer than the first secondary. All the quills, primary as well as secondary, are rounded ; and there are only nine primaries. Tail rather long, considerably rounded, the lateral feathers a quarter of an inch shorter than the middle, which are longest ; all the feathers rather narrow and obliquely pointed.

Upper mandible brownish-black, its edges in their whole length pale yellowish flesh-colour, as is the lower mandible, which, however, is a little dusky at the end. Iris hazel. Feet and claws flesh-coloured. The upper part of the head, the hind part and sides of the neck, are deep ash-grey, tinged with blue ; the back, scapulars, and rump deep olive-green ; the wings and tail greyish-brown, the edge of the wing and the outer margin of the first quill bright yellow, the other primaries narrowly edged with greenish-yellow, the secondaries of a paler brown externally, as are the tail-feathers. From the ridge of the upper mandible to the eye is a rather broad band of black, which extends a little way under the eye, but is not nearly so conspicuous as that of the species above described ; nor are the eyelids marked with white, their marginal feathers being all dusky grey. The fore part of the neck and a portion of the breast, to the distance of an inch and five-twelfths from the bill, are deep black, with lunulate white markings, each feather being margined with that colour ; the white edges of the lower black feathers being extremely narrow leave a crescent of nearly pure black ; the breast, abdomen, lower tail-coverts, and lower wing-coverts are bright yellow, the sides of the body yellowish-green.

Length to end of tail 5 inches ; " extent of wings 8 ;" bill along the ridge $\frac{5\frac{1}{2}}{1\frac{1}{2}}$, along the edge of lower mandible $\frac{7\frac{1}{2}}{1\frac{1}{2}}$; wing from flexure $2\frac{7}{12}$; tail $2\frac{1}{12}$; tarsus $\frac{9}{12}$; hind toe $\frac{3\frac{1}{2}}{1\frac{1}{2}}$, its claw $\frac{3\frac{1}{2}}{1\frac{1}{2}}$; middle toe $\frac{6}{12}$, its claw $\frac{2\frac{1}{2}}{1\frac{1}{2}}$.

The principal differences between *Sylvia Macgillivrayi* and *S. Philadelphia* may now be pointed out. The bill is considerably more compressed in the former, which has the tarsus a twelfth of an inch longer, the tail four-twelfths longer, and the wings two-twelfths shorter. Although in both the outer four quills are longest, yet the proportions are different, the first quill being longer than the fourth in *S. Philadelphia*, and the reverse being the case in *S. Macgillivrayi*. The colours are nearly the same in both ; but the latter is distinguished by its two white palpebral spots, which have never been observed in the other. The difference observable between the tip of the longest primary and that of the first secondary in these two species, is still more remarkable in another species very closely allied to these, and of which a pair of young birds have been figured in Plate CXXXVIII, and described in my second volume under the name of "Connecticut Warbler, *Sylvia agilis*," bestowed upon it by WILSON, who, however, never saw an adult individual.

CONNECTICUT WARBLER.

SYLVIA AGILIS, WILS.

THIS species is larger and stouter than those above described, and differs from them in having the wings much longer and more pointed, the first quill being longest, as well as in colour, the fore neck of the male being ash-grey, without lunulated markings, although otherwise the colours are nearly similar. WILSON'S account of it is as follows :—" This is a new species, first discovered in the State of Connecticut, and twice since met with in the neighbourhood of Philadelphia. The different specimens I have shot correspond very nearly in their markings ; two of these were males, and the other undetermined, but conjectured also to be a male. It was found in every case among low thickets, but seemed more than commonly active, not remaining for a moment in the same position.

" Length five inches and three quarters ; extent eight inches ; whole

upper parts a rich yellow-olive ; wings dusky brown, edged with olive ; throat dirty white or pale ash ; upper part of the breast dull greenish-yellow ; rest of the lower parts a pure rich yellow ; legs long, slender, and of a pale flesh-colour ; round the eye, a narrow ring of yellowish-white ; upper mandible pale brown, lower whitish ; eye dark hazel.

“ Since writing the above, I have shot two specimens of a bird, which in every particular agrees with the above, except in having the throat of a dull buff-colour, instead of pale ash. Both of these were females ; and I have little doubt but they were of the same species with the present, as their peculiar activity seemed exactly similar to the males above described.”

The males described by WILSON, however, I have reason to think were young birds in their second plumage. Those which I have described in my second volume, at p. 227, were also young birds in that stage, a male and a female. An adult male in my possession may be described as follows :—

CONNECTICUT WARBLER, *SYLVIA AGILIS*, *Wils. Amer. Ornith. vol. v. p. 64, pl. 39, fig. 4.*

Adult Male.

Bill short, straight, conico-subulate, compressed toward the end, acute ; upper mandible with the dorsal line declinate, convex toward the end, the ridge narrow, the sides convex, the edges direct and overlapping, with a slight notch, the tip narrow ; lower mandible with the angle of moderate length and narrow, the dorsal line ascending and slightly convex, the sides rounded, the edges inflected, the tip acute ; the gape-line slightly arched. Nostrils basal, lateral, oblong, operculate, exposed.

Head of moderate size, ovato-oblong ; neck short ; body rather slender. Feet rather long ; tarsus slender, of the same length as the middle toe, much compressed, covered before with seven scutella, behind with two longitudinal plates meeting so as to form a thin edge ; the lateral toes nearly equal, the third much longer, and united at the base to the fourth, hind toe stronger and rather large ; claws slightly arched, extremely compressed, laterally grooved, acute.

Plumage soft and blended, with little gloss ; wings long, very slightly concave ; the second and third (but not the fourth) primaries

having the outer web cut out toward the end ; the first quill is longest, exceeding by half a twelfth the second, which is one-twelfth longer than the third, the rest rapidly graduated, the distance between the tip of the longest or first primary and that of the first secondary being eleven-twelfths of an inch ; all the quills are rounded, and there are only nine primaries. Tail of moderate length, rather narrow, slightly rounded, the lateral feathers two-twelfths of an inch shorter than the middle, which are longest ; all the feathers acuminate.

Upper mandible dusky brown, its edges lighter, lower mandible flesh-coloured, with the tip brown. Iris hazel. Feet and claws pale flesh-coloured. The head, and neck all round, with a portion of the breast, rather deep ash-grey, the throat paler ; a ring of yellowish-white margining the eyelids, no dusky band on the loreal space as in the other species ; the back, scapulars, and rump are rich olive-green ; the breast, abdomen, lower tail-coverts, and lower wing-coverts bright yellow, excepting the sides, which are greyish-green. The wings and tail are greyish-brown, the edge of the wing yellow, the first quill narrowly margined with the same, the other primaries edged with light green.

Length to end of tail $5\frac{3}{4}$ inches, extent of wings 8 ; bill along the ridge $\frac{5\frac{1}{2}}{12}$, along the edge of lower mandible $\frac{7\frac{1}{2}}{12}$; tarsus $\frac{10}{12}$; hind toe $\frac{4}{12}$, its claw $\frac{5}{12}$; middle toe $\frac{9\frac{3}{4}}{12}$, its claw $\frac{2\frac{1}{2}}{12}$.

Adult Female. The Female resembles the male in the upper parts, but has the head of the same tint as the back ; the throat light yellow, the sides of the neck, and a broad band across its fore part, together with the sides, brownish-yellow. The yellowish-white ring round the eye is as conspicuous as in the male.

The young male and female, represented in Plate CXXXVIII, have been described with sufficient accuracy at p. 228 of Vol. II.

This species differs from the others in having the wings much longer, the tarsus shorter in relation to the middle toe, the claws much more slender and much less arched, and in the colours as above described.

These three species, which are nearly allied to *Sylvia Trichas*, and with it may constitute a distinct genus or subgenus, differ from each other much in the same degree as the Wood Wren, Willow Wren, and Chiff-chaff of Europe differ from each other. Should they be referred to the genus *Trichas*, they might be named and characterized as follows :—

Trichas agilis, WILS.

Wings long, with the first quill longest, and exceeding the first secondary by eleven-twelfths of an inch; the middle toe and claw longer than the tarsus; the tail of moderate length, nearly even, with acuminate feathers.

Male olive-green above; a ring of yellowish-white round the eye; the head, neck all round, and part of the breast ash-grey, the sides greyish-green, the rest of the lower parts bright yellow, Length $5\frac{3}{4}$ inches, extent of wings 8.

Female olive-green above, yellow beneath, the sides of the neck and a band across the breast tinged with brown.

Trichas Macgillivrayi, AUD.

Wings short, the second quill longest, the fourth longer than the first, the tail long, considerably rounded, its feathers rounded; the tarsus longer than the middle toe and claw.

Male olive-green above, the head, hind part and sides of the neck bluish-grey; the fore neck and part of the breast greyish-black, lunulated with greyish-white; a black loreal band; a conspicuous white spot on each eyelid; the lower parts bright yellow. Length $5\frac{1}{4}$ inches.

Female olive-green above, yellow beneath, the sides of the neck and a band across the breast ash-grey.

Trichas Philadelphia, WILS.

Wings of moderate length, with the second quill longest, the fourth shorter than the first; the tail long, considerably rounded, its feathers scarcely pointed; the tarsus longer than the middle toe and claw.

Male olive-green above; the head, hind part and sides of the neck bluish-grey; the fore neck and part of the breast deep black, lunulated with white; a blackish loreal band, margins of eyelids dusky-grey, the lower parts bright yellow. Length 5 inches, extent of wings 8.

Female olive-green above, yellow beneath, the sides of the neck and a band across the breast ash-grey, the throat yellowish-white.

ARKANSAW SISKIN.

FRINGILLA PSALTRIA, SAY.

PLATE CCCC. MALE.

THIS pretty little species first added to our Fauna by THOMAS SAY, who procured it in the course of Colonel LONG's expedition to the Rocky Mountains, visits the lower parts of Louisiana at irregular periods, although always during winter. I have procured individuals a few miles from Bayou Sara. They fly loosely together, alight after performing some evolutions, made as if to ascertain the absence of danger, and, as soon as they are on the trees or on the ground, proceed to search for food. The only notes I heard them utter, somewhat resembled those of *Fringilla tristis*, the American Goldfinch. They are impatient birds, and seldom remain long in the same spot, but change to and fro in the same locality. No individuals of this species were observed by NUTTALL or TOWNSEND in the course of their journey to and across the Rocky Mountains. My figure is that of an old male drawn at Bayou Sara.

ARKANSAW SISKIN, *FRINGILLA PSALTRIA*, Say, in Long's Expedition, vol. ii. p. 40.

—*Ch. Bonaparte*, Amer. Ornith. vol. i. p. 54, pl. 6, fig. 3.

FRINGILLA PSALTRIA, *Ch. Bonaparte*, Synopsis of Birds of United States, p. 111.

ARKANSAS SISKIN, *Nuttall*, Manual, vol. ii. p. 510.

Adult Male. Plate CCCC. Fig. 1.

Bill short, conical, stout, compressed toward the end, the tip acute ; upper mandible with the dorsal line somewhat convex, the ridge indistinct, the sides rounded, the edges sharp, declinate at the base, the tip narrow ; lower mandible with the angle very short and semicircular, the dorsal line straight, the sides convex, the edges inflected, the tip acute. Nostrils basal, round, concealed by the feathers.

Head rather large, broadly ovate ; neck short ; body moderate. Feet of moderate size ; tarsus rather short, compressed, with seven anterior scutella, and two plates behind meeting so as to form a very sharp edge ; toes rather large, the lateral equal, the first stouter ; claws ra-

ther long, moderately arched, much compressed, laterally grooved, very acute.

Plumage very soft and blended; short stiffish feathers at the base of the bill. Wings rather long, little concave; the second, third, and fourth primaries cut out toward the end; the second longest, the first half a twelfth shorter, the third scarcely a quarter of a twelfth shorter than the second, and exceeding the fourth by a twelfth and a half, the next four and a quarter twelfths shorter; some of the inner primaries and most of the secondaries distinctly emarginate. Tail rather short, deeply emarginate, the feathers obliquely pointed and divaricate.

Bill flesh-coloured, the upper mandible dusky toward the end. Feet and claws reddish-brown. The upper part of the head is deep black; the hind neck, back, and scapulars yellowish-green, each feather greenish-brown in the centre; the rump greenish-yellow, the upper tail-coverts dusky, margined with greenish-yellow, as are the smaller wing-coverts. The other coverts and quills are black; the secondary-coverts broadly tipped with pale yellow, which forms a conspicuous band across the wing; the quills are margined with yellowish-white, the inner more broadly; all the quills, the outer three, and the inner secondaries excepted, are white toward the base. The tail is brownish-black, the feathers narrowly edged with brownish-white, and all, excepting the two middle and the lateral, with a white space at the base, which runs out along the outer margin forming a conspicuous patch. All the lower parts are bright-yellow, but the cheeks and the sides of the neck are tinged with green, and the feathers of the chin are blackish in the centre.

Length to end of tail $4\frac{1}{2}$ inches; extent of wings 8; bill along the ridge $\frac{4\frac{1}{2}}{1\frac{1}{2}}$, along the edge of lower mandible $\frac{5\frac{1}{2}}{1\frac{1}{2}}$; wing from flexure $2\frac{1}{1\frac{1}{2}}$; tail 2; tarsus $\frac{7}{1\frac{1}{2}}$; hind toe $\frac{4}{1\frac{1}{2}}$, its claw $\frac{3\frac{1}{2}}{1\frac{1}{2}}$; middle toe $\frac{6\frac{1}{2}}{1\frac{1}{2}}$, its claw $\frac{3}{1\frac{1}{2}}$.

The Female is similar to the male, but wants the black patch on the head, that part being green like the back.

MEALY REDPOLL.

FRINGILLA BOREALIS, TEMM.

PLATE CCCC. MALE.

WHILST in Newfoundland, I procured four specimens of this curious bird, all of which were shot while feeding on the berries of the Summer Apple. It was in the month of August, and I well remember the pleasure I felt when at the same moment several Indian boys approached and offered me their waterproof bark baskets filled with those delightful berries equally pleasing to my taste and that of the Mealy Redpoll. One of the birds appeared to me to be an adult, but to have already changed its spring livery for the plainer one exhibited in the Plate. The others were evidently younger, as none of them shewed the least appearance on the forehead, checks, breast or rump, of the red colour that existed on the same parts of what perhaps was their parent.

In their habits I could see no difference between them and the Common Redpoll; but their notes, although in some degree similar, as is usually the case in all birds of the same family, differed sufficiently to induce me to believe that this mealy-coloured bird is quite distinct from the species above mentioned, although very nearly allied to it. I wish it were in my power to describe this difference of modulation, which seems to me still vibrating in my ear; but I cannot, and therefore must be content with assuring you, that the notes of the two birds are as nearly the same, and yet as distinct, as those of the American Goldfinch, *Fringilla tristis*, and the European bird of the same name, *Fringilla Carduelis*.

Removing from one spot to another with the peculiar activity and capriciousness of the Linnet family, they would fly from one portion to another of the wild natural meadow on which I watched them nearly an hour before I shot them, alight here and there, peck at the berries a few moments, and suddenly, as if affrighted, rise, perform various wide and circling flights, in deep undulations, and at once alighting repose for a short while.

Like Titmice, and often with downward inclined head, they fed,

chatted to each other, and then resting for an instant plumed themselves. These occupations they would have continued much longer had not the trigger of my gun been touched at a favourable moment, on which I walked to the spot and picked up the little flock, all of them having been killed at one shot.

I and my party had procured a good number of Common Redpolls in the rugged country of Labrador, but not a single bird of this species; which yet removes during winter to our middle districts. A specimen in my possession was procured near Moorestown in the State of New Jersey by my valued friend EDWARD HARRIS, Esq. and I have seen several others that were obtained near Baltimore in Maryland.

That the Mealy Redpoll becomes a richly coloured bird at the approach of the breeding season I feel quite confident, and I will now venture to give you some idea of its appearance at that happy period of its life. Then, I would say, the cheeks and the whole under part of the body, excepting a large black patch on the throat, are of a rich carmine, as is the rump. The spots seen on the sides of the breast, and along the lower parts of the body, almost to the femorals, disappear, and the upper parts, or the shoulders and back, become almost of a uniform rich brown, as those parts are in the Common Linnet of Europe.

The present species is rather larger than the Common Redpoll. The colour of its bill even during winter, differs in being of a rich yellow, and its legs, feet, and claws at that season are pure black, instead of reddish-brown.

On two occasions I have seen the Mealy Redpoll associated with the American Siskin, in the beginning of October in the province of New Brunswick. They were then feeding on the seeds of neglected sun-flowers.

GROS-BEC BOREAL, FRINGILLA BOREALIS, *Temminck*, Manuel d'Ornithologie, part iii. p. 264.

Adult Male. Plate CCCC. Fig. 2.

Bill short, strong, conical, much compressed toward the end extremely acute; upper mandible with the dorsal line straight, the ridge narrow, the sides convex, the edges sharp and overlapping, without notch, the tip acuminate; lower mandible with the angle short and se-

micircular, the dorsal line straight, the ridge narrow, the sides convex, the edges sharp and inflected, the tip very acute. Nostrils basal, roundish, covered by stiffish reversed feathers.

Head of moderate size, roundish ; neck short ; body moderate. Feet of moderate length, rather slender ; tarsus short, compressed, anteriorly covered with a few scutella, of which the upper are blended, posteriorly with two longitudinal plates meeting at a very acute angle ; toes rather stout, the first with its claw as long as the third with its claw ; the lateral toes equal ; claws large, moderately arched, much compressed, acute.

Plumage soft, blended. Wings rather long ; the first three quills almost equal, but the second longest ; the second, third, and fourth, cut out on the outer web toward the end ; the outer secondaries emarginate. Tail rather long, deeply emarginate or forked, the middle feathers being half an inch shorter than the outer.

Bill yellow, with the ridge of the upper mandible dusky ; iris brown ; feet and claws black. The upper part of the head crimson, the feathers of the cheeks, sides of the body and hind part of the rump pale carmine. A band edging the fore head, the loreal space, and the throat, black. The upper parts are dusky, streaked with brownish-white, the margins of the feathers being of the latter colour, and the former gradually disappearing on the hind part of the back and rump, which are nearly white, tinged with rose-colour ; the lower parts greyish-white, the sides streaked with dusky. The wings and tail are dusky, with greyish-white edges, and two transverse bands of the same on the tips of the first row of small coverts and the secondary coverts.

Length to end of tail $5\frac{1}{4}$ inches ; extent of wings 9 ; bill along the ridge $\frac{5}{12}$; wing from flexure $3\frac{2}{12}$; tail $2\frac{5}{12}$; tarsus $\frac{7}{12}$; hind toe $\frac{3\frac{1}{2}}{12}$, its claw $\frac{4\frac{1}{2}}{12}$; third toe $\frac{4}{12}$, its claw $\frac{3\frac{1}{2}}{12}$.

The Female, which is somewhat less, has the black of the forehead and throat tinged with brown, the crimson patch on the head of less extent, the sides and rump destitute of red.

LOUISIANA TANAGER.

TANAGRA LUDOVICIANA, WILS.

PLATE CCCC. Fig 3. FEMALE.

Two figures of the male of this species you have seen in Plate CCCLIV, since the publication of which I have received a fine specimen of the female, accompanied by a note from Dr TOWNSEND, in which he says that "this handsome bird is called *Ik kok koot* by the Chinook Indians. It is rare on the banks of the Platte, but rather common in the woods and oak groves of the Columbia. None were seen after leaving the Black Hills, until we reached the lower country. Its voice is generally harsh, being a low and guttural *churr*, but it at times sings with considerable spirit. The female is very silent and retired in her habits, and is therefore seldom seen."

The Female here represented has already been described at p. 387 of vol. iv.

TOWNSEND'S BUNTING.

EMBERIZA TOWNSENDI.

PLATE CCCC. Fig. 4.

Of this species only a single specimen has yet been found, which was lent to me by Dr TOWNSEND to be figured and described. Nothing is known of its habits. You will find a description of this bird at p. 183 of vol. ii.

PAINTED BUNTING.

EMBERIZA PICTA, SWAINSON.

PLATE CCCC. Fig. 5.

THIS handsome species was discovered by Dr RICHARDSON in April 1827, on the banks of the Saskatchewan River, associated with the Lapland Longspur. Only one specimen was procured at Carlton House, which has been figured by Mr SWAINSON in the *Fauna Boreali-Americana*. My own figure of this species was drawn from the same specimen, which was kindly lent to me for that purpose by the Council of the Zoological Society. That the Painted Bunting at times retires far southward, probably accompanying the Lapland Longspur, is a fact for which I can vouch, having seen one on the shore of the Mississippi in December 1820, which however I missed on wing after having viewed it about two minutes, as it lay flat on the ground.

EMBERIZA (PLECTROPHANES) PICTA, PAINTED BUNTING, *Richards. and Swains.*
Fauna Bor.-Amer. vol. ii. p. 250.

PAINTED BUNTING, *Nuttall*, *Manual*, vol. ii. p. 589.

Adult Male. Plate CCCC. Fig. 5.

Bill short, conical, stout, compressed toward the end, acuminate; its outlines straight, the lower mandible a little narrower than the upper at the base; the gape-line straight, slightly deflected at the base. Nostrils basal, rounded, partly concealed by the feathers.

Head of moderate size, ovate; neck short, body compact. Feet of ordinary length; tarsus compressed, anteriorly covered with seven large scutella, sharp behind; toes of moderate size; the lateral toes equal, the hind toe stout; claws long, slightly arched, laterally grooved, compressed, very acute, that of the hind toe much elongated.

Plumage soft and blended, the feathers somewhat distinct on the back and wings. Wing long, pointed, the second quill longest, the first nearly equal; the second, third, and fourth primaries attenuated on the outer web toward the end. Tail rather long, deeply emarginate.

Bill dusky, lower mandible yellow toward the base. Feet and claws reddish-brown. The upper part and sides of the head are deep black, with three bands of white on each side, one extending from the base of the upper mandible, over the eye, and along the side of the neck : another passing under the eye and over the ear ; the third bordering the throat. There is also a brownish-white patch on the nape. A band across the hind neck and fore part of the back, and all the lower parts buffy-orange. The feathers on the upper parts of the body, blackish-brown, edged with light brown ; the quills, and their coverts brownish-black, edged with pale brownish-red ; the first row of large coverts black, margined with white, the next two rows white, the rest of the small coverts brownish-black. The tail-feathers are brownish-black, margined with pale greyish-brown, excepting the two outer on each side, which are white, margined externally towards the tips, and along the inner webs, with brown.

Length to end of tail $6\frac{2}{12}$ inches ; bill along the ridge $\frac{5\frac{1}{2}}{12}$; wing from flexure $3\frac{1}{4}$; tail $2\frac{1}{4}$; tarsus $\frac{10\frac{3}{4}}{12}$; hind toe $\frac{3\frac{3}{4}}{12}$, its claw $\frac{6}{12}$; middle toe $\frac{7}{12}$, its claw $\frac{5}{12}$.

RED-BREASTED MERGANSER.

MERGUS SERRATOR, LINN.

PLATE CCCCI. MALE AND FEMALE.

THE range of the Red-breasted Merganser is of vast extent. In North America I have found it pretty generally dispersed during winter and even to a late period in spring, from the Texas to Labrador ; and in the Fauna Boreali-Americana Mr SWAINSON describes a male killed on the Saskatchewan. No date is mentioned, nor is any thing said as to its habits, which would lead me to believe that it must be a rare bird in the Fur Countries. It is found on the western coast however, and has been shot not far from the mouth of the Columbia River by a gentleman of Boston engaged in the fur-trade, and who is well acquainted with the water-birds of our country. In winter it is to be met with throughout the Union, on almost every unfrozen stream ;

but when the cold increases so as to close the waters it removes southward until it finds a suitable place.

This species is by choice mostly dependent on fresh water for its sustenance; but when the winters are very severe it throws itself into the salt lagoons or bays, and there seeks for prey to which it is not well accustomed, and which is rather more difficult to be overtaken, than that which is confined in the narrow mountain-streams for which it shews a natural predilection greater than even that of the Goosander, *Mergus Merganser*. It breeds in many parts of our Middle and Eastern States, and on two occasions I have found the female in charge of her brood in the lower parts of Kentucky. In the States of New York, Massachusetts and Maine it is by no means a rare occurrence to meet with the nest of this bird along the borders of small secluded lakes. It is as common at this season in the British provinces of New Brunswick and Nova Scotia, and it is still more plentiful on the islands of the Gulf of St Lawrence, as well as on the streams of Newfoundland and Labrador.

The Red-breasted Merganser is best known throughout the United States by the name of "Shell-drake." It is, like all the species of its tribe, a most expert diver, and on being fired at with a flint-locked gun generally escapes by disappearing before the shot reaches the place where it has been. Its flight is similar to that of the Goosander, being strong, rapid, and remarkably well sustained when it is travelling to a considerable distance. Gluttonous in the extreme, it frequently gorges itself so as to be unable to rise. I have several times seen one of them obliged to eject a great part of the contents of its stomach and gullet before it could fly off, and some which I have kept a day or two in confinement have died in consequence of swallowing too many fishes.

The "Shell Drake," according to the latitude of the place which it has selected, and the degree of forwardness of the season, begins to form its nest from the first of March until the middle of May. Some nests which I examined in Labrador had not their full complement of eggs until about the 20th of June. In that country, as well as in several parts of the United States, where I have found the nests, they were placed within a very short distance of the margins of fresh-water ponds, among rank grasses and sedges, or beneath the low bushes. The nest bears a great resemblance to that of the Eider Duck, but is a good

deal smaller, and better fashioned. It is made of dry weeds and mosses of various kinds, and is warmly lined with down from the breast of the female bird, for the male leaves her as soon as she has completed the laying of the eggs, the number of which I have never found to exceed ten, they being more frequently six or eight. It is a very remarkable fact that the eggs in this family of birds are usually even in number, whereas in most land birds they are odd. The eggs of the Red-breasted Merganser measure two and a half inches in length, an inch and five-eighths in breadth, resemble in form those of the domestic fowl, and are of a uniform plain dull yellowish cream-colour.

When one approaches the nest, the female usually slides or runs off a few paces, and then takes to wing. I have never observed the paths to the nests which some authors have described, and cannot well imagine why there should be any such, as this bird is capable of taking flight as readily as any with which I am acquainted. It uses the greatest precaution in retiring to the nest; and on more occasions than one I have remained well concealed at a short distance for upwards of an hour before the bird came back to her eggs. Perhaps this may tend to shew that there is less necessity for keeping the eggs warm, even when they are about to be hatched, in this than in other species, which are known to resume incubation as soon as possible.

The young betake themselves to the water a few hours after birth, and are from the first so expert at diving as to be procurable only with great difficulty. Indeed, when they are about a fortnight old, they move with astonishing rapidity, whether on the surface, where they run with almost the speed of a greyhound, or in the water itself, in which they shew themselves as much at home as if they were seals or otters. The only means of catching them that I have found successful is to throw stones at them, whenever they rise, until becoming fatigued, they make for the shore, where they stretch themselves out and remain quite still, so that you may go up to them and take them with the hand.

At the approach of autumn they resemble the old females; but the sexes can easily be distinguished by examining the unguis or extremity of the upper mandible, which will be found to be white or whitish in the males, and red or reddish in the females. The young males begin to assume the spring dress in the beginning of February, but they do not acquire their full size and beauty until the second year.

The Red-breasted Merganser is a shy bird. The males especially are extremely suspicious and vigilant, after they have left the females incubating, and when they congregate in flocks of from five to twenty on some sequestered clear stream, to renew their plumage. The moult is completed in the end of July or beginning of August, and at that season I had the greatest difficulty in procuring them, for, being then almost unable to rise from the water, they seemed to dive with an alertness proportionally greater.

The flesh of this bird is tough, and has a fishy taste. I have represented a male and a female, along with a new species of *Sarracenia*, which is found abundantly from Pensacola to Georgia, as well as in some parts of South Carolina.

MERGUS SERRATOR, *Linn. Syst. Nat.* vol. i. p. 203.—*Lath. Ind. Ornith.* vol. ii. p. 329.

—*Ch. Bonaparte*, Synopsis of Birds of United States, p. 397.

RED-BREASTED MERGANSER, MERGUS SERRATOR, *Wils. Amer. Ornith.* vol. viii. p. 91, pl. 69, fig. 2., male.

MERGUS SERRATOR, RED-BREASTED MERGANSER, *Richards. and Swains. Fauna Bor.-Amer.* vol. ii. p. 462.

RED-BREASTED MERGANSER, *Nuttall*, Manual, vol. ii. p. 463.

Adult Male. Plate CCCCI. Fig. 1.

Bill about the length of the head, straight, strong, tapering, higher than broad at the base, nearly cylindrical toward the end. Upper mandible with the dorsal outline sloping gently to the middle, then straight, along the unguis suddenly decurved; the ridge flattened at the base, and gradually becoming convex; the sides sloping rapidly at the base, convex toward the end, the edges serrated beneath; the unguis oblong, much curved, abruptly rounded at the end. Nasal groove elongated; nostrils subbasal, linear, direct, pervious. Lower mandible with the angle very narrow, and extended to the unguis, which is obovate; the sides nearly erect in their outer half, with a long narrow groove, the edges serrate within.

Head rather large, compressed, oblong. Neck rather long and somewhat slender. Body full, depressed. Feet placed far behind, short, stout; tibia bare for about a quarter of an inch; tarsus very short, compressed, anteriorly covered with small scutella, and another row on the lower half externally, the sides reticulated, the hind part thin edged. Hind toe very small, with an inferior free membrane; anterior toes

half as long again as the tarsus ; second shorter than fourth, which is almost as long as the third, all connected by reticulated webs, which are deeply concave at the margin ; the outer toe slightly margined, the inner with a broad marginal membrane. Claws rather small, very slightly arched, compressed, acute, that of the middle toe with a thin inner edge.

Plumage moderately full, dense, soft, glossy. Feathers of the head and upper part of the neck somewhat silky, blended, very narrow, elongated along the median line, so as to form a very conspicuous erectile crest, divided into two parts, those below the upper occipital region and the nape being shorter, leaving two long tufts. Feathers of the back rather compact, of the lower parts blended. Wings short, of moderate breadth, convex, acute ; primaries narrow, tapering, the first longest, the second only half a twelfth shorter, the rest rapidly graduated ; secondaries rather short, narrow, rounded, the inner elongated and tapering. Tail short, much rounded, of eighteen rounded, sub-acuminate feathers.

Bill deep carmine, dusky along the ridge, the unguis yellowish. Iris carmine. Feet bright red, claws greyish-yellow. Head and upper part of neck greenish-black, glossy, with bright green reflections along the sides, and purplish on the crest. On the middle of the neck is a broad ring of white ; and on its lower part a broad band of light brownish-red, longitudinally streaked with dusky, each feather being laterally margined with that colour. The lower parts are pure white, excepting the sides of the body and rump, which are transversely undulated with greyish-black, and the larger wing-coverts, which are ash-grey. The fore part of the back, and the inner scapulars, are deep black ; the feathers at the shoulder, or anterior to the wing white, with a broad margin of black ; some of the anterior wing-coverts ash-grey ; the other small wing-coverts, the outer scapulars, and the terminal half of the secondary coverts, pure white ; the basal portion of the latter, the primary coverts, and primary quills, black, the latter tinged with brownish-grey ; the secondaries white, with their base and the outer margin of most black, which colour predominates on the inner. The middle and hind part of the back ash-grey, undulated with white and dusky ; the tail brownish-grey.

Length to end of tail $24\frac{1}{2}$ inches ; to end of wings $22\frac{1}{2}$; to end of claws $25\frac{1}{2}$; extent of wings 33 ; bill along the ridge $2\frac{5}{12}$; wing from

flexure $9\frac{1}{2}$; tail $3\frac{6}{12}$; tarsus $1\frac{7}{12}$; hind toe $\frac{7\frac{1}{2}}{12}$, its claw $\frac{2}{12}$; inner toe $1\frac{10\frac{1}{2}}{12}$, its claw $\frac{4\frac{1}{2}}{12}$; middle toe $2\frac{4}{12}$, its claw $\frac{4\frac{1}{2}}{12}$; outer toe $2\frac{5}{12}$, its claw $\frac{3\frac{1}{2}}{12}$.
Weight 2 lb. 8 oz.

Adult Female. Plate CCCC. Fig. 2.

The Female, which is of about the same size, differs in having the crest shorter, and in wanting the broad abruptly-terminated feathers anterior to the wing. The bill and feet are of a paler tint; the head and fore part of the neck light reddish-brown, the throat and all the under parts white, excepting the sides of the body and rump, and the larger wing-coverts, which are brownish-grey. The hind neck, back, tail-coverts, tail, scapulars, and wing-coverts are brownish-grey, the feathers margined with paler. The wings are greyish-black, with a large white patch, formed by the terminal portions of the secondary coverts, and the greater part of some of the outer secondaries.

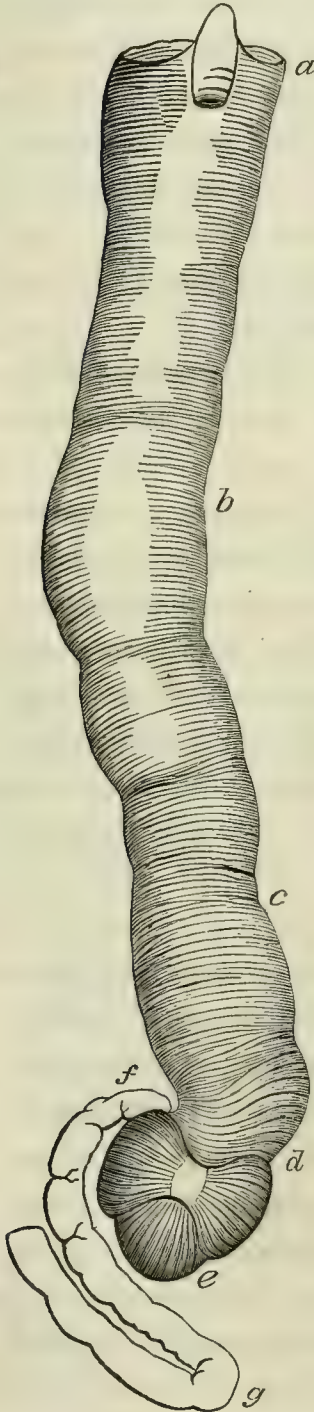
Length to end of tail 24 inches, to end of claws $24\frac{3}{4}$; extent of wings $34\frac{1}{2}$, bill along the ridge $2\frac{2}{12}$; wing from flexure $9\frac{1}{2}$; tail $3\frac{1}{2}$. Weight 2 lb. 13 oz.

The young of both sexes when fully fledged resemble the female. The males assume the plumage of the adult at their second moult. When about a fortnight old, the young, such as I found them in Labrador, are entirely covered with soft down, which is dusky reddish-brown on the head and hind neck, greyish-brown on the back, with three white patches on each side, one terminating the wing, another a little behind it, the third, which is larger, behind the leg. The lower parts greyish-white; a white band from the eye to the bill, a reddish-brown band under the eye and along the side of the neck.

An adult male examined. The roof of the mouth is flat, with a median prominent line; the upper mandible with about 35 conical, compressed, recurved, tooth-like lamellæ on each side; the lower with about 60. The aperture of the mouth is dilatible to $1\frac{1}{2}$ inch, but in its ordinary state measures only 9 twelfths across. The tongue is narrow, tapering, 1 inch 8 twelfths long, with numerous papillæ at the base, and lateral series of recurved bristles. The aperture of the ear, as in all the diving piscivorous birds, is extremely small, being only $\frac{1}{2}$ twelfth in diameter, and in this respect resembling that of the Seals

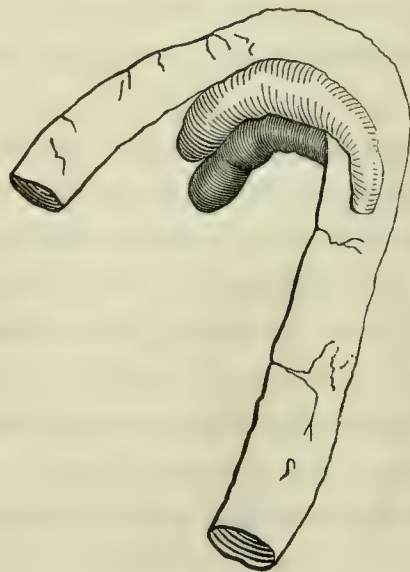
among the Mammalia. This kind of ear forms the extreme contrast to that of the nocturnal rapacious land birds. In the Ducks and Geese it is also small, but much superior in size to that of the Mergansers. The œsophagus, *a b c d*, is twelve inches long, its diameter at the upper part $1\frac{1}{2}$ inch, farther down 1 inch and 7 twelfths, within the thorax 1 inch 4 twelfths, at the proventriculus $1\frac{1}{2}$ inch. It is thus extremely

Fig. 1.



wide, like that of other diving piscivorous birds. The stomach, *d e*, is roundish, of moderate size, 1 inch 8 twelfths in length, 1 inch 11 twelfths in breadth. Its lateral muscles are of moderate thickness, its epithelium tough, with two grinding surfaces of a roundish form, and thus resembling that of Ducks. The contents of the stomach are remains of fishes and a great quantity of gravel. The inner surface of the œsophagus is very smooth when extended, plicate when contracted, with longitudinal series of mucous crypts with wide apertures, which become more numerous and close toward the proventriculus. The glandules of the latter organ are irregularly distributed, forming a belt $1\frac{1}{2}$ inch in breadth. They are cylindri-

Fig. 2.



cal, the largest being $\frac{1}{4}$ inch long, and $1\frac{1}{2}$ twelfth broad. The duodenum, *fg*, has a diameter of $7\frac{1}{2}$ twelfths, but beyond its curve contracts to $3\frac{1}{2}$ twelfths. The intestine is convoluted into numerous folds; its length is 5 feet 2 inches, its diameter about 3 twelfths; but that of the rectum $4\frac{1}{2}$ twelfths. The cœca, Fig. 2, which come off at the distance of 4 inches from the extremity, are 11 twelfths long, $2\frac{1}{2}$ twelfths in their greatest diameter, and obtuse at their extremity.

The trachea is $11\frac{1}{2}$ inches long, and is remarkable for a large dilatation above the middle, 2 inches in length and 11 twelfths in breadth, below which the tube becomes $\frac{1}{4}$ inch in diameter, afterwards enlarges to $4\frac{1}{2}$ twelfths, then continues 4 twelfths, and ends in an enormous dilatation of an irregular form, of which the greatest diameter is 2 inches. It is composed of a bony frame, with two lateral membranous spaces. The rings of the trachea, 152 in number, are broad and firmly ossified, but about 30 at the lower part are very narrow in their anterior half; about ten are incorporated with the dilatation; the contractor muscles are very large, expand over the sides of the dilated part, and continue downwards, becoming narrower, and ending at the commencement of the tympanum. There is a pair of very large cleido-tracheal muscles, and another of sterno-tracheal; but there are no inferior laryngeal muscles properly so called, the slip from the contractor ending without reaching the last ring. The bronchi come off at the distance of 9 twelfths from each other, and are short, but wide, and composed of about 20 half rings.

In the trachea of a female, which is of a nearly uniform diameter throughout, the number of rings is 150, with 10 united rings, 5 of which extend beyond the bone of divarication, forming the lower larynx, which has no remarkable dilatation. The bronchial half rings are 20.

BLACK-THROATED GUILLEMOT.

URIA ANTIQUA.

PLATE CCCCII. ADULT AND YOUNG.

THIS species, which is said to occur on the north-west coast of America, has not been met with by me. The figures in the plate were taken from specimens in the Museum of the Zoological Society of London, by permission of the Council.

ALCA ANTIQUA, *Gmel. Syst. Nat. vol. i. p. 554.*—*Lath. Ind. Ornith. vol. ii. p. 795.*

Adult. Plate CCCCII. Fig. 1.

Bill shorter than the head, stout, straightish, compressed toward the end; upper mandible with the dorsal line declinate and convex, the sides sloping, the edges sharp and overlapping, the tip rather obtuse; lower mandible with the angle long and rather wide, the dorsal outline ascending, straight, the sides sloping outwards and flattened, the edges thin and direct, the tip acute with a slight sinus behind.

Body full and compact; neck short and thick; head rather large, ovate. Feet short, stout, placed far behind; tibia bare for a short space; tarsus very short, compressed, covered anteriorly with oblique scutella, behind with angular scales; hind toe wanting; anterior toes scutellate, of moderate length, connected by emarginate webs, the inner toe much shorter than the outer, which is nearly as long as the middle. Claws rather small, moderately arched, compressed, rather acute.

Plumage dense, blended, glossy. Wings of moderate length, narrow, pointed; primaries tapering, the first longest, the rest rapidly graduated, secondaries rounded. Tail very short, rounded.

Bill and feet yellow, claws dusky. The head and upper part of the neck are black, excepting a band of white elongated linear feathers, beginning over the eye and extending down the hind part of the neck, and a broad band of white commencing behind the ear and curving forwards, to join the white which is the general colour of the lower

parts, with the exception of the flanks, which are black. All the upper parts also are greyish-black.

Length to end of tail $10\frac{1}{2}$ inches; bill along the ridge $7\frac{1}{2}$; along the edge of lower mandible $1\frac{9}{12}$; wing from flexure $5\frac{9}{12}$; tail $1\frac{1}{2}$; tarsus $1\frac{1}{4}$; middle toe $1\frac{9}{12}$, its claw $\frac{4}{12}$.

Young fully fledged. Plate CCCII. Fig. 2. *beamontis*

The young bird has the bill black, the feet dusky, the upper parts blackish-grey, each feather black in the centre, the lower greyish-yellow, transversely barred with dusky, the tail broadly tipped with white.

KNOBBED-BILLED PHALERIS.

PHALERIS NODIROSTRIS, BONAP. *nodirostris*

PLATE CCCII. ADULT.

THIS bird, which at first sight bears a considerable resemblance to the Little Guillemot, *Uria Alle*, I have also represented from a specimen belonging to the Zoological Society of London. The following description, however, is taken from one in my own possession. The species is said to occur on the north-west coast.

Adult. Plate CCCII. Fig. 3.

Bill shorter than the head, stout, quadrangular at the base; upper mandible with a roundish, compressed, decurved knob on its ridge, between the nostrils, beyond which the outline is deflected and convex, the sides sloping, the edges sharp and overlapping, with a sinus behind the small rather obtuse tip; nostrils linear-oblong, operculate, basal, near the margin; lower mandible with the angle rather long, the dorsal line ascending and slightly convex, the sides sloping outwards and flat, the edges directed outwards, thin, the tip *acute*, with a slight sinus behind.

Body full and compact; neck short and thick; head rather large, ovate. Feet short, stout, placed far behind; tibia bare for two-twelfths

of an inch ; tarsus very short, compressed, covered anteriorly with oblique scutella ; hind toe wanting ; anterior toes united by emarginate webs ; the inner toe considerably shorter than the outer, which is nearly as long as the middle. Claws rather small, moderately arched, compressed, rather acute.

Plumage dense, blended, glossy above. Wings of moderate length, narrow, pointed ; primaries tapering, the first longest, the rest rapidly graduated ; secondaries rounded. Tail very short, rounded, of fourteen feathers.

Bill orange-red, with its base, including the knob, greyish-blue ; feet dusky grey, claws brownish-black. The general colour of the upper parts is brownish-black ; the fore part and sides of the head streaked with linear, acuminate, elongated, white feathers ; the tips of the secondaries also white. The cheeks and a small portion of the throat at the base of the bill, are dusky ; the lower parts white, mottled with dusky, the tips of the feathers being of that colour.

Length to end of tail 6 inches ; bill along the ridge $\frac{5}{12}$, excluding the outline of the knob, which is $\frac{1\frac{1}{2}}{12}$ in height, and about the same length, along the edge of lower mandible $\frac{7}{12}$; wing from flexure 4 ; tail $1\frac{1}{4}$; tarsus $\frac{9}{12}$; inner toe $\frac{7}{12}$, its claw $\frac{5}{12}$; middle toe $\frac{10}{12}$, its claw $\frac{3\frac{1}{2}}{12}$; outer toe $\frac{10}{12}$, its claw $\frac{2}{12}$.

CURLED-CRESTED PHALERIS.

PHALERIS CRISTATELLA, GMEL.

PLATE CCCCII. ADULT.

My drawing of this singular bird, which also belongs to the north-west coast, was taken from a specimen in the Museum of the Zoological Society. Since then I procured one for description, from Mr LEADBEATER.

Bill shorter than the head, stout, straightish, broad at the base, compressed toward the end. Upper mandible with a prominent basal rim as in the Puffins, its dorsal outline convex and declinate, the sides sloping, a prominent line descending from the base of the ridge to the anterior part of the nostril, which is linear-oblong, and near the margin, besides which there are several faint grooves; at the base is a somewhat triangular horny plate detached from the rest of the mandible, of which latter the margin is very convex behind the nostrils, then ascends, forms a slight festoon before them, and finally a deep sinus behind the decurved, narrow, but rather obtuse tip. Lower mandible with the angle rather long and wide, the dorsal line ascending and a little convex, the sides sloping outwards, a ridge passing obliquely from behind the angle to near the tip, the edge sinuate in correspondence with that of the upper, the tip *truncate*.

Body full and compact; neck short and thick; head rather large, ovate. Feet short, placed far behind; tibia bare for a quarter of an inch; tarsus very short, much compressed, anteriorly with small oblique scutella, the rest reticulate; hind toe wanting; anterior toes scutellate, connected by emarginate webs; the inner toe much shorter than the outer, which is of the same length as the middle, claws rather stout, moderately arched, compressed, rather obtuse; on the anterior part of the forehead is a tuft of about twenty linear recurved feathers, of which the longest measures $2\frac{1}{4}$ inches.

Plumage dense, blended, glossy. Wings of moderate length, narrow, pointed; primaries incurved, tapering, the first longest, the rest rapidly graduated; secondaries rounded. Tail very short, rounded, of fourteen rounded feathers.

Bill orange; feet greyish-blue. The general colour of the upper parts is brownish-black, of the lower deep purplish-grey. There is a short line of elongated linear acuminate white feathers, commencing under the eye, and proceeding along the side of the neck.

Length to end of tail 10 inches; bill along the ridge $\frac{7}{12}$, along the edge of lower mandible 1; wing from flexure $6\frac{9}{12}$; tail $1\frac{7}{12}$; tarsus $1\frac{1}{12}$; inner toe $\frac{11}{12}$, its claw $\frac{3\frac{1}{2}}{12}$; middle toe $1\frac{4\frac{1}{2}}{12}$, its claw $\frac{4}{12}$; outer toe $1\frac{7}{12}$, its claw $\frac{5}{12}$.

HORNED-BILLED GUILLEMOT.

CERATORHYNCHA OCCIDENTALIS, BONAP.

PLATE CCCCII. ADULT.

OF this species, which, like all the others in the plate, is from the north-west coast of America, the figure was taken from a specimen lent to me for that purpose by the Prince of MUSIGNANO.

CERORHINCA OCCIDENTALIS, *Ch. Bonap.* Synopsis of Birds of United States, p. 428.
WESTERN CERORHINCA, *Nuttall*, Manual, vol. ii. p. 538.

Bill shorter than the head, stout, straightish, broad at the base, the mouth measuring seven-eighths of an inch across, compressed toward the end; upper mandible with an oblong compressed knob on the ridge between the nostrils, beyond which the dorsal line is declinate and decurved toward the end, the sides sloping, the edges sharp, the tip narrow, obtuse, with a distinct notch immediately behind it; the gape-line slightly arched; lower mandible with the angle long and rather wide, the dorsal outline ascending and straight, the sides sloping outwards and flattened, the edges thin and direct, the tip acute. Nostrils linear, near the margin, pervious.

Body full and compact; neck short and thick; head large, ovato-oblong. Feet short, stout, placed far behind; tibia bare for a short space; tarsus very short, anteriorly scutellate, laterally reticulate; hind toe wanting; anterior toes scutellate, of moderate length, connected by emarginate webs, the inner toe much shorter than the outer, which is nearly as long as the middle. Claws rather small, slightly arched, compressed, rather acute.

Plumage dense, blended, rather glossy on the upper parts. Wings of moderate length, narrow, pointed; primaries tapering, the first longest, the rest rapidly graduated, secondaries rounded. Tail very short, even, of sixteen elastic feathers.

Bill orange-yellow; feet greyish-yellow. The general colour of the upper parts is black, as are the cheeks, the upper part of the fore neck and its sides; the lower parts white. Two decurved white bands on the sides of the head, one commencing over the eye, the other at the

angle of the mouth, both being formed by elongated, linear, acuminate feathers. The shafts of the wing-feathers are reddish-brown above, white beneath.

Length to end of tail $15\frac{1}{2}$ inches; to end of claws $16\frac{3}{4}$; bill along the ridge $1\frac{5}{12}$, not including the outline of the knob, which is $\frac{4}{12}$ high, along the edge of lower mandible $1\frac{1}{12}$, breadth of upper mandible below the knob, $\frac{2}{8}$; wing from flexure $6\frac{1}{12}$; tarsus $1\frac{4}{12}$; inner toe $1\frac{2}{12}$, its claw $\frac{5}{12}$; middle toe $1\frac{1}{2}$, its claw $\frac{5}{12}$; outer toe $1\frac{5}{12}$, its claw $\frac{5}{12}$.

GOLDEN-EYE DUCK.

FULIGULA CLANGULA, BONAP.

PLATE CCCCIII. MALE IN SUMMER.

I HAVE been induced to give a figure of the Golden-eye in what I consider its summer plumage, because I find it figured and described by Dr RICHARDSON and Mr SWAINSON in the Fauna Boreali-Americana, under the name of "Rocky Mountain Garrot, *Clangula Barrovii*." Before offering any remarks on this alleged new species, it may be expedient to give a description from the specimen represented in the plate, which was presented to me by the Earl of DERBY, to whom it was given by a member of one of the late Arctic Expeditions. Let the reader turn to the description of the Golden-eye, at p. 322 of vol. iv.; and compare with it the following:

With regard to the form and proportions of the parts, and the structure and arrangement of the plumage, there is no difference whatever. All that is requisite to be remarked on the latter subject is, that the second primary is longest, as is the case in several specimens of that commonly called the Golden-eye. The colours are also similar, with very slight differences.

Bill black. Feet orange-yellow, webs dusky, claws black. Head and upper part of neck deep greenish-blue, changing to deep dusky purple in certain lights. Back, posterior scapulars, inner secondaries, edge of wing, alula, primary coverts, primary quills, and four outer secondaries, black, the back being darker and glossy, the wing-feathers

tinged with brown. An oblong, curved patch of white between the bill and eye, broader and rounded at its lower part, which is on a level with the rictus, becoming narrower upwards, and ending in a recurved point, which extends to five-twelfths of an inch above the level of the eye and of the base of the upper mandible. Lower part of neck all round, sides of the body anteriorly, the lower parts generally, the scapulars, excepting their margins which are black, a broad band across the wing formed by the first row of small coverts, and several of the others, of which the base only is black, and a large patch formed by the tips of some of the secondary coverts, and six of the secondary quills, pure white. These two patches of white on the wing are separated by an intervening band of black, which is not apparent in the more usual state of the bird, in which however it is seen on turning aside the tips of the smaller coverts. Axillar feathers and lower wing-coverts dusky; the elongated feathers of the sides have the inner, some of them also the outer margins, and many of them a large portion of the tip, black, that colour on those of the innermost covering the whole inner webs. The feathers on the legs, along the sides of the rump, and some under it, dusky. The tail brownish-grey.

Length to end of tail $21\frac{1}{2}$ inches; bill along the ridge $1\frac{6}{12}$, from the angle $1\frac{9}{12}$, along the edge of lower mandible 2; wing from flexure $9\frac{8}{12}$; tail 4; tarsus $1\frac{6}{12}$; hind toe $\frac{7\frac{1}{2}}{12}$; its claw $\frac{3\frac{1}{2}}{12}$, second toe 2, its claw $\frac{4}{12}$, third toe $2\frac{1}{2}$, its claw $\frac{4\frac{1}{2}}{12}$; fourth toe $2\frac{7\frac{1}{2}}{12}$, its claw $\frac{4}{12}$.

It will be perceived on comparing Plates CCCXII, and CCCIII, as well as the above description and that given at p. 324 of the fourth volume, that the only differences that can be pointed out between the Golden-eye, and what is called the Rocky Mountain Garrot, are such, referring to size, as are to be found in every species of bird; a conspicuous black band crossing the wing of the latter, which is to be seen only on raising the feathers in the former, but which not the less exists in it also; and the black tips of some of the elongated feathers on the sides, which are generally white in the ordinary state of the plumage. These however are very insignificant differences, not at all comparable to such as are found in different states of many other ducks, for example, *Fuligula glacialis*, and *F. rubida*.

In the next place, it is to be remarked that in one common Golden-eye before me, the head is all green excepting a very small portion of

the forehead, that in another it is all purple, and in a third green on the cheeks and purple on the top. Therefore it is obvious that the colour of that part cannot be taken as an unvarying specific distinction.

The authors of the *Fauna Boreali-Americana* consider the Golden-eye when it has a semilunar patch before the eye, and a black band separating the white patch on the wing, as a distinct species, differing from the Golden-eye when it has a roundish patch before the eye, and no perceptible black band on the wing; and call the bird in its former state "*Clangula Barrovii*," characterizing it as follows:—"Head and upper parts of the neck pansy-purple, with a large crescentic mark before each eye; white speculum separated from the band on the coverts by a black stripe." Now this character, in so far as regards the "pansy purple," supposing it to be universal in all crescent-spotted individuals, is not at all distinctive, because there are round-spotted individuals that have the whole head of precisely the same tint, which, however, in neither the one nor the other is "pansy" or violet purple. As to the white patch before the eye, I find it varying greatly in form and extent, being, for example, in one individual, roundish and entirely placed below the level of the eye; in another nearly rhomboidal, in a third oblong, being, as it were the original round spot elongated above and below, in a fourth, ovate, elongated backwards, but not upwards, in a fifth crescentic, and in younger birds scarcely perceptible, as is the case in the Buffel-headed Duck *Clangula Albeola* at various stages of its life.

In the length of the tarsus and toes there are no remarkable differences, and the scutella of both alleged species are the same in number and form. It is stated that in "*Clangula vulgaris*," the "bill is high at the base, narrower towards the point," and in "*Clangula Barrovii*," that it is "shorter and narrower towards the point," while the feathers of the fore head, instead of rising to a point on the ridge of the bill, as in the Golden-eye, terminate with a semicircular outline. I find no difference in the latter respect, and as to the former, I observe great differences in the breadth of the upper mandible in undoubted specimens of *Clangula vulgaris*, apparently dependent upon the degree in which the edges of the upper mandible have expanded or contracted in drying. In the measurements of the two supposed species, as given by the writers alluded to, there are no other differences than such as we find in different individuals of almost any species. Although they

have given no description of the female of the *Clangula vulgaris* for comparison, that of the female of the *C. Barrovii* agrees in all respects with the female of the former.

Finally, finding in my specimen of "*Clangula Barrovii*," that the feathers of the neck, and of the white patch before the eye, are obviously much worn, as are the tips of the smaller white wing-coverts, and the white parts of the tips of the scapulars, beyond which the black margins extend unaltered, I think it is thus, in the first place, easy to account for the appearance of the black band on the wing; and, secondly, cannot but infer that the alleged Rocky Mountain Garrot is simply the Golden Eye in its summer plumage.

It may be remarked that BRISSON'S description and figure of the "Garrot," represent it in that state in which Mr SWAINSON has considered it as constituting a distinct species.

This species is abundant on the Columbia River, where it was procured by Dr TOWNSEND, who has sent me a fine specimen of the male, having a narrow bill, an elliptical, but not crescentic, white spot, the head green, purplish above, and no black band on the wing, but the posterior lateral feathers margined and tipped with black. This specimen therefore presents a combination of the characters of both alleged species.

EARED GREBE.

PODICEPS AURITUS, LATH.

PLATE CCCCIV. ADULT AND YOUNG.

THE specimens from which my figures of this species of Grebe have been taken, were lent me by my noble and kind friend the Right Honourable the Earl of DERBY, who received them from North America, where, as I am assured, it is not uncommon, although it has not been my good fortune to meet with it.

PODICEPS AURITUS, *Lath. Ind. Ornith.* vol. ii. p. 781.

EARED DOBCHICK OR GREBE, *Nuttall, Manual*, vol. ii. p. 256.

Adult Male. Plate CCCCIV. Fig. 1.

Bill shorter than the head, as broad as high at the base, compressed and slightly recurved toward the end; upper mandible with the dorsal line straight and slightly declinate to beyond the nostrils, then direct, but slightly descending toward the tip, the ridge convex, the edge incurved, the tip acute; lower mandible with the angle long and extremely narrow, the dorsal line beyond it ascending and slightly convex, the sides sloping outwards and a little convex, the edges direct, the tip acute. Nostrils linear, basal, rather small, pervious. Gape-line almost straight, being a little recurvate.

Head of moderate size, oblong, compressed; neck long, slender; body depressed. Feet short, large, placed close to the extremity of the body; tibia feathered to within two-twelfths of an inch of the joint; tarsus extremely compressed, its anterior edge with a row of small scutella, the sides with broad scutella, beyond which are some irregular scales, the posterior edge with a double line of small prominent scales; first toe very small, with an inferior membrane, fourth longest; anterior toes scutellate, connected at the base by a membrane, and having on both sides an expanded web-like margin, marked with oblique lines, and having a crenulate edge; claws flat, that of the third toe very broad, obliquely obovate, abrupt.

Plumage very soft, blended, on the lower parts silky, on the back glossy and rather compact. Feathers on the occiput a little elongated; a tuft of very long, loose, linear feathers, on each side of the head, rising from over and behind the eye, and covering the ears. Wings small, acute; primaries much curved, the first longest, the second almost equal, the rest rapidly graduated; secondaries short, rounded. Tail a slight tuft of loose feathers.

Bill black, tinged with blue. Iris blood-red. Feet dusky grey externally, greenish-grey on the inner side. The tufts on the sides of the head are orange, anteriorly more yellow, posteriorly red; the head and upper part of the neck are deep black; the rest of the upper parts brownish-black, the wings greyish-brown, with a broad patch of white, the secondary quills being of that colour. The throat, fore part and sides of the neck are dull black, its lower part with some spots of the same; the rest of the lower parts glossy silvery-white, excepting the sides of the body and rump, which are light red.

Length to end of tail 13 inches; bill along the ridge $\frac{1}{2}$, along the

edge of lower mandible $1\frac{1}{2}$; wing from flexure $5\frac{8}{12}$; tarsus $1\frac{6\frac{1}{2}}{12}$; hind toe and claw $\frac{5\frac{1}{2}}{12}$; second toe to the end of the claw $1\frac{8}{12}$; third toe 2; fourth toe $2\frac{1}{4}$.

Young in autumn. Plate CCCCIV: Fig. 2.

In this state the tufts of the head are not developed, and the feathers of the neck are softer. The bill is greyish-blue, dusky above; the feet as in the adult. The upper parts are brownish-black, the neck tinged with grey behind; the secondary quills are white; the throat and a broad band, curving beneath the ear so as almost to meet the other on the nape, greyish-white; the neck brownish-grey all round at its upper part; the lower parts silvery-white, the sides of the body and rump tinged with dusky grey.

SEMIPALMATED SANDPIPER.

TRINGA SEMIPALMATA, WILS.

PLATE CCCCIV. ADULT.

THIS species enters the Texas early in April, in great numbers, although in small parties, some composed of young, others of old birds, and not unfrequently accompanied by *Tringa pusilla*, *Charadrius semipalmatus*, *Ch. melodus*, and *Ch. Wilsonii*. At this season it moves northward with celerity, both along the shores of the sea and those of some of our larger streams, by routes which they also follow in their retrograde migration at the approach of winter. Many, however, remain in the southern parts of the United States all summer, and I have seen numbers of them on the coasts, as well as on the Keys of Florida. There being a very remarkable difference of size in individuals of the same sex, and still more between males and females, the latter being the larger, I was induced to compare a great number of them, and in consequence have concluded that the difference depends on age, for the young of either sex are generally pretty similar as to the length of the bill and legs, during their first autumn and winter. In Labrador I shot a whole brood when just able to fly, together with several old birds, which kept apart. Among the latter I found differences as to

size and proportions enough to induce persons having nothing better than skins, to imagine that several species might be made out of them.

About the period when these birds prepare to return southward, they congregate in large flocks, the young separate from the old. In Labrador this takes place from the beginning to the middle of August. There I found this species dispersed in pairs, and having nests, early in June; but all our endeavours to procure any were fruitless, so cunningly had they disposed of them, and so effectually did they mislead us by squatting on the moss for several minutes at a time, as if sitting on their eggs. On our approaching them on such occasions, they would run or fly off to a short distance, in various directions, and renew their wiles.

I have often seen considerable flocks of this species along the shores of the Ohio and Mississippi during autumn, and have reason to believe that some are also to be found then on the Missouri. At this season, when they feed on fresh-water insects, worms, and small coleoptera, they are very fat, and afford excellent eating; which is rarely the case when they are along the sea-shores, as their food then consists of small shell-fish and marine insects, for which they are often seen probing the sands in the manner of Curlews. They are active, quarrelsome, and impatient, moving from one spot to another unexpectedly, and perhaps returning to the same place a few minutes after. On taking wing, they utter their *tweet tweet* simultaneously, and whilst on the ground emit murmuring sounds peculiar to themselves. Their flight is swift and well-sustained, and when alarmed, or previous to alighting, their evolutions through the air are very pleasing to the beholder.

SEMIPALMATED SANDPIPER, *TRINGA SEMIPALMATA*, *Wils. Amer. Ornith.* vol. vii. p. 131, pl. 63, fig. 4.

TRINGA SEMIPALMATA, *Ch. Bonap.*, *Synops. of Birds of United States*, p. 316.

SEMIPALMATED SANDPIPER, *Nuttall*, *Manual*, vol. ii. p. 136.

Bill as long the head, slender, straight, compressed, tapering from the base to near the point, which is slightly swelled, but with the tip rather acute. Upper mandible with the dorsal line straight, the ridge narrow and convex, a little broader and flattened towards the end, the sides sloping, with the nasal groove extending to near its tip; lower mandible with the angle very long and narrow, the outline straight,

towards the end slightly declinate, the sides sloping a little outwards, with a groove extending to near the tip, which is a little widened and rather obtuse.

Head of moderate size, oblong, compressed. Neck rather short. Body compact, ovate. Feet of moderate length and slender; tibia bare a fourth of its length; tarsus of moderate length, compressed, scutellate before and behind, so as to leave scarcely any intermediate space; hind toe very short and extremely slender; anterior toes rather long, slender, connected by webs of which the outer is larger and extends to opposite the second joint of the third toe, both however margining the toes to their extremity; the outer toe a little longer than the inner, and not much exceeded by the third. Claws small, much compressed, tapering, slightly arched, that of the third toe larger, with the inner edge a little dilated.

Plumage soft, blended on the neck and lower parts, somewhat compact on the upper. Wings long, pointed; primaries tapering, obtuse, the first longest, the second a twelfth and a half shorter, the rest rapidly graduated; outer secondaries incurved, obliquely pointed, inner straight, tapering, one of them reaching to nine-twelfths of an inch from the tip of the longest primary. Tail rather short, doubly emarginate, that is, with the middle feathers a quarter of an inch longer than the lateral, which are a little longer than some of the intermediate.

Bill greenish-dusky; iris hazel; feet dull yellowish-green, claws black. The upper part of the head, the cheeks, the hind part and sides of the neck, are ash-grey, streaked with dusky; on the rest of the upper parts the feathers are dusky brown, margined with pale grey, those on the rump and the upper tail-coverts blackish-brown; secondary coverts tipped with white; alula and primary coverts brownish-black, the latter tipped with white; primary quills greyish-black, with white shafts; secondary quills gradually more grey; the primaries externally edged with white toward the base, as are the outer secondaries in a fainter degree, as well as terminally, some of them also having the greater part of the inner web greyish-white. The two middle tail-feathers greyish-black on the inner web, their outer web and all the other feathers ash-grey. The anterior part of the forehead, and a band over the eye greyish-white: the lower parts of the neck and body white.

Length to end of tail $6\frac{3}{4}$ inches; to end of wings $6\frac{3}{4}$, to end of claws $7\frac{1}{8}$; extent of wings $12\frac{1}{2}$; bill along the ridge $1\frac{1}{2}$; wing from flexure 4;

tail $1\frac{8}{12}$; bare part of tibia $\frac{5}{12}$; tarsus $\frac{11}{12}$; hind toe $\frac{24}{12}$, its claw $\frac{1}{12}$; middle toe $\frac{8}{12}$, its claw $\frac{11}{12}$. Weight 1 oz.

The Female is considerably larger than the male, but otherwise similar.

In winter the upper parts are ash-grey tinged with brown, each feather with a central dusky line.

In a female preserved in spirits, the roof of the mouth is flat, with the edges a little prominent, and two medial series of reflected papillæ. The tongue is $10\frac{1}{4}$ twelfths long, slender, papillate at the base, concave above, rather obtuse and somewhat jagged at the extremity, horny in nearly its whole length. The extremity of the upper mandible is somewhat scrobiculate; the lower mandible deeply concave. The œsophagus, which is $2\frac{1}{2}$ inches in length, is very slender, being scarcely so wide as the trachea, its diameter nearly uniform, and about $1\frac{1}{4}$ twelfth. The stomach is elliptical, a little compressed, $\frac{1}{2}$ inch long, $4\frac{1}{2}$ twelfths broad, its lateral muscles moderately developed, its tendons large, the epithelium tough, longitudinally rugous, and of a reddish-brown colour. It contains particles of quartz and small seeds. The intestine, of which the diameter is generally 1 twelfth, measures 10 inches in length; and the cœca, which come off at the distance of $\frac{3}{4}$ inch from the extremity, are 1 inch long, and three-fourths of a twelfth in their greatest diameter.

The trachea, which is 1 inch $10\frac{1}{2}$ twelfths long, passes to the right side of the neck, along with the œsophagus, as in all birds destitute of crop, is considerably flattened, and varies in diameter from $1\frac{1}{4}$ twelfth to $\frac{3}{4}$ twelfth. The rings are about 98; the bronchial half rings about 15. The lateral muscles are strong, and terminate in the sterno-tracheal, at the distance of a twelfth and a half from the inferior larynx, which is destitute of any other muscle than a slender continuation of the contractor, which goes to the first bronchial ring.

TRUMPETER SWAN.

CYGNUS BUCCINATOR, RICHARDSON.

PLATE CCCCVI. ADULT.

HAVING nothing to add to what has already been said of this species in the Fourth Volume (p. 536), where the young was described, I proceed to give an account of the external form and colour of the adult.

CYGNUS BUCCINATOR, *Richardson*.

Adult Male. Plate CCCCVI.

Bill longer than the head, higher than broad at the base, depressed, and a little widened toward the end, rounded at the tip. Upper mandible with the dorsal line sloping, the ridge very broad at the base, with a large depression, narrowed between the nostrils, convex toward the end, the sides nearly erect at the base, gradually becoming more horizontal and convex toward the end, the sides soft and thin, with forty-five transverse, little elevated lamellæ internally, the unguis obovate. Lower mandible narrow, flattened, with the angle very long, rather narrow, anteriorly rounded, the sides convex, the edges erect, inclinate, with about twenty-six external lamellæ, and about seventy above, the unguis obovate-triangular. Nasal groove elliptical, subbasal, covered by the soft membrane of the bill; nostrils submedial, longitudinal, placed near the ridge, elliptical, pervious.

Head of moderate size, oblong, compressed; neck extremely long and slender; body very large, compact, depressed. Feet short, stout, placed a little behind the centre of the body; legs bare, an inch and a half above the joint; tarsus short, a little compressed, covered all round with angular scales, of which the posterior are extremely small. Hind toe extremely small, with a very narrow membrane; third toe longest, fourth very little shorter, second considerably shorter; anterior toes covered with angular scales for nearly half the length, scutellate in the rest of their extent, and connected by broad reticulated entire membranes. Claws rather small, strong, arched, compressed, rather obtuse, that of the middle toe much larger, with a dilated thin edge.

A portion of the forehead about half an inch in length, and the space intervening between the bill and the eye, are bare. Plumage dense, soft, and elastic; on the head and neck the feathers oblong, acuminate; on the other parts in general broadly ovate and rounded, on the back short and compact. Wings long and broad, the anterior protuberance of the first phalangeal bone very prominent; primaries curved, stiff, tapering to an obtuse point; the second longest, exceeding the first by half an inch, and the third by a quarter of an inch; secondaries very broad and rounded, some of the inner rather pointed. Tail very short, graduated, of twenty-four stiffish, moderately broad, rather pointed feathers, of which the middle exceeds the lateral by two inches and a quarter.

Bill and feet black, the outer lamellate edges of the lower mandible, and the inside of the mouth, yellowish flesh-colour. The plumage is pure white, excepting the upper part of the head, which varies from brownish-red to white, apparently without reference to age or sex, as in *Cygnus Americanus* and *Anser hyperboreus*.

Length to end of tail 68 inches; bill along the ridge $4\frac{7}{12}$, from the eye to the tip 6, along the edge of lower mandible $4\frac{7}{12}$; breadth of upper mandible near the base $1\frac{5}{12}$, near the end $1\frac{6}{12}$; wing from flexure 27; tail $8\frac{1}{2}$; tarsus $4\frac{8}{12}$; first toe $\frac{10}{12}$, its claw $\frac{5}{12}$; second toe $4\frac{9}{12}$, its claw 1; third toe 6, its claw $1\frac{1}{12}$; fourth toe $5\frac{1}{12}$, its claw $\frac{10}{12}$.

DUSKY ALBATROSS.

DIOMEDEA FUSCA.

PLATE CCCCVII. ADULT.

THE skin from which I made my drawing of this species was prepared by Dr TOWNSEND, who procured the bird near the mouth of the Columbia River. Of its habits or distribution I am entirely ignorant. Having failed in finding any figure or description of an Albatross agreeing entirely with it, I have been induced to consider it as new.

DIOMEDEA FUSCA.

Adult. Plate CCCCVII.

Bill longer than the head, nearly straight, stout, much compressed. Upper mandible with its dorsal outline straight and declinate until about one-third of its length, when it becomes a little concave, and along the unguis curves in the third of a circle, the ridge narrow, pointed at the base, separated in its whole length by a groove margined below by a prominent line from the sides, which are erect and convex, the edges sharp, the unguis decurved, strong, and sharp. Nostrils sub-basal, prominent, tubular, having a horny sheath, and placed rather nearer the ridge than the margin. Lower mandible with the angle narrow, reaching to the tip, and having at its extremity a slender interposed process; the outline of the crura gently ascending, and nearly straight, towards the end a little deflected, the sides ascending and a little convex, *with a groove in their whole length as far as the unguis*, filled by a membrane, which is wider at the base, the edges sharp, the tip compressed, its upper edges decurved.

Head rather large; neck of moderate length, body full. Feet rather short, stoutish; tibia bare for an inch, covered all round with small angular scales; toes three, long, slender, the two outer a little shorter than the middle, the inner considerably shorter; they are covered above with small angular scales at the base, in the rest of their extent with scutella, and connected by emarginate webs, the outer and inner with an external membrane. Claws rather small, slender, slightly arched, rather depressed, convex above, somewhat obtuse.

Plumage full, soft, and blended. Wings very long and very narrow, the humerus and cubitus being extremely elongated; the first primary longest, the rest very rapidly diminishing; secondaries extremely short. Tail of moderate length, cuneate, of twelve strong feathers, of which the outer are rounded, the inner gradually more acute, the middle feather exceeding the lateral by two inches and three-fourths.

Bill black; feet yellow, claws greyish-white. The head and upper part of the neck are greyish-black, tinged with brown; the rest of the neck, all the lower parts, the back and rump are light brownish-grey; the scapulars darker, the wings coloured like the head; the primary quills and tail-feathers greyish-black, with white shafts. The eyelids are narrowly margined with white feathers, their anterior part excepted.

Length to end of tail 34 inches; bill along the ridge $4\frac{1}{2}$, along the edge of lower mandible $3\frac{5}{2}$; wing from flexure 21; tail 11; bare part of tibia 1; tarsus $3\frac{2}{2}$; inner toe $3\frac{7}{2}$, its claw $\frac{6}{2}$; middle toe $4\frac{4}{2}$, its claw $\frac{9}{2}$; outer toe $4\frac{3}{2}$, its claw $\frac{7}{2}$.

AMERICAN SCOTER DUCK.

FULIGULA AMERICANA.

PLATE CCCCVIII. MALE AND FEMALE.

THE American Scoter ranges along the whole coast of our Atlantic States, in the latter part of autumn and during the winter, extending as far southward as the mouths of the Mississippi, beyond which I have not observed it. A few pairs breed on the shores of Labrador, but the great body of these birds proceed farther north, although the limits of their migration in that direction are as yet unknown.

On the 11th of July 1833, a nest of this bird was found by my young companions in Labrador. It was placed at the distance of about two yards from the margin of a large fresh-water pond, about a mile from the shore of the Gulf of St Lawrence, under a low fir, in the manner often adopted by the Eider Duck, the nest of which it somewhat resembled, although it was much smaller. It was composed ex-

ternally of small sticks, moss, and grasses, lined with down, in smaller quantity than that found in the nest of the bird just mentioned, and mixed with feathers. The eggs, which were ready to be hatched, were eight in number, two inches in length, an inch and five-eighths in breadth, of an oval form, smooth, and of a uniform pale yellowish colour. I afterwards found a female with seven young ones, of which she took such effectual care that none of them fell into our hands. On several occasions, when they were fatigued by diving, she received them all on her back, and swimming deeply, though very fast, took them to the shore, where the little things lay close among the tall grass and low tangled bushes. In this species, as in others, the male forsakes the female as soon as incubation commences.

This bird usually flies low over the water, although its flight is swift and well sustained. On land it moves more awkwardly than the Eider Duck, but in diving it is perhaps superior to that species. During their stay along our shores, they congregate in vast multitudes, and being often shot on wing in numbers, are sold in all the markets of our maritime cities; but their flesh is very dark and has a strong fishy flavour, so as to be very unsavoury. It sometimes happens that during violent gales the Scoter is forced into fresh-water rivers, from which, however, it returns to the salt bays, inlets, or outer sandy shallows of the coast, as soon as the weather permits. They are extremely abundant about Boston, New York, the New Jersey shores, and the Chesapeake; but less so to the southward, until you reach the salt lakes about New Orleans. Their food consists of shell-fish of small size, marine plants, and insects.

The difference between this species and the European bird of the same name, *Fuligula nigra*, being now well known, it is unnecessary to say any thing on the subject. I have given figures of the adult male and female, but am not acquainted with the changes which the plumage undergoes. The young are covered with pure black hair-like down. In the winter season, at which time the male in the plate was drawn, the colour of the bill is much less bright than in spring, or during the period of breeding, when the males, after they have left the females, associate together in parties, and moult in August.

It has been supposed that we have two species confounded under the common name of Scoter; but I have not succeeded in finding more than one, and my zealous young friend, Dr THOMAS M. BREWER, of

Boston, who is quite competent to the task, has been equally unsuccessful, although in the course of the last two years he has examined a great number of individuals.

OIDEZIA AMERICANA, *Swainson*. AMERICAN SCOTER, *Richards*. and *Swains*. Fauna Bor.-Americana, vol. ii. p. 450.

AMERICAN SCOTER DUCK, *Nuttall*, Manual, vol. ii. p. 422.

Adult Male. Plate CCCCVIII. Fig. 1.

Bill a little shorter than the head, very broad, higher than broad at the base, much depressed toward the end, which is semi-elliptical. Upper mandible with the dorsal outline convex at the base, descending and concave in the middle, again convex toward the end; the basal part tumid with a median groove, the ridge broad and slightly convex between the nostrils, the sides at first nearly erect and concave, gradually becoming more depressed and convex, the sides soft, internally lamellate, nearly parallel for half their length, dilating a little to beyond the nostrils, then contracting; the unguis very large, broadly elliptical. Lower mandible flattened, with the angle long and rather narrow, the dorsal line slightly convex, the edges parallel, the tip rounded, the unguis very broadly elliptical. Nostrils medial, elliptical, pervious, near the ridge.

Head large, oblong, compressed, rounded above. Eyes of moderate size. Neck short and thick. Body large and much depressed. Feet very short, placed rather far behind; tarsus very short, much compressed, having anteriorly in its whole length a series of small scutella and above the outer toe a partial series, the rest covered with reticular angular scales. Hind toe small, with a free membrane beneath; anterior toes nearly double the length of the tarsus, connected by reticulated membranes having a sinus on their free margins, the inner with a lobed marginal membrane, the outer with a thick margin, the third and fourth about equal and longest. Claws small, that of the first toe very small and curved, of the middle toe largest, with a dilated inner edge, of the rest slender, all rather obtuse.

Plumage soft, dense, blended, slightly glossed. Feathers on the head and neck of a velvety texture, being very small, oblong, with the terminal filaments disunited. Wings rather short, narrow, and pointed; primary quills curved, strong, tapering, pointed, the first with the in-

ner web cut out towards the tip, leaving the feather less than a quarter of an inch in breadth at the distance of an inch and a half from its extremity; the second longest, exceeding the first by half an inch, and the third by one-twelfth, the rest rapidly graduated; secondaries broad and rounded, the inner elongated and tapering. Tail very short, graduated, acuminate, of sixteen pointed feathers.

The bulging part of the upper mandible is bright orange, paler above, that colour extending to a little before the nostrils; the rest of the upper mandible, including its basal margin to the breadth of from three to two twelfths of an inch, black, as is the lower mandible. Iris brown. Feet brownish-black. The general colour of the plumage is black, on the lower parts tinged with brown; the inner webs of the quills brownish-grey.

Length to end of tail 19 inches, to end of wings 17, to end of claws 20; extent of wings $33\frac{1}{2}$; bill along the ridge $1\frac{1}{2}$; wing from flexure $9\frac{4}{12}$; tail 4; bare part of tibia $\frac{4}{12}$; tarsus $1\frac{9}{12}$; hind toe $\frac{3\frac{1}{2}}{12}$, its claw $\frac{2\frac{1}{2}}{12}$; second toe $2\frac{2}{12}$, its claw $\frac{4}{12}$; third toe $2\frac{9}{12}$, its claw $\frac{5\frac{1}{2}}{12}$; fourth toe $2\frac{1\frac{1}{2}}{12}$, its claw $\frac{3\frac{1}{2}}{12}$. Weight 2 lb. 9 oz.

Adult Female. Plate CCCCVIII. Fig. 2.

The Female, which is a little smaller than the male, has scarcely any protuberance at the base of the bill, which is entirely brownish-black. The upper parts are of a light sooty-brown colour, the lower light brownish-grey.

Length to end of tail 17 inches; extent of wings $29\frac{3}{4}$.

This species differs very little from the European Scoter, being nearly of the same size, proportions, and colours. The male differs from that of the other species in having the sides of the unguis narrowed, and the orange patch on the upper mandible less extended beyond the nostrils, and destitute of the median black line and lateral streak. There is less difference in the colour of the plumage however, than has been represented; for adult males of this species are not sooty-brown above, but deep black.

An adult male, from Dr T. M. BREWER, of Boston. The roof of the mouth is very concave and broad, with a median ridge, on which there are six papillæ towards the base. There are about 25 large lamellæ on each side of the upper mandible, besides a number of smaller

ones anteriorly; about 40 on each side of the lower mandible. The tongue is 1 inch 10 twelfths long, its greatest breadth $9\frac{1}{2}$ twelfths; the papillæ at the base long and pointed, the sides furnished with two rows of bristles, the tip thin-edged and rounded. The aperture of the glottis, and that of the posterior nares, are beset with minute papillæ. The œsophagus is $10\frac{1}{2}$ inches long, of moderate width, its greatest diameter being 10 twelfths; that of the proventriculus 1 inch. The stomach is a strong gizzard of moderate size, $1\frac{1}{2}$ inch in length, and 1 inch 10 twelfths in breadth; its left lateral muscle 10 twelfths in thickness, the other 9 twelfths; the epithelium tough, dense, forming two roundish slightly concave grinding surfaces. The proventricular glandules, which are rather small, of a roundish form, $1\frac{1}{2}$ twelfth long, form a belt $1\frac{1}{4}$ inch in breadth. The contents of the stomach are particles of quartz. The intestine is 4 feet 11 inches long, rather wide, its diameter pretty uniform, and about $4\frac{1}{2}$ twelfths. The cœca, which come off at the distance of 4 inches from the extremity of the gut, are 8 inches in length, $2\frac{1}{2}$ twelfths in their greatest diameter, with the extremity obtuse.

The trachea is $6\frac{1}{4}$ inches long, flattened, its breadth 5 twelfths, contracting at the lower part to 4 twelfths. Its rings are but partially ossified, being cartilaginous at the back part. It is entirely destitute of those remarkable dilatations seen on the trachea of *Fuligula perspicillata* and *F. fusca*. The bronchi, however, are of very large size, being 1 inch 4 twelfths long, their greatest breadth $\frac{1}{2}$ inch. The inferior larynx is very small, being only $3\frac{1}{2}$ twelfths in breadth, in which respect it differs from that of most other male ducks. It is indeed very remarkable that this species, so nearly allied to the Velvet and Surf Ducks, should present no dilatations, either at the upper larynx, or in the course of the trachea, as are seen in them. This fact is one of many tending to shew that the strictest affinity in some points of structure is not always accompanied with a strict resemblance in some of the organs supposed to exhibit generic peculiarities. The trachea of the male of this species merely resembles that of the female of the other species. Its rings are about 100; those of the bronchi 30. The contractor muscles are strong, and terminate at the commencement of the lower larynx. There are cleido-tracheal and sterno-tracheal muscles, but no inferior laryngeal.

HAVELL'S TERN.

STERNA HAVELLI.

PLATE CCCCIX. ADULT.

I HAVE several reasons for naming this Tern after Mr ROBERT HAVELL, of Oxford Street, London. In the first place I consider him as one of the best ornithological engravers in England. Secondly, I feel greatly indebted to him for the interest which he has always evinced in my publication, which, I dare venture to assert, is the largest work of the kind that has hitherto appeared, and the engraving of which has cost him much trouble and anxiety. Thirdly, I consider myself entitled to express my gratitude in this manner, the individual on whom I confer the honour being more deserving of it than many to whom similar compliments have been paid.

I shot several individuals of this species out of a number congregated on the broad eddies opposite New Orleans, in 1820. They were engaged in picking up floating coleopterous insects; but after I had fired several shots, and was rowing to those which had fallen on the water, the rest flew off. Since that time it had not been my fortune to meet with any birds of the same species, until I visited the Texas in the spring of 1837, when two of them were procured.

STERNA HAVELLI.

Adult in winter plumage. Plate CCCCIX. Fig. 1.

Bill about the length of the head, rather stout, much compressed, acute. Upper mandible with the dorsal line slightly declinato-convex, the ridge convex at the base, very narrow in the rest of its extent, the sides sloping at the base, nearly erect and convex toward the end, the edges sharp and inflected, the tip very narrow. Nasal groove rather short, but with a channel surmounted by a ridge running from its anterior part to the edge of the mandible about half an inch from the tip. Lower mandible with the angle very narrow and acute, extend-

ing to beyond the middle, the outline of the crura a little concave, that of the rest ascending and straight, a slight prominence or angle being formed at their junction, as in Gulls, the sides erect and slightly convex, the edges sharp and inclinate, the tip acuminate, the gape-line slightly arcuate,

Head of moderate size, ovate ; neck of moderate length ; body slender. Feet small ; tibia bare for seven-twelfths of an inch ; tarsus very short, compressed, anteriorly scutellate ; toes small, slender ; the first extremely small, the third longest, the fourth much longer than the second ; all scutellate above, the anterior connected by reticulate webs, of which the inner is more deeply emarginate. Claws moderately arched, compressed, very slender, that of the middle toe much larger, and having its inner edge somewhat dilated.

Plumage soft, close, blended, very short on the fore part of the head. Wings very long, narrow, and pointed ; primary quills tapering to an obtuse point ; the first longest, the second half an inch shorter, the rest rapidly graduated ; secondaries short, incurved, obliquely pointed, some of the inner proportionally longer and narrower. Tail of moderate length, deeply forked, of twelve feathers, of which the middle are rounded, and three inches and a quarter shorter than the outer, which taper to a slender point.

Bill black, with the base of the lower mandible tinged with brown, and a very small portion of the tip yellowish. Iris brown. Feet orange-yellow ; claws dusky. Surrounding the eye, and extending toward the nape, is a broad band of black ; the fore part of the head, the lower eyelid, and all the under parts are pure white ; the hind part of the head and the nape are dusky grey, mixed with white. The rest of the upper parts are light greyish-blue, excepting the rump which is white, the primary coverts and quills as well as the tail-feathers and their coverts, are hoary, with the shafts white ; but five of the quills are dusky on the outer web, on the inner along the shaft, and on the inner margin toward the end.

Length to end of tail $15\frac{1}{2}$ inches ; bill along the ridge $1\frac{7}{12}$, along the edge of lower mandible $2\frac{4}{12}$; wing from flexure $10\frac{8}{12}$; tail to end of middle feather $2\frac{8}{12}$, to end of longest feather $6\frac{1}{12}$; tarsus $\frac{11}{12}$, hind toe $\frac{5}{12}$, its claw $\frac{2}{12}$; middle toe $\frac{10}{12}$, its claw $\frac{4}{12}$.

This species differs from the Marsh Tern, *Sterna anglica*, in being

less robust, in having the bill a little longer and much more slender, its height at the angle being $\frac{3\frac{3}{4}}{1\frac{1}{2}}$, whereas in that species it is $\frac{4\frac{1}{2}}{1\frac{1}{2}}$; in having the tarsus shorter and much more slender, the feet yellow instead of being black, the claws more slender, and the tail more deeply forked.

The figure in the plate, which is that of an adult bird yet in its winter plumage, has the lateral tail-feathers obliquely truncate, but this was caused by accident, for these feathers in my other specimens run to a narrow point. My specimens from the Texas are also in their winter plumage. One of them is coloured as above; but the other is a young bird, which may here be described.

The bill is somewhat shorter and more tinged with brown; the lower parts, the rump, the outer web of the lateral tail-feathers and the sides of the neck are white; the wings as in the adult, but the primaries internally margined with white, and the secondaries tipped with the same; the upper part of the head, and the rest of the upper parts, are light yellowish-brown, intermixed with greyish-blue, and there is the same black band on the side of the head as in the adult.

TRUDEAU'S TERN.

STERNA TRUDEAUI.

PLATE CCCCIX. ADULT.

THIS beautiful Tern, which has not hitherto been described, was procured at Great Egg Harbour in New Jersey, by my much esteemed and talented friend, J. TRUDEAU, Esq. of Louisiana, to whom I have great pleasure in dedicating it. Nothing is known as to its range, or even the particular habits in which it may differ from other species. The individual obtained was in the company of a few others of the same kind. I have received from Mr TRUDEAU an intimation of the occurrence of several individuals on Long Island.

STERNA TRUDEAUI.

Adult in winter plumage. Plate CCCCIX. Fig. 2.

Bill about the length of the head, rather slender, much compressed, acuminate. Upper mandible with the dorsal line slightly declinato-convex, the ridge rather broad and convex at the base, very narrow in the rest of its extent, the sides sloping at the base, nearly erect and convex toward the end, the edges sharp and inflected, the tip very narrow. Nasal groove rather short, but with a slight channel, surmounted by a ridge, running from its anterior part to the edge of the mandible about three-fourths of an inch from the tip. Lower mandible with the angle long, very narrow, and pointed, the outline of the crura a little concave, that of the rest ascending and straight, a very slight prominence or angle being formed at their junction, the sides erect and slightly convex, the edges sharp and inclinate, the tip acuminate, the gape-line slightly arcuate.

Head of moderate size, ovato-oblong, neck of moderate length; body slender. Feet small; tibia bare for half an inch; tarsus very short, compressed, anteriorly scutellate; toes small, slender; the first extremely small, the third longest, the fourth much longer than the second, all scutellate above, the anterior connected by reticulate webs, of which the inner is more deeply emarginate. Claws moderately

arched, compressed, very slender towards the end, that of the middle toe much larger, and having its inner edge somewhat dilated.

Plumage soft, close, blended, very short on the fore part of the head. Wings very long, narrow, and pointed; primary quills tapering to an obtuse point; the first longest, the second half an inch shorter, the rest rapidly graduated; secondaries short, incurved, obliquely pointed, some of the inner proportionally longer and narrower. Tail of moderate length, deeply forked, of twelve feathers, of which the middle are rounded, and three inches shorter than the outer, which taper to a slender point.

Bill black, with part of the base of the lower mandible, the edges of both mandibles, and their tips to the length of five-twelfths of an inch, yellow. Iris brown. Feet orange-yellow; claws dusky yellow. Surrounding the eye, and extending toward the nape, is a band of blackish-grey; the fore part of the head, the lower eyelid, the cheeks, and the upper part of the throat, are white. The rest of the upper and lower parts are light greyish-blue, excepting the axillar feathers, the lower wing-coverts, and the rump, which are white; the tail-coverts and tail are greyish-white. The primary coverts and quills are hoary, but the outer five are dusky grey on the inner web, toward the margin, and less so along the shaft, and on the outer web; but the shafts of all the quills and tail-feathers are white, as are the inner edges of the primaries and the tips of the secondaries, the inner excepted.

Length to end of tail 16 inches; to end of wings 15; bill along the ridge $1\frac{8}{12}$, along the edge of lower mandible $2\frac{5}{12}$; wing from flexure $10\frac{0}{12}$; tail to end of middle feather $2\frac{8}{12}$, to end of lateral feather $5\frac{8}{12}$; tarsus $1\frac{1}{12}$; hind toe $\frac{5}{12}$, its claw $\frac{1\frac{1}{2}}{12}$; middle toe $\frac{10}{12}$, its claw $\frac{4}{12}$.

This species has the bill more slender than Havell's Tern, and differently coloured, the tarsus shorter, and the lower parts of the body and neck of the same tint as the upper, whereas that species is white beneath.

It is probable that both species have the upper part of the head and the nape black in summer.

MARSH OR GULL-BILLED TERN.

STERNA ANGLICA, MONTAGU.

PLATE CCCCX. MALE.

HAVING taken six specimens of the Marsh Tern of America to the British Museum, and minutely compared them in all their details with the specimens of the Gull-billed Tern which formed part of the collection of Colonel MONTAGU, and were procured in the South of England, I found them to agree so perfectly that no doubt remained with me of the identity of the bird loosely described by WILSON with that first distinguished by the English Ornithologist.

I have shot several Marsh Terns out of the same flock, in the early part of spring, when the youngest must therefore have been nearly a year old, and found them all equally perfect and beautiful in their plumage, but differing considerably in the length of their bills, tarsi, toes, and wings, in so much that a person bent on forming new species might easily gratify his inclination by founding "specific characters" on differences, which however would be merely those of males and females of different ages. With me the habits of birds, when minutely and faithfully described, go much farther to establish the identity of individuals found in the different parts of the globe, than the best and closest descriptions of prepared skins. Colonel MONTAGU informs us that the Gull-billed Tern, *Sterna anglica*, resorts by preference to lakes and rivers of the interior; and Mr SELBY states, that "on the European continent it frequents the marshes and the lakes of Neusidel and Platten in Hungary." The same naturalist also says: "Upon investigating specimens from North America, I feel no hesitation in considering the *Marsh Tern* of WILSON'S North American Ornithology to be the same bird, although Mr ORD (in his eighth volume of that work) is inclined to regard it as distinct, in consequence of some difference between the length of the bill and tarsi, as expressed in a *drawing* of *Sterna aranea* that he examined, and the proportions of those parts in the first species as given by MONTAGU and TEMMINCK."

Now, Reader, allow me to lay before you an account of the habits of the Marsh Tern, a figure of an adult individual selected from among

three shot within a few hours of each other, and the measurements of several recent birds. You may then judge whether or not our bird is that described by MONTAGU.

The Marsh Tern is pretty abundant about the salt-marshes of the mouths of the Mississippi in the beginning of April; and by following the shores of the Gulf of Mexico, you will find that it comes to us from beyond the Texas, as many make their appearance along that coast in a straggling manner during spring, there being seldom more than half a dozen together, and generally only two. Their journeys are performed over the waters of the sea, a few hundred yards from the shore; and when in want of food, they diverge from their ordinary course, and ranging over the land satisfy their hunger, when they resume their route.

Excepting the Cayenne Tern, I know no American species that has so powerful a flight as the present. To this power is added an elegant lightness that renders it most conspicuous and pleasing during the love season. Then "the happy pair" are seen to rise in elegant circling sweeps, almost in the manner of Hawks, and only a few feet apart, until they attain a height of about two hundred yards, when they come close together, and then glide with extended pinions through the air, the male over the female, both emitting tender and plaintive notes, while they vary their evolutions at the same height for five or six minutes. After this the winged lovers separate, plunge towards the earth with wonderful rapidity, resume their ordinary notes, and seek for food in concert. The usual cry of these birds is rough, sharp, distinguishable at a considerable distance, and often repeated as if to assure each other that they are near. When an accident happens to the female during the breeding season, her mate manifests a most affectionate concern; but the female in such a case acts differently. On shooting several males on various occasions, whether they were killed outright, or fell wounded on the earth or the water, I observed that the female would only take a round as she rose above the reach of shot, and move off at once to some considerable distance; but when the female dropped, if on the water, the male would plunge headlong toward her, and alighting by her side, would do all in his power to aid her in swimming or flying off. If she fell on the ground, he would alight there, and exhibit the same marks of anxious care, thus affording to the gunner the best possible opportunity of destroying him.

The Marsh Tern swims buoyantly but not swiftly, and when wounded does not attempt to dive, but when taken in the hand bites rather severely, though without uttering cries, in which latter respect it differs from the other species. Whilst travelling or inspecting the pools of the marshes, or the bayous intersecting them, it passes at a considerable height with quickly repeated movements of the wings, and when looking for food, it darts through the air and slides toward the waters, as if about to dive for fish. I have observed them coming over large mud-flats and marshes to bayous, apparently for the latter purpose; but I believe that these birds never immerse themselves in the water, as other Terns are wont to do; nor do I think that they procure fish, as, on examining a number of individuals near the mouths of the Mississippi, in the Texas, and at Great Egg Harbour, I never found any other food in their stomachs than insects of various kinds, including coleoptera, which were unknown to me. In many instances, when near the places first mentioned, my friend EDWARD HARRIS and myself saw them catching insects on wing over a small pond of almost putrid water, the surface of which was entirely covered with a thick green layer of water-plants. The same manner of procuring food was observed over the dry land at Barataria, where they seized insects by diving as it were close to the ground and again rising to a considerable height. Their plunges were performed with great velocity, generally by the males and females alternately. In two or three instances, I have seen some of these birds plunge towards the water at sea, but always close on the shore, and have supposed that when insects are scarce on the land, particularly during their migration southward, they may be forced to feed upon fish; but this is merely a supposition, in support of which I have no fact to offer. I look upon what has been said as to their feeding along the sea-shores "almost exclusively on strand birds and their eggs," as ridiculous and absurd.

On the 24th of May I observed this species mastered and driven from its feeding grounds by the King-birds, *Muscicapa Tyrannus*, and the Martins, *Hirundo purpurea*. I am inclined to believe that these birds migrate in the same manner as many of our terrestrial species, that is, the females first, by themselves, and afterwards the males.

The Marsh Tern deposits its three eggs on the dried rushes found in the salt marshes at a short distance from the water, and carefully placed beyond reach of any ordinary encroachment of the tides; for, as WILSON has truly said, this species forms no nest. The eggs differ con-

siderably in their markings. They are generally an inch and three-quarters in length, an inch and half an eighth in breadth, smooth, of a greenish or olivaceous tint, largely marked with irregular splashes of dark umber, almost black, disposed around the broadest part, leaving the apex with only a few small dots of the same colour, similar dots being as sparingly dispersed toward the smaller end, which falls off toward the extremity, and is there gently rounded. The parents sit more upon them than is usual with Terns which drop their eggs on the sands, and they do not leave their charge in cloudy weather. The young have the bill of a dull reddish orange-brown colour, the legs and feet of a less deep tint of the latter colour, which is retained by them until late in the winter, when these parts become black, and so continue for life.

The Marsh Tern does not extend its migrations eastward along our shores beyond New England; which will be understood by those who know, that in a continued direction the rocky shores afford them no place in which they could obtain food. But, from what I know of the extraordinary power of flight of this bird, I am not at all surprised at its being found in Europe, any more than I should be to find it cosmopolitan.

I here present the different measurements carefully taken from fresh birds of only four pairs, all shot in spring, and in full plumage, although of different ages. WILSON'S measurements are as follows: "fourteen inches in length, and thirty-four in extent."

	M.	F.	M.	F.	M.	F.	M.	F.
Length to end of tail, .	13	14 $\frac{3}{4}$	14 $\frac{1}{2}$	13 $\frac{1}{2}$	13 $\frac{1}{2}$	13 $\frac{1}{2}$	14 $\frac{1}{2}$	14
..... claws,	11	12 $\frac{1}{2}$	12	11 $\frac{1}{4}$	12 $\frac{1}{2}$	12 $\frac{3}{4}$	12	11
..... wings,	14 $\frac{1}{4}$	15	15 $\frac{1}{2}$	14 $\frac{1}{2}$	14 $\frac{1}{2}$	13 $\frac{1}{4}$	15 $\frac{3}{4}$	14 $\frac{3}{4}$
Extent of wings, . . .	33	34 $\frac{1}{2}$	34 $\frac{1}{2}$	33 $\frac{1}{2}$	34	34	35 $\frac{3}{4}$	35
Tarsus,	1 $\frac{1}{8}$	1 $\frac{1}{4}$	1	1 $\frac{5}{8}$	1 $\frac{1}{4}$	1	1 $\frac{5}{8}$	1 $\frac{5}{8}$

The weight of the four male birds was 6 $\frac{1}{2}$ oz., 5 $\frac{7}{8}$, 6 $\frac{3}{4}$, 7 $\frac{1}{8}$. The females were quite as heavy.

GULL-BILLED TERN, *STERNA ANGLICA*, *Mont.* Ornith. Dict. Suppl.

MARSH TERN, *STERNA ARANEA*, *Wils.* Amer. Ornith. vol. viii. p. 143, pl. 72, fig. 6.

STERNA ARANEA, *Ch. Bonaparte*, Synopsis of Birds of United States, p. 354.

MARSH TERN, *Nuttall*, Manual, vol. ii. p. 269.

Adult Male in summer. Plate CCCCX.

Bill about the length of the head, rather stout, compressed, acute Upper mandible with the dorsal line nearly straight to the anterior edge of the nostrils, then arcuato-declinate, the ridge rather broad and

rounded at the base, narrowed toward the end; the sides sloping at the base, nearly erect and convex toward the end, the edges sharp and inflected, the tip although narrow somewhat obtuse. Nasal groove comparatively short; nostrils basal, oblong, direct, pervious. Lower mandible with the angle very narrow and acute, extending to beyond the middle, the outline of the crura a little concave, that of the rest ascending and straight, a prominence or angle being formed at their junction as in Gulls, the sides erect and slightly convex, the edges sharp and inclinate, the tip acute, the gape-line straight for half its length, then slightly arcuato-declinate.

Head of moderate size, ovate; neck of moderate length; body slender. Feet small; tibia bare for nearly half an inch; tarsus very short, compressed, anteriorly scutellate; toes small, slender; the first extremely small, the third longest, the fourth considerably shorter; all scutellate above, the anterior connected by reticulated webs, of which the inner is more deeply emarginate. Claws a little arched, compressed, very slender, that of the middle toe much larger, and having its inner edge somewhat dilated.

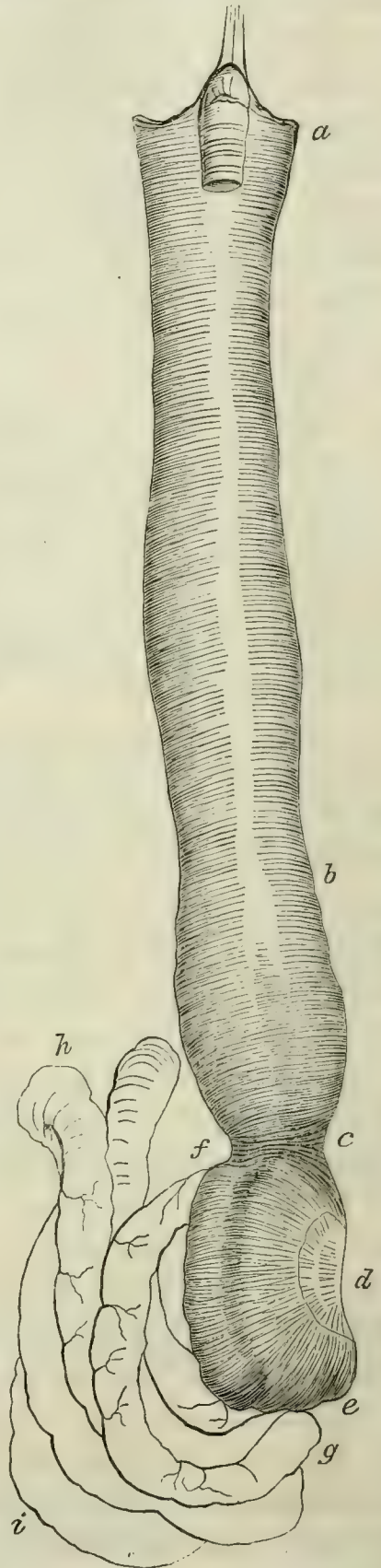
Plumage soft, close, blended, very short on the fore part of the head. Wings very long, narrow, and pointed; primary quills tapering to an obtuse point; the first longest, the second ten and a half twelfths of an inch shorter, the rest rapidly graduated; secondaries short, incurved, obliquely rounded, some of the inner proportionally longer and narrower. Tail of moderate length, forked, of twelve feathers, of which the middle are rounded and an inch and seven-twelfths shorter than the outer, which tapers to a narrow but obtuse point.

Bill black, as are the feet. Iris brown. The upper part of the head, the nape, and part of the hind neck, deep black; sides of the head, including a line margining the base of the upper mandible, fore neck, and all the lower parts white; upper parts pale greyish-blue; the edges of the wings whitish; the primary quills hoary on the outer web, deep grey on the inner, but with a large portion toward the base lighter, the shafts and those of the tail-feathers white; the tail is of a paler tint than the back, and the outer feather is nearly white.

Length to end of tail 14 inches; extent of wings 34 ; bill along the ridge $1\frac{6}{12}$, along the edge of lower mandible $2\frac{1}{12}$; wing from flexure $12\frac{1}{12}$; tail to end of middle feather $3\frac{4}{12}$, to end of lateral feather $4\frac{1}{12}$; tarsus $1\frac{1}{4}$; first toe $\frac{3\frac{1}{2}}{12}$, its claw $\frac{2\frac{1}{2}}{12}$; middle toe $\frac{10}{12}$, its claw $\frac{4\frac{1}{2}}{12}$.

A female from the Mouths of the Mississippi, April 1. 1837. On the roof of the mouth are three longitudinal ridges; the posterior aperture of the nares is linear, with an anterior slit; the tongue slender, tapering, 1 inch 2 twelfths long, papillate at the base, the outer papilla on each side larger, the tip sharp and horny. The œsophagus, *abc*, is 5 inches long, very wide, its greatest diameter 9 twelfths. The stomach, *cde*, is oblong, 1 inch 2 twelfths in length, 10 twelfths in breadth; its lateral muscles moderate. Its contents are coleopterous and hymenopterous insects, together with small crabs. The epithelium is thick, strong, prominently rugous, of a reddish-brown colour, and exactly resembling that of the smaller Gulls. The proventricular glands are very small, and form a belt $\frac{1}{2}$ inch in breadth. The intestine, *fghi*, which is 1 foot 8 inches long, is wide, its average diameter being $4\frac{1}{2}$ twelfths. The cœca, which come off at the distance of 2 inches from the anus, are very small, being 3 twelfths long, and 1 twelfth in diameter.

The trachea is 4 inches 2 twelfths long, at the upper part 4 twelfths in breadth, gradually contracting to $1\frac{1}{2}$ twelfth. The rings, about 110, are feeble and unossified. The bronchial rings are about 20. The contractor muscle



is so thin as to be scarcely perceptible ; the sterno-tracheal extremely slender. There is a single pair of inferior laryngeal muscles.

The stomach of another female contains the remains of crustaceous animals, one of which, nearly entire, is a small roundish crab, 11 twelfths in breadth.

AMERICAN SWAN.

CYGNUS AMERICANUS, SHARPLESS.

PLATE CCCCXI. MALE.

IT was undoubtedly supposed by the authors of the Fauna Boreali-Americana that this species of Swan, more recently shewn by Dr J. T. SHARPLESS of Philadelphia to be distinct, was the same as BEWICK'S Swan, *Cygnus Bewickii*, equally well characterized by my friend WILLIAM YARRELL, Esq. as distinct from the Common Wild Swan of Europe, *C. ferus*. But it has fortunately happened that while the authors above alluded to, my friends Dr RICHARDSON and Mr SWAINSON, gave the name of *Cygnus Bewickii* to the species now under consideration, they actually described the *C. Americanus* of SHARPLESS. Of this I have satisfied myself by comparing the measurements of a specimen procured at Igloolik, in Lat. 66°, on the 19th June 1823, with those of several recent individuals obtained at Baltimore and Philadelphia ; three of which are in my possession, preserved in rum. These I have found to correspond with the Igloolik bird, as nearly as is usually the case in birds of the same species, differing only in details modified by age and sex. The latter Swan is described as "pure white, except the crown, nape, and superior parts of the neck, which are deeply tinged with reddish-orange, and the belly which is slightly glossed with the same. Bill black ; cere orange (that colour entirely behind the nostrils) ; irides also orange ; feet black ; *old* birds entirely white, and *young* ones grey." All these circumstances belong to our present species, as well as to the Trumpeter Swan, excepting the colour of the bill of the latter.

Whilst in London, in the winter of 1837, I had ample opportuni-

ties of examining recent specimens of the Wild Swan, *C. ferus*, as many of these birds were offered for sale in the markets. A single glance at this Swan was sufficient to satisfy me that it had never been found in North America; whilst BEWICK'S Swan is always so much smaller in all its parts than any of the species here mentioned, that it cannot well be mistaken for any of them; and I feel almost quite confident that it has not hitherto been discovered in America, any more than the Whistling Swan, *C. musicus* of BECHSTEIN, *Anas Cygnus* of LATHAM, although this latter has a place in the Synopsis of the Prince of MUSIGNANO.

Dr TOWNSEND has sent me a fine specimen of *Cygnus Americanus* procured on the Columbia River, where it is called by the Chinook Indians *Hiass-koop-kalakala*, and corresponding exactly with one of my specimens which was shot near Baltimore. He states that it is much more abundant there in the autumn and winter than *C. Buccinator*, and thus corroborates the statement of LEWIS and CLARKE as to the latter being less numerous than the other, in the proportion of one to five.

Captain LYON describes the nest of the Common American Swan as built of moss-peat, nearly six feet long, four and three-quarters wide, and two feet high exteriorly; the cavity a foot and a half in diameter. The eggs were brownish-white, slightly clouded with a darker tint.

I have never observed any Swans of this species along the Atlantic coast, or on the rivers that open upon it, beyond Cape Hatteras in North Carolina; and although they are very numerous on the waters of the Chesapeake Bay and the streams adjacent, as well as in other parts of the Middle Districts, I am yet of opinion that the great body of them spend the winter about the Columbia River, extending their autumnal migrations westward, along the shores of the Pacific Ocean, into California, and that the columns formed by these birds when about to leave their breeding grounds in high latitudes, divide into parties, of which the less numerous bands make their way from certain points as yet unknown, towards our Middle Districts, while the rest are perhaps following the valleys of the Rocky Mountains.

When travelling to a distance they proceed at a great height, with a steady and well-sustained flight, though by no means so rapid as that of the Trumpeter Swan, this difference probably arising from the greater weight and alar extent of the latter. They usually move in long lines forming the acute angle of a baseless triangle, the leader

often changing his position and falling into the rear. On several occasions I have seen seven or eight leading the long single files behind them in a kind of disorderly crowded manner, which was continued until the birds were out of sight.

Not having had sufficient opportunities of studying the habits of these birds on the waters of the Chesapeake, where they are most numerous whilst in the Middle Districts, I here present you with an account of them kindly transmitted to me by Dr SHARPLESS of Philadelphia :—

“ About the first of September, the Swans leave the shores of the Polar Sea, according to FRANKLIN, and resort to the lakes and rivers in about the latitude of Hudson’s Bay (60°), where they remain preparing for a departure for the winter until October, when they collect in flocks of twenty or thirty, and seizing favourable weather, with the wind not opposed to the direction of their flight, they mount high in the air, form a prolonged wedge, and with loud screams depart for more genial climes. When making either their semi-annual transmigration, or on shorter expeditions, an occasional scream equal to ‘how do you all come on behind?’ issues from the leader, which is almost immediately replied to by some posterior Swan with an ‘all’s well’ vociferation. When the leader of the party becomes fatigued with his extra duty of cutting the air, he falls in the rear, and his neighbour takes his place. When mounted, as they sometimes are, several thousand feet above the earth, with their diminished and delicate outline hardly perceptible against the clear blue of heaven, this harsh sound softened and modulated by distance, and issuing from the immense void above, assumes a supernatural character of tone and impression, that excites, the first time heard, a strangely peculiar feeling.

“ In flying, these birds make a strange appearance ; their long necks protrude and present, at a distance, mere lines with black points, and occupy more than one-half their whole length, their heavy bodies and triangular wings seeming but mere appendages to the prolonged point in front.

“ When thus in motion, their wings pass through so few degrees of the circle, that, unless seen horizontally, they appear almost quiescent, being widely different from the heavy semicircular sweep of the Goose. The Swan, when migrating, with a moderate wind in his favour, and mounted high in the air, certainly travels at the rate of one hundred

miles or more an hour. I have often *timed* the flight of the Goose, and found one mile a minute a common rapidity, and when the two birds, in a change of feeding-ground, have been flying near each other, which I have often seen, the Swan invariably passed with nearly double the velocity.

“The Swans in travelling from the northern parts of America to their winter residence, generally keep far inland, mounted above the highest peaks of the Alleghany, and rarely follow the water-courses like the Geese, which usually stop on the route, particularly if they have taken the sea-board. The Swans rarely pause on their migrating flight, unless overtaken by a storm, above the reach of which occurrence they generally soar. They have been seen following the coast in but very few instances. They arrive at their winter homes in October and November, and immediately take possession of their regular feeding-grounds. They generally reach these places in the night, and the first signal of their arrival at their winter abode is a general burst of melody, making the shores ring for several hours with their vociferating congratulations, whilst making amends for a long fast, and pluming their deranged feathers. From these localities they rarely depart unless driven farther south by intensely cold weather, until their vernal excursion. When the spring arrives, a similar collection of forces as at the north takes place in March, and, after disturbing the tranquil bosom of the water for a night, by incessant washing and dressing, and alarming the quiet neighbourhood by a constant clatter of consulting tongues, they depart for the north about daylight with a general *feu-de-joie* of unmusical screams.

“The Chesapeake Bay is a great resort for Swans during the winter, and whilst there they form collections of from one to five hundred on the flats, near the western shores, and extend from the outlet of the Susquehannah river, almost to the Rip Raps. The connecting streams also present fine feeding grounds. They always select places where they can reach their food by the length of their necks, as they have never, so far as I can learn, been seen in this part of the world, to dive under the water, either for food or safety. HEARNE says, that at Hudson’s Bay, “by diving and other manœuvres, it is impossible to take them by the hand while moulting.” I have often seated myself for hours, within a short distance of several hundred swans, to watch their habits and manners, and never saw one pass entirely under the water,

though they will keep the head beneath the surface for five minutes at a time.

“ The food they are most partial to, is the canvass-back grass (*Valisneria Americana*), worms, insects, and shell-fish, never, I believe, touching fish, however hardly pressed for support. The Geese and Swans frequently feed, but never fly, together.

“ These birds are so exceedingly watchful, that if there are but three of them feeding together, one will generally be on guard, and, when danger approaches, there is some mute sign of alarm, for I have never heard a sound at such times.

“ However much noise has been made before, the instant an alarm occurs, there is perfect silence, their heads are erected, a moment's examination determines the course, when, if the case be not too urgent, they depend on swimming, if escape be necessary. They rarely fly even from the pursuit of a boat, unless very closely followed, and when they do arise from the water, either for escape or from choice, it is generally with a scream, and when alighting, particularly if among others, there is usually a “ how d'ye do ” sort of expression on all sides. Even when wing-broken, these birds can swim with great rapidity, and if not otherwise hurt, a single oarsman in the best constructed boat can rarely overtake them. A gentleman who resides on the Chesapeake near Brush River, informed me, that a few years since, he had wounded a Swan, and afterwards cured and tamed it. To prevent it from flying away, he clipped its wing, but it occasionally escaped to the water, where he had often followed it for several miles, with two rowers before he could catch it. The unwounded birds have frequently been seen to collect around a crippled companion, and urge it to escape, pushing it forward, and I have been informed by good authorities, that they have been observed to place themselves on each side of a disabled Swan, supporting a broken wing, and almost lifting the object of their affectionate care out of the water.

“ Whilst feeding and dressing, Swans make much noise, and through the night their vociferations can be heard for several miles. Their notes are extremely varied, some closely resembling the deepest base of the common tin-horn, whilst others run through every modulation of false note of the french-horn or clarionet. Whether this difference of note depends on age or sex I am not positively assured.

“ The Swan requires five or six years to reach its perfect maturity of

size and plumage, the yearling Cygnet being about one-third the magnitude of the adult, and having feathers of a deep leaden colour. The smallest Swan I have ever examined, and it was killed in my presence, weighed but eight pounds. Its plumage was very deeply tinted, and it had a bill of a very beautiful *flesh*-colour, and very soft. This Cygnet, I presume, was a yearling, for I killed one myself the same day, whose feathers were less dark, but whose bill was of a dirty white; and the bird weighed twelve pounds. This happened at a time when my attention was not turned scientifically to the subject, and I have forgotten other singularities of the specimens. By the third year the bill becomes black, and the colour of the plumage less intense, except on the top of the head and back of the neck, which are the last parts forsaken by the colour. Swans of the sixth year have assumed all the characters of the adult, and very old birds have a hard protuberance on the bend of the last joint of the wing. When less than six years of age, these birds are very tender and delicious eating, having the colour and flavour of the goose; the latter quality, however, being more concentrated and luscious. HEARNE considers a Swan, "when roasted, equal in flavour to young heifer beef, and the Cygnets are very delicate." As these birds live to a great age, they grow more tough and dry as they advance, the *patriarchs* being as un-masticable and un-savoury as the Cygnets are tender and delightful.

"There are many modes practised in the United States of destroying these princely ornaments of the water. In shooting them whilst flying with the wind, the writer just mentioned declares, "they are the most difficult bird to kill I know, it being frequently necessary to take sight ten or twelve feet before the bill." This I should consider an unnecessary allowance, unless driven by a hurricane, but, on ordinary occasions, the bill is aimed at, and if going with a breeze at a long shot, a foot before the bill would be quite sufficient. The covering is so extremely thick on old birds, that the largest *drop* shot will rarely kill unless the Swan is struck in the neck or under the wing, and I have often seen large masses of feathers torn from them, without for an instant impeding their progress.

"When wounded in the wing alone, a large Swan will readily beat off a dog, and is more than a match for a man in four feet water, a stroke of the wing having broken an arm, and the powerful feet almost obliterating the face of a good-sized duck-shooter. They are often killed by

rifle-balls thrown from the shore into the feeding-column, and as a ball will *ricochet* on the water for several hundred yards, a wing may be disabled at the distance of half a mile.

“ These birds are often brought within shooting range, by sailing down upon them whilst feeding, and, as they arise against the wind, and cannot leave the water for fifteen or twenty yards, against which they strike their enormous feet and wings most furiously, great advantage is gained in distance. They must be allowed on *all* occasions to turn the side, for a breast-shot rarely succeeds in entering.

“ When two feeding coves are separated by a single point, by disturbing the Swans in one or the other occasionally, they will pass and re-pass very closely to the projection of land, and usually taking, as they do, the straight line, each gunner, to prevent dispute, indicates the bird he will shoot at.

“ In winter, boats covered by pieces of ice, the sportsman being dressed in white, are paddled or allowed to float during the night into the midst of a flock, and they have been oftentimes killed, by being knocked on the head and neck by a pole. There is, however, much danger in this mode, as others may be engaged in like manner, and shooting at a short distance, the persons might not be distinguished from the Swans. These birds seem well aware of the range of a gun, and I have followed them in a skiff for miles, driving a body of several hundreds before me, without the possibility of getting quite within shooting distance.

“ The skins of Swans still covered by the down, which is very thick, are often used in our country for bonnets and tippetts. The Indians also employ the skins for dresses for their women of rank, and the feathers for ornaments for the head.

“ When more than one person is shooting, it is usual for each to select a particular Swan, and if there be not enough for all, two will take a particularly good bird, and, if it be killed, will decide its possession afterwards, by some *play* of chance. Few are willing to take the first bird, even though their position of *last* in the direction of flight would compel them, according to usage, to do so, not only from the difficulty and uselessness of killing the old ones, but because there is much less chance of a stray shot from a neighbour's gun assisting in the destruction.

“ In the autumn of 1829, the writer, with another person, was on

Abby Island, when seven Swans were approaching the point in one line, and three others a short distance behind them. The small group appeared exceedingly anxious to pass the larger, and as they doubled the point at about sixty yards distance, the three formed with the second bird of the larger flock, a square of probably less than three feet. At this moment both guns were discharged, and three Swans were killed, and the fourth so much injured that he left the flock and reached the water a short distance in the bay ; but it being nearly dark his direction was lost. These, with another that had been killed within an hour, and three which were subsequently obtained, were all of less than five years of age, and averaged a weight of eighteen pounds.

“ The Swans never leave the open shores of the bay for the side streams, and the Geese rarely through the day, though they often retire to the little inlets to roost or feed at night. Few of these large game are found after their regular settlement, above Spesutie Island, but lay on the flats in mingled masses of from fifty to five hundred, down the western shores, even as far as the Potomac. During a still night, a few Swans may often be seen asleep in the middle of the bay, surrounded by a group of far more watchful Geese ; and the writer has paddled at day-break one morning within ten feet of an enormous sleeping Swan, who had probably depended for alarm on the wary Geese, by which he had been surrounded, but which, as we approached, had swam away. By an unforeseen occurrence, when a few seconds would have enabled us to have stunned him by a blow, he became alarmed, and started in a direction that prevented a probable chance of killing, from our position, and the tottering nature of the skiff.”

AMERICAN WILD SWAN, *CYGNUS AMERICANUS*, *Sharpless*, Amer. Journal of Science and Arts, vol. xxii.

Adult Male. Plate CCCCXI.

Bill rather longer than the head, large, higher than broad at the base, gradually becoming more depressed. Upper mandible with the dorsal line concave at the commencement, then descending and very slightly convex to beyond the nostrils, at the end decurved ; the ridge broad and flat at the base, gradually narrowed, convex toward the end ; the sides nearly erect and somewhat concave at the base, gradually sloping, and towards the end convex, the margins nearly parallel until

toward the end, when they widen a little ; the tip rather abruptly rounded, the unguis truncato-obovate. Nostril medial, elliptical, direct, near the ridge ; nasal groove elliptical. Lower mandible flattened, slightly recurved ; the angle long and rather narrow, the edges parallel, the tip truncate, the unguis somewhat triangular.

Head of moderate size, oblong, compressed. Neck very long and slender. Body very large. Feet short, stout, placed a little behind the centre of the body ; tibia bare for an inch and a half, and reticulated ; tarsus short, moderately compressed, reticulated all round with angular scales, of which the anterior are larger ; hind toe very small, scutellate above, granulate beneath ; anterior toes longer than the tarsus, the outer a little shorter than the third, all reticulate above as far as the second joint, scutellate in the rest of their extent, connected by webs of which the margin is entire, the outer with a thick margin, the inner with a broader two-lobed margin. Claws of moderate size, arched, strong, rather acute, that of the middle toe with the inner edge dilated.

Plumage full, compact above, blended beneath ; feathers of the head and neck softer, small, ovate, rounded. Wings ample, convex ; the first quill eight-twelfths of an inch shorter than the second, which is longest, but scarcely exceeds the third ; the first, second, and third cut out on the inner web. Secondaries long, broad, and rounded. Tail very short, much rounded, of twenty broad rounded feathers, of which the lateral are an inch and nine-twelfths shorter than the middle. The bill and the bare space on the fore part of the head black, with an orange oblong patch from the anterior angle of the eye ; sides of lower mandible and inside of mouth yellowish flesh-colour. Iris brown ; feet and claws black. The plumage is entirely pure white.

Length to end of tail 53 inches, to end of wings $50\frac{1}{2}$, to end of claws 58 ; extent of wings 84 ; bill along the ridge 4, from the tip to the eye $4\frac{8}{12}$; wing from flexure $22\frac{1}{2}$; tail $7\frac{1}{4}$; tarsus $4\frac{9}{12}$; hind toe $\frac{8}{12}$, its claw $\frac{5}{12}$; second toe $3\frac{8}{12}$, its claw $\frac{10\frac{1}{2}}{12}$; third toe $\frac{9}{12}$, its claw $\frac{11}{12}$; fourth toe $4\frac{8}{12}$; its claw $\frac{7}{12}$. Weight $19\frac{1}{4}$ lb. Another individual weighed only 14 lb.

Individuals of both sexes have the upper part of the head and a portion of the neck tinged with brownish-red.

The Female is somewhat smaller, but otherwise similar.

The young in its first plumage is of a uniform light bluish-grey,

paler beneath, the fore and upper parts of the head tinged with red, the bill reddish flesh-colour, dusky at the point; the spaces between the eye and the bill, and between its basal angles, covered with minute feathers, which entirely disappear in the adult. The feet are dull yellowish flesh-colour.

An adult Female, procured at Philadelphia. The edges of the upper mandible are soft, with about 40 transverse lamellæ, which do not project beyond the margin; those of the lower with about 60 marginal lamellæ, the outer lamellæ only 22. Bill along the ridge $4\frac{1}{4}$ inches, from the angle of the eye to the tip $4\frac{1}{2}$; lower mandible along the edge $3\frac{1}{2}$; depth of bill at the angle of the mouth $1\frac{9}{12}$, its breadth at the nostrils $1\frac{4}{12}$, near the end $1\frac{5}{12}$. The roof of the mouth is deeply concave, with a medial prominent line, on which is a series of hard tubercles. The width of the mouth is 1 inch 5 twelfths. The eyes are very small, their diameter being 5 twelfths; the aperture of the ear 4 twelfths. The internal cells are of vast size; the right thoracic being 4 inches long, the right abdominal 6 inches, the right hepatic $5\frac{1}{2}$, the left hepatic 4, the left abdominal $3\frac{1}{4}$, the left thoracic 3. The heart is proportionally of large size, being 3 inches 2 twelfths in length, 2 inches 10 twelfths in breadth. The œsophagus, Fig. 1, *abc*, is 2 feet 2 inches long, much narrower than the intestine, its average diameter being only 4 twelfths, but at the lower part of the neck it dilates to 8 twelfths; on entering the thorax, it passes obliquely to the left side, and the proventriculus, *bc*, has a diameter of 1 inch 2 twelfths. The inner coat of the œsophagus is thrown into strong longitudinal rugæ, and the muscular coat consists of two layers, the outer composed of longitudinal, the inner of transverse fibres. The stomach, *defg*, is obliquely situated on the left side, and is an extremely developed muscular gizzard, of an elliptical form, its length being 2 inches 6 twelfths, its breadth 3 inches 10 twelfths. The right lateral muscle *g*, is 1 inch 9 twelfths thick, the left *e*, 1 inch 4 twelfths. In the stomach is a large mass of very fine quartz sand, and a great number of germinating seeds of an elliptical form, some about 5 twelfths long, and of a brownish-yellow colour, together with shoots of *Salicornia*. The proventriculus is turgid with the latter. Its glands are extremely numerous, of a cylindrical form, about 3 twelfths in length. The epithelium, or inner coat of the stomach, is thick and tough, the two grinding surfaces considerably concave, smoothish, of a

horny texture, 1 inch 8 twelfths long, 1 inch 5 twelfths broad. There is a large pyloric sac, from which the duodenum, *h i j k*, comes off. It curves round the edge of the stomach to the length of $8\frac{1}{2}$ inches, as represented by Fig. 2, *a b*, forming three-fourths of a circle, and reaching the sixth rib on the left side; it then curves back upon itself, *b c*, to above the stomach, where it receives the biliary ducts, passes upwards and backwards along the spine until it nearly reaches the anus, then returns forward as far as the upper edge of the stomach, then forms a small loop 3 inches long, comes forward again, passes backward, then forward, again backward and forward, now becomes anterior, and curves parallel to the duodenum, reaching the seventh rib, then passes backward parallel to itself, as far as the liver, curves again in the same direction, and proceeds backward, then sweeps backward behind to near the anus, where it becomes accompanied by the cœca, comes forward on the right side to the anterior edge of the stomach, bends abruptly backwards, and terminates in the anus. It thus forms 16 curves or 8 folds. Its length is 11 feet 5 inches,

Fig. 1.

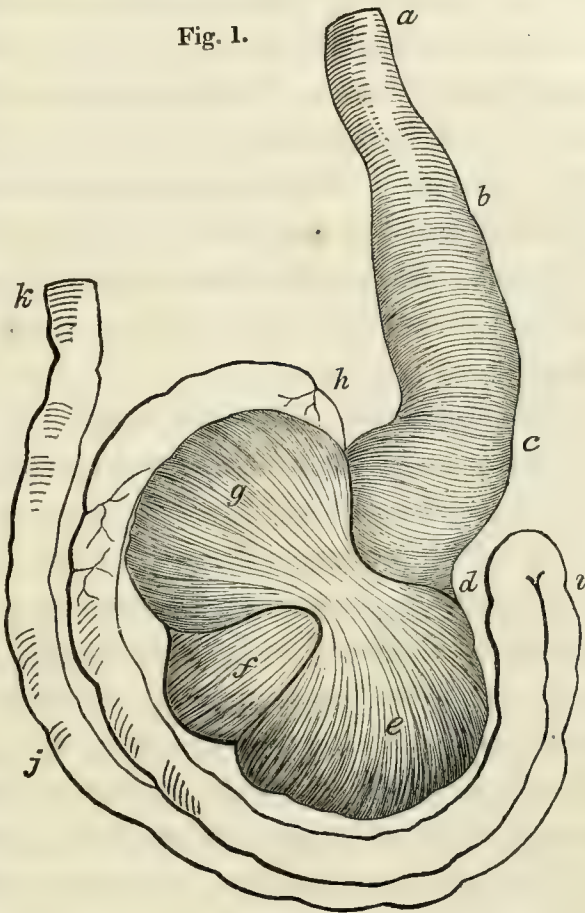
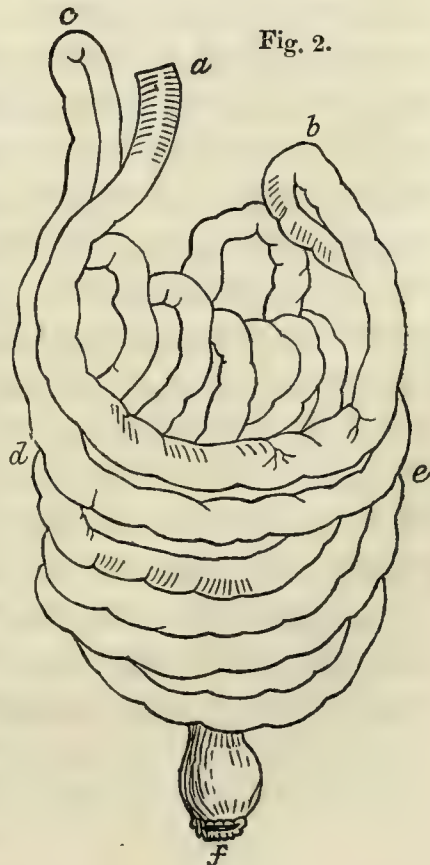


Fig. 2.



its average diameter 7 twelfths. The rectum is 7 inches in length, 8 twelfths in diameter. The cœca 11 inches long, their diameter for 3 inches only 2 twelfths, in the rest of their extent from 3 to $4\frac{1}{2}$ twelfths, the extremity obtuse. The cloaca is of moderate size and of a globular form, with longitudinal rugæ on its inner surface; that of the rectum is also longitudinally rugous, and covered with flattened papillæ. The transverse muscular fibres of the intestine are all very well marked in its whole extent; the inner surface is covered with minute prominences, arranged in regular series; the anterior portion beautifully villous.

This species has 11 ribs, the anterior rib not joining the sternum. The lungs are of large size, extending from the second to the ninth rib, and having, therefore, 7 deep grooves on their upper and inner surface. The trachea is 20 inches long; its breadth at the anterior part 9 twelfths. It gradually diminishes to 7 twelfths, and is much flattened until about 6 inches from the furcula, when it becomes gradually cylindrical, reaches the curve of the furcula, bends a little upwards, and enters a cavity formed in the sternum, along which it passes to the length of 6 inches, bends upon itself horizontally, returns, passes up between the crura of the furcula, bends backwards, and enters the thorax, its diameter in this part of its course being 7 twelfths. The inferior larynx is laterally compressed, its last rings united. Appended to the last or semilunar ring on each side is a narrow membrane, terminated by a very slender half ring; the membrane intervening between it and the first bronchial ring is large. The bronchi themselves are very short, compressed at the commencement, enlarged at the middle into a roundish cavity $7\frac{1}{2}$ twelfths in diameter, afterwards cylindrical; their entire length $1\frac{3}{4}$ inch. The lateral or contractor muscles of the trachea are large, and come off at the curve of the furcula, not following the course of the trachea within the sternum, but passing directly across to near the inferior larynx, where they terminate at the distance of $1\frac{1}{4}$ inch. The rings of the trachea are broad and well ossified; there are 148 to the curve, 40 between the lower larynx and its exit from the sternum. The right bronchus has 23, the left 21 rings.

In the external or subcutaneous cellular tissue of this bird, on the right side, over the thorax, was found a cartilaginous tumour of a roundish form, of which the greatest diameter was $1\frac{1}{4}$ inch.

Dr SHARPLESS, in a paper published in the American Journal of

Science and Arts, Vol. XXII., first distinguished this species from the others with which it had been confounded, having obtained good distinctive characters from the peculiar curve of the trachea, and other internal and external circumstances. A mature individual which he describes weighed 21 lb. Its principal dimensions were :—Length to end of tail 54 inches ; extent of wings 86 ; wing from carpus 23 ; middle toe 6 ; intestine 127. The tail-feathers were 20. He then continues :

“ The youngest and smallest specimen I have met with, had a very soft, reddish-white bill, with a brown point, and measured three inches from the point of the beak to the forehead ; six inches and one-eighth to the occiput, and the usual position of the coloured spot was covered to one inch and three-eighths in front of the eye, with small orange-yellow feathers, which extended down to the gape. The plumage, to the end of the tail and primaries, was of a deep leaden tint, and the legs were of a light grey colour. This specimen measured six feet and eight inches between the points of the extended wings ; four feet two inches from the point of the beak to the tail, and weighed eleven pounds. In the specimen above, the yellow spot on the bill was five-eighths of an inch in length, starting at the front corner of the eye, and running towards the nostrils, and one-fourth of an inch in breadth. In twenty specimens I have now examined of the American Swan, I have *never* seen this spot more than one inch in length, and half an inch in breadth, and in many of them an oblong mark of the size and shape of a little finger nail was alone found. In one specimen, which weighed sixteen pounds, this spot was but one-fourth of an inch square, and did not quite reach the eye. As the colour and extent of this spot are assumed by Mr YARRELL as one of the principal external specific differences between his two English Swans, I have taken particular care to ascertain, beyond a doubt, the tint in the American bird, and I find that it ranges from a pure gamboge-yellow to a bright red orange, and without any regard to sex or age, except in the yearling, as above mentioned, when it is covered by small feathers. This mark is always in the same position. The feathers continue, except at the anterior fourth, where the yellow spot reaches them, to the very edge of the eyelids, which are yellow. In every case, the bill has been one-eighth of an inch narrower at the middle than near the point, and in all young birds, where the plumage had become white, a dirty-yellow tinge around the head and back of the neck, marked its immaturity.

“ In several instances, a well-defined yellow or orange line ran from the point of the feathers, between the legs of the lower mandible, forward, to their junction at the point, and sometimes ended in a large patch of the same colour. In *every* case, the tail had twenty feathers, although in the younger ones, there were several of them still in the sheath. The other external characters are common to the genus.

“ The internal arrangements are those, in a great degree, of the Bewick Swan. The windpipe is uniform in calibre, and, entering the keel, takes the circuit of the horizontal pouch in the posterior flattened portion of the bone, and returning out of the keel at the same orifice it entered, winds round the merry-thought and goes to the lungs.

“ In the specimen whose admeasurement is given in detail, the loop of the trachea occupied a posterior cavity of two inches in transverse diameter, leaving in the hollow of the loop, one inch of vacant space, and projecting one-third of an inch above the inner surface of the sternum, but shewing no rise externally. In another preparation I possess, from a bird of equal age, the sternum is seven inches and a half in a straight line drawn across the concavity of the inner surface, and the posterior chamber extends to the extreme back edge of the bone, the trachea penetrating the whole distance. In this case, the horizontal chamber is three inches and one-fourth in transverse diameter, and spreads, on one side, three-fourths of an inch beyond the edge of the breast-bone, and covering and resting on the ribs at that distance. The vacuity in the loop is two inches in diameter. A third instance gives a bone seven inches and a half long, with the trachea extending to the very posterior edge, and the chamber in the bone two inches and three-fourths across, and covering the whole breadth of the sternum.

“ Another preparation, six inches and one-half long, of a younger Swan than either of the preceding, developed a rising on the internal surface of one inch in diameter, with the trachea entering but four inches and three-fourths, and just assuming the horizontal position; and the very young bird, already mentioned, and which was no doubt a yearling cygnet, produced a sternum six inches and one-half in length, with the trachea entering three inches and one-half, and preserving a vertical fold, and shewing merely a gentle swelling in the bone at the posterior termination of a cavity four inches deep. In every instance, the trachea, upon approaching this horizontal apartment, takes to the right to sweep round the cavity. The two portions of the tube, although

in contact in the keel, are separated anterior to it by a strong ligament, which stretches in a right line across from one limb of the merry-thought to the other, and extends from the outlet from the keel to near the union of the os furcatorium with the clavico-scapular bones. Lateral ligaments also pass from the limbs of the merry-thought to these bones, and form a chamber for the pulmonic portion of the trachea to lie in. The muscles of voice pass from one portion of the tube to the other, and are united to the sternum as in the English species. The bone of divarication is placed perpendicular to the sternum, and is one inch and an eighth from top to bottom, and the sides are so compressed that they are nearly parallel. The space between this bone and the bronchial rings is half an inch, and is occupied by a membranous tube, outside of which extends another membrane from the edge of this bone to a delicate semi-circular bone on each side, which protects the structure within."

Dr SHARPLESS then states, that Mr ORD and he found the ribs to be ten, and that "the intestines were in every case coiled in seven oblong folds, and two cœca, which were often of different lengths. The distinctive characters of *Cygnus ferus*, *C. Bewickii*, and *C. Americanus*, as given by Mr YARRELL and Dr SHARPLESS, are then stated to be as follows :

C. ferus.—Beak black and semi-cylindrical; its *base* and *sides even beyond the nostrils* yellow; body white; tail with twenty feathers; feet black.

C. Bewickii.—Beak black and semi-cylindrical; *base* orange; body white; tail with eighteen feathers; feet black.

C. Americanus.—Beak black and semi-cylindrical; *sides of the base* with a *small* orange or yellow spot; body white; tail with twenty feathers; feet black.

VIOLET-GREEN CORMORANT.

PHALACROCORAX RESPLENDENS.

PLATE CCCCXII. ADULT.

THIS Cormorant, the most beautiful hitherto found within the limits of the United States, was obtained by Dr TOWNSEND at Cape Disappointment, near the entrance of the Columbia River. The specimen from which the figure in the plate was taken, was transmitted to me by that zealous student of Nature. The beautiful gloss of its silky plumage suggested the specific name which I have given to it.

PHALACROCORAX RESPLENDENS.

Adult. Plate CCCCXII. Fig. 1.

Bill about the length of the head, slender, cylindrical, enlarged at the base, and compressed toward the end, straight. Upper mandible with the dorsal line very slightly concave, until on the unguis, where it is decurved, the ridge convex, flattened toward the end, separated from the sides by a narrow groove, the sides convex, the edges sharp and straight as far as the unguis, which is decurved, convex above, acute, its tip not extending beyond the level of the dorsal outline of the lower mandible. No external nostrils. Lower mandible with the angle long and very narrow towards the end, filled up by an extensile membrane which does not extend beyond the level of the eye, its very short dorsal line considerably convex, the sides erect and very convex, the edges sharp and inflected, the tip compressed and truncate.

Head small, oblong. Neck long and slender. Body rather full, elongated, and depressed. Feet short, stout, placed far behind; tibia feathered in its whole length; tarsus very short, strong, much compressed, covered all round with scales, of which a series on the inner side anteriorly, and another on the outer, are scutelliform, the posterior very small and roundish. Toes all placed in the same plane, connected by reticulated webs, and covered above with numerous broad but very short oblique scutella; first toe smallest, fourth longest. Claws rather small, strong, compressed, acute, convex above, arched, that of the third toe pectinated on its inner edge.

Plumage silky, being very soft, blended, and highly glossed. Feathers of the head and neck oblong, of the other parts ovate and rounded. The small gular sac, and the space before and beneath the eye, with the eyelids, bare. Wings rather small, broad; primaries curved; in the only individual in my possession, in which they are not fully developed, the first is an inch, and four and a half twelfths shorter than the second, which is longest, but exceeds the third only by a twelfth; secondaries broadly rounded. Tail of moderate length, very narrow, much rounded or cuneate, lateral feathers being an inch and ten-twelfths shorter than the middle; the feathers, twelve in number, are narrow, with very strong shafts.

Bill dusky, gular sac and bare skin about the eyes orange. Iris light green. Feet black. The general colour of the plumage is deep green, seeming black in some lights, and bright green and purple in others. Along the sides of the neck and the hind part of the sides of the body, are scattered numerous white piliform feathers terminated by a pencil of filaments. The quills and tail-feathers are brownish-black, and less glossy.

Length to end of tail 27 inches; bill along the ridge $1\frac{1}{2}$, along the edge of lower mandible $2\frac{8}{12}$; wing from flexure 10; tail $5\frac{1}{2}$; tarsus $1\frac{9}{12}$; hind toe $\frac{1}{2}$, its claw $\frac{5}{12}$; second toe $1\frac{7}{12}$, its claw $\frac{8}{12}$; third toe $2\frac{1}{4}$, its claw $\frac{9}{12}$; fourth toe $3\frac{2}{1}$, its claw $\frac{7}{12}$.

TOWNSEND'S CORMORANT.

PHALACROCORAX TOWNSENDI.

PLATE CCCCXII. Fig. 2. MALE.

Two specimens of the Cormorant here represented were sent to me by Dr TOWNSEND, who procured them at Cape Disappointment in the beginning of October 1836. They are both marked as males, and agree nearly in colour, but differ somewhat in the length of the bill, and in the extent of the bare space at its base. One of them seems to be in its first plumage, the other in that of the adult. Nothing,

I believe, is known of the distribution or habits of this species, which I have honoured with the name of its discoverer.

PHALACROCORAX TOWNSENDI.

Male. Plate CCCCXII. Fig. 2.

Bill about the length of the head, rather slender, nearly straight, compressed toward the end. Upper mandible with the dorsal line considerably concave, until on the unguis, where it is decurved, the ridge convex, flattened toward the end, separated from the sides by a narrow groove, the sides convex, the edges sharp and nearly straight as far as the unguis, which is decurved, convex above, acute, its tip extending nearly a quarter of an inch beyond the level of the dorsal outline of the lower mandible. No external nostrils. Lower mandible with the angle long and very narrow towards the end, filled up by an extensible membrane, which extends to the level of the angle of the mouth, the outline of the crura very slightly convex, that of the terminal part descending and slightly convex, the sides convex, the edges sharp and inflected, the tip compressed, with its marginal outline decurved.

Head rather small, oblong. Neck long, and rather thick. Body full, elongated, and depressed. Feet short, stout, placed far behind; tibia feathered in its whole length; tarsus very short, strong, much compressed, covered all round with angular scales, of which the anterior are larger, a series on part of the inner side anteriorly, and another on the lower part of the outer, scutelliform. Toes all placed in the same plane, connected by reticulated webs, and covered above with numerous broad but very short oblique scutella; first toe smallest, fourth longest. Claws rather small, strong, compressed, acute, convex above, arched, that of the third toe pectinated on its inner edge.

Plumage soft, generally blended, compact on the back and wings, glossy on the head, hind neck, and rump; the feathers on the head and neck oblong, on the back ovato-elliptical. The small gular sac, and the space before and beneath the eye, with the eyelids, bare. Wings of moderate size, broad; primaries curved, pointed, the first, second, and third with the inner web cut out toward the end, the first three and a half twelfths shorter than the second, which is longest, but exceeds the third only by one-twelfth; secondaries long and rounded.

Tail of moderate length, very narrow, much rounded or cuneate, of twelve narrow strong-shafted feathers.

Bill yellow, with the ridge brown; gular sac and bare skin about the eyes orange. The upper part of the head and hind neck are dusky, tinged with green, the hind part of the back greenish-black; the rest of the upper parts brownish-grey, each feather margined with black. The quills are also brownish-grey, edged with black, the outer primaries and the tail-feathers black. The sides of the head, the fore part of the neck, and the breast light yellowish-brown, the middle of the neck in front darker, the sides, abdomen, and tibial feathers, shaded into brownish-black, tinged with green. On the sides of the neck and on the hind part of the sides of the body are a few scattered white pili-form feathers with a terminal pencil of filaments.

Length to end of tail 35 inches; bill along the ridge $2\frac{1}{2}$; along the edge of lower mandible $3\frac{4}{1\frac{1}{2}}$; wing from flexure $12\frac{1}{2}$; tail $6\frac{9}{1\frac{1}{2}}$; tarsus $2\frac{1}{2}$; first toe 1, its claw $\frac{7}{1\frac{1}{2}}$; second toe $1\frac{10}{1\frac{1}{2}}$, its claw $\frac{6}{1\frac{1}{2}}$; hind toe $2\frac{8}{1\frac{1}{2}}$, its claw $\frac{6}{1\frac{1}{2}}$; fourth toe $3\frac{1}{2}$, its claw $\frac{5}{1\frac{1}{2}}$.

Another individual, apparently a bird in its first plumage, has the head and upper part of the fore neck darker, the middle of the breast lighter, the feathers on the back margined with greyish-brown and an inner band of dark brown. Its bill is longer, but more slender, the unguis less curved, the feathers not entirely obliterated from the space before the eye, and extending farther on the gular sac. It is obviously however of the same species.

CALIFORNIAN PARTRIDGE.

PERDIX CALIFORNICA, LATH.

PLATE CCCCXIII. MALE AND FEMALE.

THIS beautiful species was discovered in the course of the voyage of LA PEROUSE, and figured in the atlas accompanying the account of that unfortunate expedition, but without any other notice respecting its habits or distribution, than an intimation of its having been found abundant in the plains and thickets of California, where it formed large flocks. Dr TOWNSEND has lately sent me a beautiful specimen of the male, which he procured on the 6th of March 1837, near Santa Barbara in California. I have to regret, however, that he has not furnished me with any account of its habits. Mr NUTTALL, in speaking to me of this bird, informed me that it is very gentle or confident, so as to be in a great measure regardless of the approach of man, that its manners resemble those of our Common or Virginian Partridge, and that the males in spring are seen perched on low bushes, where they utter their love-notes in the same emphatic manner as the species just mentioned.

PERDIX CALIFORNICA, *Lath.* Ind. Ornith. Suppl. p. 62.

Adult Male. Plate CCCCXIII. Fig. 1.

Bill very short, stout; its dorsal outline decurved from the base, the ridge narrow, the sides sloping and slightly convex, the edges sharp and overlapping, the tip rather obtuse but thin-edged; nostrils basal, oblong, operculate, in the fore part of the wide nasal groove, which is partially covered with feathers; gape-line a little arched; lower mandible with the angle short and rounded, the dorsal line ascending and slightly convex, the ridge broad, the sides convex, the edges sharp, the tip obtuse.

Head of moderate size, ovate; neck short; body full. Feet of moderate length, stout; tibia covered to the joint; tarsus rather short, a little compressed, sharp-edged behind, covered all round with angular scales, of which the anterior are very large; toes four, the first small, and placed higher than the rest; the anterior long, rather slender, the fourth considerably longer than the second, the third much the longest, all scutellate above. Claws long, rather slender, arched, rather obtuse.

Plumage full, firm, blended. Feathers on the fore part of the head

linear, recurved, stiff; those of the neck oblong, of the throat blended, of the other parts generally broadly ovate. On the top of the head is an elegant crest of elongated feathers, six in number, at first decurved, towards the end recurved, narrow at the base, broad towards the end, with the webs deflected, the longest an inch and two-twelfths. Wings short, convex, much rounded, the fourth and fifth quills longest, the first eight-twelfths of an inch shorter. Tail rather short, much rounded, of twelve feathers.

Bill bluish-black. Iris dark hazel. Feet dull yellowish-grey, claws dusky. The stiff feathers on the forehead are dull yellow; the crest black, the upper part of the head dark-brown, margined with a band of white; the throat deep black, margined by a semilunar band of white curving up to the eyes, behind which is a bare space. The hind part and sides of the neck are light ash-grey, anteriorly approaching to white, beautifully marked with black, each feather having a marginal band and central line of that colour; the lower half of the neck anteriorly and a part of the breast, are greyish-blue, the rest of the breast reddish-white, its central part chestnut-red, with semilunar black bands; the sides reddish-brown, each feather with a central white streak; the rest of the lower parts light yellowish-brown, faintly barred with dusky, the lower tail-coverts with a central dark brown streak. The back and wings are greyish-brown, the outer secondaries margined externally, the inner internally with light red; the tail brownish-grey.

Length to end of tail $9\frac{1}{4}$ inches; bill along the ridge $\frac{6\frac{1}{2}}{1\frac{1}{2}}$, along the edge of lower mandible $\frac{6}{1\frac{1}{2}}$; wing from flexure $4\frac{7}{1\frac{1}{2}}$; tail $3\frac{1}{2}$; tarsus $1\frac{1}{4}$; hind toe $\frac{4}{1\frac{1}{2}}$, its claw $\frac{5}{1\frac{1}{2}}$; middle toe $1\frac{2}{1\frac{1}{2}}$, its claw $\frac{6\frac{1}{2}}{1\frac{1}{2}}$.

Adult Female. Plate CCCCXIII. Fig. 2.

The Female, which is a little smaller, has also a shorter tuft of elongated feathers on the head, and is much less brightly coloured; the bill being brown, the feet yellowish-brown; the upper part of the head dull reddish-brown, the throat and cheeks brownish-white, streaked with dusky; the hind part and sides of the neck greyish-brown, each feather with a median and marginal band of black, as in the male, but fainter; the lower part of the neck and part of the breast brownish-grey, the rest of the upper and lower parts as in the male, but much duller.

Length to end of tail 9 inches; bill along the ridge $\frac{6}{1\frac{1}{2}}$; wing from flexure $4\frac{7}{1\frac{1}{2}}$; tail $3\frac{9}{1\frac{1}{2}}$; tarsus $1\frac{1}{1\frac{1}{2}}$; hind toe $\frac{3\frac{1}{2}}{1\frac{1}{2}}$, its claw $\frac{2\frac{1}{2}}{1\frac{1}{2}}$; middle toe $1\frac{2}{1\frac{1}{2}}$, its claw $\frac{5}{1\frac{1}{2}}$.

GOLDEN-WINGED WARBLER.

SYLVIA CHRYSOPTERA, LINN.

PLATE CCCCXIV. MALE AND FEMALE.

ALTHOUGH I have met with this species entering the United States from the Texas in the month of April, and have procured several specimens in Kentucky and Louisiana, as well as a single one in New Jersey, I never had the good fortune to find its nest. When it first makes its appearance in Louisiana or Kentucky, it usually resorts to the higher branches of trees, where, amid the opening leaflets and blossoms, it actively searches for its insect food, occasionally following its prey on wing to some distance, and moving by short leaps among the twigs, in the manner of *Sylvia carbonata* of my first volume, which, in its elongated and slender shape, it in some measure resembles; although the latter has been pointed out by the Prince of MUSIGNANO as identical with the Cape May Warbler, *Sylvia maritima*, in which erroneous opinion he has been supported by Sir WILLIAM JARDINE. I never could in the smallest degree assimilate the movements of the Golden-winged Warbler to those of the Titmice. Indeed in this respect these birds are quite different, as they are in their manner of flight, which, in the species now under consideration is elevated, swift, and irregularly undulated, until it is about to alight, when it dives toward the spot selected by it, as most Warblers are wont to do. I never saw a bird of this species in autumn, and therefore infer that its southward journey must be accomplished in a very secret and careful manner, or by night. A male and a female are figured in their perfect spring plumage.

SYLVIA CHRYSOPTERA, Linn. Syst. Nat. vol. i. p. 333.—Lath. Ind. Ornith. vol. ii. p. 541.

GOLDEN-WINGED WARBLER, *SYLVIA CHRYSOPTERA*, Wils. Amer. Ornith. vol. ii. p. 113, pl. 15, fig. 6, male.—Bonap. Amer. Ornith. vol. i. p. 12, pl. 1, fig. 3, female.

GOLDEN-WINGED WARBLER, Nuttall, Manual, vol. i. p. 411.

Male in spring. Plate CCCCXIV. Fig. 4.

Bill shorter than the head, slender, conical, compressed toward the end, tapering to an acute point; upper mandible with the dorsal line almost perfectly straight, being very slightly convex toward the end, the ridge narrow, the sides sloping at the base, rounded toward the

end, the edges a little inflected, without notch, the tip acuminate; nostrils basal, oblong, operculate; lower mandible with the angle rather short and obtuse, the dorsal line straight, the sides convex, the edges inflected, the tip acuminate, the gape-line nearly straight.

Head of moderate size, ovate; neck rather short; body slender. Feet of moderate length, slender; tarsus longer than the middle toe, much compressed, covered anteriorly by seven scutella, posteriorly by two plates meeting so as to form a very thin edge; toes small, much compressed; hind toe comparatively large, lateral toes nearly equal, middle toe much longer; claws moderate, well curved, much compressed, laterally grooved, acute.

Plumage very soft and blended. Wings of moderate length, the second quill longest, the third scarcely shorter, the first and fourth about equal, the first with the outer web narrowed in its whole length, the next three toward the end; secondaries long, rather narrow, rounded. Tail rather long, nearly even, the middle feathers being scarcely a twelfth of an inch shorter than the lateral.

Bill and feet black; iris brown. The general colour of the upper parts is light ash-grey, of the lower white; the upper part of the head, and a patch on the wing, formed by the first row of small coverts and the secondary coverts, bright yellow; a band from the bill to the eye, continued under it, and enlarging behind, so as to include the ear-coverts, together with the throat to the extent of about an inch, black; a white band from over the eyes to behind the ears, and another from the lower mandible down the side of the neck, enlarging as it proceeds; the sides under the wings very pale ash-grey. The quills and tail-feathers are brown, edged with ash-grey; the outer three feathers of the tail have a large portion of the inner web white.

Length to end of tail $4\frac{1}{4}$ inches, to end of wings $3\frac{7}{8}$; extent of wings $7\frac{5}{8}$; bill along the ridge $\frac{5\frac{3}{4}}{1\frac{1}{2}}$, along the edge of lower mandible $\frac{7\frac{1}{2}}{1\frac{1}{2}}$; wing from flexure $2\frac{8}{1\frac{1}{2}}$; tail $2\frac{1}{4}$; tarsus $\frac{8\frac{1}{2}}{1\frac{1}{2}}$; hind toe $\frac{5}{1\frac{1}{2}}$, its claw $\frac{5}{1\frac{1}{2}}$; middle toe, $\frac{5}{1\frac{1}{2}}$ its claw $\frac{2}{1\frac{1}{2}}$.

Adult Female. Plate CCCCXIV. Fig. 2.

The Female resembles the male, but has the tints less bright, the sides of the head and the throat grey instead of black, and the white bands on the head narrower and less extended.

Length to end of tail 4 inches, to end of wings $3\frac{5}{8}$; extent of wings $7\frac{1}{4}$.

CAPE MAY WARBLER.

SYLVIA MARITIMA, WILS.

PLATE CCCCXIV. MALE AND FEMALE.

OF this beautiful species, which was first described by WILSON, very little is known. It seems to pass rapidly through our Middle Districts in May. I have never met with a single bird of this kind on my rambles, and am indebted for the fine specimens of both sexes in my possession, and from which I drew the figures in the plate, to my generous friend EDWARD HARRIS, Esq. of Moorestown, New Jersey, who procured them, with several others, in that district.

CAPE MAY WARBLER, *SYLVIA MARITIMA*, *Wils.* Amer. Ornith. vol. iv. p. 99, pl. 54, fig. 3, male.—*Bonap.* Amer. Ornith. vol. i. p. 32, fig. 3, female.
CAPE MAY WARBLER, *Nuttall*, Manual, vol. i. p. 371.

Adult Male. Plate CCCCXIV. Fig. 3.

Bill shorter than the head, slender, conical, compressed toward the end, tapering to an acute point; upper mandible with the dorsal line straight, somewhat convex toward the end, the ridge narrow, the sides sloping at the base, convex toward the end, the edges thin and overlapping, without notch, the tip acuminate; nostrils basal, oblong, operculate; lower mandible with the angle rather short and obtuse, the dorsal line straight, the sides convex, the edges inflected, the tip acuminate; the gape-line slightly arched.

Head of moderate size, ovate; neck rather short; body rather slender. Feet of moderate length, slender; tarsus longer than the middle toe, much compressed, covered anteriorly with seven scutella, posteriorly with two plates meeting so as to form a very thin edge; toes small, much compressed; hind toe comparatively large, lateral toes nearly equal, middle toe much longer; claws moderate, arched, extremely compressed, acute.

Plumage soft and blended. Wings of moderate length, pointed; the first quill longest, the second a quarter of a twelfth shorter, the third a twelfth shorter; secondary quills of moderate length, faintly

emarginate. Tail of moderate length, slightly emarginate, the middle feather being a twelfth of an inch shorter than the longest, the feathers pointed.

Bill and feet black. Iris brown. Upper part of head, and fore part of back yellowish-olive, streaked with dusky; the rump, the throat, and a collar scarcely meeting behind, yellow; a band over the eye and the ear-coverts yellowish-red; a white patch on the wing, formed by the first row of small coverts, and the outer edges of the secondary coverts white; quills and tail feathers blackish-brown, edged with dull greyish-white; the three outer of the latter having a white patch on the inner web toward the end. The lower parts are yellow, fading into white behind; the fore neck, the fore part of the breast, its sides, and the parts under the wing marked with longitudinal, oblong, black spots.

Length to end of tail $5\frac{1}{2}$ inches, to end of wings $3\frac{1}{2}$; bill along the ridge $\frac{5}{12}$, along the edge of lower mandible $\frac{6}{12}$; wing from flexure $2\frac{8}{12}$; tail 2; tarsus $\frac{3\frac{1}{2}}{12}$; hind toe $\frac{3}{12}$, its claw $\frac{3}{12}$; middle toe $\frac{5}{12}$, its claw $\frac{2\frac{1}{2}}{12}$.

Adult Female. Plate CCCCXIV. Fig. 2.

The Female resembles the male, but has the tints duller, the rump greenish-yellow, the white patch on the wing less pure and of less extent, the ear-coverts dull yellow, the lower parts with more white behind, and with the streaks less distinct.

In size and form this species is very similar to the last, but its bill is shorter, thicker, and much less attenuated at the end.

BROWN CREEPER.*CERTHIA FAMILIARIS.*

PLATE CCCCXV. MALE AND FEMALE.

THE only parts of the United States in which I have not met with this species during winter are the eastern and northern portions of the Peninsula of the Floridas. This has appeared the more strange to me, because I have observed several of these birds in Georgia, Alabama, Mississippi, and Louisiana, at that season, during which it is not rare in any of the States intervening between these and Maryland. In the spring and summer months, or what is usually called the breeding season, the Brown Creeper may be found over the whole country, from the thick woods of the northern parts of Pennsylvania to Newfoundland. None were seen by my party or myself in Labrador, and as no mention is made of this species in the *Fauna Boreali-Americana*, I suspect that the want of sufficiently wooded localities prevents it from proceeding farther north.

This bird alights on trees of all kinds, in the Carolinas on pines, in Maine on maples, in Kentucky on hickories, oaks, or ash-trees; and as, from the time when it is first able to fly, it is one of the most constant roamers of the forest, you may meet with it in almost any part of the woods. The taller trees, however, are generally preferred by it, perhaps on account of its reluctance to fly from one tree to another at a distance. It seldom leaves a tree without searching all its cranies, from near the roots to the tops of the larger branches, which it does with incomparable assiduity and care, yet by movements so rapid that a person unacquainted with it might be inclined to think that it runs up the trunk and branches, directly or spirally, above or beneath the latter, without any other intention than that of reaching the end of its journey as quickly as possible. The reverse of this, however, is the case, for, shoot one of them when you please, you will find its stomach crammed with insects and larvæ, such as occur on the trees. When these are not found in abundance, the Creeper appears to discover the scarcity very soon, and instead of continuing its search, abandons the tree when not many yards from the ground, and launching off

shoots downward in its usual manner, and alights a little above the roots of another in the neighbourhood. I have observed it when satiated, remain still and silent as if asleep, and, as it were, glued to the bark, for nearly an hour at a time. But whether the bird was really asleep, or wished to elude us, is more than I can affirm, although I am inclined toward the latter supposition, because toward night it retires to a hole, where frequently as many as a whole brood repose together, as I have on several occasions witnessed.

When on the move, the Brown Creeper emits at short intervals a sharp, quick, rather grating note, peculiar to itself, and by which you may, if acquainted with it, discover from a distance of more than sixty yards, in calm weather, where it is. Yet, after all, it requires some time, and a good eye, to perceive it, if on one of the upper branches of a tall tree. The name of "Gleaner," applied to this bird, is, in my opinion, very inappropriate; for instead of its following the different tribes of small Woodpeckers, or even Nuthatches, which, however, are at times found in company with it, I have seen our little hunter travel over every part of a large and tall tree, and afterwards remove to another, before the Woodpecker had hammered its way to a grub, which it knew to be under the bark; and all the activity of our Nuthatches does not perhaps surpass that of the present species. Yet they all pursue their avocations at the same time, and now and then on the same trees, although this is by no means a constant habit with them.

WILSON was of opinion that the Brown Creeper moves "rapidly and uniformly along, with his tail bent to the tree, and not in the hopping manner of the Woodpecker;" but I must differ from him, for the bird at each move actually hops, assisted by the pressure of its elastic tail, which indeed is the case with all our Woodpeckers, whether on the upper or the lower surface of a branch. This may be easily seen on placing a Brown Creeper in a cage containing a piece of a branch covered with scaly bark.

This bird breeds in the hole of a tree, giving a marked preference to such as are small and rounded at the entrance. For this reason, perhaps, it often takes possession of the old and abandoned nests of our smaller Woodpeckers and Squirrels; but it is careless as to the height of the situation above the ground, for I have found its nest in a hole in a broken stump which I could reach with my hand, although I could not examine it on account of the hardness of the wood. All the nests

which I have seen were loosely formed of grasses and lichens of various sorts, and warmly lined with feathers, among which I in one instance found some from the abdomen of *Tetrao Umbellus*. The eggs are from six to eight, but in some instances I have found only five, when I have supposed them to belong to a second brood. They measure five-eighths and three-fourths of an inch in length, four and a quarter-eighths in their greatest breadth. Their ground-colour is white, with a yellowish tint, irregularly marked with red and purplish spots and dots, which are larger and more crowded toward the broad end, leaving a space at its apex nearly free, as is also the case with that of the narrow end; there are small dots of pure neutral tint here and there, but none of those "streaks of dark brown" described by WILSON.

The young, like those of our Woodpeckers and Nuthatches, remain about the nest until they are able to fly, and in their minority are well supplied with food. The members of a family usually remain together until the next spring.

The males of this species are larger than the females. This difference is very apparent in the bill. In the winter months, the Brown Creeper is not unfrequently seen in orchards, and at a short distance from farm-houses; but in the breeding season it retires to the interior of the forests. Its food consists chiefly of ants, larvæ, small insects, and particles of lichens; and, if one be placed near the nose, it is generally found to emit an odour like that of ants.

I have figured a male and female, the former on wing, for the purpose of being more conveniently compared with the European Creeper, which I am convinced belongs to the same species. I have to regret, however, that only ten in place of twelve feathers have been represented in the tail, which must have been defective in my specimen.

CERTHIA FAMILIARIS, *Linn.* Syst. Nat. vol. i. p. 184.—*Lath.* Ind. Ornith. vol. i. p. 280.

—*Ch. Bonaparte*, Synopsis of Birds of United States, p. 95.

BROWN CREEPER, CERTHIA FAMILIARIS, *Wils.* Amer. Ornith. vol. i. p. 122, pl. 8, fig. 1.

BROWN CREEPER, *Nuttall*, Manual, vol. i. p. 585.

Adult Male. Plate CCCCXV. Fig. 1.

Bill a little shorter than the head, arched, very slender, much compressed, acute; upper mandible with the dorsal line arched, the ridge

narrow, the sides sloping at the base, nearly erect in the rest of their extent, the edges sharp and arched, without notch, the tip acute; nasal groove rather long, narrow, feathered; nostrils linear-oblong, operculate; lower mandible with the angle rather long, narrow, and pointed, the outline decurved, the sides erect and convex, the edges inclinate, the tip acute.

Head rather small, ovato-oblong; neck short; body slender. Feet rather short, very slender; tarsus rather shorter than the middle toe, very slender, much compressed; toes extremely compressed; the first comparatively large, longer than the middle toe, including the claws; the inner toe shorter than the outer; claws long, slender, extremely compressed, laterally grooved, acute, that of the hind toe very long.

Plumage long, loose, very soft; the feathers ovato-oblong, with disunited filaments. Wings of moderate length, very broad; the first quill very short, being ten and a half twelfths shorter than the second, which is four-twelfths shorter than the third, the fifth longest but scarcely exceeding the fourth, which is one-twelfth longer than the third. Tail long, graduated, of twelve moderately stiff pointed feathers, of which the lateral are eight-twelfths shorter than the middle.

Upper mandible brownish-black, lower flesh-coloured, with the tip dusky. Iris brown. Feet light reddish-brown, claws yellowish-grey. The upper parts are reddish-brown, the head darker, the rump light brownish-red; all the feathers with a central dull whitish streak. Wings deep brown, the coverts tipped, the secondary coverts barred at the base with dull yellow, of which a broad band in the midst of a brownish-black space crosses both webs of the quills, excepting the inner webs of the outer four, and the outer webs of the outer three; most of the quills have also a greyish-yellow patch along the outer web toward the tip, which is dull-white, the tail-feathers are yellowish-brown, with shafts of the same colour, the webs darker toward the end. A silvery white band passes over the eye; the cheeks are dark brown; the lower parts are silvery-white, the sides tinged with brown.

Length to end of tail $5\frac{1}{2}$ inches; to end of wings 4; to end of claws $4\frac{1}{4}$; extent of wings $8\frac{1}{2}$; bill along the ridge $\frac{7\frac{3}{4}}{1\frac{1}{2}}$, along the edge of lower mandible $\frac{1\frac{0}{2}}{1\frac{0}{2}}$; wing from flexure $2\frac{7}{1\frac{1}{2}}$; tail $2\frac{9}{1\frac{1}{2}}$; tarsus $\frac{6\frac{3}{4}}{1\frac{1}{2}}$; hind toe $\frac{3\frac{1}{2}}{1\frac{1}{2}}$, its claw $\frac{5\frac{1}{2}}{1\frac{1}{2}}$; middle toe $\frac{5\frac{3}{4}}{1\frac{1}{2}}$, its claw $\frac{4\frac{1}{2}}{1\frac{1}{2}}$.

Adult Female. Plate CCCCXV. Fig. 2.

The Female is considerably smaller, and generally of a darker colour, but otherwise similar.

Length to end of tail $5\frac{1}{2}$ inches, to end of wings $4\frac{1}{4}$, to end of claws $4\frac{1}{2}$; extent of wings 8; bill along the ridge $6\frac{1}{12}$.

The shafts and webs of the tail are somewhat undulated, so as to give the appearance of their being barred with dusky. Younger individuals have the rump less red. Some have the lower parts almost pure white, while in others they are dusky white, being soiled by matter rubbed from the trees.

On comparing four fresh and several dried specimens shot near Edinburgh, with eight dried specimens from America, one of which is from the Columbia River, I can find nothing on which to found a specific distinction.

The roof of the mouth is flat, but the mandible concave; the posterior aperture of the nares linear, margined with two rows of papillæ. The tongue is slender, decurved, long, measuring $6\frac{1}{2}$ twelfths, deeply emarginate and papillate at the base, concave above, horny in the greater part of its length, and tapering to a point. The œsophagus is 1 inch 8 twelfths long, of moderate width, its average diameter $1\frac{1}{2}$ twelfth, without dilatation. The proventriculus is enlarged to 2 twelfths. The stomach is a muscular gizzard, of a somewhat elliptical form, 5 twelfths long, $4\frac{1}{2}$ twelfths in breadth; its lateral muscles very strong, the tendons of moderate size; the epithelium thin, tough, longitudinally rugous, reddish-brown. The contents of the stomach are remains of insects of various kinds, and one large particle of quartz. The intestine is short, being only $4\frac{1}{2}$ inches long; its greatest diameter 1 twelfth; the rectum is dilated; the cœca, which come off at the distance of 5 twelfths from the extremity, are $\frac{1}{2}$ twelfth long, and $\frac{1}{4}$ twelfth in breadth.

CALIFORNIAN NUTHATCH.

SITTA PYGMEA, VIGORS.

PLATE CCCCXV. ADULT.

The figures of this species were drawn from a specimen kindly lent me by the Council of the Zoological Society of London. It was procured by Captain BEECHY in Upper California, and is therefore entitled to a place in our Fauna. Nothing is known of the habits of this bird, nor do I even know the sex of the individual figured.

SITTA PYGMEA, *Vig.*

Adult. Plate CCCCXV. Fig. 3, 4.

Bill of moderate length, rather slender, subconical, compressed, the tip depressed; upper mandible slightly convex in the dorsal outline, the sides sloping, the edges sharp and overlapping; lower mandible with the angle short and rather narrow, the dorsal line ascending and slightly convex. Nostrils basal, lateral, oblong.

Head rather large, ovate; neck short; body short. Feet rather short and strong; tarsus compressed, anteriorly scutellate, behind sharp; toes free, scutellate above, the hind toe very large and strong; claws arched, much compressed, laterally grooved, acute, that of the hind toe much larger.

Plumage soft and blended. Wings of ordinary length; the first quill very small, the second considerably shorter than the third, the fourth longest. Tail very short, even, of twelve rounded soft feathers.

Bill bluish-black. Feet and claws reddish-brown. The upper part of the head and the hind neck are dull greyish-brown; the upper parts of the body dull leaden-grey; the quills and tail-feathers dusky, margined with light grey, the two lateral tail-feathers on each side with a white band toward the base; the lower parts brownish-white.

Length to end of tail $3\frac{9}{12}$ inches; bill along the ridge $\frac{6\frac{3}{4}}{12}$; wing from flexure $3\frac{5}{12}$; tail $1\frac{1}{4}$.

HAIRY WOODPECKER.

PICUS VILLOSUS, LINN.

PLATE CCCCXVI. MALE AND FEMALE.

THIS species of Woodpecker has been confounded with another to which it bears a great resemblance in its markings, but from which it is distinguished by its smaller size, and the differences to be presently pointed out. WILSON, it appears, did not believe in the existence of the Canada Woodpecker, *Picus canadensis*; yet his figure of the Hairy Woodpecker seems to me to be a representation of that species, while his description belongs in part to both. These errors have been adopted by all his followers to the present day, although the specific distinctions between *Picus villosus* and *P. canadensis* have been clearly recognised by my young friend Dr TRUDEAU, who has written to me from Paris that both species are in the national museum there, and are looked upon as the same bird. Mr SWAINSON, who observed a difference between the birds of the present species received from New York, and those of higher northern latitudes, has given an exact description and figure of the bill of *P. canadensis*, thinking that he was describing *P. villosus* of LINNÆUS. To this he was probably led by the erroneous account given of the extent of the distribution of this species northward.

The Hairy Woodpecker, *P. villosus*, is a constant resident in our maritime and inland districts, from the Texas, where I have found it numerous, to the State of New Hampshire, as well as in all sufficiently wooded tracts intervening between the junction of the Missouri and Mississippi, and the northern borders of our great lakes. But not a single individual of this species could I or my sons procure in the State of Maine, where, however, the larger species, *P. canadensis*, was quite abundant, and from whence it extends its migrations "as far north," according to Dr RICHARDSON, "as the sixty-third parallel." "It remains," he continues, "all the year in the Fur Countries, and is the most common species up to the fifty-sixth degree of latitude, north of which it yields in frequency to the three-toed species."

Lively, noisy, and careless of man, the Hairy Woodpecker is found

at all seasons in the orchards, among the trees of our cities, along the borders of plantations, on the fences, or on the trees left in the fields, as well as in the densest parts of the forests. Nay, Reader, I have found this species, when in company with my friend HARRIS and my youngest son, in the very midst of vast salt-marshes, about the mouths of the Mississippi, where here and there a straggling willow or cotton-tree bush occurred, as gay, busy, noisy, and contented, as it if had been in the midst of the woods. In such localities it alights against the stalks of the largest and tallest reeds, and perforates them as it is wont to bore into trees.

In almost all parts of the Southern States, it becomes in winter one of the most familiar species, and, like the Downy Woodpecker, comes to the yard to glean the grains of corn left by the cattle. There it may be seen hopping on the ground, among Turtle Doves, Cardinal Grosbeaks, Red-bellied Woodpeckers, and several species of Black-birds. At this season, its visits to the corn-cribs are extremely frequent; and curious indeed do the shrill notes of this lively and industrious bird sound in the ear of the person who chances to surprise it within the crib, from which it makes off, passing swiftly perhaps within a foot or so of his hand. But no sooner has its escape been effected than it will alight close by, on the top of a fence-stake, and chuck aloud as if in merriment. I have often observed it clinging to the stalks of the sugar-cane, boring them, and apparently greatly enjoying the sweet juices of that plant; and when I have seen it, in severe winter weather, attempting to bore the dried stalks of maize, I have thought it expected to find in them something equally pleasing to its taste. Like all our other species, it clings, when shot, to the trunk or branch of the tree, until quite dead, and even remains sticking for several minutes more.

The flight of this species is usually short, though rapid, in this respect agreeing with that of some others allied to it, which are constant residents in the United States, and differing from that of the migratory species. It is seldom that more than the members of a family are seen together, and even this only until the young are able to provide for themselves. The migratory species, on the contrary, are frequently observed to congregate upon trees laden with fruit. This never happens with the Hairy, Downy, Yellow-bellied, Red-bellied, Canada, or Three-toed Woodpeckers; among some of which, however, a certain change

of locality takes place from south to north and backwards, within the limits of the United States, in spring and autumn.

The Hairy Woodpecker feeds on the larvæ of most insects, as well as on the insects themselves. It sometimes launches into the air after a passing one, as indeed is the case with all the Woodpeckers with which I am at present acquainted, although the larger species are less addicted to this mode of pursuing their prey than the smaller. In autumn it frequently feeds on berries near the ground, or on grasses and other fruits among the tops of our tall trees. Its notes are sharp, loud, and at times rolling, like those of others of our smaller species, but frequently uttered singly whilst it is moving on wing or along a tree.

The hole which it forms for receiving its eggs seldom exceeds two feet in depth, after diverging from its first horizontal direction, sometimes running perpendicularly, but often obliquely. In the Southern States two broods are frequently reared in the season; the first being seen abroad in May, the other in the end of July or the beginning of August. In the Middle Districts it rarely produces more than one brood. I have regularly observed that those pairs which had two broods in Louisiana, raised both in the same nest, and that not unfrequently within a few yards of a house. The eggs of the first hatch are usually six, of the second four. In the Middle Districts the number varies from four to six, and in two instances I found seven. They measure 1 inch in length by $5\frac{1}{2}$ eighths in breadth, are elliptical or almost equally rounded at both ends, smooth, pure white and translucent. The young remain about the nest until well able to fly, as is the case with those of other species.

Various writers state that the Hairy Woodpecker has been found in England; but this is very doubtful, and at present it does not seem that there are any well authenticated instances.

I have figured a male and a female; the latter, I believe, not having previously been represented.

PICUS VILLOSUS, *Linn. Syst. Nat.* vol. i. p. 175.—*Lath. Ind. Ornith.* vol. i. p. 232.—

Ch. Bonap., Synopsis of Birds of United States, p. 46.

HAIRY WOODPECKER, PICUS VILLOSUS, *Wils. Amer. Ornith.* vol. i. p. 150, pl. 9, fig. 3, male ?

HAIRY WOODPECKER, *Nuttall, Manual*, vol. i. p. 575.

Adult Male. Plate CCCCXVI. Fig. 1.

Bill about the length of the head, straight, strong, angular, compressed toward the tip, which is truncate and cuneate. Upper mandible with the dorsal line straight, the ridge very narrow, the sides sloping and flat, the lateral angle or ridge nearer the edge, which is sharp, direct, and overlapping. Lower mandible with the angle short and rather wide, the dorsal line straight, the ridge narrow, the sides flat at the base, convex toward the end, the edges inflected, the tip narrow. Nostrils oblong, basal, concealed by the feathers, and placed near the margin.

Head large, ovate; neck rather short; body full. Feet very short; tarsus short, compressed, feathered anteriorly more than one-third down, scutellate in the rest of its extent, as well as behind, on the inner side; toes four; first small, but stout; fourth longest and directed backwards, second and third united at the base; all scutellate above. Claws large, much curved, compressed, laterally grooved, very acute.

Plumage very soft, full, and blended. A large tuft of reversed stiff feathers on each side of the base of the upper mandible, concealing the nostrils; the feathers in the angle of the lower mandible also stiff, elongated, and directed forward. Wings rather long; the first quill very small, being only eleven-twelfths long, the second one inch and eleven-twelfths longer, and five and a half twelfths shorter than the third, which is one-twelfth shorter than the fourth, this being the longest, but scarcely exceeding the fifth; secondaries broad and rounded. Tail of moderate length, cuneate, of twelve feathers, of which the lateral, which are rounded and unworn, are only one inch long, the next, also unworn, are nine-twelfths of an inch shorter than the middle, which are pointed, having the shafts very strong and bristle-pointed; all the rest more or less pointed.

Bill bluish-grey, toward the end black. Iris brown. Feet bluish-grey. The upper parts are black, spotted with white, the lower brownish-white. The tufts of bristly feathers over the nostrils, and in the angle of the lower jaw, are dull yellow; the upper part of the head and the hind neck, are glossy black; over each eye is a band of white continuous with a transverse band of scarlet on the occiput, usually divided into two patches by the continuation of the black of the head; a black band from the bill to the eye, continued behind it over the auriculars, and joining the black of the hind neck; beneath

this black band is one of white, proceeding from the angle of the mouth and curving backwards below the middle of the neck, so as to meet its fellow behind; this band is succeeded by another of black, proceeding from the base of the lower mandible, and continuous with the black of the shoulders. All the upper parts may be described as black, tinged with brown behind; the feathers along the middle of the back tipped with white, forming a longitudinal band of that colour; the wing-coverts, the anterior excepted, and quills spotted with the same, there being on the four longest primaries seven spots on the outer and five on the inner web, on most of the secondaries five on each web; but on the outer quill only one patch on each web, and on the second two spots on the outer, and three on the inner. The four middle tail-feathers are glossy black, the rest black only towards the base, the outermost being almost entirely white. The lower parts are white, tinged with dull grey on the fore neck and breast, the sides with blackish-grey.

Length to end of tail $8\frac{3}{4}$ inches; to end of wings $7\frac{5}{8}$, to end of claws $7\frac{1}{2}$; extent of wings $14\frac{1}{4}$; bill along the ridge $1\frac{1}{2}$; along the lower mandible $1\frac{1}{4}$; wing from flexure $4\frac{7}{8}$; tail $2\frac{1}{2}$; tarsus $\frac{1}{2}$; hind toe $\frac{5}{2}$, its claw $\frac{4}{2}$; second toe $\frac{6}{2}$, its claw $\frac{6}{2}$; third toe $\frac{7}{2}$, its claw $\frac{6}{2}$, fourth toe $\frac{7}{2}$ its claw $\frac{7}{2}$.

Adult Female. Plate CCCCXVI. Fig. 2.

The Female resembles the male externally, being however more tinged with brown, especially on the quills, and wanting the red patches on the occiput.

Length to end of tail $8\frac{1}{2}$ inches, to end of wings $7\frac{1}{2}$, to end of claws $7\frac{1}{2}$; extent of wings 15.

In an adult male, the roof of the mouth has a prominent middle ridge, which divides posteriorly into two; the palate is convex; the posterior aperture of the nares linear-olong, margined with papillæ. The tongue is eleven-twelfths long, toward the end horny, pointed, and furnished with two lateral series of acute reversed papillæ. The horns of the hyoid bone curve round the occiput, converge on the top of the head, then leave the median line, pass to the right side in a groove round the anterior edge of the orbit, and are deflected backwards below the eye *so far as near the level of its posterior angle*. The aperture of the mouth measures $5\frac{1}{2}$ twelfths across. The œsophagus

is 3 inches long, $3\frac{1}{2}$ twelfths in diameter, very slightly dilated at the lower part of the neck. The proventriculus is scarcely enlarged; its glandules form a belt 4 twelfths in breadth. The stomach is oblong, 11 twelfths in length, 7 twelfths broad; its lateral muscles very thin; the epithelium thin, tough, longitudinally rugous, reddish-brown. The contents of the stomach are skins of large white larvæ with black heads. The intestine is $9\frac{1}{2}$ inches long, the duodenum $2\frac{1}{2}$ twelfths in diameter. There are no cœca.

The trachea is 2 inches 5 twelfths in length, its diameter $1\frac{1}{2}$ twelfth, gradually diminishing to 1 twelfth. The contractor muscles are both anterior for the length of $1\frac{1}{2}$ inch, beyond which they become lateral, and terminate in the sterno-tracheal at the distance of 2 twelfths from the bifurcation. There are no inferior laryngeal muscles. The rings of the trachea, which are firm, and but slightly compressed, are about 50 in number; the bronchial half rings about 15.

According to Dr TOWNSEND this species is found from the Rocky Mountains to the shores of the Columbia River.

RED-BELLIED WOODPECKER.

PICUS CAROLINUS, LINN.

PLATE CCCCXV. MALE AND FEMALE.

MUCH of what I have said respecting the habits of several of our Spotted Woodpeckers applies to the present species, which differs, however, in the greater extent of its migration in the spring and summer months, when the greater number of those which return from the south to our Middle and Eastern Districts proceed considerably farther northward than the Hairy Woodpecker, although not so far as the Canadian. In winter I have found the Red-bellied Woodpecker the most abundant of all in the pine barrens of the Floridas, and especially on the plantations bordering the St John's River, where on any day it would have been easy to procure half a hundred. Indeed, on this account, and from its well-known notes, the officers and men of the United

States' schooner, the Spark, as well as my assistants, always spoke of it by the name of *chaw-chaw*. Perhaps it partly obtained this name from the numbers of it cooked by the crew in the same manner as the dish known to sailors by the same name. It is, however, less common in the United States than the Hairy Woodpecker; but its range is as extensive, for I have found it from the Texas to the extremities of the British provinces of Nova Scotia, and as far inland as I have travelled. It appears however that it does not inhabit the Fur Countries, as no mention is made of it by Dr RICHARDSON, in the Fauna Boreali-Americana. It is generally more confined to the interior of the forests, especially during the time of its breeding, than the Hairy Woodpecker, although in winter I have found it quite as easily approached. In autumn it frequently occurs in the corn-fields, where it takes its share of the grain, in common with the Hairy, the Downy, and other Woodpeckers. It is a lively and active bird, fond of rolling its tappings against the decayed top-branches of trees, often launching forth after passing insects, and feeding during winter on all such berries as it can procure. Its flight is strong and better sustained than that of the Yellow-bellied or Hairy Woodpeckers, and, like the Golden-winged species, it not unfrequently alights across the smaller branches of the trees, a habit which, I assure you, is oftener exhibited than has been supposed, by all our species of this interesting tribe of birds.

I never found its nest in Louisiana or South Carolina; but it is not uncommon to meet with it in Kentucky; and from Maryland to Nova Scotia these birds breed in all convenient places, usually more in the woods than out of them, although I have found their nests in orchards in Pennsylvania, generally not far from the junction of a branch with the trunk. The hole is bored in the ordinary manner. The eggs are seldom more than four in number; they measure one inch and half an eighth in length, three-fourths of an inch in breadth, are of an elliptical form, smooth, pure white, and translucent. In so far as I have been able to discover, this species produces only one brood in a season. The young remain in or about the nest until able to fly well.

The difference which this species exhibits in the sound of its notes has always been a matter of interest to me; they fall upon the ear as if the bird were suffering from a severe catarrh, and yet may be heard at times at the distance of a hundred yards. They resemble the

syllable *chow* or *chaw*, quickly repeated during its movements, sometimes singly, but more usually doubled.

It feeds on all sorts of insects and larvæ which it can procure, and at certain periods its flesh is strongly impregnated with the odour of its food. When procured in any part of the woods that have been burnt, the feathers of its lower parts are almost black, from the carbonaceous matter adhering to them; and generally in winter, at least in the Floridas, I have found its plumage more soiled than in summer. I have represented a male and a female, in their perfect spring plumage.

PICUS CAROLINUS, *Linn. Syst. Nat.* vol. i. p. 174.—*Lath. Ind. Ornith.* vol. i. p. 231.—

Ch. Bonaparte, Synopsis of Birds of United States, p. 45.

RED-BELLIED WOODPECKER, PICUS CAROLINUS, *Wils. Amer. Ornith.* vol. i. p. 113, pl. 7, fig. 2. Male.

RED-BELLIED WOODPECKER, *Nuttall*, Manual, vol. i. p. 572.

Adult Male. Plate CCCCXV. Fig. 3.

Bill about the length of the head, nearly straight, being very slightly decurved or arched, strong, angular, compressed toward the tip, which is truncate and cuneate. Upper mandible with the dorsal line somewhat arched, the ridge very narrow, the sides sloping but convex, the lateral angle slight, near the ridge, the edges sharp, direct, overlapping. Lower mandible with the angle short and rather narrow, the crural outline concave, the dorsal line ascending and straight, the sides ascending and convex, the edges sharp and inflected, the tip narrow. Nostrils oblong, basal, concealed by the feathers, and placed about half-way between the ridge and the edge.

Head of moderate size, ovate; neck rather short; body full. Feet very short; tarsus very short, feathered anteriorly one-third down, in the rest of its extent covered with a few large scutella, compressed, with a series of small scutella internally behind; toes four; first toe small, fourth a little shorter than third, second and third united at the base; all scutellate above; claws large, much curved, compressed, laterally grooved, very acute.

Plumage full, soft, and blended. A tuft of reversed stiffish feathers on each side of the base of the upper mandible, concealing the nostrils; the feathers in the angle of the lower mandible also stiffish. Wings rather long; the first quill very small, being only an inch and

four-twelfths long, six and a half twelfths shorter than the third, which is two-twelfths shorter than the fourth, the latter the longest, the fifth almost equal; secondaries rounded, and slightly emarginate. Tail of moderate length, cuneate, of twelve feathers, of which the lateral, which are rounded and entire, are only an inch and a twelfth long, the next also unworn, are ten and a half twelfths shorter than the middle, which with those on each side have the tip slit, the shaft terminating abruptly.

Bill bluish-grey, dusky toward the end. Iris bright red. Feet dusky bluish-grey, claws dark brown. The upper part of the head and the hind neck are of a shining bright carmine; the back and scapulars transversely barred with black and white; the rump and tail-coverts with the white predominating; the smaller coverts, secondary coverts, and secondary quills, are also brownish-black, barred with white; the primary coverts unspotted; the primary quills patched or spotted with white at the base; the inner with several spots on their inner web, and all narrowly margined externally and tipped with white. The middle tail-feathers are black, with an oblique band of white occupying part of the outer web, and the greater portion of the inner, which is barred or spotted with black; the next three on each side are black, slightly tipped with white; the next also black, with seven external and three internal white indentations; the outer feathers black, tipped with white, but sometimes barred. The sides of the head and the lower parts are pale grey, the former and the chin yellowish and tinged with red, of which latter there is a shade over the breast, and a brighter tint on the abdomen; the axillar feathers dusky, barred with white, the lower tail-coverts yellowish-white, with a central dusky streak or zigzag mark.

Length to end of tail $9\frac{1}{4}$ inches, to end of wings $7\frac{3}{4}$, to end of claws $8\frac{1}{8}$; extent of wings $15\frac{3}{4}$; bill along the ridge $1\frac{1}{2}$, along the edge of lower mandible $1\frac{4}{12}$; wing from flexure $5\frac{1}{4}$; tail $3\frac{7}{12}$; tarsus $\frac{9\frac{1}{2}}{12}$; first toe $\frac{4}{12}$, its claw $\frac{3\frac{1}{2}}{12}$; second toe $\frac{6\frac{1}{2}}{12}$; its claw $\frac{5}{12}$; third toe $\frac{9}{12}$, its claw $\frac{6}{12}$; fourth toe $\frac{8}{12}$, its claw $\frac{5\frac{1}{2}}{12}$. Weight $2\frac{1}{2}$ oz.

Adult Female. Plate CCCCXVI. Fig. 4.

The Female is somewhat inferior to the male in size, and differs in colour only in having the upper part of the head ash-grey, the feathers at the base of the upper mandible of a dull reddish-orange, the lower parts less tinged with red.

Length to end of tail 8 inches, to end of wings $7\frac{1}{4}$, to end of claws 8; extent of wings $14\frac{1}{2}$. Weight $2\frac{1}{2}$ oz.

In a specimen preserved in spirits, the roof of the mouth is nearly flat, with a median prominent line; the posterior aperture of the nares linear, 9 twelfths long, and margined with papillæ. The tongue is 2 inches long, nearly cylindrical for $1\frac{1}{2}$ inch, its terminal part tapering, slender, covered with a horny sheath, on each of the edges of which are 12 recurved acute bristles. The horns of the hyoid bone curve over the occiput, meet in the median line of the head, and reach as far forward as the vicinity of the right nostril, being, as usual, accompanied in their whole length by a muscle attached to the lower jaw. The œsophagus is $3\frac{1}{4}$ inches long, its average diameter 5 twelfths. The stomach is muscular, roundish, 10 twelfths long, and of the same breadth, its tendons circular and $\frac{1}{4}$ inch in diameter. Its contents are remains of insects and a large quantity of maize. The epithelium is tough, longitudinally rugous, and of a reddish-brown colour. The intestine is $11\frac{3}{4}$ inches long, its average diameter $3\frac{1}{2}$ twelfths. The rectum, which is 4 twelfths in width, gradually enlarges to the cloaca, which is of an oblong form, with a diameter of half an inch. No cœca.

The trachea is $2\frac{1}{2}$ inches long, nearly of uniform diameter, only varying from $1\frac{1}{2}$ twelfth to 1 twelfth, a little flattened, its rings about 60. The bronchi are slender, of moderate length, with about 15 half rings. The lateral muscles, which are moderately strong, terminate on the last ring of the trachea, from which also come off the sternotracheal muscles; there are no inferior laryngeal.

RED-SHAFTED WOODPECKER.

PICUS MEXICANUS.

PLATE CCCCXVI. MALE AND FEMALE.

THIS beautiful species was first described by Mr SWAINSON from Mexican specimens. The extent of its distribution is as yet imperfectly known, especially toward the north. My friend Mr NUTTALL states, that "among the narrow belt of forest which borders Lorimie's Fork of the Platte, we met with the Mexican Colaptes, and never scarcely lost sight of it to the shores of the Pacific. Its manners in all respects are so entirely similar to those of the common species, that the same description applies to both. It is, however, always a much shyer bird, and frequents the ground less. In the breeding season it utters the same echoing note of *whittoe, whittoe, whittoe*; the males at the same time dodging after, and pursuing each other in jealousy and anger. They also burrow into the oak or pine trees, and lay white eggs, after the manner of the whole family. How far they proceed to the north I am unable to say." Dr TOWNSEND informs me that it is known to the Chinook Indians by the name of *A-Koptil-Kow*, and in regard to habits is similar to *Picus auratus*, the male equally partaking of the task of incubation.

I have represented the male and the female.

COLAPTES MEXICANUS, *Swains.* Synops. of Mex. Birds. Phil. Mag. No. 84.

COLAPTES MEXICANUS, RED-SHAFTED WOODPECKER, *Richards.* and *Swains.* Fauna Bor.-Amer. vol. ii. p. 315.

RED-SHAFTED WOODPECKER, *Nuttall,* Manual, vol. ii. p. 603.

Adult Male. Plate CCCCXVI. Fig. 5.

Bill slightly arched, strong, nearly as long as the head, angular, compressed at the tip, which is scarcely truncate or cuneate. Upper mandible with the dorsal line somewhat arched, the ridge narrow, the sides sloping, the lateral angle quite close to the ridge, the edges sharp and overlapping; lower mandible with the angle long and rather narrow, the crural outline a little concave, the dorsal straight, the ridge

narrow, the sides convex, the edges inflected, the tip acute. Nostrils basal, oblong, about half-way between the ridge and the margin, and concealed by the feathers.

Head of moderate size, ovate ; neck rather short ; body rather full. Feet very short ; tarsus short, compressed, anteriorly feathered one-third down, covered with six large scutella in the rest of its extent, thin-edged, with an internal series of small scutella behind ; toes four ; first small, third and fourth about equal, second and third united at the base ; claws large, curved, compressed, laterally grooved, very acute.

Plumage very soft, full, blended. Feathers at the base of the upper mandible stiffish and directed forwards. Wings of moderate length, the fifth quill longest, the fourth one-twelfth of an inch shorter, the third three-twelfths shorter than the fourth, and exceeding the second by one inch, the first only one inch and nine-twelfths long. Tail of moderate length, cuneate, of twelve feathers, all pointed except the outer, which is only an inch and three-quarters in length, the next one inch shorter than the middle.

Bill dusky above and at the tip, light greyish-blue beneath. Iris light brown. Feet greyish-blue. Upper part of the head and hind neck light purplish-grey ; forehead and a band over the eye dull red ; the sides and fore part of the neck ash-grey, with an oblong patch of bright carmine from the base of the lower mandible. The upper parts generally are light greyish-brown, transversely spotted with black ; the hind part of the back white ; the upper tail-coverts black, barred with white. The shafts of the quills and their coverts are orange-red ; the smaller coverts coloured like the back ; primaries and their coverts brownish-black, most of them externally spotted with greyish-brown ; secondaries brownish-black, spotted on both margins with greyish-brown. Tail-feathers brownish-black, the two lateral on each side with several light brown spots along the margin, the rest faintly edged with yellowish-white, the shafts of all toward the base, and the greater part of their lower surface orange-red, tinged with vermilion, as is the lower surface of the wings. On the fore part of the breast is a crescentic patch of black ; the rest of the lower parts are reddish-white, with numerous round black spots.

Length to end of tail $13\frac{1}{2}$ inches ; bill along the ridge $1\frac{1}{2}$, along the edge of lower mandible $1\frac{9}{12}$; wing from flexure $6\frac{10}{12}$; tail $4\frac{10}{12}$; tarsus

$1\frac{2}{12}$; first toe $\frac{4\frac{1}{2}}{12}$, its claw $\frac{4}{12}$; second toe $\frac{8}{12}$, its claw $\frac{6\frac{1}{2}}{12}$; third toe $\frac{10\frac{1}{2}}{12}$, its claw $\frac{7}{12}$; fourth toe $\frac{9\frac{1}{2}}{12}$, its claw $\frac{7}{12}$.

Adult Female. Plate CCCCXVI. Fig. 6.

The Female resembles the male; but has the tints somewhat duller, and wants the red patch on the cheeks, that part being merely tinged with red. An individual, marked by Dr TOWNSEND "Female, Columbia River, April 1, 1836," is similar to the female as above described, but has the lower surface of the wings and tail, with the shafts, of a much paler tint, approaching to dull yellow, which induces me to think that this species does not attain its perfect colouring until at least the second year.

Length to end of tail 13 inches; bill along the ridge $1\frac{4}{12}$.

LEWIS'S WOODPECKER.

PICUS TORQUATUS, WILS.

PLATE CCCCXVI. MALE AND FEMALE.

HERE you have figures of the male and female of a beautiful and singularly marked species of Woodpecker, discovered in the course of the memorable journey of Clarke and Lewis to the Pacific Ocean, and of which the first figure, being that of an immature male, was presented by WILSON. All that is at present known of its habits is contained in the following notes addressed to me by THOMAS NUTTALL, Esq. and Dr TOWNSEND. "About the middle of July," says the former of these travellers, "we first met with this fine species in our progress westward, in the central chain of the Rocky Mountains, in the Cedar and Pine woods of Bear River, on the edge of Upper California. They were already feeding their young, and inhabited the decayed trunks of the pine trees. Afterwards, at the close of August, in the plains sixty miles up the Wahlamet, flocks of from twelve to twenty together were to be seen shifting backwards and forwards in trees near the woods of the River, playing about like so many sportive Crows, which the young so much

resemble in colour. Now and then they would alight to feed, but remained perfectly silent; they were very shy, the whole flock starting at any near approach. Whether they have any note or call at other seasons I am unable to say. At this time one would scarcely have suspected them of being Woodpeckers, for they perched in dense flocks almost like Starlings, and did not climb the branches, or tap in the least, but merely watched and darted after insects, or devoured berries like Thrushes. We seldom saw this remarkable species in the dense forests of the Columbia, or in any settled part of California."

Dr TOWNSEND says, "We first found them on Bear River, and afterwards on the Columbia, where they arrive about the first of May. They are at first silent, but after incubation commences, they become very noisy and remarkably pugnacious, beating away all other birds from the vicinity of their nests. They frequently perch crossways upon the smaller branches of trees, as well as against their trunks, climb with the usual ease and activity of other species, and are in the frequent habit of darting out from the tree on which they had stationed themselves, and after having performed a circular gyration in the air, returning immediately to the branch from which they had started; as they near the latter again, they spread their wings horizontally, and sail to their perch like some of the Hawks. Both sexes incubate."

LEWIS'S WOODPECKER, *PICUS TORQUATUS*, *Wils. Amer. Ornith.* vol. iii. p. 31, pl. 20, fig. 3.

PICUS TORQUATUS, *Ch. Bonaparte*, *Synopsis of Birds of United States*, p. 46.

LEWIS'S WOODPECKER, *Nuttall*, *Manual*, vol. i. p. 577.

Adult Male. Plate CCCCXVI. Fig. 7.

Bill about the length of the head, nearly straight, strong, compressed, tapering, pointed, very slightly truncate and wedged at the tip. Upper mandible with the dorsal line slightly arched, the ridge convex at the base, very narrow in the rest of its extent, the sides sloping and considerably convex, the lateral angle slight, and near the ridge, the edges sharp, direct, overlapping, the tip almost acuminate. Lower mandible with the angle rather short and wide, the crural outline concave, the dorsal ascending, straight, the ridge narrow, the sides convex, the edges sharp and inflected, the base faintly striated. Nostrils oblong, basal, nearer the ridge, concealed by the feathers.

Head of moderate size, ovate; neck rather short; body full. Feet very short; tarsus very short, feathered anteriorly more than one-third down, in the rest of its extent covered with a few large scutella, compressed, sharp-edged and internally with small scutella behind; toes four, first toe small, fourth rather longer than the third, second and third united at the base; all scutellate above; claws large, much curved, compressed, laterally grooved, very acute.

Plumage full, soft, blended, glossy above, rude beneath. A tuft of reversed stiff feathers on each side at the base of the upper mandible; the feathers in the angle of the lower mandible also stiff. Wings long, the first quill very small, being only an inch and a half in length; the second ten-twelfths shorter than the third, which is a twelfth and a half shorter than the fourth, the fifth longest, being a twelfth and a half longer than the fourth; secondaries broadly rounded. Tail of moderate length, very strong, of ten feathers, all of which are pointed and slit, the shaft terminating abruptly, the lateral feathers ten and a half twelfths shorter than the middle.

Bill dusky, bluish-grey toward the base. Feet bluish-grey. The general colour of the upper parts is black, highly glossed with green; a band across the forehead, the throat, and a broad patch on the side of the head, surrounding the eye deep carmine or blood-red; beyond this the throat and part of the sides of the neck black; a band of dull white runs over the hind neck, and is continuous anteriorly with a large patch of reddish-white occupying the fore neck and part of the breast, the rest of the breast and the sides are rose-red, becoming of a deeper tint backwards; the lower wing-coverts, abdomen, and lower tail-coverts black.

Length to end of tail 11 inches; bill along the ridge $1\frac{2}{12}$; wing from flexure $7\frac{1}{12}$; tail $4\frac{1}{4}$; tarsus $1\frac{10}{12}$; hind toe $\frac{3}{12}$, its claw $\frac{5}{12}$; second toe $\frac{7}{12}$, its claw $\frac{5}{12}$; third toe $\frac{10}{12}$, its claw $\frac{6}{12}$; fourth toe $\frac{10}{12}$, its claw $\frac{6}{12}$.

Adult Female. Plate CCCCXVI. Fig. 8.

The Female resembles the male, being scarcely distinguishable by her slightly duller tints, and the less extent of the red on the fore part of the head. A young bird obtained in September, has the bill quite pointed, the red on the head scarcely apparent, that on the lower parts intermixed with greyish-white, the fore part of the neck dull grey, and the white ring on the hind neck wanting; many of the feathers there, however, having one or two white spots near the end.

RED-BREASTED WOODPECKER.

PICUS RUBER, GMEL.

PLATE CCCCXVI. MALE AND FEMALE.

SEVERAL specimens of this Woodpecker, which were procured by Dr TOWNSEND, on the Columbia River, are in my possession ; but I regret that I have no other information to communicate respecting its habits, than what is contained in the following note from my friend THOMAS NUTTALL, Esq., who says, “ This species, seen in the forests of the Columbia and the Blue Mountains of the same country, has most of the habits of the common Red-headed species. It is, however, much less familiar, and keeps generally among the tall fir-trees, in the dead trunks of which it burrows out a hole for a nest, sometimes at a great elevation. On approaching one which was feeding its young in one of these situations, it uttered a loud reverberating *t'rr t'rr*, and seemed angry and solicitous at my approach. The same species also inhabits Upper California as well as the north-west coast up to Nootka. It is found eastward as far as the central chain of the Rocky Mountains.” An egg taken from a nest which contained four, is an inch and a quarter in length, three-fourths in breadth, smooth, equally rounded at both ends, though somewhat elongated, and pure white.

PICUS RUBER, Gmel. Syst. Nat. vol. i. p. 429.—Lath. Ind. Ornith. vol. i. p. 228.

PICUS FLAVIVENTRIS, Vieill. Ois. d'Amer. Sept. vol. ii. p. 57.

Adult Male. Plate CCCCXVI. Fig. 9.

Bill about the length of the head, straight, strong, angular, compressed toward the tip, which is slightly truncate and cuneate. Upper mandible with the dorsal line very slightly convex, the ridge very narrow, the sides sloping, concave at the base, slightly convex toward the end, the lateral angle farther from the ridge than from the margin at its commencement, and terminating on the edge about half-way, the edges sharp, direct, overlapping. Lower mandible with the angle short and rather wide, the crural outline straight, the dorsal ascending and straight, the sides sloping outwards and slightly convex,

the tip narrow. Nostrils linear-oblong, basal, concealed by the feathers, and placed much nearer the margin than the ridge.

Head rather large, ovate; neck rather short; body full. Feet very short; tarsus very short, feathered anteriorly one-third down, in the rest of its extent covered with a few large scutella; sharp-edged and having internally small scutella behind; toes four; first toe small; fourth slightly longer than third; second and third united at the base; claws large, much curved, compressed, laterally grooved, very acute.

Plumage very soft, full, and blended. A tuft of reversed stiffish feathers on each side of the base of the upper mandible, concealing the nostrils; the feathers at the angle of the lower mandible also stiffish. Wings rather long; the first quill very small, being only ten-twelfths long, the second nine-twelfths shorter than the third, which is two-twelfths shorter than the fourth, the latter being the longest, and exceeding the fifth by a twelfth and a half; secondaries rounded, and somewhat emarginate. Tail of moderate length, cuneate, of twelve feathers, of which the lateral is only eleven-twelfths long, and one inch five and a half twelfths shorter than the next, which is eleven-twelfths shorter than the middle, and slightly worn, the rest having the tip slit, the shaft terminating abruptly.

Bill bluish-grey, dusky toward the end. Feet bluish-grey, claws brown. The upper part of the head, the neck all round, and a portion of the breast deep carmine; the tufts over the nostrils yellow, and from them a white band to beneath the eye; the feathers of the eyelids black; the middle of the breast and the abdomen yellow; the feathers of the sides of the body and rump, with the lower tail-coverts barred, or marked with a pointed dusky spot, their edges yellowish-white. The upper parts are black, the middle of the back spotted with yellowish-white, the rump and upper tail-coverts white on the inner webs and toward the tip on both. There is a large patch of white on the wing, formed by some of the smaller coverts, the first row of small coverts and the terminal portions of the outer webs of the secondary coverts. The quills are black, the three longest with eight spots on the outer, and five on the inner web, the second with four on the inner web and two on the outer, the first with two on the inner web; the secondaries more or less tipped with white, but several of them without spots on the outer web. The tail-feathers are black, the two middle with three or four white spots on the inner web, or white with several black bands. Sometimes

the lateral feathers are spotted on the outer edge, and several have a terminal white edging.

Length to end of tail 9 inches; bill along the ridge $\frac{11}{12}$, along the edge of lower mandible $1\frac{1}{2}$; wing from flexure $5\frac{4\frac{1}{2}}{12}$; tail $3\frac{10}{12}$, tarsus $\frac{9\frac{1}{2}}{12}$; first toe $\frac{3\frac{1}{2}}{12}$, its claw $\frac{3\frac{1}{2}}{12}$; second toe $\frac{7}{12}$, its claw $\frac{4\frac{1}{2}}{12}$; third toe $\frac{8}{12}$, its claw $\frac{5\frac{1}{2}}{12}$; fourth toe $\frac{7\frac{1}{2}}{12}$, its claw $\frac{4\frac{1}{2}}{12}$.

Adult Female. Plate CCCCXVI. Fig. 10.

The Female differs only in having the tints somewhat fainter, the white markings on the back smaller, and the yellow of the lower parts duller.

Length to end of tail $8\frac{1}{4}$ inches; bill along the ridge $\frac{11}{12}$; wing from flexure $5\frac{9}{12}$; tail $3\frac{7}{12}$.

MARIA'S WOODPECKER.

PICUS MARTINÆ.

PLATE CCCCXVII. MALE AND FEMALE.

THIS well-marked species, which has not hitherto been described or figured, was procured in the neighbourhood of Toronto in Upper Canada, by a gentleman who presented me with two specimens of it, a male and a female, but who has requested me not to mention his name. I am informed by this close observer of nature that its habits are as nearly as possible the same as those of the Hairy Woodpecker, *Picus villosus*, of which you have already seen an account, and that its eggs, which rarely exceed six in number, are pure white and translucent. In honouring this species with the name of Miss MARIA MARTIN, I cannot refrain from intimating the respect, admiration, and sincere friendship which I feel towards her, and stating that, independently of her other accomplishments, and our mutual goodwill, I feel bound to make some ornithological acknowledgment for the aid she has on several occasions afforded me in embellishing my drawings of birds, by adding to them beautiful and correct representations of plants and flowers.

PICUS MARTINÆ.

Adult Male. - Plate CCCCXVII. Fig. 1.

Bill about the length of the head, straight, strong, angular, compressed toward the tip, which, however, is not truncate, but very slightly cuneate or worn on the sides. With this exception it is very similar to that of *Picus villosus* and *P. Canadensis*. Upper mandible with the dorsal line almost straight, being very slightly convex, the ridge very narrow, the sides sloping and flat, or slightly concave, the lateral angle or ridge about half-way at its commencement between the ridge and the margin, but in its course gradually approximating the latter, and ending upon it about a fourth from the tip, edges sharp, direct, overlapping, tip rather acute. Lower mandible with the angle short and rather wide, the crural line a little concave, the dorsal ascending and slightly convex, the ridge narrow, the sides convex, the edges sharp and inclinate, the tip narrow. Nostrils oblong, basal, concealed by the feathers, and placed near the margin.

Head large, ovate; neck rather short; body full. Feet very short; tarsus short, compressed, feathered anteriorly about half-way down, with five large scutella in the rest of its extent, scaly and sharp-edged behind; toes four; first small and stout; fourth longest and directed backwards; second and third toe united at the base; all scutellate above. Claws large, much curved, compressed, laterally grooved, very acute.

Plumage very soft, full, and blended. A large tuft of reversed stiffish feathers on each side of the base of the upper mandible, concealing the nostrils; the feathers in the angle of the lower mandible also stiffish, elongated and directed forwards. Wings rather long; the first quill very small, being only an inch and five-twelfths long, the second half an inch shorter than the third, which is half a twelfth shorter than the fourth, the latter being the longest, and exceeding the fifth by two-twelfths; secondaries broadly rounded. Tail of moderate length, cuneate, of twelve feathers, of which the lateral, which are rounded and unworn, are only an inch and a twelfth long, the next, also unworn, are one inch shorter than the middle, which are pointed but slit, having the shaft broken off at a little distance from the tip, all the rest more or less pointed, and either entire or slit.

Bill dusky. Iris brown. Feet bluish-grey. The upper parts are black spotted with white, the lower greyish-white. The tufts of bristly

feathers over the nostrils, and in the angle of the lower mandible, are dull yellow; the upper part of the head is scarlet, the forehead and occiput are black; over each eye is a band of white; a black band from the bill to the eye, continued behind it over the auriculars, and joining the black of the hind neck; beneath this black band is one of white proceeding from the angle of the mouth and curving backwards below the middle of the neck, so as almost to meet its fellow behind; this band is succeeded by another of black, proceeding from the base of the lower mandible, and continuous with the black of the shoulders. All the upper parts may be described as black, tinged with brown behind; the feathers along the middle of the back tipped with white; excepting on the rump; the wing-coverts and quills spotted with the same, there being on the four longest primaries seven spots on the outer, and four on the inner web, on most of the secondaries five on each web; but on the outer quill only one patch on each web, and on the second four spots on the outer and three on the inner web. The four middle tail-feathers are glossy black, the next black on the inner web, and the greater part of the outer toward the base, the rest black only at the base, the two outermost being almost entirely white. The lower parts are white, tinged with grey, and a little red, the sides faintly mottled with dusky grey; lower wing-coverts white, with a dusky patch toward the edge of the wing.

Length to end of tail $9\frac{2}{12}$ inches; bill along the ridge 1, along the edge of lower mandible $1\frac{1}{4}$; wing from flexure $4\frac{10\frac{1}{2}}{12}$; tail $3\frac{5}{12}$; tarsus $\frac{10}{12}$; first⁴ toe $\frac{5}{12}$, its claw $\frac{2\frac{1}{2}}{12}$; second toe $\frac{6}{12}$, its claw $\frac{5\frac{1}{2}}{12}$; third toe $\frac{7\frac{1}{2}}{12}$, its claw $\frac{6\frac{1}{2}}{12}$; fourth toe $\frac{7\frac{3}{4}}{12}$, its claw $\frac{6}{12}$.

Adult Female. Plate CCCCXVII. Fig. 2.

The Female, which is somewhat smaller, differs in external appearance only in having the upper parts duller and tinged with brown, the lower more tinged with grey, and the bright patch on the head of a yellowish-red tint and of much less extent.

This species is very nearly allied to *Picus villosus*, and is very similar in its colours, but differs in having the mandibles pointed, in being larger, in having the top of the head red or yellowish-red, and in having its fourth toe longer than the third.

COMMON THREE-TOED WOODPECKER.

PICUS HIRSUTUS, VIEILL.

PLATE CCCCXVII. MALE AND FEMALE.

THE difference between this bird and that described in my second volume under the name of *Picus tridactylus* was unknown to me until clearly pointed out by the minute and accurate description of Mr SWAINSON in the Fauna Boreali-Americana. Indeed I had looked upon it as the young of the species just mentioned. Not having met with it myself, I can only refer you to the very short notice of Dr RICHARDSON, who says: "This bird exists in all the forests of spruce-fir lying between Lake Superior and the Arctic Sea, and it is the most common Woodpecker north of the Great Slave Lake. It much resembles the *P. villosus* (by which I presume is meant *P. Canadensis*, as already explained) in its habits, except that it seeks its food principally on decaying trees of the pine tribe, in which it frequently makes holes large enough to bury itself. It does not migrate."

I have represented the male and the female, from specimens lent to me by the Council of the Zoological Society of London.

PICUS HIRSUTUS, Vieill., Ois. de l'Amer. vol. ii. p. 124.

PICUS (APTERNUS) *TRIDACTYLUS*, Swainson, COMMON THREE-TOED WOODPECKER, Richards. and Swains. Fauna Bor.-Amer. vol. ii. p. 311, pl. 56.

Adult Male. Plate CCCCXVII. Fig. 3.

Bill about the length of the head, straight, strong, angular, depressed at the base, compressed toward the tip, which is very slightly truncate and cuneate. Upper mandible with the dorsal line straight, the ridge very narrow, the sides sloping and flat, the lateral angle much nearer the edge, which is sharp, direct, and overlapping. Lower mandible with the angle short and rather wide, the dorsal line straight, the ridge narrow, the sides convex, the edges inflected, the tip pointed. Nostrils oblong, basal, concealed by the feathers, and placed near the margin.

Head large, ovate; neck rather short; body full. Feet very short;

tarsus short, compressed, feathered anteriorly more than one-third down, scutellate in the rest of its extent, as well as behind on the inner side ; toes three, the first wanting ; the fourth or outer reversed toe considerably longer than the third, which is united to the inner at the base ; all scutellate above. Claws large, much curved, compressed, laterally grooved, very acute.

Plumage very soft, full, blended. A large tuft of reversed stiffish feathers on each side of the base of the upper mandible, concealing the nostrils ; the feathers in the angle of the lower mandible also stiffish and directed forwards. Wings rather long ; the first quill very small, being only eleven-twelfths long, the second five-twelfths shorter than the third, which is one-twelfth shorter than the fourth, this being the longest, but scarcely exceeding the fifth ; secondaries broad and rounded. Tail of moderate length, cuneate, of twelve feathers, of which the lateral, which are rounded and unworn, are only one inch long, the next, also unworn, are one inch and one-twelfth shorter than the middle.

Bill bluish-grey, dusky toward the end. Feet bluish-grey, the scutella and claws black. The general colour of the upper parts is deep glossy black, the head with blue reflections, the back and wings tinged with brown. The tufts over the nostrils are dull yellow ; the anterior part of the head pale yellow spotted with white ; a band of white, with small dusky lines, passes from the angle of the mouth to the occiput ; the back is transversely banded with white ; the quills are brownish-black, spotted and tipped with white, the four longest primaries with seven spots on the outer, and five on the inner web, on most of the secondaries five on each web. The four middle tail-feathers are black, the next black, largely tipped with white, the rest white, but except the outer small feathers, with a black band at the base. The lower parts are white, excepting the sides, and lower wing-coverts, which are banded with black.

Length to end of tail 9 inches ; bill along the ridge 1, along the edge of lower mandible $1\frac{3}{2}$; wing from flexure $4\frac{5}{12}$; tail $3\frac{1}{2}$; tarsus $\frac{9\frac{1}{2}}{12}$; second toe $\frac{4}{12}$, its claw $\frac{4\frac{1}{2}}{12}$; third toe $\frac{7}{12}$, its claw $\frac{6}{12}$; fourth toe $\frac{7\frac{1}{2}}{12}$, its claw $\frac{6}{12}$.

Adult Female. Plate CCCCXVII. Fig. 4.

The Female, which is somewhat smaller, differs from the male in wanting the yellow patch on the head, the whole of that part being black, with small white spots.

PHILLIPS'S WOODPECKER.

PICUS PHILLIPSII.

PLATE CCCCXVII. MALE.

THE only specimen of this beautiful Woodpecker that I have seen, an adult male, was sent to me by my friend Mr NUTTALL, who procured it in the State of Massachusetts. Nothing is known as to its habits. In naming it after my friend BENJAMIN PHILLIPS, Esq., F.R.S. I have the pleasure of testifying my esteem and gratitude towards one whose kindness and generosity has often been experienced by me and every member of my family. The beauty of this bird has induced me to give two figures of it, by which its form and markings may be better seen.

PICUS PHILLIPSII.

Adult Male. Plate CCCCXVII. Figs. 5, 6.

Bill about the length of the head, straight, strong, angular, compressed toward the tip, which is pointed. Upper mandible with the dorsal line straight, the ridge very narrow, the sides sloping and flat, the lateral angle half-way between the ridge and the edge at the base, and running out upon the latter about two-thirds of its length, the edges sharp and overlapping, the tip acuminate. Lower mandible with the angle short and rather wide, the dorsal line straight, the ridge narrow, the sides convex toward the edges, which are sharp and inflected, the tip acuminate. Nostrils oblong, basal, concealed by the feathers, and placed near the margin.

Head large, ovate ; neck rather short ; body full. Feet very short ; tarsus short, compressed, feathered anteriorly more than one-third down, scutellate in the rest of its extent, and with a series of large scales behind ; toes four ; first small, but stout ; third and fourth about the same length, second and third united at the base ; all scutellate above. Claws large, much curved, compressed, laterally grooved, very acute.

Plumage very soft, full, and blended. A tuft of reversed stiffish feathers on each side of the base of the upper mandible, concealing the nostrils; the feathers in the angle of the lower mandible also stiffish, and directed forwards. Wings rather long; the first quill very small, the second five-twelfths of an inch shorter than the third, the fourth longer than the latter by one-twelfth, but scarcely exceeding the fifth; secondaries broad and rounded. Tail of moderate length, cuneate, of twelve feathers, of which the lateral are only an inch and a quarter long and rounded, the next an inch and two-twelfths shorter than the middle, the rest worn and slit at the tip.

Bill dusky, its margins pale at the base. Iris red. Feet bluish-grey, claws dusky. The tufts of feathers covering the nostrils are yellowish-white; the fore part of the head to a little beyond the top orange-yellow; the occiput and hind neck glossy black; over each eye is a band of white passing to behind the auriculars; a black band from above the angle of the mouth to the eye, and behind it, including the auriculars; below this a white band from the angle of the mouth joining that over the eye; and lastly, a narrower black band from the lower mandible. The upper parts are black, tinged with brown behind; the feathers along the middle of the back tipped with white; some of the wing-coverts are tipped with white, and the quills spotted with the same, there being on the four largest primaries seven spots on the outer, and five on the inner web. The four middle tail-feathers are glossy black, the rest black towards the base, that colour gradually diminishing so that the outermost is almost entirely white. The lower parts are white.

Length to end of tail $10\frac{1}{2}$ inches; bill along the ridge $1\frac{5}{12}$, along the edge of lower mandible $1\frac{5}{12}$; wing from flexure 5; tail $3\frac{8}{12}$; tarsus $\frac{9\frac{1}{2}}{12}$; inner toe $\frac{3\frac{1}{2}}{12}$, its claw $\frac{4}{12}$; second toe $\frac{6}{12}$, its claw $\frac{5\frac{1}{2}}{12}$; third toe $\frac{8}{12}$, its claw $\frac{6}{12}$; fourth toe $\frac{10}{12}$, its claw $\frac{6}{12}$.

This species is about the same size as *P. canadensis*, which it also resembles in colour, but is distinguished by the yellow patch on the head, and its thicker, and more pointed bill.

CANADIAN WOODPECKER.

PICUS CANADENSIS, GMEL.

PLATE CCCCXVII. MALE.

THIS species, which has been overlooked by all the recent writers on the birds of North America, although described and figured by BUFFON, I again introduce to your notice. If you compare my representation of it, Fig. 7 of the present plate, with those of the Hairy Woodpecker, *Picus villosus*, Figs. 1 and 2 of Plate CCCCXVI, you will perceive that it is much larger, and somewhat differently marked, although extremely similar in form and colours.

The most southern localities in which this species has been observed in the United States, in so far as I have been able to trace it, whether personally or by means of my friend Dr TRUDEAU, are the northern portions of the State of Pennsylvania, in winter, where, however, it seems to be rare. It is more plentiful at that season in the same parallel in the State of New York, beyond which, northward, it is abundant up to the 56th degree, but then yields in frequency to the Common Three-toed Woodpecker.

It was in the course of my journey through the State of Maine, on which I was accompanied by my wife and sons, that I became aware of its being distinct from the Hairy Woodpecker. There I found it very abundant in the woods, around the farms, by the roads, and on the fences. Its notes alone suffice to distinguish it from every other species, being louder and much shriller than those of *Picus villosus*. It also resorts to prostrate decaying logs lying on the ground, in quest of food, much more than that species does, and quite as much as the Pileated Woodpecker, *P. pileatus*. During its flight, the rustling sound of its wings is very remarkable; its passage from one tree to another appears more laborious, and in all its movements it is less active, restless, or petulant, than the Hairy Woodpecker. Those which I examined contained remains of large coleopterous insects, together with pieces of lichens.

Of its manner of breeding, eggs, or young, I unfortunately know nothing. The number of figures in the present plate has prevented me

from representing the female, which however differs from the male in little more than in wanting the red patch on each side of the occiput.

PICUS CANADENSIS, *Gmel. Syst. Nat. vol. i. p. 437*,—*Lath. Ind. Ornith. vol. i. p. 230*.

PICUS (DENDROCOPUS) VILLOSUS, HAIRY WOODPECKER, *Swains. and Richards. Fauna Bor.-Amer. vol. ii. p. 305*.

Adult Male. Plate CCCCXVII. Fig. 7.

Bill about the length of the head, straight, strong, angular, compressed toward the tip, which is truncate and cuneate. Upper mandible with the dorsal line straight, the ridge very narrow, the sides sloping and flat, the lateral angle or ridge nearer the edge, which is sharp, direct, and overlapping. Lower mandible with the angle short and rather wide, the dorsal line straight, the ridge narrow, the sides flat and grooved for some way beyond the angle, convex toward the edges, which are sharp and inflected, the tip narrow. Nostrils oblong, basal, concealed by the feathers, and placed near the margin.

Head large, ovate; neck rather short; body full. Feet very short; tarsus short, compressed, feathered anteriorly more than one-third down, scutellate in the rest of its extent, and with a series of large scales behind; toes four, first small, but stout; fourth considerably longer than the third; second and third united at the base; all scutellate above. Claws large, much curved, compressed, laterally grooved, very acute.

Plumage very soft, full, and blended. A large tuft of recurved stiffish feathers on each side of the base of the upper mandible, concealing the nostrils; the feathers in the angle of the lower mandible also stiffish, and directed forwards. Wings rather long; the first quill very small, being only an inch and a twelfth long, the second two inches longer, and seven-twelfths shorter than the third, which is two-twelfths shorter than the fourth, this being the longest, but exceeding the fifth only by one-twelfth; secondaries broad and rounded. Tail of moderate length, cuneate, of twelve feathers, of which the lateral, which are rounded and unworn, are only one inch and two-twelfths long, the next, also unworn, are eleven-twelfths of an inch shorter than the middle which are pointed, sometimes without having the very strong shafts worn, but also sometimes having them broken off at the end; all the rest are more or less pointed.

Bill buish-grey, toward the end black ; iris brown ; feet bluish-grey. The tufts of bristly feathers over the nostrils, and the angle of the lower jaw, are dull yellow ; the upper part of the head and the hind neck are glossy black ; over each eye is a band of white, continuous with a transverse band of scarlet on the occiput, usually interrupted in the middle ; a black band from near the bill to the eye, continued behind it over the auriculars, and joining the black of the hind neck ; beneath this black band is one of white proceeding from the angle of the mouth and curving backwards below the middle of the neck, so as to meet its fellow behind ; this band is succeeded by another of black, proceeding from the base of the lower mandible, and continuous with the black of the shoulders. All the upper parts may be described as black, tinged with brown behind ; the feathers along the middle of the back tipped with white ; the wing-coverts, the anterior excepted, and the quills spotted with the same, there being on the four longest primaries seven spots on the outer, and five on the inner web, on most of the secondaries five on each web, but on the outer quill only one patch on each web, and on the second three spots on the outer, and four on the inner web. The four middle tail-feathers are glossy black, the rest black towards the base, that colour gradually diminishing so that the outermost is almost entirely white. The lower parts are white, slightly tinged with reddish on the fore neck and breast.

Length to end of tail $10\frac{1}{2}$ inches, to end of wings 8 ; to end of claws $9\frac{1}{4}$; extent of wings $17\frac{3}{4}$: bill along the ridge $1\frac{5}{12}$; along the edge of lower mandible $1\frac{3}{4}$; wing from flexure $5\frac{1}{12}$; tail $3\frac{6}{12}$; tarsus $\frac{10\frac{1}{2}}{12}$; hind toe $\frac{3\frac{1}{2}}{12}$, its claw $\frac{5}{12}$; second toe $\frac{5\frac{1}{2}}{12}$, its claw $\frac{6}{12}$; third toe $\frac{7\frac{1}{2}}{12}$, its claw $\frac{6\frac{1}{2}}{12}$; fourth toe $\frac{8}{12}$, its claw $\frac{6\frac{3}{4}}{12}$.

The Female, which is somewhat smaller than the male, differs only in being more tinged with brown, especially on the quills, and in wanting the red patches on the occiput.

In form, and colour, this species differs in no appreciable degree from *Picus villosus*, which it also resembles in the texture of its plumage, and in the relative proportion of the quills and tail-feathers. But it is much larger, its bill is proportionally stouter, and its fourth toe a little more elongated. The differences, however, are extremely slight.

The roof of the mouth is anteriorly nearly flat, with a prominent median line ; the posterior aperture of the nares linear, $9\frac{1}{2}$ twelfths long, and margined with papillæ. The tongue is $1\frac{1}{2}$ inch long, somewhat cy-

lindrical for 11 twelfths, in the rest of its extent slender, tapering, with a horny sheath, having eight reversed bristles on each margin. The horns of the hyoid bone pass along the median line of the head until they are over the middle of the eyes, when they turn to the right side, and are curved along a deep groove on the anterior edge of the orbit, passing under the eye to opposite its middle. The œsophagus is 3 inches 2 twelfths long, $3\frac{1}{4}$ twelfths in width, and of nearly uniform diameter. The stomach is rather small, elliptical, 9 twelfths long, 8 twelfths broad; its lateral muscles moderately developed. The contents are larvæ and coleopterous insects. The epithelium is dense but thin, and longitudinally rugous. The intestine is 9 inches long, $2\frac{1}{2}$ twelfths in width at its anterior part. There are no cœca.

The trachea is $2\frac{1}{2}$ inches long, slender, about $2\frac{1}{2}$ twelfths in breadth, a little flattened, and of about 60 rings. The bronchi are of moderate length, slender, of about 12 half rings. The contractor muscles are moderate; the sterno-tracheals come off close to the inferior larynx, which is destitute of muscles.

HARRIS'S WOODPECKER.

PICUS HARRISII.

PLATE CCCCXVII. MALE AND FEMALE.

It is to Dr TOWNSEND that we are indebted for the discovery of this singularly marked species, of which he has sent me a pair of specimens in excellent preservation, both shot on the Columbia River, the male on the 18th of January 1836, the female on the 7th of September 1834. Having been left at liberty to give names to whatever new species might occur among the birds transmitted to me by that zealous naturalist, I have honoured the present Woodpecker with the name of my friend EDWARD HARRIS, Esq., a gentleman to whom I am most deeply indebted for many acts of kindness and generosity, and in particular for his efficient aid at a time when, like my predecessor WILSON, I was reduced to the lowest degree of indigence, and removed from any individuals to whom I could make known my wants. But, inde-

pendently of his claim to scientific recognition as the friend and supporter of one who has devoted his life to the study of birds, he merits this tribute as an ardent and successful cultivator of ornithology, and an admirer of the works of Him whose good providence gave me so noble-hearted a friend.

PICUS HARRISII.

Adult Male. Plate CCCCXVII. Fig. 8.

Bill about the length of the head, straight, strong, angular, compressed toward the end, which is truncate and cuneate. Upper mandible with the dorsal line straight, the ridge very narrow, the sides sloping and concave to the lateral angle, which is nearer the edge, the intervening space nearly erect, the edges sharp, direct, and overlapping. Lower mandible with the angle short and of moderate width, the dorsal line straight, the ridge narrow, the sides convex at the base, sloping outwards and nearly flat, with a faint ridge, above which they are convex, the edges sharp, the tip truncate. Nostrils oblong, basal, concealed by the feathers, and placed near the margin.

Head large, ovate; neck rather short; body full. Feet very short; tarsus short, compressed, feathered anteriorly more than one-third down, scutellate in the rest of its extent, as well as internally behind; toes four; first small, fourth longest and directed backwards, second and third united at the base, the latter not much longer; all scutellate above. Claws large, much curved, compressed, laterally grooved, very acute.

Plumage very soft, full, and blended. A tuft of recurved stiffish feathers on each side of the base of the upper mandible, concealing the nostrils. Wings rather long; the first quill very small, being only an inch and two-twelfths in length, and two inches and a twelfth shorter than the second, which is eight-twelfths shorter than the third, the fourth two-twelfths longer than the latter, but scarcely exceeding the fifth; secondaries broadly rounded, the outer slightly emarginate. Tail of moderate length, cuneate, of twelve feathers, of which the latter, which is rounded and unworn, is only ten-twelfths long, the next, also rounded, an inch and a twelfth shorter than the middle, of which the shaft terminates so as to leave the tip slit.

Bill bluish-grey, as are the feet; the claws brown. The tufts at the

base of the upper mandible dull yellow, with the tips black ; the upper part of the head glossy black ; over each eye is a band of white continuous with a transverse band of scarlet on the occiput ; a black band in the loreal space, continued behind the eye over the auriculars, and joining the black of the hind neck ; beneath this black band is one of white, proceeding from the angle of the mouth and curving backward below the middle of the neck, but without meeting its fellow ; this band is succeeded by another of black, proceeding from the base of the lower mandible, and continuous with the black of the hind neck and shoulders. All the upper parts are black, the quills tinged with brown ; but the feathers along the middle of the back are largely tipped with white ; the quills, excepting the inner three, are marked with small roundish spots, of which there are five on the outer, and four on the inner web of the four longest quills, while on the outer there is only an elongated spot on the inner web, and on the next one spot on the outer and three on the inner. The four middle tail-feathers are black, the next also black, with a small part of the inner web, and a large portion of the outer toward the end white ; the rest white, with the base black ; the outermost small feather almost entirely white. The lower parts are brownish-white.

Length to end of tail 9 inches ; bill along the ridge $1\frac{1}{4}$, along the edge of lower mandible $1\frac{5}{12}$; wing from flexure $5\frac{2}{12}$; tail $3\frac{1}{2}$; tarsus $\frac{10}{12}$; hind toe $\frac{5}{12}$, its claw $\frac{3}{12}$; second toe $\frac{6}{12}$, its claw $\frac{6}{12}$; third toe $\frac{7}{12}$, its claw $\frac{7}{12}$; fourth toe $\frac{8}{12}$, its claw $\frac{7}{12}$.

Adult Female. Plate CCCCXVII. Fig. 9.

The Female resembles the male, but wants the red occipital band.

AUDUBON'S WOODPECKER.

PICUS AUDUBONI, TRUDEAU.

PLATE CCCCXVII. ADULT.

MY talented and amiable friend, Dr JAMES TRUDEAU, has described this species in the seventh volume of the Journal of the Academy of Natural Sciences of Philadelphia, where he says, " Hunting in a wood fifteen miles from New Orleans, on the 26th of April 1837, my attention was attracted by a very extraordinary note, and after some difficulty I succeeded in getting possession of the bird from which it proceeded. It was very wild, running on the trunks and limbs of trees with the agility peculiar to the family, always contriving to keep on the side of the trunk most distant from its pursuer. It was the species here described. I have frequently examined the spot in hopes of getting more ; and although I have often heard its note, the bird has, in the very thick woods, eluded my pursuit. The sportsmen with whom I have spoken of it, suppose it to be a common species. It is probable that this curious bird, respecting which I have learned nothing farther, has escaped the observation of naturalists on account of its resemblance to the two species already named (the Hairy and Downy Woodpeckers)."

The specimen mentioned above was presented to me by its discoverer, my obligations to whom, on account of the honour which he has conferred upon me, I now gratefully acknowledge. My friend Mr SWAINSON has also named after me a Woodpecker, procured in Louisiana, but which I believe to be only an immature specimen of *Picus pubescens*.

PICUS AUDUBONI, AUDUBON'S WOODPECKER, *Trudeau*, Journal of Acad. of Nat. Sciences of Philadelphia, vol. vii. p. 404.

Adult. Plate CCCCXVII. Fig. 10.

Bill about the length of the head, strong, straight, differing from that of any other North American Woodpecker in having both outlines a little convex, and both tips acute. Upper mandible with the ridge very narrow, the sides sloping and flat, the lateral ridge near the margin, the edges direct, sharp, and overlapping ; lower mandible with the

angle rather long and narrow, the ridge very narrow, the sides convex, the edges sharp and inflected. Nostrils basal, oblong, near the edge, and concealed by the feathers.

Head rather large, ovate ; neck short ; body rather full. Feet short ; tarsus feathered anteriorly nearly half-way down, scutellate in the rest of its extent, and having a series of large scales internally behind ; toes four ; the first very short, the fourth longer than the third, which is united with the second at the base. Claws large, well curved, extremely compressed, laterally grooved, very acute.

Plumage very soft, full, and blended. Wings rather long, the first quill only an inch and a twelfth in length, the second five-twelfths shorter than the third, which is one-twelfth shorter than the fourth, and an inch longer than the sixth. Tail of moderate length, cuneate, of twelve feathers, of which the outer is only eight-twelfths long, the next ten-twelfths shorter than the longest.

Bill greyish-blue. Iris brown. Feet bluish-grey, claws brown. The upper parts are black ; the tufts covering the nostrils white ; on the anterior part of the top of the head are some feathers largely tipped with yellow, a band of white passes over the eye ; the loreal space and that behind the eye are black ; a band of white passes from the angle of the mouth to the side of the occiput, and beneath it is a narrow band of black ; the feathers along the middle of the back are tipped with white ; the wings are spotted with white, some of the smaller coverts, the larger coverts, and all the quills being marked with that colour, of which there are six spots on the outer and four on the inner web of the longer primaries ; the first primary has a slight spot at the base of the outer web, and two spots on the inner ; the second has two spots on the outer, and three on the inner web, all the primaries except the two outer have a terminal white spot, the secondaries two, one on the outer, the other on the inner web. The four middle tail-feathers are black, the rest white toward the end, that colour enlarging so as to include almost the whole of the outer feathers. The lower parts are dull white, having a tinge of brown, the sides very faintly barred with dusky.

Length to end of tail 7 inches ; extent of wings $13\frac{1}{2}$; bill along the ridge $\frac{10\frac{1}{2}}{12}$, along the edge of lower mandible 1 ; wing from flexure $4\frac{1}{4}$; tail $2\frac{5}{12}$; tarsus $\frac{9}{12}$; hind toe $\frac{5}{12}$, its claw $\frac{2\frac{1}{2}}{12}$; second toe $\frac{5}{12}$, its claw $\frac{4\frac{1}{2}}{12}$; third toe $\frac{6}{12}$, its claw $\frac{5\frac{1}{2}}{12}$; fourth toe $\frac{6\frac{3}{4}}{12}$, its claw $\frac{5}{12}$.

As Dr TRUDEAU remarks, "this species resembles the Hairy and Downy Woodpeckers in plumage, but is very distinct, and is intermediate in size between them. It seems, in fact, to form a passage from the one to the other."

COMMON PTARMIGAN.

TETRAO MUTUS.

PLATE CCCCXVIII. ADULT IN SPRING.

THE Common Ptarmigan of Britain, *Lagopus mutus* of LEACH, which is said to occur on the Continent of Europe, although less abundant there and confounded with the Rock Grouse, *Lagopus rupestris*, has been found by Captain SABINE on the islands lying on the south-west side of Baffin's Bay. At least, individuals of a species of Ptarmigan obtained there have been considered as specifically identical with the Scottish Ptarmigan. In the Fauna Boreali-Americana, Dr RICHARDSON remarks, that "a specimen, in summer plumage, sent to Sir JOHN FRANKLIN from Churchhill River, was identified by JOSEPH SABINE, Esq., with the Scotch Ptarmigan,—thus establishing it as an inhabitant of the American Continent." "I have not been able to trace that specimen," he continues, "and I am informed, that the only authentic examples from the New World are now in the possession of Lord STANLEY, to whom they were presented by Mr SABINE." The distinguished nobleman here mentioned, my generous friend the Earl of DERBY, having, with his usual liberality, lent me three fine specimens, I have represented that which seemed to me the most beautiful. At the same time, after due consideration, I am satisfied that, although the bird figured by me, may be the Common Ptarmigan, it yet presents all the characters of the Rock Grouse or Ptarmigan. It is less than the Scotch Ptarmigan, and its wings are much shorter, and even more concave; and in these respects it corresponded with the other two specimens, which however had the plumage pure white, with the exception of the tail-feathers and the shafts of the primaries. But however this may be, whether these three specimens in the possession of the Earl of

DERBY, be the Rock Grouse, or the Common Ptarmigan, or a species distinct from either, I have seen three specimens in the Museum of the Andersonian Institution of Glasgow, which were purchased from Captain SABINE, and which I think may be referred to the Common Ptarmigan, or at all events are different from the Rock Grouse. In the present state of our knowledge as to the changes and variations of plumage in Ptarmigans, it is impossible to form a decided opinion in many instances; nor will the subject be free of doubt until each alleged species has been traced through all its gradations. The following is the description of the individual represented in the plate.

TETRAO LAGOPUS, *Sabine (Capt.) Parry's First Voyage, Suppl. p. 197.—Sabine (J.) Franklin's Journal, p. 682.—Richardson, Parry's Second Voyage, Append. p. 350.*
 TETRAO (LAGOPUS) MUTUS, THE PTARMIGAN, *Swains. and Richards. Fauna Bor.-Amer. vol. ii. p. 350.*

Adult Male. Plate CCCCXVIII. Fig. 1.

Bill short, robust; upper mandible with its dorsal outline curved, the ridge and sides convex, the edges overlapping, the tip declinate, thin edged, rounded; lower mandible with the angle short and wide, the dorsal line convex, the back broadly convex, the sides rounded, the edges inflected, the tip blunt. Nostrils basal, roundish, concealed by the feathers.

Head small, ovate; neck of moderate length; body full. Feet of ordinary length, robust; tarsus feathered, as are the toes; the first toe very small, the middle toe much longer than the lateral, which are nearly equal, the inner being a little longer. Claws slightly arched, depressed, broad, thin-edged, rounded at the end.

Plumage compact, the feathers ovate and rounded; those on the tarsi, toes, and soles, oblong, with loose stiffish barbs. Wings rather short, concave; the primaries strong, narrow, tapering, pointed; the first an inch and ten-twelfths shorter than the second, which is four-twelfths shorter than the third, the latter being the longest. Tail rather short, nearly even, of sixteen broad feathers, of which the two middle are less strong, but longer than the rest by a quarter of an inch.

Bill black; superciliary membrane scarlet; claws greyish-yellow, dusky toward the base. The plumage is pure white; but on the head, sides of the neck, and back, are several new feathers which are broadly

barred with orange-yellow and dark brown. The feathers in the loreal space are black only at the base. The shafts of the six outer quills are brownish-black, and all the tail-feathers, the two middle excepted, are greyish-black, with a terminal narrow band of white.

Length to end of tail 14 inches; bill along the ridge $\frac{5}{12}$, along the edge of lower mandible $\frac{8}{12}$; wing from flexure 8; tail $4\frac{1}{2}$; tarsus $1\frac{2}{12}$; middle toe 1, its claw $\frac{9}{12}$.

The bill seems to be narrower than it generally is in the Rock Grouse, but the description and dimensions of this bird are in no way different from those of an individual of that species in the same state of plumage.

A specimen in the Museum of the Andersonian Institution, marked "*Lagopus vulgaris*, Ptarmigan, Melville's Island," is a male in winter plumage. The bill is brownish-black, as are the claws. A black band extends from the bill to the eye and behind it. The general colour of the plumage is pure white, as are the two middle tail-feathers, the rest greyish-black, narrowly tipped with white. The third quill is longest, two-twelfths longer than the second, which exceeds the first by an inch and five-eighths.

Length to end of tail $14\frac{1}{2}$ inches; bill along the ridge $\frac{7\frac{1}{2}}{12}$; wing from carpus $8\frac{2}{12}$; tail 5; tarsus $1\frac{1\frac{1}{2}}{12}$; middle toe and claw $1\frac{1}{12}$.

Another specimen marked "*Lagopus vulgaris*, Ptarmigan, Melville's Island," is in summer plumage. The general colour of the upper parts, fore neck, and sides, is reddish-yellow, finely undulated transversely with blackish-brown, and greyish-white; the bars on the head and neck larger. The middle tail-feathers are similar to those of the back; the rest brownish-black tipped with white. There is little white on the lower parts, and that only in patches. The greyish-white undulations in this individual tend to approximate its colouring to that of some specimens of the Scottish Ptarmigan, but still the prevailing tint is not grey, but brownish-yellow.

Bill $\frac{7\frac{1}{2}}{12}$ of an inch long; wing from flexure 8; tail 5; tarsus $1\frac{1\frac{1}{2}}{12}$.

A specimen marked "Ptarmigan, Melville Island, Aug. 15. 1820," is a young bird, marked like the old, but with the bands larger. The fore part of the wings, the primaries, the secondary coverts, and the abdomen, are white.

On the whole, I am inclined to think that these birds are different from both *Lagopus mutus* and *L. rupestris* of authors ; but a more extensive comparison of individuals from North America, Europe, and Scotland, would be necessary to extricate these birds from confusion.

Since the above was written I have found among my specimens of Ptarmigans, one which agrees in all essential respects with *Lagopus mutus*, and which could not be distinguished from several specimens of the Scottish Ptarmigan, which I have seen.

Its general form is that above described, its bill more slender than that of the Rock Grouse, its claws rather narrow, with the sides parallel, and the tip obtuse, the fourth quill is longest, exceeding the third by two-twelfths of an inch, the second an inch and a quarter shorter, and exceeding the first by an inch and a half, the tail, of sixteen feathers, is even, but the middle feathers exceed the rest by a twelfth and a half.

The bill is brownish-black, paler at the end. The claws dusky, yellowish-brown toward the edges. The bird was passing from its summer state to the winter plumage, and has therefore a number of white feathers above ; but the head, cheeks, and hind neck are covered with feathers, band rather narrowly with dusky and light yellowish-red ; the back, scapulars, rump, and upper tail-coverts, are minutely undulated and dotted with dusky, light yellowish-brown, and greyish-white, with some large patches of brownish-black. On the fore part of the neck and sides, are some feathers similarly coloured. The wings are white, with the exception of a few of the inner secondaries, and one or two coverts, and the brown shafts of six of the primaries. The lower parts white. The two middle tail-feathers are white, but only growing, the rest brownish-black, narrowly tipped with white, the loreal band is black.

Length to end of tail $14\frac{3}{4}$ inches ; bill along the ridge $\frac{8}{12}$; wing from flexure $8\frac{1}{4}$; tail $4\frac{9}{12}$; tarsus $1\frac{2}{12}$; middle toe $\frac{11}{12}$, its claw $\frac{8}{12}$.

WHITE-TAILED GROUS.

TETRAO LEUCURUS, SWAINS.

PLATE CCCCXVIII. ADULT IN WINTER.

THIS pretty little Grouse is an inhabitant of the Rocky Mountains, where it was found by Mr DOUGLAS and afterwards by Mr DRUMMOND, who sent several specimens to England. It is said to extend as far as the Columbia River, but has not been observed in that region by either Mr NUTTALL or Dr TOWNSEND. All that is known of its habits is, that they resemble those of the Ptarmigan. Mr DRUMMOND states, that this bird never has the black stripe from the bill to the eye so conspicuous in the males of the other species. My figure was drawn from the only specimen now in the Museum of the Zoological Society of London.

TETRAO (LAGOPUS) LEUCURUS, Swains. WHITE-TAILED GROUSE, Richards. and Swains. Fauna Bor.-Amer. vol. ii. p. 356.

WHITE-TAILED GROUSE, Nuttall, Manual, vol. ii. p. 612.

Adult in winter. Plate CCCCXVIII. Fig. 2.

Bill short, robust; upper mandible with the dorsal outline curved, the ridge and sides convex, the edges overlapping, the tip declinate, thin edged and rounded; lower mandible with the angle short and wide, the dorsal line convex, the back broadly convex, the sides rounded, the edges inflected, the tip obtuse. Nostrils basal, roundish, concealed by the feathers.

Head small, ovate; neck of moderate length; body full. Feet of ordinary length, stout; tarsus and toes feathered; the first toe very small, the middle toe much longer than the lateral, which are nearly equal. Claws slightly arched, depressed, broad, thin-edged, the tip rather pointed.

Plumage compact, the feathers ovate and rounded; those of the tarsi and toes with loose stiffish filaments. Wings short, concave; primaries strong, narrow, tapering, pointed; the third and fourth longest. Tail rather short, slightly rounded, of sixteen broad feathers.

Bill greyish-black ; superciliary membrane scarlet ; claws greyish-yellow, dusky toward the base. The plumage is entirely pure white.

Length to end of tail 12 inches ; bill along the ridge $1\frac{6}{12}$, along the edge of lower mandible $1\frac{9}{12}$; wing from flexure $6\frac{1}{2}$; tail 4 ; tarsus $1\frac{2}{12}$; middle toe and claw $1\frac{7}{12}$.

Dr RICHARDSON'S description of the summer plumage is as follows :

“ A summer specimen (lat. 54°). Head and neck shortly barred with blackish-brown and pale wood-brown or brownish-white ; the front of the neck paler. Dorsal plumage, tail-coverts, scapulars, tertiaries, and the posterior lesser coverts, blackish-brown, cut about half-way to the shafts by rather coarse ochraceous bars, intermixed with nearly an equal number of feathers, ochraceous throughout and thickly undulated with fine black lines. The breast, belly, and flanks are mostly pale ochre, broadly blotched and barred with blackish-brown, intermixed on the belly with some white feathers, and on the breast with a few of the finely undulated ones. The vent, legs, tail (which is only partially grown), the outer border of the wing, primaries, secondaries, and greater coverts, are white. The toes partially naked, not pectinated ; the nails short and much worn.”

DWARF THRUSH.

TURDUS NANUS.

PLATE CCCCXIX. MALE.

THE history of our smaller Thrushes has been involved in obscurity by the attempts which have been made to restore to some of those described by WILSON the names supposed to have been bestowed on them by European writers, and by changing the names given by WILSON to such as could not satisfactorily be referred to previous writers. The difficulties that present themselves when we attempt to recognise species ill figured and slightly described, are very great, and I have often thought that too little credit had been given to WILSON with respect to the smaller Thrushes which he has described, and which no

European writer, who has not studied their habits and procured the birds in our woods, can correctly characterize, unless he may have a great number of specimens, ticketed when obtained, and shewing the differences as to size and markings that occur in old and young individuals, males and females, and which are the more difficult to judge of on account of the general mutual resemblance of birds of this genus. Experience has proved to me that the size, and to some extent, the colour of the spots on the breast of our small Thrushes differ in winter and summer, as the tips of the feathers become more or less worn. Nature, however, has provided each species with characters, which may with care and patience be understood.

The Wood Thrush, *Turdus mustelinus* of GMELIN, *T. melodus* of WILSON, is easily distinguished from our other small spotted Thrushes by its greater size, purer colours, and more decided spots. It measures eight inches in length, and thirteen in extent of wings. During the breeding season, it is found from the head waters of the Missouri to most parts of our Eastern Atlantic Districts, and beyond them as far as Nova Scotia, while, on the other hand, it is abundant in the Texas. I saw none in Newfoundland or Labrador, and as no mention is made of this species in the Fauna Boreali-Americana, it may be supposed that it does not extend its northward movements much beyond the skirts of the upper parts of the St Lawrence River. This Thrush spends the winter in considerable numbers in the lower parts of Louisiana, in Alabama, and especially in the southern parts of the Floridas, where I have heard its loud, clear, distinct notes in the months of December and January. My friend Dr BACHMAN informs me that the Wood Thrush arrives in South Carolina about the beginning of April, when it sings sweetly for a few weeks, after which it disperses or disappears, and that, although it breeds in the middle and mountainous districts of that State, he has known no instance of its doing so in the maritime parts. The eggs of this species measure one inch in length, by five and a quarter eighths in breadth, and are, as I have already said, of a beautiful uniform light blue colour.

The Tawny Thrush, *Turdus mustelinus* of WILSON, *Turdus Wilsonii* of BONAPARTE and SWAINSON, and *T. minor* of GMELIN. The eggs of this species differ greatly in size, colour, and markings from those of the Wood Thrush, *T. mustelinus*, or the Hermit Thrush, *T. solitarius* of WILSON. They measure seven-eighths in length by five

and a half eighths in breadth, and, instead of being much rounded, as those of the Wood Thrush are, they are elongated and rather pointed at the smaller end, while their colour, instead of being pale blue, as in that species, is a rather deep verdigris-blue, though not quite so dark as that of the eggs of the Cat Bird, *T. felivox*. To the closet naturalist, however, these circumstances would prove of little importance. In its habits the Tawny Thrush is much more terrestrial, evincing at all times a propensity to spend its time on the ground rather than on trees or even bushes. As I have already informed you, this species possesses good vocal powers, and according to my friend Mr NUTTALL, is now and then, in the State of Massachusetts, where it breeds, compared to the nightingale of Europe, on account of its sweet and somewhat melancholy evening ditties. I am induced to think that the authors of the Fauna Boreali-Americana have mistaken the female of this bird for a distinct species, which they have called *Merula minor*, considering it as *Turdus minor* of GMELIN. I am the more confident of this, because the figure given in that work, which is excellent, corresponds exactly with the female specimens that have come under my observation. The male Tawny Thrush measures from seven inches and two-twelfths in length, to seven inches and a half, and in extent of wings from twelve to twelve and a half inches. The female is nearly an inch shorter, and correspondingly smaller in all her parts, although in colours and markings precisely similar to the male. According to Dr RICHARDSON, "this species (Wilson's Thrush, Fauna Bor.-Amer. ii. 182) arrives on the banks of the Saskatchewan in May, and during summer haunts the alder thickets and dense willow groves that skirt the marshes. It doubtless breeds there; but I had no opportunity of finding its nest, nor can I speak of the extent of its range to the northward." I may add here that WILSON was quite mistaken as to the musical powers of this Thrush, when he stated that it has no song. My young friend, Dr THOMAS M. BREWER of Boston, says, "It is not uncommon in Massachusetts, where it builds its nest in a low bush, usually about one foot from the ground, in a very retired place. It is with difficulty started from the nest, can easily be caught alive; but when once driven off does not again make its appearance during the presence of the intruder."

I have by me a female specimen of a Thrush sent me by Dr TOWNSEND, who procured it on the Columbia River on the 19th June 1838,

and which he considered as new, but which I find to differ in no other respect from specimens of *Turdus Wilsonii* than in having some of the spots on the sides of the neck and the breast of a darker brown. This skin measures seven inches two and a half twelfths in length.

Our Common Hermit Thrush, *Turdus solitarius* of WILSON, is the next in size, and the smallest of the North American species, with the exception of that presently to be described. The males measure seven inches in length, ten and a half in alar extent, the females considerably less. This species is easily distinguished from the last by its having little or no rufous tint on the fore neck and breast, and by the spots there being decided, and of a blackish-brown colour.

I am of opinion that no distinctive character can be obtained from the colouring of the inner webs of the quills as seen from beneath, those parts being more or less yellowish or buffy in all the species.

Lastly, the smallest of our Thrushes is that represented in Plate CCCCXIX, under the name of "Little Tawny Thrush, *Turdus minor*, GMELIN;" but which, after a more careful examination and comparison, I am induced to consider as a new species, to which, on account of its small size, may be given the name of "Dwarf Thrush, *T. nanus*." It is nearly allied to the Hermit Thrush, but is smaller, and has the second and sixth quills nearly equal, whereas in *T. solitarius* the second quill is considerably shorter than the sixth. It must be confessed, however, that it differs very little from that species, excepting as to size, and especially that of the bill. It is extremely rare in our Atlantic districts, where, however, I have procured a few individuals. Indeed, the first intimation which I received respecting it was from my friend Dr CHARLES PICKERING of Philadelphia, who, having procured one, had kept its wings and head, the smallness of which struck me at once. I was then far from imagining that its native haunts were the valleys of the Columbia River, from which, however, I have since received it through the kindness of my friend Dr TOWNSEND, who has also sent me its measurements, "length 6 inches, alar extent 9," or one inch less in length, and one and a half less in breadth than the Hermit Thrush, with which it has probably been hitherto confounded.

TURDUS NANUS.

Male. Plate CCCCXIX. Fig. 1.

Bill short, nearly straight, compressed towards the end; upper mandible with the dorsal outline a little convex, the tip slightly declinate, the margins sharp, direct, overlapping, and slightly notched close upon the tip; lower mandible with the angle rather long and narrow, the dorsal line very slightly convex, the edges sharp and inflected, the tip narrow. Nostrils basal, oblong, partially concealed by the feathers.

Head of ordinary size, broadly ovate; neck rather short; body of moderate size. Feet rather long; tarsus longish, slender, compressed, anteriorly covered with a few indistinct elongated scutella, posteriorly edged, longer than the middle toe; toes scutellate above, lateral, almost equal, the outer connected as far as the second joint; claws moderately arched, much compressed, laterally grooved, rather acute, that of the hind toe largest.

Plumage rather loose, blended. A few longish bristles at the base of the upper mandible. Wings of ordinary length, the first quill seven and a half twelfths long, the second two and three-fourth twelfths shorter than the third, which is three-fourths of a twelfth shorter than the fourth, the latter being the longest, the fifth half a twelfth shorter, the sixth about the same length as the second, being scarcely half a twelfth longer. Tail of moderate length, slightly emarginate, the middle feathers being two-twelfths shorter than the outer.

Bill dark brown, yellowish toward the base of the lower mandible. Feet flesh-colour. The general colour of the upper parts is light yellowish-brown, changing on the rump and tail into dull yellowish-red. Quills dusky, margined externally with yellowish-brown; primary coverts yellowish-brown, dusky at the end; secondary coverts tipped with yellowish-red, which on some of the inner runs a little way along the shaft. Lower parts greyish-white, the neck and breast tinged with yellowish-red, and marked with broad triangular blackish-brown spots; the sides with faint spots of olivaceous brown, the inner feathers greyish-brown, as are the axillars and lower wing-coverts.

Length to end of tail 6 inches; extent of wings $9\frac{1}{2}$; bill along the ridge $\frac{5\frac{1}{2}}{12}$, along the edge of lower mandible $\frac{9\frac{1}{2}}{12}$; wing from flexure $3\frac{1}{2}$; tail $2\frac{10}{12}$; tarsus $1\frac{1}{12}$; hind toe $\frac{3\frac{3}{4}}{12}$, its claw $\frac{3\frac{3}{4}}{12}$; second toe $\frac{4\frac{3}{4}}{12}$, its claw $\frac{2\frac{3}{4}}{12}$; third toe $\frac{7\frac{3}{4}}{12}$, its claw $\frac{3\frac{1}{2}}{12}$; fourth toe $\frac{4\frac{3}{4}}{12}$, its claw $\frac{2\frac{3}{4}}{12}$.

This species agrees in many respects with Mr SWAINSON'S *Merula silens*, but is smaller. It has also the claws little curved, indeed much

less so than those of his figure of *Merula solitaria*, which he describes as having the "claws slightly curved." But it seems impossible to judge in this case, for in his Synopsis of the Birds of Mexico, *Merula silens* is announced as WILSON'S Hermit Thrush, and in the Fauna Boreali-Americana *Merula silens* is said to be the same as that of the Synopsis, while at the same time WILSON'S Hermit Thrush is reproduced under the same English name as that of *Merula solitaria*, while *Turdus silens* is said to be or to seem "intermediate between *Merula solitaria* and *Merula Wilsonii*."

TOWNSEND'S PTILOGONYS.

PTILOGONYS TOWNSENDI.

PLATE CCCCXIX. FEMALE.

THE only individual of this species that I have ever seen is a female, which was shot near the Columbia River, and kindly transmitted to me by my friend Dr TOWNSEND, after whom, not finding any description of it, I have named it. The genus, which was instituted by Mr SWAINSON, is very remarkable, combining, as it appears to me, the characters of some of the Flycatchers and Thrushes.

PTILOGONYS TOWNSENDI.

Female. Plate CCCCXIX. Fig. 2.

Bill short, rather strong, somewhat triangular, depressed at the base, a little compressed at the end; upper mandible with the dorsal line convex at the end, the nasal groove wide, the sides convex toward the end, the edges sharp, a distinct notch close to the short tip; lower mandible with the angle rather long and wide, the dorsal line ascending and convex, the sides convex toward the end, the edges sharp, the tip small, with a slight notch behind. Nostrils linear, oblong, partially concealed by the feathers which cover the nasal membrane; gape-line nearly straight.

Head ovato-oblong; neck rather short; body slender. Feet short and rather slender; tarsus shorter than the middle toe with its claw, compressed, covered anteriorly with a long plate and two inferior scutella, behind with two plates meeting so as to form a sharp edge. Toes free, the outer only united for a short space; hind toe rather large, stouter, outer toe a little longer than inner, and more slender toward the end; claws moderate, arched, compressed, laterally grooved, acute.

Plumage soft and blended. There are slight bristles at the base of the upper mandible, and the feathers in the angle of the lower are somewhat bristle-tipped and curved forward. Wings long, rounded; the first quill very small, being only an inch long, the second four-twelfths shorter than the third, the fourth longest, exceeding the third by half a twelfth, and the fourth by one-twelfth, the rest rapidly graduated; secondaries long, rounded, the inner diminishing. Tail very long, straight, emarginate, or doubly rounded, the middle feathers being five-twelfths, the lateral two and a half twelfths shorter than the longest.

Bill and feet black. The general colour of the plumage is dull brownish-grey; the quills and coverts dusky brown; the edge of the wing anterior to the primary coverts dull white; the basal part of the primaries pale yellow, of the secondaries ochre-yellow; the edges of all the quills dull greyish-white; the secondaries with a faint patch of light brownish-grey on the outer web toward the end. The middle tail-feathers are greyish-brown, the rest blackish-brown, the outer with an oblique patch of white, including from the tip a considerable portion of the inner web, and more than two-thirds of the outer; the next with a white patch at the end. The lower parts are paler than the upper, the lower tail and wing coverts broadly tipped with dull white; some of the inner wing-coverts white.

Length to end of tail $8\frac{1}{4}$ inches, to end of wings $6\frac{1}{2}$; wing from flexure $4\frac{1}{2}$; tail $4\frac{1}{2}$; bill along the ridge $\frac{5\frac{1}{2}}{12}$, along the edge of lower mandible $\frac{9}{12}$; tarsus $\frac{10}{12}$; hind toe $\frac{4\frac{1}{2}}{12}$, its claw $\frac{4}{12}$; second toe $\frac{4\frac{3}{4}}{12}$, its claw $\frac{2\frac{1}{4}}{12}$; third toe $\frac{7\frac{1}{2}}{12}$, its claw $\frac{5}{12}$; fourth toe $\frac{5}{12}$, its claw $\frac{2\frac{1}{2}}{12}$.

CANADA JAY.

CORVUS CANADENSIS, LINN.

PLATE CCCCXIX. YOUNG.

I HAVE been induced to give a figure of the young of the Canada Jay simply because my friend Mr SWAINSON has formed of it a new species, under the name of *Garrulus brachyrhynchus*. The account given of this alleged species, at page 296 of the second part of the Fauna Boreali-Americana, is as follows:—"The only specimen brought home of the Short-billed Jay was killed on the roof of the dwelling-house at Fort Franklin. Its general appearance and manners resemble those of the Canada Jay or Whisky-Jack so strongly, that we did not recognise it as a distinct species, and consequently did not ascertain whether it completely replaces the Canadian one in high latitudes, or whether both exist in the same localities." The description of the habits of the Canada Jay or "Whisky-Jack," in the same work, may here be referred to:—

"This inelegant but familiar Jay inhabits the woody districts from latitude 65° to Canada, and in the winter time makes its appearance in the northern section of the United States. Scarcely has the winter traveller in the Fur Countries chosen a suitable place of repose in the forest, cleared away the snow, lighted his fire, and prepared his bivouac, when the Whisky-Jack pays him a visit, and boldly descends into the circle to pick up any crumbs of frozen fish or morsels of pemmican that have escaped the mouths of the hungry and weary sledgedogs. This confidence compensates for the want of many of those qualities which endear others of the feathered tribes to man. There is nothing pleasing in the voice, plumage, form, or attitudes of the Whisky-Jack; but it is the only inhabitant of those silent and pathless forests which, trusting in the generosity of man, fearlessly approaches him; and its visits were, therefore, always hailed by us with satisfaction. It is a constant attendant at the fur-posts and fishing-stations, and becomes so tame in winter as to eat from the hand; yet it is impatient of confinement, and soon pines away if deprived of liberty. It hops actively from branch to branch, but, when at rest, sits

with its head retracted and the plumage of the body very loose. Its voice is plaintive and squeaking; though it occasionally makes a low chattering, especially when agitated by the prospect of a supply of food. It hoards berries, pieces of meat, &c. in hollow trees, or between layers of the bark of decaying birches, by which it is enabled to pass the winter in comfort, and to rear its young before the snow is off the ground, and indeed earlier than any other in the Fur Countries. Its nest is concealed with such care, that none of the Indians with whom I spoke on the subject had seen it; but both HUTCHINS and HEARNE inform us, that ‘it is generally built in a fir tree, of sticks and grass; the eggs are blue; and the young brood, which are quite black, take to flight by the middle of May.’”

Now, to my eye, the Canada Jay is as elegant in its movements, whether perched or on wing, as any other of our Jays, although its apparel is certainly very homely. It is joyous and lively at all times, even when, pushed by extreme hunger, it approaches the lonely camp of the traveller, with the hope of obtaining a share, however small, of his perhaps scanty fare.

Its range is very extensive, as I have specimens procured by Dr TOWNSEND on the Columbia River, and it has been observed by Dr RICHARDSON as far northward as lat. 65°. The former of these naturalists states that he found “these birds at the site of Old Fort Astoria, on the Columbia River. They were very noisy and active; the voice is strong and harsh. The Indians however say, that they are rarely seen, and that they do not breed hereabouts.” Mr TITIAN PEALE has obtained it in the neighbourhood of Philadelphia, and I have the body of one procured there by himself in October 1836.

The description given in the Fauna Boreali-Americana of the individual there represented, agrees in all respects with that of the bird now before you, which, as I have said in my second volume, *I saw fed several times by its parent the Canada Jay*. The differences pointed out as specifically distinctive are merely such as are presented by young and old birds of many species.

CORVUS CANADENSIS, *Linn. Lath., &c.*

GARRULUS CANADENSIS, *Swainson., &c.*

GARRULUS BRACHYRHYNCHUS, *Richards. and Swains. Fauna Bor.-Amer., vol. ii.*
p. 296. Young.

The description of two young birds, one procured in Labrador, the other in Nova Scotia, is, as to form and plumage, the same as that of the adult given in vol. ii. p. 55, the latter however being corrected as follows: The bill, instead of being compressed, is broader than high at the base, and moderately compressed only toward the end; the fifth quill is longest, the sixth and fourth nearly equal; and the plumage is remarkably soft, full, and loose, as in many Titmice.

In the young the plumage is still looser, the filaments being distinct, but the feathers are shorter than in the adult. The wings and tail are similar. The bill is dusky, with the edges of both mandibles yellow; the feet as in the adult. The general tint is very deep dull slate colour, paler on the abdomen; the feathers at the base of the bill and the ear-coverts greyish-black; inner webs of the quills brownish-black; edges of the outer primaries yellowish-grey, of the rest bluish-grey; tips of all the quills, the three outer excepted, greyish-white; tail approaching to dull leaden-grey, broadly tipped with dull yellowish-white. Another young bird is similar, but with the bill darker, and a band of dull white from the base of the lower mandible to the ears, as in the individual represented in the plate.

The specimen presented by Mr PEALE, and preserved in spirits, presents the following characters. The tongue is triangular, flattened above, tapering to a blunt emarginate point, and having a single prominent papilla at the base on each side. The œsophagus is $3\frac{1}{4}$ inches long, tapering, its diameter anteriorly $\frac{1}{2}$ inch, below $\frac{1}{4}$. Proventriculus $4\frac{1}{2}$ twelfths in breadth. The stomach is broadly elliptical, compressed, 11 twelfths long, 9 twelfths broad; its muscular coat $\frac{3}{4}$ twelfths in thickness, not divided into distinct lateral and inferior muscles; the tendons elliptical, their greatest diameter 4 twelfths; the epithelium thin, tough, brownish-red, longitudinally marked with broad rugæ. The contents of the stomach are numerous remains of insects, a large hairy caterpillar, 2 inches long, and two persimon seeds. The intestine is $17\frac{1}{2}$ inches long.

The trachea is 2 inches 5 twelfths long, flattened, tapering from 2 twelfths in breadth to 1 twelfth, of about 50 well ossified rings. The inferior laryngeal muscles are large, and four in number on each side, exclusive of the sterno-tracheal. The bronchi are wide, of about 12 cartilaginous half rings.

CRIMSON-WINGED TROOPIAL.

ICTERUS GUBERNATOR.

OF this species, which appears to be abundant about the Columbia River, I have received two specimens from Dr TOWNSEND, who procured them there. Having seen individuals from Mexico, I think it probable that it returns to that country to spend the winter. Of its habits however I regret that I am entirely ignorant.

ICTERUS GUBERNATOR.

PSAROCOLIUS GUBERNATOR, Wagler.

Adult Male. Plate CCCCXX. Fig. 1.

Bill shorter than the head, conical, straight, stout, compressed toward the end, tapering to a fine point; upper mandible with the dorsal line nearly straight, being a little convex at the base, the ridge a little flattened toward the base, where it runs into a short tapering process, the sides rounded, the edges inflected, the tip slightly depressed; lower mandible higher at the base than the upper, with the angle rather short and wide, the sides rather flat and inclined inwards at the base, convex toward the end, the edges inflected, the tip acute; the gape-line straight, but at the base deflected. Nostrils oval, in the fore part of the short nasal depression.

Head of moderate size, ovate, with the forehead flattened; neck short; body moderately stout. Feet of ordinary length; tarsus rather stout, compressed, with seven large anterior scutella, of which the upper are blended, the two lateral plates meeting at an acute angle behind; toes rather large, compressed; the first much stronger, the outer a little shorter than the inner; claws large, arched, compressed, laterally grooved, very acute.

Plumage soft, blended, glossy, the feathers ovate and rounded; those on the fore and upper parts of the head standing erect, so as to present a velvety surface. Wings rather long, the second quill longest, but exceeding the third only by half a twelfth, the first shorter than the fourth; the secondaries broadly rounded; the second, third, fourth, and fifth primaries cut out on the outer web toward the end. Tail of

twelve broadly rounded feathers, rather long, slightly rounded, the lateral feathers being two-twelfths shorter than the middle.

Bill and feet black. The general colour of the plumage is glossy bluish-black, on the head velvet-black; the smaller wing-coverts scarlet, at the base white.

Length to end of tail 9 inches, bill along the ridge $\frac{10}{1\frac{1}{2}}$; wing from flexure $5\frac{7}{1\frac{1}{2}}$; tail $4\frac{1}{1\frac{1}{2}}$; tarsus $1\frac{5}{1\frac{1}{2}}$; hind toe $\frac{6\frac{3}{4}}{1\frac{1}{2}}$, its claw $\frac{7}{1\frac{1}{2}}$; second toe $\frac{8}{1\frac{1}{2}}$, its claw $\frac{4\frac{1}{2}}{1\frac{1}{2}}$; third toe $\frac{1\frac{1}{2}}{1\frac{1}{2}}$, its claw $\frac{5}{1\frac{1}{2}}$; fourth toe $\frac{7\frac{1}{2}}{1\frac{1}{2}}$, its claw $\frac{4}{1\frac{1}{2}}$.

Female. Plate CCCCXX. Fig. 2.

The Female, which is much smaller, has the bill and feet greyish-black; the upper parts are dark brown, the feathers edged with light brown; the smaller wing-coverts edged with dull scarlet, the first row with whitish; the larger coverts, the quills and tail-feathers blackish-brown, edged with yellowish-brown; the lower parts are dull brown, but the throat, and a broad streak over the eye are dull orange.

BROWN PELICAN.

PELECANUS FUSCUS, LINN.

PLATE CCCCXXI. YOUNG.

SINCE I wrote my account of the habits of this very interesting bird, I have followed it westward as far as the inland bays of the Texas, where I found it almost as abundant as on the coast of the Floridas. In the former country however, I observed it breeding on the ground, and on the small naked islets of the large bays margining the Mexican Gulf. The nests were formed much in the same manner as when placed on trees, and the eggs were of the same number as stated. Here however, I discovered an error which I had committed in stating that there is a difference between the males and females when in a state of maturity, for, having examined several specimens procured on the nest, in the act of incubation, I found that the plumage of the fully adult female is precisely like that of the male;

and I am now convinced that birds of both sexes are several years in acquiring their full plumage, although the precise number of years is what I have not yet learned. Some additional observations respecting the habits of this species may now be stated.

During a severe gale, on the 7th of April 1836, the wind coming from the north-west, I saw a flock of about thirty of these birds flying only a few feet above the water, and against the gale. Having proceeded a few yards, they plunged into the water, generally to leeward, and threw their bodies round as soon as their bills were immersed, giving a very curious appearance to the wings, which seemed as if locked. On seizing a fish they kept the bill beneath the surface for a short time in a perpendicular direction, and drew it up gradually, when the water was seen to flow out, after which they raised the bill to a horizontal position, and swallowed the fish. In this way the whole flock kept dashing and plunging pell-mell, like Gannets, over a space of about one hundred yards, fishing at times in the very surf, and where the water could not be more than a very few feet deep. Each of them must have caught upwards of a score of fishes. As soon as they were satisfied, they flew in a line across the channel, and landed on low banks under the lee of the island, opposite our harbour. During all the time of their fishing they were attended by a number of Black-headed Gulls, *Larus Atricilla*, which followed all their movements, alighting on their heads, and feeding as I have already described. These Gulls followed their purveyors to the same low banks to spend the night.

Notwithstanding all that has been said to the contrary by some European writers, I feel perfectly satisfied that these Pelicans must make ample use of some oily matter contained in the uropygial gland, as their plumage is always dry in the midst of their continued plungings. On the 14th of the same month, my party happened to shoot a good number of Brown Pelicans, among which was one slightly wounded in the body. The sailors tied its bill with a piece of rope-yarn, and placed it in the stern of the boat; but while they were again charging their muskets, the bird recovered sufficiently to take to its wings, clear the boat, and fly off. In such a condition it must necessarily have perished of hunger.

PELECANUS FUSCUS, *Linn. Syst. Nat. vol. i. p. 215.*

Young. Plate CCCCXXI.

Bill greyish-blue, its edges and unguis greyish-yellow ; gular pouch dull greyish-blue. Iris brownish-yellow ; bare space around the eye of a dusky bluish tint, the feathers margining it yellowish-white. The feathers of the head and neck are less downy than in the adult, and those on the sides of the latter less elongated or pointed. The head and neck are dark brown, as are the upper parts generally ; the secondary and many of the smaller coverts margined with pale brown ; the primaries and their coverts as well as the tail-coverts brownish-black, with white shafts. Feet and claws dull leaden colour.

In an adult female preserved in spirits the general peculiarities of the organization are the same as those described in the American White Pelican. The mouth and the sac appended to the lower mandible present the same appearances. The œsophagus, *a b c*, measured from the articulation of the lower jaw to the stomach properly so called, is 2 feet 2 inches long. At its commencement, or opposite the tongue, its width is about 5 inches ; it contracts to the middle of the neck, where it is about 2 inches ; at the distance of 1 foot it becomes narrowed to $1\frac{1}{2}$ inch, and so continues until it enters the thorax, when it gradually enlarges, its diameter opposite the heart being 2 inches, and at the proventriculus $2\frac{9}{12}$. Its muscular coat is of moderate thickness, and composed of transverse external, and longitudinal internal fibres ; its mucous coat is thrown into longitudinal plaits. The proventricular glands are cylindrical, 3 twelfths in length, $\frac{1}{2}$ twelfth in breadth, and occupy a belt 3 inches broad ; the inner surface of this part is irregularly and tortuously rugous. The stomach *c d*, is extremely small, being as it were a slight sac appended to or terminating the œsophagus, $1\frac{1}{2}$ inch long, and of the same breadth at its upper part. It

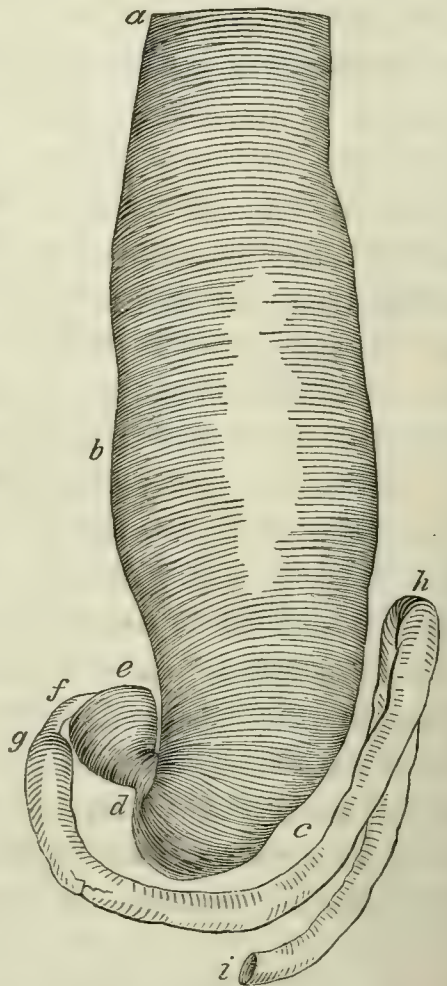
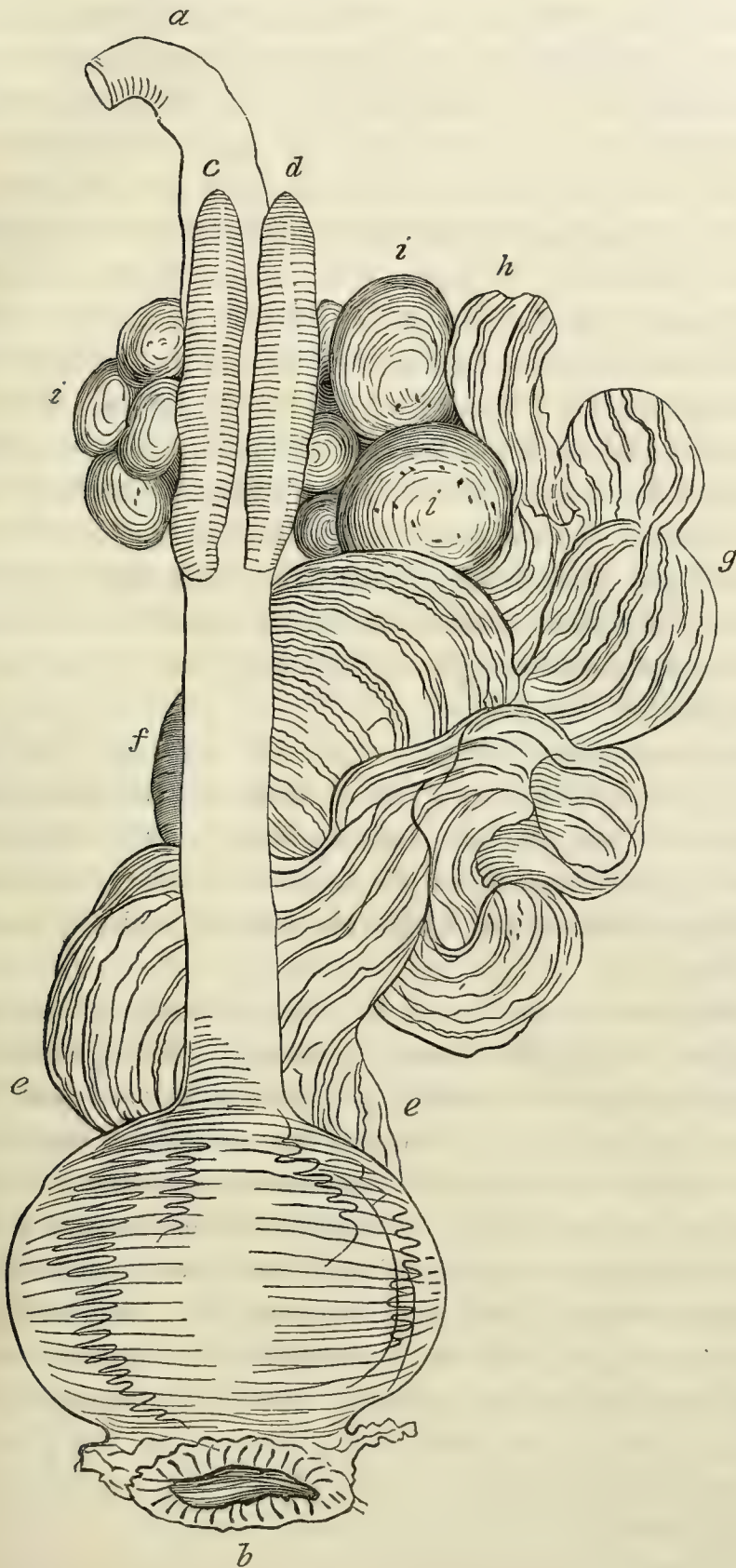


Fig. 2.



communicates by an aperture 3 twelfths in diameter, with a sac, *de*, of a roundish or somewhat triangular form, from which the duodenum, *fghi*, comes off. For half an inch, at *f*, its diameter is only $2\frac{1}{2}$ twelfths, but it then enlarges to 5 twelfths, and passes to the left side, curving forwards to the level of the upper part of the proventriculus, and at the distance of $6\frac{1}{2}$ inches from its commencement returns upon itself, curves under the right lobe of the liver, and is convoluted in longitudinal folds, of which there are 26 in all, or 13 double folds. The intestine is 11 feet 11 inches long, and varies in diameter from $\frac{1}{2}$ inch to 4 twelfths. The contents of the gullet and stomach are two fishes, about 7 inches in length, and $2\frac{1}{2}$ in depth, one entire, the other partially dissolved. The rectum is $4\frac{1}{4}$ inches long, including the cloaca, which is a large sac capable of being dilated to a diameter of 2 inches. The cœca are 1 inch and 10 twelfths long. This individual has several of the eggs or yolks largely developed, the largest having a diameter of 1 inch, and ready to be received into the oviduct, which is convoluted above the intestine, or between it and the kidneys, and is of very large size, having at its lower part a diameter of $1\frac{1}{4}$ inch.

Fig. 2 represents, of the natural size, the extremity of the intestine, *ab*; the cloaca, *b*; the cœca, *cd*; the extremely enlarged, tortuous, longitudinally, and obliquely, rugous oviduct, *efgh*; and the ova or yolks, *ii*, of which one is ready to pass into the tube, there to receive the albumen and shell, and finally to be conveyed to the termination of the guts.

The trachea is 1 foot 8 inches long, considerably flattened at the upper part, round at the lower; its diameter about $7\frac{1}{2}$ twelfths anteriorly, 4 twelfths at the middle, $4\frac{1}{2}$ twelfths at the lower part. There are 182 rings, which are exceedingly thin and slightly ossified. The contractor muscles are slender, the sterno-tracheal moderate; there are no inferior laryngeal muscles. Beyond the last entire tracheal ring are six half rings on each side, of which the last is very large, and the two together extend to a width of 1 inch 2 twelfths. The bronchi, which curve outwards, are rather short, very wide, their diameter anteriorly being 7 twelfths; the right bronchus with 32 half rings, the left with 24.

ROUGH-LEGGED FALCON.

FALCO LAGOPUS, GMEL.

PLATE CCCCXII. ADULT MALE AND YOUNG.

DURING the many years which I have spent in the woods, with the view of becoming acquainted with all that refers to that wonderful phenomenon—the desire in birds to migrate, my observations have been numerous, as have been the thoughts suggested by them. Like many others, I of course first observed that young birds reared in high latitudes exhibit a greater propensity to remove far southward than their parents, as if their more tender nature rendered it necessary for them to seek climates, in which food and genial warmth are to be found for the support of their weak constitution. That this is not the case generally I am perfectly aware, for Swallows and many other birds, which are delicately organized, find it necessary to remove far southward. Yet the young of these species are in my opinion subjected to rules, which I will presently lay before you.

Some species there are of which the old birds rarely if ever abandon the countries in which they have been wont to reproduce, after they have acquired their full firmness of constitution. Such are the Jer Falcon, the Peregrine Falcon, and the species now under consideration. The old Jer Falcon, for instance, which is found breeding in the most northern latitude, seldom removes farther southward than Labrador, where it also occasionally breeds, whilst even its young do not advance beyond the northern parts of the State of Maine. The old Peregrine, being less able to overcome the difficulties which would beset it in winter, not unfrequently proceeds southward as far as South Carolina, whilst its young are now well known to spend that season in many parts of South America.

Now, what I have said regarding these two species seems to apply equally to the Rough-legged Buzzard, *Falco lagopus*, of which very few individuals in the plumage indicative of the adult state are found farther south than the State of New Jersey, where the young birds of the same species, in the most extraordinarily diversified plumage of their

first year, are to be met with in the proportion of fifty to one. In all our other Hawks the same propensity may be looked upon as existing, although some trifling variations might easily be pointed out.

As in Nature, as well as in arithmetic, all rules that are true are found to work equally well both ways, I think that it will be established that the young of all such species as are wont in mature age to remove farthest north to breed, will be found to tarry for the same purpose at a greater or less distance from the place of their nativity according to their respective ages and their increasing vigour, which may enable them to undertake longer journeys than even their parents. For this reason, I feel a considerable degree of assurance in saying that the young of the Jer Falcon will be more abundantly met with breeding on the coast of Labrador in its grey plumage, than the adult in its white and slightly spotted garb, which will easily make its way to the very highest latitudes. The Peregrine Falcon will of course be found to act in the same manner, and this I partly established when I found the lighter-plumaged birds of this species farther south than the old ones, of which but a very few had stopped as it were at Labrador to breed; while, on the other hand, some twenty or more pairs of yet brown-coloured birds were found with young in the rocky and mountainous parts of that country.

I feel assured that the principle here laid down will be found to exist in reference to all birds that are destined to remove from one part of the world to another, for the purpose of breeding.

Whilst in Europe, where I have now spent many years, I have observed further, that in late and cold springs the Nightingales that I listened to, both in France and in the southern parts of England, were by far the best singers; whereas, on the contrary, when the winter had been mild, and the spring fine, these birds were more numerous, perhaps as six to one, and their songs were diversified in point of compass and effect. I therefore inferred that in cold springs few of the younger birds make their appearance in these countries, the rest remaining and breeding in warmer climates.

What I have said respecting my having found Ducks of species breeding in the Texas, which are generally known to proceed far north, I look upon as another evidence of the truth of my principle. Should it prove to be correct, it will no longer appear strange that the Rough-legged Falcon in its old age should never have been observed in the

southern parts of Europe, any more than to the south of the State of Maryland in North America.

As connected with this subject, I may here offer a few observations respecting the gradual improvement of the colours of birds, in their progress toward maturity.

In the Rough-legged Falcon, which forms the subject of this article, I feel convinced that the younger birds will generally be found to be of much lighter tints than the old, and that these tints become, as in *all other species*, stronger, purer, or firmer, with age. As this may call for an explanation, I will offer it to you.

The colours of an *old bird* may be darker or lighter than that of the young of the same species, until the latter has acquired its full plumage; but in the mean time the differences of which I now speak, will prove apparent between the two birds on the slightest inspection of the experienced student of nature. In birds of which the colouring must ultimately become splendid, the colours of the young are generally of a different character, that is to say considerably duller; while in species of which the adult exhibit dull colours, the young are found at first to have their plumage almost similar to that of their parents. Such is the case, for example, in the greater number of our Finches and Thrushes. Whilst in those of more striking colours when old (that is, when they have obtained their full colouring, whether at the first moult or at succeeding moults) the markings are such as at once suffice to indicate the species to which they belong.

In the Hawk family I have observed that the younger the individual is, the lighter are its colours and markings, and that even in those which after a while either lose or gain the bands on the tail, the general colour of that part becomes purer or more firm, whether barred, or of a uniform hue, as in the case of our Red-tailed Hawk, *Falco borealis*. The same observation will apply to our *Falco Sparverius*, and *Buteo lineatus*, the bands of the tail of which, like those of *Buteo lagopus* and *B. pennsylvanicus*, become more purely white and black the more the individual advances in age.

I have also observed that in all the old birds of certain species which were able to reach the higher latitudes for the purpose of breeding, the mass of their colouring was much superior to that of such birds of the same species as were by circumstances rendered incapable of reaching the same parallel. Thus, all the Finches which I found breeding in

Labrador were greatly superior in point of colouring to those of the same kind found breeding in our Middle States, and even as far northward as Nova Scotia.

I will conclude these introductory remarks by stating, that after the moult of even an old bird of any species, the plumage for a while at least will appear softer and more downy, though more perfect, than at any other period, its coat as it were resembling broad cloth fresh from the manufacturer, with the superfine nap of its surface downy and glossy.

I have in this plate represented an old male and a young bird shot in November, to shew not only that the bird with dark plumage is specifically identical with that which is brown and variegated, but also that our Rough-legged Falcon is the same as that of Europe. Since the publication of my second volume, I have collected a great number of specimens in America, of which there are not two that precisely agree in the colours of their plumage, although in form and proportions they are similar. I have also compared them with several European specimens, and am quite satisfied as to the identity supposed by me to exist between them.

My friend Dr TOWNSEND has sent me the following note relative to this species:—“*Black Hawk, Falco lagopus*. I found this bird breeding on the banks of Bear River, west of the Rocky Mountains. Its nest was placed in a willow ten feet from the ground, and formed of large sticks. It contained two young almost fledged. The birds were in the same plumage as that figured by you.” It is greatly to be regretted, however, that my friend did not say expressly whether one of them was dark and the other light, as may however be inferred, if he alludes to the present plate. This, however, were it so, would not be more strange than in the case of Eagles, which are not unfrequently found mated and breeding in very different states of plumage.

M. TEMMINCK says that this species frequents the north of Europe in autumn and winter, and it is at times seen in Holland. My friend Mr YARRELL states, that, “although it has now been killed once or oftener in almost every county in England, it has rarely been known to breed there, and is usually obtained in the spring or autumn, when changing its latitude from south to north, or *vice versa*.”

It has never been observed in our Atlantic Districts as far south as Carolina; but from Maryland to Nova Scotia it is by no means scarce in the latter part of autumn and during winter. The old birds, how-

ever, both in America and Europe, rarely remove far from their ordinary places of resort in the northern regions.

The number of meadow mice which this species destroys ought, one might think, to ensure it the protection of every husbandman; but so far is this from being the case, that in America it is shot on all occasions, simply because its presence frightens Mallards and other Ducks, which would alight on the ponds, along the shores of which the wily gunner is concealed; and in England it is caught in traps as well as shot, perhaps for no better reason than because it is a Hawk. But so scarce is it in the latter country, that I never could procure one in the flesh there.

My friend Mr SWAINSON considered our bird in its immature plumage, in which he has figured it in the *Fauna Boreali-Americana*, as the true *Falco lagopus*; and Dr RICHARDSON, in the same work, speaks of it as follows:—"A specimen of this bird, in most perfect plumage, was killed in the month of September, by Mr DRUMMOND, on the Smoking River, one of the upper branches of the Peace River. It arrives in the Fur Countries in April or May, and, having reared its young, retires southward early in October. It winters on the banks of the Delaware and Schuylkill, returning to the north in the spring. It is by no means an uncommon bird in the districts through which the expedition travelled, but, being very shy, only one specimen was procured. A pair were seen at their nest, built of sticks, on a lofty tree, standing on a low, moist, alluvial point of land, almost encircled by a bend of the Saskatchewan. They sailed round the spot in a wide circle, occasionally settling on the top of a tree, but were too wary to allow us to come within gun-shot; so that, after spending much time in vain, we were fain to relinquish the chase. In the softness and fullness of its plumage, its feathered legs, and habits, this bird bears some resemblance to the Owls. It flies slowly, sits for a long time on the bough of a tree watching for mice, frogs, &c., and is often seen skimming over swampy pieces of ground, and hunting for its prey by the subdued daylight, which illuminates even the midnight hours in the high parallels of latitude."

With this, in addition to what I have already said of the habits of the Rough-legged Falcon, I conclude; adding, however, the measurements of two American specimens, procured for me by Dr THOMAS M. BREWER, of Boston, and preserved in spirits.

	Male.	Female.
Length to end of tail,	21½	23
... .. wings,	21½	23
... .. claws,	19	21
Extent of wings,	51½	55¼

These measurements, with those previously given by myself and WILSON, and those to follow, shew that, like many other birds, the Rough-legged Buzzards differ considerably in size.

In order to render the history of this bird as complete as possible, I shall here describe an adult male, an adult female, a young male in its first plumage, a young male in its second plumage, and an individual in the intermediate state.

Adult Male. Plate CCCCXXII. Fig. 1.

Bill short, as broad as deep at the base, compressed toward the end; upper mandible with the cere rather short, the dorsal line nearly straight and declinate as far as the edge of the cere, then decurved, the ridge convex, the sides slightly convex, the sharp margin perpendicular, with a slight festoon, succeeded by a broad sinus, the tip trigonal, descending obliquely; lower mandible with the angle wide, the dorsal line convex, the back broadly convex, the sides convex, the edges sharp, arched, and inflected, the tip obliquely truncate. Nostrils large, subovate in the fore part of the cere.

Head large, broad, flattened above, with the superciliary ridges prominent. Eyes large. Neck of moderate length, body robust. Feet rather short, robust; tarsi roundish, feathered in their whole length; toes short, and rather small; hind toe considerably shorter than the second, the fourth smallest and connected with the third by a small membrane; all with four scutella at the end, the rest of their upper parts covered with very small hexagonal scales. Claws long, moderately curved, rather slender, considerably compressed, flat beneath, tapering to a fine point.

Plumage remarkably soft, full, and rather blended. Space between the bill and eye covered with dark bristle-tipped downy feathers. Feathers of the head and neck lanceolate, of the back and breast broad and rounded, of the legs short and narrow, excepting the outer tibial, which are elongated and oblong. Wings long, reaching to the end of the tail; the first four quills abruptly cut out on the inner web; se-

condaries broad and rounded. In the individual here represented, the third quill is longest, exceeding the fourth by two-twelfths of an inch; but generally the fourth is longest, the third almost equal, the second shorter than the fifth, the first nearly as long as the seventh. Tail rather long, broad, slightly rounded, the middle and lateral feathers equal, and only two-twelfths shorter than the longest.

Bill bluish-grey, toward the end black, cere yellow; superciliary ridge yellowish-grey; iris brown. Toes yellow, claws black, bluish toward the base. The general colour of the plumage is deep blackish-brown. The forehead and a large patch on the hind neck are white, streaked with blackish-brown. All the feathers of the back, the scapulars, the wing-coverts, the quills, and the tail-feathers, are white toward the base, and more or less barred with whitish, or light grey, or pale brown; in consequence of which the upper parts are obscurely mottled. The axillar feathers, some of those on the sides, and some of the tibial feathers, with the lower tail-coverts are similarly marked. The white forms a conspicuous patch on the under surface of the wing, as it occupies the greater part of the primaries as well as part of the inner webs of the secondaries, being on all, however, more or less barred with dusky. The tail may be described as brownish-black barred with greyish-white tinged with brown, there being on the middle feathers six of these black bands, the last very broad, the tips brownish-white.

Length to end of tail $21\frac{1}{2}$ inches; to end of wings $21\frac{1}{2}$; extent of wings $51\frac{1}{2}$; bill along the ridge $\frac{4}{12}$, along the edge of lower mandible $1\frac{1}{2}$, wing from flexure $17\frac{2}{12}$; tail $9\frac{1}{2}$; tarsus $2\frac{1}{2}$; hind toe $\frac{9}{12}$, its claw $1\frac{2}{12}$; second toe $\frac{10}{12}$, its claw $1\frac{1}{12}$; third toe $1\frac{4}{12}$, its claw $\frac{10}{12}$; fourth toe $\frac{10}{12}$; its claw $\frac{7}{12}$.

Adult Female. An old female, alluded to at p. 381 of vol. ii, is considerably larger, and has the bill stronger, but agrees with the above in form and proportions; only the fourth quill is longest, as is generally the case, and the tail is more rounded, the lateral feathers being three-fourths of an inch shorter than the middle. The bill and feet are coloured as above; but the plumage is of a nearly uniform chocolate-brown, the feathers of the back, and the scapulars, having no light-coloured band, although traces of them remain on the inner webs of the quills and tail, which latter is without a subterminal bar of black, and

slightly tipped with pale brown; but the bases of the quills remain white, the broad patch on the under surface of the wing being conspicuous. Some of the feathers on the forehead are margined with white, and those on the nape are white excepting at their extremity. Probably this individual is older than the male above described.

Length to end of tail 23 inches, bill along the ridge $\frac{4}{1\frac{1}{2}}$; wing from flexure $18\frac{1}{4}$; tail $9\frac{1}{2}$; tarsus 3; hind toe $\frac{9\frac{1}{2}}$, its claw $1\frac{2}{1\frac{1}{2}}$; middle toe $1\frac{5}{1\frac{1}{2}}$, its claw $\frac{9}{1\frac{1}{2}}$.

A middle-aged male has been described at p. 380 of vol. ii.

A middle-aged female agrees entirely with the description there given; but has a broad band of blackish-brown across the middle and hind part of the breast.

Length to end of tail $25\frac{1}{2}$ inches; to end of wings $24\frac{1}{2}$; extent of wings 56; bill along the ridge $1\frac{1}{2}$; wing from flexure $18\frac{1}{2}$; tail $10\frac{1}{4}$; tarsus $3\frac{1}{1\frac{1}{2}}$; middle toe $1\frac{5}{1\frac{1}{2}}$, its claw $\frac{8}{1\frac{1}{2}}$.

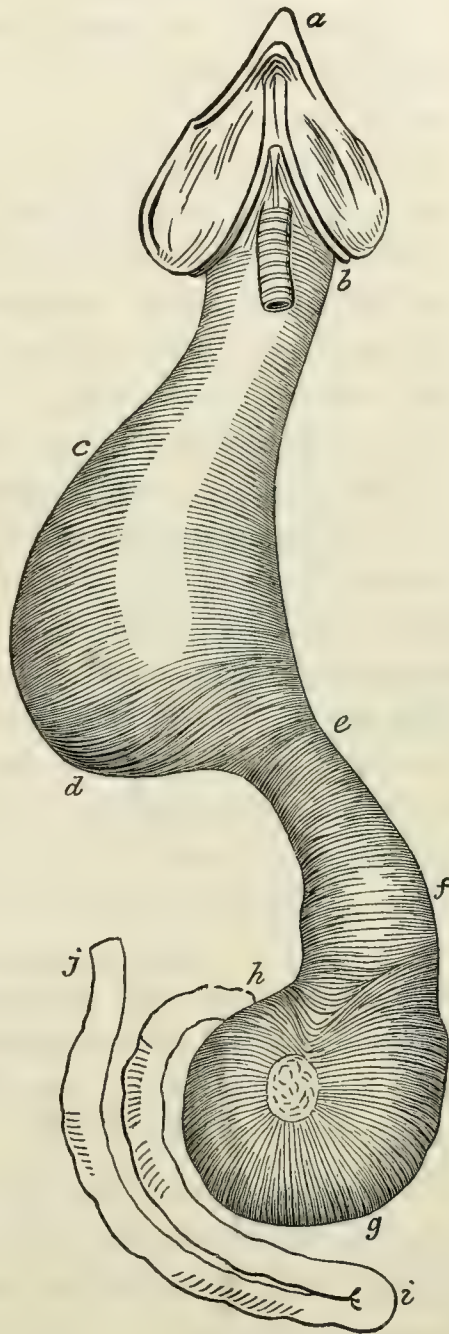
Young Male in winter. Plate CCCCXXII. Fig. 2.

The proportions are the same as those of the adult male. The cere and toes are yellow; the bill and claws black, tinged with blue at the base. The feathers of the fore part of the forehead are white with dark streaks; those of the upper part of the head brownish-black, broadly edged with pale reddish, the hind part of the neck of the latter colour, streaked with dark, and having a patch of white on the nape. The upper parts are blackish-brown, the feathers edged with light grey or light red, and more or less variegated with these colours, and in their concealed portions barred with white, as in the adult. The tail is beautifully and distinctly barred with black and white, towards the end tinged with rufous, the subterminal black bar large. The lower parts are yellowish-white, streaked and barred with blackish-brown. Large patches of the latter occupy the sides of the fore neck and breast, as well as some of the lower wing-coverts, and the feathers of the legs are barred with dusky and light red. The white patch on the lower surface of the wing as in the adult.

Length to end of tail 20 inches, bill along the ridge $1\frac{3\frac{1}{2}}{1\frac{1}{2}}$; wing from flexure $17\frac{1}{2}$; tail 9.

Male from Boston, preserved in spirits. As in other birds of this family, the roof of the mouth is flat, with an anterior ridge dividing

behind into two ridges, corresponding with the edges of the tongue. The posterior aperture of the nares is oblong, with an anterior linear slit, which is papillate on the margin. Tongue 10 twelfths long, fleshy, sagittate and papillate at the base, concave above; the sides nearly parallel, the tip rounded, the lower surface horny toward the end. The mouth is very wide, measuring $1\frac{1}{2}$ inch across. The œsophagus, *bcdef*, which is $6\frac{1}{2}$ inches long, has a width of one inch at the upper part, but is presently expanded to form an enormous crop, *cd*, 3 inches in length, and 2 inches 8 twelfths in breadth; it then contracts on entering the thorax to 10 twelfths, and in the proventricular portion enlarges to $1\frac{1}{4}$ inch. The walls of the œsophagus are extremely thin, but still with distinct transverse and longitudinal fibres. The stomach, *gh*, is a very large sac, of a roundish, somewhat compressed form, $2\frac{1}{2}$ inches long, $2\frac{1}{4}$ in breadth, its muscular coat thin, compressed, of a single series of fasciculi converging toward two roundish tendons, which have a diameter of 8 twelfths. In the crop are the different portions of three arvicolæ, which had been swallowed in fragments, including the skulls and members, with the hair. The stomach is crammed with five arvicolæ, apparently of the same species, all fresh or newly killed, the entire length of one of which, judging from the skull and vertebræ remaining, is 7 inches, of which the tail measures 1 inch 8 twelfths. Appended to the stomach is a great mass of fat, which extends over the whole surface of the abdomen. The pylorus is furnished



with three knobs or valves. The intestine is of moderate length and diameter, being 3 feet 7 inches long, its diameter in the duodenal portion 5 twelfths, but gradually diminishing to $1\frac{1}{2}$ twelfth. The rectum is 4 inches long, its width $5\frac{1}{2}$ twelfths; the cloaca globular, $1\frac{1}{2}$ inch long, $1\frac{1}{4}$ in breadth. The cœca 3 twelfths long, $1\frac{1}{4}$ twelfth in diameter.

The trachea is $5\frac{1}{4}$ inches in length, much flattened, its breadth at the upper part 4 twelfths, at the lower 3 twelfths. Its lateral or contractor muscles are very thick, and terminate in the sterno-tracheal at the distance of about 5 twelfths from the inferior larynx, sending down, however, a thin slip on each side to the first bronchial ring. There are no other inferior laryngeal muscles; and, like that of the other falconine birds, this trachea is of the most simple structure. The rings are 88; the bronchial half rings about 20.

In a female individual, the œsophagus is $7\frac{1}{2}$ inches long; the crop 3 inches by $2\frac{3}{4}$; the stomach $2\frac{1}{2}$ inches in diameter; the intestine 3 feet 8 inches long, the cœca 3 twelfths by $1\frac{1}{2}$ twelfth, the cloaca 2 inches in diameter when inflated. This individual had only one arvicola in its stomach.

PLUMED PARTRIDGE.

PERDIX PLUMIFERA.

PLATE CCCCXXIII. - MALE AND FEMALE.

OF this beautiful bird little, I believe, is known. The following notice by Dr TOWNSEND shews that it is entitled to a place in our Fauna. "This bird inhabits the dense woods along the tributary streams of the Columbia River, and is said to extend south into California. It is at all times a very scarce species, going in coveys of from six to ten, and is rarely seen away from its favourite places of resort. In all my rambles through the Oregon Country I was never so fortunate as to meet with this pretty bird, the three specimens which I have received having been procured for me by others."

One of these specimens has been forwarded to me by Dr TOWN-

SEND, and as it proved a female, I made a drawing of the male from a superb specimen now in the Museum of the Zoological Society of London.

PERDIX PLUMIFERA.

Adult Male. Plate CCCCXXIII. Fig. 1.

Bill very short, stout, higher than broad, its dorsal outline decurved from the base, the ridge narrow, the sides sloping and convex, the edges sharp and overlapping, the tip rather obtuse but thin-edged; nostrils basal, oblong, operculate, in the fore part of the wide nasal groove, which is partially covered with feathers; gape-line a little arched; lower mandible with the angle short and rounded, the dorsal line ascending and slightly convex, the ridge broad, the sides convex, the edges sharp, the tip obtuse.

Head of moderate size, ovate; neck short; body full. Feet of moderate length, stout; tibia covered to the joint; tarsus rather short, a little compressed, edged behind, covered all round with angular scales of which the anterior are very large; toes four, the first small, and placed higher than the rest; the anterior long, rather slender, the fourth considerably longer than the second, the third much the longest; all scutellate above. Claws long, rather slender, compressed, arched, rather acute.

Plumage full, firm, blended. Feathers generally oblong, on the sides very large. On the top of the head are two linear-lanceolate, decurved feathers having their webs deflected, and three inches and three-quarters long, in the midst of a tuft of smaller feathers. Wings short, convex, much rounded, the fourth quill longest, the third and fifth scarcely shorter, the second four-twelfths shorter than the third, and five-twelfths longer than the second. Tail rather short, much rounded, of twelve feathers.

Bill black, "iris red," feet dull yellow, claws brown. The upper part of the head, the hind neck, the fore part of the back, the lower part of the fore neck, and part of the breast, greyish-blue; the feathers round the base of the bill white; the elongated feathers on the head black, the throat bright chestnut, margined on each side by a black line, succeeded by a band of white an inch and a half in length, passing

downwards from the eye. The back and rump are reddish-brown, the quills and tail-feathers wood-brown margined with reddish-brown, the inner secondaries broadly margined internally with white. The middle of the breast bright chestnut, as are the upper hypochondrial feathers, which are margined on their inner web toward the end with a narrow black, and a broad white band, the intervening space on the sides broadly banded with white, black, and brownish-red.

Length to end of tail 11 inches; bill along the ridge $\frac{7\frac{1}{2}}{1\frac{1}{2}}$, along the edge of lower mandible $\frac{7}{1\frac{1}{2}}$; wing from flexure $5\frac{3}{4}$; tail $3\frac{1}{2}$; tarsus $1\frac{4}{1\frac{1}{2}}$; hind toe $\frac{4\frac{1}{2}}{1\frac{1}{2}}$, its claw $\frac{5}{1\frac{1}{2}}$; middle toe $\frac{9\frac{1}{2}}{1\frac{1}{2}}$, its claw $\frac{6}{1\frac{1}{2}}$.

Adult Female. Plate CCCCXXIII. Fig. 2.

The Female, which is somewhat less, is similar to the male, but less brightly coloured. The elongated feathers on the head are much shorter, being about two inches long. The middle and hind part of the back, the wings, and the tail, are very minutely and rather faintly undulated with dusky. Otherwise the difference in the colouring is not very remarkable.

Length to end of tail 10 inches; bill along the ridge $\frac{7}{1\frac{1}{2}}$; wing from flexure $5\frac{1}{2}$; tail $3\frac{1}{2}$; tarsus $1\frac{4}{1\frac{1}{2}}$; hind toe $\frac{4}{1\frac{1}{2}}$, its claw $\frac{5}{1\frac{1}{2}}$; middle toe $\frac{9\frac{1}{2}}{1\frac{1}{2}}$, its claw $\frac{6}{1\frac{1}{2}}$.

WELCOME PARTRIDGE.

PERDIX NEOXENUS.

PLATE CCCCXXIII. YOUNG.

Nothing is known of this species further than that it was procured in the course of Captain BEECHEY'S voyage, on the north-west coast of America. My drawing was taken from a specimen kindly lent to me by the Council of the Zoological Society of London.

WELCOME QUAIL, *ORTYX NEOXENUS*, *Vigor's* Gardens and Menagerie of the Zool. Soc. vol. ii. p. 311

Young. Plate CCCCXXIII. Fig. 3.

The form and proportions being nearly the same as those of the

Plumed and Californian Partridges, it is unnecessary to describe them ; the bill however is proportionally thicker, and has its tip less decurved. Mr BENNET's description is as follows :—

“ In size the present bird is smaller than the Californian Quail. Its crest is short, straight, directed backwards, and composed of about half a dozen elongated feathers, of the same pale brown as the forehead in front of them. Round the eyes the brown becomes much paler, but assumes a rufous tinge as it passes backwards, on either side of the head, in two stripes, extending from above and below the eye. Between these stripes, and on the lower and back part of the neck, a number of pale brown and somewhat pointed feathers alternate with broad black ones. The back is of a grizzled brown, with much darker patches ; and this colouring extends to the tail, which is crossed by about eight wavy irregular lines of very pale brown. The wing-coverts are dark brown with light margins ; and the quill-feathers dusky-brown, some of them slightly marked on the edges with paler spots. The under surface of the body is dark brown, copiously marked with rounded spots, which are nearly of a pure white ; they commence small on the neck, where they are somewhat dingy, and increase in size as they proceed backwards. The bill is black ; the iris pale brown ; and the claws horn-coloured.”

Length to end of tail $7\frac{1}{2}$ inches ; bill along the ridge $\frac{5\frac{1}{2}}{1\frac{1}{2}}$; wing from flexure $4\frac{3}{8}$; tail $2\frac{3}{8}$; tarsus $1\frac{2}{1\frac{1}{2}}$; hind toe $\frac{5}{1\frac{1}{2}}$, its claw $\frac{2\frac{1}{2}}{1\frac{1}{2}}$; middle toe $1\frac{1}{1\frac{1}{2}}$, its claw $\frac{4}{1\frac{1}{2}}$. The second quill longest ; the tail of twelve feathers.

LAZULI FINCH.

FRINGILLA AMÆNA, BONAP.

PLATE CCCCXXIV. FEMALE, FIG. 1.

THE Female of this species has been described along with the male, at p. 64 of the present volume.

CRIMSON-NECKED FINCH.

FRINGILLA FRONTALIS, SAY.

PLATE CCCCXXIV. MALE.

THIS species was first described under the name of *Fringilla frontalis*, by Mr THOMAS SAY, who discovered it in the course of LONG's Expedition to the Rocky Mountains. It was afterwards figured and described in the continuation of WILSON's American Ornithology, by the Prince of MUSIGNANO, who then considered it as belonging to the genus *Pyrrhula*, but who has since placed it in a small group, to which he gives the generic appellation of *Erythrospiza*. It is very closely allied, not only in colour, but in size and form, to the Purple Finch, *Fringilla purpurea*, with which one might at first sight readily confound it, but from which it differs in having the bill somewhat more bulging, with convex outlines, and in several other characters, such as the more elongated and less emarginate tail. For the specimen from which the figure has been taken I am indebted to Mr GOULD of London. It is reported to be from California. I have not met with this species, and, in as far as I know, its habits have not been described.

FRINGILLA FRONTALIS, Say, in Long's Expedition, vol. ii. p. 40.

CRIMSON-NECKED BULLFINCH, *PYRRHULA FRONTALIS*, Ch. Bonaparte, Amer. Ornith. vol. i. pl. 1, fig. 1, 2.

CRIMSON-FRONTED BULLFINCH, Nuttall, Manual, vol. i. p. 534.

Adult Male. Plate CCCCXXIV. Fig. 2.

Bill shortish, robust, bulging, conical, pointed; upper mandible with the dorsal outline a little convex, the back and sides rounded, the edges direct, overlapping, slightly arched, with a faint sinus, and a little deflected at the base; lower mandible with the angle short and wide, the dorsal line ascending and very slightly convex, the back and sides convex, the edges sharp and inflected. Nostrils basal, roundish, open, partially concealed by the feathers.

Head rather large, broadly ovate; neck short; body full. Feet of moderate size; tarsus slender, compressed, covered anteriorly with seven large scutella, of which the upper are rather indistinct, laterally with two long plates meeting so as to form a very sharp edge; toes scutellate above, free, the lateral nearly equal. Claws slender, arched, much compressed, acute.

Plumage soft and blended, the wing-coverts compact. Wings of moderate length, the third primary longest, the fourth scarcely shorter, the second less than one-twelfth shorter than the third, and exceeding the first by one-twelfth. Tail long, broad, emarginate and divaricate, the middle feathers only a twelfth and a half shorter than the longest, which is the third from the lateral, the latter being of the same length as the middle.

Bill brown above, paler beneath. Iris brown. Feet and claws light brown. Forehead and a band over the eye, proceeding down the neck, crimson; throat, fore part of breast and sides, with the rump, rich carmine, the latter paler. The upper parts greyish-brown, the head, hind neck, and fore part of the back slightly tinged with red; quills, coverts, and tail-feathers dusky and edged with pale brownish-grey, the first row of small coverts rather conspicuously tipped with a lighter tint of the same. Short bristly feathers at the base of the bill greyish-yellow; loreal space and ear-coverts, light grey; the hind part of the breast, abdomen, and lower tail-coverts yellowish-white, streaked with dusky.

Length to end of tail $6\frac{1}{4}$ inches; bill along the ridge $\frac{4\frac{3}{4}}{1\frac{1}{2}}$, along the edge of lower mandible $\frac{5\frac{1}{2}}{1\frac{1}{2}}$; wing from flexure $3\frac{1}{2}$; tail $3\frac{1}{4}$; tarsus $\frac{8}{1\frac{1}{2}}$; hind toe $\frac{3\frac{1}{2}}{1\frac{1}{2}}$, its claw $\frac{2\frac{1}{2}}{1\frac{1}{2}}$; middle toe $\frac{6\frac{1}{2}}{1\frac{1}{2}}$, its claw $\frac{2}{1\frac{1}{2}}$.

As stated above, this species is very closely allied to *Fringilla purpurea*, of which however the bill is less bulging, the tail shorter and

deeply emarginate, the wings with the second quill longest, the third next, and the first intermediate between the third and fourth. The proportions having been given erroneously in the description of that species (at p. 25, vol. i.), which is otherwise however correct. It is clear that the present bird is not a Bullfinch, but must be placed beside the Purple Finch.

GREY-CROWNED LINNET.

FRINGILLA TEPHROCOTIS.

PLATE CCCCXXIV. MALE.

THIS species, which in form and proportion is allied to *Fringilla purpurea* on the one hand, and to *F. cannabina* on the other, is of extremely rare occurrence, a single specimen only being mentioned as having been obtained by Dr RICHARDSON on the Saskatchewan, in May 1827, from which my figure was taken.

FRINGILLA TEPHROCOTIS.

LINARIA (LEUCOSTICTE) TEPHROCOTIS, *Swainson*, GREY-CROWNED LINNET,
Richards. and Swains. Fauna Bor.-Amer. vol. ii. p. 265.

Adult Male. Plate CCCCXXIV. Fig. 3.

Bill short, thick, conical, its upper and lower outlines straight, the ridge and sides convex, the edges inflected, the gape-line slightly arched, but at the base a little deflected. Nostrils basal, round, concealed by short bristly feathers.

Head rather large, broadly ovate; neck short; body moderate. Feet of moderate length; tarsus of the same length as the middle toe and claw, compressed, anteriorly scutellate, with two lateral plates meeting behind so as to form a sharp edge; hind toe stout, lateral toes nearly equal. Claws rather long, arched, compressed, acute, that of the hind toe largest.

Plumage soft and blended. Wings long, pointed; the second quill longest, the first slightly shorter, the rest rapidly graduated; second-

aries rounded. Tail of moderate length, emarginate, the middle-feathers a quarter of an inch shorter than the longest.

Bill black; tarsi and claws dusky brown. The general colour of the plumage is dark umber-brown; the feathers margining the bill whitish; the upper part of the head ash-grey, spotted with black anteriorly; the first row of smaller wing-coverts, the feathers of the rump and the upper tail-coverts are broadly edged and tipped with rose-red; as are the feathers of the sides and the lower tail-coverts, of which however the tint is paler. The quills, larger coverts, and tail-feathers, are dusky brown; the primary and secondary coverts edged with dull red, the quills and tail-feathers with brownish-white.

Length to end of tail 6 inches; bill along the ridge $\frac{5\frac{1}{2}}{1\frac{1}{2}}$, along the edge of lower mandible $\frac{6\frac{1}{2}}{1\frac{1}{2}}$; wing from flexure 4; tail $2\frac{7}{1\frac{1}{2}}$; tarsus $\frac{8\frac{1}{2}}{1\frac{1}{2}}$; hind toe $\frac{4}{1\frac{1}{2}}$, its claw $\frac{5}{1\frac{1}{2}}$; middle toe $\frac{6}{1\frac{1}{2}}$, its claw $\frac{2\frac{1}{2}}{1\frac{1}{2}}$.

COW-PEN BIRD.

ICTERUS PECORIS, BONAP.

PLATE CCCCXXIV. YOUNG.

THE bird from which I made the present figure was sent to me by my friend THOMAS NUTTALL, Esq., through Dr TRUDEAU. It is the same as that described by the former gentleman under the name of "Ambiguous Sparrow, *Fringilla ambigua*," at p. 485 of his Manual of the Ornithology of the United States and of Canada. On inspecting it, however, I at once felt convinced that it was nothing else than a young Cow-pen Bird, scarcely fledged, it having been found "in the early part of the summer of 1830." With the view, therefore, of preventing further mistakes I have thought it well to figure it.

In my former account of this most interesting bird (Vol. i. p. 493), I forgot to mention that it is in the habit of retiring to rest and spend the night on the reeds bordering ponds in unfrequented places, as are the rest of our "Blackbirds." One of their roosting-places is alluded to by my young friend Dr THOMAS M. BREWER, of Boston, in a letter,

as follows :—“ The four Cow Blackbirds which I obtained the last day you were with us, were shot in the marshes of Fresh Pond, by Mr CHARLES E. WARE. I went to the pond a day or two after, but was unable to procure any, as it was so late in the afternoon that they were all gone to roost in the reeds, and I could see them in thousands, nay, tens of thousands. The rustling noise they made was truly deafening.”

ICTERUS PECORIS, *Bonap.*

AMBIGUOUS SPARROW, FRINGILLA AMBIGUA, *Nuttall*, Manual, vol i. p. 484.

Young Male. Plate CCCCXXIV. Fig. 4.

Bill yellowish-brown. Tarsi, toes, and claws pale brown. The upper parts are greyish-brown, the quills and tail darker; the wing-coverts and secondary quills narrowly edged with light brown, the primaries with whitish, as are the feathers on the edge of the wing. The lower parts are dull yellowish-white, the sides marked with a series of dark brown pointed spots, the lower surface of the wings dusky.

Length to end of tail $6\frac{1}{2}$ inches; bill along the ridge $\frac{6}{12}$; wing from flexure $3\frac{3}{4}$; tail $2\frac{1}{2}$; tarsus 1; middle toe and claw $1\frac{1}{2}$.

An adult male of this species preserved in spirits presents the following characters. The roof of the mouth has three longitudinal ridges anteriorly, the middle ridge terminated by a soft prominence, similar to that of the Buntings, behind which the palate descends in the same manner as in them. The posterior aperture of the nares is oblong, with an anterior slit. The tongue is 7 twelfths long, fleshy, tapering, flat above, horny towards the end, and pointed. The œsophagus, which is $3\frac{1}{4}$ inches long, passes along the right side of the neck, accompanied by the trachea; its diameter at the commencement is 4 twelfths, but it immediately dilates into a crop, which extends to the length of $1\frac{1}{2}$ inch, its greatest width being $\frac{1}{2}$ inch; it then contracts to $\frac{1}{4}$ inch, and enters the thorax. The proventriculus measures $4\frac{1}{2}$ twelfths broad. The stomach is a strong muscular gizzard, 9 twelfths long, $7\frac{1}{2}$ twelfths broad, a little compressed; the lateral muscles large and distinct; the epithelium tough, longitudinally rugous, and of a reddish-brown colour. The contents of the stomach are grains of wheat. The intestine is rather short, and of moderate diameter, being $9\frac{1}{2}$ inches long, and varying from 2 twelfths to $1\frac{1}{2}$ twelfth in breadth; the dia-

meter of the rectum $2\frac{1}{2}$ twelfths, being the same as that of the gut immediately before it; and there is scarcely any distinct cloaca, the width of that part being not more than 4 twelfths. The cœca, 1 inch distant from the extremity, are 3 twelfths long, $\frac{1}{2}$ twelfth in diameter.

The trachea is 2 inches 2 twelfths long, rather wide in proportion to the size of the bird, although not more than $1\frac{1}{2}$ twelfth in diameter. The rings are 58; the bronchial half rings about 15. The lateral muscles are moderate; the sterno-tracheal extremely slender. There are four pairs of inferior laryngeal muscles, as in all the singing-birds, whether thick-billed or not.

The digestive organs of this bird are in all respects precisely similar to those of the Finches, Grosbeaks, Buntings, and other allied genera.

EVENING GROSBEAK.

FRINGILLA VESPERTINA, COOPER.

PLATE CCCXXIV. FEMALE AND YOUNG MALE.

DESCRIPTIONS of the Female and Young of this species have already been given at p. 517 of Vol. IV. In the present plate they form the 5th and 6th Figures.

TOWNSEND'S FINCH.

FRINGILLA TOWNSENDI.

PLATE CCCCXXIV. FEMALE.

THIS species was discovered on the shores of the Columbia River, by my friend Dr TOWNSEND, who sent me a perfect specimen, ticketed "Female, February 15th 1836," together with the following notice. "I found this species numerous on the plains of the Colorado of the west, in the Rocky Mountains. It is a very active and rather shy bird, keeping constantly in the low bushes of wormwood, and on the ground, in the vicinity. It appears to be partially gregarious, six or eight being mostly seen together. Its voice is a sharp quick chirp, and occasionally a low weak warble." It bears a considerable resemblance to *Fringilla iliaca* of our Eastern Districts, but is darker, and wants the light-coloured bands with which the wings of that species are marked. Other differences will be found on comparing the following description with that of the bird above mentioned, to which, however, it is so nearly allied that it must evidently be placed in the same subordinate group.

FRINGILLA TOWNSENDI.

Female. Plate CCCCXXIV. Fig. 7.

Bill short, rather robust, conical, acute; upper mandible rather broader than the lower, almost straight in its dorsal outline, as is the lower, both being rounded on the sides, the lower with inflected sharp edges, the upper with a slight prominence on the edges anterior to the nostrils; the gape-line nearly straight, a little deflected at the base. Nostrils basal, roundish, open, partially concealed by the feathers.

Head rather large, broadly ovate; neck shortish; body full. Legs of moderate length, rather strong, tarsus shorter than the middle toe and claw, covered anteriorly with seven long scutella; toes scutellate above, free, the lateral nearly equal, the hind toe stout, and with its claw nearly as long as the third. Claws very long, slightly arched, slender, compressed, laterally grooved, acute, that of the hind toe largest.

Plumage soft and blended, the feathers ovato-oblong. Wings very short, convex, rounded; the second, third, and fourth quills longest, and nearly equal, the first a quarter of an inch shorter than the second, and equal to the sixth; secondaries abruptly rounded. Tail longish, nearly even.

Bill dark brown above, the base of the lower mandible yellow, its tip bluish; iris brown; feet flesh-coloured. The general colour of the upper parts is a very deep olivaceous brown, in which there is apparent a slight tinge of red, which becomes more conspicuous on the rump and outer webs of the tail-feathers, and margins the wing-coverts and quills; there are no bands on the wings. The ground-colour of the lower parts is the same as of the upper, but the shafts of the cheek-feathers are whitish; there is a longitudinal band of white spots from the angle of the lower mandible; the throat, fore neck, middle of the breast, and hind part of the flanks are variegated with white, the greater part of each feather being of that colour, and the tip only dusky brown; the lower tail-coverts are reddish-brown in the centre, with broad yellowish-white edges, the tibial feathers dull reddish-brown, the lower surface of the wing greyish-brown.

Length to end of tail 7 inches; extent of wings $10\frac{1}{2}$; bill along the ridge $\frac{5}{12}$, along the edge of lower mandible $\frac{7}{12}$; wing from flexure $2\frac{1}{12}$; tail $2\frac{1}{12}$; tarsus $\frac{10\frac{1}{2}}{12}$; hind toe $\frac{4}{12}$, its claw $\frac{6}{12}$; middle toe $\frac{7\frac{1}{2}}{12}$, its claw $\frac{4\frac{1}{2}}{12}$.

The wing of this bird is much shorter than that of *Fringilla iliaca*, which measures $3\frac{6}{12}$ inches; its tarsi are longer, but more slender, and its claws are so much longer and more slender, as to suggest at first the idea of its being a *Plectrophanes*, from which however it differs in the form of the wings.

ANNA HUMMING BIRD.

TROCHILUS ANNA.

PLATE CCCCXXV. MALE AND FEMALE.

My good friend THOMAS NUTTALL, while travelling from the Rocky Mountains toward California, happened to observe on a low oak bush a Humming Bird's nest on which the female was sitting. Having cautiously approached, he secured the bird with his hat. The male in the mean time fluttered angrily around, but as my friend had not a gun, he was unable to procure it.

The nest, which he has presented to me, is attached to a small branch, and several leaves from a twig issuing from it, which have apparently been bent down for the purpose. It is very small, even for the size of the bird, being an inch and a half in depth, and an inch and a quarter in breadth externally at the mouth, while its internal diameter is ten-twelfths, and its depth eight and a half twelfths. It is of a conical form, and composed of the cottony down apparently of some species of willow, intermixed with scales of catkins and a few feathers, and lined with the same substances. The eggs, two in number, are pure white, of a nearly elliptical form, five-twelfths of an inch long, and three and a quarter twelfths in their greatest breadth.

The figures of the nest and female are taken from the specimens presented to me by Mr NUTTALL. Those of the male I made from specimens, for the use of which I am indebted to Mr LODDIGES, of London, whose collection of Humming Birds is unrivalled. This species is the fourth now found within the limits of the United States.

OISEAU-MOUCHE ANNA, ORNISMYA ANNA, *Lesson*, pl. 74.—*Traité d'Ornithologie*, p. 281.

Adult Male. Plate CCCCXXV. Figs. 1, 2, 3, 4.

Bill long, very slender, cylindrical, slightly depressed at the base, acuminate; upper mandible with the dorsal line straight, the ridge narrow at the base and convex toward the end, the sides convex, the edges overlapping; lower mandible with the angle very long and ex-

tremely narrow, the dorsal line slightly decurved, the tip forming a very slender point. Nostrils basal, linear.

Head of ordinary size, oblong; neck short; body slender. Feet very small; tarsus extremely short, rather stout, feathered more than half-way down; toes small, the lateral equal, the middle toe not much longer, the hind toe a little shorter than the lateral; anterior toes united at the base; claws rather long, stout, arched, compressed, laterally grooved, very acute.

Plumage soft and blended; feathers on the upper part of the head, cheeks, and throat, oblongo-obovate, with their filaments toward the end thickened and flattened, with metallic gloss, those on the sides of the neck more elongated. Wings rather long, extremely narrow, somewhat falcate; the primaries rapidly graduated, the first being longest; the number of quills sixteen. Tail of moderate length, emarginate and rounded.

Bill and feet black. The compact feathers of the head, cheeks, and throat, are blood-red, changing to gold, and having a tinge of blue; the upper parts light gold-green; the quills and tail-feathers dusky brown; the lower parts brownish-white.

Length to end of tail $3\frac{1}{2}$ inches; bill along the ridge $\frac{1}{2}$; wing from flexure $2\frac{1}{2}$; tail $1\frac{1}{4}$; tarsus $\frac{2}{3}$; hind toe $\frac{1}{2}$, its claw $\frac{1}{2}$; middle toe $\frac{2}{3}$, its claw $\frac{1}{2}$.

Female. Plate CCCCXXV. Fig. 5.

The Female differs from the male in several respects. The tail is rounded, without emargination; the metallic feathers are reduced to an irregular patch on the throat; the upper part of the head and the cheeks are greenish-grey, the upper parts glossy green as in the male, the wings dusky, the middle tail-feathers green, the rest greenish-grey at the base, black toward the end, with the tip white; the lower parts dull grey, the sides tinged with green.

Length to end of tail $3\frac{1}{2}$ inches; bill along the ridge $\frac{9}{12}$; wing from flexure 2; tail $1\frac{1}{4}$.

CALIFORNIAN VULTURE.

CATHARTES CALIFORNIANUS, ILLIGER.

PLATE CCCCXXVI.

OF the three species of Vulture which inhabit the southern parts of North America, this is so much superior in size to the rest that it bears to them the same proportion as a Golden Eagle to a Goshawk. It inhabits the valleys and plains of the western slope of the continent, and has not been observed to the eastward of the Rocky Mountains. Dr TOWNSEND, who has had opportunities of observing it, has favoured me with the following account of its habits.

“The Californian Vulture inhabits the region of the Columbia River, to the distance of five hundred miles from its mouth, and is most abundant in spring, at which season it feeds on the dead salmon that are thrown upon the shores in great numbers. It is also often met with near the Indian villages, being attracted by the offal of the fish thrown around the habitations. It associates with *Cathartes Aura*, but is easily distinguished from that species in flight, both by its greater size, and the more abrupt curvature of its wing. The Indians, whose observations may generally be depended upon, say that it ascertains the presence of food solely by its power of vision, thus corroborating your own remarks on the vulture tribe generally. On the upper waters of the Columbia the fish intended for winter store are usually deposited in huts made of the branches of trees interlaced. I have frequently seen the Ravens attempt to effect a lodgement in these deposits, but have never known the Vulture to be engaged in this way, although these birds were numerous in the immediate vicinity.”

In a subsequent notice, he continues:—“I have never seen the eggs of the Californian Vulture. The Indians of the Columbia say that it breeds on the ground, fixing its nest in swamps under the pine forests, chiefly in the Alpine country. The Wahlamet Mountains, seventy or eighty miles south of the Columbia, are said to be its favourite places of resort. I have never visited the mountains at that season, and therefore cannot speak from my own knowledge. It is seen on the Columbia only in summer, appearing about the first of June, and re-

tiring, probably to the mountains, about the end of August. It is particularly attached to the vicinity of cascades and falls, being attracted by the dead salmon which strew the shores in such places. The salmon, in their attempts to leap over the obstruction, become exhausted, and are cast up on the beaches in great numbers. Thither, therefore, resort all the unclean birds of the country, such as the present species, the Turkey Buzzard, and the Raven. The Californian Vulture cannot, however, be called a plentiful species, as even in the situations mentioned it is rare to see more than two or three at a time, and these so shy as not to allow an approach to within one hundred yards, unless by stratagem. Although I have frequently seen this bird I have never heard it utter any sound. The eggs I have never seen, nor have I had any account of them that I could depend upon."

In a former letter you ask me, "What is the colour of the eyes? Do they attack living animals? Do they feed on reptiles, fishes, or what? Where do they roost? Do they carry the tail upwards while walking? Are they pugnacious? What is their manner of flight, &c.?" The colour of the eye is dark hazel. I have never heard of their attacking living animals. Their food while on the Columbia is fish almost exclusively, as in the neighbourhood of the rapids and falls it is always in abundance; they also, like other Vultures, feed on dead animals. I once saw two near Fort Vancouver feeding on the carcass of a pig that had died. I have not seen them at roost. In walking they resemble a Turkey, strutting over the ground with great dignity; but this dignity is occasionally lost sight of, especially when two are striving to reach a dead fish, which has just been cast on the shore; the stately walk then degenerates into a clumsy sort of hopping canter, which is any thing but graceful. When about to rise, they always hop or run for several yards, in order to give an impetus to their heavy body, in this resembling the Condor of South America, whose well known habit furnishes the natives with an easy mode of capturing him by means of a narrow pen, in which a dead carcass has been deposited. If I should return to the Columbia, I will try this method of taking the Vulture, as I am satisfied that it would be successful."

Mr DOUGLAS has published the following account of it in the fourth volume of the *Zoological Journal*:—"The length of this bird is 56 inches; the measure round the body 40 inches. Weight 25 to 36 pounds. Beak $3\frac{1}{2}$ inches long, bright glossy yellow. Head 9 inches

round, deep orange, with a few short scattered feathers on the fore part, at the root of the beak. Iris pale red, pupil light green. Neck 11 inches long, 9 round, of a changeable colour, brownish-yellow, with blue tints. Body 24 inches long, black or slightly brown. Collar and breast feathers lanceolate, decomposed, white on the outside near the points. Quills 34, the third the longest. Extent between the tips of the wings 9 feet 3 inches. Under coverts white; upper coverts white at the points. Tarsi $4\frac{3}{4}$ ths of an inch long, bluish-black; claws black, blunt, having little curvature. Tail of 14 feathers, square at the ends, 15 inches long. In plumage both sexes are alike; in size the female is somewhat larger.

“ These gigantic birds, which represent the Condor in the northern hemisphere, are common along the coast of California, but are never seen beyond the woody parts of the country. I have met with them as far to the north as 49° N. latitude, in the summer and autumn months, but nowhere so abundantly as in the Columbian Valley between the Grand Rapids and the Sea. They build their nests in the most secret and impenetrable parts of the pine forests, invariably selecting the loftiest trees that overhang precipices on the deepest and least accessible parts of the mountain valleys. The nest is large, composed of strong thorny twigs and grass, in every way similar to that of the Eagle tribe, but more slovenly constructed. The same pair resorts for several years to the same nest, bestowing little trouble or attention in repairing it. Eggs *two*, nearly spherical, about the size of those of a goose, *jet black*. Period of incubation twenty-nine or thirty-one days. They hatch generally about the first of June.

“ The young are covered with thick whitish down, and are incapable of leaving the nest until the fifth or sixth week. Food carrion, dead fish, or other dead animal substances. In no instance will they attack any living animal unless it be wounded and unable to walk. Their senses of smelling and seeing are remarkably keen. In searching for prey they soar to a very great altitude, and when they discover a wounded deer or other animal, they follow its track, and, when it sinks, precipitately descend on their object. Although only one is at first seen occupying the concave, few minutes elapse before the prey is surrounded by great numbers, and it is then devoured to a skeleton within an hour, even though it be one of the larger animals, *Cervus Elaphus*, for instance, or a horse. Their voracity is almost insatiable, and they are

extremely ungenerous, suffering no other animal to approach them while feeding. After eating they become so sluggish and indolent as to remain in the same place until urged by hunger to go in quest of another repast. At such times they perch on decayed trees, with their heads so much retracted as to be with difficulty observed through the long, loose, lanceolate feathers of the collar. The wings at the same time hang down over the feet. This position they invariably preserve in dewy mornings or after rains.

“Except after eating, or while protecting their nest, they are so excessively wary, that the hunter can scarcely ever approach sufficiently near even for buck-shot to take effect upon them, the fulness of the plumage affording them a double chance of escaping uninjured. Their flight is slow, steady, and particularly graceful; gliding along with scarcely any apparent motion of the wings, the tips of which are curved upwards in flying. Preceding hurricanes or thunder-storms, they are seen most numerous and soar the highest. The quills are used by hunters as tubes for tobacco pipes.

“Specimens, male and female, of this truly interesting bird, which I shot in Lat. 45° 30' 15", Long. 122° 3' 12", were lately presented by the Council of the Horticultural Society to the Zoological Society, in whose museum they are now carefully deposited.”

CALIFORNIAN VULTURE, *VULTUR CALIFORNIANUS*, *Shaw*, Nat. Misc. vol. ix. pl. 301.

—*Shaw's General Zoology*, vol. vii. p. 10.

CATHARTES CALIFORNIANUS, *Illiger*.

CATHARTES CALIFORNIANUS, *Ch. Bonaparte*, Synopsis of Birds of United States, p. 22.

CALIFORNIAN VULTURE, *Nuttall*, Manual, vol. i. p. 39.

Adult. Plate CCCCXXVI.

Bill nearly as long as the head, strong, straight at the base, slightly compressed; the upper mandible covered beyond the middle by the cere, its dorsal outline declinate, convex above the nostrils, as far as the edge of the cere, then decurved, the ridge broad and convex, the edges with a slight undulation, toward the end sharp, the sides convex, the tip large, curved, and pointed; lower mandible with the angle long and rather narrow, the dorsal line beyond it convex, the back and sides broadly convex, the edges decurved toward the tip, which is broadly rounded. Nostrils sub-basal, oblong, rather small, occupying less than the pos-

terior half of the nasal cavity, of which the anterior part is filled by a membrane.

Head rather small, oblong; neck rather long; body robust. Feet short, strong; tarsus roundish, covered with small convex angular scales; toes with transverse rows of scales at the base, scutellate in the rest of their extent; the first small, the middle very long, the second shorter than the fourth; the anterior connected by webs at the base. Claws arched, strong, moderately compressed, blunted, those of the middle and inner toes largest.

The head and upper part of the neck are bare, but the middle of the forehead to beyond the nostrils, and a semicircular space before the eye, are closely covered with very small firm feathers; the fore part of the neck is longitudinally, the occiput and hind neck transversely wrinkled. Plumage full, compact; feathers of the ruff and fore part of the breast, lanceolate and acuminate, of the upper parts ovato-elliptical, broadly rounded, and glossy. Wings very long, ample, concave; primaries finely acuminate, secondaries rounded; the first quill two inches and a half shorter than the second, which is half an inch shorter than the third, the latter exceeded by the fourth by half an inch, and equal to the fifth. Tail of moderate length, nearly even, of twelve broad, rounded feathers.

The horny part of the bill yellow; the cere and naked part of the head and neck yellowish-red. Iris dark hazel. Feet yellowish-grey, claws brownish-black. The general colour of the plumage is greyish-black, the feathers of the upper parts narrowly margined with light brown and grey; the secondaries light grey externally, as are the edges of the primaries; the margins of the inner secondaries toward the base, and those of the secondary coverts, with a large portion of the extremity of the latter, are white. The feathers on the sides under the wing, the axillaries, and many of the lower wing-coverts, are white.

Length to end of tail 55 inches; bill along the ridge $4\frac{3}{4}$, along the edge of lower mandible $3\frac{5}{12}$; wing from flexure 34; tail 16; tarsus $4\frac{1}{4}$; hind toe $1\frac{4}{12}$, its claw $1\frac{1}{2}$; second toe $2\frac{1}{2}$, its claw $1\frac{0}{12}$; third toe $4\frac{1}{4}$, its claw 2; fourth toe $2\frac{9}{12}$, its claw $1\frac{4}{12}$.

A young individual obtained from Dr TOWNSEND has the horny part of the bill dusky yellowish-grey; the head and neck covered with dull brown very soft down; the feet greyish-yellow, the scutella darker, the claws

brownish-black. The general colour of the plumage is blackish-brown, the feathers on the upper part strongly tinged with grey, especially the secondary quills; the feathers of the back edged with light brown, the secondary coverts tipped with brownish-white. The feathers on the sides under the wing, the axillaries, and some of the lower wing-coverts, white with the centre dusky.

Length to end of tail 48 inches; bill along the ridge 4; wing from flexure 32; tail 16; tarsus 4; middle toe 4, its claw $1\frac{9}{12}$.

BACHMAN'S OYSTER-CATCHER.

HÆMATOPUS BACHMANI.

PLATE CCCCXXVII. MALE.

ACCORDING to my friend Dr TOWNSEND, this species is abundant along the whole of the north-west coast of America, as well as in Regent's Sound, but is rarely seen on the shores within Cape Disappointment. The specimen sent to me by him is ticketed as a male, shot in June 1836; but as in this genus there is no difference as to colour between the male and the female, it may be supposed that in this case the female differs only in being somewhat smaller.

The discovery of two new species is very remarkable, especially when it is seen by the figures given in this plate, compared with the other, that not one of our three Oyster-catchers resembles the *Hæmatopus Ostralegus* of Europe, which for a long time was supposed to exist in America, on account of the figure given of this latter bird by WILSON, who must have taken it from a stuffed European specimen in PEALE'S Museum in Philadelphia. Whether this be the case or not, it is pretty certain that no such bird as WILSON has represented has as yet been observed in any part of North America, although some writers have gone so far as to say so, without however offering any evidence.

HÆMATOPUS BACHMANI.

Male. Plate CCCCXXVII. Fig. 1.

Bill long, slender but strong, straight, higher than broad at the base, towards the end extremely compressed, terminating in a very thin

wedge-shaped point. Upper mandible with the dorsal line at the base straight and slightly sloping, a little arched beyond the nostrils, then nearly straight and sloping to the point, the ridge broad and flattened as far as the prominence, afterwards very narrow, the sides sloping at the base, perpendicular towards the end, the edges sharp and direct. Nasal groove basal, long; nostrils sub-basal, in the middle of the groove near the margin, linear, direct, pervious. Lower mandible with the angle rather short and narrow, the dorsal line straight and slightly ascending, the ridge narrow, the sides a little convex and erect, with a shallow groove at the base, the edges sharp and direct.

Head of moderate size, ovate, the forehead convex. Neck rather long. Feet of moderate length, rather stout; tibia bare for half an inch; tarsus rather short slightly compressed, covered all round with hexagonal scales; toes rather short and fleshy, the hind toe wanting, the second shorter than the fourth, the third considerably longer, all scaly at the base above, scutellate towards the end, flattened and broad beneath, with thick margins, and connected at the base by short webs, of which the outer is longer. Claws small, compressed at the base, depressed and rounded at the end, that of the middle toe largest, with a somewhat dilated thin inner edge.

Plumage of the head and neck short and blended, of the back rather compact and slightly glossed, of the lower parts blended, the feathers in general ovate and rounded. Wings long, acute; primaries tapering toward the end, but obtuse, the first longest, the second one-twelfth of an inch shorter, the third two-twelfths shorter than the second, the rest more rapidly graduated; secondaries broad and rounded, the inner much elongated and tapering. Tail short, nearly even, of twelve rather broad, rounded feathers, of which the lateral are two-twelfths shorter than the middle (but as they are all worn the proportions cannot be determined).

Bill vermilion, fading to yellow on the worn parts toward the end. Edges of eyelids vermilion; iris yellow. Feet white, slightly tinged with flesh colour; claws yellowish, toward the end dusky. The plumage is chocolate-brown, darker, and tinged with bluish-grey on the head and neck; the under surface of the quills light brownish-grey, their shafts whitish.

Length to end of tail $17\frac{1}{2}$ inches; bill along the ridge $2\frac{9}{12}$, along the edge of lower mandible $2\frac{10\frac{1}{2}}{12}$, its greatest height beyond the nostrils $\frac{6\frac{1}{2}}{12}$; wing from flexure 10; tail $3\frac{1\frac{1}{2}}{12}$; tarsus $1\frac{10\frac{1}{2}}{12}$; inner toe 1, its claw $\frac{3}{12}$; middle toe $1\frac{4\frac{1}{2}}{12}$, its claw $\frac{4\frac{1}{2}}{12}$; outer toe $1\frac{2}{12}$, its claw $\frac{2\frac{3}{4}}{12}$.

TOWNSEND'S OYSTER-CATCHER.

HÆMATOPUS TOWNSENDI.

PLATE CCCCXXVII. MALE.

A specimen of this species, which very closely resembles the last, but is much larger, and differs in its proportions, was also forwarded to me by Dr TOWNSEND, but without any notice respecting its habits or distribution. I have compared it with some specimens brought from the coast of California, with which it agrees in all respects. It is not improbable however, that, like our *Hæmatopus palliatus*, which in summer extends from the shores of South America to those of Labrador, the present species as well as *H. Bachmani*, courses the shores of the Pacific Ocean, to a very high latitude. I have taken the liberty of naming it after its discoverer.

HÆMATOPUS TOWNSENDI.

Male. Plate CCCCXXVII. Fig. 3.

Bill long, slender but strong, slightly recurved, or ascending, beyond the nostrils, about the same height and breadth at the base, toward the end extremely compressed, terminating in an exceedingly thin wedge-shaped point. Upper mandible with the dorsal line at the base straight and slightly sloping, a little arched beyond the nostrils, then nearly straight and sloping to the point, the ridge broad and flattened as far as the prominence, afterwards extremely narrow, the sides sloping at the base, perpendicular towards the end, the edges sharp, direct, and about the middle slightly overlapping. Nasal groove basal, long; nostrils sub-basal, in the middle of the groove near the margin, linear, direct, pervious. Lower mandible with the angle rather short and narrow, the dorsal line ascending and slightly convex, the ridge very narrow, the sides erect and nearly flat, with a shallow groove at the base, the edges sharp and direct.

Head of moderate size, ovate, the fore head convex. Neck rather long. Feet of moderate length, rather stout, tibia bare for three-quar-

ters of an inch ; tarsus of moderate length, somewhat compressed, covered all round with hexagonal scales ; toes rather short and fleshy, the hind toe wanting, the second shorter than the fourth, the third considerably longer, all scaly at the base above, scutellate towards the end, flattened and broad beneath, with thick margins, and connected at the base by short webs, of which the outer is longer. Claws rather small, compressed, blunt, that of the middle toe largest, with a somewhat dilated thin inner edge.

Plumage of the head and neck short and blended, of the back rather compact and slightly glossed, the lower parts blended, the feathers in general ovate and rounded. Wings long, acute ; primaries tapering toward the end, but obtuse, the first longest, the second two-twelfths shorter, and exceeding the third by three-twelfths ; secondaries broad and rounded, the inner much elongated and tapering. Tail short, nearly even, of twelve rather broad, rounded feathers, of which the lateral are scarcely shorter than the middle.

Bill vermilion, paler toward the end. Edges of eyelids vermilion ; iris yellow. Feet blood-red, claws dusky. The plumage is chocolate-brown, darker and tinged with bluish-grey on the head, neck, and breast ; the under surface of the quills light brownish-grey, their shafts whitish. Many of the upper wing-coverts are narrowly tipped with brownish-white.

Length to end of tail 20 inches ; bill along the ridge $3\frac{2}{12}$; along the edge of lower mandible $3\frac{4}{12}$, its greatest height beyond the nostrils $\frac{7}{12}$; wing from flexure 11 ; tail $4\frac{1}{12}$; tarsus $2\frac{5}{12}$; inner toe $\frac{9}{12}$, its claw $\frac{3}{12}$; middle toe $1\frac{6}{12}$, its claw $\frac{5}{12}$; outer toe $1\frac{7}{12}$, its claw $\frac{4}{12}$.

This species is larger than the preceding, but its plumage is [similar in texture and colouring. Besides its much greater size, it differs in the form of the bill, which is much longer, much deeper, more compressed, and distinctly ascending or slightly recurvate, the lower mandible especially, which in the other is quite straight. The former species also has the feet white, and the claws pale, whereas in this they seem to have been red, with the claws dusky.

TOWNSEND'S SURF-BIRD.

APHRIZA TOWNSENDI.

PLATE CCCCXXVIII. FEMALE.

THE remarkable bird here represented, which in form and size bears a considerable resemblance to the Knot, was procured by Dr TOWNSEND on the shores of Cape Disappointment, and proved to be a female. Nothing is known as to the habits or range of the species. In order to exhibit its characters to the best advantage, I have figured it flying in two different aspects. The following note accompanied the specimen sent to me by Dr TOWNSEND:—"I shot this bird, the only one I have ever seen, on Cape Disappointment, at the entrance of the Columbia River. It was sitting on the edge of the steep rocks, and the heavy surf frequently dashed its spray over it as it foraged among the retreating waves. When it started, it flew with a quick, jerking motion of its wings, and alighted again at a short distance. It was a female. The stomach was remarkably strong and muscular, and contained fragments of a small black shell-fish which adheres to the rocks in this neighbourhood."

TRINGA TOWNSENDI.

Female. Plate CCCCXXVIII.

Bill a little shorter than the head, rather stout, compressed, tapering, straightish, being recurvate in a slight degree. Upper mandible with the dorsal line straight and a little declinate as far as the middle, then concave, and towards the end convex, the nasal groove extending to near the end, the ridge rather broad and flattened, the tip compressed and bluntish. Lower mandible with the angle rather long and narrow, the dorsal line ascending and slightly convex, the sides grooved for half their length, convex toward the end, the tip narrowed but blunt. Nostrils sub-basal, linear near the margin.

Head rather small, ovate, rounded in front. Neck of ordinary length. Body rather full. Feet of moderate length, rather stout; tibia bare at the lower part, and reticulated tarsus roundish, with

small angular scales all round, those on the fore part larger ; toes four, with numerous scutella, the first very small and placed higher than the rest ; the anterior toes free to the base, distinctly margined on both edges, flat beneath, the inner considerably shorter than the outer, the third a quarter of an inch longer than the latter ; claws rather small, curved, compressed, blunted.

Plumage full, soft, rather dense, on the neck and lower parts blended. Wings very long, narrow and pointed ; primaries with strong shafts, narrowed towards the end, the first longest, the rest rapidly decreasing ; outer secondaries incurved, obliquely rounded, inner elongated, one of them reaching to an inch and two-thirds of the tip of the longest primary when the wing is closed. Tail rather short, even, of twelve moderately broad, rounded feathers.

Bill dusky toward the end, orange at the base. Feet bluish-green, claws black. The general colour of the upper parts is a very dark or blackish-grey ; the quills greyish-black ; a broad band of white crosses the wing, occupying the tips of the primary coverts, the terminal third of the secondary coverts, the bases and more or less of the margins and tips of the quills, several of the inner secondaries having only a streak of dusky on the inner web, but the innermost or elongated quills are destitute of white. The shafts of the quills are also white, as are some of the feathers of the rump, the upper tail-coverts, the basal half of the tail, of which the rest is black, the feathers narrowly edged with white at the end ; the black on the tail is narrower on the lateral feathers, and on the outer does not occupy much more than half an inch. The throat is greyish-white ; the cheeks, sides, and fore part of the neck, and the anterior part of the breast dull grey, of a lighter tint than the back. The rest of the lower parts white, with small longitudinal oblong dark grey streaks ; the axillaries and lower wing-coverts white, those at the edge of the wing dark grey with white margins.

Length to end of tail 11 inches ; bill from flexure $1\frac{1}{2}$, along the edge of lower mandible $1\frac{1}{2}$; wing from flexure $7\frac{1}{2}$; tail $3\frac{2}{2}$; tarsus $1\frac{2}{2}$; hind toe $\frac{2}{2}$, its claw $\frac{2}{2}$; middle toe $\frac{11}{2}$, its claw $\frac{5}{2}$.

The prominence on the terminal part of the upper mandible gives the bill somewhat of the appearance of that of a Plover, but in other respects it more resembles that of the Turnstone, the plumage agrees with that of the latter bird, and the colouring is very similar to its winter dress. This species in short seems intermediate between *Tringa* and

Strepsilas, but is much more allied to the latter, with which it agrees in form and proportions, the principal differences being in the tail, which is not rounded, but even, in the want of scutella on the tarsi, and in the form of the bill at its extremity, the upper mandible in place of being a little recurvate and depressed, having its extremity arched and the point a little decurved. Were the latter worn off, it would agree with that of *Strepsilas*. Conceiving this bird to present characters sufficient to constitute a sub-genus in immediate connection with *Strepsilas*, I propose to give it the name of *Aphriza Townsendi*, the generic appellation (derived from ἀφρος and ζαω) being expressive of the habit of the bird, as indicated in the notice of its discoverer, who appears to me to have the best claim for the specific name.

SLENDER-BILLED GUILLEMOT.

URIA TOWNSENDI.

✓ PLATE ~~CCCCXXIX~~. ADULT AND YOUNG. 430/

I have received not less than four specimens of this small Guillemot from Dr TOWNSEND, who procured them on the north-west coast of America, not very far from the mouth of the Columbia River. The changes of colour in birds of this genus are well known to be considerable; and I have represented two individuals, supposing one to be an adult, and the other a young bird in its first plumage.

URIA TOWNSENDI.

Adult. Plate ~~CCCCXXIX~~. Fig. 1. 431/

Bill shorter than the head, straight, slender, much compressed, acute. Upper mandible with the dorsal line convex and declinate, the ridge very narrow, the sides erect and convex toward the end, the edges sharp and inflected, with a distinct notch near the tip, which is rather acute and caniculate beneath. Nostrils medial, narrow near the margin, in the fore parts of the long nasal sinus, which is feathered. Lower mandible with the angle long and very narrow, the dorsal line ascending and straight, the sides nearly erect, but convex, the edges sharp and inflected, the tip very acute.

Head of moderate size, oblong; neck short; body full, depressed; wings small. Feet placed far behind, very short and slender; tarsus very short, reticulate; toes slender, with numerous short scutella; the first wanting; the third or middle toe longest, the inner much shorter than the outer; claws small, slightly arched, compressed, rather acute.

Plumage very soft, close, blended, rather glossy; feathers of the head very short, of the back oblong, of the lower parts ovate. Wings small, very narrow, convex, falcate; first quill longest, second a twelfth of an inch shorter, the rest rapidly diminishing; secondaries incurved, obliquely rounded. Tail extremely short, narrow, rounded, of twelve weak, rounded feathers.

Bill black. Feet yellow; claws black. The upper parts are brownish-black, the feathers of the back terminally margined with light grey; the lower parts, cheeks, a transverse band on the nape, both eyelids, and a longitudinal band on each side, formed by some of the scapulars, white, some dusky streaks on the hind part of the sides, and the lower wing-covert greyish-brown, the larger tipped with dull white.

Length to end of tail 10 inches; bill along the ridge $\frac{1}{2}$, along the edge of lower mandible $1\frac{4}{12}$; wing from flexure $5\frac{2}{12}$; tail $1\frac{4}{12}$; tarsus $\frac{8}{12}$; middle toe $1\frac{1}{12}$, its claw $\frac{2}{12}$.

Young in Autumn. Plate CCCCXXIX. Fig. 2.

Bill and feet as in the adult. The upper parts are brownish-black, the feathers terminally margined with brown; the occipital band is merely indicated by some lighter feathers, and the scapular band is brownish or chestnut-red. The lower parts have a curious mottled appearance, the feathers being brownish-grey at the end, but in the rest of their extent white, that colour appearing more or less on all parts, and shewing a patch on the hind part of the sides.

Length to end of tail $9\frac{3}{4}$ inches; bill along the ridge $\frac{7}{12}$, along the edge of lower mandible $1\frac{5}{12}$; wing from flexure $5\frac{1}{12}$; tail $1\frac{2}{12}$; tarsus $\frac{7}{12}$; middle toe $\frac{11}{12}$, its claw $\frac{2}{12}$.

Two other individuals, apparently more advanced, or perhaps adults in winter, have the upper parts brownish-black; the lower white but finely mottled, a small portion of the extremity of each feather being greyish-dusky. The white bands on the hind neck and scapulars are formed, and the lower surface of the wing is brownish-grey.

WESTERN DUCK.

FULIGULA DISPAR, GMEL.PLATE CCCCXXX. MALE. 429/

THIS beautiful species, which was discovered by STELLER on the north-west coast of America, has never been known to visit our Atlantic shores. So very scarce indeed is it, that all my exertions to obtain a specimen have failed. It is surprising that it was not procured by any of the great navigators and travellers who have visited the northern and western coast within these fifteen years. As it has been acknowledged, however, as belonging to our Fauna, I have introduced a figure of it taken by my son JOHN WOODHOUSE, from a beautiful specimen in the Museum of Norwich, in England. It is said to have been shot at Yarmouth, in the county of Norfolk, in the winter of 1830.

ANAS DISPAR, *Gmel. Syst. Nat. vol. i. p. 535,—Lath. Ind. Ornith. vol. ii. p. 866.*

ANAS STELLERI, *Gmel. Syst. Nat. vol. i. p. 518.*

WESTERN DUCK, *Lath. Penn.*

Adult Male. Plate CCCCXXX. 429/

Bill shorter than the head, deeper than broad at the base, depressed towards the end, which is rounded. Upper mandible with the dorsal line straight and sloping to the middle, then slightly concave, at the end decurved; the ridge broad and flat at the base, afterwards convex, as are the sides, the unguis elliptical. Nostrils sub-basal, oblong. Lower mandible flat, with the angle long and rather narrow, the unguis elliptical.

Head large, compressed; neck rather short and thick. Feet short, stout, placed rather far behind; tarsus very short, compressed, reticulate with a series of larger scales in front. Hind toe small, with a free membrane beneath; anterior toes longer than the tarsus, connected by reticulated membranes, the inner with a narrow lobed marginal membrane; the third longest, the fourth nearly equal; all covered above with numerous short scutella. Claws small, arched, obtuse.

Plumage dense, soft, blended. Wings of moderate length, pointed;

the first quill longest; secondaries short, broad, rounded, the inner elongated, lanceolate, and decurved, as are the scapulars. Tail rather short, pointed, of fourteen feathers.

Bill dull greyish-blue, as are the feet, the claws yellowish-grey. The upper part of the head and a broad band surrounding the neck are white; the throat; some feathers around the eye are black; a light green patch in the loreal space, and a transverse patch of the same on the nape, margined behind and laterally with black. A broad band on the neck and the whole of the back is velvet-black, with green reflections; the smaller wing-coverts white; the secondary coverts bluish-black, terminating in a broad white band; the elongated secondaries and scapulars with the inner web white, the outer black with blue reflections; the primaries and coverts brownish-black, the tail black, as are the lower tail-coverts and abdomen; the rest of the lower parts deep reddish-buff, fading toward the shoulders and neck into pure white; there is a bluish-black spot on each side of the lower part of the neck anterior to the wing.

Length to end of tail 16 inches; bill along the ridge $\frac{9}{12}$; wing from flexure $8\frac{3}{8}$; tail 4; tarsus $1\frac{5}{16}$; inner toe and claw $1\frac{1}{2}$; middle toe and claw $2\frac{1}{8}$; outer toe and claw $2\frac{1}{4}$; breadth of unguis of upper mandible $\frac{3}{8}$; breadth of bill at base $\frac{5}{8}$.

AMERICAN FLAMINGO.

PHENICOPTERUS RUBER, LINN.

PLATE CCCCXXXI. ADULT MALE.

ON the 7th of May 1832, while sailing from Indian Key, one of the numerous islets that skirt the south-eastern coast of the Peninsula of Florida, I for the first time saw a flock of Flamingoes. It was on the afternoon of one of those sultry days which, in that portion of the country, exhibit towards evening the most glorious effulgence that can be conceived. The sun, now far advanced toward the horizon, still shone with full splendour, the ocean around glittered in its quiet beauty, and the light fleecy clouds that here and there spotted the heavens, seemed flakes of snow margined with gold. Our bark was propelled almost as if by magic, for scarcely was a ripple raised by her bows as we moved in silence. Far away to seaward we spied a flock of Flamingoes advancing in "Indian line," with well-spread wings, outstretched necks, and long legs directed backwards. Ah! Reader, could you but know the emotions that then agitated my breast! I thought I had now reached the height of all my expectations, for my voyage to the Floridas was undertaken in a great measure for the purpose of studying these lovely birds in their own beautiful islands. I followed them with my eyes, watching as it were every beat of their wings; and as they were rapidly advancing towards us, Captain DAY, who was aware of my anxiety to procure some, had every man stowed away out of sight and our gunners in readiness. The pilot, Mr EGAN, proposed to offer the first taste of his "groceries" to the leader of the band. As I have more than once told you, he was a first-rate shot, and had already killed many Flamingoes. The birds were now, as I thought, within a hundred and fifty yards; when suddenly, to our extreme disappointment, their chief veered away, and was of course followed by the rest. Mr EGAN, however, assured us that they would fly round the Key, and alight not far from us, in less than ten minutes, which in fact they did, although to me these minutes seemed almost hours. "Now they come," said the pilot, "keep low." This we did; but, alas! the Flamingoes were all, as I suppose, very old and experienced birds, with

the exception of one, for on turning round the lower end of the Key, they spied our boat again, sailed away without flapping their wings, and alighted about four hundred yards from us, and upwards of one hundred from the shore, on a "soap flat" of vast extent, where neither boat nor man could approach them. I however watched their motions until dusk, when we reluctantly left the spot and advanced toward Indian Key. Mr LOGAN then told me that these birds habitually returned to their feeding-grounds toward evening, that they fed during the greater part of the night, and were much more nocturnal in their habits than any of the Heron tribe.

When I reached Key West, my first inquiries, addressed to Dr BENJAMIN STROBEL, had reference to the Flamingoes, and I felt gratified by learning that he had killed a good number of them, and that he would assist us in procuring some. As on that Key they are fond of resorting to the shallow ponds formerly kept there as reservoirs of water, for the purpose of making salt, we visited them at different times, but always without success; and, although I saw a great number of them in the course of my stay in that country, I cannot even at this moment boast of having had the satisfaction of shooting a single individual.

A very few of these birds have been known to proceed eastward of the Floridas beyond Charleston in South Carolina, and some have been procured there within eight or ten years back. None have ever been observed about the mouths of the Mississippi; and to my great surprise I did not meet with any in the course of my voyage to the Texas, where, indeed, I was assured they had never been seen, at least as far as Galveston Island. The western coast of Florida, and some portions of that of Alabama, in the neighbourhood of Pensacola, are the parts to which they mostly resort; but they are said to be there always extremely shy, and can be procured only by waylaying them in the vicinity of their feeding-grounds toward evening, when, on one occasion, Dr STROBEL shot several in the course of a few hours. Dr LEITNER also procured some in the course of his botanical excursions along the western coast of the Floridas, where he was at last murdered by some party of Seminole Indians, at the time of our last disastrous war with those children of the desert.

Flamingoes, as I am informed, are abundant on the Island of Cuba, more especially on the southern side of some of its shores, and where

many islets at some distance from the mainland afford them ample protection. In their flight they resemble Ibises, and they usually move in lines, with the neck and legs fully extended, alternately flapping their wings for twenty or thirty yards and sailing over a like space. Before alighting they generally sail round the place for several minutes, when their glowing tints become most conspicuous. They very rarely alight on the shore itself, unless, as I am told, during the breeding season, but usually in the water, and on shallow banks, whether of mud or of sand, from which however they often wade to the shores. Their walk is stately and slow, and their cautiousness extreme, so that it is very difficult to approach them, as their great height enables them to see and watch the movements of their various enemies at a distance. When travelling over the water, they rarely fly at a greater height than eight or ten feet; but when passing over the land, no matter how short the distance may be, they, as well as Ibises and Herons, advance at a considerable elevation. I well remember that on one occasion, when near Key West, I saw one of them flying directly towards a small hummock of mangroves, to which I was near, and towards which I made, in full expectation of having a fine shot. When the bird came within a hundred and twenty yards, it rose obliquely, and when directly over my head, was almost as far off. I fired, but with no other effect than that of altering its course, and inducing it to rise still higher. It continued to fly at this elevation until nearly half a mile off, when it sailed downwards, and resumed its wonted low flight.

Although my friends Dr JOHN BACHMAN, Dr WILSON, and WILLIAM KUNHARDT, Esq. of Charleston, have been at considerable trouble in endeavouring to procure accounts of the nidification of these birds and their habits during the breeding season, and although they, as well as myself, have made many inquiries by letter respecting them, of persons residing in Cuba, all that has been transmitted to me has proved of little interest. I am not however the less obliged by the kind intentions of these individuals, one of whom, A. MALLORY, Esq. thus writes to Captain CROFT.

“ Capt. CROFT,

Matanzas, April 20. 1837.

DEAR SIR,—“ I have made inquiry of several of the fishermen, and salt-rakers, who frequent the keys to the windward of this place,

in regard to the habits of the Flamingo, and have obtained the following information, which will be found, I believe, pretty correct: *1st*, They build upon nearly all the Keys to the windward, the nearest of which is called Collocino Lignas. *2dly*, It builds upon the ground. *3dly*, The nest is an irregular mass of earth dug in the salt ponds, and entirely surrounded by water. It is scooped up from the immediate vicinity to the height of two or three feet, and is of course hollow at the top. There is no lining, nor any thing but the bare earth. *4thly*, The number of the eggs is almost always two. When there is one, there has probably been some accident. The time of incubation is not known. The egg is white, and near the size of the Goose's egg. On scraping the shell, it has a bluish tinge. *5thly*, The colour of the young is nearly white, and it does not attain the full scarlet colour until two years old. *6thly*, When the young first leave the nest, they take to the water, and do not walk for about a fortnight, as their feet are almost as tender as jelly. I do not think it easy to procure an entire nest; but I am promised some of the eggs, this being the time to procure them. Very truly your obedient servant,

A. MALLORY."

Another communication is as follows:—"The Flamingo is a kind of bird that lives in lagoons having a communication with the sea. This bird makes its nest on the shore of the same lagoon, with the mud which it heaps up to beyond the level of the water. Its eggs are about the size of those of a goose; it only lays two or three at a time, which are hatched about the end of May. The young when they break the shell have no feathers, only a kind of cottony down which covers them. They immediately betake themselves to the water to harden their feet. They take from two to three months before their feathers are long enough to enable them to fly. The first year they are rose-coloured, and in the second they obtain their natural colour, being all scarlet; half their bill is black, and the points of the wings are all black; the eyes entirely blue. Its flesh is savoury, and its tongue is pure fat. It is easily tamed, and feeds on rice, maize-meal, &c. Its body is about a yard high, and the neck about half as much. The breadth of the nest, with little difference, is that of the crown of a hat. The way in which the female covers the eggs is by standing in the water on one foot and supporting its body on the nest. This bird always rests in a lagoon, supporting itself on one leg alternately

and it is to be observed that it always stands with its front to the wind."

An egg, presented to me by Dr BACHMAN, and of which two were found in the nest, measures three inches and three-eighths in length, two inches and one-eighth in breadth, and is thus of an elongated form. The shell is thick, rather rough or granulated, and pure white externally, but of a bluish tint when the surface is scraped off.

The following description is taken from specimens sent to me by JEAN CHARTRAND, Esq. from Cuba, and preserved in spirits, together with several dried skins.

PHENICOPTERUS RUBER, *Linn. Syst. Nat.* vol. i. p. 230.—*Lath. Ind. Ornith.* vol. ii. p. 788.—*Ch. Bonaparte, Synopsis of Birds of United States*, p. 348.

RED FLAMINGO, PHENICOPTERUS RUBER, *Wils. Amer. Ornith.* vol. viii. p. 145, ^t pl. 66, fig. 4, Adult.—*Ch. Bonaparte, Amer. Ornith.* vol. iii.

AMERICAN OR RED FLAMINGO, *Nuttall, Manual*, vol. ii. p. 71.

Adult Male. Plate CCCCXXXI.

Bill more than double the length of the head, straight and higher than broad for half its length, then deflected and tapering to an obtuse point. Upper mandible with its dorsal line straight, convex at the curve, and again straight nearly to the end, when it becomes convex at the tip; the ridge broad and convex, on the deflected part expanded into a lanceolate plate, having a shallow groove in the middle, and separated from the edges by a narrow groove; its extremity narrow, and thin-edged, but obtuse, this part being analogous to the unguis of ducks and other birds of that tribe. Lower mandible narrower than the upper at its base, but much broader in the rest of its extent; its angle rather long, wide, and filled with bare skin; its dorsal line concave, but at the tip convex, the ridge deeply depressed, there being a wide channel in its place, the sides nearly erect and a little convex, with six ridges on each side toward the tip. The edges of the upper mandible are furnished with about 150 oblique lamellæ, of which the external part is perpendicular, tapering, pointed, and tooth-like. The edge of the lower mandible is incurved in an extraordinary degree, leaving a convex upper surface about $\frac{1}{4}$ inch in breadth, covered in its whole extent with transverse very delicate lamellæ, with an external series of larger lamellæ. The whole surface of the bill is covered with a thickened leathery skin, which becomes horny toward the end. The

nostrils are linear, direct, sub-basal, nearer the margin than the ridge, operculate, $1\frac{1}{4}$ inch long.

Head small, ovate; neck extremely elongated, and very slender, body slender. Legs extremely long; the bare part of the tibia $9\frac{1}{2}$ inches, with 30 very broad scutella before, and about 40 behind, the scutella both here and on the tarsus almost meeting so as scarcely to leave any interspace. Tarsus extremely long, slender, its anterior scutella 54, posterior 65. Hind toe very small, with 3 large scutella, its claw oblong, depressed, obtuse; it is 5 twelfths of an inch shorter than the outer, which is also 5 twelfths shorter than the middle toe. The webs are anteriorly emarginate and crenate; they are very thick, rugous, and reticulated, especially on the sole; the lower surface of the toes is tessellated with squarish, flattish, thickened scales, resembling mosaic work, and the upper surface is covered with numerous broad, but short scutella. The claws are oblong, obtuse, depressed, and very similar to those of a monkey.

The space between the bill and the eye is bare. The plumage is generally compact, the feathers rounded; those on the neck short. Wings long, very broad, pointed; the first primary half a twelfth of an inch shorter than the second, which is longest, and exceeds the third by one-twelfth; some of the inner secondaries much elongated, tapering, and extending five or six inches beyond the first primary when the wing is closed. Tail very short.

Bill black beyond the curve, then orange, and towards the base pure yellow, of which colour also is the bare skin at its base. Iris blue. Feet lake-colour. The plumage is of a very rich pure scarlet, excepting the ten primaries, and twenty of the secondaries, which are black, the inner ten elongated secondaries being scarlet.

Length to carpal joint $27\frac{3}{4}$ inches, to end of wing 44, to end of tail $45\frac{1}{2}$, to end of claws $62\frac{1}{2}$; extent of wings 66; bare part of tibia 9; tarsus $13\frac{1}{2}$; middle toe and claw $3\frac{5}{8}$; hind toe and claw $\frac{1}{2}$; spread of foot from outer to inner claw 5; wing from flexure 16; tail 6; circumference of body 24. Weight 7 lb. 8 oz.

The Female is similar to the male, but much smaller; its weight 6 lb. 4 oz.

A male preserved in spirits. On the roof of the mouth is a large prominent median ridge, which toward the end has two sharp edges; the sides concave and covered with lamellæ. The lower mandible is

deeply and widely grooved, forming a cavity 1 inch in depth at the curvature, the tip narrowed but obtuse, and with a flattened broadly ovate surface above. The tongue, which lies in this deep groove, by which it is confined so as to be capable of little motion, is a fleshy, somewhat compressed, decurved body, 2 inches 2 twelfths long, measured along its upper median line, having at its base on each side three series of very pointed papillæ, and on each side about 20 conical recurved, horny, acuminate papillæ, about $\frac{1}{4}$ inch in length; between which is a narrow median groove. These papillæ terminate at the curvature, beyond which is a lanceolate flattened horny surface, with a thin elevated margin, the organ at that part tapering to an obtuse point, horny on its lower surface. The nostrils are $1\frac{1}{4}$ inch long; the aperture of the ear very small, $2\frac{1}{2}$ twelfths in diameter, that of the eye $4\frac{1}{2}$ twelfths. In this specimen the whole of the thoracic and abdominal viscera have been removed.

The trachea, which is narrow, little flattened, and with its rings firm, passes down in front of the vertebræ to the distance of 12 inches, and is then deflected to the right side for 11 inches more. The diameter at the upper part is $4\frac{3}{4}$ twelfths, and it gradually enlarges to $5\frac{1}{2}$ twelfths; at the lower part of the neck its greatest breadth is 7 twelfths. It then passes over the vertebræ, continuing of the same breadth, enters the thorax, contracts at its lower part and is compressed, its diameter being 4 twelfths. The number of rings is 330. The bronchi are wide, short, compressed, of about 15 half rings.

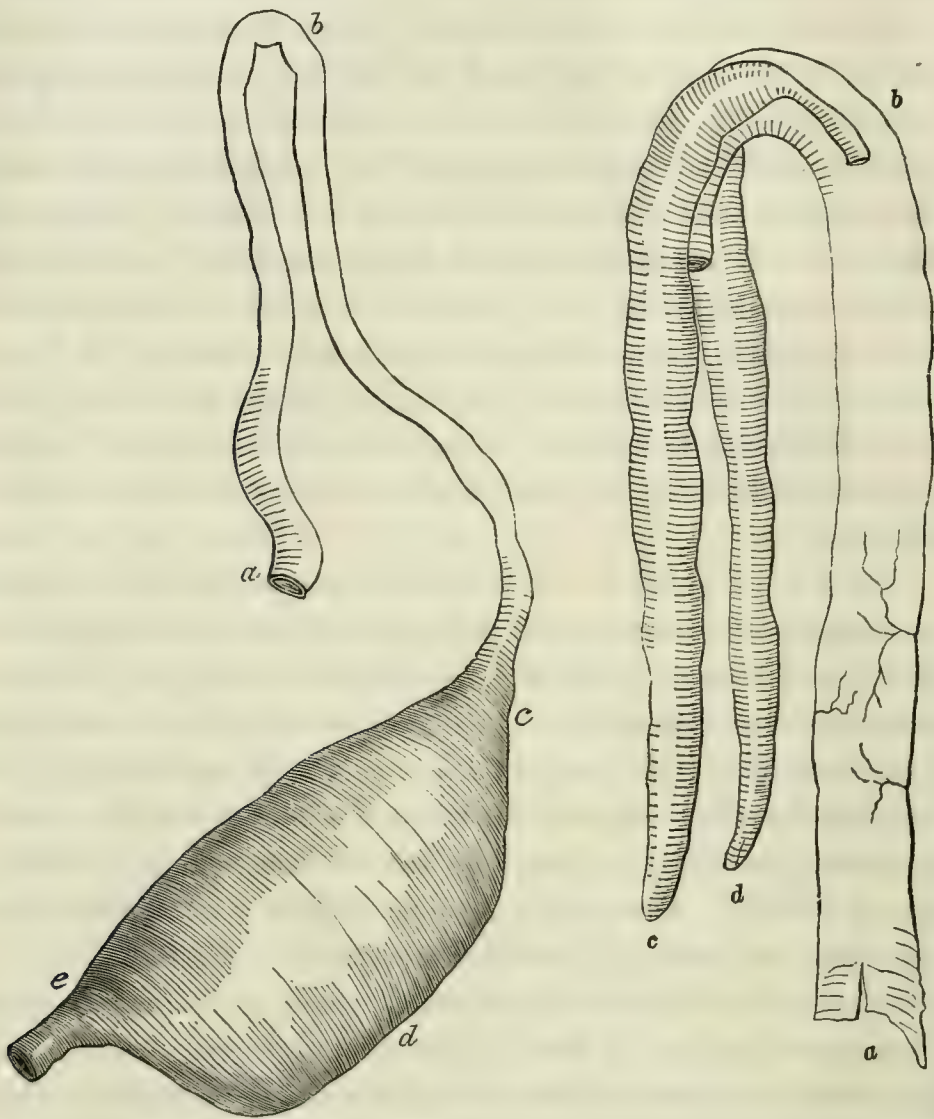
The aperture of the glottis is 6 twelfths long; at its anterior part is a transverse series of 12 short papillæ directed forward, and behind it are numerous pointed papillæ, of which the middle are largest. The muscles of the upper larynx are two, one passing obliquely from the edge of the marginal cartilage to the edge of the thyroid bone, for the purpose of opening the aperture of the glottis; the other passing from the fore part of the edge of the thyroid bone to the base of the cricoid and arytenoid, for the purpose of pulling these parts forward, and thus closing the aperture. The contractor muscles are of moderate strength, and the trachea is enveloped in numerous layers of dense cellular tissue. The sterno-tracheals, which are of moderate size, are in part a continuation of the contractors, which moreover send a slip to the inferior larynx.

A Female also preserved in spirits is much smaller. The œsophagus, Fig. 1, *abcd* (diminished one-third) is 2 feet 1 inch long, only 3 twelfths in

width at the upper part, and diminishes to $2\frac{1}{2}$ twelfths. At the lower part of the neck however it enlarges into a crop, *cde*, $3\frac{1}{4}$ inches long and

Fig. 1.

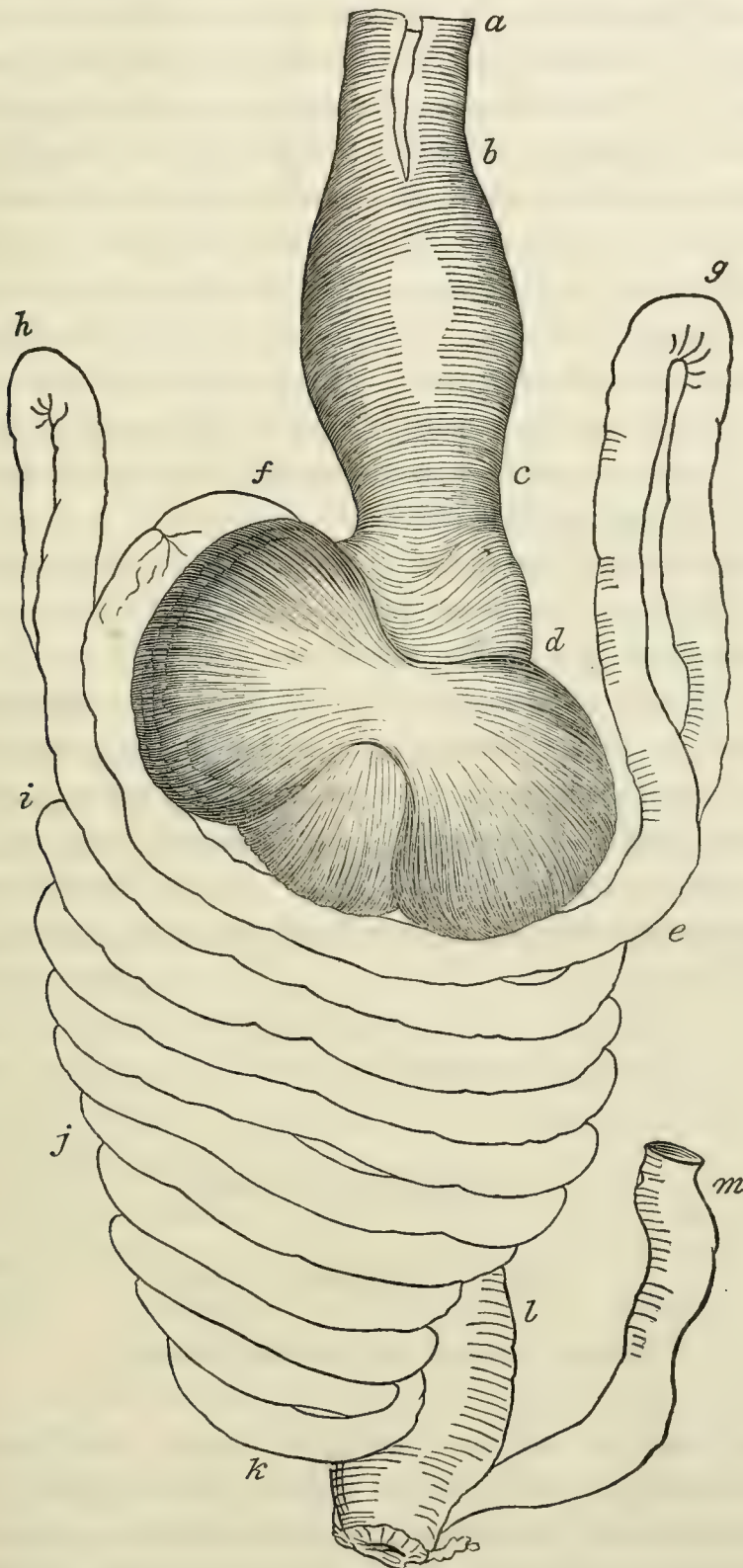
Fig. 3.



$2\frac{1}{2}$ inches in its greatest width. On entering the thorax, the œsophagus has a diameter of 9 twelfths; the proventriculus, Fig. 2, *abc*, enlarges to an ovate sac, $1\frac{1}{4}$ inch in its greatest breadth. The stomach, *def*, is a very muscular gizzard, of an elliptical form, placed obliquely, and exactly resembling that of a Duck or Goose; its length 1 inch 7 twelfths, its breadth 2 inches 3 twelfths. Its lateral muscles are extremely developed, the left being 1 inch 1 twelfth thick, the other 1 inch; the epithelium thick, tough, brownish-red, marked with longitudinal coarse grooves, but not flattened on the two surfaces, opposite the muscles, as is the case in Ducks and Geese. The proventricular glands are very large, and occupy a belt $1\frac{3}{4}$ inch in breadth. The contents of the sto-

mach are numerous very small univalve shells of a great variety of species and fragments of larger shells, which however have probably been

Fig. 2.



used in place of gravel ; for the structure of the œsophagus and sto .

mach would indicate that the bird is graminivorous. The intestine, *fk*, which is very long, and of considerable width, its diameter being greater than that of the upper part of the œsophagus, is very regularly and beautifully convoluted, presenting, when the bird is opened in front 10 parallel convolutions, *fg hijk*, inclined from right to left at an angle of about 30°. The duodenum, *fg h*, passes round the edge of the stomach, curves upwards as far as the fore part of the proventriculus, is then doubled on itself, reaches the right lobe of the liver, which has a large elliptical gall-bladder, and forms 32 half curves in all, ending above the stomach in the rectum. The intestine is 11 feet 4 inches long, its average diameter $4\frac{1}{2}$ twelfths. The rectum, Fig. 3, *ab*, is $5\frac{1}{2}$ inches long, its diameter $\frac{1}{2}$ inch. The cœca, *cd*, are 4 inches long; for $\frac{1}{2}$ inch at the base their diameter is 1 twelfth, immediately after 4 twelfths; they then taper to the extremity, which is obtuse. The cloaca is very large and globular.

In the plate, are represented in outline, the bill, tongue, and foot. Fig. 1 shews the bill as viewed laterally; Fig. 2 is the upper mandible seen from above; Fig. 3, the roof of the mouth; Fig. 4, the lower mandible viewed from beneath; Fig. 5, the lower mandible viewed from above, together with the tongue, on which are seen two series of elongated horny papillæ; Fig. 6, a lateral view of the tongue; Fig. 7, the anterior portion of the tongue, removed from the deep cavity of the lower mandible, and viewed from above; Fig. 8, inferior view of the anterior portion of the tongue; Fig. 9, the right foot seen from before.

BURROWING OWL.

STRIX CUNICULARIA, GMEL.

PLATE CCCCXXXII. MALE AND FEMALE.

THIS singular species was added to our Fauna by Mr THOMAS SAY, who met with it in the course of Colonel LONG's expedition to the Rocky Mountains. The observations of that zealous naturalist have been published in the first volume of the Continuation of WILSON'S

American Ornithology by the Prince of MUSIGNANO, and will be repeated below, after I have presented you with the notice transmitted to me by my friend Dr TOWNSEND, from whom I have received four specimens, one of which I at first supposed to be of a distinct species, and which on the plate bears the name of "*Strix californica*." He says:—

“ This species inhabits the plains near the Columbia River and the whole extent of the Rocky Mountains, residing in the forsaken burrows of the Marmots and American Badgers, but never lives on terms of intimacy with either of these animals, as has been so often stated. The burrow selected by this bird is usually found at the foot of a wormwood bush (*Artemisia*), upon the summit of which this Owl often perches, and stands for a considerable while. On their being approached, they utter a low chattering sound, start, and skim along the plain near the ground for a considerable distance. When winged, they make immediately for the nearest burrow, and when once within it, it is impossible to dislodge them. They are strictly diurnal, feed principally upon grasshoppers and crickets, and, according to the Indians, sometimes upon field-mice. The nest is composed of fine grass, and placed at the extremity of the hole. The eggs are uniformly four in number, pale white, and about the size of those of the common House-Pigeon, the great end, however, being remarkably large, and tapering abruptly. Nothing can be more unpleasant than the bagging of this species, on account of the fleas with which their plumage swarms, and which in all probability have been left in the burrow by the Badger or Marmot, at the time it was abandoned by these animals. I know of no other bird infested by that kind of vermin. This species suddenly disappears in the early part of the month of August, and the Indians assert with great confidence that it retires into its burrow, and spends the winter there in a torpid state.”

Mr SAY's account, as presented in the Continuation of WILSON's American Ornithology, is as follows:—“ In the Trans-Mississipian territories of the United States, the Burrowing Owl resides exclusively in the village of the Marmot or Prairie Dog, whose excavations are so commodious as to render it unnecessary that our bird should dig for himself, as he is said to do in other parts of the world, where no burrowing animals exist. These villages are very numerous and variable in their extent, sometimes covering only a few acres, and at others spreading over the surface of the country for miles together. They

are composed of slightly elevated mounds, having the form of a truncated cone, about two feet in width at base, and seldom rising as high as eighteen inches above the surface of the soil. The entrance is placed either at the top or on the side, and the whole mound is beaten down externally, especially at the summit, resembling a much used foot-path.

“From the entrance, the passage into the mound descends vertically for one or two feet, and is thence continued obliquely downwards, until it terminates in an apartment, within which the industrious Marmot constructs, on the approach of the cold season, the comfortable cell for his winter’s sleep. This cell, which is composed of fine dry grass, is globular in form, with an opening at top capable of admitting the finger; and the whole is so firmly compacted, that it might, without injury, be rolled over the floor.

“It is delightful, during fine weather, to see these lively little creatures sporting about the entrance of their burrows, which are always kept in the neatest repair, and are often inhabited by several individuals. When alarmed, they immediately take refuge in their subterranean chambers, or, if the dreaded danger be not immediately impending, they stand near the brink of the entrance, bravely barking and flourishing their tails, or else sit erect to reconnoitre the movements of the enemy. * * * * *

“In all these prairie villages, the Burrowing Owl is seen moving briskly about, or else in small flocks scattered among the mounds, and, at a distance, it may be mistaken for the Marmot itself when sitting erect. They manifest but little timidity, and allow themselves to be approached sufficiently close for shooting; but, if alarmed, some or all of them soar away, and settle down again at a short distance. If further disturbed, their flight is continued until they are no longer in view, or they descend into their dwellings, whence they are difficult to dislodge.

“The burrows into which these Owls have been seen to descend, on the plains of the river Platte, where they are most numerous, were evidently excavated by the Marmot, whence it has been inferred by SAY, that they were either common, though unfriendly residents of the same habitation, or that our Owl was the sole occupant of a burrow acquired by the right of conquest. The evidence of this was clearly presented by the ruinous condition of the burrows tenanted by the Owl, which were frequently caved in, and their sides channelled by the

rains, while the neat and well-preserved mansion of the Marmot shewed the active care of a skilful and industrious owner. We have no evidence that the Owl and Marmot habitually resort to one burrow, yet we are well assured by PIKE and others, that a common danger often drives them into the same excavation, where lizards and rattlesnakes also enter for concealment and safety.

The note of our bird is strikingly similar to the cry of the Marmot, which sounds like *chek, chek*, pronounced several times in rapid succession.—Its food appears to consist entirely of insects, as, on examination of its stomach, nothing but parts of their hard wing-cases were found.”

STRIX CUNICULARIA, *Gmel. Syst. Nat. vol. i. p. 292.*—*Lath. Ind. Ornith. vol. i. p. 63.*

BURROWING OWL, STRIX CUNICULARIA, *Say in Long's Exped. to the Rocky Mountains, vol. i. p. 200.*—*Ch Bonap. Amer. Ornith. vol. i. p. 68, pl. vii, fig. 2.*

BURROWING OWL, *Nuttall, Manual, vol. i. p. 118.*

Adult Male. Plate CCCCXXXII. Fig. 1.

Bill short, stout, broader than high at the base, its dorsal outline decurved in its whole length, the sides of the upper mandible sloping and slightly convex, the ridge rather narrow, the tip compressed, decurved, acute; lower mandible with the angle long and wide, the dorsal line convex, the edges sharp and inflected, with a notch close to the truncate tip; the gape-line straight, at the end decurved. Nostrils rather small, elliptical oblique, in the fore part of a tumid portion of the cere. Eyes large. Aperture of ear large, but for an Owl small, being elliptical and four and a half twelfths long, without operculum.

Head very large; neck short; body slender. Feet rather long, slender; tarsus roundish, scaly, but covered with short soft feathers, of which the shafts only remain towards the lower part; toes short, tubercularly scaly with two scutella at the end, and having bristles or the shafts of feathers scattered over their upper surface; the first toe much shorter than the outer, which is itself shorter than the inner. Claws slightly curved, long, rather slender, compressed, tapering to a fine point when not blunted from use, that of the middle toe as broad as high.

Plumage full, soft, and rather downy; the feathers ovate; those on the face linear, stiffish, with loose barbs, and disposed in two disks surrounding the eyes, but incomplete above; between the eye and the

bill long with strong terminal bristles. There is a ruff of shorter, downy, oblong feathers extending on each side from the forehead to the chin. Wings of moderate length, broad, concave; primaries broad, the first with the filaments of its outer web bare and enlarged at the end, but scarcely recurved; the first and second cut out on the inner web near the end, the second and third slightly so on the outer web; the first four and a half twelfths shorter than the second, which is longest, but scarcely exceeds the third. Tail short, arched, narrow, slightly rounded, of twelve broadly rounded feathers.

Bill greyish-yellow, darker towards the base. Iris yellow. Feet dusky grey, claws black. The general colour of the upper parts is light yellowish-brown, having a bleached appearance, and spotted with white; the quills with triangular reddish-white spots from the margins of both webs, there being five on each web of the first; the tail similarly barred, there being on the middle feathers four double spots, and the tips of all white. The face is greyish-white, the bristle tips of the stiff feathers at the base of the bill blackish; the throat and ruff white, succeeded by a mottled brown band, beneath which is a patch of white; the rest of the lower parts are yellowish-white, with broad bars of light reddish-brown, which are closer on the sides of the breast; the abdomen, lower tail-coverts, and legs without spots.

Length to end of tail 10 inches, extent of wings 24; bill along the ridge $1\frac{1}{2}$; wing from flexure $7\frac{4}{12}$; tail $3\frac{8}{12}$; tarsus $1\frac{1}{12}$; hind toe $1\frac{5}{12}$, its claw $\frac{4}{12}$; second toe $\frac{9}{12}$, its claw $\frac{5}{12}$; third toe $\frac{10\frac{1}{2}}{12}$, its claw $\frac{5}{12}$; fourth toe $\frac{7}{12}$, its claw $\frac{4\frac{1}{2}}{12}$.

In this individual the colours are obviously faded, and the feathers are worn at the tips, shewing that it was approaching the period of moulting.

In another, the upper parts are of a much deeper tint of a dull reddish-brown, approaching to burnt umber, and the spots, which are smaller, are brownish-white, those toward the end of the tail tinged with reddish earth. The tarsi are much more denuded, and the toes are entirely so, with the scales and scutella more convex and crusted with earth.

But in a third specimen, larger than either, and probably a female, the plumage is perfect, being evidently quite new, and the tarsi covered with fine soft downy feathers, the toes alone having long bristles or shafts on the upper parts. The claws taper to a fine point and the scales and scutella are not so thickened. This bird is therefore probably a

young one. It is that represented by Fig. 2, and named *Strix Californica*.

Female. Plate CCCCXXXII. Fig. 2.

Bill, feet, and claws coloured as in the male. The plumage is also in all respects similar, only the upper parts are of a deeper tint, being umber-brown, the white spots larger, especially on the hind neck, and generally margined with dusky.

Length to end of tail 11 inches; bill along the ridge $1\frac{3}{12}$; wing from flexure $7\frac{1}{2}$; tail $3\frac{3}{4}$; tarsus $2\frac{2}{12}$; hind toe $\frac{6}{12}$, its claw $\frac{5\frac{1}{2}}{12}$; second toe $\frac{10\frac{1}{2}}{12}$, its claw $\frac{7\frac{1}{2}}{12}$; third toe $\frac{1\frac{1}{2}}{12}$, its claw $\frac{7}{12}$; fourth toe $\frac{9}{12}$ its claw $\frac{6}{12}$.

The Burrowing Owl probably belongs to the same section as *Strix passerina*, and *S. acadica*, which it resembles in the form of its bill, the aperture of the ear, and the disposition of the colours of the plumage. The partially bare tarsi and toes appear to be the result of denudation caused by their habits in frequenting sandy and muddy places.

LITTLE NIGHT OWL.

STRIX PASSERINA, GMEL.

PLATE CCCCXXXII. FEMALE.

THE specimen from which my drawing of this bird was taken, was procured near Pictou in Nova Scotia, by my young friend THOMAS M'CULLOCH, Esq., who assured me that it is not very uncommon there. How far southward it may proceed in winter I have not been able to ascertain; nor have I ever met with it in any part of the United States. It is also said to be abundant in Newfoundland, and not rare in Labrador. My specimen is a female, and was shot in winter.

STRIX PASSERINA, Linn. Syst. Nat. vol. i. p. 133.

CHOUETTE CHEVECHE, *STRIX PASSERINA*, Temm. Man. d'Ornith. p. 92.

Female. Plate CCCCXXXII. Fig. 3.

Bill short, stout, broader than high at the base, compressed toward the end; upper mandible with the dorsal line nearly straight to the end of the cere, then decurved, the ridge convex, the sides nearly erect and moderately convex, the tip decurved and acute; nostrils rather small, elliptical; the membrane tumid behind them; lower mandible with the angle very wide, the dorsal line ascending and convex, the edges sharp,

decurved toward the end, with an abrupt notch close to the truncate tip.

Head extremely large, broader than deep ; eyes very large ; aperture of ears elliptical, four-twelfths of an inch long, without operculum ; neck short ; body slender. Feet rather short ; tarsus rather short, stout, covered with fine soft feathers ; as are the toes, on which however the feathers soon become reduced to the shafts. First toe shorter than the fourth, which is much exceeded by the second ; claws moderately curved, slender, compressed, tapering to a fine point, that of the middle toe having the inner edge considerably dilated.

Plumage full, very soft, blended ; facial disks incomplete above ; ruff distinct ; feathers at the base of the bill terminated by long bristly points. Wings long ; the third quill longest, but slightly exceeding the fourth, the second two and a half twelfths shorter, and nine-twelfths longer than the first ; the outer four cut out on the inner web ; the second, third, fourth, and fifth sinuate on the outer ; the filaments of the outer web of the first thickened, free, and slightly recurved, as are those of the second and third beyond the sinus, but in a less degree. Tail of moderate length, arched, slightly rounded.

Bill greyish, its ridge and tip greyish-yellow. Iris dark. Claws brownish-black, lighter at the base. The general colour of the upper parts is chocolate-brown ; the feathers of the head have an oblong white median mark, and as they are small this part is marked with numerous spots ; on the hind neck the white spots are very large, forming a conspicuous patch ; on the back most of the feathers have a single large subterminal roundish spot, which is also the case with the scapulars and wing-coverts, some of which, however, have two or more spots. All the quills have marginal reddish-white spots on both webs, the third quill with six on the outer and four on the inner, with two very faint pale bars toward the end. The tail is similarly marked with four bands of transversely oblong, reddish-white spots. On the anterior part of the disk, the feathers are whitish, with black shafts, on the lower part whitish, on the hind part brown tipped with greyish-white. A broad band of white crosses the throat and curves upwards on either side to the ear ; there is also a patch of white on the lower part of the fore neck, and between them is a brownish-grey band. The general colour of the lower parts is dull yellowish-white, each feather with a broad longitudinal band of chocolate-brown ; the abdomen and lower tail-coverts unspotted ; the tarsal feathers dull white

Length to end of tail $10\frac{1}{2}$ inches, to end of wings 10 ; bill along the ridge $\frac{1}{2}$; wing from flexure $6\frac{1}{4}$; tail $3\frac{1}{2}$; tarsus $1\frac{1}{4}$; hind toe $\frac{5}{12}$, its claw $\frac{5}{12}$; middle toe $\frac{1}{2}$, its claw $\frac{6}{12}$.

On comparing this bird with European specimens, as well as with the best descriptions of *Strix passerina*, I feel convinced that it belongs to that species, as it entirely agrees with it in size, proportions, and colouring.

LITTLE COLUMBIAN OWL.

STRIX PASSERINOIDES, TEMM.

PLATE CCCCXXXII. MALE.

OF this pretty little Owl I can only say that the single specimen from which I made the two figures in the plate before you, was sent to me by Dr TOWNSEND, along with the following notice respecting it:—
 “ I shot this bird on the Columbia River, near Fort Vancouver, in the month of November. I first saw it on wing about mid-day, and its curious jerking or undulating flight struck me as extremely peculiar, and induced me to follow and secure it. It soon alighted upon a high branch of a pine tree, and I shot it with my rifle, the only gun I had with me, as I was at the time engaged in shooting cranes along the banks of the river. The specimen is somewhat mutilated, in consequence of having lost one wing by the ball. The stomach contained nearly the whole body of a Ruby-crowned Wren, with a few small remnants of beetles and worms. It was a male; its irides bright yellow; and it measured 7 inches in length. The tail is exactly 3 inches long, and extends $2\frac{1}{4}$ inches beyond the closed wings.”

I have seen several specimens of this Owl in the Edinburgh Museum, which had also been sent from Fort Vancouver by Dr MERIDETH GAIRDNER.

CHEVECHE CHEVECHOIDE, *STRIX PASSERINOIDES*, Temm. Pl. Col. 344

Adult Male. Plate CCCCXXXII, Figs. 4, 5.

Bill short, strong, broader than high at the base, compressed toward the end; the cere short; the nostrils rather small, oblong, ob-

lique; the nasal membrane tumid behind them; the upper mandible with its dorsal line curved from the base, the ridge rather narrow, the sides convex, the tip decurved and acute; lower mandible, with the angle very wide, the dorsal line short, ascending, convex, the edges inflected, slightly decurved, with an abrupt notch close to the truncate tip.

Head very large, roundish; neck short; body slender. Eyes large; aperture of ear elliptical, two-twelfths and a half at its greatest length, without operculum. Feet short; tarsi very short, feathered, as are the toes, on the greater part of which however, there are only stiff bristles or shafts; the first toe short, the second longer than the fourth. Claws well curved, very slender, compressed, tapering to an extremely acute point.

Plumage full, very soft, blended. Facial disks indistinct, and incomplete above; the feathers at the base of the bill linear, with bristle-shafts; ruff indistinct. Wings rather short, concave, much rounded, the first quill eight-twelfths of an inch shorter than the second, which is three and a quarter twelfths shorter than the third, the fourth slightly exceeding the latter; the outer three abruptly cut out on the inner web, the second, third, and fourth cut out on the outer; the first with its outer filaments thickened but not recurvate, those of the second and third also thickened toward the end. Tail of moderate length, slightly rounded.

Bill greyish-yellow, dusky towards the base. Iris yellow. Claws greyish-yellow at the base, dusky toward the end. The general colour of the upper parts is olivaceous-brown; the head with numerous small, roundish, yellowish-white spots margined with dusky, of which there are two on each feather; the rest of the upper parts marked with larger, angular whitish spots; the quills generally with three small and five large white spots on the outer and inner webs; the tail barred with transversely oblong white spots, of which there are seven pairs on the middle feathers. The facial disk is brown, spotted with white, the throat white, then with a transverse brown band, succeeded by a white one; the lower parts white, with longitudinal brownish-black streaks, the sides brown, faintly spotted with paler; the wing-coverts white, with black streaks.

Length to end of tail 7 inches; bill along the ridge $\frac{7\frac{1}{2}}{1\frac{1}{2}}$; wing from flexure $3\frac{7\frac{1}{2}}{1\frac{1}{2}}$; tail $\frac{5}{1\frac{1}{2}}$; tarsus $\frac{8}{1\frac{1}{2}}$; hind toe $\frac{4}{1\frac{1}{2}}$, its claw $\frac{4\frac{1}{2}}{1\frac{1}{2}}$; middle toe $\frac{7}{1\frac{1}{2}}$, its claw $\frac{6\frac{1}{2}}{1\frac{1}{2}}$.

A young individual, which is the *Strix pumila* of ILLIGER and TEMMINCK, has the bill and feet similar; but the upper parts are rufous; the head with fewer and smaller white spots; those on the lower part of the hind neck very large; the back, scapulars, and wing-coverts unspotted; the wings marked as in the adult, but with pale red spots on the outer, and reddish-white on the inner webs; the tail with only five bands of spots; the lower parts white, longitudinally streaked with light red, of which colour are the sides of the body and neck, and a band across the throat.

SHORT-EARED OWL.

STRIX BRACHYOTUS, LINN.

PLATE CCCCXXXII. MALE.

ALTHOUGH this species is by no means scarce in almost any part of the United States, in the latter half of autumn and during winter, very few individuals spend the summer south of the Great Pine Swamp of Pennsylvania, where, however, some occasionally breed. In Nova Scotia, its nest has frequently been met with, and in Newfoundland it is as common as the Barred Owl is in Louisiana. In winter I have found it so plentiful in the Floridas, that I have shot seven in the course of a morning, while I was at General HERNANDEZ's. Indeed I was surprised to see the great number of these birds which at that period were to be found in the open prairies of that country, rising from the tall grass in a hurried manner, and zig-zagging for a few yards, as if suddenly wakened from sound sleep, then sailing to some distance in a direct course, and dropping among the thickest herbage. On such an occasion, when I had observed the bird to have thrust itself into a thicket formed of tangled palmettoes, I moved towards it with caution, approached it, and caught it in my hand. I observed, however, that these birds, on being pursued and repeatedly started from the ground, extended their flight so far as to be quite out of sight before alighting. I never started two birds at once, but always found them singly at distances of from twenty to a hundred yards, and although on several oc-

casions, as many as three were seen on wing, they having been put up by my companions and myself, they never flew towards each other, but went off in different directions, as if unaware of each other's presence.

Its predilections for the ground forms a very distinctive peculiarity in the habits of this Owl, as compared with the Long-eared; for although it alights on bushes and trees, this seems more a matter of necessity than of choice; and in this respect it resembles the Barn Owls which I found on Galveston Island. I have never observed it in the act of procuring food, although it appears to see pretty well by day, or at least sufficiently to enable it to discover the nature of the spot toward which it removes for security.

In America, the Short-eared Owl has been observed as far north as latitude 67° by Dr RICHARDSON, who mentions a female having been killed at Fort Franklin, on the 20th of May, containing several pretty large eggs, nearly ready for being laid. It is also an inhabitant of the Rocky Mountains, and of the valley of the Columbia River, from which it has been sent to me by Dr TOWNSEND; and is by no means scarce in Kentucky, Louisiana, and along the coast as far as the Texas.

Having so frequently met with many of these birds in an extent of ground not exceeding half a mile, I have been disposed to think, that during the migratory movements of this species, those which follow in the rear of the first, are attracted by their cries, and induced to alight in their vicinity; but of this I have no positive proof, nor have I ever seen them travelling from one part of the country to another.

The only nest of this bird that I have found was placed on one of the high mountain ridges of the Great Pine Forest. It contained four eggs, nearly ready to be hatched. They were of a dull bluish-white, covered with excrement, of a somewhat elongated or elliptical form, measuring an inch and a half in length, and an inch and an eighth in breadth. The nest, which I met with on the 17th of June, was placed under a low bush, and covered over by tall grass, through which a path had been made by the bird. It was formed of dry grass, raked together in a slovenly manner, and quite flat, but covering a large space, on one side of which were found many pellets, and two field-mice, which must have been brought there in the course of the preceding night, as they were quite fresh. I should never have discovered their nest had not the sitting bird made a noise by clicking its bill as I was passing close by. The poor thing was so intent on her task that I almost put

my hand on her before she moved ; and then, instead of flying off, she hopped with great leaps until about ten yards from me, keeping up a constant clicking of her mandibles. Having satisfied myself as to the species, made an outline of two of the eggs, and measured them, I proceeded slowly to a short distance, and watched her movements. Having remained silent and still for about ten minutes, I saw her hop toward the nest, and soon felt assured that she had resumed her task. It was my intention to revisit the spot, and take note of the growth of the young, but letters which came to me from Philadelphia a few days after, induced me to return thither ; and since then I have had no opportunity of examining either the eggs or young of the Short-eared Owl.

On examining the pellets disgorged by this bird, I found them to be formed of the remains of bones of small quadrupeds, mixed with hair, and the elytra of various coleopterous insects. In its diurnal flight, the flappings of its wings are noiseless, as in most other species, and it is apt to sail many yards at a time before alighting. Like the rest of the family, when reposing, they stand as if crouched on the full length of their tarsi, and the slight crests or tufts of feathers on their head are, on such occasions, usually so lowered as to be scarcely perceptible.

STRIX BRACHYOTOS, *Lath.* Ind. Ornith. vol. i. p. 55.—*Ch. Bonaparte*, Synopsis of Birds of United States, p. 27.

SHORT-EARED OWL, *STRIX BRACHYOTOS*, *Wils.* Amer. Ornith. vol. iv. p. 64, pl. 33, fig. 3, male.

STRIX BRACHYOTA, SHORT-EARED OWL, *Swains.* and *Richards.* Fauna Bor.-Amer. vol. ii. p. 75.

SHORT-EARED OWL, *Nuttall*, Manual, vol. i. p. 132.

Adult Male. Plate CCCCXXXII. Fig. 6.

Bill short, stout, broader than high at the base, compressed toward the end ; upper mandible with its dorsal line slightly curved from the base, towards the end decurved, the ridge broad at the base, narrowed anteriorly, more or less convex in its whole extent, the sides convex toward the tip, the edges soft as far as the nostrils, then sharp and decurved to the end, the tip acute and descending ; the cere of moderate length, feathered on the sides ; lower mandible straight, its angle very wide, the dorsal line very short, ascending, and slightly convex, the back and sides convex, the edges toward the end sharp and inflected,

their outline decurved, and with an abrupt sinus on each side close to the truncate tip. Nostrils medial, lateral, large, oblique, elliptical; in the fore part of the cere near the ridge, with a tough soft membrane above, and having internally a ridge curved backwards from the inner edge.

Head very large, flattened anteriorly; neck short; body very slender, although, as in other Owls, seeming large on account of the great mass of plumage. Feet of moderate length, stout; tarsi feathered, short; toes also short and feathered; the first shortest, the third longest, the fourth considerably shorter than the second. Claws long, slightly arched, tapering, extremely acute, rounded above, very narrow beneath, the first and second rounded, the rest flat; that of the fourth toe smallest, of the first slightly larger, those of the other toes much larger and nearly equal.

Plumage extremely soft and downy. The facial disks complete, and composed of circular series of weak, slender, slightly recurved feathers, having remote barbs; surrounding which is a ruff formed of several rows of oblong incurved feathers, having their filaments close. The bill is partially concealed by the plumage; the feathers on the head and neck oblong, on the fore part of the back elongated and oblong, on the hind part short, broad, and entirely downy; on the tibia short, extremely soft, and silky; on the tarsi and toes small, soft, and blended. Wings long and broad; primaries very broad, rounded, with slender shafts, the outer a little incurved towards the end; the first sinuate on the inner web near the end, the second slightly so; the second longest, the third a quarter of an inch shorter, the fourth shorter than the first; secondaries slightly decurved, broad and rounded. The outer quill in its whole length, the second towards the end, and the first alular feather, have the barbs disunited and recurved at the points; and the inner webs of the quills and tail-feathers are covered with extremely soft down. Tail rather short, slightly decurved, a little rounded, of twelve broad, rounded feathers, having feeble shafts.

Bill brownish-black, cere flesh-coloured; iris bright yellow; claws black, with a tinge of greyish-blue. The eye is surrounded by a ring of brownish-black, much broader behind; the anterior half of the disk is white, the tips black, the posterior yellowish with black shafts. The anterior auricular ruff is white, the posterior yellowish, each feather with an oblong dark brown spot. The upper part of the head, the hind

neck and the fore part of the back are buff and dark brown, the central part of each feather being of the latter colour. The scapulars and wing-coverts are spotted and banded in large patches of the same colour, and many of them have a large spot of yellowish-white on the outer web near the end. The edge of the wing is whitish; the alula and primary coverts dark brown, the outer webs pale buff at the base; the quills buff, with a narrow space along the shafts, the ends and two or three broad bands dark brown. The tail is buff, with five broad bands of brown, the tip yellowish-white; on the middle feathers the light coloured spaces are ocellate, or have a patch of brown in the centre. The lower parts are pale buff, whitish behind; the neck with oblong, the breast and sides with linear dark brown streaks; the chin, legs and feet, abdomen, and lower tail-coverts unspotted.

Length to end of tail 15 inches, to end of wings 17, to end of claws $15\frac{1}{2}$; extent of wings 40; bill along the ridge $1\frac{5}{12}$; tarsus $1\frac{7}{12}$; hind toe $\frac{7}{12}$, its claw $\frac{8}{12}$; middle toe $1\frac{5}{12}$, its claw $\frac{9}{12}$. Weight 1 lb. $1\frac{1}{2}$ oz.

The Female is considerably larger, but resembles the male in colour. Individuals vary considerably in tint, some having their ground-colour light yellowish-red, others buff, and some yellowish or reddish white. Younger individuals have the dark spots and streaks on the lower parts broader.

A male preserved in spirits. The conch of the ear is similar to that of the Long-eared Owl, already described, commencing nearly above the middle of the eye, and ending near the angle of the mouth, its outer flap being $3\frac{1}{4}$ inches in length. The mouth is very wide, measuring $1\frac{1}{12}$ inch across; the palate has two longitudinal ridges; the posterior aperture of the nares is oblong, with an anterior slit, a posterior papillate flap, and numerous papillæ along the sides. The tongue is short, fleshy, oblong, flattened, deeply emarginate and papillate at the base, the tip rounded and emarginate. The œsophagus is 6 inches long, very wide, its diameter being about 10 twelfths, destitute of crop or dilatation. The proventriculus is about the same width; its glandules, which are small, cylindrical, 2 twelfths long and half a twelfth broad, form a belt about 8 twelfths in breadth. The stomach is of moderate size, roundish, $1\frac{5}{12}$ inch in diameter; its muscular coat very thin, and composed of a single series of strong fasciculi; its tendons $\frac{1}{2}$ inch broad; its inner coat soft, thin, longitudinally rugous. The intestine

is $24\frac{1}{2}$ inches long ; its diameter at the upper part about 4 twelfths, towards the rectum $2\frac{1}{2}$ twelfths. The cœca, which come off at the distance of 3 inches from the extremity, are 2 inches 8 twelfths long ; for 1 inch they have a width of only $\frac{1}{2}$ twelfth, and in the rest of their extent are of an oblong form, with their greatest diameter 8 twelfths, their extremity rounded.

The trachea is 4 inches long, flattened, $4\frac{1}{4}$ twelfths in breadth at the upper part, 3 twelfths at the lower ; its rings very feeble, being but partially ossified, 72 in number, and 7 half rings. The contractor or lateral muscles are strong, and besides the sterno-tracheals, there is a pair of inferior laryngeal muscles going to the last ring of the trachea. The bronchial half-rings are about 18.

BULLOCK'S TROOPIAL.

ICTERUS BULLOCKII, SWAINS.

PLATE CCCXXXIII. YOUNG MALE AND ADULT FEMALE. FIGS. 1, 2.

THE female and young male, as represented in this plate, have already been described at p. 11 of the present volume. I have only to add that, according to Dr TOWNSEND, the male measures $7\frac{1}{2}$ inches in length, and 11 in the extent of its wings.

BALTIMORE ORIOLE.

ICTERUS BALTIMORE, DAUDIN.

PLATE CCCXXXIII. ADULT FEMALE.

ACCORDING to Dr RICHARDSON this species ranges through the central districts of the Fur Countries up to the 55th degree of latitude, arriving on the Saskatchewan plains on the 10th of May. At this period I saw it breeding and abundant in the Texas ; but none were observed by me in Labrador or Newfoundland. I have ascertained to my perfect satisfaction, that the males of this elegant species obtain

the full beauty of their plumage before the first winter after their birth, having seen several individuals taken from the nest and reared in aviaries acquire their full plumage by the end of September. They feed kindly and breed well in a state of confinement, taking great care of their young.

In the wild state I have frequently seen these birds feed on those beautiful green coleopterous insects called "May-bugs," but they seldom eat them in confinement. I have seen one reared from the nest so gentle as to follow and come to its owner, whenever he called to it. They do not breed in the lower parts of South Carolina, but are found not unfrequently breeding at the distance of a hundred miles from the sea-coast of that State. It is not uncommon in Nova Scotia.

It will be seen from the above that WILSON and all who have copied him have erred in alleging, that the males of this species do not acquire their full plumage until the third year. This opinion I also entertained when I wrote my first volume.

The eggs average seven and a half eighths in length, and five and three-fourths in their greatest breadth. They are rather pointed at the smaller end.

In addition to the description of this species given in vol. i. at p. 70, a few particulars may here be noted :—

The bill agrees with those of *Icterus spurius* and *I. Bullockii*, in its general characters, being considerably shorter than the head, conical, rather stout, but tapering to a very attenuated point. It is almost perfectly straight, being but very slightly decurved towards the end ; that of *I. Bullockii* is similar in this respect, but is a little more decurved and considerably longer ; while that of *I. spurius* is very perceptibly decurved. The nostrils are linear, oblong, operculate, exposed, in the fore part of the rather short nasal groove. The form and proportions of the wings and tail agree in all these species, with slight differences. In the present bird the wing is longish, and rather pointed than rounded, the first and second quills being equal and longest, the third scarcely a twelfth of an inch shorter, the fourth shorter in the same proportion, but the other primaries more rapidly diminished ; the secondaries broadly rounded. Tail rather long, straight, rounded, the lateral feathers being two-twelfths shorter than the longest, which exceed the middle feathers by about half a twelfth. The claws are rather large, that of the hind toe more curved and much stronger than that of the middle

toe, which, with those of the other anterior toes, is moderately curved, much compressed, and tapering to a sharp point.

The colours have been already accurately described.

Length to end of tail $7\frac{3}{4}$ inches; extent of wings 12; bill along the ridge $\frac{8\frac{1}{2}}{12}$, along the edge of lower mandible $\frac{10}{12}$; wing from flexure $3\frac{9}{12}$; tail 3; tarsus $\frac{1\frac{1}{2}}{12}$; hind toe $\frac{4\frac{1}{2}}{12}$, its claw $\frac{4}{12}$; second toe $\frac{6\frac{1}{2}}{12}$, its claw $\frac{2\frac{1}{2}}{12}$; third toe $\frac{7}{12}$, its claw $\frac{4\frac{1}{2}}{12}$; outer toe $\frac{5\frac{1}{2}}{12}$, its claw $\frac{1\frac{1}{2}}{12}$.

Adult Female. Plate CCCCXXXIII. Fig. 3.

The Female is considerably smaller than the male, to which it is much inferior in beauty, although the colouring is similar. The bill is light blue, with the ridge of the upper mandible black; the iris brown; the feet greyish-blue, the claws of the same colour, tinged with brown. The upper part of the head, hind neck, sides of the neck at the middle, and anterior half of the back brownish-black, the feathers edged with dull yellowish-green; the hind part of the back light brownish-yellow, purer on the rump; the tail light yellowish-brown, the middle feathers darker. The wing-coverts are blackish-brown, the quills dark brown, all margined with whitish, the first row of small coverts and the secondary coverts largely tipped with white, so as to present two conspicuous bands of that colour. The loreal space, a band over the eye, and another beneath it, extending to the ear-coverts, dull yellow; below the latter the cheeks spotted with dusky; the lower parts are dull orange, paler behind, with some small dusky streaks on the throat and a tinge of grey on the sides; the lower wing-coverts yellow.

Length to end of tail 7 inches; bill along the ridge $\frac{8\frac{1}{2}}{12}$; wing from flexure $3\frac{4}{12}$; tail $2\frac{1\frac{1}{2}}{12}$; tarsus $\frac{1\frac{1}{2}}{12}$; hind toe $\frac{4\frac{1}{2}}{12}$, its claw $\frac{4}{12}$; middle toe $\frac{7\frac{1}{2}}{12}$, its claw $\frac{4\frac{1}{2}}{12}$.

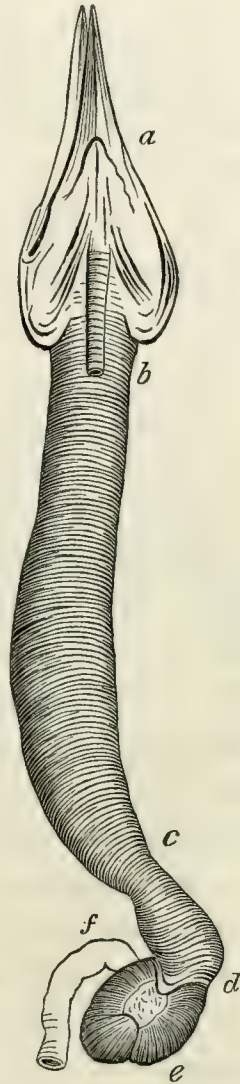
A male preserved in spirits presents the following characters. The palate ascends anteriorly, and has two prominent soft ridges, at the anterior extremity of which is a slight protuberance, analogous to that of the Buntings, but only rudimentary or less developed; beyond it is a median broad ridge gradually tapering to the point. The posterior aperture of the nares is linear, margined with pointed papillæ. The tongue is 6 twelfths long, emarginate and papillate at the base, slightly grooved above, horny in the greater part of its length, and tapering to a deeply slit point. The œsophagus, *abc*, is 2 inches 5 twelfths long; at the upper

part its diameter is about 4 twelfths ; it passes along the right side of the neck, forming an elongated dilatation, of which the greatest breadth is 6 twelfths ; and on entering the thorax, *abc*, contracts to 3 twelfths. The proventriculus, *cd*, is $3\frac{1}{2}$ twelfths in breadth. The stomach, *de*, is an oblong gizzard, 7 twelfths long, 5 twelfths broad, situated obliquely, its fundus being directed toward the right side. The lateral muscles are moderately developed ; the epithelium longitudinally rugous, tough, and of a reddish-brown colour. The contents of the stomach are remains of insects. The intestine is short and of moderate width, being $7\frac{1}{4}$ inches long, its diameter in the duodenal portion $2\frac{1}{2}$ twelfths. The cœca, which come off at the distance of 10 twelfths from the extremity, are very small, 2 twelfths long, $\frac{1}{2}$ twelfth in width. The cloaca is globular, and 7 twelfths in diameter.

The trachea is 1 inch 10 twelfths long, its breadth anteriorly $1\frac{1}{2}$ twelfths, at the lower part 1 twelfth. The rings, about 70, are well ossified, and considerably flattened. The inferior larynx has four pairs of muscles besides the sterno-tracheal. The bronchi have about 12 half rings.

In another individual the intestine is 7 inches 9 twelfths long. The contents of the stomach are remains of insects and particles of quartz.

These circumstances shew, that in the structure of its digestive organs as well as in the form of its bill, the Baltimore Bird, like other Icteri, is much more intimately allied to the Buntings and Finches than to the Starlings and Crows.



MEXICAN GOLDFINCH.

FRINGILLA MEXICANA.

PLATE CCCCXXXIII. MALE AND FEMALE.

I am indebted to my friend WILLIAM SWAINSON, Esq., the well-known naturalist, for skins of a pair of this pretty little bird, from which I made the drawing of the Male and Female represented in the Plate. As the species is found in Upper California, it may be considered as forming part of our Fauna.

CARDUELIS MEXICANUS, *Swainson*, Synopsis of Birds of Mexico, in Phil. Mag. vol. i., N. Series, p. 435.

Adult Male. Plate CCCCXXXIII. Fig. 4.

Bill shorter than the head, conical, compressed toward the end, very stout, with the tip acute; upper mandible with the dorsal line declinate and very slightly convex, the edge rather distinct, the sides rounded, the edges sharp, declinate at the base; lower mandible with the angle short and wide, the dorsal line almost straight, being very slightly concave, the sides convex, the edges inflected, the tip acute. Nostrils basal, round, concealed by the feathers.

Head large, broadly ovate; neck short. Feet rather short; tarsus short, compressed, with seven anterior scutella, and two lateral plates meeting behind so as to form a very sharp edge; toes rather large, the first stouter, the lateral nearly equal; claws rather long, moderately arched, much compressed, laterally grooved, very acute.

Plumage very soft and blended; short stiffish feathers at the base of the bill. Wings rather long, little concave; the second, third, and fourth primaries cut out toward the end; the second longest, the first half a twelfth shorter, the third scarcely a quarter of a twelfth shorter than the second, and exceeding the fourth by a twelfth; some of the secondaries slightly emarginate. Tail rather short, emarginate, the feathers obliquely and narrowly rounded.

Bill flesh-coloured, somewhat dusky above. Feet and claws yellowish-brown. The upper part of the head is deep black; the back and

scapulars yellowish-green, the hind neck and rump greenish-yellow; the wings and tail brownish-black, the former when extended crossed by two bands, one greenish-yellow, tipping the first row of small coverts; the other bright yellow and broad, on the base of the primary and secondary quills; the tail also yellow in its basal half. The lower parts are bright yellow.

Length to end of tail $4\frac{2}{12}$ inches; bill along the ridge $\frac{4\frac{1}{2}}{12}$; wing from flexure $2\frac{6}{12}$; tail $1\frac{7\frac{1}{2}}{12}$; tarsus $\frac{6}{12}$; hind toe $\frac{3\frac{1}{2}}{12}$, its claw $\frac{5}{12}$; middle toe $\frac{4\frac{1}{2}}{12}$, claw $\frac{2}{12}$.

Female. Plate CCCCXXXIII. Fig. 5.

The Female, which is smaller, has no black on the head, that part, with the hind neck, back, rump, scapulars and smaller wing-coverts being light yellowish-green, tinged with grey; the wings and tail wood-brown; the coverts tipped with dull yellowish-green; the bases of the primary quills white; the quills edged with greyish-white; the base of the tail, the two middle feathers excepted, white on the inner webs to within half an inch of the end; the lower parts are dull greenish-yellow.

Length to end of tail 4 inches; bill along the ridge $\frac{4}{12}$; wing from flexure $2\frac{1}{2}$; tail $1\frac{3}{4}$; tarsus $\frac{6}{12}$.

In the brief specific character of this species given by Mr SWAINSON, the bird is said to be "glossy black, beneath yellow; base of the quills and lateral tail-feathers white." The first and last of these characters, however, do not agree with the male presented by himself, which has only the upper part of the head, and part of the wings and tail black, the back being yellowish-green. This species is much smaller than the Arkansaw Siskin, and is very similar in its markings, but is of a much brighter yellow.

VARIED THRUSH.

TURDUS NÆVIUS, LATH.

PLATE CCCCXXXIII. FEMALE. FIG. 6.

THE Female of this species has already been described at p. 491 of the fourth volume.

COMMON WATER THRUSH.

TURDUS AQUATICUS, WILS.

PLATE CCCCXXXIII. MALE.

ALTHOUGH I was for many years convinced that two distinct species have been confounded under the name of Water Thrush, yet a more strict examination of individuals of these supposed species has induced me to retract the opinion expressed at p. 99 of my first volume, and to consider the bird represented in Plate XIX, and that figured in Plate CCCCXXXIII, as belonging to one and the same species. The reasons for this amendment will be found below. The difference in the habits of these two alleged species may be accounted for by the southern birds having been observed by me at home as it were, while those seen in the northern parts were strangers only passing through the country.

Dr RICHARDSON states that this species was seen "at Carlton House, where it frequented the moist and thickly wooded points of the river. It arrived in May, and disappeared after a few days, probably going farther north to breed." Dr TOWNSEND informs me that it is common in the districts adjoining the Columbia River, but does not say whether it breeds there or not, although he states that it breeds on the Missouri. During my late journey to the Texas, my friend

EDWARD HARRIS and my son JOHN WOODHOUSE procured a good number of these birds in the months of April and May. They were then migrating along the shores and islands of the Gulf of Mexico. Many of them had dark brown feet and yellowish-white under parts. My friend Dr BACHMAN has procured the dark-footed bird in South Carolina, and that with flesh-coloured feet in the State of New York. Mr HARRIS shot one of the former, and Mr COLLINS another, in the State of New Jersey.

WATER THRUSH, *TURDUS AQUATICUS*, *Wilson*, Amer. Ornith. vol. iii. p. 66, pl. 23, fig. 5.

SEIURUS AQUATICUS, *Swainson*, AQUATIC ACCENTOR, *Richards*. and *Swains*. Fauna Boreali-Americana, vol. ii. p. 229.

LOUISIANA WATER THRUSH, *TURDUS LUDOVICIANUS*, *Audubon*, Amer. Ornith. Biog. vol. i. p. 99.

NEW YORK OF AQUATIC THRUSH, *TURDUS NOVEBORACENSIS*, *Nuttall*, Manual, vol. i. p. 353.

SYLVIA NOVEBORACENSIS, *Lath.*, *Bonap.* 43?

Adult Male. Plate CCCCXXXIII. Fig. 7.

Bill of ordinary length, straight, slender, nearly as broad as high at the base, compressed toward the end, which is acute; upper mandible with the dorsal line straight, the ridge very narrow, the sides convex beyond the nostrils, the edges direct, with a very slight notch close to the slightly deflected tip; lower mandible with the angle of moderate length, rather narrow, the dorsal line ascending and almost straight, the back narrow, the sides erect and convex, the edges inflected, the tip rather acute; the gape-line straight. Nostrils oblong, operculate, open, partially concealed by the feathers.

Head of moderate size, ovate; neck rather short; body rather slender. Feet of moderate length; tarsus a little longer than the middle toe and claw, much compressed, anteriorly with a long plate and three inferior scutella, posteriorly with two long plates meeting so as to form a very thin edge. Toes slender; the first a little stouter than the middle toe, the inner slightly shorter than the outer, which is united to the third as far as its second joint. Claws of moderate length, very slender, much compressed, moderately arched, acute.

Plumage soft, blended ; bristles at the base of the upper mandible very small, so as to be readily overlooked. Wings of moderate length, broad ; the second and third quills longest and equal, the first one-twelfth of an inch shorter, and slightly longer than the fourth, which exceeds the fifth by a quarter of an inch, the intervals between the rest about a twelfth ; secondaries abruptly rounded. Tail of moderate length, even.

Bill deep brown above, flesh-coloured on the lower mandible, of which the tip is brownish. Iris deep brown. Feet and claws flesh-coloured. The general colour of the upper parts is dull greenish-brown, of the lower pale yellow. A streak of the latter colour passes from the nostril over the eye ; the loreal space and a streak behind the eye dusky ; the cheeks yellowish-grey, streaked with brown ; the whole fore part and sides of the neck, the breast and the sides, are marked with triangular dark brown spots, which are more elongated on the sides ; the abdomen and sides unspotted ; the lower wing-coverts brownish-grey ; the tibial feathers greyish-brown.

Length to end of tail $6\frac{2}{12}$ inches, to end of wings $5\frac{2}{12}$, to end of claws $5\frac{0}{12}$; extent of wings $9\frac{1}{2}$; bill along the ridge $\frac{5\frac{1}{2}}{12}$, along the edge of lower mandible $\frac{7}{12}$; wing from flexure $3\frac{1}{12}$; tail $2\frac{2\frac{1}{2}}{12}$; tarsus $\frac{1\frac{0}{2}}{12}$; hind toe $\frac{4}{12}$, its claw $\frac{3\frac{1}{2}}{12}$; second toe $\frac{4\frac{1}{2}}{12}$, its claw $\frac{1\frac{1}{2}}{12}$; third toe $\frac{7}{12}$, its claw $\frac{2\frac{1}{2}}{12}$; fourth toe $\frac{5}{12}$, its claw $\frac{1\frac{1}{2}}{12}$.

The Female is considerably less, but in all other respects similar.

Length to end of tail $5\frac{8}{12}$ inches, to end of wings $4\frac{8}{12}$, to end of claws $5\frac{1}{2}$; extent of wings $8\frac{7}{12}$; wing from flexure $2\frac{10\frac{1}{2}}{12}$; tail 2 ; tarsus $\frac{1\frac{0}{2}}{12}$; hind toe $\frac{4}{12}$, its claw $\frac{3\frac{1}{2}}{12}$; second toe $\frac{5}{12}$, its claw $\frac{1\frac{1}{2}}{12}$; third toe $\frac{7\frac{1}{2}}{12}$, its claw $\frac{2\frac{1}{2}}{12}$; fourth toe $\frac{5\frac{1}{2}}{12}$, its claw $\frac{1\frac{1}{2}}{12}$.

Individuals present some slight variations. Thus, in one of my specimens the first quill is longest, while in three skins and three specimens preserved in spirits the proportions are as above described ; in two the tail is perfectly even, in two slightly emarginate ; the middle feather being a twelfth in one, a twelfth and a half in the other, shorter than the outer feather, which again in another is half a twelfth shorter than the next. In one specimen, the two outer tail-feathers have a pretty large terminal white spot on the inner web. In some

the lower parts are yellow, in others yellowish-white, and in others the fore neck has scarcely any tinge of yellow. In some the tarsi and toes are yellowish flesh-colour, in others flesh-colour, in one somewhat dusky, and in many which I have examined dusky brown. The size also varies, some birds measuring $6\frac{2}{12}$ inches in length, others not more than $5\frac{7}{12}$. The dark-footed birds seem in no essential respect to differ from the light-footed; and in conclusion, I cannot after all distinguish between the Louisiana Water Thrush and the Common Water Thrush. As I cannot distinguish between the two alleged species, I prefer considering them as identical; moreover, the dark-footed bird, which has commonly been said to be larger than the light-footed, I find to be on an average of the same size. The dimensions given above are from two specimens of which the feet were pale flesh-colour. The following is an account of their digestive organs:—

Male shot in the Texas. The roof of the mouth is flat, with two longitudinal ridges, at the union of which anteriorly is a small soft knob, and beyond it a median prominent line. The posterior aperture of the nares is linear in its whole length, margined with papillæ, $4\frac{1}{2}$ twelfths long. The tongue is of moderate length, very slender, sagittate and papillate at the base, the lateral papillæ on each side large; it is flat above, with a slight median groove, horny towards the end, which is deeply slit and lacerated; its length 5 twelfths. The œsophagus is 2 inches 2 twelfths long; for three-fourths of an inch its breadth is 2 twelfths, then for half an inch $2\frac{1}{2}$ twelfths. The stomach is roundish, 5 twelfths long, $4\frac{1}{2}$ twelfths broad, with strong lateral muscles, and a tough brownish-red epithelium, marked with nine prominent longitudinal ridges. The intestine is $8\frac{1}{4}$ inches long, its greatest width scarcely 1 twelfth. The cœca are 2 twelfths long, and about $\frac{1}{4}$ twelfth wide, their distance from the extremity 1 inch; the cloaca oblong. The stomach filled with fragments of insects, without any particles of quartz.

The trachea is 1 inch 7 twelfths long, a little flattened, its breadth uniformly 1 twelfth; the rings are about 68. The lateral muscles are moderate; besides the sterno-tracheal there are four pairs of inferior laryngeal muscles. The bronchi are of moderate width, with about 12 half rings.

A female has the œsophagus 2 inches 1 twelfth long; the stomach 6 twelfths by $4\frac{1}{2}$ twelfths; the intestine $9\frac{1}{2}$ inches long, its greatest width scarcely 1 twelfth; the cœca 2 twelfths long, and about a quarter of a twelfth wide.

LITTLE TYRANT FLYCATCHER.

MUSCICAPA PUSILLA.

PLATE CCCCXXXIV. MALE.

THIS small and plainly-coloured species, first described by my friend WILLIAM SWAINSON, Esq. in the Fauna Boreali-Americana, under the name of "*Tyrannula pusilla*," is a common inhabitant of the northern and north-western parts of America, but has not, I believe, been known to pass along our Atlantic shores. Dr RICHARDSON, who observed it in the Fur Countries, says that "it was first seen by us at Carlton House, on the 19th of May, flitting about for a few days among low bushes on the banks of the river, after which it retired to the moist shady woods lying farther north."

My friend THOMAS NUTTALL, Esq. procured this bird on Wapatoo Island, which is formed by the junction of the Multnomah with the Columbia, 20 miles long, and 10 broad. The land is high and extremely fertile, and in most parts supplied with a heavy growth of cotton-wood, ash, and sweet-willow. But the chief wealth of the island consists of the numerous ponds in the interior, abounding with the common arrow-head, *Sagittaria sagittifolia*, to the root of which is attached a bulb growing beneath it in the mud. This bulb, to which the Indians give the name of Wapatoo, is the great article of food, and almost the staple article of commerce, on the Columbia. It is never out of season, so that at all times of the year the valley is frequented by the neighbouring Indians, who come to gather it. It is collected chiefly by the women, who take a light canoe in a pond, where the water is as high as the breast, and by means of their toes, separate the root from the bulb, which on being freed from the mud rises immediately to the surface of

the water, and is thrown into the canoe. This plant is found through the whole extent of the Columbia Valley, but does not grow farther eastward.

“ I observed,” he continues, “ a male of this species very active and cheerful, making his chief residence in a spreading oak, on the open border of a piece of forest. As usual, he took his station at the extremity of a dead branch, from whence, at pretty quick intervals, he darted after passing insects. When at rest, he raised his erectile crest, and in great earnest called out *sishui*, *sishui*, and sometimes *tsishea*, *tsishea*, in a lisping tone, rather quickly, and sometimes in great haste, so as to run both calls together. This brief, rather loud, quaint and monotonous ditty, was continued for hours together, at which time, so great was our little actor’s abstraction, that he allowed a near approach without any material apprehension. As I could not discover any nest, I have little doubt it was concealed either in some knot or laid on some horizontal branch.”

I found this species both in Newfoundland and on the coast of Labrador in considerable numbers. In the latter country, where the bushes are low and the fir-trees seldom attain a height of thirty feet, I observed that it preferred for its residence the narrow and confined valleys which at that season (July) are clothed with luxuriant herbage, and abound in insects, to which this little Flycatcher gives chase with great activity, returning, as is the well-known habit of all our small species, to the twig or top of the plant which it has selected for its look-out station. Two males I observed one morning, were constantly engaged in pursuing each other, when at times they would mount to some height in the air, there meet, snap their bills violently, separate, and return to their posts. Their continued cries induced me to believe that they had females and nests in the valley; and after searching a good while, I had the gratification of finding one of them placed between two small twigs of a bush not above four feet in height. This nest was composed of delicate dry grasses and fibrous roots, so thinly arranged as to enable me to see through it. It contained five eggs, so nearly resembling those of our Little Red-start Flycatcher, that, had I not started the female from the nest, I should have been induced to pronounce them the property of that bird. They measured five and a half eighths by four-eighths, and were rather sharp at the smaller end, pure white, thinly spotted, and marked with different tints of light red, with a few dots of umber,

principally toward the apex. Many of the young were able to fly before our departure, which took place on the 12th of August; and I think that the pair which I found breeding must have been later than usual in arriving in that country, as a very few days afterwards I found a good number fully fledged, and travelling along the shore of St George's Bay in Newfoundland. This species may perhaps breed in Nova Scotia, as I have seen a specimen obtained there in the collection of my young friend THOMAS M'CUCCLOCH, Esq. of Pictou.

TYRANNULA PUSILLA, *Swains. Richards. and Swains. Fauna Boreali-Americana*, vol. ii. p. 144.

Adult Male. Plate CCCXXXIV. Fig. 1.

Bill rather short, straight, depressed, triangular when viewed from above; upper mandible with the sides sloping and somewhat convex, the dorsal line slightly convex, the ridge distinct, the edges thin and overlapping, the tip slightly declinate; nostrils rather large, elliptical, partially concealed by the feathers; lower mandible with the angle rather short and wide, the dorsal line ascending and slightly convex, the back broad and flattened at the base, the sides sloping outwards and a little convex, the edges thin, the tip acute.

Head of moderate size, ovate; neck rather short; body slender. Feet of ordinary length; tarsus slender, compressed, with seven anterior scutella, of which the upper are blended, thin-edged behind; toes rather short, slender, the first stouter, the inner slightly shorter than the outer; claws rather long, moderately arched, much compressed, laterally grooved, acute.

Plumage soft, blended, tufty; the feathers of the head capable of being raised into a crest; bristly feathers at the base of the bill long. Wings of ordinary length, when closed three-quarters of an inch shorter than the tail; third quill longest, fourth scarcely shorter, second nearly one-twelfth shorter, and exceeding the first by three and a quarter twelfths. Tail long, slightly emarginate, the middle feathers a twelfth and a half shorter than the outer.

Bill dusky above, pale yellow beneath. Iris brown. Feet light brown. The general colour of the upper parts is light greenish-brown; there is a whitish loreal band, and a narrow pale ring surrounding the eye. The larger wing-coverts and quills are olive-brown; the first row of small coverts and the secondary coverts rather largely tipped

with dull white, with which also the secondary quills are margined and narrowly tipped. Tail olive-brown, the lateral feathers lighter, its outer web pale brownish-grey. The lower throat, fore part of the neck, and a portion of the breast and sides, are ash-grey; the rest of the lower parts and lower wing-coverts pale yellow.

Length to end of tail $5\frac{2}{1\frac{1}{2}}$; bill along the ridge $\frac{5}{1\frac{1}{2}}$; wing from flexure $2\frac{5}{1\frac{1}{2}}$; tail $2\frac{1\frac{1}{2}}{1\frac{1}{2}}$; tarsus $\frac{7\frac{1}{2}}{1\frac{1}{2}}$; hind toe $\frac{5}{1\frac{1}{2}}$, its claw $\frac{3\frac{1}{2}}{1\frac{1}{2}}$; middle toe $\frac{4\frac{1}{2}}{1\frac{1}{2}}$, its claw $\frac{5}{1\frac{1}{2}}$.

SMALL HEADED FLYCATCHER.

MUSCICAPA MINUTA, WILSON.

PLATE CCCCXXXIV. MALE.

THE sight of the figure of this species brings to my recollection a curious incident of long-past days, when I drew it at Louisville in Kentucky. It was in the early part of the spring of 1808, thirty years ago, that I procured a specimen of it while searching the margins of a pond. Had any one then suggested that it might yet be figured in London as part of a work comprising five hundred species of birds of the United States and British America, I should have smiled and shaken my head. The drawings which I then made were simply intended for the gratification of my best friend on earth, my beloved wife, as well as myself and some of her relatives, especially Miss EUPHEMIA GIFFORD, to whom, as good fortune would have it, I sent about thirty before I removed to Henderson, where, as I have long since told you, the contents of my portfolios were destroyed by the rats; but I never once imagined that the observations which I now and then made, and stored up in my mind, should some day accumulate so as to form some thousand pages of print, or that my drawings should compose four volumes, each large enough to require two stout arms to raise it from the ground.

In those happy days, kind Reader, I thought not of the minute differences by which one species may be distinguished from another in words, or of the necessity of comparing tarsi, toes, claws, and quills, although I have, as you are aware, frequently troubled you with tedi-

ous details of this sort. When ALEXANDER WILSON visited me at Louisville, he found in my already large collection of drawings, a figure of the present species, which, being at that time unknown to him, he copied and afterwards published in his great work, but without acknowledging the privilege that had thus been granted to him. I have more than once regretted this, not by any means so much on my own account, as for the sake of one to whom we are so deeply indebted for his elucidation of our ornithology.

I consider this Flycatcher as among the scarcest of those that visit our middle districts; for, although it seems that WILSON procured one that "was shot on the 24th of April, in an orchard," and afterwards "several individuals of this species in various quarters of New Jersey, particularly in swamps," all my endeavours to trace it in that section of the country have failed, as have those of my friend EDWARD HARRIS, Esq., who is a native of that State, resides there, and is well acquainted with all the birds found in the district. I have never seen it out of Kentucky, and even there it is a very uncommon bird. In Philadelphia, Baltimore, New York, or farther eastward or southward, in our Atlantic districts, I never saw a single individual, not even in museums, private collections, or for sale in bird-stuffers' shops.

In its habits this species is closely allied to the Hooded and Green Black-capt Flycatchers, being fond of low thick coverts, whether in the interior of swamps, or by the margins of sluggish pools, from which it only removes to higher situations after a continuation of wet weather, when I have found it on rolling grounds, and amid woods comparatively clear of under-growth.

Differing from the true Flycatchers, this species has several rather pleasing notes, which it enunciates at pretty regular intervals, and which may be heard at the distance of forty or fifty yards in calm weather. I have more than once seen it attracted by an imitation of these notes. While chasing insects on wing, although it clicks its bill on catching them, the sound thus emitted is comparatively weak, as is the case with the species above mentioned, it being stronger however in the Green Blackcapt, than in this or the Hooded species. Like these birds, it follows its prey to some distance at times, whilst at others, it searches keenly among the leaves for its prey, but, I believe, never alights on the ground, not even for the purpose of drinking, which act it performs by passing lightly over the water and sipping as it were the quantity it needs.

All my efforts to discover its nest in the lower parts of Kentucky, where I am confident that it breeds, have proved fruitless; and I have not heard that any person has been more successful. The figure in the plate has been copied from the drawing in the possession of my excellent friend, and patroness, Miss EUPHEMIA GIFFORD.

SMALL-HEADED FLYCATCHER, *MUSCICAPA MINUTA*, *Wils.* Amer. Ornith. vol. vi.
p. 62, pl. 50, fig. 5.

SYLVIA MINUTA, *Ch. Bonaparte*, Synopsis of Birds of United States, p. 86.

SMALL-HEADED SYLVAN FLYCATCHER, *Nuttall*, Manual, vol. i. p. 296.

Adult Male. Plate CCCCXXXIV. Fig. 2.

Bill rather short, straight, depressed, triangular when viewed from above; upper mandible with its dorsal line sloping, convex toward the end, the ridge distinct, the sides sloping and slightly convex, the edges thin and overlapping, the tip a little deflected; nostrils rather small, roundish, partially concealed by the feathers; lower mandible with its dorsal line ascending and straight, the back broad at the base, the sides sloping upwards and convex, the tip acute.

Head of moderate size, ovate; neck rather short; body slender. Feet of ordinary length; tarsus slender, compressed, anteriorly scutellate, thin-edged behind; toes rather short, slender, the first stouter, the lateral nearly equal; claws much compressed, laterally grooved, moderately arched, acute.

Plumage soft, blended; bristly feathers at the base of the bill long. Wings short, when closed an inch shorter than the tail; the second quill longest. Tail of moderate length, even.

Bill dusky above, pale yellowish-brown beneath. Iris dark brown. Feet dusky brown, the lower surface of the toes yellow. The general colour of the upper parts is light greenish-brown; the wings dark olive-brown; the first row of small coverts and the secondary coverts tipped with dull white; the tail olive-brown, the outer feathers with a terminal white spot on the inner web. A ring of white surrounds the eye; the sides of the head and neck are light greenish-yellow; the rest of the lower parts pale yellow, gradually fading into white behind.

Length to end of tail 5 inches; extent of wings $8\frac{2}{3}$; bill along the ridge $\frac{5}{12}$; wing from flexure $2\frac{1}{2}$; tail 2; tarsus $\frac{7}{12}$; hind toe $\frac{3}{12}$, its claw $\frac{3}{12}$; middle toe $\frac{4}{12}$, its claw $\frac{5}{12}$.

BLUE MOUNTAIN WARBLER.

SYLVIA MONTANA, WILSON.

PLATE CCCCXXXIV. MALE.

It is somewhat strange, that among the numerous species of birds that visit the United States, a few should have been met with only in single instances. The present Warbler is in this predicament, as are the Carbonated Warbler and Cuvier's Wren, of which it does not appear that a specimen has been obtained excepting those from which their figures and descriptions were taken. For many years I never met with Bewick's Wren, which is now, however, known to be abundant on the mountains of Virginia, and elsewhere in our Middle and Southern Districts, and still more so along the Columbia River. The same was the case with Henslow's Bunting, which has become a common bird in the State of New Jersey, where it breeds, and in South Carolina and the Floridas, where it spends the winter. Of Townsend's Bunting the only specimen as yet procured is in my possession; and it is only of late years that Macgillivray's Finch has appeared in numbers in the neighbourhood of Charleston. Swainson's Warbler, at one time scarce in South Carolina, where it was discovered by my good friend Dr BACHMAN, has since been procured as far eastward as the vicinity of Boston by THOMAS M. BREWER junior, Esq. The Phipps Flycatcher was not known to exist eastward of the Floridas until after I had found it there, although now it is not a scarce species, being found breeding in the very heart of the city of Charleston. Traill's Flycatcher, which I first discovered on the Arkansaw River, is now known to abound on the Columbia River. No other person has observed the Rocky Mountain Wren in any part of the country eastward of that great chain besides Dr BACHMAN, who shot one within a few miles of Charleston. I might mention several other species, which at one time were extremely rare in the United States, but are now abundant in many of our districts; but prefer returning to the Blue-Mountain Warbler, which it has not been my good fortune to meet with, although it would be in no degree surprising to find it a constant visitor to some portions of our vast country yet untrodden by the ornithologist. My

figure was taken from a specimen lent to me by the Council of the Zoological Society of London, and which had come from California.

ALEXANDER WILSON, to whom we are indebted for our knowledge of this pretty bird, says that it "was first discovered near that celebrated ridge, or range of mountains, with whose name I have honoured it. Several of these solitary Warblers remain yet to be gleaned up from the airy heights of our alpine scenery, as well as from the recesses of our swamps and morasses, whither it is my design to pursue them by every opportunity. Some of these, I believe, rarely or never visit the lower cultivated parts of the country; but seem only at home among the gloom and silence of those dreary solitudes. The present species seems of that family, or subdivision, of the Warblers, that approach the Flycatchers, darting after flies wherever they see them, and also searching with great activity among the leaves. Its song was a feeble screech, three or four times repeated.

"This species is four inches and three-quarters in length; the upper parts a rich yellow olive; front, cheeks, and chin yellow; also the sides of the neck; breast and belly pale yellow, streaked with black or dusky; vent plain pale yellow; wings black; first and second row of coverts broadly tipped with pale yellowish-white, tertials the same; the rest of the quills edged with whitish; tail black, handsomely rounded, edged with pale olive; the two exterior feathers on each side white on the inner vanes from the middle to the tips, and edged on the outer side with white; bill dark brown, legs and feet purple-brown; soles yellow; eye dark hazel.

"This was a male. The female I have never seen."

BLUE MOUNTAIN WARBLER, *SYLVIA MONTANA*, *Wils.* Amer. Ornith. vol. v. p. 113.
pl. 44, fig. 2.

SYLVIA TIGRINA, *Ch. Bonaparte*, Synopsis, p. 82; but not of *Gmelin* or *Latham*.

BLUE-MOUNTAIN WARBLER, *Nuttall*, Manual, vol. i. p. 393.

Adult Male. Plate CCCCXXXIV. Fig. 3.

Bill of moderate length, slender, tapering, broader than high at the base, with the ridge rather distinct, the sides sloping and a little convex, the edges sharp, somewhat arched, those of the upper mandible without notch, its tip slightly declinate.

Head of moderate size, ovate; neck short. Feet rather short; tarsus short, slender, much compressed, with seven anterior scutella, and two lateral plates forming a thin edge behind; toes rather short,

the first stouter, the lateral about equal, claws much compressed, laterally grooved, acute.

Plumage soft and blended. No bristles at the base of the bill. Wings rather short; the third and fourth quills longest. Tail of moderate length, rounded, the lateral feathers four and a half twelfths shorter than the middle.

Bill reddish-brown, as are the feet and claws, the soles yellow. The general colour of the upper parts is light greenish-olive; a band across the forehead, a band over the eye, the cheeks, throat, fore part, and sides of the neck bright yellow; the rest of the lower parts yellowish-white; the sides marked with narrow dusky longitudinal streaks. The wings are dusky brown, all the feathers edged with yellowish-white, the secondary quills more broadly, the first row of small coverts and the secondary coverts tipped with white, and thus forming two very conspicuous bands across the wing. Tail brownish-black, the feathers edged with yellowish-green; the two lateral feathers on each side white in their terminal half.

Length to end of tail $4\frac{1}{2}$ inches; bill along the ridge $\frac{5}{12}$; wing from flexure $2\frac{6}{12}$; tail 2; tarsus $\frac{7\frac{1}{2}}{12}$; hind toe $\frac{5}{12}$, its claw $\frac{2\frac{1}{2}}{12}$; middle toe $\frac{5}{12}$, its claw $\frac{2}{12}$.

This bird cannot be the *Sylvia tigrina* of GMELIN and LATHAM, as the figure of EDWARDS, to which reference is made, has the tail, not rounded, but emarginate. That figure, in fact, affords a better representation of *Sylvia maritima*.

BARTRAM'S VIREO.

VIREO BARTRAMII, SWAINS.

PLATE CCCXXXIV. MALE.

AT page 289 of the second volume of this work, when speaking of *Vireo olivaceus*, I made the following remark:—"WILSON, who was a most excellent observer, was quite correct, as well as DR BARTON of Philadelphia, in alluding to another species of Vireo, which, although

nearly allied to this, is quite distinct. It is smaller, has brown eyes at all times of its life, sings sweetly, lives in low thickets, and builds a pensile nest. You will see its figure in my fourth volume of Illustrations, where I hope to be able to give you a good account of its habits."

The bird alluded to is now in your presence. But before I proceed to lay before you all that I know respecting it, I may direct your attention to the following remarks of WILSON. "Before I take leave of this bird (the Red-eyed Flycatcher) it may not be amiss to observe that there is another and rather less species of Flycatcher, somewhat resembling the Red-eyed, which is frequently found in its company. Its eyes are hazel; its back more cinereous than the other, and it has a single light streak over the eye. The notes of this bird are low, somewhat plaintive, but warbled out with great sweetness, and form a striking contrast with those of the Red-eyed Flycatcher."

This species has been named as above by my friend WILLIAM SWAINSON, Esq., from whom I received a specimen procured in Mexico, which corresponds in every respect with those which I have myself procured in the States of New Jersey and Kentucky. I consider it as a species generally overlooked in America, confounded with, or mistaken for, the Red-eyed Vireo; but I have not been able to ascertain its range with us, although I strongly suspect that it proceeds very far northward as well as westward.

A remarkable difference between this and the Red-eyed Vireo is, that it rarely if ever ascends even moderately tall trees, as the latter is wont to do, but almost constantly remains in low and close thickets, in the manner of the White-eyed Vireo, of the petulance and activity of which it also possesses a portion, as well as its disregard of the approach of man, or indeed of any other intruder. I have not unfrequently remained a considerable time, within a few yards of one, listening with delight to its sweetly varied and plaintive notes, which it poured forth just as if no enemy were near, and now and then peeped at me as if it wished that we were better acquainted.

The nest of this bird is seldom placed at a greater height from the ground than four feet. In two instances I have found it attached to two strong blades of coarse grass growing from beneath a thicket of brambles, not above two feet from the earth. It is truly pensile, about three inches deep, and formed wholly of slender grasses and fibrous roots. The eggs are usually pure white, without any spots or dots.

I have not been able to ascertain if it breeds twice in the season, although I suspect it does.

There is a greater difference as to colour between the sexes of this species than between those of the Red-eyed. The female is generally much less pure in its tints, while the males have usually much more of a yellowish tint on their upper and under plumage than is observed in the same sex of the other species.

VIREO BARTRAMII *Swains.* BARTRAM'S GREENLET, *Richards. and Swains. Fauna Boreali-Americana*, vol. ii. p. 235.

Adult Male. Plate CCCCXXXIV. Fig 4.

Bill of moderate length, strong, rather broader than high at the base, compressed toward the end; upper mandible with the dorsal line descending and slightly convex, the tip very narrow, acute, declinate, the ridge very narrow, the sides a little convex, the edges sharp, overlapping, with a slight notch close to the tip; lower mandible with the angle of moderate length and rather narrowed, the dorsal line ascending and slightly convex, the back narrow, the sides convex, the edges inclinate, the tip acute and ascending. Nostrils basal, oblong, operculate.

Head rather large, ovate; neck short; body rather stout. Feet of ordinary length; tarsus compressed, with seven anterior broad scutella, edged behind; toes slender; the first strong, the second much shorter than the fourth; claws rather stout, much curved, compressed, laterally grooved, acute.

Plumage soft and blended. Wings of moderate length, the first quill a twelfth and a half shorter than the fifth, three-twelfths shorter than the second, which is equal to the third, and exceeds the fourth only by a quarter of a twelfth. Tail rather long, nearly even, the lateral and middle feathers equal, and one-twelfth shorter than the longest.

Bill brown above, pale bluish-grey beneath. Feet bluish-grey. The general colour of the plumage above is light yellowish-olive, the crown of the head deep grey, bordered on each side by a line of blackish, below which is a line of yellowish-white passing from the nostril over the eye, the loreal space dusky. Quills brown, yellowish-olive on the outer margin, whitish on the inner. Tail wood-brown, margined with paler. The lower parts are white, the breast tinged with pale yellow, the throat and sides with grey.

Length to end of tail $4\frac{7}{8}$ inches; extent of wings $7\frac{3}{4}$; bill along the

ridge $\frac{6}{12}$, along the edge of lower mandible $\frac{8\frac{1}{2}}{12}$; wing from flexure $2\frac{9}{12}$; tail $2\frac{14}{12}$; tarsus $\frac{8}{12}$; hind toe $\frac{5}{12}$, its claw $\frac{2\frac{3}{4}}{12}$; middle toe $\frac{5\frac{1}{2}}{12}$, its claw $\frac{2\frac{3}{4}}{12}$.

This species is almost exactly similar to *Vireo olivaceus* in colour, but is considerably smaller, and differs in having the wings shorter, with the first quill considerably shorter than the fifth, whereas in that species it is always much longer, generally exceeding even the fourth. It is intermediate between the *Vireo gilvus* and *V. olivaceus*.

SHORT-LEGGED PEWEE FLYCATCHER.

MUSCICAPA RICHARDSONII, SWAINSON.

PLATE CCCCXXXIV. MALE.

I HAVE much pleasure in presenting you with a rare and remarkable species of Flycatcher, honoured by Mr SWAINSON with the name of my excellent friend Dr RICHARDSON. I found this species plentiful on the coast of Labrador, where, for a while, I thought it so nearly allied to our Common Pewee Flycatcher, as almost to render me indifferent to its notes, movements, and nidification, all of which, however, I at length discovered to differ considerably, especially the latter. On this particular subject, on which I have already said so much, I may here repeat, that birds of the same species may in some localities form nests extremely different from those constructed by them in others. Indeed, accustomed as I have been to this for a considerable number of years, I thought it in no way remarkable to find the nest of what I then considered as our Common Pewee placed in a bush, instead of being placed against a rock or under a shed, for I thought the difference less than that presented by the nidification of our Common Crow Blackbird, which in Louisiana deposits its eggs in the hollow of a tree, while in Pennsylvania, and other districts, it constructs as regular a nest as our *Turdus migratorius*. It was not long, however, before I discovered material differences in the deportment, habits, and voice of this Flycatcher and the Pewee; the larger size of the latter of which rendered me confident that I could not be mistaken, as I frequently saw both birds in the course of my daily rambles.

Although it is very difficult to distinguish preserved skins of our many plain-coloured Flycatchers, yet to one who has traversed the woods, and listened to their voices, there is little difficulty in recognising the sounds of any of them, for the cries of all are different, and may be known with certainty, however alike they may seem to one who has seldom heard them. The notes of the present species differ from those of the Common Pewee, being as it were hoarse or harsh. It never jerks up its tail, as is the common habit of that species, and in this respect differs from all our Flycatchers. Again, RICHARDSON'S Flycatcher, instead of standing on an eminence for an hour at a time, as the Pewee does, pouring forth its ditty, is continually in motion; and never alights on rocks or the higher parts of trees, but keeps on low bushes at all times. Its flight too is different, for instead of launching upward after its prey, it flies low, proceeding immediately over the tops of the plants, from which it sweeps the insects before they are aware of the presence or purpose of the little depredator that skipingly passes over them. After this, it betakes itself to the tallest and rankest weed of the open space, whether a narrow valley, or the environs of one of those small ponds so abundant in Labrador, and which in summer display a most luxuriant growth of aquatic plants. The Common Pewee, on the contrary, which also breeds in that country, frequents rocks and the tallest fir trees.

Whilst in Labrador, I examined several nests of the Short-legged Pewee, all of which were placed on low bushes, and almost as bulky as those of the Pipirie Flycatcher, or about double the size of that of our Common Pewee. They were all formed of a quantity of such dry mosses as are commonly found hanging from the stems of all low bushes in the vicinity of the places in which this species breeds, together with feathers of the Eider Duck and Willow Grouse. They were suspended between the forks of two twigs, and in this respect resembled the nests of the Orchard Oriole. The eggs varied from five to seven, measured six-eighths of an inch in length, four-eighths in breadth, and instead of being pure white, like those of the Pewee, were spotted nearly all over with minute brown specks on a light bluish ground. On the 21st of July I saw the first young on wing, and as at that time they were fully fledged, I thought that even in that cold region, this species may perhaps breed twice in the season.

The migratory movements of this bird are very peculiar. I feel

almost confident that none pass southward over our Atlantic districts, and it would appear that they must advance along the eastern base of the Rocky Mountains, as I have not heard of their having been found to the westward of that range.

TYRANNULA RICHARDSONII, *Swainson*. SHORT-LEGGED PEWEE, *Richards*. and *Swains*. *Fauna Bor.-Amer.*, vol. ii. p. 146.

Adult Male. Plate CCCCXXXIV. Fig. 5.

Bill rather long, broad and depressed at the base, compressed toward the tip, acute; upper mandible with the dorsal line declinate and slightly convex, the sides sloping and convex, the edges sharp, with a slight notch, the tip declinate, very narrow, but abruptly terminated; lower mandible with the angle rather short and rounded; the dorsal line ascending and slightly convex, the back broad at the base, the sides convex, the tip narrow, but rather obtuse; the gape-line straight.

Head of moderate size, ovate, depressed; neck rather short; body slender. Feet short, rather slender; tarsus shorter than the middle toe and claw, compressed, with seven scutella, which almost entirely surround it, leaving only a small interval on the inner side behind. Toes rather short, slender, much compressed, the inner a little shorter than the outer, the first and third nearly equal, including their claws.

Plumage blended, soft; feathers of the head erectile; bristles at the base of the bill long. Wings rather long, the third and fourth quills longest, the second and fourth slightly shorter, and equal to each other, the first intermediate between the sixth and seventh. Tail emarginate, the middle feathers a quarter of an inch shorter than the outer.

Bill and feet black. Iris brown. The general colour of the upper parts is olivaceous brown, the head and nape dark greyish-brown, the wings and tail brown; the secondary coverts tipped with brownish-white, and the secondary quills externally margined with the same; the outer edges of the lateral tail-feathers pale brownish-grey. The lower parts are light yellowish-grey, the sides and fore part of the breast olivaceous grey, the abdominal feathers and lower tail-coverts ochraceous.

Length to end of tail $6\frac{9}{12}$ inches; bill along the ridge $\frac{6\frac{1}{2}}{12}$; wing from flexure $3\frac{1}{4}$; tail $2\frac{0}{12}$; tarsus $\frac{7\frac{1}{2}}{12}$; hind toe $\frac{3\frac{3}{4}}{12}$, its claw $\frac{3\frac{3}{4}}{12}$; middle toe $\frac{5\frac{1}{2}}{12}$, its claw $\frac{2\frac{1}{2}}{12}$.

ROCKY-MOUNTAIN FLYCATCHER.

MUSCICAPA NIGRICANS.

PLATE CCCCXXXIV. MALE.

THE only specimen of this Flycatcher in my possession was given to me by my esteemed friend THOMAS NUTTALL, Esq., who procured it in North California, but was unable to give me any account of its habits. It has been briefly characterized by Mr SWAINSON in his Synopsis of the Birds of Mexico.

TYRANNULA NIGRICANS, *Swainson*, Synops. of Mex. Birds. Phil. Mag. N. S. vol. i. p. 367.

Adult Male. Plate CCCCXXXIV. Fig. 6.

Bill shorter than the head, elongated, triangular when viewed from above, much broader than high at the base, compressed only at the tip; upper mandible with the dorsal line almost straight, decurved at the end, the ridge narrow and distinct, the sides sloping and a little convex, the edges overlapping with a sinus close to the very slender, decurved, abrupt tip; lower mandible with the angle of moderate length and rather wide, the ridge narrowed toward the end, the sides convex, the edges a little inflected, the tip acute; the gape-line straight. Nostrils small, roundish.

Head of moderate size, oblong; neck short; body slender. Feet short; tarsus a little shorter than the middle toe with its claw, compressed, with seven very broad scutella which meet behind; toes short, slender; hind toe stronger, lateral toes nearly equal; claws moderately arched, compressed, acute, that of the hind toe much larger, those of the lateral toes very small.

Plumage very soft and blended; bristles at the base of the bill rather large. Wings of moderate length; first quill longer than the sixth and four and a half twelfths shorter than the second, which is equal to the fourth, the third half a twelfth longer. Tail long, nearly even, the middle feathers being only half a twelfth shorter than the longest.

Bill and feet black; iris brown. The head, hind neck, fore part of the back, fore neck, a portion of the breast, and the sides dark sooty-

brown; the rest of the upper parts greyish-brown; the secondary coverts tipped, and the secondaries margined with greyish-white, of which colour is the greater part of the outer web of the lateral tail-feathers. Middle of the breast, abdomen, and lower tail-coverts, white; lower wing-coverts greyish-brown, edged with white.

Length to end of tail 7 inches; bill along the ridge $\frac{7}{12}$, along the edge of lower mandible $\frac{9}{12}$; wing from flexure $3\frac{7}{12}$; tail $3\frac{5}{12}$; tarsus $\frac{8\frac{1}{2}}{12}$; hind toe $\frac{5}{12}$, its claw $\frac{4\frac{1}{2}}{12}$; middle toe $\frac{5\frac{1}{2}}{12}$, its claw $\frac{5}{12}$.

AMERICAN DIPPER.

CINCLUS AMERICANUS, SWAINSON.

PLATE CCCCXXXV. YOUNG. FIGS. 1, 2.

THE specimen from which the first figure in the plate was taken, I received from Dr TOWNSEND, who procured it at Fort McLoughlin, on the north-west coast of America, in February 1836, having obtained it from Captain W. BROTHIE. The much larger size of this individual, which was a female, independently of colour, induced me to think that it might be specifically distinct from *Cinclus Americanus*, which it however resembles in its proportions and the texture of its plumage as well as in colour, with the exception of having the head not brown, but of nearly the same tint as the rest of the upper parts. The bill, however, is not larger than that of the individuals represented in Pl. CCCLXX, and the dimensions are scarcely superior to those of a specimen described in the Fauna Boreali-Americana. Almost all the feathers of the lower parts are slightly margined with whitish, as are some of those on the wings, and there is a slight tinge of brown on the head. These circumstances lead me to suppose that the present bird is merely an immature individual of the American Dipper, already described (Vol. IV. p. 501). And the smaller specimen, Fig. 2 of the present plate, being in all respects similar, excepting as to size, must also belong to the same species.

The bill, nostrils, and general form, are as described, which is also the case with the plumage. The greater part of the lower mandible and the edges of the upper have been pale yellow or flesh-colour, the

rest dusky. The feet pale flesh-colour, and the claws yellowish-grey, tinged with brown. The general colour of the upper parts is blackish-grey or deep bluish-grey; the head and hind neck slightly tinged with brown; the feathers of the wings and tail dusky; the secondaries and their coverts narrowly margined with greyish-white, as are the tail-feathers in a slight degree. The lower parts are of a lighter tint, the feathers margined with whitish, and the throat with a slight tinge of brown. There is a white spot on the upper eyelid as in the adult.

Length to end of tail $8\frac{1}{2}$ inches; bill along the ridge $\frac{8}{12}$, along the edge of lower mandible $\frac{11}{12}$; wing from flexure $3\frac{10}{12}$; tail $2\frac{4}{12}$; tarsus $\frac{2}{12}$; hind toe $\frac{5}{12}$, its claw $\frac{5}{12}$; middle toe $\frac{10\frac{1}{2}}{12}$, its claw $\frac{4}{12}$.

On comparing the above description and the figure with the description of the immature bird by Dr RICHARDSON, it will be seen that the differences are extremely slight.

The individual represented by Fig. 2, and which is from the Columbia River, where it was shot by Dr TOWNSEND, on the 8th October 1835, is precisely similar to that already described, only it has the bill more slender, the tarsi much shorter and less robust, and the dimensions in general much less. It was a male bird, probably very young, and as its markings and colours are the same as those of Fig. 1, which was a female, proves that the young of both sexes are alike as to colour in their first plumage.

Length to end of tail $6\frac{9}{12}$ inches; bill along the ridge $\frac{8}{12}$; wing from flexure $3\frac{1}{2}$; tail $1\frac{11}{12}$; tarsus 1; hind toe $\frac{4\frac{1}{2}}{12}$, its claw $\frac{5}{12}$; middle toe $\frac{8\frac{1}{2}}{12}$, its claw $\frac{4\frac{1}{2}}{12}$.

The claws of these two individuals are longer and more pointed than those of the adult specimens described, and their bills have not been worn at the point:—additional proofs of their being young birds.

DESCRIPTIONS
OF
SPECIES FOUND IN NORTH AMERICA,
BUT NOT FIGURED IN THE
“ BIRDS OF AMERICA.”

VOL. V.

U

DELAFIELD'S YELLOW-THROAT.

SYLVIA DELAFIELDII.

THIS beautiful little bird I name in honour of Colonel DELAFIELD, President of the Lyceum of New York, a gentleman distinguished by his scientific attainments, not less than by those accomplishments and virtues which tend to improve and adorn society. It so much resembles the Maryland Yellow-throat, *Sylvia Trichas* of the older authors, *Trichas personatus* of SWAINSON, that one might readily confound the two species. The differences between them will be pointed out below; but before this is done, it will be necessary to present a more minute description of the Maryland Yellow-throat than that contained in the first volume of this work. The only specimen in my possession was obtained from Dr TOWNSEND, who procured it in California.

SYLVIA TRICHAS, Lath. · *SYLVIA MARYLANDICA*, Wils. Bonap. *TRICHAS PERSONATUS*, Swains.

Adult Male.

Bill short, straight, conico-subulate, compressed toward the end, acute; upper mandible with the dorsal line declinate, straight, a little convex at the end, the ridge narrow, the sides convex, the edges direct and overlapping, with a very slight notch, the tip narrow; lower mandible with the angle of moderate length and narrow, the dorsal line ascending and very slightly convex, the sides rounded, the edges inflected, the tip acute; the gape-line straight. Nostrils basal, lateral, oblong, operculate, exposed.

Head of moderate size, ovate; neck short; body rather slender. Feet rather long; tarsus slender, longer than the middle toe, much compressed, covered anteriorly with seven scutella, behind with two longitudinal plates, meeting so as to form a thin edge; the lateral toes nearly equal, the third much longer, and united at the base to the fourth, hind toe stronger and large; claws moderately arched, extremely compressed, laterally grooved, acute.

Plumage soft and blended, with little gloss; wings rather short, somewhat concave; the second, third, and fourth primaries have the outer web cut out toward the end; the first quill is a twelfth of an inch

shorter than the second, which is half a twelfth shorter than the third, and a little shorter than the fourth, the third being longest; the other primaries very slowly graduated, the longest or third being only four and a half twelfths longer than the first secondary; all the quills are rounded. Tail rather long, straight, considerably rounded, the lateral feathers being three-twelfths shorter than the middle; all the feathers rather narrow and rounded.

Upper mandible blackish-brown, lower dusky toward the end, the edges of the upper and the basal portion of the lower pale yellowish flesh-colour. Iris dark hazel. Feet flesh-colour. A broad band of black across the forehead, including the loreal space and eyes, and terminating in a rather pointed form beyond the ear-coverts. Behind this band is a narrow one of very pale blue or bluish-white. The rest of the upper parts yellowish-green, on the head slightly tinged with red; the quills and tail-feathers wood-brown, the edge of the wing and the margin of the outer primary yellow. The fore part of the neck bright yellow, as is the anterior part of the breast, the abdomen and lower tail-coverts pale, the sides shaded with dull yellowish-green; the lower wing-coverts and axillaries nearly white.

Length to end of tail $4\frac{3}{4}$ inches; extent of wings $6\frac{1}{2}$; bill along the ridge $\frac{5}{12}$, along the edge of lower mandible $\frac{7}{12}$; wing from flexure $2\frac{1}{4}$; tail $2\frac{1}{4}$; tarsus $\frac{9}{12}$; hind toe $\frac{4\frac{1}{2}}{12}$, its claw $\frac{4\frac{1}{2}}{12}$; middle toe $\frac{7\frac{1}{2}}{12}$, its claw $\frac{2\frac{1}{2}}{12}$.

The female has the upper part lighter, the lower less bright, tinged with reddish-brown, and wants the two bands on the head, which is of a pale brownish-red colour.

The young male in autumn has the whole of the upper plumage of a uniform yellowish-green colour, the head being destitute of the black and white markings of the adult; but there is a narrow black patch behind the eyes. It is in this state that I mistook it for a new species, to which I erroneously gave the name of "Roscoe's Yellow-throat, *Sylvia Roscoe*." Plate XXIII. Vol. I. p. 121. The eggs are broadly ovate, rather pointed, eight and a half twelfths long, and six and a half twelfths in their greatest breadth.

SYLVIA DELAFIELDII.

Bill longish, nearly straight, conico-subulate, rather broader than high at the base, compressed toward the end, acute; upper mandible with the dorsal line declinato-convex, the ridge narrow, the sides con-

vex, the edges direct and overlapping, with a very slight notch, the tip narrow; lower mandible with the angle of moderate length and narrow, the dorsal line ascending and straight, the sides rounded, the edges inflected, the tip acute; the gape-line considerably arched. Nostrils basal, lateral, oblong, operculate, exposed.

Head of moderate size, ovate; neck short; body moderately stout. Feet rather long, tarsus slender, longer than the middle toe, much compressed, covered anteriorly with seven scutella, behind with two longitudinal plates meeting so as to form a thin edge; the lateral toes nearly equal, the third much longer, and united at the base to the fourth, the hind toe large; claws moderately arched, extremely compressed, with the sides faintly grooved, acute.

Plumage soft and blended with little gloss. Wings rather long, somewhat concave; the second, third, and fourth primaries have the outer web cut out towards the end; the first quill is three and a half twelfths shorter than the second, which is two-twelfths shorter than the third; the latter is longest, but scarcely exceeds the fourth, and the fifth is only a quarter of a twelfth shorter than it; the other primaries very slowly graduated, the longest or third being only five-twelfths longer than the first secondary; all the quills are rounded. Tail rather long, straight, much rounded, the lateral feathers being half an inch shorter than the middle.

Upper mandible blackish-brown, with the edges yellowish flesh-colour; lower mandible of the latter colour, slightly dusky at the point. A band of black passes across the forehead, includes the loreal space and eyes, and terminates on the ear-coverts. The upper part of the head is light greyish-blue, tinged behind with green; the rest of the upper parts dull greyish-olive; the quills and tail-feathers wood-brown, the edge of the wing, and the margin of the outer primary yellow. The fore part of the neck, and all the lower parts rich yellow, excepting the sides, which are shaded into dull yellowish-green, and the lower wing-coverts and axillaries, which are nearly white.

Length to end of tail $5\frac{1}{4}$ inches; bill along the ridge $\frac{6\frac{1}{2}}{12}$, along the edge of lower mandible $\frac{8}{12}$; wing from flexure $2\frac{5}{12}$; tail $2\frac{1}{2}$; tarsus $1\frac{1}{2}$; hind toe $\frac{4\frac{1}{2}}{12}$, its claw $\frac{4\frac{1}{2}}{12}$; middle toe $\frac{7\frac{1}{2}}{12}$, its claw $\frac{5}{12}$.

This species has the bill much stronger and more elongated than the other; its wings are much more rounded, the first quill being nearly five-twelfths shorter than the third, whereas in *S. Trichas* it is scarcely a twelfth and a half shorter; its tail is more rounded; and its tarsi

and toes are proportionally larger. The colours are, however, similar ; but the present species has no whitish band margining the black band on the head, and this latter band is much narrower in front, and does not proceed so far down the neck, extending only to the distance of four and a half twelfths from the eye, whereas in *S. Trichas* it extends to the distance of half an inch.

PARKMAN'S WREN.

TROGLODYTES PARKMANII.

A single specimen of this Wren which differs considerably from *Troglodytes hyemalis* and *T. europæus*, has been sent to me by Dr TOWNSEND, who procured it on the Columbia River, along with several others, all exactly similar. The principal difference is in the bill, which is much longer, stouter, and decidedly arched. The wings also are considerably longer, as is the tail in a still greater degree. The plumage is similar, and presents nearly the same markings, but the colours are much paler, and the lower parts nearly greyish-white. This, however, may be merely the effect of the weather. This species may be briefly characterized as follows :

T. Parkmanii. The bill much longer, stouter, and more curved than that of *T. hyemalis* ; the upper parts reddish-brown, faintly barred with dusky, the lower parts dull brownish-white ; the sides barred with brownish-black, and greyish-white, the foreneck and breast with scarcely any markings, the lower wing-coverts and axillars greyish-white obscurely barred with dusky ; the tail half an inch longer than that of the common species, and more rounded.

Bill rather long, slender, tapering ; as broad as high at the base, slightly arched, compressed toward the end. Upper mandible with the dorsal outline slightly arched, the ridge narrow, the sides sloping at the base, toward the end slightly convex and erect, the edges sharp, direct, without notch ; lower mandible with the angle narrow and rather acute, the dorsal outline decurved in an almost imperceptible degree, the back narrow, the edges sharp and inflected, the tip very narrow ; the gape-line slightly arched. Nostrils oblong, basal, operculate.

Head ovate, of moderate size ; neck short. Feet of ordinary length ; tarsus compressed, with seven anterior scutella, all of which are very

distinct; toes rather large, compressed; first large, and much longer than the two lateral, of which the inner is a little shorter; the third and fourth coherent as far as the second joint of the latter. Claws long, arched, extremely compressed, laterally grooved, acute.

Plumage soft and blended; no bristle-feathers at the base of the bill. Wing of moderate length, broad, much rounded; the first quill very small, being only half the length of the second, which is three and a half twelfths shorter than the third; the fourth longest, and exceeding the third by half a twelfth, and the fourth by scarcely a quarter of a twelfth; secondaries long and rounded. Tail rather long, much rounded, the lateral feathers being nearly half an inch shorter than the middle.

Bill dusky brown, with the basal edges of the upper and two-thirds of the lower mandible pale. Tarsi greyish-yellow; toes and claws light brownish. The general colour of the upper parts is reddish-brown tinged with grey. There is a white spot near the tips of the posterior dorsal feathers. The secondary coverts, and the first small coverts, have each a white spot at the tip. The wing-coverts and quills are banded with blackish-brown and dull brownish-red, the bands of the latter colour paler on the outer quills; the inner webs and tips of all the quills plain brown, as in the other species. All the upper parts are more faintly barred in the same manner. On the tail are twelve dusky bars, as in *T. hyemalis*. A dull whitish band from the upper mandible over the eye; the cheeks whitish, with the basal margins of the feathers brown; the lower parts are dull brownish-white tinged with grey, the sides brownish barred with dusky; the fore neck and breast with faint indications of bars; the lower wing-coverts and axillaries greyish-white, some of the former with dusky markings; the lower tail-coverts brownish-white, barred with dusky.

Length to end of tail $4\frac{2}{12}$ inches, to end of wings $3\frac{7}{12}$; bill along the ridge $\frac{7}{12}$; wing from flexure $2\frac{1}{4}$; tail $1\frac{1}{12}$; tarsus $\frac{8}{12}$; hind toe $\frac{4\frac{1}{2}}{12}$, its claw $\frac{4}{12}$; middle toe $\frac{6}{12}$, its claw $\frac{2\frac{1}{2}}{12}$.

Feeling perfectly confident that this species is distinct from any other, and not finding it anywhere described, I have named it after my most kind, generous, and highly talented friend, GEORGE PARKMAN, Esq. M.D. of Boston, as an indication of the esteem in which I hold him, and of the gratitude which I ever cherish towards him.

MORTON'S FINCH.

FRINGILLA MORTONII.

A SINGLE specimen of this pretty little bird, apparently an adult male, has been sent to me by Dr TOWNSEND, who procured it in Upper California. Supposing it to be undescribed, I have named it after my excellent and muchesteemed friend Dr MORTON of Philadelphia, Corresponding Secretary of the Academy of Natural Sciences of that city.

Adult Male.

Bill short, stout, conical, compressed toward the end; upper mandible with its dorsal outline declinate, almost straight, being slightly convex toward the end, the ridge indistinct, the sides rounded, the edges sharp and somewhat inflected, with a very faint notch close to the tip, lower mandible about the same depth and nearly as broad at the base, its angle very short and rounded, its dorsal line ascending, almost straight being very slightly convex, the back and sides convex, the edges inflected, the tip acute. Gape-line considerably declinate at the base. Nostrials small, roundish, marginate, basal, in the fore part of the short nasal depression, and partially concealed by the feathers.

Head rather large, ovate; neck short. Feet of ordinary length, tarsus much compressed, with seven anterior scutella, and two plates behind meeting so as to form a very thin edge; toes rather stout, compressed, the first large, the second or inner scarcely shorter than the outer, which is united to the fourth as far as the second joint; claws rather long, much compressed, laterally grooved, moderately arched, acute.

Plumage soft and blended. Wings of moderate length, the first quill two-twelfths of an inch shorter than the second, which is almost equal to the third, the latter being the longest, the fourth scarcely half a twelfth shorter, the rest slowly decreasing; secondaries long, truncate or abruptly rounded. Tail of moderate length, nearly even, the middle feathers one-twelfth, the lateral half a twelfth shorter than the rest.

Bill dusky, bluish toward the base. Feet and claws yellowish-brown. The upper part of the head is ash-grey, with a longitudinal band of black on each side from the bill to the occiput, externally of which is a greyish-white band; loreal space, cheek-coverts, and auriculars dusky, the feathers under the eye tipped with white; the throat white, sur-

rounded with a black band; a light chestnut-red band surrounds the neck, except for a short space in front; the fore part of the back and scapulars are light dull yellowish-red, streaked with brownish-black, the hind part, rump, and upper tail-coverts yellowish-grey; the smaller wing-coverts yellowish-grey, the first row brownish-black toward the end with the tip white, the secondary coverts and inner secondary quills brownish-black, broadly margined with light yellowish-red, the former tipped with white, the rest of the quill dusky brown, edged with yellowish-red fading on the outer to whitish; the tail-feathers blackish-brown, narrowly edged with pale yellowish-grey, the lateral of a lighter tint. The lower parts are dull brownish-white, the sides light greyish-brown, the lower wing-coverts yellowish-white.

Length to end of tail $5\frac{1}{2}$ inches; bill along the ridge $\frac{4\frac{1}{2}}$, along the edge of lower mandible $\frac{6}{1\frac{1}{2}}$; wing from flexure $2\frac{1\frac{1}{2}}$; tail $2\frac{4}{1\frac{1}{2}}$, tarsus $\frac{9\frac{1}{2}}$; hind toe $\frac{3\frac{1}{2}}$, its claw $\frac{4\frac{1}{2}}$; middle toe $\frac{7}{1\frac{1}{2}}$, its claw $\frac{2\frac{1}{2}}$.

In its colouring this bird is very similar to the White-crowned and White-chinned Finches, with which it also agrees in the form of its wings, but differs in having the tail much shorter, the bill less robust, the claws proportionally longer and less arched.

IMPERIAL WOODPECKER.

PICUS IMPERIALIS, GOULD.

THE following note, which I have received from Dr TOWNSEND, refers to this splendid Woodpecker. "On the 14th of August 1834, I saw several specimens of a large black Woodpecker, about the size of *Picus principalis*. A broad band of white appeared to extend transversely across the wings and back. It inhabited the tall pine trees, and was very shy. The note was almost exactly that of the Red-headed Woodpecker, so much so that at first Mr NUTTALL and myself were both deceived by it. I lingered behind the party, which at that time was travelling rapidly, and at last got a shot at one of them with slugs, my large shot having been entirely expended. The bird fell wounded into a thicket at a considerable distance. I searched for an hour, with-

out finding it, and was at last compelled to relinquish it and follow the party, which had been leaving me at a rapid trot, to find my way as I best could, and keep out of the reach of Indians, who were dogging us continually. Who can describe the chagrin and positive misery of a poor fellow in my then situation !

“ The only account of this species that I have met with is the following, extracted from the “ Proceedings of the Committee of Science and Correspondence of the Zoological Society of London,” Part II. 1832, p. 140.—“ Specimens were exhibited of a species of *Woodpecker*, hitherto undescribed, which has recently been obtained by Mr GOULD from that little explored district of California, which borders the territory of Mexico. The exhibition was accompanied by a communication from Mr GOULD, in which, after some general remarks on the *Picidæ*, and their geographical distribution, he referred to the species before the Committee as possessing the characters of the genus *Picus* in their most marked development, together with the greatest size hitherto observed in that group. In this respect it as far exceeds the *Ivory-billed Woodpecker* of the United States, *Picus principalis*, as the latter does the *Picus martius* of Europe. Mr GOULD described it as the

“ *Picus imperialis*. Mas. Pic. ater, virescenti-splendens; crista elongata occipitali coccinea; macula triangulari interscapulari, remigibus secundariis, primariarumque (præter terium quatuorve exteriorum) rachibus intermis albis; rostro eburneo.

“ Fœm. Paulo minor; crista occipitali cum corpore concolore.

“ Longitudo manis, 2 ped.; alæ (clausæ), 1 ped.; caudæ, 10 unc.; tarsi, vix 2 unc.; digiti externi portici, eadem ac tarsi, ungues validissimi, arcuati; rostrum exacte cuneiforme, a rictu ad apicem 4 unc. long., ad basin 1 unc. latum.

“ This species is readily distinguishable from the *Pic. principalis* by its much larger size; by the length of its occipital crest, the pendent silky feathers of which measure nearly four inches; by the absence of the white stripe which ornaments the neck of that bird, and by the bristles which cover its nostrils being black, whereas those of the *Pic. principalis* are white.”

LINEATED WOODPECKER.

PICUS LINEATUS, LINN.

A SPECIMEN of a Woodpecker sent from the Columbia River by Dr MEREDITH GAIRDNER to Professor JAMESON of Edinburgh, who kindly lent it to me for the purpose of being described, I find to be the *Picus lineatus* of LINNÆUS, a species which appears to be very extensively distributed, being, according to various authors, plentiful in Cayenne, Guiana, Brazil, and even Paraguay. The specimen, which was shot near Fort Vancouver, is an adult male, but has been injured in the wings. Along with it were specimens of *Picus Harrisii* and *Picus ruber*, shot in the same neighbourhood. A Brazilian specimen may first be described, and afterwards Dr GAIRDNER'S.

PICUS LINEATUS, *Linn. Syst. Nat.* vol. i. p. 174.—*Lath. Ind. Ornith.* vol. i. p. 226.—*Wagler, Syst. Av.*

LINEATED WOODPECKER, *Lath. Gen. Synops.* vol. ii. p. 556.

Adult Male.

Bill nearly as long as the head, straight, strong, angulate, depressed at the base, compressed toward the end, which is truncate, and laterally worn so as to be wedge-shaped. Upper mandible with the dorsal line slightly convex, the ridge very narrow and prominent, the sides concave at the base, the lateral angles nearer the ridge than the edges, which are sharp and direct; the point with two slight ridges on each side; lower mandible with the angle long and narrow, the dorsal line ascending and straight, the ridge narrow, the sides erect at the base, afterwards sloping outwards and convex, the tip narrow; gape-line straight. Nostrils elliptical, covered by a tuft of reversed bristly feathers.

Head rather large, ovato-oblong; neck rather long and slender. Feet short, stout; tarsus very short, scutellate before, scaly on the sides; two toes before, two behind, the fourth being directed backwards; the first very small, the third a little longer than the fourth,

all scutellate above ; claws strong, much curved, much compressed, deep, broadly grooved on the sides, very acute.

Plumage blended ; feathers on the upper and hind part of the head linear, glossy, stiffish, with separated barbs, forming a broad occipital crest an inch in length. Wings long, much rounded ; the outer six quills with the inner web cut out : the first very small, being only an inch and three-quarters long ; the second two inches and five-twelfths longer ; the third eleven-twelfths longer ; the fourth two and a half twelfths shorter than the fifth, which is longest ; the fourth a little shorter than the sixth ; the third and seventh nearly equal ; the second shorter than the eighth. Tail rather long, cuneate, acuminate, of twelve feathers, the lateral only an inch and three-quarters long ; slender and unworn, the rest pointed ; the middle feathers exceeding the second outer feathers by an inch and eight-twelfths.

Bill horn-coloured, bluish toward the end, dusky at the point. Feet greyish-blue, claws brownish. The upper part of the head, including the forehead and occiput, vivid scarlet ; a narrow dusky line from the nostril to the eye ; a patch, including the eyelids and ear-coverts, leaden-grey ; a narrow band down the hind part of the neck gradually enlarging, the back, wings, and tail deep black ; a band from the nostrils obliquely descending over the side of the head, passing backwards behind the ear, then much enlarged, and running down the side of the neck to the shoulder, a large oblique patch at the commencement of the wing, including the outer scapulars, the small feathers on the edge of the wing under the alula, the lower wing-coverts, and the inner webs of the quills for about half their length, pure white. There is an elongated oblong crimson patch at the base of the lower jaw ; the chin or fore part of the throat is yellowish-white, longitudinally streaked with dusky, the rest of the fore neck and a part of the breast black ; the lower parts and sides brownish-white, transversely barred with black.

Length to end of tail 15 inches ; bill along the ridge $1\frac{5}{12}$, along the edge of lower mandible $1\frac{10}{12}$; wing from flexure $7\frac{2}{12}$; tail $5\frac{1}{12}$; tarsus $\frac{1}{12}$; hind toe $\frac{4\frac{1}{2}}{12}$, its claw $\frac{3\frac{1}{2}}{12}$; second toe $\frac{9}{12}$, its claw $\frac{8}{12}$; third toe $1\frac{1}{12}$, its claw $\frac{9\frac{1}{2}}{12}$; third toe $\frac{10\frac{1}{2}}{12}$, its claw $\frac{8}{12}$.

The specimen from the Columbia River may be described precisely

in the same terms, with the exception of its wanting the white patch on the scapulars, and having the bands of the lower parts broader. But on minutely examining the parts, the secondary quills of the left wing and the scapulars of that side are found to be entirely wanting, having been destroyed, and those on the right side are incomplete.

Length to end of tail 14 inches ; bill along the ridge $1\frac{7}{12}$, along the edge of lower mandible $1\frac{1}{2}$; wing from flexure $7\frac{10}{12}$; tail $5\frac{10}{12}$; tarsus 1 ; hind toe $\frac{3\frac{1}{2}}{12}$, its claw $\frac{4\frac{1}{2}}{12}$; second toe $\frac{8}{12}$, its claw $\frac{8\frac{1}{2}}{12}$; third toe $\frac{11\frac{1}{2}}{12}$, its claw $\frac{9\frac{1}{2}}{12}$; fourth toe $\frac{9}{12}$, its claw $\frac{9}{12}$.

GAIRDNER'S WOODPECKER.

PICUS GAIRDNERII.

THIS curious little Woodpecker is so very similar to *Picus pubescens* in form, size, and colour, that one can scarcely distinguish it, its affinity to that species being as strict as that of *Picus villosus* to *P. canadensis*. Its bill is slightly stronger ; but the greatest difference is found in the toes, which are very much larger, as will be seen from the following measurements.

	Picus Gairdnerii.	Picus pubescens.
Tarsus,	$\frac{7\frac{1}{2}}{12}$	$\frac{7}{12}$ $\frac{8\frac{1}{2}}{12}$
Hind toe,	$\frac{2\frac{1}{2}}{12}$	$\frac{2}{12}$ $\frac{2\frac{1}{2}}{12}$
Its claw,	$\frac{2\frac{3}{4}}{12}$	$\frac{2\frac{1}{2}}{12}$ $\frac{2\frac{1}{2}}{12}$
Second toe,	$\frac{4\frac{1}{2}}{12}$	$\frac{4\frac{1}{2}}{12}$ $\frac{4\frac{1}{2}}{12}$
Its claw,	$\frac{4\frac{1}{2}}{12}$	$\frac{4}{12}$ $\frac{4}{12}$
Third toe,	$\frac{5\frac{3}{4}}{12}$	$\frac{5}{12}$ $\frac{5\frac{1}{2}}{12}$
Its claw,	$\frac{5}{12}$	$\frac{4}{12}$ $\frac{4\frac{1}{2}}{12}$
Fourth toe,	$\frac{7}{12}$	$\frac{6}{12}$ $\frac{6\frac{1}{2}}{12}$
Its claw,	$\frac{4\frac{3}{4}}{12}$	$\frac{4\frac{1}{2}}{12}$ $\frac{4\frac{1}{2}}{12}$

These differences may appear slight, and were there intermediate gradations, would be of no value, but I find that eight individuals of *P. pubescens* present no material deviation from the above measurements,

while my specimen of *P. Gairdnerii* may be at once distinguished by the greater length especially of the outer or reversed toe. Its bill is also considerably thicker at the base, although otherwise similar. Another difference presents itself in the relative length of some of the quills, the fifth being longest in *P. Gairdnerii*, the fourth in *P. pubescens*.

Adult Male.

Bill longish, straight, strong, tapering, angular, slightly compressed, and at the tip truncate; mandibles of equal length; both straight in their outline, the ridge of the upper very narrow, its sides sloping, the lateral ridge nearer the margin; the nostrils linear-oblong, basal, concealed by tufts of reversed bristly feathers.

Head of moderate size, ovate; neck short. Feet short, rather strong; tarsus with a few large scutella before, thin-edged behind, with a series of large scales along the inner side; two toes before, two behind, the fourth or outer reversed toe considerably longer than the third, the first very short; claws strong, much compressed, well curved, very acute, those of the third and fourth toes nearly equal and largest.

Plumage very soft and blended; feathers of the middle part of the back very long and downy. Wings large, rounded, the first quill eight-twelfths long, the second an inch and seven-twelfths longer, the third seven and a quarter twelfths longer than the second, and three-quarters of a twelfth shorter than the fourth, which is slightly exceeded by the fifth, the sixth a little shorter than the fourth; secondaries very broad, truncate. Tail rather long, cuneate, of ten feathers, of which the lateral are eight-twelfths shorter than the middle, all more or less slit at the point.

Bill greyish-blue, somewhat dusky above; feet bluish-grey; claws light blue, dusky at the end. The top of the head is black, as are a broad band behind the eye, part of the loreal space, a band below the cheek, as well as the scapulars, wings, and four middle tail-feathers; there is a band of white over each eye, enlarging on the occiput and terminating in a broad band of bright crimson running across that part; another white band from below the eye, curving behind the ears, nearly meeting on the hind neck; the wings barred with squarish spots of white, and tipped with the same, there being on the outer webs of the third and fourth primaries five spots on the outer and four on the inner web; most of

the coverts are also tipped with a white spot; a broad band of white down the middle of the back, the lateral tail-feathers are white, with two bars of black toward the end, and the base of the inner web of the same colour; the next feather is similar with more black at the base, and on both webs; the next black, with the terminal half of the outer web, a bar on the inner, and its tip white; the lower surface is white, but much soiled and of a dull greyish-brown tint, the lower tail-coverts with a slightly dusky spot toward the end.

Length to end of tail $6\frac{8}{12}$ inches; bill along the ridge $\frac{9\frac{1}{2}}{12}$; wing from flexure $3\frac{1}{2}$; tail $2\frac{1}{2}$.

Between this and *P. pubescens* there is no difference as to colour, only the spots on the wings of the latter are much larger. Most individuals of *P. pubescens* have the same number of spots on the longer quills, but others have an additional pair.

DRUMMOND'S SNIPE.

SCOLOPAX DRUMMONDII, SWAINS.

SCOLOPAX DRUMMONDII, DRUMMOND'S SNIPE, *Richards.* and *Swains.* Fauna Boreali-Americana, vol. ii. p. 400.

"This Snipe," according to Dr RICHARDSON, whose account of it I copy, "is common in the Fur Countries up to latitude 65°, and is also found in the recesses of the Rocky Mountains. Its manners are in all respects similar to those of the European Snipes. It is intermediate in size between the *Sc. major* and *gallinago*; it has a much longer bill than the latter, and two more tail-feathers. Its head is divided by a pale central stripe, as in *Sc. gallinula* and *major*; its dorsal plumage more distinctly striped than that of the latter; and the outer tail-feather is a quarter of an inch shorter than that of *S. Douglassi*."

"Description of a specimen killed on the Rocky Mountains. Colour:—*Dorsal plumage* and wings mostly brownish-black; the top of the head, scapulars, interscapulars, intermediate coverts, posterior

greater ones, and tertiaries, reflecting green and mottled, or barred with yellowish-brown; this colour also forming stripes from the forehead to the nape, over the eyes to the sides of the neck, and more broadly on the exterior edges of the scapulars and interscapulars. Middle dorsal plumage and first quill fringed with white, and most of the wing-coverts and lesser quills tipped with the same. Shafts of the primaries deep brown; an inch of the first near its point whitish. Rump and tail-coverts rich greenish-black, with reddish-orange or ferruginous ends, crossed by a blackish subterminal line, and tipped with white; the three exterior pairs barred alternately with clove-brown and brownish-white, the white tips broader; the two intermediate pairs coloured nearly like the middle ones, but partly barred and tipped with white. *Under plumage*: A dark brown stripe on the lores, another under the ear. Sides of the head, front of the neck and breast pale wood-brown, with central spots of dark umber; the flanks, insides of the wings, and under tail-coverts, barred with black and white, which on the latter is tinged with brown. Belly white. Bill blackish towards its tip, dark wood-brown at the base.

“Form typical; one small fold of the epidermis at the upper base of the bill; tail rather long, graduated, the feathers decreasing a little in breadth as they are more exterior.

“Length to end of tail $11\frac{1}{2}$ inches; tail $2\frac{1}{2}$; wing $5\frac{3}{8}$; bill above $2\frac{7}{12}$, rictus $2\frac{6}{12}$; bare part of tibia $\frac{5}{12}$; tarsus $1\frac{5}{12}$; middle toe $1\frac{3}{12}$, its nail $\frac{5}{12}$; inner toe $\frac{1}{12}$; hind toe $\frac{4}{12}$, its nail $\frac{1}{12}$.”

WESTERN GULL.

LARUS OCCIDENTALIS.

Two specimens of this Gull have been sent to me by Dr TOWNSEND. One of them, an adult, is marked, “Male, Cape Disappointment, October 7th 1836;” the other, a young bird, “Young Male, Cape Disappointment, October 6th 1836.” The iris of both is stated to have been light hazel. This species, which I presume to be undescribed, as I

have not met with any account of it, is about equal to *Larus marinus* in size, and resembles *L. argentatus* in colour, but differs from both in many respects, as will be seen from the annexed description. It is especially remarkable for the great depth and comparative shortness of its bill, which in this respect approaches to *L. melanoleucos* of New South Wales. The adult specimen unfortunately has the wings imperfect, the primary quills having been only partially developed; but the wings of the younger bird are complete.

Adult Male.

Bill shorter than the head, robust, compressed. Upper mandible with the dorsal line straight as far as the end of the nostrils, decurved toward the end, the ridge convex, gradually narrowed to the point, the sides nearly flat, the edges sharp, inflected, toward the end direct and arcuato-declinate, the tip rather sharp; lower mandible with the angle long and narrow, the outline of the crura slightly arched, the dorsal line beyond the prominence at the angle ascending and slightly concave, the sides erect and nearly flat, the edges sharp, inflected, decurved toward the narrow tip. Nostrils medial, lateral, linear-oblong, wider anteriorly, in the fore part of the nasal groove, which is rather long and narrow.

Head large, broadly ovate, narrowed anteriorly. Neck of moderate length, thick. Feet of moderate length, rather slender; tibia bare for an inch and a quarter, reticulate; tarsus rather short, somewhat compressed, covered anteriorly with numerous scutella, laterally with angular scales, behind with numerous small somewhat rectangular scales. Hind toe very small and elevated; the fore toes rather long, the fourth little shorter than the third; all scutellate above, and connected by reticulate webs; the lateral toes margined externally with a thick membrane. Claws small, slightly arched, somewhat compressed, blunt, that of the middle toe with the inner margin expanded.

The plumage is full, close, elastic, very soft and blended, on the back and wings rather compact. Wings very long, broad (four outer primaries only partially developed); secondaries broad and narrowly rounded. Tail even (not fully developed).

Bill yellow, with an orange red patch toward the end of the lower mandible. "Iris light hazel." Feet flesh-coloured, claws dusky. The head, neck, lower parts, rump, and tail, are pure white; the back

and wings light greyish-blue, of a deeper tint than in *L. argentatus*; the edges of the wing and the extremities of all the quills are white; the first seven quills are greyish-black toward the end, that colour including the outer webs and the greater part of the inner of the two first, and on the rest gradually diminishing, so as on the seventh merely to form a subterminal bar; the first quill with a patch of white on both webs near the end; the tips of all being white.

Length to end of tail 25 inches (but the tail is not full grown); bill along the ridge $2\frac{7}{12}$, along the edge of lower mandible $3\frac{1}{4}$, its depth at the base $\frac{1}{2}$, at the angle $\frac{1}{2}$; tarsus $2\frac{1}{2}$; hind toe $\frac{3}{4}$, its claw $\frac{2}{4}$; second toe $1\frac{1}{2}$, its claw $\frac{5}{8}$; third toe $2\frac{6}{12}$, its claw $\frac{5}{8}$; fourth toe $2\frac{4}{12}$, its claw $\frac{5}{8}$.

Young Male.

Bill flesh-coloured, beyond the nostrils and angle black, with the tips horn-coloured. Feet flesh-coloured; claws brownish-black. The upper part and sides of the head, the hind part and sides of the neck light brownish-grey, mottled and streaked with white; on the back the colour is light greyish-blue, some of the feathers mottled with brown, the adult plumage having been partially assumed; the wing-coverts are chiefly of a greyish-brown colour; the primary quills greyish-black, without white at the end; the secondary blackish-grey, margined and tipped with white, finely undulated with brown. The rump is white; the tail greyish-black, tipped with white; the whole outer web of the outer, and the basal half of that of the next feather white; the lower wing-coverts dusky grey. All the lower parts are greyish-white, obscurely mottled with pale brownish-grey.

Length to end of tail 27 inches; bill along the ridge $2\frac{1}{2}$, along the edge of lower mandible $3\frac{2}{12}$, its height at the base $\frac{1}{2}$, at the angle $\frac{1}{2}$; wing from flexure $17\frac{1}{4}$; tail $7\frac{1}{4}$; tarsus $2\frac{1}{2}$; middle toe $2\frac{1}{2}$, its claw $\frac{7}{8}$.

From the above description, it will be seen that in proportions and colouring this species does not differ much from *L. argentatus*. It is much larger, however; its bill is deeper and stronger in a very conspicuous degree, and its tarsi and toes are considerably longer.

FRANKLIN'S ROSY GULL.

LARUS FRANKLINII, RICHARDSON.

THE following account of this species by Dr RICHARDSON is taken from the *Fauna Boreali-Americana*.

LARUS FRANKLINII, *Richards.* FRANKLIN'S ROSY GULL, *Richards.* and *Swains.*
Fauna Bor.-Amer. vol. ii. p. 424.

“ Franklin's Rosy Gull, with vermilion bill and feet; mantle pearl-grey; five exterior quills broadly barred with black, the first one tipped with white for an inch; tarsus twenty lines long; hood black in summer.

“ This is a very common Gull in the interior of the Fur Countries, where it frequents the shores of the larger lakes. It is generally seen in flocks, and is very noisy. It breeds in marshy places. ORD's description of his Black-headed Gull (*Wils.* ix. p. 89.) corresponds with our specimens, except that the conspicuous white end of the first quill is not noticed: the figure (*Pl.* 74, fig. 4.) differs in the primaries being entirely black. The Prince of MUSIGNANO gives the totally black primaries, and a tarsus nearly two inches long, as part of the specific character of his *Larus atricilla*, to which he refers Wilson's bird; though, in his *Observations*, he states that the adult specimens have the primaries, with the exception of the first and second, tipped with white. *L. Franklinii* cannot be referred either to the *L. atricilla* or *L. melanocephalus* of M. TEMMINCK: the first has a *lead-coloured hood* and deep black quill-feathers, untipped by white; and the *black hood* of the second does not descend lower on the throat than on the nape; its quill-feathers are also differently marked, and its tarsus is longer. His *L. ridibundus* and *L. capistratus* have brown heads, and the interior of the wings grey; the latter has also a much smaller bill than our *L. Franklinii*.

“ Description of a male killed, June 6. 1827, on the Saskatchewan.

“ Colour.—Both eyelids, the neck, rump, tail, and whole under plumage, white, the latter and interior of the wings deeply tinged with peach-blossom red. Black hood covering three-quarters of an inch of

the nape, and extending as much lower on the throat. Mantle and wings bluish-grey. The outer web of the first quill-feather is black to near the tip, and a broad band of the same crosses the ends of the five outer primaries; all the quill-feathers are terminated with white, that on the first primary and of all the secondaries being upwards of an inch long; all the shafts whitish. Bill and legs vermilion, the former obscurely barred near the tip.

“Form.—Bill rather stout, curved from the nostrils, with the gonyes forming an evident salient angle; its depth equal to twice its breadth. Wings an inch and a half longer than the perfectly even tail. Thighs an inch bare.

“A female and another male, killed at the same place six weeks later in the season, correspond minutely with the above.

“Dimensions of a male. Length to end of tail 17 inches; tail $4\frac{1}{2}$; wing 11; bill along the ridge $1\frac{5}{12}$; rictus $1\frac{1}{12}$; tarsus $1\frac{8}{12}$; middle toe $1\frac{3}{12}$, its nail $\frac{4}{12}$; inner toe 1; hind toe $\frac{5}{12}$, its nail $\frac{1}{12}$.”

ROSS'S GULL.

LARUS ROSS, RICHARDSON.

NOT having met with this beautiful little Gull, I am obliged to refer to Dr RICHARDSON'S description of it in the *Fauna Boreali-Americana*.

LARUS ROSSII, CUNEATE-TAILED GULL, *Richards. Parry's Second Voy. App.* p. 359.—*Ross, Parry's Third Voy.*, p. 195.—*Richards. Fauna Bor.-Amer.* vol. ii. p. 427.

“Cuneate-tailed Gull, with a pearl-grey mantle. Wings longer than the cuneiform tail. The outer web of the first tail-feather blackish; a slender black bill, tarsi an inch long, and, as well as the feet, vermilion red.

“Two specimens of this Gull were killed on the coast of Melville Peninsula, on Sir EDWARD PARRY'S second voyage, one of which is preserved in the Museum of the University of Edinburgh, and the other was presented to JOSEPH SABINE, Esq. No other examples are

known to exist in collections ; but Commander Ross, in his Zoological Appendix to Sir EDWARD PARRY'S narrative of his most adventurous boat-voyage towards the Pole, relates that several were seen during the journey over the ice north of Spitzbergen, and that Lieutenant FORSTER also found the species in Waygait Straits, which is probably one of its breeding places. It is to Commander Ross, who killed the first specimen which was obtained, that the species is dedicated, as a tribute for his unwearied exertions in the promotion of natural history on the late Arctic voyages, in all of which he bore a part. Of the peculiar habits or winter retreat of this species nothing is known.

“ Description of a specimen killed, June 1823, at Alagnak, Melville Peninsula, Lat. $69\frac{1}{4}^{\circ}$ N.

“ Colour.—Scapulars, inter-scapulars, and both surfaces of the wings clear pearl-grey ; outer web of the first quill blackish-brown to its tip, which is grey ; tips of the scapulars and lesser quills whitish. Some small feathers near the eye, and a collar round the middle of the neck pitch-black. Rest of the plumage white, the neck above and the whole under plumage deeply tinged with peach-blossom red in recent specimens. Bill black ; its rictus and the edges of the eyelids reddish-orange. Legs and feet vermilion-red ; nails blackish.

“ Form.—Bill slender, weak, with a scarcely perceptible salient angle beneath ; the upper mandible slightly arched and compressed towards the point ; the commissure slightly curved at the tip. Wings an inch longer than the decidedly cuneiform tail, of which the central feathers are an inch longer than the lateral. Tarsi rather stout ; the thumb very distinct, armed with a nail as large as that of the outer toe.

“ The other specimen killed by Mr SHERER a few days later, differs only in the first primary coverts having the same dark colour with the outer web of the first primary itself.

“ Length to end of tail 14 inches ; tail $5\frac{1}{2}$; wing $10\frac{1}{2}$; bill along the ridge $\frac{3}{4}$; rictus $1\frac{1}{4}$; from nostril to tip of bill $\frac{4\frac{1}{2}}{1\frac{1}{2}}$; tarsus $1\frac{1}{2}$; middle toe $\frac{10\frac{1}{2}}{1\frac{1}{2}}$, its nail $\frac{3}{17}$.”

YELLOW-NOSED ALBATROSS.

DIOMEDEA CHLORORHYNCHOS, GMEL.

A SKIN of this bird was sent to me by Dr TOWNSEND, who procured it in the Pacific Ocean, not far from the mouth of the Columbia River. The species is well known, and one which, unlike most of the others, has been tolerably well described.

DIOMEDEA CHLORORHYNCHOS, *Gmel. Syst. Nat. vol. i. p. 568.—Lath. Ind. Ornith. vol. ii. p. 790.*

YELLOW-NOSED ALBATROSS, *Lath. Gen. Syn. vol. v. p. 309.*

Bill longer than the head, nearly straight, stout, much compressed. Upper mandible with its dorsal outline much declinate and nearly straight for a third of its length, then concave, ascending to the unguis, on which it is arched and decurved in the third of a circle, the ridge broad, convex, rounded at the base, separated in its whole length by a groove, margined below beyond the nostrils by a prominent line, from the sides, which are erect and convex, the edges sharp, the unguis decurved, much compressed, with its sides flattened, and the tip acute. Nostrils sub-basal, prominent, tubular, having a horny sheath. Lower mandible with the angle very narrow, reaching to the tip, and having at its extremity a long slender interposed horny process; the outline of the crura gently ascending and quite straight until near the end, when it is a little decurved, the sides ascending, nearly erect, a little convex, the edges sharp, the tip extremely compressed, its upper edges decurved.

Head rather large, ovate, compressed anteriorly; neck of moderate length; body full. Feet rather short, stoutish; tibia bare for three-quarters of an inch, covered all round with small angular scales; tarsus roundish, reticulated with small angular and roundish scales; toes three, long, slender, the outer very little shorter than the middle, which exceeds the inner by three-quarters of an inch; they are covered above with small angular scales for half their length, in the rest of their extent with scutella, and connected by emarginate webs, the outer and inner with an external lobed membrane. Claws rather small, slender, slightly arched, rather depressed, convex above, somewhat obtuse.

Plumage full, soft and blended. Wings very long and very narrow, the humerus and cubitus being extremely elongated; the first primary longest, the rest very rapidly diminishing; the secondaries extremely short. Tail of twelve broadly rounded feathers, short, rounded, the lateral feathers one inch shorter than the middle.

Bill black, with the ridge in its entire length and breadth, the tip of the upper mandible, and the crura of the lower along their inferior edge, yellow. Feet yellow, claws yellowish-grey. The head and neck are ash-grey, the fore part of the back shaded into blackish-grey; the wings entirely brownish-black, the shafts of the primaries white, toward the end brownish-black; the hind part of the back, rump, and upper tail-coverts, white; the tail deep grey, the bases and shafts of the feathers white. The loreal space is of a darker grey than the rest of the head, and that colour deepens at the fore part of the eye, forming a spot which includes the whole of the upper eyelid, and the anterior half of the lower, of which the other half is white; the lower half of the neck anteriorly, the breast, sides, abdomen, lower tail-coverts, some of the axillaries, and the larger lower wing-coverts white; the rest being brownish-black.

Length to end of tail 37 inches; bill along the ridge $5\frac{5}{12}$, along the edge of lower mandible $4\frac{1}{12}$, its height at the base $1\frac{0}{12}$, at the middle 1, at the angle $1\frac{2}{12}$; wing from flexure 21; tail $8\frac{1}{4}$; bare part of tibia $\frac{3}{4}$; tarsus $3\frac{2}{12}$; inner toe $3\frac{7}{12}$, its claw $\frac{7}{12}$; middle toe $4\frac{5}{12}$, its claw $\frac{9}{12}$; outer toe $4\frac{5}{12}$, its claw $\frac{5}{12}$.

BLACK-FOOTED ALBATROSS.

DIOMEDEA NIGRIPES.

For a specimen of this Albatross, I am indebted to Dr TOWNSEND, who procured it on the 25th December 1834, on the Pacific Ocean, in lat. 30°, 44', N. long. 146°. It is clearly distinct from the other two described in this work, namely the Dusky and the Yellow-nosed; but I have received no information respecting its habits. Not finding any of the meagre notices or descriptions to which I can refer to agree with

this bird, I have taken the liberty of giving it a name, being well assured that, should it prove to have been described, some person will kindly correct my mistake.

DIOMEDEA NIGRIPES.

Male.

Bill longer than the head, nearly straight, stout, compressed. Upper mandible with its dorsal outline straight and declinate until near the middle, when it becomes a little concave, and along the unguis curves in the third of a circle, the ridge convex, very broad and convex at the base, with its basal margin curved in the third of a circle, the ridge separated in its whole length by a groove, margined below by a prominent line, from the sides, which are prominently convex, the edges sharp, the unguis decurved, strong, acute, with the sides a little convex. Nostrils sub-basal, prominent, tubular, having a horny sheath. Lower mandible with the angle narrow, reaching to the tip, and having at its extremity a slender horny interposed process; the outline of the crura gently ascending, slightly convex, toward the end a little concave, at the tip deflected, the sides ascending and considerably convex, but at the base concave, the edges sharp and inflexed, the tip compressed, its upper edges decurved.

Head rather large, ovate, anteriorly compressed; neck of moderate length; body full. Feet rather short, stoutish; tibia bare for an inch and ten-twelfths, reticulated all round with very small convex scales; tarsus rather slender, covered all round with small roundish convex scales; toes three, long, slender, for half their length covered above with transverse series of flat scales, in the rest of their extent scutellate; the second ten-twelfths of an inch shorter than the middle, which is scarcely longer than the outer. Claws rather small, slender, slightly arched, rather compressed, somewhat obtuse.

Plumage full, soft and blended. Wings very long and very narrow, the humerus and cubitus being extremely elongated; the first primary longest, the rest rapidly diminishing; secondaries extremely short. Tail of twelve rounded feathers, extremely short, rounded, the lateral feathers one inch shorter than the middle.

Bill dusky, the greater part of the lower mandible, and the middle of the upper, tinged with yellowish-brown. Feet and claws black. The

fore part of the head, cheeks and throat light dusky-grey, the capis-tral feathers nearly white, as is a small patch at the posterior angle of the eye; the upper part of the head, the hind neck, and all the upper parts, including the wings and tail, are of a sooty brown tinged with grey, as are the lower surface of the wings and the axillaries. The lower parts are of a dull grey tint, deeper on the fore parts and sides of the neck.

Length to end of tail 36 inches; bill along the ridge 5, along the edge of lower mandible 5; wing from flexure 21; tail 3; bare part of tibia $1\frac{1}{2}$; tarsus $3\frac{1}{2}$; inner toe $1\frac{1}{2}$, its claw $\frac{6}{12}$; middle toe $4\frac{5}{12}$, its claw $\frac{8}{12}$; outer toe $4\frac{7}{12}$, its claw $\frac{6}{12}$.

The three Albatrosses described in this volume may very easily be distinguished by the form of the bill, independently of all other characters. Thus:

Diomedea nigripes has the bill much thicker, or less compressed than the other two species; its ridge very broad and convex at the base, its basal outline being semicircular and two inches in extent, so that its sides behind overlap and obliterate the sutural space behind the nostrils.

Diomedea chlororhynchus has the bill much compressed, its ridge convex in its whole length, but with its basal outline, although semicircular, only half an inch in extent, so that between its margins and those of the sides of the bill there is behind the eye a space nearly a quarter of an inch in breadth.

Diomedea fusca has the bill as much compressed as that of *D. chlororhynchus*; but its ridge, in place of being convex, is carinate, and instead of having its base semicircular, as in the other two species, has it running up on the forehead into a very acute angle.

Many other differences might be pointed out, but these will suffice to distinguish the species. It may be remarked, that such descriptions are absolutely necessary to render the species of this genus intelligible; for at present it seems impossible to form any correct idea from the notices given in books; and if descriptions are not sufficient to enable one to refer an object to its species, of what use can they be?

GIGANTIC FULMAR.

PROCELLARIA GIGANTEA, LINN.

A SPECIMEN of the Gigantic Fulmar, shot at some distance from the mouth of the Columbia River, has been sent to me by Dr TOWNSEND, along with those of the other species of the same genus described in this volume, and which it resembles in form and proportions. The great size of this bird gives it at first sight the appearance of an Albatross. It is described as frequent in the southern seas, gliding silently over the surface of the waters, and subsisting on carcasses of cetacea, seals, birds, and other animal matter ; the sailors distinguishing them by the name of " Mother Carey's Geese." The individual in my possession may be described as follows :—

PROCELLARIA GIGANTEA, *Linn. Syst. Nat. vol. i. p. 563.*—*Lath. Ind. Ornith. vol. i. p. 820.*

GIGANTIC FULMAR, *FULMAREUS GIGANTEUS*, *Steph. Shaw's Zool. vol. xiii. p. 237.*

Bill longer than the head, robust, straight, moderately compressed, with the tip decurved. Upper mandible with the nostrils on the ridge, separated only by a thin septum, covered by a broad elongated horny case, of which the ridge is nearly straight and carinate, and the base striated ; the sides erect and convex, separated by a groove from the nasal plate, as well as from the unguis, which is remarkably strong, curved, laterally convex, and acute, the edges blunt, direct, slightly recurved, along the unguis sharp and decurved. Lower mandible with the angle long and narrow, the sides sloping a little outwards and nearly flat, with a longitudinal seam near the edges, which are inclinate and sharp, the tip compressed, the dorsal outline ascending and extremely sharp, the edges at the end suddenly decurved.

Head rather large, ovate ; neck rather long ; body full. Legs short, rather stout ; tibia bare for an inch and a quarter ; tarsus a little compressed, covered with angular scales, of which the posterior are much smaller. Hind toe elevated, its first phalanx scarcely apparent, its claw large, somewhat conical, obtuse, flattened beneath ; the fore

toes long, slender, scutellate above, connected by striated entire webs; the fourth toe slightly shorter than the third, including the claws, but otherwise longer; the second toe not much shorter. Claws moderate, arched, compressed, rather acute, that of the third toe with an inner thin edge.

Plumage full, close, elastic; on the back and wings the feathers rather distinct. Wings very long, narrow; primary quills broad, tapering to an obtuse point, the first longest, the rest rapidly graduated; secondary quills broad and rounded. Tail short, much rounded, of sixteen broad, rounded feathers, of which the lateral are an inch and a half shorter than the middle.

Bill and feet yellow. The general colour of the plumage is a deep dingy grey or blackish-grey, of a tint similar to that of the young of *Procellaria glacialis* and *P. pacifica*, but much deeper. It is considerably lighter on the lower parts, and especially on the lower surface of the wings.

Length to end of tail 36 inches; bill along the ridge 4, along the edge of lower mandible $3\frac{1}{2}$; length of nasal case $1\frac{1}{2}$; wing from flexure $1\frac{9}{12}$; tail $7\frac{1}{2}$; tarsus $3\frac{1}{4}$; first toe $\frac{1}{2}$, its claw $\frac{5}{12}$; second toe $3\frac{1}{2}$, its claw $\frac{7}{12}$, third toe $4\frac{5}{12}$, its claw $\frac{1}{2}$; fourth toe $4\frac{1}{4}$, its claw $\frac{9}{12}$.

PACIFIC FULMAR.

PROCELLARIA PACIFICA.

THREE skins transmitted to me by Mr TOWNSEND appear to belong to two species of the Fulmar genus, distinct from that of the Atlantic seas. The first of these species may be named as above. An adult individual resembles the common *Procellaria glacialis* in form, proportions, and colour, but differs in having the bill much smaller, more compressed, with the angle of the lower mandible narrower, and the tips of both very much inferior in strength. It is about the same size as the species just mentioned, and shews no remarkable difference in the wings or tail. Besides being more compressed, its bill presents a character, which, if universal, is perfectly distinctive: the upper outline of the

united nasal tubes is concave in the Atlantic Fulmar, and its ridge flattened; whereas the outline of these tubes is straight in the Pacific species, and its ridge distinctly carinate.

Adult.

Bill shorter than the head, robust, straight, compressed, the tip curved. Upper mandible with the nostrils on the ridge, separated by a thin septum, covered by an elevated horny case, and opening directly forwards, the sides erect, convex, and separated by a groove from the nasal plate, as well as from the unguis, which is strong, decurved, and acute, the edges sharp, inflected, and slightly recurved from the base to the unguis. Lower mandible with the angle long, narrow, acute, the sides erect, with a groove in their whole length, the edges sharp and direct, the very short dorsal line ascending and slightly concave, the edges decurved at the end.

Head rather large, ovate; neck rather short. Feet of moderate length, stout; tibia bare for a short space below; tarsus a little compressed, covered all round with reticular scales, of which those on the anterior and posterior thin ridges are much smaller. Hind toe a slight prominence, with a conical rather obtuse claw; the fore toes long, slender, scutellate above, connected by striated entire webs, the fourth a little longer than the third, the second or inner not much shorter. Claws rather small, slightly arched, compressed, acute, that of the third toe with an inner thin edge. Plumage full, close, elastic, blended; on the back and wings the feathers rather distinct. Wings long; primary quills rather broad, tapering to a roundish point having a minute acumen, the first four-twelfths longer than the second, which exceeds the third by half an inch; secondary quills broad and rounded. Tail short, rounded, of fourteen rounded feathers, of which the lateral are one inch shorter than the middle; the lower tail-coverts very strong and of the same length as the tail-feathers.

Bill and feet yellow. The head, neck, and lower parts are pure white; the back and wings light greyish-blue, but most of the feathers, including those of the tail, becoming dark grey toward the end; the primary quills and their coverts are blackish-brown, tinged with grey.

Length to end of tail 18 inches; bill along the ridge $1\frac{9}{12}$; nasal case $\frac{6}{12}$; wing from flexure $12\frac{9}{12}$; tail $4\frac{3}{4}$; tarsus $1\frac{1}{2}$; hind toe $\frac{9}{12}$, its claw $\frac{5}{12}$; second toe $1\frac{1}{12}$, its claw $\frac{5}{12}$; third toe $2\frac{2}{12}$, its claw $\frac{7}{12}$; fourth toe $2\frac{1}{4}$, its claw $\frac{4}{12}$.

The young bird is of a uniform dull light dusky-grey colour ; a patch before the eye and the primary quills dusky. Its bill and feet are also yellow ; the former as in the adult ; the outline of its nasal case straight, its ridge carinate.

Length to end of tail $19\frac{1}{2}$ inches ; bill along the ridge $1\frac{1}{2}$, nasal case $\frac{7}{12}$; wing from flexure $12\frac{9}{12}$; tail $4\frac{9}{12}$.

The tail-feathers of *Procellaria glacialis* are erroneously stated, at p. 450 of Vol. III. to be twelve, whereas they are fourteen, as in the present species.

SLENDER-BILLED FULMAR.

PROCELLARIA TENUIROSTRIS.

THE other individual agrees in all respects with the first described ; but its bill is much more elongated, comparatively slender, and with the nasal case, half of the unguis of the upper mandible, and the tip of the lower black. The outline of the nasal case is a little concave, and its ridge is somewhat carinate. Whether this individual be of another species, or of the same, having an accidentally elongated bill, cannot perhaps be determined without a series of specimens ; but it is probably a true species, as neither of the other two have the bill black in any part or at any period. If it be distinct, it might be named the Slender-billed Fulmar, *Procellaria tenuirostris*.

The following note from Dr TOWNSEND was appended to this specimen :—“ Within a day’s sail from the mouth of the Columbia River. Its habits are very similar to those of *Procellaria capensis*, keeping constantly around the vessel, and frequently alighting in her wake for the purpose of feeding. They are easily taken with a hook baited with pork, and at times, particularly during a gale, they are so tame as almost to allow themselves to be taken with the hand. The stomachs of most of those that I captured were found to contain a species of sepia and grease.

Length to end of tail $18\frac{1}{2}$ inches ; bill along the ridge $2\frac{1}{12}$; nasal case $\frac{7}{12}$; wing from flexure 13 ; tail 5 ; tarsus $1\frac{1}{12}$; hind toe $\frac{1}{12}$, its claw $\frac{3}{12}$; outer toe $2\frac{3}{12}$, its claw $\frac{4}{12}$.

SPECIES SEEN WITHIN THE LIMITS OF THE UNITED STATES, BUT NOT CHARACTERIZED.

BACHMAN'S HAWK. *FALCO BACHMANII*.

I HAVE several times seen in South Carolina a Hawk flying, equal in size to *Falco lineatus*, and remarkable for the great breadth of its wings. It was of a uniform brown colour, excepting the tail, which was barred with white. The same bird has also been repeatedly observed by my friend Dr BACHMAN, who feels assured of its being distinct from any other Hawk hitherto found in North America.

FORK-TAILED OWL. *STRIX FORFICATA*.

I shot this bird in the vicinity of Green Bay, when on my way across to the Mississippi; but the drawing which I made of it on the spot has been lost. It was about the size of *Strix acadica*, of a dark grey colour, with the tail long and deeply forked; but I am unable to describe it more particularly, the Journal in which it was noticed having been, along with others, destroyed by the great fire which happened in New York some years ago.

BROWN IBIS. *TANTALUS FUSCUS*.

Two specimens, apparently male and female, of this large Ibis were shot by me on the Bayou leading from the Silver Springs to the St John's River in Florida. I was at the time along with Colonel JOHN REES in his boat, with two Negroes, but although we exerted ourselves to the utmost for the space of an hour, we were unable to get at them, on account of the great depth and peculiar nature of the mud on which they were. This species is little inferior in size to the Common Wood Ibis, *Tantalus Loculator*, and appeared to be of a uniform deep chocolate-brown, with the bill deep blue, and the legs greyish-blue. The *Tantalus fuscus* of the Prince of MUSIGNANO is not this species, although I have frequently spoken of it to him.

AMERICAN PHEASANT. *PHASIANUS AMERICANUS.*

The existence of a species of Pheasant in America appears to be proved by the following notice from Dr TOWNSEND. "On the 13th of August 1834, I saw two specimens of the long-tailed Pheasant. They inhabited the pine-trees in a deep and tangled dell, called Thornbury's Pass, near Mallade River, in the Rocky Mountains. They appeared rather tame, flying for short distances before our party, and alighting near the summits of the tall pines. This bird in length appeared about equal to the English Pheasant, but not so heavy-bodied. The tail was as long, or longer. The general colour was dark brown or black, with some white below. The hunters mentioned having seen several of these birds during the day, and one of the rascals shot one with his rifle, and left it lying upon the ground. They had never met with such birds before."

NUTTALL'S WHIP-POOR-WHILL. *CAPRIMULGUS NUTTALLII.*

According to my friend Mr NUTTALL, there exists in the Rocky Mountains a species of *Caprimulgus* scarcely half the size of the Whip-poor-will. It was frequently seen by him, often within a few feet, but was not procured, probably because he is not in the habit of carrying a gun on his rambles.

RED-BACKED WOODPECKER. *PICUS PYRRHONOTUS.*

"On the 10th of June 1835," Dr TOWNSEND informs me, "I observed a Black Woodpecker, about the size of *Picus torquatus*, on the Columbia River, near Fort Vancouver. On the back between the shoulders was a large red space. I found it flitting about among the pine trees near the bank of the river. It was very shy, and on alighting emitted a strange sort of guttural note, unlike any sound I ever heard before. After pursuing it for a considerable time, I succeeded in getting a shot at it, though at a great distance, and the bird fell, apparently dead. Upon going up to the spot, I found the ground covered in the vicinity with a dense crowd of tangled bushes, through which it was impossible to make way. I went immediately to the Fort, a distance of about three miles, and procured a matchette or large knife, returned to the spot, and cut away all the bushes near the tree where the bird fell, but could not find it. Whether it was only wounded and crawled away, or whether it had been taken, during my absence, by

some animal or reptile, I never could discover, but the prize was lost to me for ever. I searched the forests for months afterwards, but never saw another."

GREEN-TAILED SPARROW. *FRINGILLA CHLORURA.*

THE following notice respecting this bird is by Dr TOWNSEND:—
 "July 12. 1834. I shot this morning a new and singularly marked Sparrow. The specimen is, however, unfortunately young, and the plumage is not fully developed. I feel in great hopes of finding the adult in similar situations on our route. It is a true *Fringilla*. The head is of a light brownish colour, spotted with dusky; back varied with dusky and greenish-olive; rump brownish, spotted with dusky; wings plain dusky, the outer vanes, as well as the tail-feathers, greenish-yellow; axillaries yellow; throat white; a longitudinal line of black on either side; breast and flanks white, spotted or streaked with black; belly whitish; vent tinged with light brown, inclining to ochreous." "The measurements of this species I find I have not given. I probably omitted them from the supposition that I should at a future time find the perfect bird. In this I was, however, disappointed: I never saw it afterwards."

TOWNSEND'S MOCKING THRUSH. *TURDUS TOWNSENDI.*

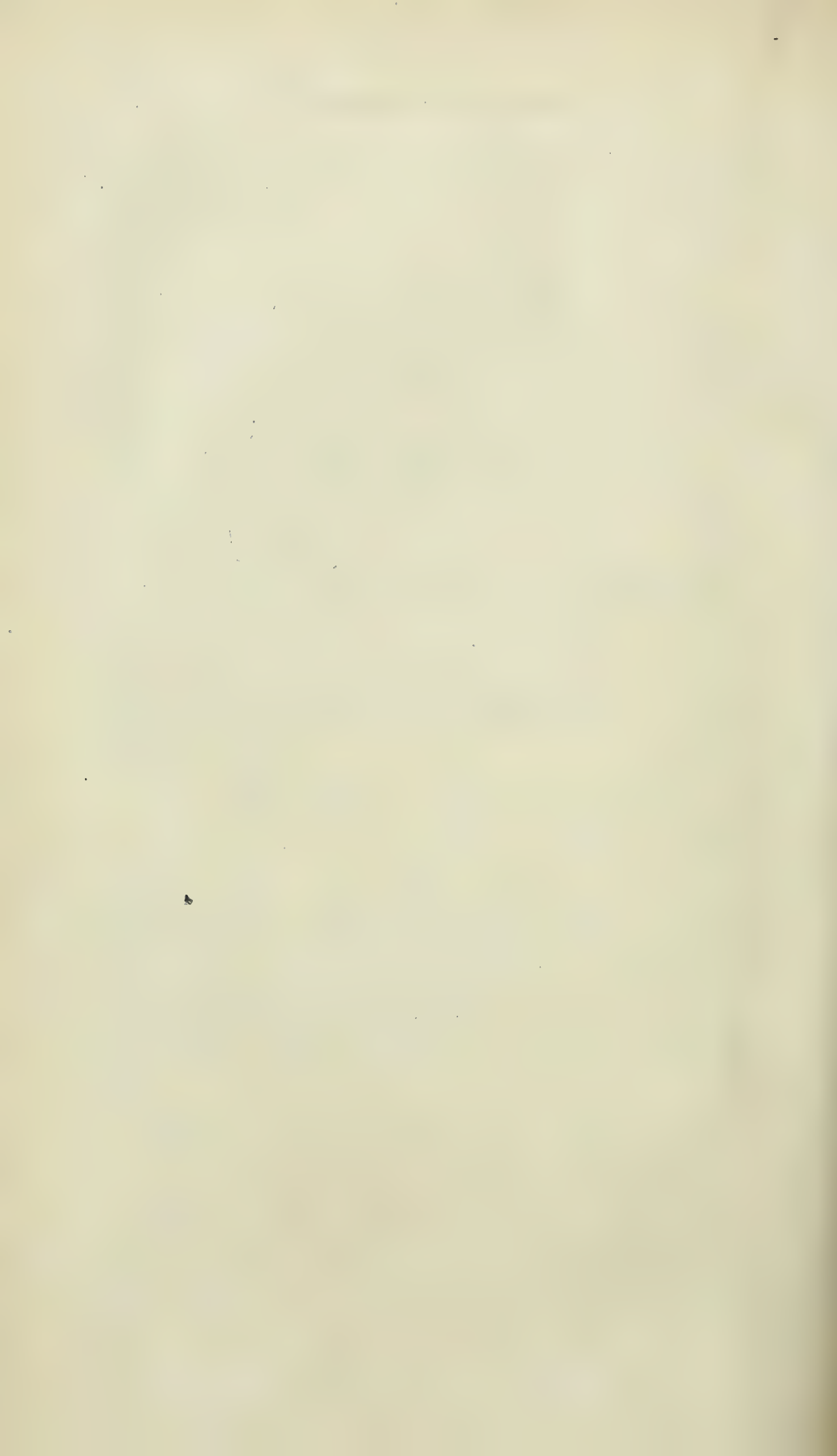
"On the 12th of August 1834," says Dr TOWNSEND, "I saw a Thrush, cinereous brown above, whitish below, with a long rounded tail, every feather except the two middle ones largely tipped with white. About two months subsequently, on the Shoshone River, West of the Rocky Mountains, I killed one of these birds; but it was moulting, and I foolishly threw it away in the expectation of finding it on the Columbia. I never saw it afterwards."

WHITE-TAILED AND WHITE-RUMPED CORMORANTS.

PHALACROCORAX LEUCURUS. *PHALACROCORAX LEUCONOTUS.*

"At Cape Disappointment," says Dr TOWNSEND in his notes transmitted to me, "there are two Cormorants, at least in spring, about the size of *Phalacrocorax resplendens*, one with a white tail, the other with a white rump."

APPENDIX :
COMPRISING
ADDITIONAL OBSERVATIONS
ON THE
HABITS, GEOGRAPHICAL DISTRIBUTION,
AND
ANATOMICAL STRUCTURE
OF THE
BIRDS DESCRIBED IN THIS WORK ;
TOGETHER WITH
CORRECTIONS OF ERRORS
RELATIVE TO THE
SPECIES.



APPENDIX.

TURKEY BUZZARD.

CATHARTES AURA, ILLIGER.

PLATE CLI. VOL. II. p. 296.

THE Turkey Buzzard was found in abundance on the Rocky Mountains and along the Columbia River by LEWIS and CLARK, as well as subsequently by Dr TOWNSEND, although it is said by Mr DAVID DOUGLAS to be extremely rare on the north-west coast of America. On the Island of Galveston in Texas, where it is plentiful, we several times found its nest, as usual, on the ground, but on level parts of salt marshes, either under the wide-spread branches of cactuses, or among tall grass growing beneath low bushes, on which Herons of different species also bred, their young supplying a plentiful store of food for those of the Vultures. The eggs, which never exceed two in number, measure two inches and seven-eighths in length, and one inch and seven and a half eighths in their greatest breadth.

An adult female, from Charleston in South Carolina, preserved in spirits, presents the following characters. The most remarkable circumstances relative to its external aspect are these:—The skin of the head, as well as of the neck for a third of its length, is transversely rugous, and sparsely covered with very small bristly feathers. The anterior part of the neck below this, and as far as the furcula, is quite bare. The external nostrils are very large, oblong, 6 twelfths in length, pervious, but having the entrance into the nasal cavities small. The aperture of the ear is rather small, its diameter being only 3 twelfths. The eyes are of moderate size, their aperture being 5 twelfths.

The neck in its whole length is sheathed in a very strong subcutaneous muscle, of which the external fibres are transverse, the internal longitudinal. These latter collect at the lower part, on each side, into a thin expansion inserted into the anterior edge of the pectoralis major, lying over another larger collection proceeding from the lower part of the crop in front, and inserted into the furcula, so as to support the enormous crop, and serve to assist in contracting it. This layer of muscle is firmly connected with the whole surface of the crop on the right side; but on the left is quite free, leaving an empty space of great width, and eight inches in length, in which the trachea lies. The cells on the back of the neck are also extremely large.

The roof of the mouth presents much the same appearance as that of the Falconine birds, having anteriorly a prominent ridge, and on the palate two parallel ridges, the space between which is anteriorly covered with minute papillæ. The posterior aperture of the nares is oblong behind, linear before, 9 twelfths in length. The tongue is 1 inch long in a direct line, fleshy, decurved, very deeply and widely concave above, its edges serrated in their whole length with small hard pointed papillæ directed backwards and inwards, its tip obtuse, but not emarginate. The ridges on the roof of the mouth are also papillate.

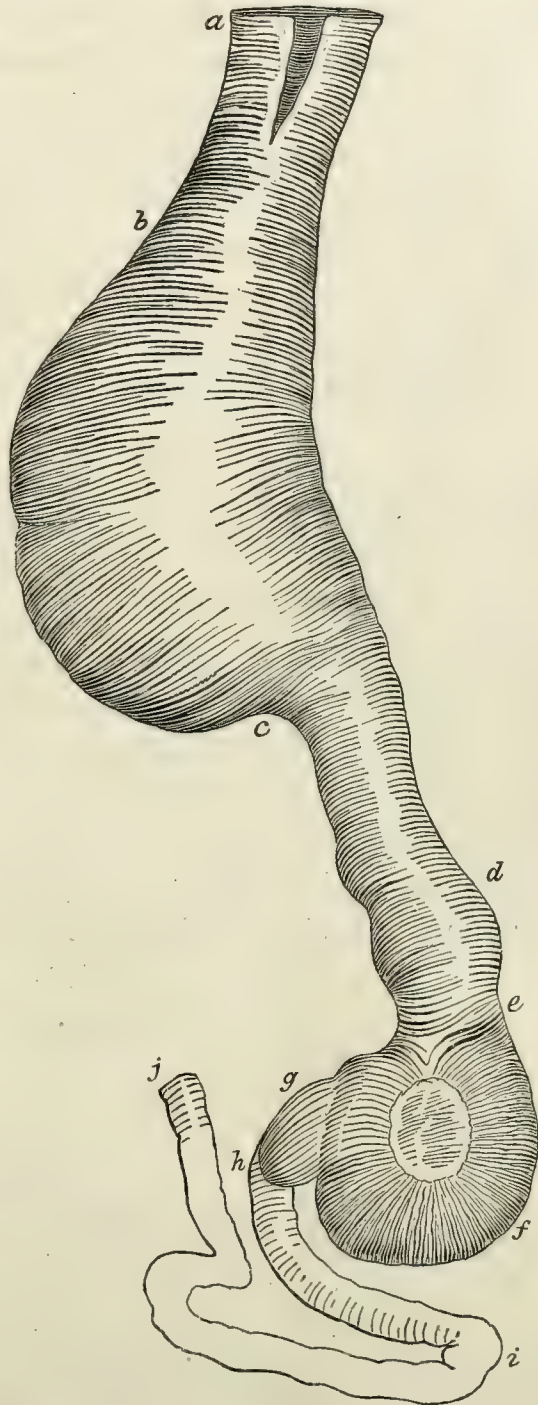
The œsophagus, Fig. 1, *a e*, which is 11 inches long, begins immediately to enlarge, forming an enormous crop, *b c*, 3 inches in width at its lower part, and then contracting to 1 inch as it enters the thorax. Its walls are thin, and shew the usual arrangement of fasciculi of muscular fibres, the external being transverse. The proventricular glands are very numerous, and occupy a belt 1 inch in breadth, *d e*; at the upper edge of which are numerous longitudinal plicæ, having between them small cellular cavities. The stomach, *e f*, is comparatively small, 2 inches in length, $1\frac{1}{2}$ in breadth; its tendon 1 inch long and 10 twelfths broad, its muscular coat moderately thick, its inner coat a thick strongly rugous, rather soft, deep-red epithelium. There is a pyloric lobe, *g*, about half an inch in diameter, which is lined with bristly hairs, as is seen in Fig. 3. They are all inserted at right angles to the surface, penetrate to the base of the epithelium, and are of various lengths, some of them not protruded beyond the surface, others upwards of half an inch, of various colours, some black, generally tipped with whitish, others light greyish-yellow, all thick at the base, and tapering to a fine point. Being disposed in this regular manner, they might seem to

form a part of the organization of the stomach, and not to be, like the hairs found in that of *Cuculus canorus*, and *Coccyzus Americanus*, merely extraneous, in which birds besides they occupy the whole surface, and are disposed in a circular manner, most of them, moreover, being abruptly broken.

The duodenum, *g h i j*, curves at first in the usual manner at the distance of $2\frac{1}{2}$ inches, but in ascending towards the liver forms a partial curve. The intestine forms eight double folds, and is 5 feet 9 inches long, its average diameter above being 5 twelfths, contracting to $3\frac{1}{2}$ twelfths, and again towards the rectum enlarging to 6 twelfths. The rectum is short, the cloaca globular, and only 1 inch in diameter, and there are *no caeca*.

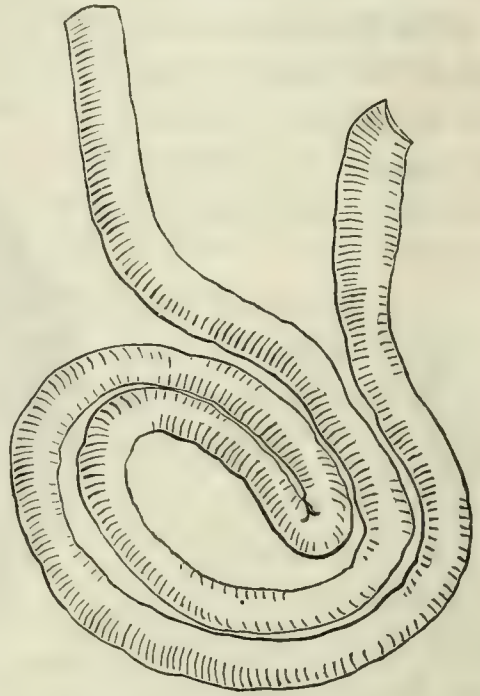
The trachea is 8 inches long, much flattened, tapering from 6 twelfths in breadth to 4 twelfths; its rings 150, partially ossified. The inferior larynx is remarkable for its small size, for being much flattened, and for branching off into the bronchi without having a septum in its last entire ring. Beyond the bifurcation are on each side 8 cartilaginous slender rings, the remaining part of the bronchi being entirely membranous. The lateral muscles are of considerable strength, and cover the anterior surface of the trachea until they terminate in the sterno-trachealis. There are no inferior laryngeal muscles.

Fig. 1.



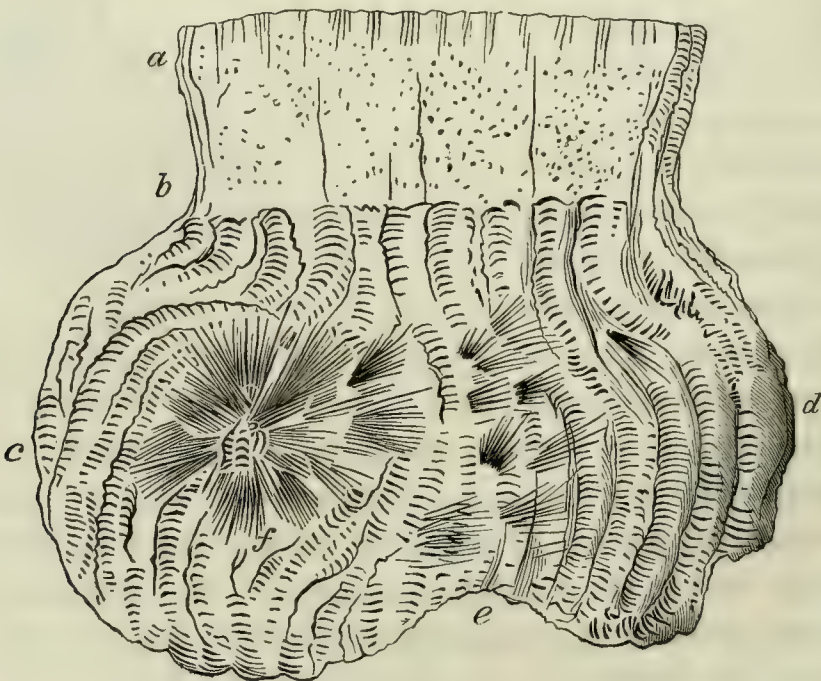
An adult male, also from Charleston. The stomach, Fig. 3, presents the same appearance. The proventricular glands are $2\frac{1}{2}$ twelfths in length, and occupy a belt, *a b*, 1 inch in breadth, at the upper edge of

Fig. 2.



which are numerous longitudinal plicæ, having small cellular cavities between them. The inner coat, *b c d e*, is thick, rather soft and of a bright red colour, with numerous, principally longitudinal prominent tortuous rugæ. Numerous hairs, and a few small feathers, are stuck over the surface towards the pyloric cavity, which is itself densely and completely covered with hairs of various lengths, the longest being 9 twelfths, all of them with the inserted extremity thick, the other pointed, and of various colours, chiefly greyish-yellow. The epithelium, which is here about $1\frac{1}{2}$ twelfth in thickness, is composed of perpendicular parallel fibres, between or into which the hairs are inserted, and the dense cellular or

Fig. 3.

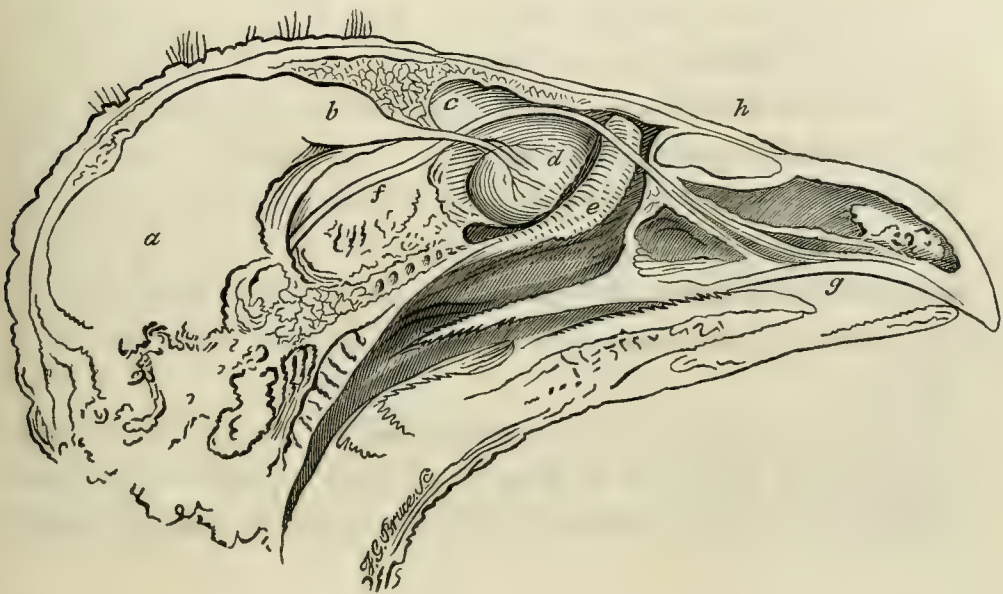


nervous layer beneath it is minutely and regularly scrobiculate. All these circumstances might induce us to believe that the hair actually grew in the substance of the epithelium; but the presence of small feathers and portions of feathers, similarly inserted, shews that they are merely adventitious. The duodenum, Fig. 2, first curves on the left side in the usual manner, but before ascending towards the liver, first nearly forms a circle, then bends upon itself, and curves in the opposite direction, as in the Caracara and White-headed Eagles. Its entire length to the liver is 14 inches. The intestine is 5 feet 11 inches long, its diameter from 5 twelfths to 3 twelfths; the greatest diameter of the rectum 8 twelfths, that of the cloaca 1 inch 2 twelfths. There are no traces of cœca.

The heart is 1 inch 10 twelfths long, 1 inch 8 twelfths broad. The lobes of the liver are nearly equal, being about 1 inch 1 twelfth long.

The accompanying sketch, Fig. 4, represents a vertical section of the head in the median plane, with the septum between the eyes and that of the nasal cavities removed, so as to expose the left cavity, with its turbinated bodies. The brain is marked *a b*, the nasal cavity *c d e*, *d* being the upper, *e* the lower turbinated bone. Before and beneath the latter is seen the passage to the posterior nares or palatal aperture of the nose. The external nostril, or large opening which runs across the bill, is marked *h*. From *h* to *g* are the large cells in the interior of the upper mandible. Below *g* are the tongue and the lower jaw in outline. The bottom of the left eye is marked *f*.

Fig. 4.



The external nostrils, as already mentioned, occupy the whole length of the nasal groove, being 6 twelfths of an inch long, of an irregular oblong form, their greatest height $2\frac{1}{4}$ twelfths, pervious or communicating, the greatest breadth of the common space being 7 twelfths. Their posterior apertures, Fig. 5, are separated by a strong dissepiment, and are of moderate size, but without any appearance of the flap or operculum, which many authors have mentioned as closing them. The posterior or palatal aperture of the nares is also of moderate size, linear-oblong, 6 twelfths in length, prolonged anteriorly into a slit $4\frac{1}{2}$ twelfths long, finely papillate on the edges.



Fig. 5.

The nasal cavity, Fig. 4, *cde*, is large, of an irregular oblong compressed form 10 twelfths in its greatest length, $7\frac{1}{2}$ in its greatest height. There are two well-developed turbinated bones, *de*, of which the upper, *d*, presenting the appearance of a hollow ovate body, forms two curves upon itself, so that when the outer curve is cut open, it seems to contain another oval body. The anterior or inferior spongy bone, *e*, is of an elongated form, bent upwards, and forms a single curve on itself. Both are only cartilaginous or membranous. The anterior extremity of the hemisphere of the brain, *b*, is prolonged forwards between the orbits, gradually tapering from a height of 3 twelfths to $\frac{1}{2}$ twelfth, and terminating in the olfactory nerve, which has ultimately a diameter of a third of a twelfth, but is from the commencement divided into several fibres, and is distributed upon the nasal cavity. A large branch of the fifth pair, *f*, $\frac{1}{2}$ twelfth in diameter, ascends across the orbit, enters the nasal cavity, crosses the olfactory nerve, curves over the upper turbinated bones, passes between the lower and the septum of the nasal cavity, from which it emerges, enters the cavities of the supramaxillary bone, and is distributed chiefly to the roof of the mouth, at *g*. The anterior lobe-like process from the cerebral hemisphere, *b*, is in structure precisely similar to the part in its vicinity, and may be called the olfactory lobe. It occupies the place which in most birds presents merely a slender nerve, or filament inclosed in a bony tube traversing the cellular osseous tissue, as is more especially seen in Owls and Goat-suckers.

The olfactory nerve has been ascertained in the mammalia to be the instrument of smell; but in the class of birds experiments and observations are wanting to determine its precise function, although analogy

would lead us to suppose it to be the same in them. So inaccurate have observers been in this matter, that some of them have mistaken the large branch of the fifth pair, which traverses the nasal cavity, for the olfactory nerve. The experiments instituted upon the Vultures shew that not only are they not led to their prey by the sense of smell, but also that they are not made sensible by it of the presence of food when in their immediate proximity. Yet, if the olfactory nerve be really the nerve of smell, and if a large expansion of the nasal membrane be indicative of an extension of the faculty, one would necessarily infer that the Turkey Buzzard must possess it in a high degree. On the other hand, however, the organ and the nerves being found to be equally developed in birds, such as Geese and Gallinaceous species, which have never been suspected of being guided by smell when searching for food, it would seem to follow that the precise function of this nerve, and the nasal cavities, has not yet been determined in birds. That the nasal passages must be subservient to some other purpose than that of respiration merely, is evident from their complexity, but what that purpose is, remains to be determined by accurate observations and experiments.

BLACK VULTURE OR CARRION CROW.

CATHARTES IOTA.

PLATE CVI. VOL. II. p. 33.

ALTHOUGH I have already presented a full and detailed account of this bird, I feel it incumbent on me to offer a few additional remarks respecting it, because even at the present day many errors relative to its habits are to be found, not only in the minds of people in general, but even in works that are held in estimation. Thus, in the *Fauna Boreali-Americana* I find the following statement:—"Mr Ord informs us that the Black Vultures are indolent, and may be observed in companies, loitering together for hours in one place. They do not associate with the Turkey Vultures." "The latter, though found in the vicinity of towns, rarely venture into them, and then always appearing cautious of the near approach of any one." Again, the same person is represented as

informing us that "the Turkey Buzzard, though seemingly inactive, hops along with an even gait. The latter, unless pressed by hunger, will not eat of a carcass until it becomes putrid; the former is not so fastidious, but devours animal food without distinction." "The Black Vulture builds its nest in the large trees of low wet swamps, to which places they retire every evening to rest."

The gentleman whose sayings are thus quoted in the valuable work above mentioned, could not have visited any of our southern cities at the time when he penned these notes, or he might have seen that the habits of the Carrion Crow differ in more respects than one from what he has represented them to be. In the first place, the Black Vulture does associate with the Turkey Buzzard, and the latter is not at all disdainful of the society of the former. Indeed, it would be difficult, in Charleston, Savannah, Natchez, or their suburbs, to find the one without the other. They are both careless of the approach of man, and no positive laws or regulations for the protection of either, exist in any of the United States. If I understand aright the meaning of the word "hopping," which I take to signify progression by short leaps, the Turkey Buzzard does not hop when not disturbed: it *walks* with measured steps. As to its not feeding on matters that are not putrid, such a tale might have answered a century ago, but will not do now-a-days. I will give "a handsome reward" to any one who shall point out to me a Carrion Crow's nest in a tree, or upon its branches. To end all this, I assure you that although the greater number of the Carrion Crows resort to trees toward night, in order to repose upon them, many remain on the roofs and chimney-tops.

I found this species abundant in the Texas, where it bred, as usual, on the ground, but in situations such as I had not before seen; for the nests which I examined were under very small bushes in marshes adjoining salt-water lagoons, or amidst cactuses, and along with that of several species of Heron, the young of these latter forming a considerable portion of the food of the young Vultures. They were in fact placed in the same situation as those of the Turkey Buzzard, and frequently at no great distance from them. The Carrion Crow is found abundantly in Chili also, from whence I have seen specimens precisely similar to our own. As it was named *Iota* by Molina, who, although not always correct in his statements, has been found to be right in this, that name must be retained in preference to *atratus*. Dr

TOWNSEND found it on the Columbia River also, but not on the Rocky Mountains. I have not seen it to the eastward of Maryland, and it is not numerous even there.

The eggs, which *never exceed two*, measure three inches and two-twelfths in length, two inches and half an eighth in breadth, and are more elongated, as well as sharper at the small end, than those of the Turkey Buzzard.

An adult female preserved in spirits presents the following characters:—The cells of the neck are extremely developed, one of them extending along its back part, being five inches in length, and communicating by very large apertures with the lateral and anterior cells, which on the left side unite into an enormous cavity, 8 inches in length, extending from the jaw to the furcula, and containing the trachea, which curves over to that side, as in all birds having a large crop. On the left side the œsophagus is thus, as it were, free, or has no attachment, but in front and on the right side it is connected by dense cellular tissue with the subcutaneous muscles, which extend, in the form of two large and strong expansions, along the whole of the neck, and are inserted upon the anterior edge of the pectoral muscle, as in the Turkey Buzzard. Besides these, there is a layer of strong transverse fibres externally.

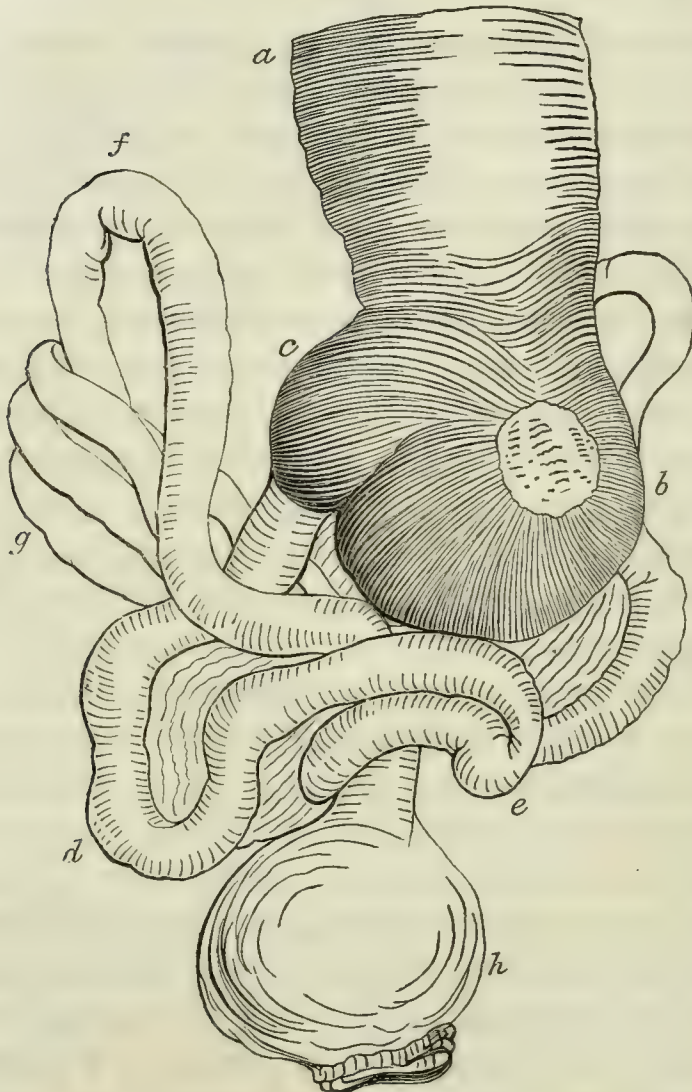
The external nostrils are linear-oblong, direct, 7 twelfths in length, $1\frac{1}{2}$ twelfth in height, pervious, without any operculum either externally or within, but margined above with soft skin. The aperture of the eye is rather small, measuring only 5 twelfths. That of the ear is of moderate size, being externally $4\frac{1}{2}$ twelfths.

The roof of the mouth is deeply concave, with a longitudinal prominent, soft, strongly papillate ridge, and two finely papillate palatal ridges. The posterior aperture of the nares is oblong, $\frac{1}{2}$ inch in length, margined with slender papillæ, and an anterior slit 7 twelfths long, similarly margined, the space between it and the lateral ridges being also covered with papillæ. The tongue is of moderate length, $1\frac{1}{4}$ inch in a direct line, broad, very deeply concave above, being as it were induplicate, horny towards the end and on the back, its margin beautifully fringed with a single series of slender papillæ, directed backwards and inwards, the outlines decurved toward the end, and the tip obtuse.

The heart is large, ovato-oblong, $2\frac{1}{4}$ inches in length, $1\frac{5}{8}$ in breadth. The lobes of the liver are nearly equal in length, being 1 inch 9 twelfths, but the right lobe is much broader. The gall-bladder is oblong, 1 inch 1 twelfth in length, and half an inch in breadth.

The œsophagus is 11 inches long, and of extreme width, its diameter being at the commencement $1\frac{1}{2}$ inch, and so continuing for

Fig. 1.



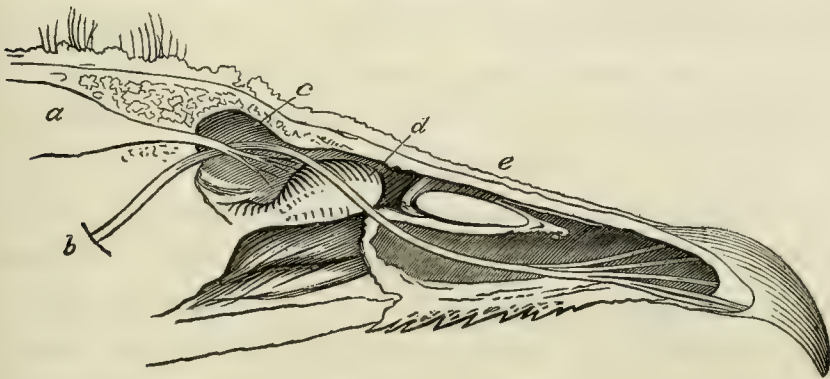
nearly 3 inches, when it enlarges into an enormous sac, of which the greatest breadth is 4 inches. On entering the thorax it contracts to 1 inch, and afterwards enlarges to $1\frac{1}{2}$, Fig. 1, *a*. The stomach, *bc*, is comparatively small, round, 1 inch 10 twelfths in diameter; its muscular coat extremely thin, and composed of a single series of fasciculi; its tendons $\frac{1}{2}$ inch in diameter; its inner surface soft and smooth,

there being no epithelium as in the Turkey Buzzard, nor any hairs in the cardiac lobe. The duodenum, *c d e f*, is 10 inches long, and forms several convolutions previous to its curving forward to receive the biliary ducts. The intestine subsequently forms twelve curves, and above the stomach terminates in the rectum. Its whole length is 4 feet 1 inch; its width at the commencement $5\frac{1}{2}$ twelfths, gradually diminishing to 3 twelfths, towards the rectum enlarging to 4 twelfths. That part has a breadth of $4\frac{1}{2}$ twelfths at its commencement, gradually enlarging to 9 twelfths and terminates in a globular cloaca, *h*, $1\frac{1}{2}$ inch in diameter. The proventricular glands are large, and form a complete belt 1 inch 2 twelfths in breadth.

The trachea is 10 inches in length, much flattened; its rings 162 in number, slightly ossified, narrower behind. Its breadth at the anterior part is $5\frac{1}{2}$ twelfths, at the lower $4\frac{1}{2}$ twelfths, but again enlarging at the bifurcation to 6 twelfths. As in the Turkey Buzzard the bifurcation takes place without the usual bipartite ring; and there are on each side 8 rings beyond it, which may be considered as part of the bronchi, the rest being composed of a membranous tube destitute of rings. The lateral muscles are very large and expanded over the whole breadth of the trachea to the distance of 10 twelfths from its bifurcation, when they pass off to be inserted into the sternum. There are no inferior laryngeal muscles.

As to the nasal apparatus, it is found to differ very considerably from that of the Turkey Buzzard. The head and jaws of the present

Fig. 2.



species are more elongated, its brain is smaller, and the height of the upper jaw at the base is much less. The nasal cavity is therefore more confined, and it is moreover of less complex structure, inasmuch as the turbinated bones are reduced to one, Fig. 2, *d*, which appears to be the

analogue of the superior turbinated bone of the Turkey Buzzard. The cavity of the nose measures exactly 1 inch in its greatest length, from the posterior part of the arch at *c* to the nostril *e*, which is narrower than that of the Turkey Buzzard. The turbinated bone is entirely membranous, and forms two convolutions. The anterior extremity of the cerebral hemisphere runs out into a point *a*, and gradually contracting constitutes the olfactory nerve, which may be said to be from 2 twelfths to half a twelfth in height, and of the same breadth, according to the part at which it is measured. It enters the nasal cavity near *c*, and is distributed over its membrane. The large branch of the fifth pair *b*, follows the same course as in the Turkey Buzzard, and is of the same size, that is, has a diameter of one-third of a twelfth of an inch.

Now, here are two birds, the Turkey Buzzard, and the Carrion Crow, so called, both Vultures, and of very similar habits, both feeding on flesh and on all sorts of matter, fresh or putrid, dead or alive; the one smelling, or not smelling, precisely like the other, in so far as can be judged from appearances. Yet one has its rather muscular stomach lined with a thick strongly ridged epithelium of more than a twelfth of an inch thick, while the other has a stomach of which the walls are as thin as those of an Owl, and having no internal cuticle. One has a nasal cavity furnished with two turbinated bones and a wide aperture, while the other has only a single turbinated bone in its nasal cavity, of which the anterior aperture is comparatively narrow. In other respects, however, the birds are alike; they have a broad induplicate, marginally denticulate tongue. Why it should be so is not apparent, but doubtless there is a reason. They who profess to know about Vultures may perhaps inform us. They have both a most enormous crop; wide intestines of moderate length; and both are destitute of cœca. We know that birds which feed on flesh, which is very nutritious, have the cœca of the minimum size, and that those which feed on grass and twigs, which are not so easily assimilated, have them extremely large: but if the smallness of the cœca be in relation to the excellence of the food, why should the garbage-eating Vultures have no cœca, when the pure-feeding Falcons have, small though they be? There is enough in these and other subjects relative to Vultures, to occupy philosophers for some time to come; so that they need not be at a loss for better employment than vituperating those who have endeavoured by observation and experiment to elicit truth.

CARACARA EAGLE.

POLYBORUS BRAZILIENSIS, VIEILL.

PLATE CLXL. VOL. II. p. 350.

ALTHOUGH this bird has a great affinity to the Turkey Buzzard *Cathartes Aura*, it differs considerably in some of its habits. It always by preference places its nest on a tree, but when none is to be found, builds on the top of a low bush, rather than deposit its eggs on the ground, as our Vultures are wont to do. Nests of the Caracara found in the Floridas by Dr BENJAMIN STROBEL, were placed on the highest branches of the tall trees in the pine barrens, whilst those met with in the Texas were in a good many instances built on the tops of bushes not more than seven or eight feet high. The nest which is formed of dry sticks, is pretty large, rather flat, and rudely lined with small roots, grass, or moss, when the latter can be procured. Like the Turkey Buzzard, this bird lays only two eggs. In its mode of flying during the breeding season, its movements through the air so much more resemble those of a Hawk than any other bird, that the first pair seen on Galveston Island in the Texas, were considered by us as belonging to some unknown species of that family, in consequence of which we bestowed much time on endeavouring to procure them. While removing from a tree or bush to a distance they usually flew swiftly over the ground, with continuous beats of their wings; and on alighting, they would at once assume an erect posture, and by the slenderness of their form and long tail continue to deceive us.

Dr STROBEL carried a pair of young birds of this species alive to Charleston for me, and consigned them to the charge of my friend Dr BACHMAN, who kept them upwards of a year. They were male and female, but the former was not merely at all times rude to his companion, but often extremely tyrannical, seldom missing an opportunity of annoying her by repeated and violent blows, accompanied with loud cries of anger and exultation; insomuch as to force her into one of the corners of the aviary, where she would at times lie for several minutes on her back, stretching out her legs and talons to defend herself against her unmerciful assailant. Her cries were harsh and disagreeable, as were those of the male, but the latter alone was in the habit of throwing back its head, opening its mouth, swelling out its throat, and erecting

the feathers of its head, while loudly screaming. On being laid hold of with the hand, both bit and scratched me so severely as to force me to let them go. They fed indifferently on dead and living animals, such as rats, cats, and fowls of various sorts, and shewed a power of carrying off their victims in their talons, such as Hawks and Eagles exhibit, but of which our Vultures are destitute. While feeding, they would stand upon the quarry, with their claws thrust into it, and tear off the hair or feathers, along with the flesh, both of which they swallowed. They devoured great quantities at a time, but could support privation of food for several days. Like other birds of prey, they drank frequently. In the second spring, their plumage became barred transversely, as represented in my plate, my specimen having been drawn before the second moult had taken place. As these birds become older, these transverse bars assume more regularity, and their colours acquire deeper tints. Owing to the differences thus produced in their appearance, the old birds have been named *Polyborus Mexicanus*, while the young have been called *P. vulgaris*. In the Texas these birds are viewed as Eagles, but I saw none of them there pounce on living animals, unless the latter had been wounded, in which case they would attack Ducks and other birds. They are at all times extremely vigilant and suspicious, so that it is very difficult to approach them. As the species first received the name of *Brasiliensis*, it ought to retain that specific appellation, in preference to *vulgaris*.

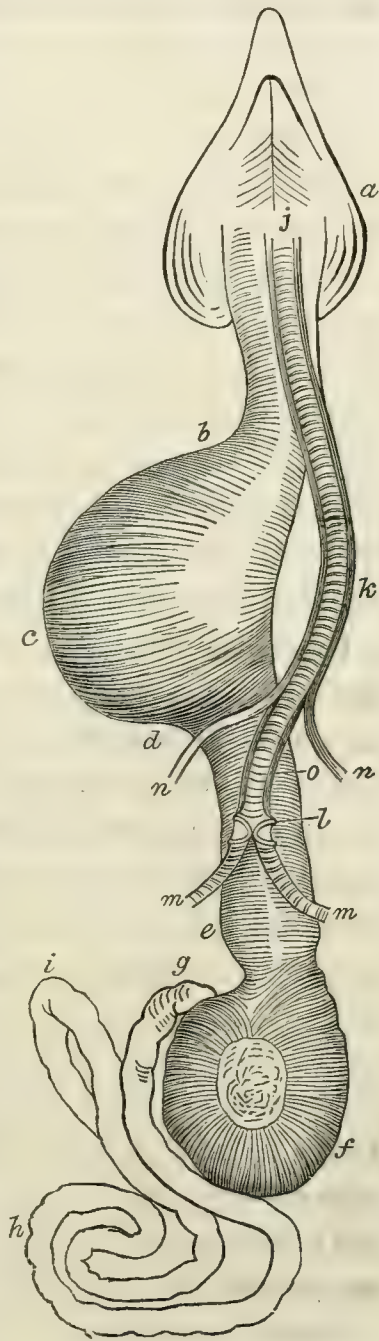
An adult male, from Florida, presented by Dr STROBEL, and preserved in spirits, presents the following characters:—The affinity of this bird to the Vultures is evinced in its exterior by the large portion of the fore part and sides of the head which is nearly bare, by the skin lying over the large crop being also destitute of feathers, and by the comparative shortness of the hind toe, as well as the slight curve of the claws.

The mouth is comparatively narrow, being 1 inch 1 twelfth in width. In other respects it is similar to that of the Hawks, there being a very prominent median ridge in its anterior part, and two parallel ridges along the palate. The posterior aperture of the nares is linear-oblong behind, linear anteriorly, $1\frac{1}{4}$ inch long, with the usual transverse papillate ridges or flaps. The tongue is 1 inch 2 twelfths long, fleshy, narrower at the base than is usual in Hawks, emarginate and papillate; it is also covered above at the base with very numerous

minute papillæ, and is concave, with the point obtuse and slit to the depth of $1\frac{1}{2}$ twelfth. The nostrils are linear-oblong, oblique, 3 twelfths in length. The aperture of the ear is roundish, of moderate size, $3\frac{1}{2}$ twelfths in diameter. The aperture of the eye is 5 twelfths.

The œsophagus, *abcde*, which is eight inches long, at first contracts to half an inch, at the distance of an inch and a half from the commencement, then enlarges into a crop, *bd*, 2 inches in width, and on entering the thorax contracts to 9 twelfths, the proventriculus being also of the latter diameter. The stomach, *f*, is round, compressed, 2 inches long, 1 inch 10 twelfths broad; its tendons 8 twelfths across; its muscular coat very thin and composed of a single series of large fasciculi, its inner surface soft, smooth, but longitudinally rugous. The proventricular glandules are very numerous, cylindrical, 2 twelfths long, and occupy a belt 1 inch 2 twelfths in breadth. The external muscular fibres of the œsophagus are transverse, the internal longitudinal. The pylorus has three small knobs. The duodenum, *ghi*, presents exactly the same arrangement as that of the White-headed Eagle, forming five curves, and then proceeding forward to beneath the right lobe of the liver, its length being 13 inches. The intestine, however, is not proportionally so long as in the Fishing Eagles (*Haliaetus*), its whole length, including the duodenum, being only 42 inches. Its diameter varies from 3 twelfths to 2 twelfths. The rectum is very short, being only $2\frac{1}{2}$ inches long, including the cloaca, which has a diameter of about $1\frac{1}{4}$ inch, but its average width is 6 twelfths. The cœca are two small sacs, 4 twelfths long, and 2 twelfths in width.

The liver is rather large, the left lobe somewhat smaller, it being 1 inch 8



twelfths long, while the other measures 1 inch 10 twelfths. The heart is conical $1\frac{1}{2}$ inch in length, $1\frac{1}{3}$ inch in its greatest breadth.

The trachea, *j k l*, is 7 inches long, flattened, $4\frac{1}{2}$ twelfths in breadth at the upper part, enlarging to 5 twelfths, but towards the end only $3\frac{1}{4}$ twelfths and round. The number of its rings is 106; they are firm and well ossified; the last half ring, *l*, broad, being 5 twelfths in extent, as is the first half ring of the bronchi, with a large membrane interposed. The lateral or contractor muscles *k*, are strong; the sterno-tracheal, *m*, very large; and there is a pair of inferior laryngeal muscles inserted upon the bronchial membranes *o*.

WHITE-HEADED EAGLE.

FALCO LEUCOCEPHALUS, LINN.

PLATE XXXI. VOL. I. p. 160. ADULT.

PLATE CXXVI. VOL. II. p. 160. YOUNG.

FROM what I have already said of this species it will be understood that it is to be met with more abundantly than elsewhere, in the space bounded by the Mississippi and the Atlantic coast of our Middle States, it being more numerous, however, in the Southern States. It appears from what is said of it in the Fauna Boreali-Americana, that it has not been met with farther north than Great Bear Lake, or latitude 62° N.; but Dr TOWNSEND met with it on the Columbia River and in California. M. TEMMINCK must be mistaken, I should think, in assigning to it the regions within the Arctic Circle, as its habitual residence. I have not been able to see a single specimen that could be proved to have been procured in Europe.

Adult Male.

Bill about a third shorter than the head, very deep, compressed. Upper mandible with the dorsal outline nearly straight as far as the edge of the cere, then deurved in the third of a circle, the ridge broad and a little convex on the cere, then narrowed, but again enlarging, and towards the end narrowed, but in its whole length convex, the sides sloping and flat at the base, sloping and considerably convex to-

ward the end, the edges sharp beyond the cere, with a slight festoon, the tip deflected, long, subtrigonal, acute, at its lower part perpendicular to the gape-line. Lower mandible with the angle rather long, wide, and rounded, the dorsal line ascending and convex, the sides flattened at the base, convex toward the end, the edges direct, slightly decurved toward the end, where it descends obliquely, the tip rounded.

Body full, robust, very broad and deep anteriorly; neck rather short and thick; head ovate, rather large, moderately convex above. Feet of moderate length, very strong; the tibia proportionally long, the tarsus short, feathered anteriorly for more than half its length; covered with roundish or transversely oblong convex scales, some of the anterior of which are larger, but scarcely so as to deserve being called scutella; the hind part is bare in its whole length with roundish scales, ten of which in two series, below the middle, are scutelliform. Toes robust, free; the hind toe and second about equal in size, strongish, the third much longer, the fourth considerably longer than the second and the most slender; the first with four, the second with five, the third with fourteen, the fourth with seven scutella, their basal portions being covered with scales. Claws well curved, very large, tapering, moderately compressed, convex above, flattened beneath, with two prominent margins, and that of the middle toe with an inner thin edge, beneath which is a deep groove.

The cere is bare above, as is the superciliary ridge; the sides of the cere and the space extending to the eye nearly bare, being only covered with very slender bristle-tipped plumules, of which there are also some on the chin. Feathers on the head, neck, and breast, narrow-lanceolate, acuminate; those of the back and breast broadly ovate and rather pointed, of the sides oblong, of the legs oblongo-ovate, rounded, the outer elongated, the inner short and downy. A large space on the fore part of the neck and interfurcular space covered with very soft down; feathers of the ventral space also downy. Wings very long and broad; the first quill short, the third longest, the fourth scarcely shorter; the outer five abruptly cut out on the inner web and tapering; the secondaries broad, broadly rounded with an acumen. Tail of moderate length, rounded, of twelve broad, rounded feathers.

Bill, cere, edge of eyebrow, iris, and feet, yellow; claws bluish-black. The head, the neck all round for half its length, the rump, upper tail-coverts, tail, and lower tail-coverts, are white. The rest of the plumage is chocolate-brown, the terminal margins of all the fea-

thers pale greyish-brown. The downy part of the plumage is greyish-white on the dark, white on the white parts; the bases of the quills become shaded into light-grey, and ultimately into greyish-white.

Length to end of tail 34 inches; extent of wings 7 feet; bill along the ridge $2\frac{9}{12}$, along the edge of lower mandible $2\frac{9}{12}$, its height $1\frac{5}{12}$; tarsus 3; hind toe $1\frac{4}{12}$, its claw 2; middle toe $2\frac{8}{12}$, its claw $1\frac{8}{12}$.

Adult Female. A splendid specimen from Nova Scotia agrees in its general characters with the above, the bill and other parts being as described. The nostrils are oblong, oblique, $5\frac{1}{2}$ twelfths long, 3 twelfths in breadth. The tarsi are feathered anteriorly and on the sides for nearly two-thirds of their length, and are covered with transverse series of roundish, and transversely elongated convex scales, of which some of the anterior are merely somewhat larger, and twelve in a double series behind are scutelliform. On the first toe are four, on the second five, on the third thirteen, on the fourth six entire scutella; their basal spaces being covered with scales. The claws are as described above. There is no difference in the texture or form of the feathers. The outer five quills are abruptly cut out on the inner web; the first quill is 4 inches $2\frac{1}{12}$ shorter than the second, which is 1 inch $1\frac{1}{12}$ shorter than the third, the latter is the longest, but exceeds the fourth only by $2\frac{1}{12}$, the second is shorter than the fifth, the first 1 inch $9\frac{1}{12}$ longer than the first secondary. The tail is rounded, the lateral feathers being $1\frac{1}{2}$ inch shorter than the middle; but the tail-feathers are considerably worn.

The bill, cere, eyelids, and feet yellow; claws bluish-black. The head, the neck for half its length, the rump, upper tail-coverts, tail, lower tail-coverts, and the feathers in the vicinity, are pure white. The rest of the plumage is deep chocolate, the feathers terminally margined with light brown; the quills, large coverts, and scapulars brownish-black, tinged with grey toward the base, where they finally become greyish-white. The downy bases of the feathers greyish-white on the dark parts, white on the rest.

Length to end of tail $40\frac{1}{2}$ inches; bill along the ridge $3\frac{2}{12}$, along the edge of lower mandible $2\frac{1}{12}$, its height at the base of the cere $1\frac{5}{12}$, a little beyond the angle of lower mandible $1\frac{4}{12}$; wing from flexure $25\frac{3}{4}$; tail $13\frac{1}{4}$; tarsus $3\frac{9}{12}$; hind toe $1\frac{1}{2}$, its claw $2\frac{5}{12}$; second toe $1\frac{1}{2}$, its claw $2\frac{2}{12}$; third toe $2\frac{9}{12}$, its claw $1\frac{10}{12}$; fourth toe $1\frac{1}{2}$, its claw $1\frac{1}{2}$.

A young bird just able to fly, being one of the individuals mentioned at p. 160 of Vol. II., and killed on 7th February 1832.

The bill is of the same form as above described, but shorter. The tarsi and toes are proportionally weaker, and the claws much more slender. On the tarsi in front are five scutella of moderate size, the third from above divided into two, the lower also divided. On the hind toe are 4, on the second 5, on the third 13, on the fourth 6 large scutella.

The quills are not more than half-grown; the fourth longest, the third 1 twelfth, the fifth 2 twelfths shorter. The tail-feathers are terminated by a long bristle; the lateral feathers an inch and a half; the form of the feathers as in the adult.

The bill is brownish-black, the cere dull greenish-yellow, the base of the lower mandible yellow. Iris dark-brown. Feet yellow; claws bluish-black. The general colour of the plumage is very dark chocolate, uniform, the feathers being without edgings; all the feathers white at the base, that colour appearing more or less on the hind part and more especially on the fore part and sides of the neck, and on the sides of the body and lower wing-coverts; the quills and tail-feathers are brownish-black, tinged with grey toward the base; the latter with the greater part of the inner webs and a portion of the outer brownish-white, freckled with dusky.

Length to end of tail $29\frac{1}{2}$ inches; bill along the ridge $2\frac{7}{12}$, its height at the base $1\frac{2}{12}$; tarsus $3\frac{1}{4}$; hind toe $1\frac{5}{12}$, its claw $1\frac{9}{12}$; middle toe $2\frac{1}{2}$, its claw $1\frac{5}{12}$; wing from flexure 18; tail $9\frac{1}{2}$.

In more advanced stages, the colours of the plumage vary considerably in different individuals. The general tint continues brown for several years, a variable, and often large proportion of white, or brownish-white appearing, on the neck, the lower part of the body, the sides, and under the wings, the tail meanwhile gradually becoming white, in freckled patches. Some individuals have a large patch of brownish-white across the breast. When the feathers are new they are of a glossy deep brown, but when old and worn they present a bleached appearance, and the upper parts are often patched with pale brown, or brownish-white. On account of these circumstances, individuals of different ages, and shot at different periods of the year, differ so much from each other in appearance, that one might, without a very extend-

ed comparison, conceive that in a collection of specimens there might be several species. The bill remains dark until the head and tail assume the white colour.

In their first years individuals of this species are so very similar to those of the White-tailed Sea Eagle, that one can hardly avoid confounding them. These species in the adult state can easily be distinguished, as the European bird never has the head white, although it becomes of a yellowish-grey. It appears, moreover, from a comparison of many specimens, that the bill and tarsi of the White-tailed Eagle are considerably longer than those of the White-headed. Their scutella do not differ materially, and their wings and tail are similar.

It is a very remarkable circumstance, that in two adult individuals of the White-headed Eagle examined, there are no scutella properly so called on the anterior part of the tarsus, while in five younger birds, there are five scutella. Such a difference has not been observed in any other species. At the same time, however, there are adult individuals which have tarsal scutella.

The following table exhibits the number of scutella on the tarsi and toes of six individuals.

	Adult.	Young in different stages.				
Anterior tarsal,.....	0	6	6	6	6	5
Posterior tarsal,.....	12	10	11	14	9	10
Hind toe,.....	4	4	4	4	4	4
Second toe,.....	5	6	5	5	5	5
Third toe,.....	13	12	13	9	13	13
Fourth toe,.....	6	6	6	6	7	6

The scutella of the White-tailed Eagle are as follows :

	Adult.	Young in different stages.				
Anterior tarsal,	7	0	6	7	6	7
Posterior tarsal,.....	14	4	16	10	0	10
Hind toe,.....	3	3	4	4	4	5
Second toe,	4	3	4	5	5	4
Third toe,.....	12	12	13	13	14	13
Fourth toe,.....	7	7	7	7	6	7

Two of these individuals are adult, and in one of them the anterior tarsal scutella have been reduced to mere scales, as in the two specimens of the White-headed Eagle mentioned above. Hence it appears that in both species these scutella are liable to diminish in size, and to

be broken up into small scales in old age. The above tables will shew what degree of reliance may be placed on a precise number of scutella as a specific character.

An adult male procured at Boston preserved in spirits. The mouth is 2 inches in width; the palate rather flat, with two longitudinal papillate ridges, and an anterior median ridge. The posterior aperture of the nares is oblong, with an anterior slit, and two transverse papillate flaps, as in all other birds of this family. The tongue is 1 inch 7 twelfths long, fleshy, deeply emarginate and papillate at the base, one of the lateral papillæ on each side large; a broad groove extends along the middle, the sides are nearly parallel, and the tip is rounded.

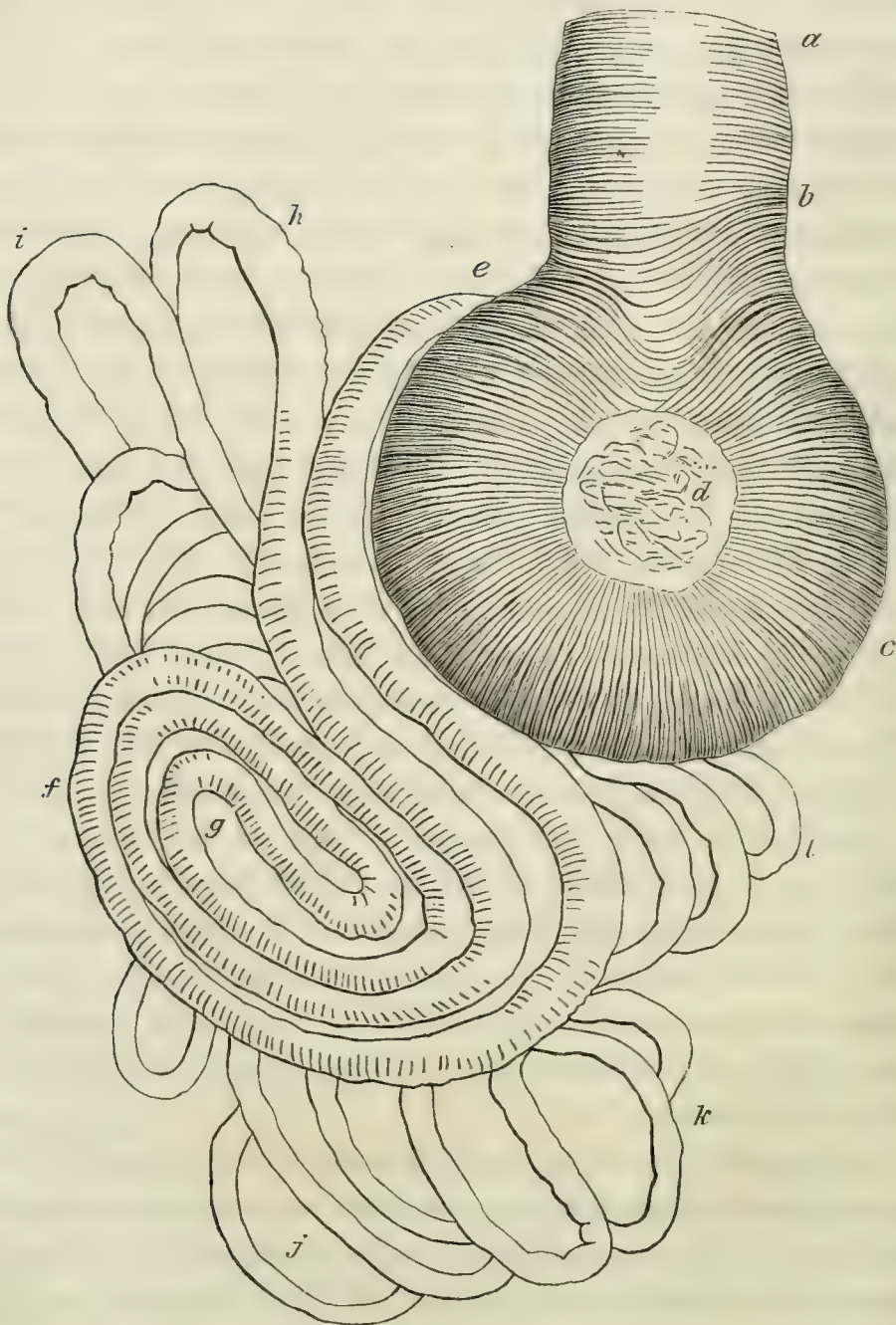
The heart is proportionally large, being $2\frac{1}{2}$ inches in length, and 2 in breadth. The two lobes of the liver are almost exactly equal, the greatest length of that of the left side being 2 inches 7 twelfths. The gall-bladder is elliptical, $1\frac{1}{4}$ inch long. The œsophagus is 11 inches long, its width at the commencement 1 inch 9 twelfths; it enlarges so as to form a crop, of which the greatest width is $3\frac{1}{2}$ inches, and on entering the thorax contracts to 9 twelfths; the breadth of the proventriculus, Fig. 1, *ab*, 1 inch 2 twelfths. The stomach, *cd*, is of a roundish form; its walls so thin as to be almost membranous, and composed of a single series of parallel fasciculi; the tendons, *d*, half an inch in breadth. The intestine, *ek*, is 9 feet 8 inches long. The duodenum, *efgh*, which has a diameter of 4 twelfths, in place of curving round the stomach, and coming up on the left side, as usual, forms a coil of seven folds, supported by a distinct mesentery, then proceeds forwards, and to the right side, opposite the pylorus, forms another loop, and is 23 inches in length. The pancreas, which is double, is only contained in the anterior part of this folded portion, and is $1\frac{1}{2}$ inch long. The intestine, *ijkl*, then having a diameter of 3 twelfths, varying to $2\frac{1}{2}$ twelfths, forms twenty-three folds, and ends in the rectum beneath the kidneys. The rectum, Fig. 2, *ab*, is $5\frac{3}{4}$ inches long, and has a diameter of from 8 twelfths to 10 twelfths; the cloaca *c*, globular, 2 inches in diameter; the cœca extremely small, being $3\frac{1}{4}$ twelfths long, and $1\frac{1}{2}$ twelfth broad.

The trachea is $10\frac{1}{2}$ inches long, flattened, its breadth from 9 twelfths to 6 twelfths; its rings, 120 in number, narrow, and partially ossified. The lateral muscles are very large, and continued into the sterno-tracheales, sending down also on each side a slip to the first bronchial

ring. The bronchi are short, and wide, the right with 20, the left with 18 half rings.

A young Male from Boston, procured by Dr THOMAS M. BREWER. The tongue is $1\frac{1}{2}$ inch long, oblong, fleshy, emarginate and papillate at the base, deeply and broadly grooved along the middle, horny beneath, narrowed, but rounded at the end. The mouth measures 2 inches across. The œsophagus is 11 inches in length, $1\frac{1}{2}$ inch in width at its

Fig. 1.



upper part, enlarges into a crop, of which the greatest width is $2\frac{1}{2}$ inches, lying on the right side and in front, the trachea passing to the left. The walls of the œsophagus are comparatively thick; the external transverse muscular fibres very strong on the crop. On entering the thorax it contracts to $\frac{9}{12}$ twelfths; the proventriculus $1\frac{1}{4}$ inch in breadth. The stomach is rather large, being $2\frac{1}{4}$ inches in length and breadth, somewhat compressed; its muscular coat very thin, and composed of coarse fasciculi; the tendons round and about $\frac{7}{12}$ twelfths in diameter. The proventricular glandules are $\frac{3}{12}$ twelfths long, and $\frac{1}{3}$ twelfth in diameter, cylindrical, forming a belt 2 inches in breadth. The inner surface of the stomach is quite smooth and glossy. The aperture of the pylorus has three valves. The duodenum curves as in the adult, and is 18 inches long. The whole length of the intestine is 9 feet 2 inches; its width from $4\frac{1}{2}$ twelfths to $2\frac{1}{2}$ twelfths. The rectum dilates to $\frac{1}{2}$ inch, and the cœca merely form two projecting knobs, $2\frac{1}{4}$ twelfths long, and $1\frac{1}{2}$ twelfth in breadth.

The trachea is $9\frac{1}{2}$ inches long; its breadth from $\frac{9}{12}$ twelfths to $\frac{7}{12}$ twelfths; it is much flattened, and its rings, 118 in number, are quite unossified. The lateral muscles are very large, at the upper part,

Fig. 2.



expanded over the whole anterior surface ; the sterno-tracheal muscles or slips also very large ; and there is a single pair of inferior laryngeal muscles going to the first bronchial ring. The bronchi are short and wide, one of 16, the other of 18 rings.

The heart is 2 inches 7 twelfths in length, 2 inches in its greatest breadth. The lobes of the liver are about equal, being 2 inches 7 twelfths in their greatest length. The gall-bladder is elliptical, $1\frac{1}{4}$ inch long. The left thoracic cell is $2\frac{1}{4}$ inches long, the left abdominal 4 inches.

OSPREY OR FISH-HAWK.

FALCO HALIAETUS, LINN.

PLATE LXXXI. Vol. I. p. 415.

THE opinion emitted by WILSON and myself that this bird passes southward beyond the limits of the United States, to spend the winter, is only correct in a very limited degree. Observations made by me since the publication of my first volume, have clearly shewn that the greater number spend at least the winter in the Floridas, where they breed at an earlier period than in perhaps any other part of North America. These facts were transmitted by me to my highly esteemed and learned friend WILLIAM MACGILLIVRAY, Esq. of Edinburgh, in a letter addressed to him on the 15th of June 1835, and which was printed in his valuable volume on the "Rapacious Birds of Great Britain" :—

" My dear Friend,—Since the publication of the first volume of my 'Ornithological Biography,' in which an account of the habits of the Fish-Hawk is given, I have had many opportunities of extending my acquaintance with it, and have traced it along the whole extent of the Atlantic coast of the United States, and even as far north as Labrador, where it breeds. I have the greatest pleasure in presenting you with the result of my observations, which you may use in whatever way you please.

" The difference between the periods at which this species breeds along the coast, from the Gulf of Mexico to the northern shores of the

St Lawrence, is very great. While on the St John's River in Florida, on the 7th of February 1832, I found the Fish-Hawks very abundant, and all sitting on their eggs, many of which contained chicks nearly ready for emerging. The birds, therefore, must have paired at least six weeks previous to that date. I was, however, surprised to find them more tardy in this respect than the White-headed Eagles, which had young able to fly. Three hundred miles farther south, the Fish-Hawks had laid their eggs a month earlier. Between the Floridas and New Jersey, or in the districts usually called the Middle States, they rarely begin to lay before the 15th of April. In the State of Maine they seldom arrive before the middle of May; and in Labrador the period of their appearance is from the 1st to the 10th of June. It would be interesting to discover whether the Fish-Hawk, which breeds near the mouths of the Mississippi in January, breeds again in the course of the same season between that place and Labrador or not. I have thought it not unlikely that it does; but have no facts to support the opinion.

“The Fish-Hawk is far from always placing its nest on very high trees, but accommodates itself to any situation that may occur, provided other circumstances are favourable. On the Keys of the Floridas, its nest is often seen placed on a mangrove, not more than seven or eight feet above the water. In two instances, I saw it there on the ground, and once on the roof of a low house. In the latter case, the nest had been resorted to three successive years. In Labrador, the nests which I saw were built on the stunted firs, there being no trees in the country deserving the name. In the Floridas I saw several nests placed close to those of Herons, Ibises, and Cormorants, all these species living together in the greatest harmony.”

Dr RICHARDSON mentions their arrival in the Fur Countries as taking place in the months of March or April, and says that they immediately commence building their nests, or reoccupy old ones. The utmost northern range at this season was not ascertained; but as HEARNE says that none breed in the barren ground north of Churchill, it is presumable that those which are found on the north-west coast of the continent, where they are mentioned as having been seen by Dr TOWNSEND, may, as PENNANT states, be also found in Kamtschatka. I saw very few birds of this species near or within those portions of the Texas which I visited in 1837.

The eggs, which measure $2\frac{1}{2}$ inches in length, $1\frac{2}{8}$ in breadth, are rounded, but otherwise as already described.

An adult female, from New York, preserved in spirits. Length to end of tail $25\frac{1}{2}$ inches, to end of wings $26\frac{1}{2}$, to end of claws $21\frac{1}{2}$; extent of wings 58; wing from flexure 21; tail $9\frac{5}{8}$.

The palate is flat, with two prominent ridges, margined with papillæ, and corresponding to the tongue, and an anterior median ridge. The posterior aperture of the nares is oblong, $4\frac{1}{2}$ twelfths in length, with an anterior slit, and the usual transverse papillate flaps. The tongue is 1 inch long, slightly emarginate behind, with numerous very slender papillæ, one of which on each side is large; it is very concave above, horny on the back beneath, with the tip rounded. The width of the mouth is 1 inch 3 twelfths. The œsophagus is $9\frac{1}{2}$ inches long, its width at the commencement 1 inch, but it soon enlarges into a crop, of which the greatest breadth is $2\frac{1}{2}$ inches, and in entering the thorax contracts to 9 twelfths. The proventriculus is 1 inch in breadth, $1\frac{3}{4}$ long. The stomach is round, 1 inch 10 twelfths in length and breadth; its muscular coat very thin, its fasciculi extremely slender, the central tendons 5 twelfths in breadth; the inner coat smooth. The proventricular glandules are extremely numerous, $2\frac{1}{2}$ twelfths long, and $\frac{1}{4}$ twelfth in breadth. The duodenum forms the usual curve at the distance of 4 inches from the pylorus, its entire length being only 8 inches, in which respect it more resembles that of the true Eagles and many Hawks, than of the *Haliaeti*. The intestine, which is extremely long and slender, forms very numerous convolutions, there being 46 folds in all, and measures 9 feet 9 inches in length, its greatest diameter in the duodenal part being $2\frac{1}{4}$ twelfths, the smallest near the rectum $\frac{1}{2}$ twelfth. The rectum, which is 4 inches long, including the cloaca, has a width of 4 twelfths; and the cœca form two oblong adherent sacs of an elliptical form, $3\frac{1}{2}$ twelfths long, $2\frac{1}{4}$ twelfths in breadth. The cloaca, as usual, is very large and globular.

The heart is 1 inch 5 twelfths long, 1 inch 8 twelfths broad, and therefore of a much more dilated form than usual. The left lobe of the liver is much larger than the right, which is also very unusual, it being 2 inches 5 twelfths in length, the other 2 inches 1 twelfth. The gall-bladder is elliptical, and 1 inch in length.

The trachea is 7 inches 2 twelfths long; its breadth at the upper

part $5\frac{3}{4}$ twelfths, at the lower $4\frac{1}{2}$ twelfths. It is much flattened; its rings 96 in number, only partially ossified. The contractor muscles are large, as are the sterno-tracheal, and there is a distinct inferior laryngeal muscle on each side, proceeding to the membrane between the last ring of the trachea and the first bronchial ring. The right bronchus has 18, the left 15 half rings.

Why should the Osprey have the intestine so much more elongated and attenuated than that of Falcons, Buzzards, and most other birds of this family? Its capacity is probably about the same as that of an ordinary Hawk of the same size. Is a long narrow intestine best adapted for assimilating fish? The White-headed Sea Eagle, which is also a fish-eater, has such an intestine, very different from the short and wide intestine of the flesh-eating Golden Eagle. Or is it because it plunges into the sea, and thus is liable to sudden shocks, which have less effect upon a slender coil of intestine? But many plunging birds, such as Gannets and Terns, have the intestine wide; and the fish-eating palmipedes are not furnished with intestines so attenuated; while the Herons, on the contrary, are. It is a subject for ingenious speculation.

PEREGRINE FALCON OR GREAT-FOOTED HAWK.

FALCO PEREGRINUS, LINN.

PLATE XVI. Vol. I. p. 85.

THIS species is rare in the wooded districts of the Fur Countries, near the trading posts; but Dr RICHARDSON frequently saw it whilst on his march across the Barren Grounds, and Captain PARRY brought some specimens of it from Melville Peninsula. It is a summer visitor of the northern parts of North America, and frequents the coast of Hudson's Bay and the Arctic Sea, with the Barren Grounds, but is very seldom seen in the interior. It arrives there in June, and departs in September.

According to my friend Dr BACHMAN, the Peregrine Falcon is

scarce in South Carolina, and is there seen only along the large rivers, such as the Santee, and in winter.

Dr TOWNSEND saw it on the Rocky Mountains, and I found it in the Texas late in April; but I have nowhere seen it so abundant as along the high rocky shores of Labrador and Newfoundland, where I procured several adult individuals of both sexes, as well as some eggs and young. The nests were placed on the shelves of rocks, a few feet from the top, and were flat and rudely constructed of sticks and moss. In some were found four eggs, in others only two, and in one five. In one nest only a single young bird was found. The eggs vary considerably in colour and size, which I think is owing to a difference of age in the females, the eggs of young birds being smaller. The average length of four was 2 inches, their breadth $1\frac{1}{2}$. They are somewhat rounded, though larger at one end than the other; their general and most common colour is a reddish or rusty yellowish-brown, spotted and confusedly marked with darker tints of the same, here and there intermixed with lighter. The young are at first thickly covered with soft white down. They take food almost immediately after being removed from the nest. Remains of Ducks, Willow Grouse, and young Gulls were found about the nests, which are easily discovered by the excrements on the rocks. In several instances, we found these Falcons breeding on the same ledge with Cormorants, *Phalacrocorax Carbo*.

Although it has been supposed that our Great-footed Falcon is different from the Peregrine Falcon of Europe, I am perfectly convinced of its being the same bird. Since my first acquaintance with this species I have observed nothing in its habits, form, or markings on one continent that differs from what is found on the other.

On the 15th of July 1833, I saw, in Labrador, a Peregrine Falcon chase a Raven with great fury, and follow it to its very nest, having alighted on which, however, the Raven defended herself and her young. The farther north we advanced the more abundant did we find this bird, whereas the Common Crow gradually became scarcer, so that at last it was hardly more numerous than the Peregrine. In the Floridas, I once saw a Peregrine Falcon chase a White-headed Eagle, and drive it away with ease, until it disappeared in the woods.

The following measurements are those of two adult individuals:—

Male. Length to end of tail $17\frac{1}{2}$ inches, to end of wings 17, to end of claws $17\frac{1}{2}$; extent of wings 39.

Female. Length to end of tail $19\frac{1}{4}$ inches, to end of wings 18, to end of claws 20 ; extent of wings 42.

An adult male, sent from Boston by Dr T. M. BREWER. The roof of the mouth flat, with two longitudinal papillate ridges; the upper mandible with a broad median ridge. The aperture of the mouth 1 inch $1\frac{1}{2}$ twelfth across; the tongue 9 twelfths long, fleshy, sagittate and papillate at the base, concave above, grooved on the back beneath, the point horny, rounded, and slightly emarginate. The œsophagus is 6 inches long, 1 inch in width at its upper part, immediately dilating into a large crop, of which the greatest width is 1 inch 9 twelfths; on entering the thorax it contracts to 8 twelfths; the proventriculus is 10 twelfths in breadth. The stomach is round, 1 inch 11 twelfths in diameter, a little compressed; its muscular coat very thin, and composed of a single series of large fasciculi; the tendons roundish, and $\frac{1}{2}$ inch in diameter. The duodenum curves in the usual manner, returning at the distance of $5\frac{1}{4}$ inches. The intestine is 3 feet long, rather slender, the width of the duodenum being $4\frac{1}{2}$ twelfths, of the rest diminishing to 2 twelfths. The cœca are merely two slight sacs, $1\frac{1}{2}$ twelfth long. The cloaca is very large, globular, $1\frac{1}{4}$ inch in diameter. The proventricular glands are exceedingly small, cylindrical, 1 twelfth long, and forming a belt 10 twelfths in breadth. The inner surface of the stomach is smooth, and the pylorus has a kind of valve composed of three small knobs.

The heart measures 1 inch 9 twelfths in length, 1 inch 2 twelfths in breadth. The lobes of the liver are about equal.

The trachea is $4\frac{1}{2}$ inches long, rather wide, considerably flattened; its breadth at the upper part 5 twelfths, at the lower $3\frac{1}{2}$ twelfths. The rings, 72 in number, are very firm; the lateral muscles very large, as are the sterno-tracheales, which are continuous with the anterior part of the lateral muscles, while a strong slip passes on each side from their posterior part to be inserted upon the membrane interposed between the last ring of the trachea and the first of the bronchus. The last entire ring of the trachea is divided by a transverse bony ridge, as in all American birds of this family excepting the Caracara. The bronchi are rather short and wide, one of 15, the other of 17 cartilaginous half rings.

Adult Female. The mouth measures $1\frac{1}{4}$ inch across. The œso-

phagus is $7\frac{1}{4}$ inches long; the crop 2 inches in width. The stomach has a diameter of 2 inches 2 twelfths. The intestine is 4 feet 6 inches long, its width varying from 4 twelfths to $2\frac{1}{2}$ twelfths. The cœca are 3 twelfths long, $1\frac{1}{2}$ twelfth in breadth; the diameter of the cloaca $1\frac{1}{2}$ inch; its distance from the cœca $1\frac{9}{12}$ inch.

The trachea is 5 inches 4 twelfths long, its breadth from $5\frac{1}{2}$ twelfths to $4\frac{1}{2}$ twelfths; its rings 80; the bronchi with 15 and 18 rings.

PIGEON HAWK. *FALCO COLUMBARIUS.*

PLATE XCII. VOL. I. p. 466. MALE AND FEMALE.

PETIT CAPOREAL. *FALCO TEMERARIUS.*

PLATE LXXXV. VOL. I. p. 381. ADULT MALE.

THE bird represented in the last-mentioned plate, and described under the name of *Falco temerarius*, was merely a beautiful adult of the Pigeon Hawk, *F. columbarius*. That figure, and the two of the same species in Plate XCII, will afford a good opportunity of judging of the differences, as to size and colour, that occur in this species. The great inferiority in size of the individual represented as *F. temerarius*, was the cause of my mistaking it for a distinct species; and I have pleasure in stating that the Prince of MUSIGNANO was the first person who pointed out my error to me soon after the publication of my first volume.

The Pigeon Hawk ranges very extensively over the United States, and extends its migrations far beyond their limits on either side. Dr TOWNSEND found it on the Rocky Mountains, as well as along the shores of the Columbia River. Dr RICHARDSON mentions it as not uncommon about York Factory, in latitude 57° , and it is not improbable that it wanders farther, as he speaks of having seen a small hawk on the north shore of Great Bear Lake, in latitude 66° , which may have been a male as small as the one represented in my plate. I found it very abundant in the Texas early in May, when I shot as many as five on a small island in a short time.

Mr HUTCHINS's description of the eggs of this bird, which he says are white, and from two to four in number, as well as the situation of

its nest, as given in his Notes on the Hudson's Bay Birds, is greatly at variance with my own observations. The eggs in three instances, which occurred at Labrador, were five; they measured an inch and three-quarters in length, an inch and a quarter in breadth, and were rather elongated; their ground colour a dull yellowish-brown, thickly clouded with irregular blotches of dull dark reddish-brown. In that country they are laid about the first of June. In the beginning of July I found five in a nest that were ready to be hatched. The nests were placed on the top branches of the low firs peculiar to that country, about ten or twelve feet from the ground, and were composed of sticks slightly lined with moss and a few feathers. At this season the old birds evinced great concern respecting their eggs or young, remaining about them, and shewing all the tokens of anger and vexation which other courageous species exhibit on similar occasions. The young are at first covered with yellowish down; but I had no opportunity of watching their progress, as all that were taken on board the Ripley died in a few days. This species also breeds in Nova Scotia and New Brunswick.

A male from the Texas. Length to end of tail $13\frac{1}{4}$ inches, to end of wings $11\frac{5}{12}$, to end of claws $11\frac{6}{12}$; extent of wings 26.

The mouth resembles that of the other Falcons; its breadth $9\frac{1}{2}$ twelfths. The tongue is short, 6 twelfths long, fleshy, deeply emarginate and papillate at the base, broadly grooved above, the tip rounded and slightly emarginate. The œsophagus is $4\frac{1}{2}$ inches long, its width at the upper part half an inch. The stomach is very large, round, $1\frac{1}{2}$ inch in diameter, with a very thin muscular coat; its central tendons 4 twelfths in diameter. The proventriculus is 9 twelfths long; its glands very numerous, and cylindrical. The intestine is $26\frac{3}{4}$ inches long, $2\frac{1}{2}$ twelfths in its greatest diameter. There are merely two slight indications of cœca; and the cloaca is globular, with a diameter of 1 inch.

The trachea is $2\frac{3}{4}$ inches long, a little flattened; the rings 58, well ossified; its breadth at the upper part 3 twelfths, at the lower 2 twelfths. The contractor muscles cover the anterior surface entirely in the upper third, and are of moderate strength, as are the sterno-tracheales; a pair of inferior laryngeal muscles going to the membrane between the last tracheal and first bronchial half ring. The bronchial half rings are 15 and 18.

A female from the same country has the œsophagus $4\frac{3}{4}$ inches long; the stomach $1\frac{3}{4}$ inch in diameter, the intestine 28 inches long.

AMERICAN SPARROW HAWK.

FALCO SPARVERIUS, LINN.

PLATE CXLII. VOL. II. p. 246.

ALTHOUGH this well-known species has not been observed farther north than the 54th degree of latitude, it extends laterally from the Atlantic to the Pacific, and is found in all intermediate districts. I have specimens from the Rocky Mountains and the valley of the Columbia River, which were procured by Dr TOWNSEND. It is abundant in the Texas, where it breeds.

Individuals of this species vary much in size, but I have not been able to detect differences sufficient to induce me to think that two species are confounded under a common name.

In a male, the mouth is 9 twelfths in breadth; the tongue $5\frac{1}{2}$ twelfths long, concave above, rounded at the tip, with a notch, and grooved beneath. The posterior aperture of the nares is $\frac{1}{2}$ inch long, including the slit. The œsophagus is 3 inches 2 twelfths long, inclined to the right side, as usual, and expanded so as to form a crop of moderate size, of which the greatest width is 9 twelfths. The stomach is round, a little compressed, 11 twelfths long, 10 twelfths broad, its central tendons $4\frac{1}{2}$ twelfths; its muscular coat thin, and composed of a single series of fasciculi, many of which are separated to a distance equal to their own breadth, when the stomach is distended. The proventricular glands are very minute, and form a belt half an inch in breadth. The intestine is 15 inches long, from $2\frac{1}{2}$ twelfths to $1\frac{1}{2}$ twelfth in width. There are no cœca. The rectum from $2\frac{1}{2}$ to $4\frac{1}{2}$ twelfths in width; the cloaca globular and dilatable to $1\frac{1}{4}$ inch. The inner surface of the stomach is smooth, and the pylorus has three valvular prominences.

The trachea is $2\frac{2}{12}$ inches long, from 2 twelfths to $1\frac{1}{2}$ twelfth in breadth, and much flattened; its rings 82, firm. The bronchi have about 15 half rings. The muscles are as in the Peregrine and Iceland Falcons.

SWALLOW-TAILED HAWK.

FALCO FURCATUS, LINN.

PLATE LXXII. VOL. I. p. 368.

I SAW a good number of Swallow-tailed Hawks in the Texas, and observed, that while on wing they not unfrequently shake themselves, partially closing the wings, and vibrating the tail-feathers, the birds meanwhile gliding to the distance of ten or fifteen yards, after which they resume their graceful flight. We saw one coming down, rapidly sweeping over the water of Buffalo Bayou, and drinking in the manner of a Swallow. In the same country I found these birds at a greater distance from woods than I have elsewhere seen them, and frequenting the wet prairies. We frequently saw them having long slender snakes hanging in their talons, and observed that they devoured them while on wing. Some of these snakes were so slender that my friend EDWARD HARRIS thought, on first seeing them dangling in the air, that the Hawk had a long blade of grass in its claws. On being shot at the bird would sometimes drop its prey, unless it happened to be beyond the reach of shot. This species nestles in that country on the tallest trees, along the margins of the bayous or water-courses.

My friend Dr BACHMAN informs me, that the Swallow-tailed Hawk "is seen sparingly in South Carolina, where it breeds on the high trees of the swamps. They occasionally appear in companies of five or six. I have seen it more frequently," he continues, "along the sea-coast, coursing about over the brown grass, and among the myrtles, apparently in search of insects. It is rather a scarce bird in every part of this State, and I have ascertained that it is scarcely ever seen in the upper country. A singular habit of this bird may be worth mentioning. It is common in Carolina to set on fire early in the spring the woods and dried grass of old fields, for the purpose of procuring an early growth of grass for cattle. No sooner are woods on fire than this Hawk makes its appearance, sailing around like a Tern, plunging into the smoke and within a few feet of the flames. It is evidently tempted to these situations by the number of insects, particularly by several species of *Gryllæ*, which are disturbed by the fire, and are seen flying among the

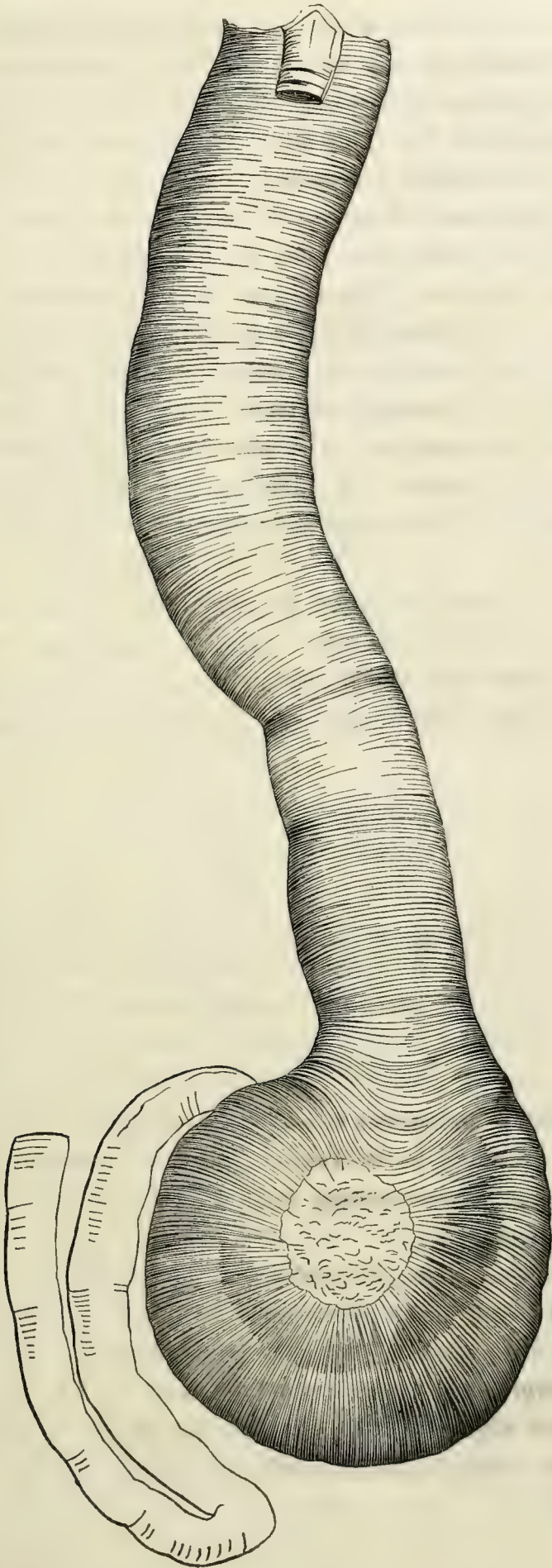
smoke!" This I have also observed on several occasions in the Floridas and in Louisiana, since the publication of my first volume.

Is it not somewhat strange, Reader, that because WILSON, who never saw a Swallow-tailed Hawk alive, but drew his figure from a stuffed specimen in PEALE'S Museum in Philadelphia, represented its eyes and feet pure yellow, these colours are to this day quoted and given in coloured plates; whereas I have long since described *the eyes as black, and the feet pale blue tinged with green!*

The following are some of the dimensions of an individual. Length to end of tail 22 inches, to end of wings 19, to end of claws 13; extent of wings 47. Weight 1 lb. Of another, the length to end of tail 22 inches, to end of wings $19\frac{1}{4}$, to end of claws $12\frac{1}{2}$; extent of wings $48\frac{1}{4}$. Weight 15 oz.

An adult male from Texas in spirits. The general description of the mouth is the same as that of most other Hawks, the palate being flat, with two longitudinal ridges, and an anterior tuberculate ridge. The posterior aperture of the nares oblong, with an anterior slit, which has the edges papillate. The lower mandible is much more decurved toward the end than in any other North American species. The tongue is correspondingly decurved, but otherwise of ordinary form, 9 twelfths long, sagittate and finely papillate at the base, flat above, narrowed and slit at the point, the fissure being 1 twelfth in depth.

The œsophagus is $5\frac{1}{2}$ twelfths long. It differs from that of all other American birds of this family examined, in being destitute of a crop or sacciform dilatation, and in resembling that of the Owls, being of the uniform diameter of about 1 inch in its whole length. Its walls are extremely thin, and its muscular coat has its fibres disposed in fasciculi, resembling those of the stomach. The latter organ is extremely large, being 2 inches 4 twelfths long, 2 inches 3 twelfths broad; its walls very thin, the muscular coat composed of a single series of distinct fasciculi, as in the Owls, the tendons roundish and 10 twelfths in diameter. The heart is $1\frac{1}{2}$ inch long, 10 twelfths broad. The left lobe of the liver is larger than the right, the former being 1 inch 5 twelfths, the latter 1 inch 3 twelfths in length. The gall-bladder, which is oblong, is 9 twelfths in length. In the stomach are six snakes, of a very slender form, and light green colour, one of them $22\frac{1}{2}$ inches in length, together with one large larva, 3 inches long, and 2 cole-



opterous insects. Some of the snakes have been swallowed whole, although bruised, the rest broken into large pieces several inches long. The aperture of the pylorus is very small, its diameter being only $1\frac{1}{2}$ twelfth; it has three longitudinal valves, as is common in hawks. The duodenum curves in the usual manner, returning upon itself at the distance of 3 inches. The biliary ducts enter at $6\frac{1}{2}$ inches. The intestine is short, rather wide, 22 inches long, from 5 twelfths to 3 twelfths in diameter. There are *no cæca*. The rectum is $3\frac{1}{2}$ inches long, including the cloaca, which is globular, and 1 inch in diameter.

The trachea is 4 inches long, flattened, from 4 twelfths to $2\frac{3}{4}$ twelfths in breadth, a little enlarged and much flattened at the lower part; its rings feeble, 82 in number. The contractor muscles are strong, the sterno-tracheal moderate. A single pair of inferior laryngeal, going to the last ring. The bronchi are moderate, one of 12, the other of 15 half rings.

In another male shot in the same country, on the same day, the stomach contains 1 slender green snake 19 inches long, 6 lizards, and 4 beautiful very large coleopterous insects, with two eggs of reptiles $7\frac{1}{2}$ twelfths long. The intestine is 22 inches long, there are *no vestiges of cæca*.

MISSISSIPPI KITE.

FALCO PLUMBEUS, GMEL.

L ATE CXVII. VOL. II. p. 108.

RESPECTING this species I have only to add that I found it in abundance, and breeding, in the Texas. An adult individual procured on Buffalo Bayou, in that country, in May 1837, presents the following internal characters:—

The mouth is wide; its roof flat, with two longitudinal papillate ridges, and an anterior median ridge; the tongue very short and broad measuring only $\frac{1}{2}$ inch in the longitudinal direction, and $3\frac{1}{4}$ twelfths across, emarginate and papillate at the base, concave above, the tip rounded and slightly emarginate. The œsophagus is 4 inches long, dilated into a crop 1 inch in width, and on entering the thorax con-

tracts to 5 twelfths. The proventriculus is 8 twelfths in breadth, its glands very numerous, cylindrical, $1\frac{1}{2}$ twelfth long, $\frac{1}{4}$ twelfth broad. The stomach is round, little flattened; its muscular coat rather thick, composed of a single series of strong fasciculi; the tendons round, $4\frac{1}{2}$ twelfths in diameter; its inner coat soft and smooth. The intestine is $19\frac{3}{4}$ inches long; its width at the anterior part 4 twelfths, toward the cœca $2\frac{1}{2}$ twelfths; in the rectum 5 twelfths; the cloaca very large and globular. The cœca come off at the distance of $3\frac{1}{2}$ inches from the extremity, and are only $1\frac{1}{2}$ twelfth long, and $\frac{3}{4}$ twelfth broad.

The trachea is $3\frac{1}{4}$ inches long, much flattened, the rings, 88 in number, feeble; its breadth pretty uniformly $2\frac{1}{4}$ twelfths, but at the lower part 2 twelfths. The bronchi are rather slender, with about 15 half rings. The lateral muscles are strong, as are the sterno-tracheal, which are directly continuous with them, and there is a slip which runs down to the last ring of the trachea on each side.

GOSHAWK.

FALCO PALUMBARIUS, LINN.

PLATE CXLI. VOL. II. p. 241.

I continue of the same opinion as before respecting the American Goshawk, considering it as in no respect different from that of Europe, notwithstanding all that has been said to the contrary by authors, who, I am convinced, never studied its habits. Some, who at one time considered them identical, now view them as distinct, without so much as informing us on what grounds; while others adduce characters neither permanent nor general.

I regret, that although Mr SWAINSON has described specimens of this Hawk procured near the Saskatchewan River, Dr RICHARDSON says nothing as to the extent of its distribution northward. Dr TOWNSEND did not meet with it on the Rocky Mountains, or in the Oregon Territory. Its tendency to remain in the northern parts of the continent, so as rarely to extend its winter visits beyond Maryland and the lower parts of Kentucky, affords strong evidence in favour of what I have said regarding its identity with the bird of Europe.

The eggs of our bird measure two inches and a quarter in length, one inch and five and a half eighths in breadth. They are sometimes pale greenish-blue, or bluish-white, without spots.

STANLEY HAWK.—COOPER'S HAWK.

FALCO STANLEYII, AND *FALCO COOPERII*. BONAP.

PLATE XXXVI. VOL. I. p. 186. YOUNG IN WINTER.

PLATE CXLI. VOL. II. p. 245. ADULT MALE.

I feel perfectly convinced that the specimens of this Hawk figured in my plates, belong to the same species as the bird named *Falco Cooperii* by the Prince of MUSIGNANO before I published my account of it. I must, however, inform you that the naturalist just mentioned saw my original drawing, which I made in Louisiana, several years before he received his specimen from Mr COOPER, and that he acknowledged to me that he had not before seen any of the kind. The name which I gave it must, however, now give place to that of *Falco* or *Astur Cooperii*.

To the account of the habits of this bird already given, I have to add, that it extends its migrations to the Valley of the Columbia River, where it was observed by Dr TOWNSEND. I may here give you another instance of its audacity. My friend Dr BACHMAN shewed me a beautiful specimen alive, which had thrust itself into one of his aviaries, attracted by some Pheasants confined there. He presented it to me, and its skin is now in my possession, along with many others.

The eggs, which are usually four in number, measure one inch seven-eighths in length, an inch and six and a half twelfths in breadth, and are much rounded at both ends. On some of them I found a few large markings of a dull yellowish-cream colour.

BROAD-WINGED HAWK.

FALCO PENNSYLVANICUS.

PLATE XCI. VOL. I. p. 461.

I HAVE not been able to trace the movements of this bird farther eastward than the vicinity of Pictou in Nova Scotia, where several specimens have been procured by my friend THOMAS MACCULLOCH, Esq., one of which is in my possession. It does not appear to go farther southward than the State of Maryland, unless driven by very intense cold. It is more abundant in Pennsylvania, New York, and Connecticut, than in any other district, and is thus apparently more restricted in its range of migration than most of our Hawks. I received a fine pair in excellent preservation from WILLIAM COOPER, Esq. of New York.

The eggs of this bird measure two inches and a half in length, an inch and five-eighths in breadth, and are of a rather roundish form, varying from dull greyish-white, blotched with dark brown to yellowish-white, rather faintly clouded, especially towards the smaller end, with pale purplish-grey, dull yellowish-brown, and dotted with various light tints towards the larger end.

An adult Male. Length to end of tail $18\frac{3}{4}$ inches, to end of wing 17, to end of claws 17; extent of wings 38; bill along the ridge $1\frac{4\frac{1}{2}}{1\frac{1}{2}}$, along the edge of lower mandible also $1\frac{4\frac{1}{2}}{1\frac{1}{2}}$; height of bill at the base $\frac{10}{1\frac{1}{2}}$; wing from flexure $11\frac{3}{4}$; tail $7\frac{7}{8}$; tarsus 3; first toe $\frac{10}{1\frac{1}{2}}$, its claw $\frac{10\frac{1}{2}}{1\frac{1}{2}}$; second toe $\frac{1}{1\frac{1}{2}}$, its claw $\frac{10\frac{1}{2}}{1\frac{1}{2}}$; third toe $1\frac{7\frac{1}{2}}{1\frac{1}{2}}$, its claw $\frac{9}{1\frac{1}{2}}$; outer toe $1\frac{1\frac{1}{2}}{1\frac{1}{2}}$, its claw $\frac{7\frac{1}{2}}{1\frac{1}{2}}$.

The roof of the mouth is flat, with two longitudinal papillate ridges, and an anterior tuberculate ridge; its width 1 inch 1 twelfth. The tongue is rather short, measuring 10 twelfths of an inch in length, emarginate and papillate at the base, longitudinally concave above, with the sides nearly parallel, its breadth $\frac{1}{4}$ inch, the tip rounded. Posterior aperture of the nares linear-oblong, $4\frac{1}{2}$ twelfths in length, with an anterior slit 5 twelfths long. The œsophagus is 6 inches long, inclines to the right side as usual, and there expands into a large crop, of which

the greatest width is 1 inch 10 twelfths ; the proventriculus 11 twelfths, its glands very small, cylindrical, occupying a belt 1 inch in breadth. The stomach is large, round, a little compressed, $1\frac{1}{2}$ inch in diameter ; its muscular coat very thin, and composed of a single series of fasciculi ; its inner surface smooth, soft, somewhat rugous ; the tendons 8 twelfths in diameter. The pylorus has three prominent triangular valves, and a small prominence exterior to the margin. The duodenum curves in the usual manner, folding back at the distance of three inches. The intestine is 39 inches long ; its greatest width $2\frac{1}{2}$ twelfths, the smallest towards the rectum nearly 2 twelfths. The rectum is $3\frac{1}{2}$ inches long, including the cloaca, its breadth at the commencement 4 twelfths, gradually enlarging to 6 twelfths ; the cloaca globular, $1\frac{3}{4}$ inch in diameter. The cœca unequal, one 3 twelfths long, the other $1\frac{1}{2}$ twelfth.

The trachea is $4\frac{5}{12}$ inches long, flattened, 4 twelfths broad at its upper part, 2 twelfths at the lower ; the rings 95, very thin and partially ossified. The bronchi of 21 rings each. The contractor muscles are very strong, directly continued into the sterno-tracheal, and sending a small slip on each side to the last ring.

RED-TAILED HAWK.

FALCO BOREALIS, GMEL.

PLATE LI. VOL. I. p. 265.

It is to be regretted that authors have so often imposed upon birds names which are not strictly applicable to them. In the present case the specific name "*borealis*" is far from correct, for this species is very abundant during the whole year in our Southern and Western Districts, indeed in the proportion probably of five for one found in the northern. This, it would appear, was not known to WILSON ; and, although a good number breed in the Middle Districts, and some remain there in winter, those which have been obtained farther north I look upon as stragglers. Some of these have been shot at York Factory, on the plains of the Saskatchewan, on the Rocky Mountains, and on the Columbia River. I have found this species abundant in the Texas, where

it breeds, as well as in the Floridas ; but in Labrador I saw only a single individual.

The eggs measure two inches and one-eighth in length, an inch and five and a half eighths in breadth, and are thus much rounded, though still broader at one end than the other.

The roof of the mouth is flat, with two longitudinal soft ridges and an anterior ridge ; the posterior aperture of the nares 1 inch long, oblong behind, linear before, papillate on the edges. The tongue is 11 twelfths long, emarginate and papillate at the base, concave above, horny beneath, narrowly rounded at the tip. The mouth is very wide, measuring 1 inch 4 twelfths across. The œsophagus is $7\frac{1}{2}$ inches long, 1 inch 2 twelfths in width at the upper part, dilated into a large crop $2\frac{1}{4}$ inches in width, then contracted to 1 inch as it enters the thorax. The proventricular glands are small, cylindrical, 1 twelfth long, forming a belt 1 inch in breadth. The stomach is roundish, a little compressed, 1 inch 9 twelfths in diameter ; its muscular coat thin and composed of a single series of fasciculi, as in other Hawks ; its tendons $\frac{1}{2}$ inch in diameter ; its inner coat soft, smooth, faintly rugous. The pylorus has three knob-like valves. The intestine is rather short and wide, its length 2 feet 11 inches, its width from $4\frac{1}{2}$ twelfths to $2\frac{1}{2}$ twelfths. The duodenum curves in the usual manner, returning at the distance of $2\frac{1}{2}$ inches, and the intestine forms ten single curves. The rectum is 3 inches 8 twelfths long, including the cloaca, which is 2 inches in diameter. The cœca form two very small sacs scarcely distinguishable, being only $1\frac{1}{2}$ twelfth long, and $\frac{1}{2}$ twelfth wide ; the rectum $\frac{1}{2}$ inch wide at the commencement, the cloaca large and globular.

The trachea is 6 inches long, rather wide, flattened ; its breadth at the top 5 twelfths, towards the lower part $3\frac{1}{2}$ twelfths. The rings, 102 in number, are partially ossified. The bronchi are of moderate width, and of about 16 cartilaginous half rings. The contractor muscles expand over the whole anterior surface for the length of $2\frac{1}{2}$ inches, then become lateral, and are very strong. The sterno-tracheales come off at the distance of 10 twelfths from the inferior larynx ; and there is a pair of inferior laryngeal muscles, which, as usual, are a continuation of the posterior parts of the lateral or contractor muscles, and attached to the first bronchial ring.

BLACK WARRIOR.*FALCO HARLANI.*

PLATE LXXXIV. Vol. I. p. 441.

ALTHOUGH this species was looked upon as doubtful by those who had not seen it, and even by the Prince of MUSIGNANO, until his recent visit to London, when I shewed to him and the Messrs GRAY the specimen which I presented to the British Museum, it seems to be now fairly established. These gentlemen admitted it to have no connection with the bird called by WILSON *Falco niger*, to which it was imagined by Sir WILLIAM JARDINE to be allied, and to be distinct from any known to them. Of the two specimens which I gave to the British Museum, there is now only one to be found, and even of it the sex has not been marked. It is however valuable, inasmuch as I am not aware of the existence of any other.

RED-SHOULDERED HAWK. *FALCO LINEATUS*, GMEL.

PLATE LVI. Vol. I. p. 296. ADULT MALE AND FEMALE.

WINTER HAWK. *FALCO HYEMALIS*, GMEL.

PLATE LXXI. Vol. I. p. 364. YOUNG IN WINTER.

It is now pretty well ascertained that this species does not proceed farther north than the lines of the United States, as it is not mentioned in the Fauna Boreali-Americana, nor was met with by myself in Labrador or Newfoundland. On the other hand, it is very abundant in the Texas. Dr THOMAS M. BREWER informs me that a few birds of this species breed in Massachusetts, and that he found a nest in Roxbury, at a short distance from Boston. The eggs measure 2 inches and one-eighth in length, one inch and five-eighths in breadth. Dr TRUDEAU states that he found a nest with eggs in the State of New York, near Cape St Vincent. "It was placed upon a very high sugar maple, and

was large for the size of the bird. The female was shot on the nest, and one of the eggs, of which there were only two, was broken in descending. This species also nestles in Louisiana." According to Dr BACHMAN, "this bird is very destructive to poultry in South Carolina, breeding in the neighbourhood of the plantations, and often persecuting a hen with half-grown chickens until the whole brood is seized."

The dimensions of an adult male are :—Length to end of tail $21\frac{1}{4}$ inches, to end of wings 19, to end of claws 19; extent of wings 44; wing from flexure $13\frac{1}{2}$; tail 9; bill along the ridge $1\frac{4}{12}$, along the edge of lower mandible $1\frac{4}{12}$; tarsus 3; hind toe 1, its claw $1\frac{1}{12}$; second toe 1, its claw $1\frac{1}{12}$; middle toe $1\frac{1}{2}$, its claw $\frac{10}{12}$; outer toe $1\frac{1}{2}$, its claw $\frac{8}{12}$.

The mouth is 1 inch in width; the palate flat, with two longitudinal papillate ridges, and an anterior median smooth ridge; the posterior aperture of the nares oblong, 5 twelfths in length, with an anterior slit of the same length. The tongue is $10\frac{1}{2}$ twelfths long, emarginate and papillate at the base, concave above, horny beneath, its breadth 3 twelfths, its sides parallel, its tip rounded. The œsophagus is 6 inches long, 1 inch in width at the commencement, dilated into a large crop 2 inches long and 1 inch 9 twelfths in its greatest breadth, and on entering the thorax contracted to 10 twelfths. The stomach is very large, roundish, $2\frac{1}{4}$ inches long, 2 inches and 1 twelfth in breadth; its muscular coat very thin, being composed of a single series of fasciculi; the tendons 7 twelfths in breadth; the inner surface smooth. The pylorus is very small, with two knob-like valves; around it the surface covered with minute hairs, which are, however, adventitious. The proventricular glands occupy a belt $1\frac{1}{4}$ inch in breadth. The intestine is 50 inches long, its width from 3 twelfths to $1\frac{1}{2}$ twelfth. The cœca are $2\frac{1}{2}$ twelfths long, $1\frac{1}{2}$ twelfth in width, and placed at the distance of 3 inches from the anus. The cloaca is globular, $1\frac{1}{2}$ inch in diameter. The stomach contained remains of bones of frogs and insects of different species.

The trachea is 4 inches 10 twelfths long, much flattened; its breadth at the upper part $4\frac{3}{4}$ twelfths, at the lower $2\frac{3}{4}$ twelfths; its rings, 78 in number, slender and partially ossified. The bronchi, of moderate length and width, have 15 and 18 half rings. The lateral muscles are rather large, the sterno-tracheal rather slender; and there is a single pair of inferior laryngeal muscles.

SNOWY OWL.

STRIX NYCTEA, LINN.

PLATE CXXI. VOL. II. p. 135.

THIS beautiful bird frequents the most arctic lands that have been visited, and, according to Dr RICHARDSON, “retires with the Ptarmigan, upon which it preys, to more sheltered districts, in the winter. Even in this latter season, it is frequently seen within the confines of the arctic circle. It hunts in the day. When seen in the barren grounds, it was generally squatting on the earth, and if put up, it alighted again after a short flight, but was always so wary as to be approached with great difficulty. In the woody districts it shews less caution, and has been known to watch the Grouse-shooter to despoil him of his game. It preys on lemmings, hares, and birds, particularly the Willow Grouse and Ptarmigan. It makes its nest on the ground, and lays three or four eggs, of which two only are in general hatched.”

My friend THOMAS MACCULLCOH, Esq. of Pictou, has favoured me with the following interesting notice respecting this species:—“When in London, I mentioned to you, that during my passage from Pictou to Hull, in November 1834, I had seen a Snowy Owl at a considerable distance at sea. When the bird was first observed, I thought that it had wandered, and would immediately make for the vessel, but though it passed close by us repeatedly, it shewed no disposition whatever to alight. By the ship’s reckoning we were then upwards of 200 miles from the nearest point of Newfoundland, and notwithstanding the distance which the Owl must have traversed in its irregular course, it shewed no symptom of fatigue, but skimmed as dexterously along the deep trough of the rolling waves, or rose as freely over their huge white crests as if it had been merely coursing the surface of its native hills. I did not, however, observe it attempt to lift anything from the water, though from the care with which it scanned the surface, it was evidently in search of food. Fish seemed to be the object of its search, for it never attempted to interfere with any of the numerous water-fowl by which it was surrounded, nor did they on the other hand appear in the least degree alarmed by its presence. There could not be, I am

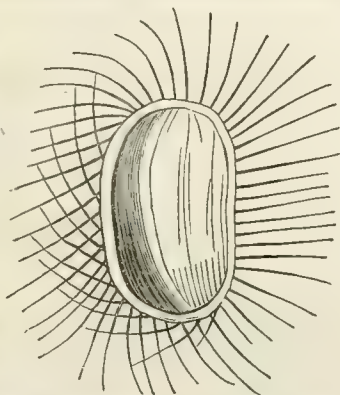
satisfied, any mistake about the bird, as it was too long about the vessel and too close for us to be deceived. I had with me at that time one of these birds alive, and my attention was first directed to the other by one of the sailors pointing to it, and calling to me that mine had escaped.

As the Snowy Owl is very seldom obtained alive, the following notices of the one which I had for a few weeks in my possession may perhaps prove interesting to you. The bird was purchased from an Indian the day upon which I sailed, and was at first so exceedingly timid that when I approached, it used to expand its wings and make every effort to escape, uttering at the same time a sharp shrill sound, which closely resembled the note of the little Sparrow Hawk. After a few days, however, it greedily devoured the fresh beef which was laid beside it, and became apparently quite reconciled to confinement. The disposition of the bird appeared to be exceedingly gentle. I never observed it attempt to strike with its claws, and it never used to bite unless when provoked. Nothing seemed to afford it so much pleasure as scratching its head and breast-bone, and while this was being done, it would close its eyes and remain perfectly still, as if lulled to sleep by the agreeable sensation. The captain put up a roost for the Owl, along one of the lockers, and often amused himself by shaking hands, as he called it, with the bird. This was done by placing one of his fingers among the strong talons of the Owl, and shaking away, often very roughly, while the bird, apparently much delighted, used to support itself upon the other leg. At first, when the captain wished to withdraw his finger, he used to give the Owl a sudden touch upon the shoulder with his left hand, which made the bird jump and scream most violently. For a short time this answered the purpose, but the Owl got so cunning at length, that though the proffered finger was never refused, yet the slightest motion of the left arm was sufficient to make it tighten the gripe and bite most furiously. With the sailors it was a general favourite, and when upon deck they used to cram it with every bit of fresh meat they could obtain; and in course of time it became so accustomed to get scraps from them, that frequently when dozing, by merely touching its bill or breast, it would take the pieces from their hands without opening its eyes. One morning the Owl was dozing upon deck, and a sailor, by the way of shewing his cleverness, held his hands full of salt water directly in front of the bird. With-

out looking what his hands contained, it dipped its head into the water, much to its own discomfort, but to the great amusement of the sailors. The Owl having apparently relapsed into a doze, the sailor, elated with the result of his first attempt, ventured to try the same trick again, but received a nip in return, which made him clap his finger into his mouth and retreat amid the laughter and jeers of the rest of the crew. The roost which the captain had put up for the Owl, was directly behind the locker upon which the carpenter and mate usually sat at mess. During dinner, one very stormy day, by a sudden lurch of the vessel, the Owl was thrown from its perch, and the first place it alighted upon was the bald pate of the carpenter, who was seated in front. It had, however, scarcely time to open its eyes upon its strange resting place, ere it was dislodged by a stroke of the carpenter's arm, and obliged to seek for more secure footing, which it readily found among the bushy locks of the mate, who but an instant before was laughing at the strange predicament of his companion. For a short time every stroke which the mate gave his unwelcome visitor was quickly repaid by a closer gripe, and a smart stroke upon each ear from a pair of powerful wings; but the vessel having at length settled, the bird retreated, apparently not a little astonished at the unusual uproar. During the day-time it seemed a good deal inclined to doze, particularly after being fed, but not more so than I have seen Hawks and some other birds. Towards evening, however, it certainly shewed a stronger disposition to activity, its eyes became more bright and glaring, its motions more quick, and no movement in the cabin escaped its notice. Having repeatedly extinguished the candles in the cabin by attempts to fly, we were obliged to confine the bird whenever the daylight began to fade. Two things seemed to irritate it exceedingly: the first was to touch its wings, and the second to put water on it. The first might have originated from a wound, though I could not detect any injury; but the second seemed rather singular in a bird which was accustomed to obtain at least a part of its subsistence from the water. Before I parted with this bird, it seemed a good deal attached to me, though it took no notice of other persons. When it observed me even at a considerable distance, it would lower its head, watch me very closely, and seem much pleased when I approached."

Adult male, presented by the Society of Natural History of Salem, Massachusetts. The nostrils are ovate, oblique, $4\frac{1}{4}$ twelfths long, 2

twelfths in breadth. The aperture of the eye is 11 twelfths. The aperture of the ear is simple, without operculum, of comparatively small size, 11 twelfths long, 6 twelfths wide, margined all round with linear feathers, of which the anterior are $1\frac{1}{2}$ inch long, the posterior 10 twelfths.



The palate is flattened, sloping a little upwards at the sides, with two longitudinal ridges, and entirely covered with series of minute papillæ; at its anterior part is a median tuberculate prominent ridge. The posterior aperture of the nares is broadly elliptical, 5 twelfths long, with an anterior slit 7 twelfths long. The width of the mouth is 2 inches. The tongue is short, measuring 11 twelfths in length, deeply sagittate and papillate at the base, its breadth 5 twelfths, its edges nearly parallel, its upper surface nearly flat, with a median groove, its tip narrowed but rounded and slightly emarginate. Œsophagus 9 inches long, of the nearly uniform width of $1\frac{1}{4}$ inch. The proventricular glands occupy a belt 1 inch 7 twelfths in breadth. The stomach is large, roundish, 2 inches 2 twelfths in length, 2 inches 1 twelfth in width; its muscular coat very thin, being composed of a single series of fasciculi; the inner coat thick, moderately tough, and rugous. The pylorus is very small, with two prominences. The intestine is 43 inches long, its width at the upper part 5 twelfths, diminishing to 3 twelfths. The cœca are 5 inches long, their greatest width 6 twelfths. The cloaca is capable of being dilated to the diameter of 2 inches. The lobes of the liver are equal, 2 inches long, and the gall-bladder elliptical, 1 inch long.

The trachea is $6\frac{1}{2}$ inches long, much flattened, its breadth at the upper part $\frac{1}{2}$ inch, at the lower $5\frac{1}{2}$ twelfths; its rings 90, partially ossified, being cartilaginous before and behind. Bronchi of moderate length and width, with about 20 half rings. The lateral muscles are moderate, as are the sterno-tracheales, and a very thin slip on each side goes to the last half ring of the trachea.

BARRED OWL.

STRIX NEBULOSA, LINN.

PLATE XLVI. Vol. I. p. 242.

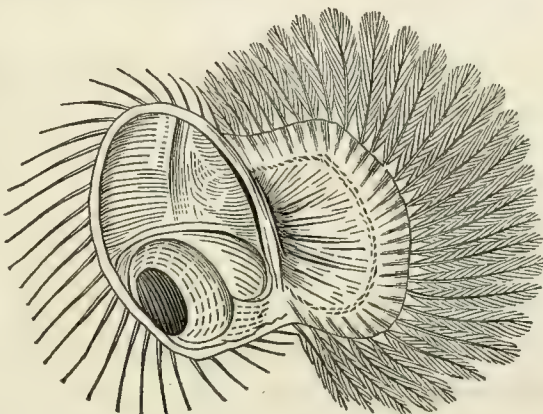
THIS species, which is undoubtedly the most common in our southern and western States, was not met with by Dr RICHARDSON beyond the southern districts of the Fur Countries; nor has it been observed by Dr TOWNSEND on the Columbia River. I have found it very abundant in the Floridas, where it is a constant resident, and it is an inhabitant of the maritime districts west of the mouths of the Mississippi, including the Texas, where I shot several individuals. It is not rare to the eastward, as far as Nova Scotia and Newfoundland, and a few were seen by myself and my party in Labrador. I feel, therefore, very doubtful as to the identity of our bird and that found in the northern parts of Europe. Ours removes southward at the approach of winter in considerable numbers. I have seen some of our Barred Owls in London, which, although imported from New York, were sold as European specimens. The same dishonest practice is exercised by some of our American bird-stuffers, who import skins of European birds, sometimes live birds, and reship them on certain occasions, with the view of proving to European naturalists that these species exist with us, although in reality there are none of them in America. Thus, the European Oyster-catcher has been palmed upon European ornithologists as being found in the very neighbourhood of New York. I might mention a dozen species in this predicament. I would, therefore, recommend to those whom it may concern, to be assured of the respectability of the parties by whom skins of birds are forwarded, either on sale or for exchange.

The eggs of the American Barred Owl measure two inches in length, one inch and six and a half twelfths in breadth, so that they are of a roundish form; their colour is pure white.

An adult male in spirits. The palate is slightly concave, but at the sides inclining upwards. The posterior aperture of the nares is 4 twelfths long, with an anterior slit of 6 twelfths. On the anterior part

is a median broad prominent ridge, and on the palate are two longitudinal ridges; in other respects the interior of the mouth is as in the Virginian Owl; its breadth $1\frac{1}{4}$ inch. The tongue is 10 twelfths long, deeply sagittate and papillate at the base, covered above with minute papillæ, rounded and emarginate at the point.

The nostrils are elliptical, $2\frac{3}{4}$ twelfths long, $1\frac{1}{4}$ twelfth broad. The conch of the ear is elliptical, oblique, 1 inch 2 twelfths long, $7\frac{1}{2}$ twelfths wide, with a large anterior operculum, which is 1 inch $\frac{1}{2}$ twelfth long at the base, 1 inch 8 twelfths high, of a somewhat square form, but rounded on the edge, and somewhat similar to that of the Ameri-



can Barn Owl, but larger, the latter being truncate or straight on the edge. The heart is small, 1 inch $1\frac{1}{2}$ twelfth long, 8 twelfths broad. The lobes of the liver are nearly equal, the left 1 inch $6\frac{1}{2}$ twelfths long, the right $1\frac{1}{2}$ inch long.

The œsophagus is $6\frac{1}{2}$ inches long; its width at the commencement $1\frac{1}{4}$ inch, about the middle 9 twelfths, and then nearly uniform. The stomach is very large, roundish, its walls very thin, the muscular coat composed of a single series of fasciculi; the inner surface slightly rugous. It contains a large shrew. The proventricular belt is 9 twelfths long. The aperture of the pylorus is only $\frac{1}{2}$ twelfth, with a semicircular flap. The duodenal curve is $3\frac{1}{4}$ inches long. The intestine is 2 feet 1 inch long, its width varying from 4 twelfths to 2 twelfths. The cœca, which come off at the distance of $2\frac{1}{4}$ inches, are 3 inches long, their greatest width 5 twelfths. The cloaca is globular, and $1\frac{1}{4}$ inch in diameter.

The trachea is 4 inches 9 twelfths long, its breadth at the top $4\frac{3}{4}$ twelfths; it immediately contracts to $3\frac{1}{4}$ twelfths, and at the lower part is $3\frac{1}{2}$ twelfths, and much flattened. The rings, 88 in number, are pretty firm; and there are four additional half rings. The bronchi are short and wide; one with 12, the other with 15 extremely slender cartilaginous half rings.

BARN OWL.

STRIX FLAMMEA, LINN.

PLATE CLXXI. VOL. II. p. 403.

ON the 29th April 1837, on Galveston Island, in Texas, we found several individuals of this bird in bunches of cactuses, surrounded by low bushes and tall grass. They flew round the gunners as if they were about to breed there. One of them was started from the tall grass, and was shot. We thought it strange to meet with these Owls in salt-marshes. At first they were very gentle, but after we had shot several the rest became very shy. Two of them flew off toward a fresh-water pond, surrounded by high flags and sedges, and were pursued by a great number of Boat-tailed Grakles, *Quiscalus major*, which forced them down into the marsh. Our men were sent after these Owls, and soon started them anew. One of them made for another marsh, and there alighted, whilst the other perched on the top of a low bush quite exposed to view; but when we tried to get near, it seemed to see us clearly, for it flew away long before we were within shot, and betook itself to an island several miles distant.

On the 3d May, we found on the same island two nests, situated among thick bushes and tall grass, and placed on the bare ground, which appeared to have been cleared for the purpose to the extent of several feet, in a circular form. Each of them had avenues through the grass several feet in length, and completely covered over, by which the birds escaped on our approach. In one of the nests we found two sets of young birds, four large and three small, the latter apparently at least a week younger than the rest. One of the old birds, on being shot at when leaving the nest, rose in a circling manner until nearly out of sight, when it suddenly closed its wings in the manner of some Hawks, glided downwards with great velocity, and alighted in the middle of a high marsh. The other was shot on wing soon after leaving its nest, in which we found three young ones and four eggs ready to be hatched. The extraordinary difference in the size of these young Owls induced us to put some of them into rum. The nests were placed close to those of some Carrion Crows, *Cathartes Iota*.

It is thus apparent that the Barn Owl sees remarkably well by day, and in my opinion it is closely connected with the Burrowing Owl. We kept several of the young alive, feeding them on small terrapins. It was observed that the first pellets which they disgorged were thrown up five days after they were first fed, and that they subsequently ejected them at intervals of about forty-eight hours.

The food provided for the young by their parents consisted entirely of large Cotton or Marsh Rats.

The Prince of MUSIGNANO in his List of the Birds of Europe and North America, states that this Owl, his *Strix pratincola*, inhabits the "northern parts," where, however, not a single specimen has ever been seen: Pennsylvania and New York are the northern limits of its range. On this account, and because it is generally of larger size, I think it probable that it is distinct from *Strix flammea* of Europe.

The eggs are not globular, but of a regular ovate form, one inch nine and a half twelfths in length, an inch and a quarter in breadth, pure white, with the surface roughish.

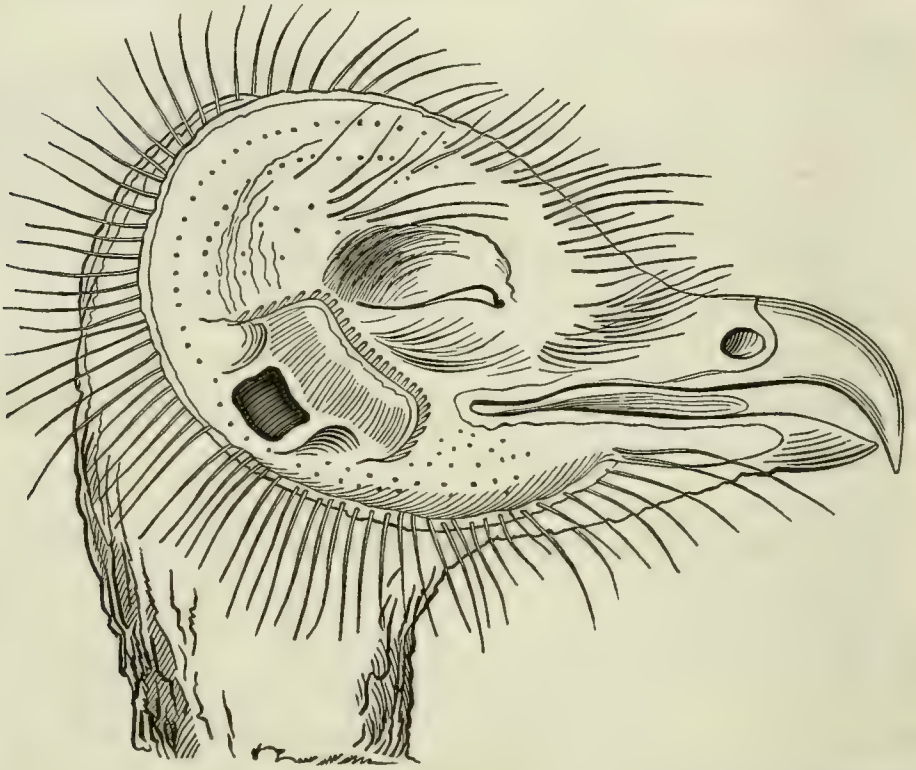
The dimensions of a Female from Galveston Island are as follows:

Length to end of tail $17\frac{1}{4}$ inches, to end of wings $18\frac{3}{4}$, to end of claws $19\frac{3}{4}$; extent of wings $46\frac{1}{4}$; bill along the ridge $1\frac{6}{12}$, along the edge of lower mandible $1\frac{1}{2}$; width of mouth $1\frac{4}{12}$; tarsus $3\frac{5}{12}$; hind toe $\frac{1}{2}$, its claw $\frac{1}{2}$; second or inner toe $1\frac{4}{12}$, its claw $1\frac{2}{12}$; middle toe $1\frac{5}{12}$, its claw $\frac{1}{2}$; outer toe 1, its claw 1; wing from flexure $14\frac{1}{4}$; tail $6\frac{2}{12}$, the lateral feathers $\frac{2}{12}$ longer than the middle.

The palate is concave in the middle, sloping upwards at the sides, with two longitudinal ridges, and an anterior median tuberculate ridge. The posterior aperture of the nares is ovato-lanceolate, $\frac{1}{2}$ inch long, with an anterior slit of the same length, the margins of which, and the space between it and the ridges are finely papillate. The tongue is 11 twelfths long, sagittate and papillate at the base, one of the papillæ on each side much larger, the sides nearly parallel, the breadth at the middle $2\frac{1}{2}$ twelfths, its upper surface flattened, with a median groove, the tip rounded and emarginate.

The nostrils are ovate, direct, $2\frac{1}{2}$ twelfths by $1\frac{1}{2}$ twelfth. The aperture of the eye is $\frac{1}{2}$ inch in breadth. The ear forms a very large semicircular conch, extending from over the anterior angle of the eye to the middle of the lower jaw, and measuring 5 inches along its poste-

rior margin. The aperture of the ear, properly so called, is situated directly behind the space between the eye and the opening of the mouth, and is $4\frac{1}{2}$ twelfths long, $4\frac{1}{4}$ twelfths broad. There is an anterior operculum, 1 inch 1 twelfth long, $7\frac{1}{2}$ twelfths high, with its anterior margin straight. The surface of the conch is sparsely covered with long, very slender feathers, of which the basal half is reduced to



a hair-like shaft. The posterior margin of the conch is furnished with several series of linear curved feathers, of which the tube is proportionally very large; but the operculum is edged with feathers reduced merely to the tube, having only a very slight shaft, scarcely 1 twelfth in length, flattened and rounded, without any filaments; besides which, however, on its anterior surface, there are several series of regularly constructed linear feathers, about 35 in number.

The œsophagus is 6 inches long, very wide, its diameter uniform, and about 1 inch 3 twelfths; its walls very thin. The proventricular glands form a belt 9 twelfths in breadth. The lobes of the liver are nearly equal, and rather small, being $1\frac{1}{4}$ inch in length; the gall-bladder oblong. The stomach and intestine are covered with fat, of which there is also a large deposit under the skin of the abdomen. The stomach is very large, roundish, a little compressed, $2\frac{1}{2}$ inches long, 2

inches 1 twelfth broad ; its muscular coat very thin, and composed of a single series of coarse fasciculi ; the inner surface perfectly smooth and even. The pylorus is very small, with one triangular prominence. The intestine is 23 inches long, from 3 to 2 twelfths in width. The cœca are 3 inches long, for two inches having a width of only 1 twelfth, and terminating in an oblong extremity, of which the greatest width is 3 twelfths ; their distance from the anus 3 inches. The cloaca is extremely large, capable of being dilated to $2\frac{1}{4}$ inches in length, and $1\frac{3}{4}$ inch in breadth.

The trachea is 4 inches 2 twelfths long, flattened, its breadth at the upper part 5 twelfths, gradually diminishing to 3 twelfths ; the rings narrow, but well ossified, 68 in number, with 4 dimidiate rings. The bronchi are rather long and slender, of 20 half rings. The lateral muscles are large, as are the sterno-tracheales. There are no inferior laryngeal muscles.

Another female, also from Galveston Island, has the mouth 1 inch $1\frac{1}{2}$ twelfth wide ; the œsophagus 6 inches long, its average width 1 inch ; the stomach $2\frac{1}{2}$ inches long, 1 inch 9 twelfths broad ; the intestine 26 inches, and the cœca 3 inches long.

Some of the differences between this bird and the Barn Owl of Europe, have been pointed out at p. 409 of vol. ii., where the probability of their being distinct species was announced, although I was then "unable to point out any satisfactory distinctions." The examination of entire specimens, however, has brought to light a remarkable and unvarying character in the feathers which fringe the operculum. In both species, the tubes of these feathers are very large ; but in the American bird the shafts are obsolete, as represented in the figure, whereas in the European bird, each tube bears a very slender shaft, about half an inch long, and furnished with about a dozen filaments on each side, forming an elliptical or obovate feather. This character and the great difference in size, will thus suffice to distinguish the American bird to which, it now having for the first time been shewn to be distinct, I propose giving the name of *Strix Americana*.

LITTLE SCREECH OWL.

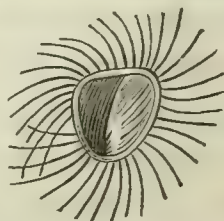
STRIX ASIO, LINN.

PLATE XCVII. VOL. I. p. 486.

ALTHOUGH this species inhabits the Oregon Territory and the Columbia River district, where it was found by Dr TOWNSEND, it is not mentioned by Dr RICHARDSON as being observed in the Fur Countries. It is, however, met with abundantly in the British provinces of New Brunswick, Nova Scotia, Newfoundland, and Labrador, where I procured it. My friend Dr BACHMAN says, "there is no doubt about the correctness of the changes of plumage of this species, for I have seen it in its various stages from red to grey. I kept it more than a year in domestication, when it underwent all its changes. I have taken the young *red* birds from the nest, and the old in the same hole, very *grey*. The bird breeds in the red state the following spring, and does not become grey until two years old. Specimens have been procured partially red and grey in the intermediate state." The eggs are one inch two-eighths long, eleven and a quarter twelfths in breadth.

An adult female preserved in spirits measures to end of tail 10 inches, to end of wings 10, to end of claws $11\frac{1}{4}$; extent of wings 23; bill along the ridge $\frac{1}{2}$, along the edge of lower mandible $\frac{10\frac{1}{2}}{12}$; wing from flexure $6\frac{1}{2}$; tail $3\frac{1}{4}$; tarsus $1\frac{6}{12}$; hind toe $\frac{5\frac{1}{2}}{12}$, its claw $\frac{5\frac{1}{2}}{12}$; second toe $\frac{9}{12}$, its claw $\frac{5\frac{1}{2}}{12}$; third toe $\frac{10\frac{1}{2}}{12}$, its claw $\frac{4\frac{1}{2}}{12}$; outer toe $\frac{7}{12}$, its claw $\frac{4}{12}$.

The palate is concave, with two longitudinal ridges, its sides convex; the posterior aperture of the nares oblong, 2 twelfths in length, with an anterior slit 4 twelfths long. The palate and margins of the nasal aperture are covered with papillæ. The aperture of the ear is large, elliptical, $5\frac{1}{2}$ twelfths long, $4\frac{1}{2}$ twelfths broad. The width of the mouth is 11 twelfths. The œsophagus is $3\frac{1}{4}$ inches long, of the nearly uniform width of $\frac{1}{2}$ inch; it passes, together with the trachea, along the right side of the neck, until, on entering the thorax, it crosses to the left, as in all other Owls. The liver is large, its left lobe 1 inch 5 twelfths in length, the other $1\frac{1}{2}$ inch. The stomach is excessively large, round, a little compressed, $1\frac{1}{2}$ inch



long, $1\frac{1}{4}$ broad, of the usual structure, its tendons circular, and $4\frac{1}{2}$ twelfths in diameter; its inner surface smooth and somewhat villous. Its contents are remains of insects and bones of small birds. The pro-ventricular glands are rather large, and form a belt of $\frac{3}{4}$ inch in breadth. The duodenum curves at the distance of 2 inches from the pylorus. The intestine is 15 inches long, and from 3 to 2 twelfths wide; the cœca are large, 2 inches 4 twelfths long, for 1 inch and 2 twelfths their width only 1 twelfth, their greatest breadth toward the end 4 twelfths. The rectum is 2 inches 10 twelfths long, for 1 inch and 2 twelfths its width is $2\frac{3}{4}$ twelfths; it then expands into the cloaca, which is 11 twelfths in diameter.

The trachea is 2 inches 2 twelfths long, flattened, of the uniform breadth of $1\frac{1}{2}$ twelfth, and having about 90 very slender rings, together with 5 dimidiate. The contractor muscles are thin, the sterno-tracheal moderate; and there is a single pair of inferior laryngeal muscles going to the last ring of the trachea. The bronchial rings are about 15.

The tufts of the head are composed of a longitudinal series of 10 feathers, commencing over the middle of the eye, and extending a quarter of an inch beyond its posterior edge.

GREAT-HORNED OWL.

STRIX VIRGINIANA, LINN.

PLATE LXI. VOL. I. p. 313.

THIS species occurs in every part of the United States, as well as beyond their limits northward, as far as the wooded tracts extend, including Labrador. It is also met with on the Rocky Mountains, about the Columbia River, in California, and in Mexico. I have seen specimens from all these countries, which presented no greater differences in size and colour than might be expected in a bird so extensively distributed, some being larger or smaller, darker or lighter, according to sex, age, and season. One which I examined in the Texas was of a lighter colour than any that I have ever seen, with the exception of the specimen named by Mr SWAINSON "*Strix (Bubo) arctica*," which

is in the museum of the Zoological Society of London, and is merely a light coloured *Strix virginiana*.

My friend Dr BACHMAN says, "I had a nest of young ones sent me early in February (Charleston). In the State of New York I have, on several occasions, procured large specimens of this Owl that were very offensive with the smell of the Polecat, having evidently caught and fed on that animal. The northern Hare, *Lepus virginianus*, and the Common Hare, *L. americanus*, also frequently become the prey of this Owl."

In the State of Maine it watches the traps placed along the margins of streams for the purpose of catching the Musk Rat, and frequently destroys the skins, on which account the hunters often bait the trap with the body of a rat after being skinned, and next morning find the marauder caught. The eggs measure two inches and three-eighths in length, two inches in breadth, and are nearly equally rounded at both ends.

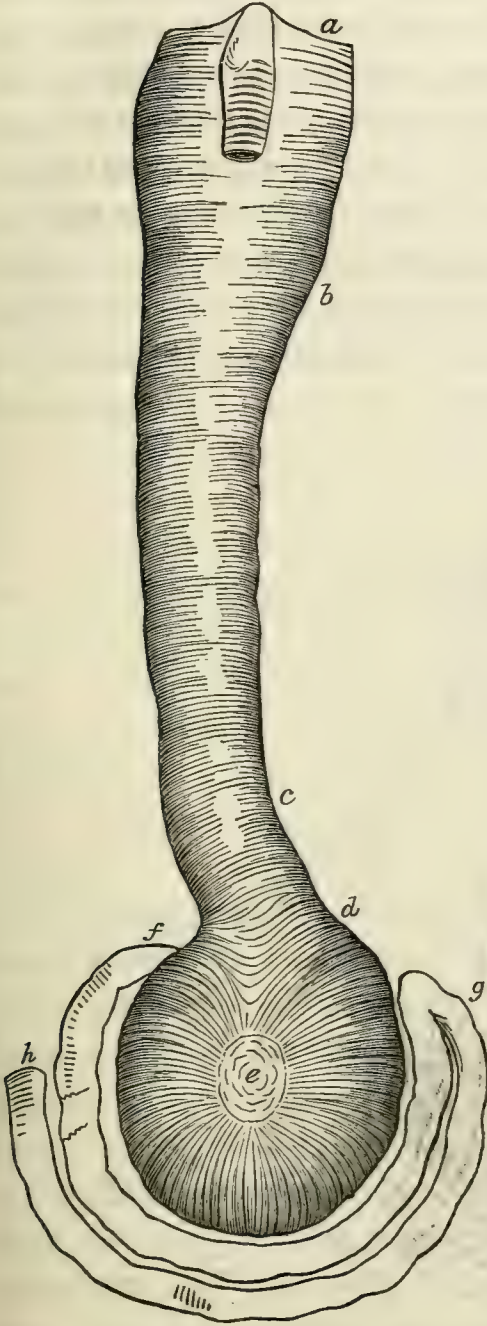
In an adult male preserved in spirits, the palate is slightly concave, but at the sides inclining upwards; the posterior aperture of the nares is small, of an elliptical form, 4 twelfths long, 2 twelfths broad, with an anterior slit 7 twelfths long; the lateral space is covered with small papillæ; there is a small oblique flap from the base of the slit, and a semicircular papillate flap behind the aperture of the fallopian tubes, which is 2 twelfths in length. On the anterior part of the roof of the mouth is a broad prominent ridge. The skin or mucous membrane, as well as the bones, of the palate, are in this, as in most other Owls, thin and somewhat transparent, whence originated the foolish notion of their being able to direct their eyes so as to see through the open mouth. The salivary crypts are very numerous and large, especially in the space around and anterior to the tongue, as well as upon its upper surface at the base. The tongue is 1 inch 1 twelfth long, very deeply sagittate and papillate at the base, flattish above, with a median groove, rounded and emarginate at the tip. The width of the mouth is 1 inch $8\frac{1}{2}$ twelfths.

The eyes are firmly fixed in their sockets, and incapable of motion, as in most Owls; their direction is at an angle of about 60°. The aperture of the eyelids is 1 inch. The tufts on the head are composed exactly of two series of 9 feathers, there being 18 in each tuft, the two rows parallel and close together.

The œsophagus, Fig. 1, *abc*, of which the walls are extremely thin,

Fig. 1.

Fig. 2.



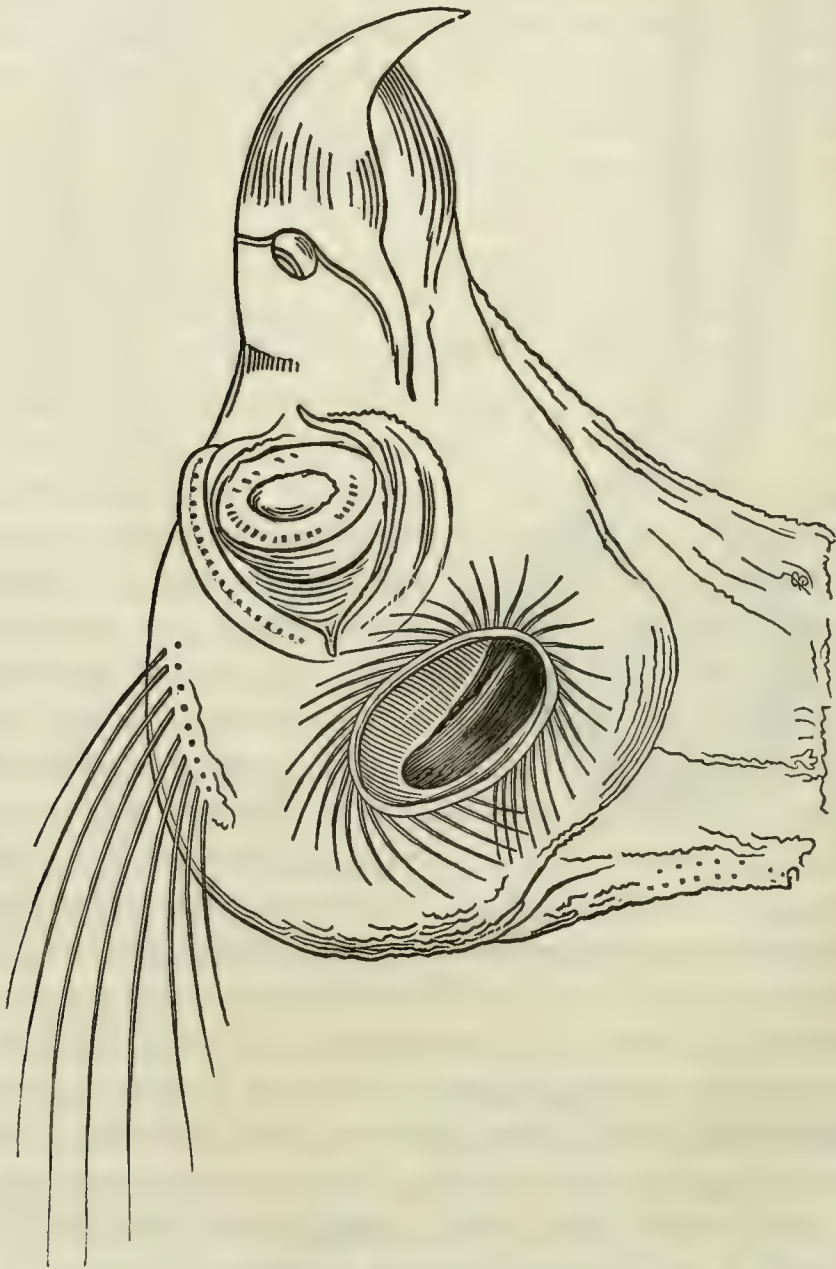
although its transverse muscular fibres are very distinct, is at the commencement two inches in width, in the rest of its extent $1\frac{1}{4}$ inch, its length $8\frac{1}{2}$ inches. The stomach, *d*, is very large, of a roundish form when distended, 3 inches long, $2\frac{1}{2}$ inches broad; its walls are extremely thin, its muscular

coat composed of distinct fasciuli, its inner surface smooth. The contents are several small birds which have been swallowed entire, and the remains of a squirrel. The proventricular glands occupy a belt 1 inch in breadth, and are very small, being only $\frac{1}{12}$ inch in length. The liver is small, the left lobe 2 inches in length, the other 1 inch $\frac{5}{12}$ twelfths. The gall-bladder elliptical. The heart also is comparatively small, being $1\frac{1}{2}$ inch long, 1 inch $\frac{1}{12}$ broad. The duodenum, *fgh*, curves in the usual manner at the distance of 5 inches; the bi-

liary ducts entire at 9 inches. The intestine varies from 4 twelfths to 2 twelfths in width, and is short, being 31 inches long. The cloaca is globular, about $1\frac{1}{2}$ inch in diameter; the cæca, Fig. 2, are 3 inches long, for $1\frac{1}{2}$ inch $2\frac{1}{2}$ twelfths in diameter, in the rest of their extent of an oblong form, 7 twelfths in width; the rectum, including the cloaca, 3 inches 9 twelfths long. The aperture of the pylorus is extremely small, $1\frac{1}{2}$ twelfth in width, with two longitudinal valves, and a thin semicircular flap.

The trachea is $5\frac{3}{4}$ inches in length, flattened, $\frac{1}{2}$ inch broad at the commencement, gradually contracting to $4\frac{1}{2}$ twelfths, toward the lower part enlarging to $5\frac{1}{4}$ twelfths and much flattened, its thickness there

Fig. 3



being only $1\frac{1}{2}$ twelfth. The rings are 90, moderately firm, but very thin; there are 4 half rings beyond the bipartite ring. The bronchi are short, very wide, one of 15 the other of 16 cartilaginous half rings. The lateral muscles are extremely thin, as are the sterno-tracheal; and there is a single pair of inferior laryngeal muscles, going to the last ring of the trachea.

The aperture of the ear is of an elliptical form, placed obliquely, $11\frac{1}{2}$ twelfths long, $\frac{1}{2}$ inch broad, without operculum, having only an elevated margin, fringed with feathers; the passage to the internal ear $\frac{1}{2}$ inch long and 3 twelfths broad. The nostrils are broadly elliptical, 3 twelfths long, 1 twelfth broad.

LITTLE OWL.

STRIX ACADICA, GMEL.

PLATE CXCIX. Vol. II. p. 567.

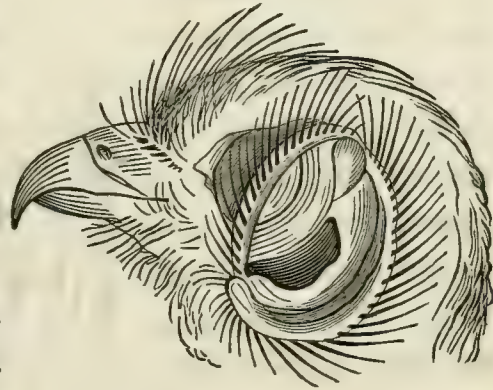
MY friend Mr T. MACCULLOCH jun. has favoured me with the following curious notice respecting this bird. "In the beginning of April, when the snow was still lying in large patches in the woods, although it had entirely disappeared from the clear lands, I went out with my gun one afternoon, expecting to obtain some of the small birds which remove to the north on the first approach of spring. Having wandered about four miles from home without meeting with any thing worthy of notice, I had almost determined to return, when my attention was arrested by a sound which at first seemed to me like the faint tones of a distant bell. The resemblance was so exceedingly strong that I believe the mistake would not have been detected, had not a slight variation in it induced me to listen more attentively, and mark the direction in which it seemed to come. With the view of ascertaining its origin if possible, I crossed an intervening farm, and striking into a dense spruce wood, directed my course towards the point from which it seemed to proceed. While listening to the singular note, the accounts which I had seen of the *Turdus tinniens* or Bell Bird of the southern portion of

the continent forcibly recurred to my mind, and rendered me doubly eager to discover its source. This, however, I found to be no easy matter. After proceeding a considerable distance in the woods the sound became suddenly sharp and shrill, and seemed so close behind me that I started involuntarily. Having carefully examined all the adjacent trees without success, I was about giving it up in despair, when the note which first attracted my attention seemed to come in the former direction. Before I had advanced many steps, the sound changed as before ; at one moment it seemed behind me, the next upon the right hand, then upon the left, and then it resumed its former distant mellow tone. This occurred so often, that I was completely puzzled and tempted to give up the pursuit, but still the desire of finding out the origin of the sound urged me on. After proceeding a considerable distance farther, I found that the bell-like sound now came from the opposite direction, and seemed far beyond the spot where I first heard it. Retracing my steps I entered a small cleared spot, in the centre of which stood a black birch, whose dead and decayed top projected beyond a vigorous growth of fresh branches, by which its sides were clothed. As I seated myself upon a prostrate log, the shrill note was suddenly resumed, and from the direction of the sound I was convinced that it proceeded from the birch tree. Almost breathless with expectation, I carefully examined the tree from top to bottom, but the secret still remained concealed. Moving cautiously round, I examined the other side of the tree, but with no better success, until going to the root, and directing my eye along the trunk, I observed a small protuberance, which at first appeared to be a knot. Inspecting it more closely, however, I found it to be the head of the Little Grey Owl, protruded from a small aperture, which probably formed the entrance of its nest. Though standing directly beneath the bird, it did not seem to observe me, but continued to call for its mate. While watching the Owl, I observed with no little surprise that the sound which I thought came from a distance, as well as that which was near, actually proceeded from the same source. This singular power of altering the voice I have never found in any other bird, and to me it appeared analogous to that by which ventriloquists are able to make the voice seem near or remote. Having enjoyed the pleasing deception for some time, I left the little performer unmolested, feeling abundantly recompensed for my long tramp through mire and slush by the curious discovery.

This was the only time I ever heard the note of this owl. Frequently I have had it alive, but it was invariably silent, and, like the *Strix flammea*, would sometimes feign itself dead; and last winter I shot one which was placed upon its back in a scale, and handled a good deal, yet it shewed no signs of life until thrown into a box, when it started up, and looked about sharply enough."

A male from Dr T. M. BREWER of Boston, has the roof of the mouth concave, with two narrow longitudinal ridges, and covered with minute papillæ; the posterior aperture of the nares elliptical behind, $2\frac{1}{2}$ twelfths long, with an anterior slit 4 twelfths long. The tongue is very small, $4\frac{1}{2}$ twelfths long, deeply emarginate and finely papillate at the base, its upper surface slightly concave, its tip rounded. The width of the mouth is $8\frac{1}{2}$ twelfths. The external aperture of the ear, Fig. 1, is of enormous size, extending from the

Fig. 1.



level of the top of the head in a semicircular curve to below the aperture of the mouth, being 1 inch 9 twelfths along its posterior margin. It is bounded anteriorly by an elevated operculum in its whole length, and its posterior margin is similar. The anterior part of this conch is formed by the posterior third of the eye-ball covered by the skin, and the entrance to the internal ear is of a large size, being 5 twelfths in length, and $2\frac{1}{4}$ twelfths in its greatest breadth. The ear is thus similar in form to that of *Strix otus* and *Strix brachyotus*.

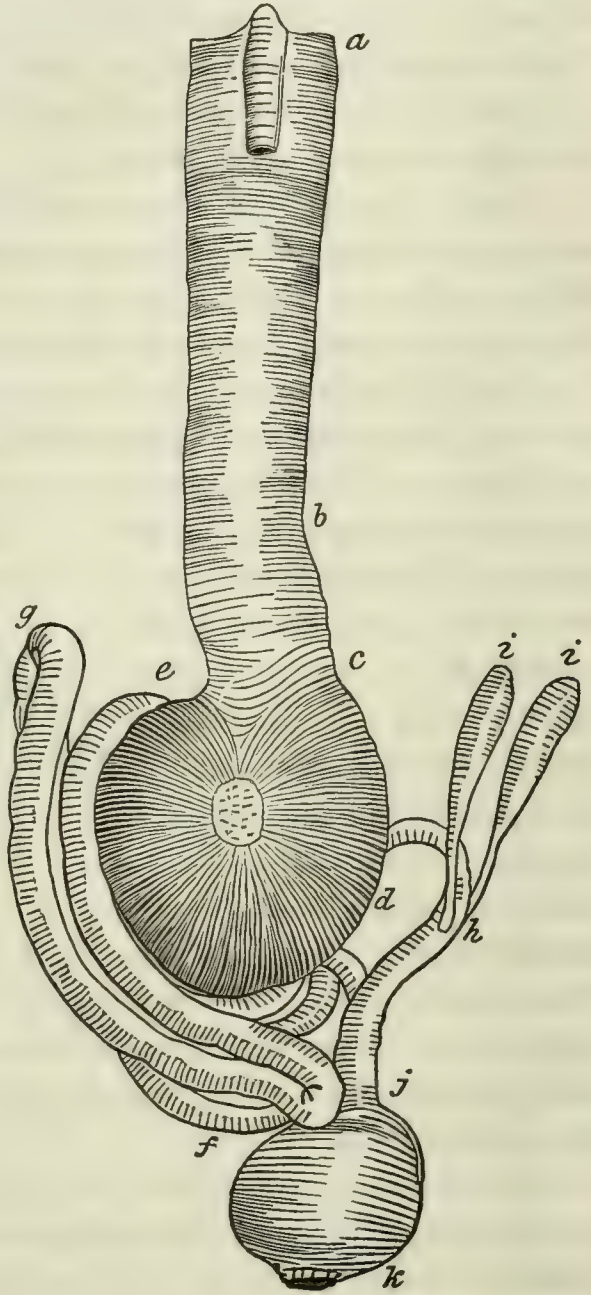
The œsophagus, Fig. 2, *abc*, is 3 inches 2 twelfths long, of the average width of 7 twelfths, being uniform, without dilatation. The lobes of the liver are large, nearly equal, the left 1 inch $1\frac{1}{2}$ twelfth long, the right 1 inch 3 twelfths. The stomach, *cde*, is very large, roundish, a little compressed, 1 inch 3 twelfths in length, 1 inch 2 twelfths in breadth. Its muscular coat is extremely thin, and composed of a single series of fasciculi; its inner coat smooth and soft. The proventricular glands are globular, forming a belt 6 twelfths in breadth. The stomach is filled with hair and bones of small quadrupeds, including the skull of an arvicola. The duodenum, *efg*, curves in the usual manner, at the distance of 2 inches 5 twelfths. The

intestine, *e f g h k*, is $13\frac{1}{2}$ inches long, its width varying from $2\frac{1}{2}$ twelfths to $1\frac{1}{2}$ twelfth.

The cæca, *h i i*, are large, 1 inch 3 twelfths long, $2\frac{1}{2}$ twelfths in their greatest width, and only $\frac{1}{2}$ twelfth for 7 twelfths at the base. The cloaca, *j k*, is extremely large, globular, 10 twelfths in diameter.

The trachea is 2 inches 2 twelfths long, from 2 to $1\frac{1}{2}$ twelfth in breadth, much flattened; its rings firm but very slender, 45 in number, besides 7 dimidiate rings at the bifurcation. The bronchi are rather wide, and of about 12 half rings. The lateral muscles are slender, as are the sterno-tracheal, and a very thin slip goes to the first bronchial ring on each side.

Fig. 2.



CHUCK-WILL'S-WIDOW.

CAPRIMULGUS CAROLINENSIS, BRISS.

PLATE LII. Vol. I. p. 273.

SINCE the publication of my first volume, I have procured several individuals of this species in the central parts of Florida, in the course of a winter which I spent in that peninsula. They uttered their usual notes, in the same emphatic manner as during the breeding season, when they are dispersed over other sections of our southernmost districts. I have also procured this species in Texas, where it breeds. The eggs measure one inch two and a half eighths in length, an inch and half an eighth in breadth, and are nearly equally rounded at both ends. They vary much in colour; some procured by my friend Dr BACHMAN have a yellowish-white ground-colour, with large blotches of bluish-purple and light reddish-brown, interspersed with dots of the latter colour. This species has not been observed to the west of the Rocky Mountains.

An adult male, from Dr BACHMAN, preserved in spirits, measures to the end of the tail $13\frac{1}{4}$ inches, to end of wings $12\frac{1}{4}$, to end of claws 9; wing from flexure $8\frac{1}{2}$; tail $6\frac{2}{12}$.

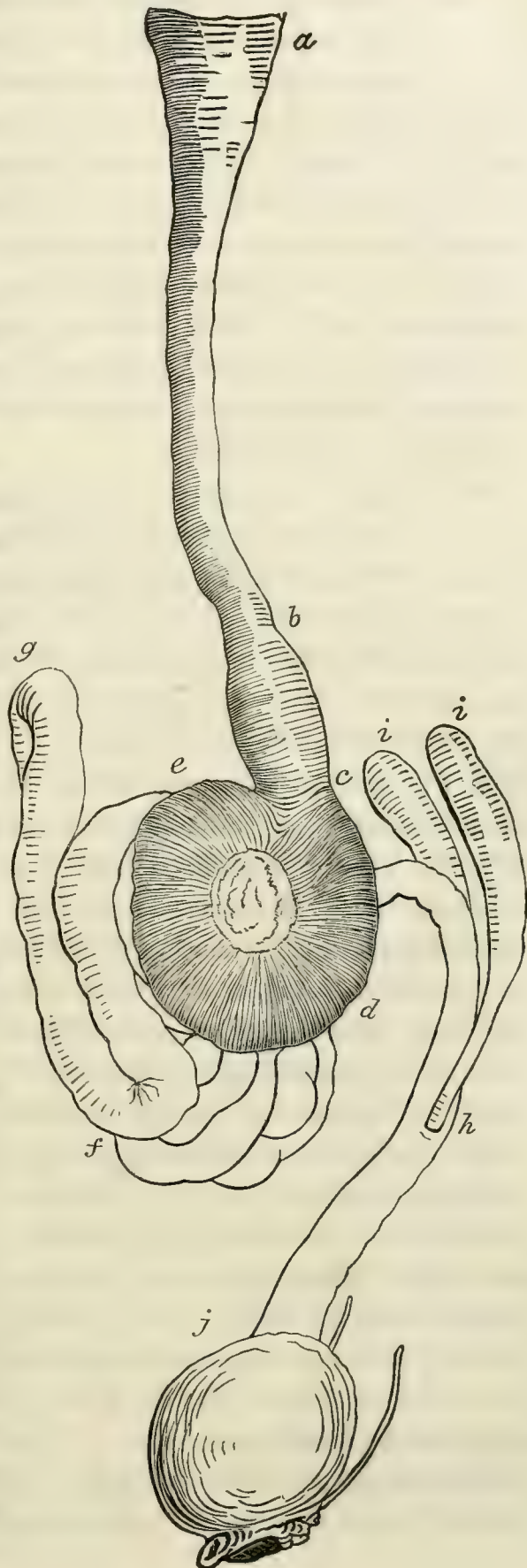
The relative proportion of the head and bill of this and other Goat-suckers have been misrepresented, owing to the manner in which the greater part of the latter is concealed by the feathers. The head itself is of extreme breadth, but also extremely depressed, its breadth in this species being $1\frac{1}{2}$ inch, whilst its greatest height is only 11 twelfths. In this respect it differs greatly from that of the Owls, in which it is high and at the same time flattened before and behind. The aperture of the ear is very large, of an elliptical form, $4\frac{1}{2}$ twelfths long, 3 twelfths wide, without operculum, but margined with feathers. The aperture of the eye is also very large, measuring $\frac{1}{2}$ inch. The bill, although seemingly very short, is in reality long, being 1 twelfth longer than the head, and measuring 1 inch 4 twelfths in length. The ridge of the upper mandible, covered with skin, is apparent to 10 twelfths beyond the nostrils, but being very narrow, and the very elongated nasal space

being covered with feathers, the bill is entirely concealed, excepting only that part which is beyond the nostrils. The gape extends to beneath the posterior margin of the eye, and has its lateral outline singularly curved. From the anterior margin of the eye to near the nostril is a series of feathers having very strong shafts, terminating in an elastic filamentous point, and with the barbs or lateral filaments extremely slender, distant, and not extended beyond the middle of the shaft. The direction of these feathers is downwards, forwards, and outwards, and although they can easily be deflected beyond the perpendicular, they cannot be forced upwards beyond the horizontal. The horny covering of the mandibles is extremely narrow, and the nostrils are subterminal, elliptical, horizontal, inclined obliquely outward, pectinate, marginate, $1\frac{1}{4}$ twelfth by 1 twelfth.

The aperture of the mouth is of extreme width, measuring 1 inch $7\frac{1}{2}$ twelfths, and being thus wider than the cranium. The roof of the mouth is a little concave anteriorly, with two longitudinal ridges on the outer side of each of which is a deep cavity, while between them, as well as at the back part, are numerous papillæ. The posterior aperture of the nares is linear, 8 twelfths long, with the septum apparent in its whole length. The space between the palatal ridges and the edges of the mandibles is covered with a very thin diaphanous membrane, covering the eye and the cavity of the nose. It is on account of this transparency of the roof of the mouth that some shallow-brained observers have conjectured the possibility of the bird directing its eyes so as to look through the palate,—an action which is rendered impossible by the manner in which the eye is fixed in its orbit, and by its form, which the ingenious persons alluded to must have conceived to be perfectly globular, whereas it is much depressed, convex only at the base, but anteriorly with the sides concave, owing to the curvature of the sclerotic bones; so that, if the bird were to turn its eye forward and inward, one-half of it would project out of the socket. After all, this contemptible absurdity is not worthy of a serious refutation. The lower jaw is very remarkable in having on each side two distinct pieces, of which the basal is $1\frac{3}{4}$ inch in length, and much curved in the horizontal plane, its convexity being outward; the other portion, 11 twelfths in length, very slender, and directed forwards and inwards, with a considerable curvature downwards. The Goatsuckers are the only American land birds that have thus the lower jaw composed of two bones on each side, with a very loose joint. The tongue is very small,

adnate for half its length, attenuated, tapering; flat above, covered with papillæ, of which there is a large one at the base on each side; the tip narrow, but rather obtuse; its length $7\frac{1}{2}$ twelfths, its breadth at the base nearly 3 twelfths, at the middle $1\frac{1}{4}$ twelfth.

Although the mouth is thus of extreme width, the aperture of the throat is only in its ordinary state $6\frac{1}{2}$ twelfths. Its mucous membrane is thrown into beautiful longitudinal rugæ, which are continuous with those of the mouth. The œsophagus, *a b c*, is 3 inches 10 twelfths long, funnel-shaped at the commencement, its average width in the rest of its extent 3 twelfths; the proventriculus, *b c*, large, its breadth being 7 twelfths. The stomach, *d e*, is very large, roundish, considerably compressed, $1\frac{1}{4}$ inch in diameter, its tendons round, and $\frac{1}{2}$ inch in breadth. The inner surface of the œsophagus is longitudinally plicate; the proventricular glands are few, very large, branched,



and form a belt about 9 twelfths in breadth. The muscular coat of the stomach is very thin, and composed of strong fasciculi; the epithelium extremely hard, of a horny consistence, with faint longitudinal rugæ. The lobes of the liver are nearly equal, and of moderate size. The pylorus is small, with a prominent semilunar margin. The intestine, *efg*, is short and wide, 14 inches long, from 4 twelfths to 3 twelfths in width; the duodenum curves in the usual manner, returning at the distance of 1 inch 9 twelfths, the rest of the intestine forms only two curves. The cœca, *h i i*, are 2 inches long, their greatest width 4 twelfths, their extremity rounded, their width at the base for half an inch only $1\frac{1}{2}$ twelfth, their distance from the anus 1 inch 9 twelfths. The cloaca, *j*, is globular, 1 inch in width.

The horns of the hyoid bone curve over the occiput until nearly over the middle of the orbits, and are attached to the base of the upper jaw. The nasal cavity is very long, and has two turbinated bones.

The brain is extremely small, its length being 8 twelfths, its greatest height 5 twelfths. Its anterior extremity is much rounded, and from its lower anterior part comes off the olfactory nerve, which is at first somewhat bulbiform, and about $\frac{3}{4}$ twelfths in breadth; it then enters a bony tube of about the diameter of one-tenth of a twelfth, and which terminates opposite the superior turbinated bone, which is ovate and forms a turn and a half. Besides this, there is anteriorly another turbinated bone. The cavity of the nose communicates behind with a large depressed cavity passing over the palate and beneath the orbit, which being covered beneath with merely the membrane of the mouth, extends all the way to the occiput. The distribution of the first or upper branch of the fifth pair is as usual. The olfactory nerve is about the size of a human hair, the other about double.

The trachea is 3 inches 9 twelfths long, a little flattened, of the nearly uniform breadth of $2\frac{1}{2}$ twelfths; its rings extremely feeble, and unossified, about 80 in number, the lower very narrow, with 3 large dimidiate rings. The bronchi are moderate, of about 15 half rings. The lateral muscles are strong, as are especially the sterno-tracheal; a slip from the lateral muscles proceeds a short way beyond the sterno-tracheal, but does not extend to the end of the trachea, so that in reality there are no inferior laryngeal muscles.

The stomach was distended with a mass consisting chiefly of remains of insects, but also of *numerous feathers, together with the lower*

mandible of a small and young bird, apparently a Flycatcher, its cervical vertebrae, a portion of a humerus, and fragments of other bones.

In a female, the œsophagus is 3 inches 8 twelfths long. The stomach is 1 inch 4 twelfths by 1 inch 1 twelfth. Its contents, remains of coleopterous insects.

The occurrence of the remains of a bird in the stomach of an individual of this species is a very remarkable circumstance, as it had never been known, or even conjectured to feed on birds. If the larger and stronger species, and especially the Stout-billed Podargi, should thus be found to be carnivorous, their affinity to the Owls, so apparent in the texture and colours of their plumage, will be rendered more conspicuous.

WHIP-POOR-WILL.

CAPRIMULGUS VOCIFERUS, WILS.

PLATE LXXXII. VOL. I. p. 422.

ACCORDING to Dr RICHARDSON, this bird probably does not proceed farther north than the shores of Lake Huron. A good number remain during winter in the central southern parts of the Floridas, where it was my delight to listen to their curious notes at that season. This species was not seen by Mr NUTTALL or Dr TOWNSEND either on the Rocky Mountains or in the Columbia River district, where its place seems to be supplied by a smaller species, which, although often seen by Mr NUTTALL, was not procured. I met with the Whip-poor-Will in the Texas, and in the course of a journey through the northern parts of Maine, performed in autumn, I frequently saw individuals on their way southward, flying pretty swiftly close over the ground, from the commencement of dusk. No doubt its migrations are performed by night. The eggs measure one inch and one eighth in length, seven and a quarter eighths in breadth; their ground-colour varies, and is sometimes very light.

Dimensions of a male preserved in spirits:—Length to end of tail $9\frac{1}{2}$ inches, to end of wings $8\frac{1}{2}$, to end of claws $7\frac{2}{12}$; wing from flexure $7\frac{1}{4}$; tail $4\frac{3}{4}$; extent of wings $17\frac{3}{4}$.

The form of the head and the proportions of its parts are similar to those of the Chuck-Will's-Widow. The bill is $9\frac{1}{2}$ twelfths long; the aperture of the ear $3\frac{1}{2}$ twelfths; that of the eye $4\frac{1}{2}$ twelfths; the nostril 5 twelfths. The bristles, about 12 in number, are directed as in the species above mentioned, but are composed of *shafts destitute of barbs*.

The œsophagus is 2 inches 9 twelfths long; its average width 4 twelfths, funnel-shaped at the commencement; the proventriculus $3\frac{1}{2}$ twelfths across. The stomach is 10 twelfths long, 8 twelfths broad; its muscular coat rather thick, the tendons large; the epithelium strong, tough, with very prominent longitudinal rugæ, and of a light red colour. Its contents are remains of insects. The intestine is $9\frac{3}{4}$ inches long, from $2\frac{3}{4}$ twelfths to 2 twelfths in width. The cœca are 1 inch 9 twelfths long, for three-quarters of an inch 1 twelfth in width, in the rest of their extent oblong, with the extremity obtuse, their greatest width 3 twelfths. The cloaca is ovate, 8 twelfths in diameter; the rectum, including the cloaca, 2 inches long.

The tongue is 5 twelfths long, slender, tapering to a point, very thin, with two long, pointed papillæ at the base, and numerous small papillæ on its upper surface. The hyoid bones as in the other species.

The trachea is $2\frac{1}{4}$ inches long, $1\frac{1}{2}$ twelfth in breadth, little flattened, the rings feeble, 78 in number. The bronchi of moderate size, of about 15 half rings. The muscles as in the other species.

The brain is smaller in these birds than in any that have been examined, excepting perhaps the Cuckoos and Pigeons.

NIGHT HAWK.

CAPRIMULGUS VIRGINIANUS, BRISS.

PLATE CXLVII. VOL. II. p. 273.

ACCORDING to Dr RICHARDSON, "Few birds are better known in the Fur Countries than this, which ranges in summer even to the remotest Arctic islands." It extends laterally to the shores of the Columbia River, where it was found by Dr TOWNSEND. In the Texas I found it plentiful, and breeding, although I did not meet with its eggs

there. They measure one inch and three and a half eighths in length, by seven-eighths in the middle, whence they round off almost equally at both ends. Their ground-colour is bluish-white, with numerous irregular blotches of dull reddish-brown, of light and dark tints, giving it the appearance of a piece of well-polished curiously clouded marble. At Galveston Bay, I frequently observed this bird alight on the dry mud-flats of the interior of salt-marshes, among Curlews, Semipalmated Snipes, and other aquatic species. It is abundant at Boston, and breeds there.

An adult Female preserved in spirits, measures to the end of the tail $9\frac{3}{4}$ inches, to end of wings $9\frac{1}{4}$, to end of claws $6\frac{1}{2}$; wing from flexure $8\frac{1}{2}$; tail $4\frac{9}{12}$; extent of wings $23\frac{3}{4}$.

The form of the head differs considerably from that of the other two species, being more elevated in proportion to its breadth, and considerably compressed before and behind, so as evidently to approximate to that of the Owls. The bill is of the same form as in the Whip-poor-Will, but proportionally shorter, and the lower mandible is equally divided into two pieces on each side. The aperture of the nares is oblong, prominent, marginate, $1\frac{1}{2}$ twelfth long, $\frac{1}{2}$ twelfth broad. That of the ear is elliptical, $2\frac{3}{4}$ twelfths long, $1\frac{1}{2}$ twelfth broad; and that of the eye measures $4\frac{1}{2}$ twelfths. The interior of the mouth is as in the other species; but its margins externally are *destitute of bristles*. The posterior aperture of the nares is 5 twelfths long, the palate is covered with papillæ, the tongue is proportionally shorter and broader than in the other species, being 3 twelfths long, triangular, sagittate at the base, with two large papillæ, fleshy, but thin and pointed. The width of the mouth is 11 twelfths. The œsophagus is 2 inches 10 twelfths long, funnel-shaped at the commencement, presently contracting to 3 twelfths, but on entering the thorax enlarged; the proventriculus 6 twelfths in breadth. The stomach is very large, moderately muscular, irregularly elliptical, a little compressed, 1 inch 1 twelfth long, 11 twelfths broad; its muscular coat of considerable thickness, the epithelium remarkably thick and tough, so as to be almost of a horny consistence, with strong longitudinal rugæ, and of a reddish colour. The contents of the stomach, remains of insects. The intestine is short and wide, $10\frac{1}{2}$ inches long, 3 twelfths wide at the upper, $2\frac{1}{2}$ twelfths at the lower part; cœca 1 inch 8 twelfths long; for half an

inch 1 twelfth wide, the remaining part oblong, obtuse, 3 twelfths wide. Cloaca globular, 9 twelfths in diameter.

Trachea $2\frac{1}{4}$ inches long, considerably flattened, of the uniform breadth of 2 twelfths, excepting at the lower part, where it contracts to $1\frac{1}{4}$ twelfth. The rings are extremely feeble, about 60, with two terminal dimidiate rings. Bronchi moderate, of about 15 half rings. The muscles as in the other species.

If the use of the elongated bristles at the base and sides of the bill be to enable the Goatsuckers the more easily to secure their prey, as it very probably is, why is the Night Hawk destitute of them, and what are the circumstances in its economy that render them unnecessary?

PURPLE MARTIN.

HIRUNDO PURPUREA, LINN.

PLATE XXII. VOL. I. p. 115.

ALTHOUGH this beautiful Swallow reaches the vicinity of the Arctic circle earlier than others, it is said to migrate far within the tropics, as, according to Mr SWAINSON, it was "observed in numbers around Pernambuco, eight degrees and a half south of the line." Dr TOWNSEND found it on the Rocky Mountains, and I met with it breeding in the Texas in April 1837. Although it has not been mentioned whether it breeds at Pernambuco, it is probable that it does, for in the United States it nestles in favourable situations from their southern extremity to their northern limits, selecting fissures of rocks and hollow trees in the wilder or less inhabited parts. I saw none, however, in Labrador or Newfoundland. The following notice by THOMAS M. BREWER, Esq. of Boston, I present to you with pleasure.

"A trivial fact will I think shew how exceedingly attached these birds are to certain districts. Not many years ago, an unusually cold season destroyed all the birds of this species in the immediate neighbourhood of Boston; and, although those met within twenty miles of

the sea-shore escaped with comparatively little loss, yet the place of the dead Martins has never to this day been made good, excepting by the intrusion of another species. Perhaps this fact proves nothing; it, however, appears to me to shew that these birds return in spring to the places where they are reared; or why, if the young of the last year ramble in search of convenient boxes, should none have come here, although they are around us? It cannot be that they are not a match for the White-bellied Swallows, *Hirundo bicolor*, which have taken their places."

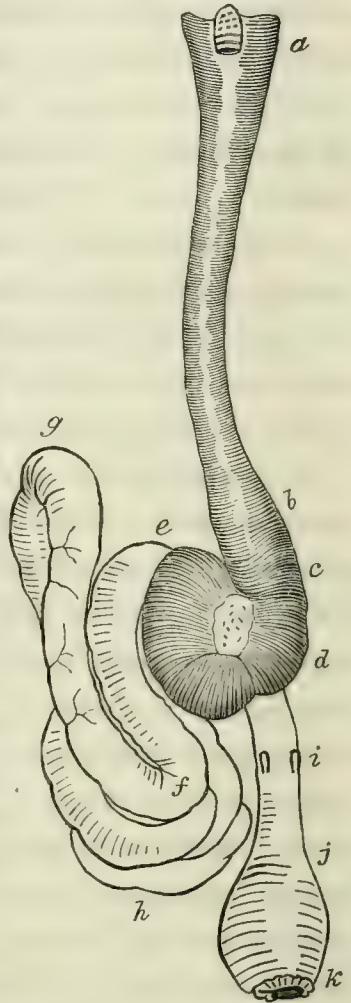
This statement is interesting as illustrative of the readiness with which certain species, while seeking for places in which to breed, take advantage of any favourable circumstance. The White-bellied Swallows, instead of continuing to resort to hollow trees, as they are wont to do, here took possession of the empty boxes of the Purple Martins.

A curious instance of the expedition with which this bird is apt to make choice of a situation to breed in, and there form a nest, happened on the 13th of May 1837, whilst the Crusader was lying at anchor a few miles above New Washington, close to a point of sand, where our men were engaged in fishing with the seine. The sails of our craft were furled, and the morning was perfectly calm, clear, and warm. Several pairs of Martins were seen to alight on the main-yard, and then to pour forth their not unmusical song, after which, one by one, they were all observed to examine and enter the folds of the furled sails. In a few moments several were seen to go on shore, and return with materials to form their nests. I gazed on all their movements with painful anxiety, for the more they laboured at this time, the greater I knew would be their loss. About mid-day they had made so much progress that they were seen gambolling around and over the water, as if in ecstasy at their success; but a fresh breeze happening to spring up, our men were recalled, and the sails were unloosed, by which the fragments of their nests were strewed on the deck. The Swallows came round the now-moving bark, and followed us for several hundred yards, not with songs of joy but with notes of sorrow.

An adult female preserved in spirits measures to end of tail $7\frac{4}{12}$ inches, to end of wings $6\frac{1}{12}$; wing from flexure $5\frac{8}{12}$; tail 3; extent of wings $15\frac{9}{12}$; bill $\frac{4\frac{1}{2}}{12}$.

The mouth is of extreme width, its breadth being 10 twelfths; its roof flat, covered behind and in the middle with numerous papillæ.

On each side of the tongue is seen a prominence, which is caused by a narrow oblong salivary gland, lying within the ramus of the lower jaw on each side, and between it and the tongue, separated from the mouth only by the mucous membrane, and formed of distinct tubular bodies, of which the ducts enter nearly opposite the top of the tongue. That organ is short, triangular, sagittate and papillate at the base, fleshy, slightly convex above, thin and horny towards the point, which is slightly emarginate. The œsophagus, *abc*, is 2 inches 7 twelfths long, with an average width of $2\frac{1}{2}$ twelfths; the proventriculus, *bc*, 3 twelfths across, its glandules oblong, forming a belt 4 twelfths in breadth. The stomach, *de*, is of an irregular somewhat elliptical form, 9 twelfths in length, 8 twelfths in breadth; its muscular coat moderately thick, the muscles distinct, the tendons large; the epithelium thick, dense, with a few broad longitudinal rugæ. The contents of the stomach are insects of various kinds. The lobes of the liver are very unequal, the right being 11 twelfths long, the left 7. There is a gall-bladder of an oblong form, 5 twelfths long. The intestine, *fg h*, is short and wide, its length 7 inches, its breadth from 3 twelfths to $2\frac{1}{2}$ twelfths. The cœca, *ii*, are extremely small, 2 twelfths long, $\frac{1}{2}$ twelfth broad. The rectum, *j*, is short and wide, the cloaca, *k*, ovate and 6 twelfths in breadth.



The trachea is 1 inch 9 twelfths long, considerably flattened, from $1\frac{1}{2}$ twelfth to 1 twelfth in breadth; its rings 52, firm, with 2 dimidiate rings. The lateral muscles are moderate, the sterno-tracheal slender; there are four pairs of inferior laryngeal muscles. The bronchi are composed of about 15 half rings.

COMMON BARN SWALLOW.

HIRUNDO RUSTICA, LINN.

PLATE CLXXIII. VOL. II. p. 413.

I AM as confident as ever, that our Barn Swallow and the Chimney Swallow of Europe are the same species. It has been found on the Rocky Mountains, and in the Valley of the Columbia River, as well as in the Texas, and in many intermediate places. On the 24th of April 1837, when we were between Rabbit Island and Galveston Bay, in the latter country, a bird of this species came on board, very much fatigued, and after flying about some time, made an attempt to proceed on its journey, but finding itself too weak, returned. It again set out, but soon came back, and being too weak to gain a footing, fell into the water, where it rested a short time, and took to wing, but striking against the vessel, fell again on its back, with its wings extended. After remaining a few moments in this position, it gradually turned itself over by means of its wings, and took to wing, but this time made a shorter flight, and endeavoured to gain the vessel, which was passing slowly along; its strength, however, failed entirely, and it fell and floated astern, when it was picked up by one of the crew of the *Crusader*, which we had in tow, but died soon after.

“In the Fur Countries,” according to Dr RICHARDSON, “where the habitations of man are ‘few and far between,’ it inhabits caves, particularly in the limestone rocks; and it also frequents the outhouses at the trading posts.” My friend THOMAS DURHAM WEIR, Esq. of Boghead in Scotland, has favoured me with the following account of the various situations in which he has observed it breeding in that country:—

“About five or six feet down the inside of a wide circular chimney at Cowie Distillery, about five miles from Stirling, for some time past, three or four pairs of Swallows have annually built their nests. Upon the inside of the roof of the coolers at the same place, which is 250 feet long by 50 in breadth, upwards of a hundred pairs of them have for many years erected their habitations and reared their offspring. In the cooler at Glenmavis Distillery, near Bathgate, last summer several pairs had their nests.

“ In the inside of the large wooden vane of Bridgehaugh Mill, Berwickshire, for fourteen successive years, a pair of them have resided. The original nest is still remaining. Upon it, during that long period, there have been only two other nests built, which are ranged in tiers one above another, nearly all the same size, and plastered with mud mixed with straw. For several seasons their young have been suffocated by the smoke of the fire, which, during summer, is occasionally put on for the purpose of drying corn and barley. After the destruction of their brood in July last, they did not attempt to occupy their old abode, but erected another upon the side of the wall at no great distance from it.

“ By some naturalists an erroneous opinion has been maintained, that the Chimney Swallows differ from the Window Martins, in their not returning to their old nests, but always building new ones.

“ In the inside of the cowhouse at Bathville, in my immediate neighbourhood, there are two nests fixed on the tiles at the top of the roof, which have been possessed by these Swallows, the one five, and the other six years.

“ In the stable at Heatherfield, parish of Bathgate, Mr JOHN WAUGH, farmer, informed me, that the same nest (out of which I took the young ones that I sent to you) has been occupied by a pair of them, for twenty-one successive years, in which, each season, they have brought up two broods. During that time they have only occasionally put a little clay around the edge of it, and repaired the feathers in the inside. It is a curious fact, that in the morning before the door was opened, they were in the habit of flying out and in at a small aperture at the bottom of it. That entrance, however, having been shut up last spring, these active little creatures were determined not to be excluded, for they found a passage through a gutter which was only 6 inches in breadth by $5\frac{1}{2}$ in length.

“ For three successive years, a pair of them took possession of the same nest which was built upon the wooden lintel of the cart-house at Westmains, parish of Bathgate. It was within six feet of a large Newfoundland dog. Although it, during the day, was in continual motion, and very often barked, they brought up two broods each summer. In June last, their eggs having been destroyed by rats, they appeared to have had such a dislike at these voracious animals, that they immediately forsook their old residence.

“ In the corner of Boghead coal-house, and within two yards of the kitchen window, for several years a pair of these birds occupied the same nest. Although the servants passed and repassed within a few inches of it almost every hour of the day, and often during night carried a candle, they appeared not to have been in the least degree alarmed, as they always reared two families each season. Having, however, in August last, attempted to catch them, they did not pay me their usual visit this summer.

“ In Scotland, at least so far as it has come under my notice, barns and outhouses are the places in which they generally build. In this neighbourhood, indeed, there is scarcely one to which these birds have a proper access without them; and as they are seldom disturbed, they usually revisit their old haunts.

“ For their residence, they sometimes make choice of singular situations. In July last, upon two wooden pegs in the wall of the laundry of Balbardie House, Linlithgowshire, and within three feet of the chimney, a pair of these birds built their nest. In consequence of the house having been for some time past unoccupied, and the door left a few inches open for the admittance of air, through this narrow passage they flew in and out with the greatest dexterity.

“ In a large unfinished room of a house belonging to me in the parish of Whitburn, nine or ten pairs of them have for several successive years taken up their dwelling; although their nests were close to one another, yet in this social and happy community the greatest harmony prevailed.

“ In the inside of the skylight of the upper loft of Gordon mill, Berwickshire, a pair of them built their nest. They flew into the room through a broken pane in the window. As the hole by which they entered was very small, it cost them a great deal of trouble to induce their young when ripe to make their escape. By holding flies in their bills at the outside of the pane they at length succeeded. From this snug retreat, they, for eight or nine days, flew out every morning and returned in the evening, in which they with their parents roosted during the night.

“ Upon the face of a farret-brae, or bank produced by the cutting of peats, in Heatherfield moss, a few years ago, a pair erected their nest, which they occupied for two successive summers.

“ In the shafts of deserted coal-pits they frequently build.

“ In Skeltymuir, near Dalhousie Castle, there is a large pit cradled with stone, in which between forty and fifty pairs of them have for many years dwelt and reared their young.

“ To Ballencrieff and Hilderstone coal-pits, in the vicinity of Bathgate, they annually resort. Although their nests were built at a considerable depth, it was surprising to observe with what rapidity and ease they flew up and down.

“ But they not only frequent abandoned pits, but even those which are in use.

“ In Colinshiels coal-pit, in the parish of Bathgate, I have seen their nests, which were built between the branders or bars, at the depth of two, three, and nearly four fathoms. Of the banksmen and colliers they appeared to be regardless; even the hatches, which were often drawn up and down, did not annoy them. To their offspring they are so strongly attached, that I have been assured by those who were eye-witness of the fact, that they often continued to sit upon them when the pit was full of smoke. In Borbaughlan coal-pit, which is narrower than the former, they likewise build and rear their young. A collier informed me, upon whose veracity I can depend, that he is well acquainted with a man named Malcolm, who, a few years ago, lost his hand in the act of robbing a nest of its young in a coal-pit in the parish of Shotts: the hatch in which he was standing having been unexpectedly drawn up, occasioned the accident. The nest was built at the astonishing depth of fifteen fathoms.

“ You will observe, from the account which I have given of some of the different situations in which these Swallows build, that, at least in Scotland, the name ‘Chimney’ is not very appropriate.”

An individual of this species preserved in spirits measures to end of tail $6\frac{8}{12}$ inches, to end of wings $6\frac{2}{12}$; wing from flexure $4\frac{10}{12}$; tail $3\frac{1}{4}$; extent of wings $12\frac{9}{12}$. The roof of the mouth is flat and somewhat transparent; the posterior aperture of the nares oblongo-linear, margined with strong papillæ; the tongue $3\frac{1}{4}$ twelfths long, triangular, emarginate and papillate at the base, thin, the tip slit and lacerate. The mouth is supplied with numerous mucous crypts; its width is $5\frac{1}{2}$ twelfths. There is a very narrow flattened salivary gland, similar to that of the Purple Martin, but proportionally smaller. The œsophagus is 2 inches long, $1\frac{1}{2}$ twelfth in width, simple or without dilatation.

The stomach is elliptical, $7\frac{1}{2}$ twelfths long, 6 twelfths broad, its muscles distinct; the epithelium, as in the other species, tough, with longitudinal rugæ, and of a reddish-brown colour. The intestine is short and wide, its length being $6\frac{1}{2}$ inches, its breadth from $2\frac{1}{2}$ twelfths to 2 twelfths. The cœca are 2 twelfths long, $\frac{1}{3}$ twelfth wide, and placed at the distance of 11 twelfths from the extremity; the rectum is dilated into an oblong cloaca; about 5 twelfths in width.

The trachea is 1 inch 5 twelfths long, moderately flattened, from 1 twelfth to $\frac{3}{4}$ twelfth in breadth; its rings pretty firm, 50 in number, with two dimidiate rings. The muscles are as in the other species; the bronchi are moderate, of about 15 half rings.

REPUBLICAN OR CLIFF SWALLOW.

HIRUNDO FULVA, VIEILL.

PLATE LXVIII. Vol. I. p. 353.

THE scientific world has been deceived as to the first discovery of this interesting Swallow in the United States, it having been generally supposed not to have been known as an inhabitant of our country until the year 1820, when Major LONG found it near the Rocky Mountains. And although the Prince of MUSIGNANO saw my original drawing, and read the account of the habits of this species in my Journal, as written on the spot, both at Henderson in Kentucky, in the spring of 1815, and again in the same state opposite Cincinnati, in the spring of 1819, and concocted his article on this bird from these sources, he has refrained from making any mention of these circumstances.

Much has been said by both American and European writers, to prove that specific differences exist between the birds figured and described by VIEILLOT, SWAINSON, and the Prince of MUSIGNANO, founded on differences in the colouring of the specimens examined by these authors; but these variations are not greater than may be observed in any other Swallow. Since I published my first volume I have enjoyed ample opportunities of witnessing the breeding of this species, and have examined a great number of specimens of all ages, from the period of hatching to that of their being full-fledged. I have found the front-

let in some pure white, in others reddish-brown, while in some the forehead and throat were of a bright and rather deep rufous tint. All these differences I observed in the members of a group, which had their nests under the eaves of the same barn in the State of Maine, where this bird has been known to arrive regularly every spring since the recollection of the oldest inhabitants. Of this I was well assured by Judge LINCOLN of Dennisville, where I saw hundreds of nests of this species. If naturalists are determined to form new species on such slight grounds, their labours will be interminable, but useless. If I had an opportunity of examining the nests, eggs, young and old birds of the *Hirundo melano-gaster* of my friend Mr SWAINSON, I should not be much surprised to find it to be no other than the Cliff Swallow. As to figures of birds taken from dried skins, no great reliance can be placed upon their accuracy. The eggs of this species measure ten twelfths in length, six and a half twelfths in breadth.

According to Dr RICHARDSON, this species is abundant in the Fur Countries, where it was seen in great numbers by Sir JOHN FRANKLIN's party, on the Journey from Cumberland House to Fort Enterprise, and on the banks of Point Lake in latitude 65°, N., where its earliest arrival the following year was noted to be the 12th of June. Its clustered nests he states to be of frequent occurrence on the faces of the rocky cliffs of the barren-grounds, and to be not uncommon throughout the whole course of the Slave and Mackenzie Rivers. Dr TOWNSEND has found this Swallow on the Rocky Mountains, and along the shores of the Columbia River.

A female preserved in spirits, and presented by THOMAS MACCULLOCH, Esq., measures to end of tail $5\frac{4}{12}$ inches; to end of wings $5\frac{7}{12}$; to end of claws $4\frac{4}{12}$; wing from flexure $4\frac{7}{12}$; tail $2\frac{2}{12}$; extent of wings $12\frac{3}{4}$. The mouth is as in the other species; and there is on each side, between the lower jaw and the mucous membrane, a narrow salivary gland, which opens in the angle, or near the junction of the crura, apparently by a single duct. The width of the mouth is 6 twelfths. The tongue is $4\frac{1}{2}$ twelfths long, triangular, emarginate and papillate at the base, flat above, the tip rather abrupt and emarginate, thin and horny. The œsophagus is 2 inches long, 2 twelfths in width. The stomach is oblong, 8 twelfths in length, 6 twelfths in breadth, moderately muscular, its epithelium tough, longitudinally rugous, and of a reddish colour. The contents of the stomach

are insects, but there are no particles of quartz, of which none have been found in that of any of the American Swallows or Goatsuckers examined. The intestine is short and wide, as in the other species, its length being $5\frac{1}{2}$ inches, its breadth from $2\frac{1}{2}$ twelfths to $\frac{1}{2}$ twelfth. The cœca are extremely small, scarcely 1 twelfth in length, and $\frac{1}{3}$ twelfth in breadth.

The trachea is 1 inch $4\frac{1}{2}$ twelfths long, 1 twelfth in breadth, considerably flattened; the rings 55 in number, moderately firm, with two additional dimidiate rings. The bronchi are formed of about 15 half rings. The muscles as in the other species.

WHITE-BELLIED SWALLOW.

HIRUNDO BICOLOR, VIEILLOT.

PLATE XCVIII. VOL. I. p. 491.

THIS species is found abundantly dispersed over the Rocky Mountains, and along the Columbia River. I have traced it on our Atlantic coast from the Texas to Labrador, and Dr RICHARDSON states that it frequents the woody districts of the Fur Countries up to the 68th parallel, but does not mention the periods of its arrival or departure. In all parts of the country which are well wooded, it was, until lately, in the constant habit of breeding in the hollows of trees; now, however, this is not so much the case, as will be seen from the following note of Dr THOMAS M. BREWER of Boston:—"The *Hirundo bicolor* arrives in New England the last of April or the first of May, and is principally occupied, preparatory to breeding, with obstinate contests with its own species, as well as with the Blue Bird, the Wren, and the Barn Swallow. In the vicinity of Boston, since the destruction of the Purple Martins already mentioned, they have taken their places, building in the boxes, jars, &c. originally intended for their relatives, so much so, that in this vicinity they are not now known to breed at all in the hollow trees; a change of habit very unusual, if not wholly unexampled. So much do they prefer their present mode of breeding, that I have known them to build in a rude candle-box, of which one side had been knocked out, placed upon the top of the house.

In the first part of August, they collect in large flocks about ten days before their departure for warmer climates. During that time they are to be seen in great quantities flying around and over the houses in Boston in quest of insects."

My friend Dr BACHMAN says, "On the afternoon of the 16th of October 1833, in company with Dr WILSON and Mr JOHN WOODHOUSE AUDUBON, I saw such an immense quantity of this species of birds that the air was positively darkened. As far as the eye could reach, there were Swallows crowded thickly together, and winging their way southward; there must have been many millions!"

The eggs of this bird measure five and a half eighths of an inch in length, and half an inch in breadth.

In an individual preserved in spirits, the length to end of tail is $5\frac{1}{4}$ inches, to end of wings $5\frac{1}{2}$, to end of claws $3\frac{1}{10}$; wing from flexure $4\frac{9}{12}$; tail $2\frac{4}{12}$; extent of wings $12\frac{1}{2}$.

The roof of the mouth is flat, and of the same general description as in the Purple Martin; its width $4\frac{1}{2}$ twelfths; the tongue 3 twelfths long, its point slit. Between each branch of the lower jaw and the membrane of the mouth is a narrow oblong salivary gland, with two ducts, opening near the junction of the branches. The œsophagus is 2 inches long, from $1\frac{1}{2}$ twelfth to 1 twelfth in width; the proventriculus 2 twelfths. The stomach is irregularly elliptical, 6 twelfths long, $5\frac{1}{2}$ twelfths broad; its structure as in the other species; the epithelium longitudinally rugous, reddish-brown. The intestine is 6 inches long, from 2 twelfths to $1\frac{1}{2}$ twelfth in width; the cœca are 3 twelfths long, and $\frac{1}{2}$ twelfth in breadth, 1 inch distant from the extremity; the cloaca oblong, 4 twelfths wide.

The trachea is 1 inch 4 twelfths long, considerably flattened; its rings pretty firm, 58 in number, with 2 dimidiate rings; the muscles as in the Purple Martin; the bronchial half rings 15.

In the structure of the mouth the Swallows are allied to the Flycatchers on the one hand, and to the Goatsuckers on the other. Their digestive organs do not differ materially from those of the former. The elongated narrow salivary gland found in all the species examined, occurs equally in the Flycatchers, as well as in many other insectivorous birds; but is not larger in the species of which the materials of the nest are fastened together by a gluey substance than in the rest. Although not mentioned in the description of the Sand Martin, it occurs in it also.

AMERICAN SWIFT.

CYPSELUS PELASGIUS, TEMMINCK.

PLATE CLVIII. VOL. II. p. 329.

Dr TOWNSEND confirms the statement of General CLARK, by mentioning that this species inhabits the Rocky Mountains, and the Columbia River district. I have found it breeding in the Texas. It does not visit the Fur Countries.

A specimen in spirits measures to end of tail $4\frac{1}{2}$ inches, to end of wings $6\frac{1}{4}$, to end of claws $3\frac{1}{2}$; extent of wings $12\frac{1}{2}$; wing from flexure $5\frac{1}{4}$; tail $2\frac{1}{2}$.

The bill is extremely short, the gape-line much decurved, the nostrils oblong, 1 twelfth in length, directed obliquely inward, and having a prominent soft margin. The mouth is extremely wide, $6\frac{1}{2}$ twelfths in breadth; the tongue triangular, flattened, 4 twelfths long, thin, papillate at the base, horny towards the end, and pointed. There is on each side an oblong flattened salivary gland, lying between the branch of the lower jaw and the mucous membrane of the mouth, into which it opens near the junction of the crura, apparently by several ducts. The œsophagus is 1 inch 9 twelfths long, of the uniform width of 2 twelfths. The stomach is oblong, moderately muscular, $6\frac{1}{2}$ twelfths long, $4\frac{1}{2}$ twelfths broad; its epithelium dense, reddish-brown, with twelve longitudinal rugæ. The proventricular glands form a belt 4 twelfths in breadth. The intestine is short and rather wide, $4\frac{1}{2}$ inches long, from $1\frac{3}{4}$ twelfths to 1 twelfth in breadth; the rectum wider; there are no cœca; the cloaca oblong. The lobes of the liver are about equal, the left being $7\frac{1}{2}$ twelfths in length, the right 8 twelfths.

The trachea is 1 inch 5 twelfths long, from 1 inch $\frac{1}{4}$ twelfth to $\frac{3}{4}$ twelfth in breadth, flattened; its rings extremely feeble, 58 in number, with 2 dimidiate rings. The lateral muscles are slender, as are the sterno-tracheales; a slender slip extends to near the last ring, but there are *no inferior laryngeal muscles*. The bronchi are moderate, of about 12 half rings.

The feet are extremely short, the anterior toes almost equal, the hind toe very short, and capable of being directed forward. Although

the toes are much shortened, and the third little longer than the second and fourth, the number of phalanges is the same as in other birds, the first toe having two, the second three, the third four, the fourth five. Of these phalanges the one next the last remains nearly of the usual size, but the rest are extremely abbreviated. The form of the foot thus differs essentially from that of the Swallows, in which the middle toe is much longer than the lateral, and the hind toe proportionally larger. It bears a great resemblance to that of the Humming Birds, which on the other hand differ greatly in the structure of the mouth. The sternum differs from that of the Swallows in having the crest extremely elevated at its anterior part, being $5\frac{1}{2}$ twelfths in height, and the posterior margin without notches; whereas in the Swallows there is on each side a deep notch similar to that of the Flycatchers and Warblers. The furcula is also much shorter and wider.

In another specimen there are *no inferior laryngeal muscles, nor cæca.*

These circumstances exhibit curious anomalies in a genus so intimately allied in form and habits to the Swallows. They shew that *Cypselus* is intermediate in some respects between these birds and the Goatsuckers. In the form of the wing, and in the elevation of the crest of the sternum, it closely resembles the Humming-birds; from which, on the other hand, it differs as widely in the structure of the mouth, tongue, and bill. They also shew that until the interior of birds has been studied, it is in vain to think that any classification can be constructed so as to exhibit their real affinities, and that the notions of those who reject anatomy must often prove very absurd.

TYRANT FLYCATCHER.

MUSCICAPA TYRANNUS, BRISS.

PLATE LXXIX. Vol. I. p. 403.

THIS bold Flycatcher is not satisfied with ranging throughout the United States, but extends its migrations across the continent to the Columbia River, and, according to Dr RICHARDSON, northward as far as the 57th parallel, where it breeds, arriving in May, and departing in the beginning of September. I have found it breeding in the Texas, on the one hand, in Labrador on the other, and in all intervening dis-

tricts, excepting the Florida Keys, where it is represented by the Pipit Flycatcher. I have never seen it dive after fish, or even after aquatic insects, although, as I have already mentioned, it throws itself into the water for the purpose of bathing; nor have remains of fishes been found in its stomach or gullet. Like all Flycatchers, it disgorges the harder parts of insects.

How wonderful is it that this bird should be found breeding over so vast an extent of country, and yet retire southward of the Texas, to spend a very short part of the winter! Some, however, remain then in the southern portions of the Floridas. The eggs measure rather more than an inch in length, and six and a half eighths in breadth; they are broadly rounded at the larger end, the other being suddenly brought to a sharpish conical point.

This bird has the mouth wide, the palate flat, with two longitudinal ridges, its anterior part horny, and concave, with a median and two slight lateral prominent lines; the posterior aperture of the nares oblongo-linear, papillate, $4\frac{1}{2}$ twelfths long. The tongue is six-twelfths long, triangular, very thin, sagittate and papillate at the base, flat above, pointed, but a little slit, and with the edges slightly lacerated. The œsophagus is $2\frac{1}{2}$ inches long, without dilatation, of the uniform width of 3 twelfths, and extremely thin; the proventriculus $3\frac{1}{2}$ twelfths across. The stomach is rather large, broadly elliptical, considerably compressed; its lateral muscles strong, the lower thin, its length 10 twelfths, its breadth 8 twelfths, its tendons $4\frac{1}{2}$ twelfths in breadth; the epithelium thin, tough, longitudinally rugous, reddish-brown. The stomach filled with remains of insects. The intestine is short and wide, 7 inches long, its width at the upper part 4 twelfths, at the lower 2 twelfths. The cœca are 2 twelfths long, $\frac{1}{2}$ twelfth in breadth, and placed at an inch and a half from the extremity. The rectum gradually dilates into the cloaca, which is 6 twelfths in width.

The trachea is 2 inches 2 twelfths long, considerably flattened, $2\frac{1}{2}$ twelfths broad at the upper part, gradually contracting to $1\frac{1}{4}$ twelfth; its rings 56, firm, with 2 dimidiate rings. It is remarkable that in this and the other Flycatchers, there is no bone of divarication, or ring divided by a partition; but two of the rings are slit behind, and the last two both behind and before. Bronchial rings about 15. The lateral muscles are slender, but at the lower part expand so as to cover the front of the trachea, and running down, terminate on the dimidiate rings, so that on each side of the inferior larynx there is a short thick

mass of muscular fibres, which are scarcely capable of being divided into distinct portions, although three pairs may be in some degree traced, an anterior, a middle, and a posterior. These muscles are similarly formed in all the other birds of this family, the *Muscicapinæ*, described in this work.

OLIVE-SIDED FLYCATCHER.

MUSICAPA COOPERI, NUTTALL.

PLATE CLXXIV. Vol. II. p. 422.

THIS species has never been observed in South Carolina, although I met with it in Georgia, as well as in the Texas, in the month of April. According to Mr NUTTALL, it is "a common inhabitant of the dark fir woods of the Columbia, where they arrive towards the close of May. We again heard," he continues, "at intervals, the same curious call, like *'gh-phehéa*, and sometimes like the guttural sound of *p h p-phebéé*, commencing with a sort of suppressed chuck; at other times the notes varied into a lively and sometimes quick *p t-petoway*. This no doubt is the note which WILSON attributed to the Wood Pewee. When approached, as usual, or when calling, we heard the *pu pu pu*." A single specimen was shot on the banks of the Saskatchewan, and has been described in the Fauna Boreali-Americana under the name of *Tyrannus borealis*.

Dr BREWER has sent me the following note:—"A female specimen obtained by me measures $6\frac{1}{2}$ inches in length, being fully half an inch shorter than the male. Nape of the neck, belly, vent, throat, and flanks white; in the latter, continued to the back, so as to be visible above the fold of the wings; a broad olive band across the breast; in all other respects it resembles the male. A nest, which I have examined, measures five inches in external diameter, and three and a half inches in internal, and is about half an inch deep. It is composed entirely of roots and fibres of moss. It is, moreover, very rudely constructed, and is almost wholly flat, resembling the nest of no other Flycatcher I have seen, but having some similitude to that of the Cuckoo."

GREAT CRESTED FLYCATCHER.

MUSCICAPA CRINITA, LINN.

PLATE CXXIX. VOL. II. p. 176.

THIS species is found on the Upper Missouri during summer. A good number remain through the winter in the warmer portions of the Floridas. I found them very abundant on the Texas, where they also breed. On the 14th of May 1837, we saw a flock of about twenty, composed of the young fully fledged and their parents. The eggs measure seven and a half twelfths in length, and six twelfths in breadth at the bulge, from which they run rather abruptly towards the smaller end.

In a specimen preserved in spirits the roof of the mouth is flat, with the membrane transparent; the palate is papillate, with two longitudinal ridges; the upper mandible but slightly concave, with a median ridge and two slight lateral prominent lines; the lower mandible also shallow, with three faint ridges. The tongue is rather short, triangular, flattened, extremely thin, sagittate and papillate at the base, horny toward the end, with the point slit and lacerated; its length $6\frac{1}{2}$ twelfths. The mouth is wide, and there are five strong bristles on each side of the base of the upper mandible, with an equal number of smaller bristles behind the nostril. The œsophagus is three inches long, funnel-shaped at the top, being at first $\frac{1}{2}$ inch in width, but soon diminishing to 3 twelfths, and so continuing. The lobes of the liver are very unequal, the right being much larger. The stomach is broadly elliptical, $9\frac{1}{2}$ twelfths long, 8 twelfths in breadth; its lateral muscles strong, its tendons large, being 3 twelfths in diameter; its epithelium dense, longitudinally rugous, reddish-brown. The contents are insects. The proventricular glands are rather large, forming a belt 4 twelfths in breadth. The intestine is short, and of moderate width, its length being only $6\frac{1}{2}$ inches, its breadth from 3 twelfths to $1\frac{1}{2}$ twelfth. The cœca are very small, forming two knobs about 1 twelfth in length, and 1 inch distant from the extremity.

The trachea is 2 inches 1 twelfth long, little flattened, from 2 twelfths to 1 twelfth in breadth; its rings 60, with 2 dimidiated rings.

The bronchi are wide, and of about 12 half rings. The lateral and sterno-tracheal muscles are very slender; the inferior laryngeal form on each side a short thick pad, which is not divisible into distinct portions, as it is in the singing birds. In another individual, the inferior laryngeal muscles were extremely thin, as if atrophied.

COMMON PEWEE FLYCATCHER.

MUSCICAPA FUSCA, BONAP.

PLATE CXX. VOL. II. p. 222.

ALTHOUGH this interesting and well-known species is found in every portion of the United States, from the Columbia River to our Atlantic coasts, no mention is made of it as occurring in the Fur Countries. I have found it in Labrador, and in the Texas, in both which countries it breeds. The eggs are six-eighths of an inch in length, five-eighths in breadth, and are broadly rounded at the larger end. Dr T. M. BREWER states, that "although not on Professor EMMON'S List, it is one of the most common birds in Massachusetts, and its nests are to be found in abundance from the end of May until late in July. The materials of which the nest is composed vary considerably, but fine grass is generally used. In one instance I found it formed entirely of down, with a few straws to keep it in shape." The eggs are uniformly pure white.

The following characters presented by the digestive organs and trachea are common to all the North American small Flycatchers, varying only in their relative dimensions. The roof of the mouth is flat and somewhat diaphanous; its anterior part with three prominent lines, the palate with longitudinal ridges; the posterior aperture of the nares linear-oblong, margined with papillæ. The tongue is $4\frac{1}{2}$ twelfths long, rather broad, very thin, emarginate and papillate at the base, the tip slit. The mouth is rather wide, measuring $4\frac{3}{4}$ twelfths across. There is a very narrow oblong salivary gland in the usual place, and opening by three ducts. The œsophagus is 2 inches 1 twelfth long, $2\frac{1}{2}$ twelfths wide, without dilatation. The stomach is rather small, 6

twelfths long, 5 twelfths broad, considerably compressed, the lateral muscles distinct and of moderate size, the lower very thin; the epithelium thin, tough, longitudinally rugous, brownish-red. The stomach filled with insects. The intestine is $6\frac{1}{2}$ inches long, from $1\frac{3}{4}$ twelfth to 1 twelfth in width; the cœca $1\frac{1}{2}$ twelfth long, $\frac{1}{2}$ twelfth broad, 1 inch distant from the extremity; the rectum gradually dilates into an ovate cloaca.

The trachea is 1 inch 7 twelfths long, from 1 twelfth to $\frac{3}{4}$ twelfth in breadth, considerably flattened; the rings 78, with 2 additional dimidiate rings. The bronchi are of moderate length, with 12 half rings. The lateral muscles are very slender, as are the sterno-tracheales; the inferior laryngeal are very small, and seem to form only a single pair.

WOOD PEWEE.

MUSCICAPA VIRENS, LINN.

PLATE CXV. VOL. II. p. 93.

ALTHOUGH the Wood Pewee is common in Labrador and Newfoundland, as well as on the Rocky Mountains and along the Columbia River, it does not appear to have been seen in the Fur Countries. I have met with it abundantly in the Texas, where it breeds, as it does in all suitable localities in the United States. The following notes have been sent to me by my friend Dr T. M. BREWER of Boston.

“ As you have informed me that some naturalists have doubted the truth of the assertion that the materials of the nest of the Wood Pewee are glued to the branch with saliva, assigning as a reason for their scepticism, that the nest being always built on the dead limb, it would be necessarily exposed to continual or occasional rains, which would not fail to dissolve the cement and thus destroy it, if it depended on that fastening alone. This objection, however plausible, is not valid. I have taken particular pains to ascertain the fact, and, although I have never actually seen the gluey substance applied by the bird itself, I have yet no doubt that your conjectures are correct. That the saliva is soluble in water, and that should the nest be exposed to a heavy rain it would be washed off is true. Yet this is seldom the case; and

why? for the simplest reason, that the nest, although built on a bare and lifeless limb, is uniformly protected from the rain by the overhanging branches of the tree. I once took the pains to watch one of these nests, which was placed on the dead limb of a walnut, during a heavy thunder-storm, and though the rain poured down in torrents, I could not perceive that a single drop had fallen on the nest. This protection does not always prove sufficient, for the nest is sometimes actually washed away. I have never known an instance in which one of these nests was built without this defence against the rain, although a strong wind, by giving the drops an inclined instead of a perpendicular direction, will render it no protection. It appears to me, therefore, that the objections to your statement seem rather to strengthen than to weaken its probability. I have little to add to the history of this bird. The egg measures five-eighths of an inch in length, and nine-sixteenths in breadth. The vividness of the red markings varies considerably.

The structure of the mouth is the same as that of the Common Pewee. The tongue is $4\frac{1}{2}$ twelfths long, its point very narrow and slit. The œsophagus is 1 inch 11 twelfths long, its average width $1\frac{1}{2}$ twelfth. The stomach is $\frac{1}{2}$ inch long, $5\frac{1}{4}$ twelfths broad, and of the same structure. The intestine is 5 inches long, from 2 twelfths to 1 twelfth in width; the cœca $1\frac{1}{2}$ twelfth, and $\frac{1}{2}$ twelfth broad. There are salivary glands, with three ducts as in the preceding species. The trachea is 1 inch 5 twelfths long, its rings about 75, and 2 terminal dimidiate rings. The muscles are as in the other species, but the inferior laryngeal are larger. The bronchi have about 12 half rings.

TRAILL'S FLYCATCHER.

MUSCICAPA TRAILLII.

PLATE XLV. Vol. I. p. 236.

MANY specimens of this Flycatcher have been procured by Dr TOWNSEND about the Columbia River, several of which are still in my possession, after giving one to the Prince of MUSIGNANO, who had not seen one before, and another to the Earl of DERBY. Nothing has transpired respecting its habits since the publication of my first volume.

SMALL GREEN CRESTED FLYCATCHER.

MUSCICAPA ACADICA, GMEL.

PLATE CXLIV. VOL. II. p. 256.

THIS well-known species was procured on the Columbia River by Dr TOWNSEND, whose specimens I saw in Philadelphia. It does not appear to inhabit the Fur Countries, as no mention is made of it in the *Fauna Boreali-Americana*.

The mouth is as in the other species, and there are salivary glands; the tongue 3 twelfths long, triangular, pointed and slit. Width of mouth 4 twelfths. Œsophagus 1 inch 8 twelfths, its width from 2 twelfths to $1\frac{1}{2}$ twelfth. The stomach is 5 twelfths long, $4\frac{3}{4}$ twelfths broad. Its contents, insects. The intestine is 4 inches 10 twelfths long, from 1 twelfth to $\frac{1}{2}$ twelfth in width; the cœca extremely small, $\frac{3}{4}$ twelfths in length, their distance from the extremity 9 twelfths.

The trachea is 1 inch 4 twelfths long, about $\frac{3}{4}$ twelfth in breadth, the rings 55, and 2 dimidiate. The muscles are as in the other species. The bronchi have about 12 half rings.

LEAST FLYCATCHER.

MUSCICAPA PUSILLA.

PLATE CCCCXXXIV. VOL. V. p. 288.

THE mouth is as in all the preceding species; there are very slender salivary glands; the tongue is $2\frac{3}{4}$ twelfths long, triangular, pointed, and slit. The œsophagus 1 inch 8 twelfths long, from 2 twelfths to 1 twelfth in width. The stomach is broadly elliptical, $4\frac{3}{4}$ twelfths by $4\frac{1}{4}$ twelfths, considerably compressed, and in all respects as in the rest. Intestine $5\frac{1}{4}$ inches long, from 1 twelfth to $\frac{1}{2}$ twelfth in width; cœca 1 twelfth long, $\frac{3}{4}$ twelfth in width.

Trachea 1 inch 2 twelfths long, from $\frac{3}{4}$ twelfth to $\frac{1}{2}$ twelfth in breadth; rings about 60, with 2 halved rings; bronchi of about 12 rings. The muscles as in the rest, the inferior laryngeal extremely small.

AMERICAN REDSTART.*MUSCICAPA RUTICILLA*, LINN.

PLATE XL. VOL. I. p. 202.

THIS bird differs in no essential respect from the Flycatchers above mentioned. Its mouth has the same structure, being only a little more concave in front. The tongue is of the same form, but proportionally narrower, its tip slit. The œsophagus is 1 inch 8 twelfths long, its average width 1 twelfth. The stomach $4\frac{1}{2}$ twelfths by $3\frac{3}{4}$ twelfths. Intestine 3 inches 10 twelfths long, its greatest width barely 1 twelfth; cœca little more than $\frac{1}{2}$ twelfth long, and $7\frac{1}{2}$ twelfths distant from the extremity. Trachea $1\frac{1}{4}$ inch long, of 55 rings, with 2 dimidiate; its muscles as in the other species, but the inferior laryngeal proportionally a little larger; bronchi of about 12 half rings.

GREEN BLACK-CAPPED FLYCATCHER.*MUSCICAPA WILSONII*.

PLATE CXXIV. VOL. II. p. 148.

THIS species is abundant on the Columbia River, whence several specimens were brought by Dr TOWNSEND. I also found it on my way to the Texas, early in April. It is now not uncommon in New Jersey, on its passage Northward; but it has not been mentioned as occurring in the Fur Countries.

YELLOW-THROATED VIREO.*VIREO FLAVIFRONS*, VIEILL.

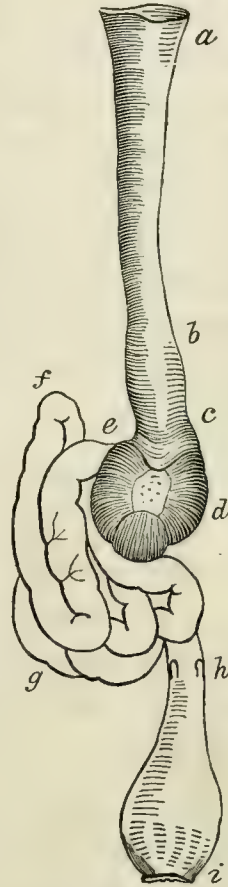
PLATE CXIX. VOL. II. p. 119.

THE egg of this bird measures thirteen-sixteenths of an inch in length, by five-eighths, is of a slightly elongated form, oval, from the

smaller end being rather rounded, and is marked with a few scattered spots of a deep brownish-crimson, on a beautiful flesh-coloured ground.

The Vireos are intermediate between the Flycatchers and the Shrikes, but in the structure of their digestive organs, and in the arrangement of the muscles of the trachea, more allied to the latter. In a male preserved in spirits, the roof of the mouth is slightly concave, with two palatal ridges, and an anterior median ridge; the posterior aperture of the nares is linear-oblong, 5 twelfths in length, its margins papillate. The tongue is rather short, $4\frac{1}{2}$ twelfths long, narrow, triangular, very thin, emarginate and papillate at the base, flat above, tapering, to a horny, deeply slit, lacerated point. The width of the mouth is $4\frac{1}{2}$ twelfths. The œsophagus is 1 inch 9 twelfths long, funnel-shaped at the commencement, at the distance of half an inch, its width is $1\frac{3}{4}$ twelfth, and thus continues until it enters the thorax, soon after which it enlarges to form the proventriculus, of which the breadth is 3 twelfths. The stomach is of moderate size, of a broadly elliptical form, considerably compressed; its length 6 twelfths, its breadth 5 twelfths, its muscles pretty large and distinct, its tendons of moderate size; the epithelium thin, reddish-brown, with eight longitudinal rugæ on one side, and five on the other. The belt of proventricular glandules is $2\frac{1}{2}$ twelfths broad. The intestine is $5\frac{3}{4}$ inches long, from $1\frac{1}{2}$ twelfth to 1 twelfth in width, the rectum 2 twelfths at first, the cloaca globular, about 4 twelfths; the cœca $1\frac{1}{4}$ twelfth long, about $\frac{1}{4}$ twelfth wide, and placed at the distance of 9 twelfths from the extremity.

The trachea is 1 inch 2 twelfths long, from 1 twelfth to $\frac{3}{4}$ twelfth in width, moderately flattened, its rings rather firm, about 50, with 2 dimidiate; the muscles disposed as in the Thrushes and Warblers, there being four pairs of inferior laryngeal on each side, besides the sterno-tracheal. The bronchi short, slender, of about 10 half rings.



RED-EYED VIREO.

VIREO OLIVACEUS, BONAP.

PLATE CL. VOL. II. P. 287.

It appears that an individual of this species was procured at Cumberland House, lat. 54° N., and a description of it is given in the *Fauna Boreali-Americana*, but without a single word as to its times of appearance and departure. My friend Dr THOMAS M. BREWER has sent me the following curious notice respecting this species. "There is connected with the egg of this bird which I sent you, a fact of some interest, both as displaying its kind nature, and as establishing a fact in natural history. Mr ORD says, in his paper in *LOUDON'S Magazine*, that 'it is probable, that if the Cowbird deposits her egg in a nest wherein the owner has not yet begun to lay, the nest is either detected forthwith, or the egg of the intruder is buried by the addition of fresh materials, so that it becomes abortive!' Let us see if this be so. On the 10th of June 1836, I found the nest of the Red-eyed Vireo nearly finished. It was situated on the extremity of a branch of an oak, at the height of about 30 feet. Being in that situation quite inaccessible, I fastened a cord to the end of the limb, and by bringing it closer to the body of the tree and securing it in that situation, I put it within reach. Although by this means the nest was nearly inverted, the bird did not forsake it, but built up the under side, and adapted it to its new situation. About a fortnight after, I found in the nest two eggs of the Cow Troopial advanced in incubation, although there were none of the eggs of the owner of the nest. On the 30th of the same month, the egg of the Vireo was found to have been added. This had been sat upon a few days; and those of the Troopial were nearly ready to be hatched. This fact is one of the most satisfactory kind, for not merely one, but actually *two* eggs of the Cow Blackbird were deposited, and instead of being forsaken were incubated for at least a week before the bird was ready to lay any of her eggs; and although repeatedly disturbed, first by having her empty and unfinished nest nearly inverted, then by having the eggs of the Cowbird removed and afterwards replaced in order to put their identity beyond doubt, and again by having her own eggs removed, she still clung to her adopted younglings with unexampled fidelity."

WARBLING FLYCATCHER OR VIREO.

VIREO GILVUS, BONAP.

PLATE CXVIII. Vol. II. p. 114.

The roof of the mouth is flat behind, moderately concave before, with a median ridge ; the tongue 6 twelfths long, emarginate, and finely papillate at the base, flat above, slit at the point. The width of the mouth is 5 twelfths. The œsophagus is 1 inch 10 twelfths long, its greatest width $2\frac{1}{2}$ twelfths. The stomach is $6\frac{1}{2}$ twelfths long, $5\frac{1}{2}$ twelfths broad, of the same structure as in Thrushes, Warblers, and Flycatchers, its lateral muscles being moderate, the lower thin, the epithelium thin, tough, longitudinally ridged. The intestine is $5\frac{1}{2}$ inches long, from $1\frac{3}{4}$ twelfth to 1 twelfth wide. The cœca are very small, 1 twelfth long, 9 twelfths from the extremity. The individual examined, being a female, has the oviduct of enormous width, its greatest breadth when inflated being 9 twelfths of an inch. The trachea is $1\frac{1}{2}$ inch long, from $1\frac{1}{4}$ twelfth to 1 twelfth in breadth, its rings 52, with two additional dimidiate rings ; the muscles as in the Thrushes, but proportionally smaller.

WHITE-EYED VIREO.

VIREO NOVEBORACENSIS, BONAP.

PLATE LXIII. Vol. I. p. 328.

I HAVE ascertained that this species is a constant resident in the Floridas during winter, as well as in the lower parts of Alabama and Georgia. A great number, however, pass beyond our limits, for at Galveston Island I found them arriving from the south. It extends its movements across the whole continent, Dr TOWNSEND having met with it on the Columbia River. Along our Atlantic districts it is found sparingly in summer as far as Nova Scotia, and a few were seen by me in Labrador. The eggs measure four-eighths and three-fourths in length, and half an inch in breadth.

SOLITARY VIREO.

VIREO SOLITARIUS, VIEILLOT.

PLATE XXVIII. VOL. I. p. 147.

THIS species is an inhabitant of the Columbia River district, where several specimens were procured by Dr TOWNSEND. I found it abundant in Maine, and it reaches Pictou in Nova Scotia, beyond which I saw none on my way to Labrador. We found it in the Texas, arriving from farther south late in April. My friend Dr BACHMAN informs me that it is "every year becoming more abundant in South Carolina, where it remains from about the middle of February to that of March, keeping to the woods. It has a sweet and loud song of half a dozen notes, heard at a considerable distance." Mr NUTTALL has favoured me with the following notice respecting it:—

"About the beginning of May, in the oaks already almost wholly in leaf, on the banks of the Columbia, we heard around us the plaintive deliberate warble of this species, first mentioned by WILSON. Its song seems to be intermediate between that of the Red-eyed and Yellow-breasted species, having the *preai, preai*, &c. of the latter, and the fine variety of the former in its tones. It darted about in the tops of the trees, incessantly engaged in quest of food, and now and then disputing with some rival. The nest of this bird is made much in the same manner as that of *Vireo olivaceus*. One which I examined was suspended from the forked twig of the wild crab-tree, at about ten feet from the ground. The chief materials were dead and whitened grass-leaves, with some cobwebs agglutinated together as usual, externally scattered with a few shreds of moss (*Hypnum*) to resemble the branch on which it hung; here and there were also a few of the white paper-like capsules of the spider's nest, and it was lined with fine blades of grass and slender root fibres. The situation, as usual, was open, but shady."

WARBLING VIREO.

VIREO GILVUS, BONAP.

PLATE CXVIII. VOL. II. p. 114.

It is very surprising that this species, which is found on the Columbia River, and in our Middle and Eastern Districts, enters, traverses, and leaves the United States, in a manner unknown to any one. When on my way to the Texas, I met with most of our small birds, but with none of this species.

YELLOW-BREASTED CHAT.

ICTERIA VIRIDIS, BONAP.

PLATE CXXXVII. VOL. II. p. 223.

In an adult male preserved in spirits, the roof of the mouth is nearly flat behind, anteriorly arched and decurved, with a prominent median ridge. The posterior aperture of the nares is linear, 5 twelfths long, with the margins papillate. The tongue is 7 twelfths long, deeply emarginate and papillate at the base, channelled above, tapering to a horny point, which is rather blunt, but terminates in a number of slender bristles, of which there are also some on its edges. The œsophagus is $2\frac{1}{2}$ inches long, funnel-shaped at the commencement, then 3 twelfths in width, and so continuing. The stomach is rather small, considerably compressed, roundish, 7 twelfths long, 6 twelfths broad; its muscles moderate and distinct, its tendons rather large; its cuticular lining thin, tough, brownish-red, with six rugæ on one side, and four on the other. Its contents are remains of insects. The intestine is $6\frac{1}{4}$ inches long, $1\frac{1}{2}$ twelfth in width; the cœca are extremely minute, being only $\frac{1}{4}$ twelfth in length.

The trachea is 1 inch 9 twelfths long, considerably flattened, its breadth 1 twelfth. The rings are 70 in number, and 2 dimidiated rings. The bronchi are short, of 10 half rings. There are four pairs of inferior laryngeal muscles, similar to those of the Shrikes.

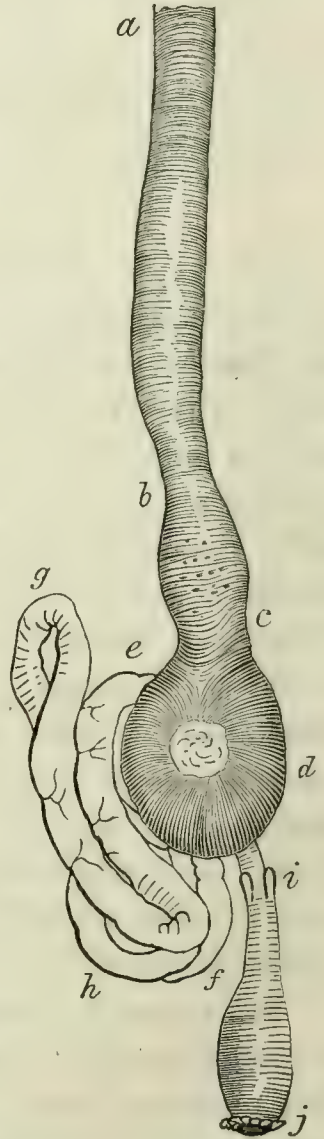
GREAT CINEREOUS SHRIKE.

LANIUS EXCUBITOR, LINN.

PLATE CXCII. VOL. II. p. 534.

THE dimensions of an adult male presented by Dr T. M. BREWER of Boston, and preserved in spirits, are :—Length to end of tail $10\frac{2}{12}$ inches, to end of wings $7\frac{5}{12}$, to end of claws $8\frac{2}{12}$; extent of wings $14\frac{2}{12}$; wing from flexure $4\frac{8}{12}$; tail $4\frac{8}{12}$.

The roof of the mouth is nearly flat, with a median prominent ridge anteriorly, and two papillate ridges behind. The posterior aperture of the nares is 7 twelfths long; the tongue is slender, 7 twelfths long, emarginate and papillate at the base, concave above, horny toward the end, the margins lacerated, the tip slit. The width of the mouth is $7\frac{1}{2}$ twelfths. The œsophagus, *abc*, is 2 inches 10 twelfths long, of considerable width, having an average breadth of 4 twelfths; the proventriculus, *bc*, 5 twelfths in width, its glands forming a belt only 3 twelfths in breadth. The stomach, *de*, is broadly elliptical, 11 twelfths long, $9\frac{1}{2}$ twelfths broad; its muscular coat thin, being composed of strong parallel fasciculi, its thickest part not exceeding 1 twelfth; the epithelium thin, tough, reddish-brown, longitudinally rugous. The pylorus is very small, with a semilunar margin. The intestine, *efghij*, is 12 inches long, its greatest width 3 twelfths, the least 2 twelfths; the cœca, *i*, 2 twelfths long, and scarcely $\frac{1}{2}$ twelfth wide, their distance from the extremity 1 inch; the cloaca, *j*, oblong, its width about 6 twelfths. The stomach contained portions of a mouse, including two front teeth.



The trachea is 2 inches 4 twelfths long, 2 twelfths broad at the upper part, $1\frac{1}{2}$ twelfth at the lower; its rings about 55, with 2 dimidiate rings; it is considerably flattened below, but roundish at the upper part. The bronchi are of moderate size, with about 12 half rings. The muscles are as in the Thrushes, there being four pairs of inferior laryngeal, of large size.

In another individual, the tongue is 7 twelfths long, the mouth 8 twelfths in width; the œsophagus 3 inches long, its average width $3\frac{1}{2}$ twelfths; the intestine 12 inches long. The lobes of the liver are very unequal, the left smaller. The aperture of the ear of moderate size, roundish, 2 twelfths in diameter. The contents of the stomach were a small bird and some insects.

LOGGERHEAD SHRIKE.

LANIUS LUDOVICIANUS, LINN.

PLATE LVII. Vol. I. p. 300.

I HAVE received specimens of our common Loggerhead Shrike, of both sexes and of various ages, from Dr TOWNSEND, who procured them on the Rocky Mountains and in the Columbia River district. These specimens are in no respect different from those which I have obtained in South Carolina, where it is plentiful. That this species should occur on both sides of the continent is not very remarkable, as several other birds are in the same predicament. The Fish Crow, for example, affords a more striking instance, as it is rarely found beyond the maritime districts; whereas the Loggerhead Shrike extends its movements far inland in the States of Georgia, Alabama, and Louisiana. This species has been given as new, under the name of *Lanius Excubitorides*, in the Fauna Boreali-Americana; but the description and figure indicate nothing peculiar; and the nest and eggs described by Mr DRUMMOND, especially the latter, are similar to those of the Carolina Bird.

My account of the habits of this species being meagre, I have great pleasure in laying before you the observations of my friend the Rev.

Dr BACHMAN, who has had much better opportunities of studying them. “Your description of this bird requires, I think, many additions. You say it has no song. This is true in part, but it has other notes than the grating sounds you attribute to it. During the breeding season, and indeed nearly all summer, the male ascends some cedar or other tree, and makes an effort at a song, which I cannot compare to anything nearer than the first attempts of a young Brown Thrush. He seems to labour hard, making as it were almost painful exertions. At times the notes are not unpleasing, but very irregular.

“You speak of the male shewing but little attachment to the female. I have thought differently, and so would you were you to watch him carrying every now and then a grasshopper or cricket to her, pouncing upon the Crow and even the Buzzard, that approach his nest, and invariably driving these intruders away. Indeed I consider these birds as evidencing great attachment toward each other.

“I have usually found the nest on the outer limbs of a tree, frequently the live-oak, sometimes the black-gum (*Liquidambar styraciflua*), and often on a cedar, from fifteen to thirty feet from the ground. Once only I saw it lower, on the toothach bush, *Xanthoxylum*, about ten feet high.

“I have occasionally seen this bird with young mice in its mouth, and have found it feeding on birds that had apparently been wounded by the sportsman. It sometimes catches young birds and devours them; but I am induced to think, from the observation of many years, that the food of the Logger-head Shrike consists principally of insects. Grasshoppers and crickets are preferred; coleopterous and other insects are also frequently seized; and I have seen it catch moths and butterflies on wing. This bird has the same propensity as the Northern Shrike, to stick grasshoppers and other insects on thorns. I have seen one occupy himself for hours in sticking up in this way a number of small fishes that the fishermen had thrown on the shore; but I never found either this or the Northern Shrike return to seek this prey for food at any other time; but on the contrary, the fishes dried up and decayed. I have seen them alight on the same thorn-bush afterwards, but never make use of this kind of food. May it not be the same propensity which Jays have, who conceal nuts and grain, and apparently do not return to devour them?

“The Logger-headed Shrike is partially migratory in Carolina. A

few may be found through the winter; but the number is ten times greater in summer; and such is also the case with the Mocking Bird. It appears fond of the little changeable Green Lizard (*Anolis Carolinensis*, Cuv.), and I have seen exertions of skill and activity on the one part in seizing, and on the other in avoiding their enemy, but the reptile, in spite of all its agility, is frequently secured. On one occasion I had marked a lizard of this species on a fence. It was then beautifully green; but on being chased by a Shrike, which observing me flew off, I found that it had become quite brown.

“This species breeds twice in a season, lays four and sometimes five white eggs. Occasionally it feeds on the small black berries of a species of *Smilax*; this is in winter, when it is probably pinched for food. I have noticed it building its nest in the same tree for a succession of years, never repairing an old nest but always building a new one.”

According to Mr SWAINSON this species is found on the Table Land of Mexico, where it is very common.

A male preserved in spirits measures $8\frac{1}{2}$ inches in length; extent of wings 12; wing from flexure 4; tail $4\frac{1}{2}$.

The roof of the mouth is as in the other species; its width 7 twelfths; the tongue is 6 twelfths, the posterior aperture of the nares 5 twelfths. The lobes of the liver are very unequal, the right being the largest. The œsophagus is $2\frac{1}{4}$ inches long, 4 twelfths in width, but on entering the thorax contracting to $2\frac{1}{2}$ twelfths; the proventriculus 3 twelfths. The stomach is irregularly elliptical, a little compressed; the muscles thin, especially the lower; the epithelium thin, tough, brownish-red, with longitudinal rugæ. The intestine is 9 inches long, from 3 twelfths to 1 twelfth wide; the cœca extremely small, $2\frac{1}{2}$ twelfths long, $\frac{1}{4}$ twelfth wide; the cloaca small and oblong.

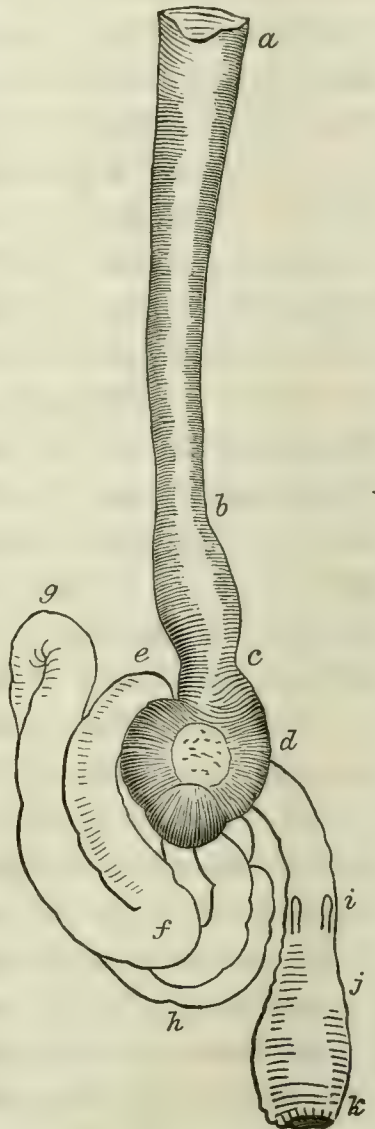
The trachea is $2\frac{1}{2}$ inches long, moderately flattened, $1\frac{3}{4}$ twelfth broad at the commencement, 1 twelfth at the lower part; the rings firm, about 56, with 2 dimidiate rings. The lateral muscles are very slender, as are the sterno-tracheal, and there are four pairs of inferior laryngeal muscles on each side, forming a large pad, as in the Thrushes. In this respect the Shrikes resemble the *Turdinæ* and *Sylvianæ*, much more than the Flycatchers, of which the inferior laryngeal muscles are small and blended. The bronchi are moderate, of about 12 half rings.

MOCKING BIRD.

TURDUS POLYGLOTTUS, LINN.

PLATE XXI. VOL. I. p. 103.

IN an adult male of this celebrated bird, the roof the mouth is flat, with two narrow longitudinal palatal ridges, and an anterior median prominent line; the posterior aperture of the nares is oblongo-linear, margined with acute papillæ, with which also the whole membrane of the palate is covered. The tongue is slender, 7 twelfths long, emarginate and papillate at the base, channelled above, horny and thin toward the end, which is slit and lacerated. The width of the mouth is 6 twelfths. The œsophagus, *abc*, is 3 inches long, and of the nearly uniform width of $4\frac{1}{2}$ twelfths, unless at the commencement where it is a little wider. The proventricular glands form a belt 5 twelfths of an inch in breadth. The stomach, *cde*, is rather small, broadly elliptical, 9 twelfths long, $7\frac{1}{2}$ twelfths broad, considerably compressed; its muscular coat moderately developed, the right muscle being $1\frac{1}{2}$ twelfth thick, the left 1 twelfth; the epithelium dense, tough, reddish-brown, with seven longitudinal rugæ on one side and three on the other. The intestine, *efghijk*, is of moderate length and width; the duodenum, *efg*, curves at the distance of $1\frac{1}{4}$ inch, and is 3 twelfths wide, as is the rest of the intestine, of which the entire length is $9\frac{1}{2}$ inches; the cloaca, *k*, very little enlarged; the cœca, *i*, 2 twelfths long, and $\frac{1}{2}$ twelfth broad, their distance from the extremity 8 twelfths.



The right lobe of the liver is very large, being 1 inch $1\frac{1}{2}$ twelfth in length, and extending under the anterior part of the stomach, in the form of a thin-edged rounded lobe ; the left lobe is 10 twelfths long, and lies under the proventriculus and left side of the stomach. The heart is of moderate size, $7\frac{1}{2}$ twelfths long, 5 twelfths in breadth, of a conical obtuse form.

The aperture of the glottis is $1\frac{1}{2}$ twelfth long, and furnished with the same muscles as the other singing birds, viz. the *thyro-arytenoideus*, which passes from the edge of the thyroid cartilage at its lower part to be inserted into the tip and sides of the arytenoid cartilage ; the *thyro-cricoideus*, which passes from the anterior edge of the thyroid backward to the cricoid ; a small muscle, the *crico-arytenoideus*, which assists in closing the glottis ; and several small slips similar to those observed in other Thrushes, and especially in the Crows, in which the parts, being larger, are more easily seen. The trachea is 1 inch 10 twelfths in length, considerably flattened, gradually tapering from $1\frac{1}{2}$ twelfth to 1 twelfth ; the rings, which are firm, are about 60, and 2 dimidiate rings. The lateral muscles are slender, as are the sterno-tracheal. There are four pairs of inferior laryngeal muscles ; an anterior, going to the tip of the first half-ring, another to the tip of the second, a third broader and inserted into a portion of the last half ring, the fourth or posterior or upper, long, narrow, and inserted into the point of the same half ring. Besides these, as in all the land-birds, there is a pair of very slender muscles, the *cleido-tracheal*, arising from the sides of the thyroid cartilage and inserted into the furcula. The bronchi are rather wide and short, of 12 cartilaginous half rings.

As in all the birds of this family, there is a very slender salivary gland on each side, lying between the branch of the lower jaw and the mucous membrane of the mouth, upon which latter it opens anteriorly to the frenum of the tongue.

This species is abundant in the Texas, where it breeds. The eggs are generally one inch in length, and nine-twelfths and a quarter in breadth.

CAT BIRD.

TURDUS FELIVOX, VIEILL.

PLATE CXXVIII. VOL. II. p. 171.

I FOUND this species abundant in the Texas, where it breeds. The eggs measure almost an inch in length, and three-fourths in breadth, and are of an oval form, well rounded at both ends. According to Dr TOWNSEND, it is not found on the Missouri or on the Rocky Mountains. "Although only here and there met with in Maine, it is yet found in the greater part, if not the whole, of that State. It exists in New Hampshire and Vermont, as far to the north as the Canada line, and even breeds there, as its eggs have been sent me from the town of Coventry, which is but a few miles from the border. How much farther north they are to be found I cannot say. The Cat Bird, like its relatives, the Robin and Brown Thrush, cannot be induced to sit upon eggs which do not belong to it, even if they be eggs of the same species, but will invariably, I believe, remove them from the nest. It is also strongly attached to its own eggs, so much so as to follow the nest when it has been taken down, and even to take possession of it again, although left at a great distance from the place in which it was built." This notice is from Dr T. M. BREWER of Boston.

The structure of the mouth is as in the Mocking Bird; its width $5\frac{1}{4}$ twelfths. The tongue is 5 twelfths long, with the point slit. The œsophagus is 2 inches 11 twelfths long, its greatest width 3 twelfths, without any remarkable dilatation. The stomach is broadly elliptical, $7\frac{1}{2}$ twelfths long, $6\frac{1}{4}$ twelfths broad; its muscles pretty large, the lower however very thin, the tendons roundish; the epithelium as in the other species, with prominent longitudinal rugæ. The intestine is $7\frac{1}{2}$ inches long, from 3 twelfths to $1\frac{1}{2}$ twelfth in width. The cœca are $2\frac{1}{2}$ twelfths long, $1\frac{1}{2}$ twelfth in width, 1 inch distant from the extremity; the cloaca ovate, $4\frac{1}{2}$ twelfths wide.

The trachea is 1 inch 10 twelfths long, moderately flattened; the rings firm, 75 in number; the bronchial half rings about 15. The muscles are as in the other Thrushes; the inferior laryngeal pretty large and well defined.

FERRUGINOUS THRUSH.

TURDUS RUFUS, LINN.

PLATE CXVI. VOL. II. p. 102.

THIS species is abundant in the Texas, and breeds there. It was not observed by Dr TOWNSEND on the Rocky Mountains, or any where beyond them. According to Dr RICHARDSON, the vicinity of the Saskatchewan River forms its northern limits. Dr T. M. BREWER writes me as follows:—"Your account of the habits of the Brown Thrush does not leave me any thing to add. I will therefore only trouble you with the following test of the ability of this bird to detect the intrusion of eggs not belonging to it. I found this summer, 1837, a nest containing three eggs, which I removed, leaving in their place three Robin's eggs, and retired to wait the issue. In a few moments the female approached, gave the contents of the nest a hasty survey, and immediately flew off. She returned in a short time in company with her mate, and both flew to the nest apparently in the greatest rage, took each an egg in their *claws*, and dashed it against the ground at the distance of more than a rod from the nest, the female repeating the same to the other egg. This done, they continued for some time to vent their rage on the broken eggs, tossing them about, and at the same time manifesting their displeasure in every possible way. They afterwards forsook the nest. The eggs measure an inch and an eighth in length, six and a half eighths in breadth. They never raise more than one brood in a season here."

As in the preceding species, the roof of the mouth is flat, with two longitudinal ridges behind, a median and two slight lateral ridges before. The posterior aperture of the nares is linear-oblong, $\frac{1}{2}$ inch in length, margined with papillæ. The tongue is slender, emarginate and papillate at the base, slightly concave above, horny in the greater part of its length, thin-edged toward the end, and with the point slit and lacerated. The œsophagus is 3 inches long, without dilatation, 3 twelfths in width. The stomach is of moderate size, 10 twelfths long, 9 twelfths broad, its lateral muscles well developed, the tendons large;

the epithelium tough, reddish-brown, with three longitudinal rugæ on one side, and four on the other. The proventricular glands very small, forming a belt 5 twelfths in breadth. The contents of the stomach are remains of insects, with a few particles of quartz. The intestine is 10 inches long, its width from $3\frac{1}{4}$ twelfths to 2 twelfths; the cœca extremely small, $1\frac{1}{2}$ twelfth in length, $\frac{1}{2}$ twelfth in breadth, 1 inch distant from the extremity; the cloaca oblong, 5 twelfths in breadth.

The trachea is $2\frac{1}{2}$ inches long, flattened; 2 twelfths broad above, $1\frac{1}{2}$ twelfth below; its rings firm and rather broad, 60 in number, with 2 dimidiate rings. Bronchi short, of about 12 half rings. The muscles as in the Mocking Bird and other Thrushes and Warblers.

AMERICAN ROBIN OR MIGRATORY THRUSH.

TURDUS MIGRATORIUS, LINN.

PLATE CXXXI. Vol. II. p. 190.

THE extent of migration of this bird, and its breeding from the Texas to the 56th degree of north latitude, and from the Atlantic coast to the Columbia River, seem to me to afford a strong argument against the necessity of migration in birds. In countries, like ours, of great extent and varied climate, migrating birds find many favourable places at which to stop during the summer months for the purpose of breeding. I have repeatedly mentioned that young birds regularly advance farther southward in winter than their parents, which may be accounted for by the capability of enduring cold being greater in the latter. Now, is it not probable that young birds of a second or third brood, who are urged at an earlier period than those of the first set, but late in the season, to force their way southward, and save themselves from the rigours of approaching winter, are at this period of weaker constitution than those which have been born earlier, and have been less pressed by time in prosecuting their journey southward? In consequence of this, the last young broods may be unwilling, perhaps unable, on the approach of spring, to start and follow their stronger companions to the land of their nativity. They may thus remain and breed in their first year's winter quarters, or advance so far as their strength will allow them.

In the course of my studies, I have, in a great number of instances, observed that such birds as produced *three* broods in one season and in the same district, were all much older than those which produced only one brood. Of this any one can easily assure himself by shooting the breeding birds, and either bending or breaking their bones, or tearing asunder their pectoral muscles, which will be found harder or tougher in proportion to their age. Thus I am inclined to believe, that the farther south breeding individuals are found the younger they are, and *vice versa*. This general rule is well exhibited in most of the species of birds, whether of the land or of the water, that are known to proceed in spring northward, and to return southward at the appearance of the inclement season; for in them the gradual progress of the young may easily be compared with the much slower advance of the old.

I have, on many occasions, when certain species returned to the nest or spot where they bred the previous season, observed, that what I considered to be the parents of the first year's young, were again the occupants. In the Swallow tribe, and in some of our travelling Woodpeckers, as well as in the Summer Duck, the Dusky Duck, the Mallard, the Hooded Merganser, Crow Blackbirds, Starlings, Kingfishers, Canada Geese, &c., this has proved correct, in as far as I could ascertain by the comparative softness of their bones and pectoral muscles. I think, further, that such species as merely enter the southern parts of our country in the breeding season, as the Mississippi Kites, Fork-tailed Hawks, Roseate Spoonbills, Flamingoes, Scarlet Ibises, &c. would all prove, if their winter retreats were well ascertained, to advance much farther southward than any of those which reach us first, and which continue their movements northward; with the exception of such species, however, as would not be likely to meet with the food they are accustomed to live upon, or the same degree of warmth as that to which they have been habituated, as our Parrakeets, the White-headed Pigeon, Zenaida Dove, Booby Gannet, several Terns, Gallinules, Herons, and others, which are by no means deficient in the power of flight, were nothing else required.

Another thought has frequently recurred to me while making observations on the habits of our birds: the nests of all those which advance least to the northward are less bulky than those of the same species found in higher latitudes. This difference I have not considered altogether as depending upon the state of the temperature, but upon the

longer time afforded these birds for rearing their young, the old and strong individuals arriving at an early period of the season, so that they have abundance of time to rear their broods before a decided change of temperature takes place. Again, it has become a matter of great doubt with me, whether the necessity of migration has not, in some parts of our countries, been increased in many species by the great increase of the individuals of a species that have settled there, and which have so encroached upon the original occupants as to force them to seek other retreats. In times long gone by, the country was in a manner their own, and being free of annoyance, they probably bred in every portion of the land that proved favourable in regard to food. On the other hand, I am fully aware that many species, now unknown in certain districts, have formerly been abundant there, but have been induced to remove to other sections of the country, enticed thither by the accumulation of food produced by the increase of civilized men. This I would look upon as a proof that migration is not caused by an organic or instinctive impulse which induces birds to remove at a particular period to a distant part, to spend a season there for the *sole purpose of reproducing*, but for the reasons stated above.

Dr T. M. BREWER has favoured me with the following remarks:—
“ Your account of the Robin hardly leaves me any thing to add, except the fact that Mr CABOT found the nest of this bird on the ground (a bare rock) near New Port, Rhode Island. Such a situation is certainly unusual, if not altogether unprecedented. It appears to me that the opinion commonly entertained, that the Robin passes the winter in Massachusetts, is not strictly correct. Sure it is that Robins are to be found here pretty much at all seasons, but I have no idea that the same individuals remain any length of time. They are rather successions of flocks slowly moving towards warmer regions, and have about all passed through the State by the first week of February; from which time until March none are to be found there, when those that visit the extreme northern parts again commence their migrations. In the gardens in the vicinity of Boston, the Robins have become a great nuisance, from the boldness with which they appropriate to their own use the largest, earliest, and best cherries, strawberries, currants, buffalo-berries, raspberries, and other fruit. The Robin generally has three broods in a season, in this State, and in the third nest it is not unusual to find the

egg last laid to be only about a third of the size of the others. Albinos of this species have sometimes been seen."

The interior of the mouth has the same general structure as that of the Mocking Bird; its width 4 twelfths. The tongue is 8 twelfths long, narrow, tapering, thin, horny, with the margins slightly lacerated, and the tip slit. The posterior aperture of the nares is oblongo-linear, 7 twelfths long. The œsophagus is three inches long, funnel-shaped at the commencement, afterwards of the nearly uniform width of $3\frac{1}{2}$ twelfths, until it enters the thorax, when it contracts; the proventriculus bulbiform, 5 twelfths in breadth. The stomach is of moderate size, broadly elliptical, 9 twelfths in length, $7\frac{1}{2}$ twelfths in breadth; the epithelium light red, longitudinally rugous; the muscles of moderate thickness. The intestine is of moderate length and great width, the former being 13 inches, the latter 4 twelfths. It passes downwards in front, at the distance of $1\frac{1}{2}$ inch, bends forward, inclosing the pancreas, opposite the right lobe of the liver receives the biliary ducts, then passes backwards to the right side until it reaches the hind part of the abdomen, forms two short convolutions, afterwards a larger one, and over the stomach terminates in the rectum. The cœca are 3 twelfths long, 1 twelfth in width; their distance from the extremity 1 inch. The cloaca is an oblong sac, of which the width is $\frac{1}{4}$ inch.

The trachea is 2 inches 2 twelfths long, a little flattened, firm, the rings about 78, with 2 terminal half rings. The bronchi are short, of about 12 half rings. The muscles are as described in the Mocking Bird.

HERMIT THRUSH.

TURDUS MINOR, GMEL.

PLATE LVIII. Vol. I. p. 303.

THE mouth of this species has the same structure as that of the Robin. The tongue is 5 twelfths long, sagittate and papillate at the base, narrow, thin, horny, with the margins slightly lacerate and the tip slit. The œsophagus is $2\frac{1}{4}$ inches long, about 2 twelfths in width.

The stomach is 6 twelfths long, 6 twelfths broad, or quite round ; its structure as in the Robin. The intestine is $7\frac{1}{2}$ inches long, from $2\frac{1}{2}$ twelfths to 2 twelfths in width. The cœca are 2 twelfths long, $\frac{1}{2}$ twelfth broad, 10 twelfths distant from the extremity ; the cloaca oblong, about $4\frac{1}{2}$ twelfths in width. The trachea is $1\frac{1}{2}$ inch long, $\frac{3}{4}$ twelfth in breadth ; its rings 90 ; the bronchial half rings about 15 ; the muscles as in the other species.

WOOD THRUSH.

TURDUS MUSTELINUS, GMEL.

PLATE LXXIII. Vol. I. p. 372.

MOUTH as in the rest ; tongue $6\frac{1}{2}$ twelfths long, emarginate and papillate at the base, flat above, thin, and tapering to a slit point ; salivary glands as in all the Thrushes. Œsophagus 2 inches 8 twelfths long, about 9 twelfths in width. Stomach 8 twelfths long, 6 twelfths broad, its muscles large ; epithelium with prominent rugæ. Intestine $8\frac{3}{4}$ inches long, from $2\frac{1}{2}$ twelfths to $1\frac{1}{2}$ twelfth wide ; cœca 2 twelfths long, 1 twelfth broad ; cloaca ovate, $4\frac{1}{2}$ twelfths in breadth. Trachea 2 inches long, from $1\frac{3}{4}$ twelfth to $1\frac{1}{2}$ twelfth in breadth, moderately flattened ; the rings firm, 68 in number ; bronchial rings 15. The muscles as in the rest.

TAWNY THRUSH.

TURDUS WILSONII, BONAP.

PLATE CLXIV. Vol. II. p. 362.

MOUTH as in the rest ; tongue $5\frac{3}{4}$ twelfths long. Œsophagus 2 inches 2 twelfths long, its width $2\frac{1}{2}$ twelfths ; proventriculus 3 twelfths. Stomach roundish, $7\frac{1}{2}$ twelfths long, 6 twelfths broad, in other respects as in the other species. Intestine $9\frac{1}{2}$ inches long, from $2\frac{1}{2}$ twelfths to 2 twelfths in width ; cœca 2 twelfths by 1 twelfth, 1 inch

distant from the extremity; cloaca ovate, 4 twelfths wide. Trachea 1 inch 8 twelfths long, 1 twelfth broad; rings 78, moderately firm; bronchial rings about 15. Muscles as in the other species.

All the Thrushes examined, as well as the Shrikes, Warblers, Flycatchers, Swallows, in short all the land birds, have a pair of very slender muscles proceeding from the sides of the thyroid cartilage, to be inserted into some part of the furcula. In all the Thrushes, the right lobe of the liver is larger than the left, under which it passes in the form of a thin expanded lobe; and there is no gall-bladder.

GOLDEN-CROWNED THRUSH.

TURDUS AUROCAPILLUS, LATH.

PLATE CXLIII. Vol. II. p. 253.

THIS bird is found in almost every district, from the Atlantic coasts to the shores of the Pacific ocean. Dr TOWNSEND brought specimens of it from the Columbia River, but he did not find it on the Rocky Mountains, although it inhabits the plains of the Missouri. Dr RICHARDSON informs us that it breeds on the banks of the Saskatchewan River, and perhaps still farther northward. I found it abundant in the Texas, about the middle of May, and have reason to think that it breeds there. The eggs measure seven-eighths in length, and five-eighths in breadth. The nest somewhat resembles in form that of the European Dipper, although it is far from being so substantially built, or so large.

The structure of the mouth is the same as in the Thrushes above described; as is that of the tongue, which is $4\frac{1}{2}$ twelfths long, emarginate and papillate at the base, and terminates in a slit point. The œsophagus is 2 inches long, its greatest width $2\frac{1}{2}$ twelfths. The stomach is 6 twelfths long, 5 twelfths broad, its structure in all respects as in the Thrushes. The intestine is $5\frac{1}{2}$ inches long, about $1\frac{1}{2}$ twelfth wide; the cœca very small. The trachea is 1 inch $1\frac{1}{2}$ twelfth long, nearly 1 twelfth broad, its rings 75, the bronchial half rings about 12; the muscles as in the Thrushes and Warblers. There are slender salivary glands, as in all the birds of this family.

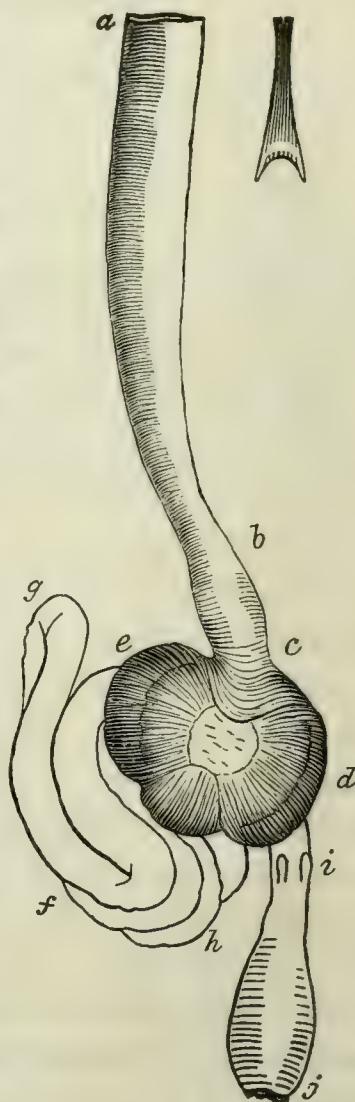
SHORE LARK

ALAUDA ALPESTRIS, LINN.

PLATE CC. Vol. II. p. 570.

“EARLY in November,” as my friend Dr T. M. BREWER informs me, “the Shore Lark makes its appearance in Massachusetts, and continues there in large flocks of immature birds through the whole of the winter, and until March. They fly in small flocks, usually of less than twenty, frequenting for the greater part the salt-marshes along the coast. They suffer greatly from the depredations made upon them by Hawks of various kinds, especially the Rough-legged Falcon, the Red-shouldered Hawk, and the Marsh Hawk.” “On June 10.” says Mr NUTTALL, “on the plains by the banks of the sweet water of the Platte, we started the Shore Lark from her nest in a small depression on the ground. It was made of bent grass, lined with coarse bison hair. The eggs were olive-white, minutely spotted all over with a darker tinge.”

In a male preserved in spirits, the roof of the mouth is slightly concave, its anterior part with a median and two slight lateral prominent lines; its width $4\frac{1}{4}$ twelfths. The tongue is $8\frac{1}{2}$ twelfths long, emarginate and papillate at the base, with a large papilla at each side, narrow, concave above, tapering, with the point abrupt and emarginate. The œsophagus, *a b c*, is 3 inches long, its greatest width $4\frac{1}{2}$ twelfths, narrowed to 3 twelfths on entering the thorax; the proventriculus, *b c*, 4 twelfths. The stomach, *d e*, is an exceedingly large muscular gizzard, of a transversely elliptical



form ; its breadth 1 inch 1 twelfth, its length 10 twelfths ; its lateral muscles much developed, its tendons large and radiated ; the epithelium brownish-red, very thick, with two opposite concave smooth grinding surfaces. Its contents are seeds and sand. The intestine, *efgh*, is $10\frac{1}{4}$ inches long, its width from $3\frac{1}{2}$ twelfths to 3 twelfths ; the cœca, *i*, $2\frac{1}{2}$ twelfths long, $1\frac{1}{2}$ twelfth wide ; the distance from the extremity of the intestine 1 inch ; the cloaca, *j*, oblong, about 5 twelfths wide.

The trachea is 2 inches long, from $1\frac{1}{2}$ twelfth to 1 twelfth in width, considerably flattened ; the rings about 65, moderately firm. The inferior laryngeal muscles, four on each side, are of considerable size ; the lateral muscles slender. The bronchial rings 15. As in the Thrushes and Warblers there are two very slender salivary glands.

BROWN TITLARK. *ANTHUS SPINOLETTA*, BONAP.

PLATE X. Vol. I. p. 49.

PRAIRIE TITLARK. *ANTHUS PIFIENS*.

PLATE LXXX. P. 408.

THIS species extends its migrations to the Missouri and Columbia River, where it was met with by Dr TOWNSEND. I found it in April in the Texas, and Dr RICHARDSON observed it in small flocks on the plains of the Saskatchewan in the spring of 1827, feeding on the larvæ of small insects, particularly of a species of ant. I found it breeding very abundantly on the coast of Labrador, on the moss-covered rocks, as well as in the deep valleys, but never at any great distance from the sea. The nests were usually placed at the foot of a wall of the rocks, buried in the dark mould, and beautifully formed of fine bent grass, arranged in a circular manner, without any hair or other lining. Both birds incubate, sitting so closely, that on several occasions I almost put my foot upon them before they flew. The first that I found was on the 29th of June, when the thermometer ranged from 51° to 54° . The

eggs were six in number, five-eighths of an inch long, six and a quarter twelfths in breadth, being rather elongated, though rounded at both ends; their ground-colour of a deep reddish-chestnut or reddish-brown, considerably darkened by numerous dots of a deeper reddish-brown and lines of various sizes, especially toward the large end. The drawing of an egg supposed to be of this species, sent me by Dr THOMAS M. BREWER of Boston, measures seven-eighths of an inch in length, five-eighths in breadth, and is more pointed at the small end than any of those found in Labrador; its ground-colour is whitish, faintly marked all over with dull reddish-brown dots. It was found in Coventry, in the State of Vermont.

These Titlarks vary much in colour, having the upper parts in spring almost of a leaden grey, the cheeks and a line over the eye whitish, the lower parts of a beautiful light buff. The claws of those shot in Labrador were shorter than usual, having probably been worn in scratching the mosses and soil in forming a place for the nest, which is well sunk. During the breeding-time the male often rises on wing to the height of eight or ten yards, and emits a few clear and mellow notes, but returns to its consort or alights on the rock with a suddenness in keeping with the short duration of its song, which is rarely heard after the eggs are hatched. These birds leave Labrador and Newfoundland as soon as their young are able to fly, which is usually the case about the middle of August. On the 6th of July 1833, in Labrador, I heard this bird singing both on wing and on the ground. When on wing, it sings while flying very irregularly in zigzags up and down; when on the rocks, it stands erect, and I think produces a louder and clearer song.

When returning northward in spring, their movements correspond with the advancement of the season, and we found them to increase in number as we proceeded, and to settle in all the favourable places. In the vicinity of Charleston, as well as in that of New Orleans, where this species is very abundant during winter, it is frequently seen seeking for food among the castings of filth of all sorts, in company with the Turkey Buzzards and Carrion Crows, and when disturbed, will alight on the roof of the nearest building, on stakes or fences, as well as walls, and occasionally on the branches of trees. While watching them, I have often observed them vibrating their tail, and thought

them closely allied in this and other respects to the Wagtails of Europe, of which no species has hitherto been found in America.

The description given of this species at p. 50 of Vol. I. is sufficiently correct for the adult, and that at p. 408 of the same volume for the young. The species to which it approaches nearest are *Anthus aquaticus* and *Anthus pratensis*, from both of which it is undoubtedly distinct. It resembles the former in size, and in the colour of the upper parts, which in some individuals is precisely the same; but differs in having the bill much shorter (5 twelfths and 7 twelfths), the tarsi, toes, and claws more slender, although very similar, as well as in the following respects. The American bird has a whitish band from the nostril over the eye, which is not seen in *A. aquaticus*; the outer tail-feather has the greater part of the outer web and a large portion of the inner toward the end, together with an oblique patch on the next, pure white, whereas the outer tail-feathers of *A. aquaticus* is merely paler than the rest; the latter bird has its lower parts marked with ill-defined dusky spots, while those of the former are distinctly defined, and the ground colour generally of a light rufous or cream-coloured tinge, which they never are in the European bird. From *Anthus pratensis* it differs in having the bill much stouter, although nearly of the same length, the tarsus longer ($10\frac{1}{2}$ and $9\frac{1}{2}$ twelfths); the hind claw stouter, more curved, and much shorter ($4\frac{1}{2}$ and 6 twelfths), the colour of the feet much darker, in being always much more rufous beneath, and in sometimes, when the season is advanced, being almost entirely unspotted there. On the other hand, it agrees in having the upper parts similarly coloured, as are the lateral tail-feathers, in being of nearly the same size and proportions, with the exceptions mentioned, and often in having the lower parts spotted in precisely the same manner. It is, in short, much more intimately allied to *Anthus pratensis* than to *A. aquaticus*, and young individuals of these species, as well as old birds in which the plumage is fresh, can hardly be distinguished by the plumage.

In a specimen preserved in spirits, the roof of the mouth is flat, its width 4 twelfths; the palate with two ridges, its anterior part with a median and two slight lateral ridges. The tongue is $4\frac{1}{2}$ twelfths long, emarginate and papillate at the base, slender, channelled above, horny towards the end, tapering to a slightly lacerated point. The œsophagus

is 2 inches 1 twelfth long, its average width $1\frac{1}{2}$ twelfth; that of the proventriculus $2\frac{1}{2}$ twelfths. The stomach is elliptical, compressed, 7 twelfths long, $5\frac{1}{2}$ twelfths in breadth; its lateral muscles rather strong, the tendons large; the epithelium reddish-brown, longitudinally rugous. The intestine is 6 inches long, $1\frac{1}{2}$ twelfth in width; the cœca 1 twelfth long, $\frac{1}{2}$ twelfth wide, 9 twelfths from the extremity.

The trachea is $1\frac{1}{2}$ inch long, scarcely 1 twelfth in breadth, considerably flattened, firm, its rings 75, with 2 dimidiate rings; the muscles as usual in the Thrushes, Warblers, and Larks; the bronchi with 18 half rings. There is a very slender salivary gland on each side.

BLUE BIRD.

SYLVIA SIALIS, LATH.

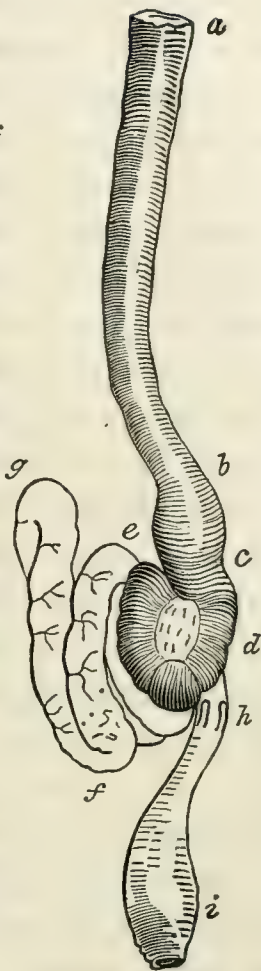
PLATE CXIII. VOL. II. p. 84.

I HAVE not received any intimation of the occurrence of this interesting bird to the west of the Rocky Mountains, although it was observed by Dr TOWNSEND on the head waters of the Missouri. Dr RICHARDSON mentions it as being found in summer to the eastward of the Rocky Mountains, up to the 48th parallel of latitude, beyond which none were seen by the members of the expedition. I found it abundant and breeding in the Texas. The eggs measure seven and a half eighths of an inch in length, five-eighths and three-fourths in breadth, and are rather more bulky than is usual in birds of this family. In the United States, when in an uncultivated district, it forms its nest in the hollow or hole of a tree.

In a male preserved in spirits, the roof of the mouth is flat, and similar to that of the Thrushes; the tongue triangular, deeply emarginate and papillate at the base, very thin, flat above, horny towards

the end, tapering to a slit point, and having the edges lacerated. The œsophagus, *a b c*, is $2\frac{1}{2}$ inches long, its width at the upper part 4 twelfths; the proventriculus, *b c*, large. The stomach, *d e*, is of moderate size, broadly elliptical, a little compressed, 8 twelfths long, 7 twelfths broad; its muscles distinct, the lateral of considerable thickness, the lower very thin, the tendons elliptical; the epithelium tough, dense, with longitudinal rugæ. The intestine, *e f g h i*, is rather short and wide, its length being $7\frac{1}{4}$ inches, its breadth in the duodenal portion $2\frac{3}{4}$ twelfths, contracting to 2 twelfths; the rectum of the same width at first, but enlarging into an oblong cloaca, *i*, 5 twelfths wide; the cœca, *h*, 2 twelfths long, $\frac{1}{2}$ twelfth broad, cylindrical, 1 inch 1 twelfth distant from the extremity. Elongated salivary glands.

The trachea is 1 inch 10 twelfths long, moderately flattened, its rings 65, firm, with 2 additional half rings. There are four pairs of inferior laryngeal muscles; the bronchi of about 15 half rings.



YELLOW-POLL WARBLER. *SYLVIA ÆSTIVA.*

PLATE XCV. VOL. I. p. 476. ADULT.

CHILDREN'S WARBLER. *SYLVIA CHILDRENI.*

PLATE XXXV. VOL. I. p. 180. YOUNG.

THE birds represented in my thirty-fifth plate, and dedicated to Mr CHILDREN, I have found to be the young of *Sylvia æstiva*, probably of a late brood of the previous year, they having been found breeding at a period when this species shews few or none of the reddish spots on the breast, the want of which induced me to consider them as of a distinct species. These circumstances I mentioned to the Prince of

MUSIGNANO, in London, my friend Dr BACHMAN and myself having discovered the error soon after the publication of my first volume.

The history of the Yellow-poll Warbler is very imperfectly given in that volume; but I am now enabled to repair this fault, after having studied its habits during the breeding season, when it is dispersed over the whole extent of the United States. Its migrations northward are almost as wonderful as those of several other birds, that seem, as it were, not to have been endowed with sufficient power of flight to enable them to traverse a vast extent of country. Yet it proceeds in summer as far as the 68th parallel, where it was found by Dr RICHARDSON in numbers and breeding. It comes into the United States from the south at the early period mentioned, but thousands follow in the wake of the first that are seen in Louisiana, for, I met with great numbers during the whole month of April, when on my way to the Texas, as well as after my arrival in that country, where they threw themselves into all the bushes along the sea-shore, apparently for the purpose of spending the night. At this period they are quite silent, and many of them have not yet obtained the reddish spots on the breast so conspicuous at a later season.

Mr NUTTALL was the first naturalist who observed the very curious method in which it contrives to rid itself of the charge of rearing the young of the Cow Bird. "It is amusing," he says, "to observe the sagacity of this little bird in disposing of the eggs of the vagrant and parasitic Cow Troopial. The egg deposited before the laying of the rightful tenant, too large for ejection, is ingeniously incarcerated in the bottom of the nest, and a new lining placed above it, so that it is never hatched to prove the dragon of the brood. Two instances of this kind occurred to the observation of my friend Mr CHARLES PICKERING; and last summer I obtained a nest with the adventitious egg about two-thirds buried, the upper edge only being visible, so that, in many instances, it is probable that this species escapes from the unpleasant position of becoming a nurse to the sable orphan of the Cow Bird. She, however, acts faithfully the part of a foster-parent when the egg is laid after her own."

The following note from my friend Dr T. M. BREWER shews that this little bird is capable of still greater exploits. "There is a very interesting item in the history of the Yellow-poll Warbler, which has been noticed only within a few years, and which is well deserving of

attention, both for the reasoning powers which it exhibits, and for its uniqueness, for it is not known, I believe, to be practised by any other bird. I allude to the surprising ingenuity with which they often contrive to escape the burden of rearing the offspring of the Cow Troopial, by burying the egg of the intruder. I have known four instances in which single eggs have been thus buried by the Yellow-bird's building a second story to her nest, and enclosing the intruder between them. In one instance, three of the *Sylvia's* own eggs were thus covered along with that of the Cow Black-bird, and in another, after a Black-bird's egg had been thus concealed, a second was laid, which was similarly treated, thus giving rise to a three-storied nest. This last you have in your possession, and will, I hope, give to the world a drawing as well as a complete description of it. The Summer Yellow-bird raises only one brood in the season in Massachusetts. The eggs, four or five in number, measure $5\frac{1}{2}$ eighths in length, by a trifle more than half an inch in breadth; they are of a light, dull, bluish-white, thickly sprinkled with dots and small markings of various sizes of dull reddish-brown, accumulated towards the great end."

The fabric alluded to above may be thus described. A nest of the usual form had been constructed, of which the external diameter was three inches. It is composed of cotton rudely interwoven with flaxen fibres of plants, and lined with cotton of a reddish colour, with some hairs round the inner edges. The egg of the Cowbird having been deposited in this nest, another of a larger size, three inches and three-quarters in external diameter, has been built upon it, being formed of the same materials, but with less of the flaxen fibres. The egg is thus surmounted by a layer three-quarters of an inch thick, and was discovered by opening the lower nest from beneath. It is agglutinated to the lining of the nest, having been addled and probably burst. In this second nest a Cowbird had also deposited an egg, which was, in like manner, covered over by a third nest, composed of the same materials, and of nearly the same size as the second.

All our little birds known by the name of Warblers, and referred by authors to the genera *Sylvicola*, *Trichas*, and *Vermivora*, present the same structure in their digestive and respiratory organs. Their œsophagus is rather narrow, without dilatation; the proventriculus bulbiform, with numerous oblong glandules; the stomach rather small, oblique, elliptical or roundish, with the lateral muscles distinct, but of

moderate thickness, the lower muscle thin, the epithelium dense, reddish-brown, and longitudinally rugous when not filled; the intestine rather short and of moderate width; two very small cœca; the rectum gradually enlarged. The trachea is composed of from 60 to 80 rings, flattened, somewhat tapering; the bronchi of ordinary size, of from 12 to 15 rings; there are cleido-tracheal muscles, lateral muscles, sterno-tracheal, and four pairs of inferior laryngeal.

AZURE WARBLER. *SYLVIA AZUREA*, STEPHENS.

PLATE XLVIII. VOL. I. p. 235. ADULT.

BLUE-GREEN WARBLER. *SYLVIA RARA*, WILS.

PLATE XLIX. VOL. I. p. 258. YOUNG.

In the course of my late journey to the Texas I found the Azure Warbler entering the United States from Mexico, early in April, when it was in perfect plumage. On an island on which we landed, about an hour before sunset, some hundreds had stopped to pass the night, the appearance of the weather being threatening. My friend EDWARD HARRIS and my son shot a number of them. Next day few were seen, and in about a week they had all proceeded eastward. The whole breadth of our country, from the Atlantic shores to those of the Pacific, is visited by this bird, which was found along the Columbia River at Fort Vancouver by Dr TOWNSEND. The most eastern point at which I have known it to be procured is the neighbourhood of Pictou in Nova Scotia. It is not mentioned by Dr RICHARDSON.

As to the *Sylvia rara*, my doubts regarding its specific distinction are as great as ever, especially as no one has found its nest. I mentioned my suspicions to the Prince of MUSIGNANO, who has placed it in his list as the young of *Sylvia azurea*.

HEMLOCK WARBLER. *SYLVIA PARUS*, WILS.

PLATE CXXXIV. VOL. II. p. 205. ADULT.

AUTUMNAL WARBLER. *SYLVIA AUTUMNALIS*, WILS.

PLATE LXXXVIII. VOL. I. p. 447. YOUNG.

THE bird described under the name of *Sylvia autumnalis* by WILSON, BONAPARTE, NUTTALL, myself, and all the compilers, is only the young of *Sylvia parus*. Of this I gave intimation to the Prince of MUSIGNANO when in London.

PINE-CREEPING WARBLER. *SYLVIA PINUS*, LATH.

PLATE CXL. VOL. II. p. 232. ADULT.

VIGORS'S WARBLER. *SYLVIA VIGORSII*.

PLATE XXX. VOL. I. p. 153. YOUNG.

I have already mentioned that the Pine-creeping Warbler is the parent of VIGORS'S Warbler. Of this fact I gave intimation to the Prince of MUSIGNANO, during his recent visit to London. I found it abundant in the Texas, where it breeds.

BLACK-THROATED BLUE WARBLER.*SYLVIA CANADENSIS*, LATH.

PLATE CLV. Vol. II. p. 209. MALE.

PINE-SWAMP WARBLER.*SYLVIA SPHAGNOSA*, BONAPARTE.

PLATE CXLVIII. Vol. II. p. 279. FEMALE OR YOUNG.

THE birds represented in the plate last mentioned are the young of the Black-throated Blue Warbler, *Sylvia canadensis*, Plate CLV., the female of which resembles them so much that I looked upon it as of a species distinct from the male. I have no doubt that this error originated with WILSON, who has been followed by all our writers. Now, however, the *Sylvia* or *Sylvicola sphagnosa* of BONAPARTE, which he altered from WILSON'S *S. pusilla*, must be erased from our Fauna. This bird extends to the head waters of the Missouri, but is not mentioned as occurring in the Fur Countries. I found it abundant on my way to the Texas in the beginning of April; I have also seen it plentiful in June about Boston, where, however, it does not breed. Of this fact also I gave the first intimation to the Prince of MUSIGNANO.

BLACK-AND-YELLOW WARBLER.*SYLVIA MACULOSA*, LATH.

PLATE CXXIII. Vol. II. p. 145.

THIS beautiful Warbler is, according to Dr RICHARDSON, a common bird on the banks of the Saskatchewan River, where it enlivens the thickets of young spruce trees and willows with its agreeable notes. It was not observed by Dr TOWNSEND on the Rocky Mountains or along the Columbia River. As I proceeded towards the Texas, in the beginning of April, I found it in considerable numbers on its way toward the United States. The eggs measure five-eighths and three-fourths in length, four-eighths and a half in breadth; in some instances the ground-colour is slightly tinged with very pale yellow.

BLACKBURNIAN WARBLER.*SYLVIA BLACKBURNIÆ*, LATH.

PLATE CXXXV. Vol. II. p. 208.

“THE nest of this species,” as Dr T. M. BREWER informs me, “is rather loosely constructed, and is formed of dry grass, leaves, and stripes of the bark of the grape vine, with the lining of finer grass and a few horse-hairs. It measures three inches in external diameter, two internally, and is two and a half inches in depth, including the bottom, which is half an inch thick. The eggs are extremely beautiful, having on a white ground dots and lines of reddish-brown, chiefly disposed at the larger end. They measure eleven-sixteenths of an inch in length, and half an inch in breadth; they have the form of a short abrupt cone. This,” he adds, “is the only instance in which I have known it to breed in Massachusetts.”

BAY-BREASTED WARBLER.*SYLVIA CASTANEA*, WILSON.

PLATE LXIX. Vol. I. p. 358.

ALTHOUGH I have procured a great number of birds of this species of late years, I have not been able to discover its nest. I found it abundant in April and the beginning of May, along the shores of the Gulf of Mexico, as far as Texas, and to the eastward it is not uncommon even in Nova Scotia, although my friend Dr BACHMAN informs me that he has not seen it in South Carolina.

WORM-EATING WARBLER.

SYLVIA VERMIVORA, LATH.

PLATE XXXIV. Vol. I. p. 177.

ACCORDING to Dr RICHARDSON, this species visits the Fur Countries, where a single specimen was procured at Cumberland House, on the banks of the Saskatchewan. It is found in the State of Maine, and in the British Provinces of New Brunswick and Nova Scotia, but I did not meet with it farther eastward. None were seen on the Rocky Mountains, or about the Columbia River by Dr TOWNSEND. My friend Dr BACHMAN says that it breeds sparingly in the swamps of Carolina. He observed a pair followed by three or four young ones nearly fledged, all of which already exhibited the markings on the head.

The eggs of this species measure five and a half eighths of an inch in length, and half an inch in breadth; the smaller end is rather rounded; its colour and markings as already described, though I have seen some more copiously marked than others, and the cream-colour of their ground tinged with a rosy hue.

The roof of the mouth is flat and slightly arched, posteriorly with two ridges, anteriorly with a middle prominent and two very slight lateral ridges; its width $3\frac{1}{2}$ twelfths. The tongue is 5 twelfths long, emarginate and papillate at the base, narrow, tapering, thin, concave above, the tip rather abrupt, and terminated by several stiffish bristles, like that of a Titmouse. The œsophagus is 1 inch 9 twelfths long, its greatest width 3 twelfths. The stomach is small, elliptical, $5\frac{1}{2}$ twelfths long, $4\frac{1}{2}$ twelfths in breadth; the lateral muscles moderate, the lower very thin; the epithelium longitudinally rugous. The stomach is filled with insects. The intestine is $5\frac{1}{4}$ inches long, from $1\frac{1}{2}$ twelfth to 1 twelfth in width. The cœca are $1\frac{1}{2}$ twelfth long, and $\frac{1}{4}$ twelfth wide; their distance from the extremity 7 twelfths.

The trachea is 1 inch 7 twelfths long, flattened, 1 twelfth broad at the upper part; the rings about 70, moderately firm; bronchial half rings about 15; the muscles as usual.

PROTHONOTARY WARBLER.

SYLVIA PROTHONOTARIUS, LATH.

PLATE III. Vol. I. p. 22.

Dr BACHMAN informs me that he has watched this species for hours at a time, when on the borders of streams, and observed it to seize insects on wing by gliding through the air after them, but never heard it click its bill, as is usual with Flycatchers. It breeds in South Carolina, and he saw a pair with four young ones near Charleston, on the 1st of June 1836.

NASHVILLE WARBLER.

SYLVIA RUBRICAPILLA, WILSON.

PLATE LXXXIX. Vol. I. p. 450.

THIS species, which was very rare in the United States in WILSON'S time, is now no longer so. As I was advancing toward the Texas in April, I found it on its way eastward in considerable numbers, travelling only by day, stopping about an hour before sunset, and apparently spending the night in the low bushes along the sea-shore. It is not uncommon in Maine, or in the provinces of New Brunswick and Nova Scotia. A few were procured by us in Labrador, and Dr RICHARDSON mentions it as an occasional straggler in the Fur Countries. One specimen only was procured in the woods of Cumberland House. All my endeavours to discover the nest, or to ascertain the localities in which it breeds, have proved unsuccessful.

TENNESSEE WARBLER.

SYLVIA PEREGRINA, WILSON.

PLATE CLIV. Vol. II. p. 307.

THIS rare species at times rambles as far north as the shores of the Saskatchewan, where a single specimen was procured by Dr RICHARDSON ; but nothing is yet known respecting its eggs or young.

SWAINSON'S WARBLER.

SYLVIA SWAINSONII.

PLATE CXCVIII. Vol. II. p. 563.

Dr T. M. BREWER informs me that a specimen of Swainson's Warbler has been obtained in Massachusetts, by Mr SAMUEL CABOT. This is the only instance in which it is known to have been procured, or even observed, in that part of the country, where nothing farther has therefore been ascertained respecting its history.

**YELLOW-BREASTED WARBLER OR MARYLAND
YELLOW-THROAT.**

SYLVIA TRICHAS, LATH.

PLATE XXIII. VOL. I. p. 121. ADULT.

ROSCOE'S YELLOW-THROAT. *SYLVIA ROSCOE*.

PLATE XXIV. VOL. I. p. 124. YOUNG.

Not long after the publication of my first volume, I discovered the error which I had committed in making the bird represented in my twenty-fourth plate a new species, it being only the young of *Sylvia Trichas* of LATHAM. Of this I informed my friends Dr BACHMAN, Mr HARRIS, and Dr BREWER, and afterwards the Prince of MUSIGNANO. I have nothing to add to my account of the habits of the Maryland Yellow-throat. It was found on the Columbia River by Dr TOWNSEND, several of whose specimens I have seen. I also found it in the Texas in April. No mention is made of it in the Fauna Boreali-Americana; and I saw none in Labrador or Newfoundland. The eggs of this species measure $5\frac{1}{2}$ eighths in length, by four and a half eighths, and are rather pointed at the small end.

The roof of the mouth is flat, posteriorly with two ridges, anteriorly with a middle prominent and two very slight lateral ridges; its width 3 twelfths. The tongue is $4\frac{1}{2}$ twelfths long, sagittate and papillate at the base, thin, concave above, tapering to a deeply slit and slightly lacerated point. The œsophagus is 1 inch 7 twelfths long, its greatest width 2 twelfths. The stomach is rather small, elliptical, $4\frac{1}{2}$ twelfths long, $3\frac{1}{2}$ twelfths broad; its lateral muscles moderate, the lower very thin; the epithelium longitudinally rugous. The intestine is 5 inches long, its greatest width 1 twelfth; the cœca 1 twelfth long, and about a third of a twelfth wide, their distance from the extremity 7 twelfths.

The trachea is $1\frac{1}{4}$ inch long, 1 twelfth broad at the top; its rings 60; its muscles as usual. Bronchial rings 15.

GREEN BLACK-CAPT WARBLER.

SYLVIA MITRATA, LATH.

PLATE CX. Vol. II. p. 66.

DR TOWNSEND informs me, that this species is “ found at Columbia River, where it breeds. The nest is somewhat pensile, and is usually fastened to a horizontal twig, from 6 to 10 feet from the ground, to which it is firmly attached by a long hair-like moss. Of this moss and of bent the fabric is entirely composed, no hair, down, or cottony substance being ever used. The eggs are four, white, spotted all over with light brown, the markings most numerous at the large end.”

Mr NUTTALL'S notice respecting it is as follows. “ About the first week of May the species arrives in the woods of the Columbia, where it takes up its summer residence. It has a warble somewhat like that of the *S. aestiva*, but more brief: 'tsh 'tsh 'tsh 'tshea, or something similar. It was generally familiar and unsuspecting, kept in bushes more than trees, in the thickets bordering the river, most commonly busily engaged collecting its insect fare, and only varying its employment by an occasional musical call. By the 12th of May, they were already feeding their full-fledged young, though I also found a nest on the 16th of the same month, containing four eggs, and just commencing incubation. The nest was in the branch of a small service bush, laid very adroitly upon an accidental mass of old moss that had fallen from a tree above. It was made of moss (*Hypnum*), and with a thick lining of dry, wiry, slender grass. The female, when I approached, went off slyly, running along the ground like a mouse. The eggs are very similar to those of the Summer Yellow-bird, covered with spots of a pale olive-brown.”

HOODED WARBLER. *SYLVIA MITRATA*, LATH.

PLATE CX. VOL. II. p. 66. ADULT MALE AND FEMALE.

SELBY'S FLYCATCHER. *MUSCICAPA SELBYI*.

PLATE IX. VOL. I. p. 46. YOUNG.

IN this species the mouth has the same structure as in all the others above mentioned. The tongue is $5\frac{1}{4}$ twelfths long, concave above, thin, and tapering to a slit and lacerate point. The œsophagus is 1 inch 10 twelfths long; the stomach round, rather small, a little compressed, 5 twelfths in length and breadth, the lateral muscles strong, the epithelium rugous, the intestine is 6 inches long, its greatest width $1\frac{1}{4}$ twelfth, 7 twelfths distant from the extremity. The trachea is 1 inch 6 twelfths long, 1 twelfth broad; the rings about 70; the muscles as usual. Bronchial rings about 15.

AMERICAN GOLDEN-CRESTED WREN.*REGULUS TRICOLOR*, NUTTALL.

PLATE CLXXXIII. VOL. II. p. 476.

DR TOWNSEND informs me, that this delicate little bird is an inhabitant of the Columbia River; and from its being abundant in Labrador and Newfoundland, it is not improbable that it proceeds farther north into the Fur Countries, although no mention is made of it in the Fauna Boreali-Americana.

In this and the other *Reguli*, the structure of the digestive organs is the same as in the Warblers. The width of the mouth is $2\frac{3}{4}$ twelfths; the tongue $2\frac{1}{2}$ twelfths long; the œsophagus 1 inch 2 twelfths, its greatest width $1\frac{1}{2}$ twelfth; the stomach oblique, elliptical, $4\frac{1}{2}$ twelfths long, $3\frac{3}{4}$ twelfths broad, its muscles very thin, the epithelium rugous; the intestine 4 inches long, its greatest width 1 twelfth; the cœca 1 twelfth long, $\frac{1}{4}$ twelfth broad, 6 twelfths distant from the extremity. The trachea 1 inch long, $\frac{1}{2}$ twelfth broad, flattened, of about 50 rings; the bronchi of about 12 half rings. The muscles as in the Warblers and Thrushes.

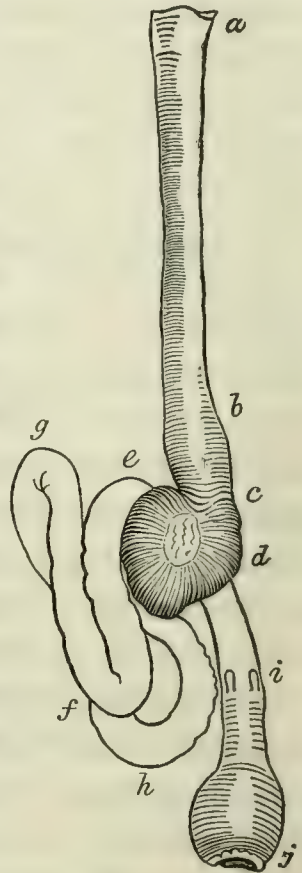
GREAT CAROLINA WREN.

TROGLODYTES LUDOVICIANUS, BONAP.

PLATE LXXVIII. Vol. I. p. 399.

THIS bird rarely extends its movements eastward beyond the State of New York, and has not, I believe, been seen in Massachusetts. I found it very numerous in the Floridas and all along the coast of the Mexican Gulf to within the Texas, where it spends the whole year. Dr TOWNSEND mentions it as being found on the Missouri.

The roof of the mouth is flat with two slight ridges on the palate, and a prominent median line anteriorly, the posterior aperture of the nares linear, 4 twelfths long, papillate; the tongue $7\frac{1}{2}$ twelfths long, very slender, $1\frac{1}{4}$ twelfth broad at the base, where it is emarginate and papillate, channelled above, tapering to a rather obtuse bristly and horny point. The width of the mouth is 4 twelfths. The œsophagus, *abc*, is 1 inch 9 twelfths long, 3 twelfths in width; the proventriculus, *bc*, $3\frac{1}{4}$ twelfths. The stomach, *cde*, is elliptical, a little compressed, $7\frac{1}{2}$ twelfths long, $5\frac{1}{2}$ twelfths broad; its muscles moderate, the lower very thin, the tendons rather large; the epithelium tough, with large longitudinal rugæ, and of a reddish-brown colour. The contents of the stomach are insects and seeds. The intestine, *efgh*, is 5 inches 9 twelfths long, its width $1\frac{1}{2}$ twelfth; the cloaca, *j*, globular, 6 twelfths in width; the cœca, *i*, $1\frac{1}{2}$ twelfth long, and $\frac{1}{2}$ twelfth wide.



The trachea is $1\frac{1}{2}$ inch long, considerably flattened, scarcely 1 twelfth broad at its widest part, and contracting to $\frac{1}{2}$ twelfth; the rings 58, with 2 additional dimidiated rings. The muscles as in all the singing birds, those of the inferior larynx considerably developed. Bronchial half rings about 15.

There is a pretty large oblong salivary gland in the usual place, opening with a single duct into the fore part of the mouth.

MARSH WREN.

TROGLODYTES PALUSTRIS, BONAP.

PLATE C. VOL. I. p. 500.

A nest of this bird with eggs was seen in the salt marshes of Barnstable by Dr STORER of Boston. At the south-west pass of the Mississippi, I found it very abundant, in full song, and breeding, on the 1st of April 1837. At the latter place this species sings during the whole of the night.

BEWICK'S WREN.

TROGLODYTES BEWICKII.

PLATE XVIII. VOL. I. p. 96.

FOR the following observations regarding this species I am indebted to my friend Dr BACHMAN. " In the month of July 1835, when on a visit to the mountains of Virginia, I heard at the Salt Sulphur Springs the note of a Wren that I did not recognise as that of any of our known species. On procuring the bird I ascertained it to be the Bewick's Wren. There were a pair, accompanied by four or five young, nearly full grown. The notes bore some resemblance to those of the Winter Wren, scarcely louder and more connected. It possessed all the restless habits of the other species, creeping actively between the rails of fences and among logs and stumps. One of them ascended an oak nearly to its top in the manner of a Creeper. I found the young several times during the morning entering a hole in the limb of a fallen tree a few feet from the ground, and conjectured that they had been bred in that situation. I was unable to see the nest. During a residence of a few weeks in the neighbourhood of the Virginia springs I saw several of these birds every day, and ascertained that this was the only species of Wren common in the mountains. The *Troglodytes ædon* was abundant in all the low country of Virginia, to the foot of the Alle-

ghanies. The *T. Ludovicianus* was sparingly seen in the valleys and along the water-courses, but the present species seemed particularly attached to the highest ridges, preferring grounds that had once been cleared, but now partially overgrown. It did not appear to be a shy bird, but, from its active restless habits, was procured with difficulty. It probably sleeps in hollows during the night, as I saw two or three issuing from the hole of a tree at day-light one morning. The stomachs of those which I examined were principally filled with small spiders, minute caterpillars, and the larvæ of insects. A specimen of this bird was sent me from Columbia in South Carolina, procured by Dr GIBBS, and I have no doubt it will be found on the whole range of our southern mountains."

Dr TRUDEAU has sent the following note :—" The Bewick's Wren must be common in Louisiana. I shot but one there, but I frequently found them in the vicinity of the woods, where it must breed. They are seen in the bushes and dive among them as soon as they perceive the gunner. The nest is different from that of the Carolina Wren."

My friends Mr NUTTALL and Dr TOWNSEND found this species on the Columbia River, from which country I have specimens perfectly similar to that figured in my plate. No doubt can exist that it has a wide range along the Rocky Mountains, as well as along the elevated portions of our Atlantic States. Dr TOWNSEND says that it breeds on the ground.

A specimen in my possession measures $5\frac{5}{12}$ inches in length; the bill $\frac{7\frac{1}{2}}{12}$; tarsus $\frac{9}{12}$; hind toe $\frac{4\frac{1}{2}}{12}$, its claw $\frac{3\frac{1}{2}}{12}$; middle toe $\frac{6\frac{1}{2}}{12}$, its claw $\frac{2\frac{1}{2}}{12}$; wing from flexure $2\frac{2}{12}$; tail $2\frac{2}{12}$. The first quill is $\frac{9}{12}$ shorter than the fifth, which is longest, but scarcely exceeds the fourth and sixth. The lateral tail-feathers are $\frac{5}{12}$ shorter than the middle. The Great Carolina Wren has the bill and tarsi much stronger; the first quill $\frac{1\frac{1}{2}}{12}$ shorter than the fifth, which is longest, but scarcely exceeds the fourth, and its lateral tail-feathers are only $\frac{4}{12}$ shorter than the longest.

WOOD WREN.

TROGLODYTES AMERICANA.

PLATE CLXXIX. Vol. II. p. 452.

I HAVE ascertained that this species spends the winter months in South Carolina, where it keeps along the hedge-rows, about the roots of bushes, and is quite silent. An egg of this bird, procured in the State of Vermont, and presented to me by Dr T. M. BREWER of Boston, differs from those of all our other Wrens: it measures six-eighths of an inch in length, four and a half eighths in breadth; its ground-colour is dull yellowish-white, blotched all over with rather large markings of pale purplish-red, and zigzag streaks of deep blackish-brown, more numerous around the middle than at either end.

NUTTALL'S SHORT-BILLED MARSH WREN.

TROGLODYTES BREVIROSTRIS, NUTTALL.

PLATE CLXXV. Vol. II. p. 427.

I FOUND this small species very abundant in the Texas, where it breeds in such situations as are usually selected by it elsewhere. When within a few feet of them, I observed that whilst the males are singing, the tail is allowed to hang loosely. I mention this because the bird has been represented as elevating its tail while so engaged. Dr TRUDEAU informs me that he found its nest in the Delaware marshes, and saw both the male and the female near it, but could not procure them, being at the time without a gun. The eggs were four.

HOUSE WREN.

TROGLODYTES ÆDON, VIEILL.

PLATE LXXXIII. VOL. I. p. 427.

THIS species is not found farther eastward along our Atlantic shores than the province of Nova Scotia, where it is not very common, and I suspect that the specimen of a *Troglodytes* procured by Mr DRUMMOND at the foot of the Rocky Mountains, and described in the *Fauna Boreali-Americana*, was the Wood Wren, *T. Americana*, it being found from Maine to the Rocky Mountains, as well as on the Columbia River, from which specimens have been brought by Dr TOWNSEND. The House Wren, if I am not greatly mistaken, passes southward of the United States, to spend the winter. The other spends that season within our limits.

Dr BACHMAN informs me that a bird resembling the Wood Wren, as well as the House Wren, so closely that he could never distinguish it from either species, spends its winters in great numbers in South Carolina. Dr BREWER has favoured me with the following notice respecting the House Wren. "This bird never constructs with us a distinct nest, but always conceals it in olive-jars, boxes, and such things, placed for its convenience around the houses, or in the hollow of trees. Whenever the places in which they build are larger than necessary, they usually endeavour to fill up the vacant parts with additional materials. I have by me a nest built two years since in the clothes-line box of Professor WARE of Cambridge, which is in size considerably more than a foot square; and it must have cost its tiny architect many days of hard labour to have arranged there such a mass of various materials. The variety and size of some of those of which it is composed is truly surprising. Among them are the exuvia of a snake several feet in length, large twigs, pieces of India-rubber suspenders (which, by the way, are old acquaintances) oak-leaves, feathers, pieces of shavings, hair, hay, &c. It contained six eggs, which evidently, were suffered to become stale in consequence of the anxiety of the bird to fill up the empty space." The eggs measure five-eighths of an inch in length, and four and a half eighths in breadth.

BLACK-AND-WHITE CREEPER.

CERTHIA VARIA, WILS.

PLATE XC. Vol. I. p. 452.

I FOUND this species in the Texas, breeding near Buffalo Bayou, where I saw a young one that had fallen out of the nest, which was in the prong of a broken limb not more than ten feet from the ground. It breeds in localities greatly distant from each other, and, like many other birds, on this account, places its nest in different situations, and varies the materials of which it is composed. Mr NUTTALL saw a nest in the vicinity of Boston, which was “nched in the shelving of a rock, on the surface of the ground, and was externally composed of coarse stripes of the inner bark of the hemlock-tree (*Abies canadensis*) which overshadowed the situation. With these were mixed soft dissected old leaves, and a few stalks of dead grass; the lining was made of a thin layer of black hair.”

The eggs of this bird measure four and a fourth eighths in length, and half an inch in breadth. Some of them are much more spotted with light reddish-brown and purplish dots than others. Of this latter kind I have a beautiful specimen presented by my friend Dr T. M. BREWER of Boston.

As some persons might suppose from my account of its habits, that it uses its tail to aid it in climbing, like the Brown Creeper, I must here state that it never does so, but hops in the manner of the Nuthatches. My friend Dr BACHMAN has observed it in spring perched on small twigs and uttering its song composed of half a dozen notes, which are heard at a considerable distance. It arrives in South Carolina early in April, remains until about the 10th of May, and has been seen on its return as early as the 1st of September.

Dr T. M. BREWER sends me the following notice:—“This bird, which you speak of as breeding in the hollows of trees, with us always builds its nest on the ground. I say always, because I never knew it to lay anywhere else. I have by me a nest brought to me by Mr APPLETON from Batternits, New York, which was found in the drain of the house in which he resided. It is neat and compact, measures $3\frac{1}{2}$

inches in external diameter, $2\frac{1}{2}$ in internal ; its internal depth is 1 inch, the external two. It is composed externally of coarse hay, and lined in an unusually compact manner, with horse hair. The eggs are oval, nearly equal at both ends, and measure six-eighths of an inch by nine-sixteenths, and are in markings exactly as you describe them. The number in this nest was three, but their complement is, I believe, four."

CRESTED TITMOUSE.

PARUS BICOLOR, LINN.

PLATE XXXIX. Vol. I. p. 199.

MY friend Dr BACHMAN informs me, that he "kept a bird of this species in confinement for some time. It was in the habit of hiding its food in the corner of its cage in a crevice, and at night crept into a small box, where it lay doubled up like a ball till the first light of the morning, when it resumed its restless habits, continually trying to escape from the cage." This species was not seen by Dr TOWNSEND on the Rocky Mountains, or near the Columbia River ; and Dr RICHARDSON does not mention its occurring in the Fur Countries. I found it abundant in the Texas, and in all our Atlantic States, as well as in Nova Scotia.

In this species as in the rest, the palate is flat, with two longitudinal ridges ; the posterior aperture of the nares oblongo-linear ; the tongue $3\frac{1}{2}$ twelfths long, emarginate and papillate at the base, flat above, horny toward the end, with three grooves terminating abruptly, and furnished with stiffish bristles. The œsophagus is 2 inches long, and of the uniform width of two-twelfths ; the proventriculus a little wider. The stomach is small, elliptical, $4\frac{1}{2}$ twelfths long, $3\frac{1}{2}$ twelfths broad ; its lateral muscles moderate ; the epithelium longitudinally rugous, and reddish-brown. The intestine is five inches long, from $2\frac{1}{2}$ twelfths to 2 twelfths in width ; the cœca extremely small, about 1 twelfth long, and $\frac{1}{4}$ twelfth in width. There is on each side a very slender salivary gland with two ducts.

The trachea is 1 inch $4\frac{1}{2}$ twelfths long, of the uniform width of $1\frac{1}{2}$ twelfth, considerably flattened ; its rings 60, the bronchial half rings 12. The muscles as in the Warblers and Thrushes.

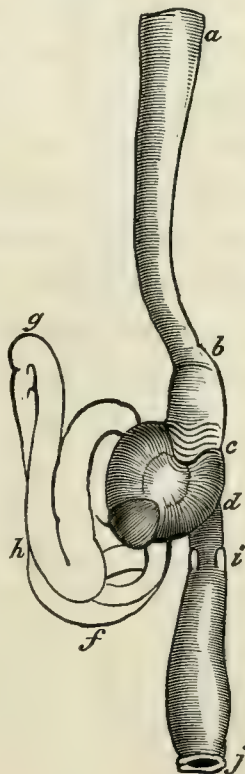
WHITE-BREASTED NUTHATCH.

SITTA CAROLINENSIS, BRISSON.

PLATE CLII. Vol. II. p. 290.

THIS lively roamer of our forests extends its rambles from the Texas, where I found it abundant, to the shores of the Columbia River, from which country specimens were brought by Dr TOWNSEND. It is not mentioned as having been found in the Fur Countries.

On the roof of the mouth are three anterior ridges, of which the middle is larger ; both mandibles are slightly concave, the lower with a median elevated line. Tongue 6 twelfths long, emarginate and finely papillate at the base, slender, very thin, the point abrupt, and terminated by several strong bristles. Œsophagus, *a, b c*, 1 inch 10 twelfths long, funnel-shaped at the commencement, its width being there 4 twelfths, and then gradually diminishing to 2 twelfths. The stomach, *c d*, is rather large, broadly elliptical, $7\frac{1}{2}$ twelfths long, 6 twelfths broad ; its lateral muscles thin ; the epithelium slightly rugous. It is filled with insects and larvæ. Intestine, *e f g h*, rather short and wide, 7 inches in length, its greatest width 2 twelfths ; the rectum, *i j*, 3 twelfths wide ; the cloaca 4 twelfths ; the cœca, *i*, 2 twelfths long, $\frac{3}{4}$ twelfth in breadth, and 10 twelfths from the extremity. The trachea is $1\frac{1}{2}$ inch long, 1 twelfth in breadth ; its rings feeble, 75 in number. The sterno-tracheal muscles very slender ; the inferior laryngeal form on each side a small knob, inserted into the last half ring in its whole extent. Bronchial half rings about 12. There is on each side an elongated salivary gland, about $\frac{3}{4}$ twelfth in breadth. The hyoid bones are not unusually elongated. In the form of the tongue the Nuthatches resembles the Titmice.



RED-BELLIED NUTHATCH.

SITTA CANADENSIS, LINN.

PLATE CV. Vol. II. p. 24.

ALTHOUGH this species was not seen by Dr RICHARDSON in the Fur Countries, it is an inhabitant of the Columbia River district, where it was found by Dr TOWNSEND.

CAROLINA TITMOUSE.

PARUS CAROLINIENSIS.

PLATE CLX. Vol. II. p. 341.

IT is now ascertained that this species reaches eastward as far as the State of New Jersey, where it has been procured by my friend EDWARD HARRIS. On the other hand, it is abundant from South Carolina to within the Texas, in the wooded portions of which I found it breeding. A nest presented to me by Dr BACHMAN, who found it in a hollow stump, at the height of about four feet from the ground, is cup-shaped, two inches in diameter at the mouth internally, three externally, its depth two inches. It is composed of fine wool, cotton, and a few fibres of plants, felted together so as to be of uniform thickness throughout. The eggs are pure white.

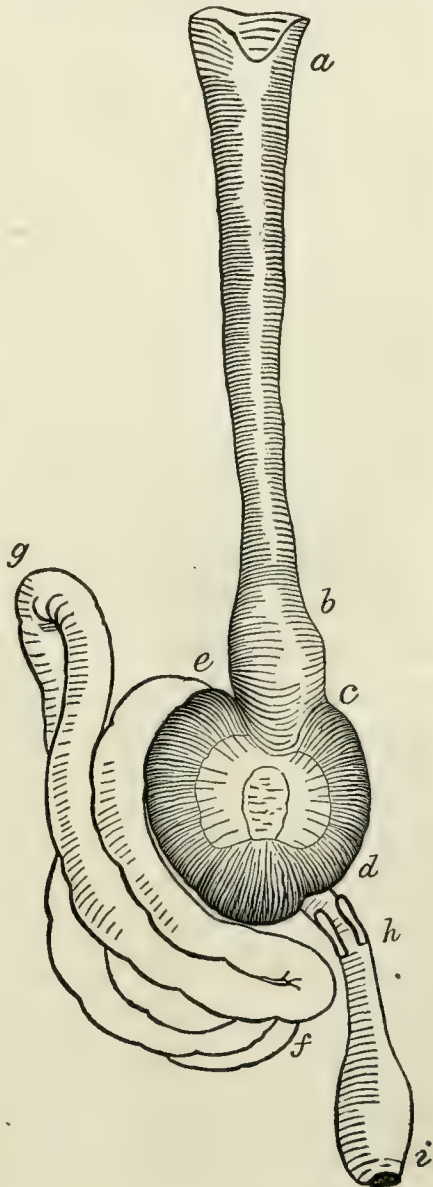
BLUE JAY.

CORVUS CRISTATUS, LINN.

PLATE CII. Vol. II. p. 11.

ALTHOUGH this species proceeds up the Missouri River to the eastern declivities of the Rocky Mountains, it is not found on the Columbia. Dr RICHARDSON says that it "visits the Fur Countries, in summer, up to the 56th parallel, but seldom approaches the shores of Hudson's Bay." He is, however, mistaken when he says, that "it frequents the Southern States only in winter;" for it is found there at all seasons, and breeds in every district of them, as well as in the Texas, where I found it, although it was rare. The eggs measure an inch and half an eighth in length, and seven-eighths in breadth.

The roof of the mouth is rather flat, anteriorly with three ridges; the lower mandible moderately concave with a median ridge; posterior aperture of nares linear, 8 twelfths long, with the edges papillate; width of mouth $7\frac{1}{2}$ twelfths. The tongue is $9\frac{1}{2}$ twelfths long, emarginate and papillate at the base, flat above, horny toward the end, with the tip slit and lacerated. The œsophagus, *abc*, $3\frac{1}{4}$ inches long, 6 twelfths wide at the commencement, but suddenly tapering to 3 twelfths. The lobes of the liver are very unequal, the right being 1 inch 2 twelfths in length, the other 9 twelfths. The stomach, *cde*, is very



large, of a broadly elliptical, compressed form, 1 inch in length, 10 twelfths in breadth; its lateral muscles of considerable thickness, the left being 4 twelfths; the tendons large; the epithelium very dense, tough, rugous, of a dark brown colour. It is filled with remains of insects and mineral substances. The intestine, *efghi*, is $16\frac{1}{2}$ inches long, from 4 twelfths to $2\frac{1}{2}$ twelfths in width; the cœca, *h*, 3 twelfths long, $\frac{1}{2}$ twelfth wide, and $1\frac{1}{4}$ inch distant from the extremity; the cloaca, *i*, ovate, 8 twelfths in breadth.

The trachea is 2 inches 5 twelfths long, considerably flattened toward the lower part; its rings 56 in number, rather broad, and well ossified, with two additional dimidiate rings; the bronchi of moderate size, with 12 half rings. The lateral muscles are rather slender; there are four pairs of inferior laryngeal muscles.

RAVEN.

CORVUS CORAX, LINN.

PLATE CL Vol. II. p. 1.

THIS species, which is plentiful on the Rocky Mountains and along the Columbia River, also abounds in the Fur Countries, and, according to Dr RICHARDSON, visits the remotest islands of the Polar seas. It frequents the Barren Grounds even in the most intense winter colds, its movements being directed in a great measure by those of the herds of Rein Deer, Musk Oxen, and Bison, which it follows, ready to assist in devouring such as are killed by beasts of prey or by accident. He relates a curious instance of the propensity it shews to appropriate to itself any metallic substance. "Mr KENDAL, in crossing the heights of land which divide the waters that flow towards Hudson's Bay, from those which fall into the Arctic Sea, saw a Raven flying off with something in his claws, pursued by a number of his clamorous companions. The bird being fired at dropped the object of contention, which proved to be the lock of a chest!" Dr TOWNSEND informs me that on the Columbia River the Ravens constantly attend on the salmon

fisheries, and that during winter they are very expert at discovering the small tents raised by the Indians for the purpose of saving their fish. They are in all those districts constant attendants upon the hunters, for the purpose of devouring the offal of all such game as may be slaughtered.

Although I have found eggs of this species which measured rather more than two inches in length, by an inch and three-eighths, others did not measure more than one inch and seven-eighths by an inch and four-twelfths. They also differ considerably in the tint of their ground-colour, as well as in their markings.

AMERICAN CROW.

CORVUS AMERICANUS.

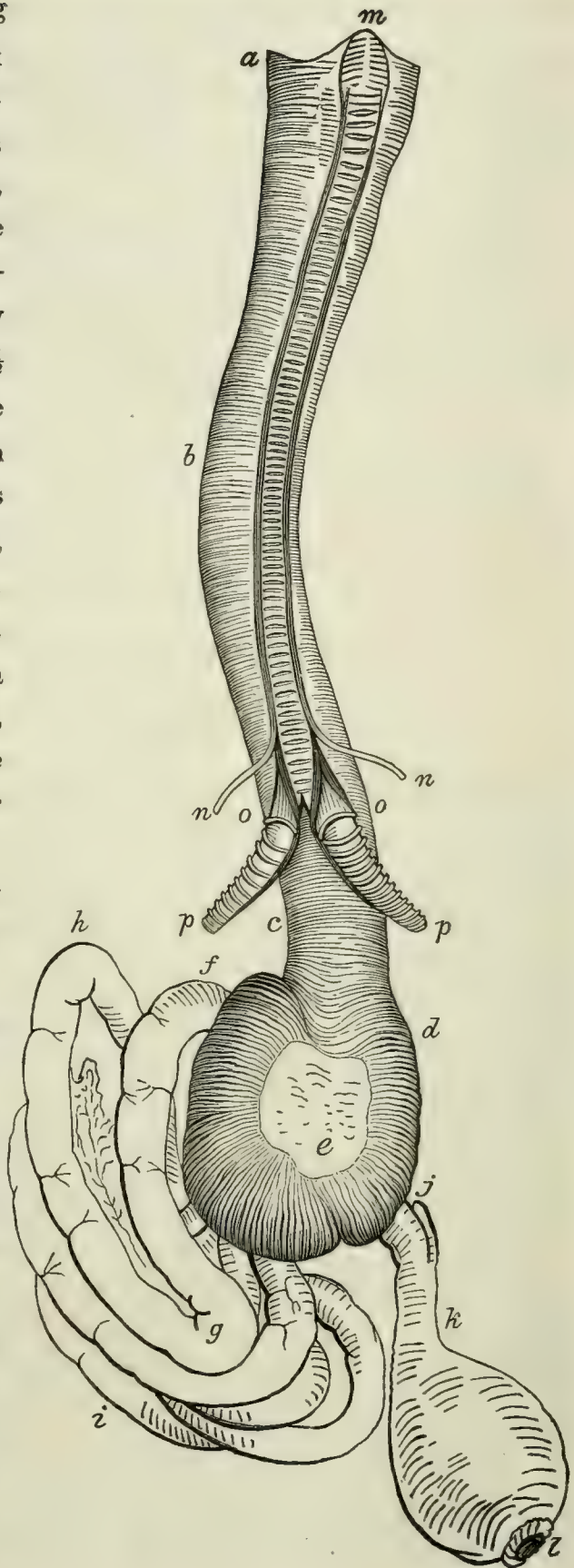
PLATE CLVI. Vol. II. p. 317.

ALTHOUGH the common American Crow ranges from the Gulf of Mexico to the shores of the Columbia River, where it is abundant, as well as on the Rocky Mountains, it does not, according to Dr RICHARDSON, proceed farther north than the 55th parallel of latitude, nor approach within five or six hundred miles of Hudson's Bay, appearing in the Fur Countries during the summer only. I found it abundant in the Texas, where it breeds. The eggs measure one inch five-eighths in length, an inch and one-eighth in breadth.

A specimen preserved in spirits measures in length to end of tail $18\frac{1}{4}$ inches, to end of wings 17, to end of claws $16\frac{1}{4}$; extent of wings 35; wing from flexure $12\frac{1}{4}$; tail $\frac{1}{2}$; bill along the ridge 2; tarsus $2\frac{1}{4}$.

The palate is concave, with two ridges; the upper mandible internally with five ridges, the lower deeply concave, with a median prominent line. The tongue is 1 inch 2 twelfths long, semicircularly emarginate at the base and papillate, one of the papillæ on each side very large; it is horny toward the end, narrow, thin edged, and with the point slit, the fissure being $1\frac{1}{2}$ twelfth in depth. The width of the mouth is 1 inch 1 twelfth; the œsophagus, *abcd*, is 7 inches long, averages $7\frac{1}{2}$ twelfths in width, is funnel-shaped at the com-

mencement, passes along the right side of the neck until it enters the thorax, and has its walls of moderate thickness, with external transverse fibres. The proventricular glands are very small, and form a belt $7\frac{1}{2}$ twelfths in breadth. The stomach, *def*, is $1\frac{1}{2}$ inch long, 1 inch $5\frac{1}{2}$ twelfths broad, of a roundish form, considerably compressed; its lateral muscles large; being about a quarter of an inch thick, its tendons, *e*, also large and radiating, their transverse diameter $\frac{1}{2}$ inch; the cuticular lining thick, dense, of a dark reddish-brown colour, with broad longitudinal rugæ. The intestine, *fghl*, forms a curve at the distance of $2\frac{1}{2}$ inches, bends forwards toward the right lobe of the liver, then forms four circular convolutions, and terminates in the rectum. Its length is 29 inches, its width $4\frac{1}{2}$ twelfths in the duodenal portion, and 4 twelfths in the rest



of its length; the cloaca, *kl*, globular and about 1 inch in diameter; the cœca small, *j*, cylindrical, $5\frac{1}{2}$ twelfths long and 1 twelfth in breadth.

In another male, the intestine is 42 inches long; from $4\frac{1}{2}$ twelfths to 4 twelfths in width; the cœca $\frac{1}{2}$ inch long, and 1 twelfth in width. In a third, a male also, the intestine is $41\frac{1}{2}$ inches long; and in a fourth 33 inches. This statement shews that the intestine of birds sometimes varies very considerably in the same species.

In the stomachs of two of them were numerous seeds of a brownish-yellow colour, globular, and 1 twelfth in diameter, together with a few particles of quartz. That of another contained a mass of pounded sumach berries.

The trachea, *mo*, of the first is 5 inches long, a little flattened, $4\frac{1}{2}$ twelfths in breadth at the commencement, $3\frac{1}{2}$ twelfths for 2 inches, near the lower part enlarging to 4 twelfths, and again contracting to $2\frac{3}{4}$ twelfths. The inferior larynx, *oo*, is much compressed, with 2 large dimidiate rings. The rings are broad, firm, 56 in number. The bronchi, *op, op*, are wide, of about 15 half rings. The muscles are the same as in the Thrushes and Warblers, there being four pairs of inferior laryngeal.

FISH CROW.

CORVUS OSSIFRAGUS, WILS.

PLATE CXLVI. VOL. II. p. 268.

THIS species does not appear to proceed westward along the coast beyond the mouths of the Mississippi, where it is, however, abundant; for, after leaving this place, none were seen on our way to the Texas; where we found the Common American Crow in great abundance. The Fish Crow is, however, plentiful on the Columbia River, according to Dr TOWNSEND, who brought specimens from that country.

BOAT-TAILED GRAKLE.

QUISCALUS MAJOR, VIEILL.

PLATE CLXXXVII. VOL. II. p. 504.

I FOUND this species abundant and breeding along the shores of the Gulf of Mexico, from the mouths of the Mississippi to within the maritime portions of the Texas, in every suitable place, forming its nests principally among the tall reeds of the salt marshes. The eggs measure one inch three-eighths in length, and seven-eighths in breadth, being of an elongated oval form. The name of Boat-tailed Grakle has been of late given to our Common Crow Blackbird, *Quiscalus versicolor*, which in my opinion is improper, in our country at least, where all original well-known names ought to be retained, were it for no other reason than to prevent inconvenience to students. No one in Kentucky, for example, would know what was meant by "Little Rusty-crowned Falcon," but would point out at once to any inquirer the "Sparrow Hawk."

In a male, from the mouths of the Mississippi, preserved in spirits, the palate is convex, with two longitudinal ridges, anteriorly with a middle and two lateral ridges. The tongue is 1 inch 2 twelfths long, slender, horny nearly in its whole length, sagittate and papillate at the base, concave above, its greatest breadth $2\frac{1}{2}$ twelfths, tapering to a lacerated thin point, and with the edges also lacerated for nearly half an inch from the tip. The posterior aperture of the nares is oblong behind, linear before, with strong papillæ on the edges. The œsophagus is $5\frac{1}{2}$ twelfths long, its width 7 twelfths at the commencement, then contracting to 4 twelfths, again slightly dilated to 5 twelfths; the proventriculus also 5 twelfths in width, its glands forming a belt $7\frac{1}{2}$ twelfths in breadth. The stomach is elliptical, 1 inch 2 twelfths long, $10\frac{1}{2}$ twelfths in breadth; its muscular coat moderately thick, the right lateral muscle 2 twelfths; the epithelium dense, tough, longitudinally rugous, and dark brown. The intestine is of moderate length and width, the former being 15 inches, the latter averaging 3 twelfths; the cœca an inch and a half long.

The trachea is $3\frac{1}{2}$ inches long, much flattened, from $3\frac{1}{2}$ twelfths to $2\frac{1}{2}$ twelfths in breadth; its rings about 70, very thin, with 2 dimidiate rings. The bronchi are wide, of about 12 very slender cartilaginous half rings. The lateral muscles are slender, as are the sterno-tracheal slips; and there are four pairs of inferior laryngeal muscles.

The digestive and respiratory organs of this bird do not differ materially from those of the Crows, Starlings, and Thrushes, but the œsophagus having a slight dilatation indicates some affinity to the Conirostres.

PURPLE GRAKLE OR COMMON CROW BLACKBIRD.

QUISCALUS VERSICOLOR, VIEILLOT.

PLATE VII. VOL. I. p. 35.

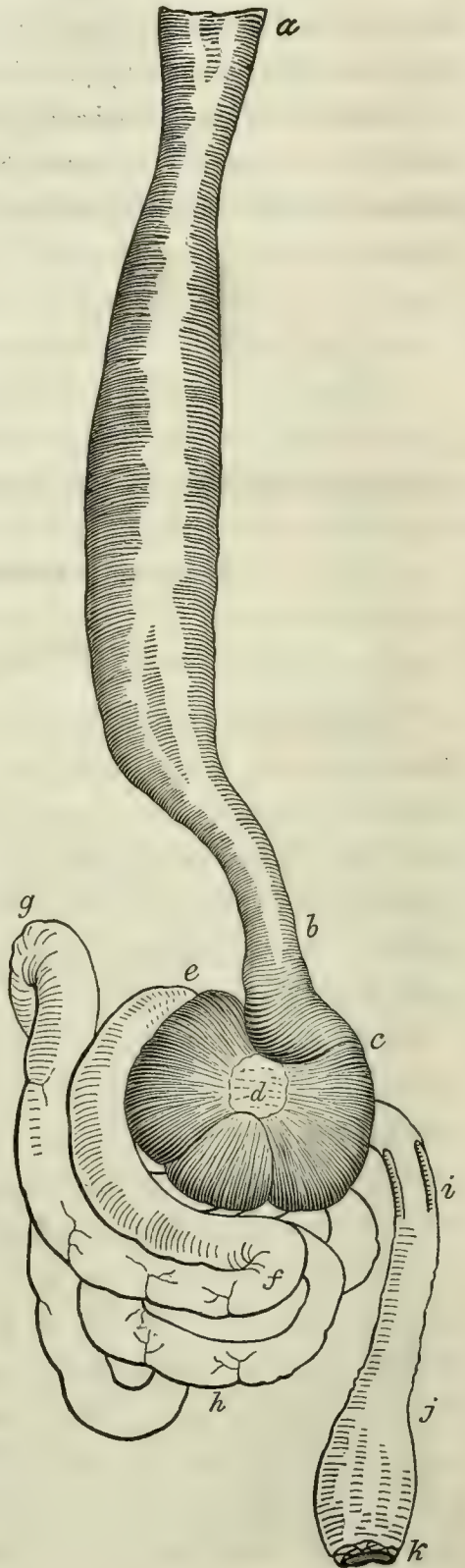
ACCORDING TO DR RICHARDSON, this species reaches the plains of the Saskatchewan in the beginning of May, in flocks of from twenty to a hundred, the males and females separate; and, as in Pennsylvania, several pairs nestle on the branches of the same tree. I have found it dispersed over the country from Texas to Nova Scotia, but met with none in Newfoundland or Labrador. It was not observed by Dr TOWNSEND on the Columbia River.

Dr BACHMAN, who has seen it building in the hollows of trees, and in abandoned nests of Woodpeckers, has observed it carrying grass and mud for the construction of its nest. It breeds in like situations in Louisiana, without using these materials; and in the middle and northern districts forms a fine, well-finished nest, such as I have described in the article on this species in my first volume. The eggs measure one inch and half an eighth in length, by five and a half eighths in breadth, are of a bluish-white colour, blotched, streaked, and spotted with brown and black. On the Florida Keys I found this species breeding in low mangroves, in communities, along with the White-headed Pigeon, *Columba leucocephala*, and thought that the glossy richness of the plumage far exceeded that of our northern birds; yet, on close examination, I could observe no other difference in them. I have also

found them breeding westward of the mouths of the Mississippi, as far as the Texas.

A male preserved in spirits measures to end of tail $11\frac{1}{2}$ inches, to end of wings $8\frac{3}{4}$, to end of claws 10; wing from flexure 6; tail 5; extent of wings $17\frac{1}{4}$.

The mouth is rather narrow, its width being $6\frac{1}{2}$ twelfths; the palate ascending, with two papillate ridges, the space between which and the margin of the posterior nasal aperture is also papillate. The latter is 6 twelfths long, linear, and margined with strong papillæ. There are three ridges on the anterior part of the roof of the mouth, of which the middle is much stronger, at the base large, prominent, and hard, being similar to the knob observed in the Buntings, but much more elongated. The tongue is slender, 9 twelfths long, emarginate and papillate at the base, grooved above, horny toward the end, slightly lacerated, and slit at the tip. The œsophagus, *abcd*, is $4\frac{1}{4}$ inches long, 5 twelfths in width at the commencement; then for the length of nearly two inches dilated to $7\frac{1}{2}$ twelfths; on entering the thorax contracted to 4 twelfths. The stomach, *d e*, is of moderate size, round, a little compressed, moderately muscular, the left muscle 3 twelfths, the left $2\frac{1}{2}$ twelfths thick; the epithelium



dense, horny, slightly rugous, with two roundish slightly concave grinding surfaces. The œsophagus contains two grains of maize, and the stomach is distended with fragments of the same, together with portions of husks and grains of sand. The intestine, *f g h i j k*, is of moderate length and rather wide; being 16 inches long, and from 4 twelfths to $2\frac{1}{2}$ twelfths wide; the duodenum, *f g h*, curves in the usual manner, returning at the distance of two inches; the cœca, *i*, which come off at the distance of $1\frac{1}{2}$ inch from the extremity, are $1\frac{1}{2}$ inch long, but only $\frac{1}{2}$ twelfth in width; the rectum gradually enlarges into an oblong cloaca, *j*, about 5 twelfths in width.

The trachea is 3 inches long, moderately flattened, $1\frac{1}{2}$ twelfth in breadth, its rings firm, and about 60 in number, with 2 additional dimidiate rings. The lateral muscles are slender, as are the sterno-tracheal; there are four pairs of large inferior laryngeal muscles. The bronchi are of moderate size, with about 15 half rings.

In the structure of the mouth and digestive organs, this bird shews some affinity to the Crows and Starlings, more to the Buntings and Finches, and an intimate relationship to the *Icteri*. The position which it occupies in the List of the Prince of MUSIGNANO is therefore correct. But the *Icteri* and their allies are more closely related to the Passerine birds properly so called, than to either the Crows or Starlings, and being essentially husking birds, with a dilatation on the œsophagus, are not members of the families of *Corvinæ* or *Sturninæ*, as he has made them.

RUSTY GRAKLE.

QUISCALUS FERRUGINEUS, BONAP.

PLATE CLVII. Vol. II. p. 325.

THIS species is found on the shores of the Columbia River, and in all the districts intervening between them and those of the Gulf of Mexico, at least in winter and the early part of spring. Dr TOWNSEND, who procured some on the Columbia, did not inform me whether it breeds there. Northward, according to Dr RICHARDSON, its sum-

mer range extends to the 68th parallel, or as far as the woods reach, and it arrives in pairs on the banks of the Saskatchewan in the beginning of May. In that country it joins with the Redwings, Common Crow Blackbirds, and Cow-Buntings, in committing depredations on the cornfields.

The eggs of this species measure one inch in length, five and a half eighths in breadth. Their ground-colour is pale blue, marked sparingly with blotches of brownish-black, and others more numerous of pale purplish-grey, the former disposed round the large end, the latter over the whole surface.

In a male preserved in spirits, the palate is slightly ascending, with two papillate ridges; the posterior aperture of the nares 5 twelfths long, margined with small papillæ; the upper mandible beneath slightly concave, with three longitudinal ridges and four grooves. The tongue is 9 twelfths long, narrow, very thin, concave above, sagittate and papillate at the base, the tip slit and lacerated, forming two elongated points. The tongue is thus very different from that of the Buntings and Finches, which generally have it deeper than broad, and is similar to that of the Crows, Starlings, Thrushes, &c. The breadth of the mouth is $5\frac{1}{2}$ twelfths. The œsophagus is 3 inches long, its greatest width 5 twelfths, on entering the thorax contracting to $2\frac{1}{2}$ twelfths. The stomach is elliptical, rather large, 10 twelfths in length, 7 twelfths in breadth; the lateral muscles rather thin, the tendons large; the epithelium thin, dense, reddish-brown, longitudinally rugous. The stomach is filled with small seeds and insects, together with some grains of quartz. The intestine is $11\frac{1}{2}$ inches long, from $2\frac{1}{2}$ twelfths to 2 twelfths in width; the cœca 3 twelfths long, $\frac{1}{4}$ twelfth in width, 10 twelfths distant from the extremity.

The trachea is 2 inches 4 twelfths long, considerably flattened; its rings, which are firm, about 80, with 2 additional rings. Bronchial half rings about 15. Four pairs of inferior laryngeal muscles, which are large and well defined.

In all the *Quiscali*, *Icteri*, and other birds of this group, there are slender salivary glands as in the Thrushes and Warblers, as well as the Finches and Buntings.

ORCHARD ORIOLE.

ICTERUS SPURIUS, BONAP.

PLATE XLII. Vol. I. p. 221.

Dr BACHMAN informs me, that he has kept this bird in aviaries for several years, and that although the birds of this genus are supposed to be of a plain colour in winter, he has ascertained that this species at least preserves throughout the winter the plumage it possessed in summer.

In a male preserved in spirits, the roof of the mouth is slightly ascending, with two longitudinal ridges; the posterior aperture of the nares oblongo-linear with the edges papillate; the upper mandible with three prominent lines, and four grooves, the tongue is 6 twelfths long, sagittate and papillate at the base, narrow, channelled above, the tip deeply slit and lacerated. The œsophagus is 2 inches 2 twelfths long, its greatest breadth 3 twelfths. The stomach is very small, roundish, compressed, 5 twelfths long, $\frac{1}{2}$ twelfth broad; its muscles thick, the epithelium thin, tough, longitudinally rugous, reddish-brown. The contents of the stomach are insects. The intestine is 6 inches long, from $1\frac{1}{2}$ twelfth to 1 twelfth in breadth. The cœca 1 twelfth long, $\frac{1}{4}$ twelfth broad, 8 twelfths from the extremity.

The trachea is $1\frac{1}{4}$ inch long, much flattened, 1 twelfth broad at the upper part; its rings 65 with 2 dimidiate. Bronchi of about 10 half rings. The muscles as in the other species of this group.

RICE BIRD.

ICTERUS AGRIPENNIS, BONAP.

PLATE LIV. VOL. I. p. 283.

ACCORDING to Dr RICHARDSON, this species does not proceed northward beyond the 54th parallel, where it arrives in the beginning of June. Among the Creek Indians it bears the name of "Skunk Bird," from the similarity of its plumage to the colouring of the Skunk, *Mephitis Americana*. It has been observed on the Rocky Mountains by Dr TOWNSEND. I found it entering the United States from beyond the Texas, on the shores of the Gulf of Mexico, early in April, when most of the males were in full plumage, and I have no doubt that before they reach the Carolinas this state of plumage is perfected.

My friend Dr BREWER describes their mode of nesting in Massachusetts as follows:—"This species breeds here abundantly, although, from the careful manner in which the nest is concealed, it is very seldom met with. The Rice Bird arrives in New England about the middle of May, and commences its nest usually about the first of June. It is placed on the ground, and here for the most part in meadows, and with so much pains at concealment, that it is to be found only by accident. Ingenious stratagems are also used to decoy the passer-by from its vicinity: for instance, a pretended anxiety about parts of a field in which they have not the slightest interest; so that persons unaware of this are often induced to search spots many rods distant from the object of their pursuit. The nest is very simple, usually consisting of a few pieces of hay and straw, so loosely arranged as hardly to admit of removal without falling to pieces. The eggs, five in number, measure fifteen-sixteenths of an inch in length, and eleven-sixteenths in breadth. About the 8th of August, they assemble in large flocks, and take their departure for the south."

In a male preserved in spirits, the palate is ascending, with two lateral ridges, which on meeting anteriorly form a soft prominence; on

the upper mandible beneath are three ridges, of which the lateral are larger; the lower mandible is deeply concave; the width of the mouth $4\frac{1}{2}$ twelfths. The tongue is 5 twelfths long, sagittate and papillate at the base, narrow, deep, pointed, and with a median groove on its upper surface. It thus approaches in form to that of the Finches and Buntings. The œsophagus is $2\frac{1}{2}$ inches long, its greatest width $4\frac{1}{2}$ twelfths, contracting to 2 twelfths as it enters the thorax; the proventriculus 3 twelfths broad, its glands forming a belt 4 twelfths in breadth. The stomach is rather small, roundish, much compressed, 6 twelfths in length, and of the same breadth; its lateral muscles thick, the tendons large; the epithelium thin, tough, reddish-brown, with longitudinal rugæ. The intestine is 7 inches 9 twelfths long; its average width $1\frac{1}{2}$ twelfth; the cœca $\frac{1}{2}$ twelfth long, $\frac{1}{4}$ twelfth broad, 9 twelfths from the extremity.

The trachea is $1\frac{1}{2}$ inch long, 1 twelfth broad at the upper part, considerably compressed; the rings 55, with 2 dimidiate; the muscles as in the last species; bronchi of about 12 half rings.

RED-WINGED STARLING.

ICTERUS PHENICEUS, DAUDIN.

PLATE LXVII. Vol. I. p. 348.

THE dispersion of this bird over the whole of the United States, the Fur Countries beyond the limits of the inhabitation of the human species, the great western plains, the Rocky Mountains, and even the shores of the Columbia River, where it was procured by Dr TOWNSEND, forms a remarkable part of its history. Our surprise becomes greatly increased by the knowledge of its breeding in great numbers in every part of this vast extent. I found the Islands about Galveston Bay most plentifully supplied with it, as well as the grassy margins of the pools and bayous of the mainland, where it was seen breeding, sometimes within a few yards of houses. The same occurred on the Florida Keys. The only part of the country visited by me in which I found it wanting is Labrador, although it is known to breed in some portions

of the interior of Newfoundland. In many instances I found it nesting in the Floridas on Mangroves and low bushes, in the vicinity of the nests of Cormorants and our smaller Herons, and even sometimes in the midst of them. From these observations, you may readily believe what I have already said as to the greater extension of birds during the migratory movements, in proportion to their growth or age, the younger individuals not being equal in strength to their parents, and seldom reaching the place of their birth in the course of their first year.

In speaking of this species, Dr RICHARDSON mentions a circumstance relative to its habits of which I was not aware. "On its first arrival (the beginning of May) it feeds on grubs; but as soon as the grain sown in the vicinity of the trading posts begins to germinate, it associates itself with Saffron-headed Maize birds and Boat-tails (Common Crow Black-bird), and is occupied the whole day in tearing up and devouring the sprouting plants, returning to the work of devastation as often as driven away." He states that it does not pass the 57th parallel.

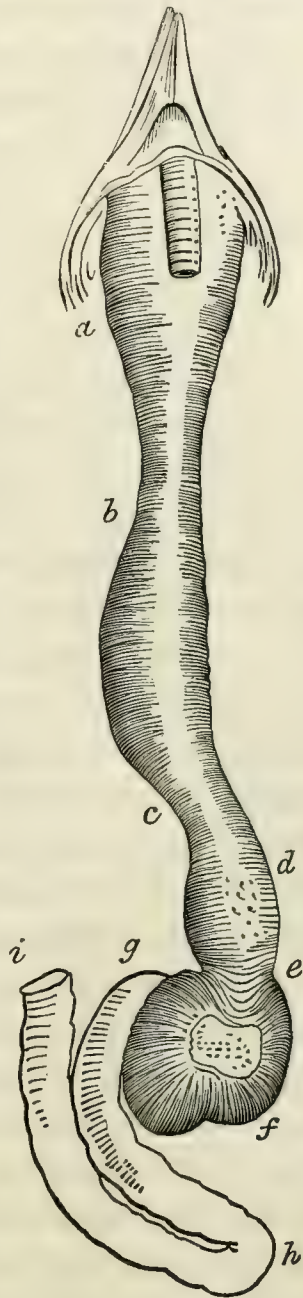
The attachment of this bird to the locality which it has selected for breeding, is illustrated by the following note of my friend Dr THOMAS M. BREWER of Boston. "A pair of these birds constructed a nest in a small clump of bushes near a brook in Roxbury, and deposited four eggs, which were taken away. They then built a nest within a foot of the first, in which the same number of eggs was laid, and in like manner abstracted. Undeterred by this want of success, they again constructed a nest in the same clump, and this time without molestation. This fact is perhaps trivial in itself, but the same can hardly be told of any other species." The eggs measure in length seven-eighths and three-fourths, and in breadth five and a half eighths.

At Galveston I observed flocks of female Red-winged Starlings congregated, and to all appearance migrating. This shews that migration in birds is far from being regular, but is dependent on many accidental circumstances, such as difference of temperature at certain seasons when they are supposed usually to move, or storms, or want of proper food.

Dr BACHMAN writes thus to me:—"You speak of the Red-winged Starlings as nearly all proceeding to the coast to breed. They breed very abundantly in all the low marshy grounds of Carolina, and in all

the intermediate places to the Northern States. The young birds in autumn that I have procured from the young guinea-corn and rice-fields were fat, and in taste fully equal to the Robin. I am not aware, that you have mentioned that, when a year old, though not full-plumaged, they breed like those that are older. Indeed, nearly all our birds breed when a year old, however imperfect their plumage; I cannot recollect any species that does not."

In a male preserved in spirits, the palate ascends rapidly, and is in the middle concave, with two very prominent papillate ridges, which, in meeting, form a large soft prominence, anteriorly of which the roof of the mouth is nearly flat, with a median and two lateral ridges. The posterior aperture of the nares is oblongo-linear, with its margins papillate. The lower mandible is deeply concave. The tongue is 9 twelfths long, higher than broad, sagittate and papillate at the base, grooved above, tapering to a horny flattened, slightly emarginate tip. The œsophagus, *abcde*, is $3\frac{1}{4}$ inches long, forming a sac, *bc*, the width of which at the commencement is $7\frac{1}{2}$ twelfths, soon after $4\frac{1}{2}$ twelfths, toward the lower part of the neck $5\frac{1}{2}$ twelfths, but on entering the thorax contracting to $3\frac{1}{2}$ twelfths; the proventriculus, *de*, $4\frac{1}{2}$ twelfths in width. The stomach, *efg*, is broadly elliptical, 9 twelfths long, $7\frac{1}{2}$ twelfths wide, its lateral muscles well developed; the epithelium thin, but dense, and of a reddish-brown colour. The contents of the stomach are remains of coleopterous insects and seeds. The duodenum, *ghi*, curves in the usual manner at the distance of $1\frac{1}{4}$ inch; the entire length of the intestine is 10 inches, its width from 2 twelfths to $1\frac{1}{2}$ twelfth; the cœca 2 twelfths long, $\frac{1}{2}$ twelfth wide, 1 inch distant from the extremity; the rectum gradually dilates into an oblong cloaca, 5 twelfths in width.



The trachea is $2\frac{1}{4}$ inches long, flattened, slender, being only $1\frac{1}{2}$ twelfth wide at the upper part; its rings 54, well ossified; the lateral muscles are moderate, as are the sterno-tracheal; the inferior laryngeal very large, and disposed in four pairs. The bronchi are of moderate size, and of about 12 half rings.

COW-PEN BIRD.

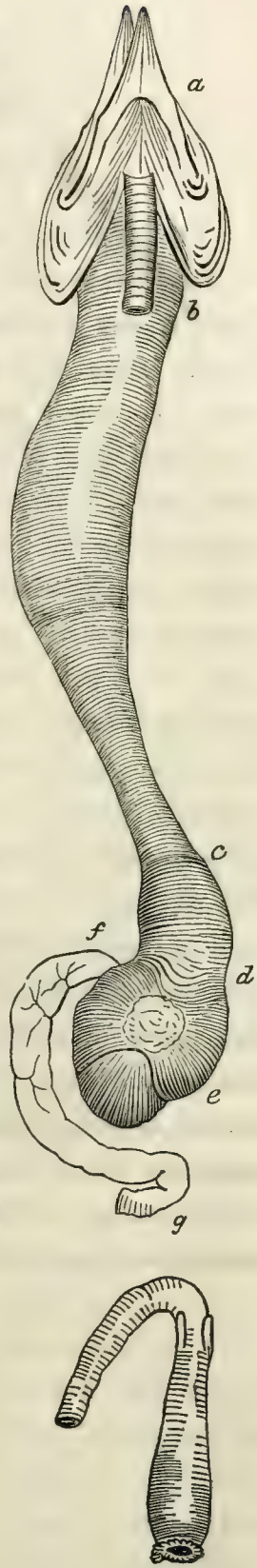
ICTERUS PECORIS, BONAP.

PLATE XCIX. VOL. I. p. 443.

“ You can hardly expect,” writes my friend Dr BREWER, “ that I should add any thing to the detailed account which I have already given you of this bird, and yet I cannot but think that much remains to be told respecting its habits. Many circumstances relative to its history still solicit the attention of the inquisitive naturalist, but of these I am not at present qualified to speak. There is one subject, however, on which I may offer a few remarks, namely, its laying in the nest of *Fringilla tristis*. WILSON first asserted that it burdens that species with the charge of its egg; but Mr NUTTALL denies the possibility of such an occurrence, on the ground that the Cow Blackbirds are not present at the time when the Goldfinch is breeding. For this, however, Mr ORD takes him to task, and states that he has himself seen a Cow Bunting’s egg in the nest of the bird in question. Now, it appears to me, that when we consider how extremely incorrect WILSON’s description of the nest and eggs of *Fringilla tristis* is, very little reliance can be placed upon his assertion in this case. I can add my testimony to the authority of Mr NUTTALL as to the absence of the Cow Bird from this State while the Goldfinch is breeding here. The former leaves Massachusetts before the first of July, sometimes earlier, indeed by the middle of June, and never lays on its return late in September. I have never found the nest of the Goldfinch before the 7th of August, although Mr NUTTALL states that it breeds in July. But then Mr ORD says that he has himself witnessed the occurrence. I would be the last person to doubt that gentleman’s veracity, nor have I the slightest idea that he would wilfully make a mistatement; yet I

cannot help thinking that in this matter he has been deceived. Perhaps he is correct : but, in that case, he must either have in his part of the country a distinct species of Goldfinch, or its habits and those of the Cow Bird must be very different there from what they are here. At all events, it is utterly impossible that such an occurrence could ever have taken place in Massachusetts. I think, therefore, that the Goldfinch should be struck from the list of those species in the nests of which the Cow Bird lays. On the other hand, *Sylvia Blackburnia* and *S. vermivora* are to be added to it. The Cow Bird is very common at Boston, having its eggs in the nests of the White-eyed Vireo, the Red-eyed, and any other that it chances to encounter, and departing in autumn for the south.

The digestive organs and trachea of this bird have already been described, at p. 234 of the present volume ; but the figures were then accidentally omitted. The œsophagus, *a b c d*, is considerably dilated on the neck ; the stomach, *e*, is a strong muscular gizzard, having the lateral muscles large and distinct, the lower prominent, the epithelium longitudinally rugous. The intestine, of which the commencement only is here represented, *f g*, is rather short and of moderate width. The cœca are an inch distant from the extremity, and about a quarter of an inch in length ; and the rectum forms only a slight dilatation in place of a cloaca.



MEADOW LARK.

STURNUS LUDOVICIANUS, LINN.

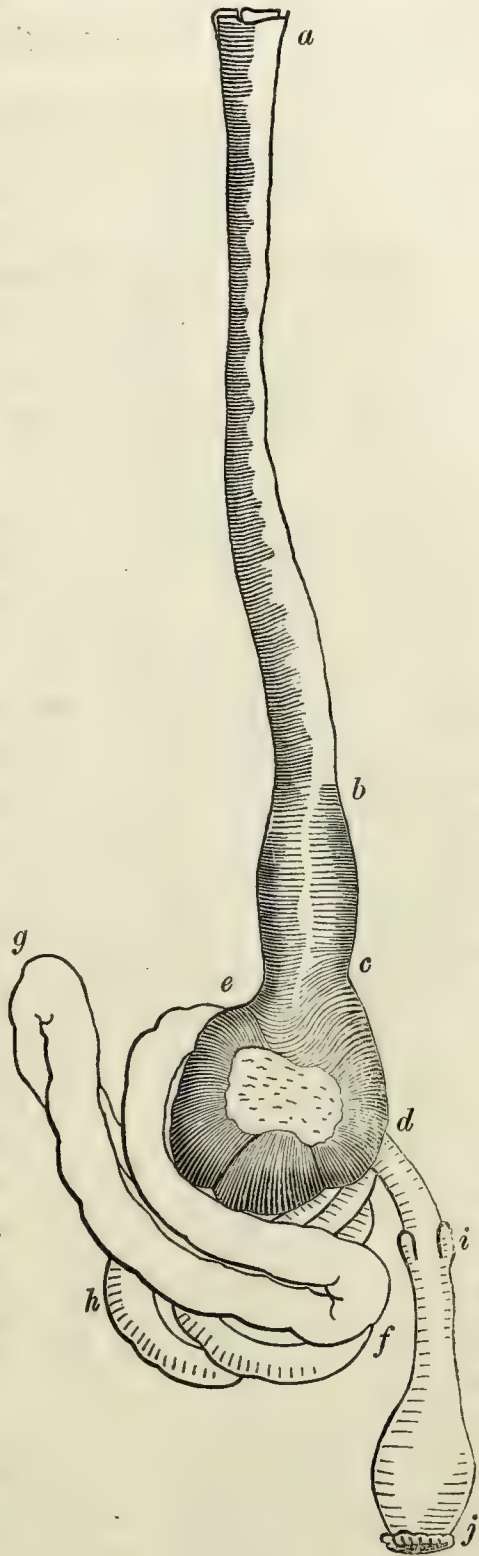
PLATE CXXXVI. Vol. II. p. 216.

THIS beautiful bird is dispersed over all the countries intervening between the shores of the Columbia River and the Gulf of Mexico. I found it very abundant and breeding on the Island of Galveston in the Texas, where, as well as in our Southern States, it is a constant resident. It travels northward as far as the Saskatchewan River, where, according to Dr RICHARDSON, it arrives about the first of May, but beyond which it was not seen. In a note appended to the article on this bird, in the Fauna Boreali-Americana, Mr SWAINSON says it "is subject to very considerable variation, not only in its colour, but in its size, and in the proportionate length of the bill. The northern specimens are larger and much paler than those we possess from Georgia, while the Pennsylvania ones are intermediate between the two, proving the influence of climate or the prevalence of particular races." This note is in perfect accordance with my views as regards the migrations of birds, and it corroborates the fact which I have already mentioned, that the larger, and consequently the stronger, birds are those which remove farthest north in spring. The difference as to size and colour acknowledged to exist in this species, may be observed in a greater or less degree in almost every bird; and I am fully convinced that a great number of young birds, as well as females, have been converted into distinct species, through the lamentable epidemic mania which has infected the closet-naturalists, who found their fame on the invention of useless names. The eggs of the Meadow Lark are an inch and two-twelfths in length, and seven-eighths in breadth.

In an adult male preserved in spirits, the roof of the mouth has a median ridge anteriorly, with two ridges on the palate, which is convex and ascending; the posterior aperture of the nares linear, margined with large papillæ, and 8 twelfths long. The tongue is slender, 10 twelfths long, deeply sagittate and papillate at the base, concave above, horny beneath, with a median groove, thin-edged, lacerated toward the tip, which is slit to the depth of 1 twelfth. It resembles the tongue of the Quiscali, Starlings, Crows, and Thrushes. The œsophagus, *abc*, is $4\frac{1}{4}$

inches long, very narrow, its average width along the neck being $2\frac{1}{2}$ twelfths; on entering the thorax it enlarges to 3 twelfths; the proventriculus, *bc*, is 5 twelfths in breadth, its glandular belt 6 twelfths. The stomach, *cde*, is a very strong muscular gizzard, placed obliquely, of an elliptical form, 11 twelfths in length, $9\frac{1}{2}$ twelfths in breadth; The proventricular glands are large, nearly globular, $\frac{1}{2}$ twelfth in diameter. The muscular coat of the stomach is rather thin, the thickness of the lateral muscles being 2 twelfths; the epithelium dense, tough, dark red, with three longitudinal rugæ on each side. The contents of the stomach are remains of insects, larvæ, and especially legs of grasshoppers. The intestine, *efghij*, is of moderate length and width, the former being $12\frac{1}{2}$ inches, the latter averaging $2\frac{1}{2}$ twelfths. The duodenum, *ef*, curves in the usual manner at the distance of $1\frac{3}{4}$ inches, and is 3 twelfths wide. The cœca, *i*, come off at the distance of $1\frac{1}{4}$ inch from the extremity, and are 3 twelfths in length, 1 twelfth in width, and obtuse; the cloaca, *j*, is small and of an oblong form, its breadth 5 twelfths.

The trachea is 3 inches long, flattened, firm, of the nearly uniform width of 2 twelfths. The rings are 68, with two dimidiate, rather broad and firm. There are four pairs of inferior laryngeal muscles besides the sterno-tracheal, and the lateral muscles are of moderate size. The bronchi are rather narrow, of 18 half rings.



CEDAR BIRD.

BOMBYCILLA CAROLINENSIS, BRISS.

PLATE XLIII. Vol. I. p. 227.

I AM informed by Dr TOWNSEND that this species is found about the Columbia River, where he procured specimens. Dr RICHARDSON speaks of it as not having been observed to the north of the 54th parallel. Mr DRUMMOND saw several small flocks on the south branch of the Saskatchewan, on the 27th of June. I found it very numerous in the Texas, in the early part of May. It is known to breed from Maryland to Nova Scotia, but none were seen by me in Labrador or Newfoundland. Dr BREWER has sent me the following note respecting it. " This is almost, if not quite, the only one of our birds to which WILSON has been guilty of injustice. He has branded it as a thief, and denied it the possession of any redeeming quality. That it does not sing I admit, but that it is not deserving of our protection is not true. I forbear entering any plea in its behalf on account of the beauty of its plumage, or its bold defence of its young, which I can attest from actual observation, but I must commend it for the benefit which it confers, in this part of the country, on the farmer, by destroying thousands of the destructive cankerworm. I have watched it for hours together feasting on that deadly enemy to our orchards. It is very abundant, but does not breed until July. The eggs do not vary much in colour. It remains all the year round at Boston, and breeds abundantly in the orchards." The length of the egg is 9 twelfths, its breadth 7 twelfths.

In a male preserved in spirits, the roof of the mouth is slightly concave anteriorly, with three slight longitudinal ridges; the palate covered with small papillæ; the posterior aperture of the nares linear-oblong, 4 twelfths in length, with the margin papillate; the tongue 4 twelfths long, triangular, sagittate and papillate at the base, concave above, the tip horny, deeply slit, with two slender points. The width of the mouth is $5\frac{1}{2}$ twelfths. The œsophagus, *abcd*, is 2 inches 9 twelfths long, its width at the commencement 5 twelfths; it is presently enlarged to 7 twelfths, and increases to 8 twelfths, of which width it continues to the lower part of the neck, where it contracts to 3 twelfths;

the proventriculus, *cd*, $3\frac{1}{2}$ twelfths in breadth. The stomach, *de*, is

a small moderately muscular gizzard, of a roundish form, $7\frac{1}{2}$ twelfths in length, and 8 twelfths in breadth; its lateral muscles well defined, the right 3 twelfths, the left $2\frac{1}{2}$ twelfths thick; the tendons oblong and of moderate size; the epithelium dense, tough, longitudinally rugous, and of a reddish colour. The liver is extremely large, the right lobe 1 inch 8

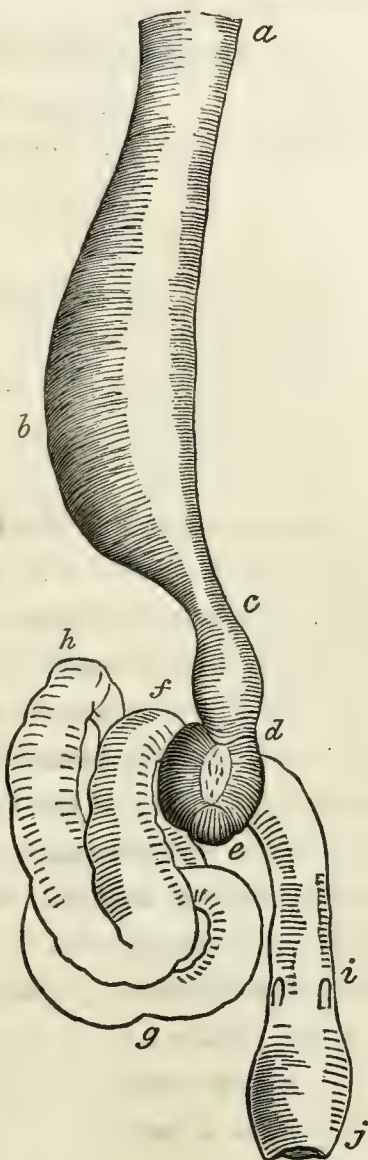
twelfths in its greatest length, the left 8 twelfths. The intestine, *fghij*, is short, and of excessive width, its length $7\frac{1}{3}$ inches, its breadth in the duodenal portion $4\frac{1}{2}$ twelfths, and so continuing with little diminution to the end. The duodenum, *fgh*,

curves at the distance of $1\frac{1}{4}$ inch, passes forwards, as usual, to beneath the liver, then runs down the right side, bends to the left, curves again to the right over the duodenum, and crossing to the right over the stomach, terminates in the rectum. The cœca, *i*, are $2\frac{1}{2}$ twelfths long, and $1\frac{1}{2}$ twelfth in width; their distance from the extremity 8 twelfths. There is no decided cloacal enlargement. In the

œsophagus are several small berries; the stomach is filled with berries and seeds, and the intestine contains a very great number of the latter, so that this bird evidently has not the power of pounding and digesting such as are hard. The same circumstance is observed in Woodpeckers, through the intestines of which seeds pass unchanged.

In another individual, the œsophagus is turgid with globular berries, 2 twelfths in diameter, so as to form an elongated crop, lying on the right side of the neck, and extending over it behind.

The trachea is $2\frac{1}{4}$ inches long, of the uniform width of 1 twelfth, considerably flattened, of 80 pretty firm entire, and 2 dimidiate rings. The muscles of the inferior larynx, although four in number, are remarkably small, compared with those of a Thrush. The bronchi are



slender, of 18 half rings. The lateral muscles are very slender, as are the sterno-tracheal.

The intestine of this bird is proportionally wider than in any other examined. Its œsophagus assimilates it to the Finches and Buntings; its mouth, tongue, and intestine, to the Swallows and Flycatchers.

SNOW BUNTING.

EMBERIZA NIVALIS, LINN.

PLATE CLXXXIX. Vol. II. p. 515.

ACCORDING to my friend Dr T. M. BREWER, "great numbers occurred in the winters of 1831-2-3, near Cambridge, in Massachusetts. Scarcely two birds were exactly alike in plumage. They fed constantly upon the seeds of dried grasses and other plants, were easily approached, and departed for the north early in spring."

In this bird the form of the bill is intermediate between that of the Buntings and that of the Finches. The palate is ascending, with two ridges, the posterior aperture of the nares linear and papillate; the upper mandible beneath with a hard convex protuberance, and three ridges proceeding forwards from it, with the lateral grooves large; the lower mandible deeply concave. The tongue is 5 twelfths long, sagittate and papillate at the base, narrow, deep, channelled above, tapering to a horny point, which is slightly slit. Width of mouth 5 twelfths. Œsophagus 2 inches 7 twelfths long, its greatest width 3 twelfths. Stomach a strong gizzard, 7 twelfths long, 8 twelfths broad; the lateral muscles very large and distinct, as are the tendons; the epithelium dense, tough, and rugous. In the stomach are small black seeds, and a great quantity of particles of quartz. The intestine is $10\frac{1}{4}$ inches long, from 2 twelfths to $1\frac{1}{2}$ twelfth in width; the cœca $2\frac{1}{2}$ twelfths long, and 1 twelfth wide, their distance from the extremity $1\frac{1}{3}$ inch. In another individual, the contents of the stomach are the same; the rectum 3 twelfths in width, gradually dilated at the end.

The trachea is 1 inch $10\frac{1}{2}$ twelfths long, 1 twelfth in breadth; its rings about 70; the bronchial half rings about 15. The muscles are as usual in this family, there being four distinct pairs of inferior laryngeal. The salivary glands are slender, and extend to behind the articulation of the lower jaw.

WHITE-THROATED BUNTING.

FRINGILLA PENNSYLVANICA, LATH.

PLATE VIII. Vol. I. p. 42.

Dr RICHARDSON informs us that this species reaches the Saskatchewan in the middle of May, and spreads throughout the Fur Countries up to the 66th parallel. On the 14th of June, he found a female sitting on four eggs, at Cumberland House. The nest which was placed under a fallen tree, was built of grass, lined with deer's hair and a few feathers. Another found at Great Bear Lake was lined with the setæ of *Bryum*. The eggs were very pale mountain-green, thickly marbled with reddish-brown. When the female was disturbed, she made her escape by running silently off, in a crouching manner, like a Lark. I met with this species in Labrador, in considerable numbers, but did not find its nest, although the young were seen late in July.

When kept in an aviary, this bird, in the latter part of spring or about May, sings at all hours of the night as joyously as when at liberty and breeding. It arrives from the north in South Carolina about the first of November, and departs in the end of March. In that State it is quite silent until the approach of night, when it chirps, as I have described in my first volume.

YELLOW-WINGED BUNTING.

FRINGILLA PASSERINA, WILSON.

PLATE CXXX. Vol. II. p. 180.

THE appearance of this humble species on the shores of the Columbia River renders its geographical distribution as difficult of comprehension as that of some other species, which, like it, discard as it were extensive tracts, and appear in distant regions for a season.

Thus some of this species, on their way from their unknown winter abode northward, pass toward the middle and eastern districts of our Atlantic coast, while others diverge to reach the Oregon section, in which this bird has been found by Dr TOWNSEND, passing over our Southern States without being observed, although, when proceeding toward the Texas in April 1837, I found them abundant on their way eastward.

In a male preserved in spirits, the palate is ascending, and its ridges form a soft prominence at their junction anteriorly; on the fore part are three narrow ridges, forming a large oblong hard knob at their base, in which respect this bird is obviously of the family of Buntings. The tongue is $4\frac{1}{4}$ twelfths long, deeper than broad, grooved above toward the end, which is horny and pointed. The width of the mouth is $3\frac{1}{2}$ twelfths. Œsophagus 1 inch 8 twelfths in length, its greatest width $3\frac{1}{2}$ twelfths, it being considerably dilated on the neck. Stomach rather small, elliptical, oblique, 6 twelfths in length, 5 twelfths in breadth, muscular, and of the usual structure. It contains insects, seeds, and quartz. Intestine 5 inches long, from $1\frac{1}{2}$ twelfth to 1 twelfth wide; cœca $1\frac{1}{2}$ twelfth long, $\frac{1}{4}$ twelfth broad, 7 twelfths distant from the extremity.

Trachea 1 inch 2 twelfths long, from nearly 1 twelfth to $\frac{1}{2}$ twelfth wide, its rings 55; inferior laryngeal muscles very large. Bronchi very slender, of about 12 rings.

HENSLOW'S BUNTING.

EMBERIZA HENSLOWII.

PLATE LXX. Vol. I. p. 360.

THIS species is abundant in the State of New Jersey, and breeds there; but of this I was not aware until after my last return to England, in the spring of 1838, when my friend Dr JAMES TRUDEAU sent me a specimen procured by himself while in company with our mutual friend EDWARD HARRIS, Esq. This specimen is the finest I have seen, although Dr BACHMAN and myself have procured a great number in

South Carolina, where this species abounds in the latter part of autumn, and where some remain during winter. I have found it in great numbers in all the pine barrens of the Floridas, in winter, but mostly in sandy or light soil, in woods thinly overgrown by tall pines. I never saw this species alight on trees, but on the ground, where it spends its time, it runs with rapidity, passing through the grass with the swiftness of a mouse. In the State of New Jersey it is found in ploughed fields, and I have no doubt was previously overlooked or supposed to be the Yellow-winged Bunting, to which it bears some resemblance. It has not been observed farther to the eastward than the State just mentioned. Its plumage in spring is more richly coloured than in autumn or winter.

SHARP-TAILED FINCH.

FRINGILLA CAUDACUTA, WILS.

PLATE CXLIX. VOL. II. p. 281.

ACCORDING to my friend Dr T. M. BREWER, "this species is not rare among the high grass upon Chelsea Beach, near Boston, in the summer, where it no doubt breeds. It runs with wonderful speed, and is unwilling to take wing until almost trodden upon."

MACGILLIVRAY'S FINCH.

FRINGILLA MACGILLIVRAYI, AUD.

PLATE CCCLV. VOL. IV. p. 394.

IN an adult female preserved in spirits, the palate is moderately ascending, with two longitudinal papillate ridges; the posterior aperture of the nares linear, margined with large papillæ; the anterior part or lower surface of upper mandible with a slender median line and two larger lateral, but very narrow. Tongue $5\frac{1}{2}$ twelfths long, sagittate

and papillate at the base, as broad as high, flattened toward the end, concave above, the tip thin, slit, and lacerated. There are slender, submaxillary, salivary glands. The œsophagus is 1 inch 9 twelfths long, its greatest width $2\frac{1}{2}$ twelfths; the proventriculus 3 twelfths in breadth; its lateral muscles distinct and of moderate size; the epithelium longitudinally rugous. The intestine is 8 inches long, from 2 twelfths to $1\frac{1}{2}$ twelfth wide; cœca 4 twelfths long, $\frac{3}{4}$ twelfth broad, $7\frac{1}{2}$ twelfths distinct from the extremity. The trachea is 1 inch $2\frac{1}{2}$ twelfths long, $\frac{3}{4}$ twelfth broad; its rings 55; the bronchial half rings 12. The muscles as usual in this family.

PURPLE FINCH.

FRINGILLA PURPUREA, GMEL.

PLATE IV. VOL. I. p. 24.

THIS species was seen by Dr RICHARDSON on the banks of the Saskatchewan River only, where it feeds on willow-buds. It arrives there in May, and resides during the summer. The eggs have been procured in the State of Massachusetts by my friend Dr T. M. BREWER. They measure seven-eighths and a quarter in length, four-eighths and a half in breadth, and are thus of an elongated form, rather pointed. Their ground-colour is a bright emerald-green, sparingly marked with dots and a few streaks of black, accumulated near the apex, and some large marks of dull purple here and there over the whole surface. The following note is from the same gentleman:—"The passage of the Purple Finch through this State on its way north, is so rapid, and the number of those that stop to breed here so small, that I can furnish nothing respecting its habits, except that there is good reason to believe the accusation which has been brought against it, of injuring the blossoms of fruit trees. Last year, the trees were in full bloom at the time this bird was migrating, and I saw them plainly clinging to the branches, and at work upon the blossoms; so that under some trees the ground was literally strewed with the result of their destructiveness, although they did not appear to feed on the blossoms. I have had the good fortune to meet with its nest and eggs this season. Mr CABOT found another, and is probably the first naturalist who has done so. The nest which I found

was built in a cedar tree, at the distance of five feet from the ground. The tree stood by itself in a small sandy pasture, which was sparingly covered with half-grown cedars. The nest itself was rudely constructed : it was composed externally of coarse grass and weeds, lined with fine roots of the same, and little care seemed to have been bestowed on its completion. The diameter of the exterior was 9 inches, the brim 3 inches, the depth 1 inch, the external depth 2 inches, giving it thus a shallow or flattish appearance. The eggs, four in number, were of a bright emerald-green."

I have found this species from Labrador to the Texas. Mr NUTTALL and Dr TOWNSEND met with it on the Columbia River, and all the way to St Louis. In South Carolina, where it appears only during severe winters, it feeds on the berries of the Virginian juniper, commonly called the red cedar ; and when the berries fall to the ground, it alights to secure them. Dr BACHMAN has kept it in aviaries, where it became very fat, silent, and only uttered its usual simple feeble note. After moulting, the males assumed the plumage of the females. The next spring a very slight appearance of red was seen, but they never recovered their original brilliancy, and it was difficult to distinguish the sexes. It breeds sparingly in the northern parts of the State of New York. In June 1837, I met with three pairs, within a few miles of Waterford, that evidently had nests in the neighbourhood.

Palate gently ascending ; upper mandible considerably concave, with three prominent lines, of which the two lateral are much larger ; mandibles nearly equal in breadth, the lower deeply concave. Width of mouth 5 twelfths. Tongue 5 twelfths long, sagittate and papillate at the base, much compressed, being higher than broad, channelled above, the channel becoming somewhat dilated toward the end, and approaching to that of the Pine Grosbeak and the Crossbills. Œsophagus 2 inches 2 twelfths in length, its greatest width 4 twelfths. Stomach 5½ twelfths long, 4½ twelfths broad ; its lateral muscles of moderate size, the epithelium tough and longitudinally rugous. Contents of stomach, seeds of various sorts. Intestine 8¾ inches long, its width from 1½ twelfth to ¾ twelfth ; cœca ½ twelfth long, ¼ twelfth broad, 9 twelfths distant from the extremity.

Trachea 1 inch 7½ twelfths long, flattened, nearly 1 twelfth in breadth ; the rings 66 and 2 additional ; bronchial rings 12 ; muscles as usual in this family ; as are the salivary glands.

GRASS FINCH, OR BAY-WINGED BUNTING.

FRINGILLA GRAMINEA, GMEL.

PLATE XCIV. VOL. I. p. 473.

THIS extremely abundant species extends its migrations to the shores of the Columbia River, where it was procured by Dr TOWNSEND; and it is mentioned by Dr RICHARDSON as one of the birds that reach the prairies of the Saskatchewan early in May, to depart in September. In these distant localities it breeds on the ground, as it is wont to do in our own Middle Districts, as far south as Maryland. During winter it is found in astonishing numbers about all the old fields in South Carolina, Georgia, the Floridas, and Alabama. The eggs measure seven-eighths of an inch in length, seven-twelfths in breadth, with a bluish-white ground, almost entirely covered with undefined markings of pale reddish-brown, more closely set towards the larger end; but they vary much, some being almost white. I have found many nests of this species on Chelsea Beach, in July and August.

The following account of its manners while incubating, is from Dr T. M. BREWER:—"There are few of our Sparrows that employ a greater variety of artifice to decoy their chief enemy, man, from the young or eggs. The situation of the nest, which is usually placed on the ground in dry sandy fields, without the least pains at concealment, renders stratagem peculiarly necessary to this bird. In the morning of May 1836, as I was crossing a dry sandy field, I almost trode upon a female of this species, as she was sitting on her nest. She was exactly the colour of the surrounding soil, and was therefore unperceived by me, and another step would have inevitably brought me upon her, when she tumbled forward and imitated lameness so perfectly, that it was with the utmost difficulty I could prevent myself from being deceived and following her. The stratagem, however, was of no avail: I stopped, examined the eggs, which were four in number, and left them. The following morning I again visited the spot, but this time the stratagem was different. She left her nest, flew to a spot several rods distant, and manifested the greatest anxiety about the place on which she alighted, so that a stranger, not seeing her flight, would have supposed her nest to be at quite

a distance from its real location. Finding this trick also unavailing, and seeing me stoop and examine her treasures, she speedily approached, and began making the most piteous lamentations, which she continued until I was at a considerable distance from her nest. The next morning I made her another visit, and again she varied her artifice, by leaving her nest, while I was at a greater distance than on either of my other visits, and flying into concealment as speedily as possible, evidently in hopes her flight would not be noticed. To how great a number and variety she would have carried her stratagems I am unable to say, for on visiting the spot on the fourth day I was sorry to find the nest empty and deserted. Was this bird guided by instinct or by reason? The egg measures seven-eighths of an inch in length, and eleven-sixteenths in breadth, and is of a bluish-white, covered nearly equally with blotches of a reddish-brown colour. They are not always exactly uniform in colour and markings, but sufficiently so to be readily recognised. They resemble not a little the eggs of *Fringilla maritima* and *F. palustris*; but are distinguishable from both. They are also sometimes marked with hair-lines of a dark brown colour, irregularly scattered over the whole egg.

INDIGO BUNTING.

FRINGILLA CYANEA, WILS.

PLATE LXXIV. Vol. I. p. 377.

I observed this species breeding in the Texas late in April, and it would appear from a note sent by my friend Dr T. M. BREWER of Boston, that it reaches the neighbourhood of that city early in June, but does not commence its nest there until the latter part of that month, or early in July. He further states that it "is abundant near Boston, and when it arrives in spring generally chooses the highest chimney-tops to alight upon. They appear much attached to particular districts. A pair has now for five years in succession built in my father's garden, but this year, something would seem to have befallen them, for they have not made their appearance. One year they raised a second brood. This

is the only instance in which I have known them to do so. The nest is usually placed in a bush or low tree, about three feet from the ground, and with us has uniformly been built of Russia matting, purloined from our grape-vines, lined with fine grass and hair. The eggs, four in number, are eleven-sixteenths of an inch in length, seven-sixteenths in breadth, and of a uniform white colour, without the slightest blotch or mark. I have never met with an egg having this purple blotch at the larger end, which you and WILSON mention as existing there, although my observations are taken from the contents of more than eight nests. The second brood spoken of above was hatched in September."

I have before me at this moment an egg of the Indigo Bird procured by myself, which has several dots toward the larger end, and of which the general colour is not pure white, but, as described by NUTTALL, greenish-white, or rather, as I would call it, lightish-blue.

The width of the mouth is 3 twelfths; the palate ascending; the upper mandible beneath with three narrow ridges, forming a large oblong hard knob at their base. Tongue $4\frac{3}{4}$ twelfths long, higher than broad, deeply grooved above in its whole length, horny at the end and pointed. Œsophagus 1 inch 10 twelfths long, dilated into a kind of cross $4\frac{1}{2}$ twelfths wide. Stomach elliptical, 6 twelfths long, 5 twelfths in breadth, with the lateral muscle strong, the epithelium dense and longitudinally rugous. It contains insects, seeds, and grains of quartz. Intestine of ordinary length; cœca $1\frac{1}{4}$ twelfth long, $\frac{1}{4}$ twelfth wide, $10\frac{1}{2}$ twelfths from the extremity.

Trachea $1\frac{1}{2}$ inch long, its rings 78, its breadth $\frac{3}{4}$ twelfth, its muscles as usual. Bronchi of 15 half rings.

TREE SPARROW.

FRINGILLA CANADENSIS, LATH.

PLATE CLXXXVIII. Vol. II. p. 511.

ACCORDING to Dr T. M. BREWER, this is the most common Sparrow found near Boston during the winter, inhabiting in large flocks the low bushes and grass in marshy, sheltered situations, much of the time very quiet and inactive.

A specimen sent by him in spirits has the palate ascending obliquely, and of the usual appearance, the upper mandible beneath with a middle prominent line and two broad ridges, which at the base form a hard flattened prominence, similar to that of the true Bunting, but not so elevated. Tongue $4\frac{1}{4}$ twelfths long, about as deep as broad, fleshy and convex at the base above, channelled toward the end, which is pointed and horny. Width of mouth $3\frac{1}{2}$ twelfths. Œsophagus 2 inches 1 twelfth long, dilated on the middle of the neck into a large crop, 5 twelfths in width, which winds round into the hollow of the neck behind. Stomach roundish, placed obliquely, 6 twelfths long, $7\frac{1}{2}$ twelfths broad; its lateral muscles very large, as are the tendons; the epithelium dense and longitudinally rugous. The stomach filled with seeds and sand, and the crop partially filled with the former. The intestine is 7 inches long, from 2 twelfths to 1 twelfth in width; the cœca 2 twelfths long $\frac{1}{4}$ twelfth width, 10 twelfths from the extremity.

The trachea is 1 inch 8 twelfths long, nearly 1 twelfth in breath; its rings 75, firm and considerably flattened. Inferior laryngeal muscles small. Bronchi of about 12 half rings.

SNOW BIRD.

FRINGILLA HYEMALIS, LINN.

PLATE XIII. VOL. I. p. 72.

It now appears that the principal breeding places of this species are in the range of the Alleghany Mountains, and their spurs, commencing in the State of Virginia, and continuing eastward. It is merely a summer resident in the Fur Countries, where it is not common, and where it was not met with by Dr RICHARDSON beyond the 57th parallel. I did not find it in Labrador, nor does it occur on the Rocky Mountains, where it seems to be represented by *Fringilla oregona*. My friend Dr BACHMAN has seen it in the breeding season (June) in the mountainous districts of Virginia, in considerable numbers. At this season it has a sweet note. In July the young were full grown, and kept among the huckle-berry bushes. It arrives in South Carolina in

November, and departs in March. When kept in aviaries in that State, it appears to suffer much from heat, bathing frequently to cool itself, but it never breeds, and is always silent.

My friend Dr T. M. BREWER of Boston, has sent me the following account of the nest and eggs, as found among the mountains in the Oswego county, in the State of New York, by Mr EDWARD APPLETON:—
 “The nests were all situated on the ground, some of them having concealed entrances in the same manner as is frequently practised by the Song Sparrow, and their complement of eggs was four. The external diameter of the nest given me was four and a half inches, its internal two and a half, the internal depth an inch and a half, the external about two. It is composed of stripes of bark, straw roots, and horse hair, lined with fine moss and the soft hair of small quadrupeds. In size and appearance it is not unlike the nest of the common *Fringilla melodia*. The eggs measure six-eighths of an inch in length, five-eighths in breadth, and are more nearly spherical than any of the eggs of this genus with which I am acquainted. Their ground-colour is yellowish-white, thickly covered with small dots of a reddish-brown colour; in the broadest part of the egg the spots are more numerous and confluent, forming a crown or belt, but at the end they are more sparse.

The palate ascending, the upper mandible beneath with a hard convex protuberance, less prominent than in the Snow Bunting, and three ridges proceeding from it; the lower mandible deeply concave. Tongue 5 twelfths long, narrow, deep, grooved above, tapering to a horny point, which is slightly slit. Œsophagus $2\frac{1}{4}$ inches long, dilated on the middle of the neck to $4\frac{1}{2}$ twelfths. Stomach rather small, roundish, 5 twelfths long, $4\frac{1}{2}$ twelfths broad; its lateral muscles large and distinct, its cuticular lining dense and longitudinally rugous. It contains seeds and numerous particles of quartz. Intestine 8 inches long, from 2 twelfths to 1 twelfth in width. Cæca 2 twelfths long, 1 twelfth wide, and 1 inch distant from the extremity.

Trachea 1 inch 9 twelfths long, scarcely 1 twelfth in breadth; its rings about 70, rather feeble; bronchial half rings about 15; the four pairs of inferior laryngeal muscles very large.

SONG SPARROW.

FRINGILLA MELODIA, WILS.

PLATE XXV. Vol. I. p. 126.

MY friend Dr T. M. BREWER of Boston has sent me the following remarks:—"I think there is good reason for believing that two distinct species are confounded under the name of *Fringilla melodia*. I have long observed the striking differences exhibited by eggs supposed to belong to this bird, and within a few months Mr CABOT had pointed out to me a uniform difference of plumage, which always accompanies this difference of the eggs. One of these supposed species had been painted by WILSON. It differs in having its breast more universally spotted, while that of the other is much less so, except in the centre, where a number of confluent spots form a distinct star. This last bird is the one painted by you, and is by far the most common. The former builds its nest in bushes or young trees at least two feet from the ground. The most common resort for this purpose is a young cedar tree, where the branches are very thick, where I have twice found an arched entrance leading to it, and a cover to the nest, made by weaving straw and hay among the thick foliage of the tree. The other always builds on the ground. I have found in the nest of the former six eggs, but never more than five in that of the latter. The egg of WILSON'S bird is larger and less pointed at the small end, the ground-colour, so far as it can be seen, appears to be white, but the whole of the egg is so thickly spotted with blotches of a rusty brown as to appear almost wholly of that colour. The eggs of your bird are of a less size, the smallest end obtuse, the ground-colour of a distinct light green, and perceptible over the whole egg, not even excepting the larger end, where the spots of lilac-brown, with which the egg is spangled over, are the thickest. These differences are uniform. There is still another, which should not be overlooked. The former is always known to breed apart from the habitations of man, in old orchards and pastures; the other is often found to build its nest in our gardens, and not unfrequently under our windows. Such coincident differences cannot be merely casual, and therefore I do not see why birds differing in plumage, nest, and eggs, as well as in habits, should not be regarded as distinct species."

SWAMP SPARROW.

FRINGILLA PALUSTRIS, WILS.

PLATE LXIV. Vol. I. p. 331.

THIS bird is abundant, in company with the Tree Sparrow, during winter, about Boston. It is not mentioned by Dr RICHARDSON as being an inhabitant of the Fur Countries, although I found it plentiful in Labrador and Newfoundland, as well as in all the districts suited to its habits between these countries and the Texas. Dr TOWNSEND informs me that it is found on the Missouri, but was not observed beyond the head-waters of that river.

BLUE GROSBEAK.

FRINGILLA CÆRULEA, BONAP.

PLATE CXXII. Vol. II. p. 140.

THE Blue Grosbeak extends to the Rocky Mountains, on which it has been procured by Dr TOWNSEND. I found it abundant and breeding in the Texas. In confinement it suffers greatly during the moult. One which is now in my possession in Edinburgh, and which was raised from the nest, obtained its full summer plumage in the month of September, but was about two weeks nearly naked. The feathers of the wings and tail fell gradually off whilst those of the other parts were growing, and in about a fortnight more, when the bird was about one year old, it became of a beautiful blue. This bird frequently sings in the night, and before dawn. It is extremely tame, goes out and returns to its cage, generally perches on the head-dress of my wife, and on the bare heads of the other members of the family, alights on the table, and feeds on almost any thing given to it. It is curious that if a gold or silver coin be thrown on the table, while he is near, he goes to it, takes it up in his bill, and tosses it about apparently with pleasure. After bathing he invariably goes to the fire, and perches on the fender,

to dry himself. Two or three other birds have been put into the cage with him, but were instantly attacked. He has now and then been seen to hold his food in his claws like a hawk.

PINE FINCH.

FRINGILLA PINUS, WILS.

PLATE CLXXX. Vol. II. p. 445.

I HAVE thought it rather strange that this species is not mentioned in the Fauna Boreali-Americana, as occurring in the Fur Countries, as I found it abundant in Labrador. Dr TOWNSEND also procured specimens of it along the shores of the Columbia River. Nothing, however, is yet known of its nest, eggs, or habits during the breeding season.

The bill of this species is very similar to that of the Linnets, being regularly conical, a little compressed; both mandibles equal in size, and of the same length. The roof of the mouth is deeply and broadly concave, with two ridges; the palate ascending, with two prominent ridges; the posterior aperture of the nares linear, papillate on the edges; the lower mandible much involute. The tongue is 4 twelfths long, deeper than broad, emarginate and papillate at the base, concave above toward the point, which is acute. Width of mouth $3\frac{1}{2}$ twelfths. Œsophagus 1 inch 9 twelfths long, enlarging into a kind of cross 4 twelfths in width, on the right side of the neck, and extending behind so that its edge projects on the other side, as in the Crossbills and Pine Grosbeak; it then contracts to 2 twelfths; the proventriculus $2\frac{1}{2}$ twelfths in breadth. Stomach roundish, moderately compressed, its length and breadth $4\frac{1}{2}$ twelfths, the lateral muscles well developed, the tendons large, the epithelium tough and longitudinally rugous. It contains quartz-sand and remains of seeds. Intestine $10\frac{1}{2}$ inches long, from $1\frac{1}{4}$ twelfth to $\frac{3}{4}$ twelfth in width; cœca 1 twelfth long, $\frac{1}{4}$ twelfth broad, 1 inch distant from the extremity.

Trachea 1 inch 2 twelfths long, scarcely $\frac{3}{4}$ twelfth in breadth, moderately flattened, firm; the rings about 60; bronchial half rings 10; inferior laryngeal muscles large.

AMERICAN GOLDFINCH.

FRINGILLA TRISTIS, LINN.

PLATE XXXIII. VOL. I. p. 172.

THIS interesting species, which is so nearly allied to several others of the same family, is found on the shores of the Columbia River. It is mentioned by Dr RICHARDSON as visiting the Fur Countries, where it arrives at a very late period, as it retires in September, after a stay of less than three months. The eggs described by that most zealous naturalist agree in every particular with some now before me, which I collected myself. They measure a trifle more than five and a half eighths in length, by $4\frac{1}{2}$ eighths in breadth, and are very obtuse at one end and sharp at the other. My friend Dr BACHMAN informs me, that "although this bird is not uncommon in the maritime districts of South Carolina during winter, it has not been observed to breed nearer than one hundred miles from Charleston. Dr T. M. BREWER states, that "it remains through the year at Boston, breeds in large numbers, and is seen during winter in great flocks, in dull plumage, constantly flitting about."

The palate is moderately ascending, the anterior part of the roof of the mouth deeply and broadly concave, the lower mandible very narrow. The tongue is $3\frac{1}{2}$ twelfths long, emarginate and papillate at the base, grooved above, horny and pointed. Œsophagus 1 inch 9 twelfths long, dilated on the middle of the neck to $4\frac{1}{2}$ twelfths, and lying on the right side and behind. Proventriculus 4 twelfths in length and 2 twelfths in breadth, stomach very small, elliptical, 5 twelfths long, $3\frac{1}{2}$ twelfths broad, the lateral muscles moderate. Intestine $6\frac{1}{4}$ inches long, its greatest width 1 twelfth. Cæca 2 twelfths long, $\frac{1}{4}$ twelfth broad, 7 twelfths from the extremity.

Trachea 1 inch 4 twelfths long, $\frac{3}{4}$ twelfth broad; its rings about 60. Bronchi very narrow, of about 12 rings.

COMMON CROSSBILL.

LOXIA CURVIROSTRA, LINN.

PLATE CXCVII. Vol. II. p. 559.

THE following note respecting this bird is from my friend Dr T. M. BREWER. "Among a number of eggs which I obtained from Coventry, Vermont, there was one of the Common Crossbill, a description of which, it never having been before procured by any naturalist, to my knowledge, and consequently never having been described, will, I doubt not, be acceptable. It measures thirteen-sixteenths of an inch in length, by three-eighths in breadth. At the large end it is broadly rounded, and the smaller end forms a complete and abrupt cone. The ground-colour is a greenish-white, pretty thickly covered, more especially at the large end, with very brown spots. Crossbills appeared in large flocks, in the winter of 1832, in the pine woods near Fresh Pond, and with them two or three White-winged Crossbills. They were very noisy, rarely quiet for many moments at a time. Before this winter I have been told that the White-wing was the most common, though never very abundant.

TOWHEE BUNTING.

FRINGILLA ERYTHROPHALMA, LINN.

PLATE XXIX. Vol. I. p. 150.

IN an adult male preserved in spirits, the palate is ascending and deeply concave ; its two longitudinal ridges uniting in front, where there is a considerable soft prominence ; the upper mandible beneath flat, with a median ridge and two lateral, broad and flattened ridges. The width of the mouth is $5\frac{3}{4}$ twelfths. Posterior aperture of the nares linear, and strongly papillate, as in all the species. Tongue $5\frac{1}{2}$ twelfths long, fleshy above, toward the end horny, convex, and with a medi-

an groove. Œsophagus 2 inches 4 twelfths long, its greatest width 3 twelfths. Stomach a strong muscular gizzard, 6 twelfths long, 10½ twelfths broad; the epithelium dense and longitudinally rugous. Contents of stomach, seeds and husks of barley. Intestine 9¼ inches long, 2 twelfths in width; the cœca 4½ twelfths long, 1½ twelfth in breadth, 1½ inch from the extremity; rectum very slightly dilated.

Trachea 1 inch 7½ twelfths long, 1 twelfth in breadth; its rings 75, besides 2 dimidiate rings. Bronchi very slender, of 15 half rings. The muscles as in all the other species.

FOX-COLOURED SPARROW.

FRINGILLA ILIACA, MERREM.

PLATE CVIII. Vol. II. p. 58.

THIS delightful songster is found abundantly on the Columbia River. It breeds in the woody districts of the Fur Countries, up to the 68th parallel. About Boston it is abundant during summer, generally skulking in the bushes and avoiding observation. It passes through Massachusetts on its way south in the first week in November, and returns about the 10th of April. It is very easily approached, and its note is extremely beautiful.

In this species the palate is moderately ascending, deeply concave, with two prominent lines, at the meeting of which anteriorly is a small soft projection. The upper mandible is moderately concave, with a prominent middle line and two lateral ridges. The width of the mouth is 5½ twelfths. The tongue is 4 twelfths long, compressed, channelled above, horny, rather obtuse, somewhat spoon-shaped at the point, as in the Pine Finch. Œsophagus 2½ inches long, its greatest width 4½ twelfths, being slightly dilated towards the lower part of the neck. The stomach is roundish, 7 twelfths long, 6 twelfths broad; its lateral muscles rather strong, the epithelium tough, longitudinally rugous. Intestine 9½ inches long, from 3 twelfths to 2 twelfths in width: cœca 3¼ twelfths long, ½ twelfth in width, 1 inch distant from the extremity. Trachea 1 inch 8 twelfths long, 1 twelfth in breadth; the rings 72, and 2 dimidiate, firm; bronchial rings about 15; the muscles as usual.

ROSE-BREASTED GROSBEAK.

FRINGILLA LUDOVICIANA, BONAP.

PLATE CXXVII. VOL. II. p. 166.

ALTHOUGH this beautiful bird is common about the mouths of the Mississippi in spring, when on its way northward, it is never seen in South Carolina. When proceeding to the Texas in April 1837, I found it so abundant wherever we landed that hundreds might have been procured. Both sexes were in perfect plumage. Dr TOWNSEND observed it on the Missouri; and Dr T. M. BREWER informs me that he shot a fine male at Fresh Pond, near Boston, in the summer of 1832, and knew of two or three females killed afterwards.

In an adult male from Texas, the palate is deeply concave in the middle, with two prominent longitudinal ridges, forming a large projection at their meeting anteriorly; it ascends obliquely, is gradually narrowed, and beyond the nostrils becomes horizontal, the upper mandible beneath being concave, with three strong longitudinal ridges and four grooves; the lower mandible is very deeply concave. The posterior aperture of the nares is 3 twelfths long, oblongo-linear, margined with papillæ. The width of the mouth is 6 twelfths. The tongue is $5\frac{3}{4}$ twelfths long, emarginate and papillate at the base, convex and fleshy above, as high as broad, horny beneath, and tapering to a point. Œsophagus 3 inches 2 twelfths long, nearly uniformly 3 twelfths wide. Stomach small, roundish, compressed, $\frac{1}{2}$ inch long, and of the same breadth; its muscles distinct and of moderate thickness, the tendons large, the epithelium thin, tough, longitudinally rugous, and of a reddish-brown colour. The contents of the stomach small seeds and particles of quartz. Intestine $9\frac{1}{2}$ inches long, its width from 2 twelfths to $1\frac{1}{2}$ twelfth; cæca $1\frac{1}{2}$ twelfth long, $\frac{1}{2}$ twelfth in breadth, 1 inch distant from the extremity.

Trachea 2 inches 1 twelfth long, from 1 twelfth to $\frac{1}{2}$ twelfth in breadth; the rings about 70, firm, considerably flattened. Bronchi of about 15 rings. Muscles as usual in this family; the inferior laryngeal large. There are very slender elongated salivary glands, extending to beyond the articulation of the jaw.

CARDINAL GROSBEAK.

FRINGILLA CARDINALIS, BONAP

PLATE CLIX. Vol. II. p. 336.

THIS species is very abundant in Texas, where, as in our Southern States, it is a constant resident. Dr TOWNSEND has observed it on the waters of the Upper Missouri. According to Dr T. M. BREWER, it is but a chance visitor in Massachusetts during summer, indeed so rare, that he never knew certainly but of one pair which bred in the Botanical Garden, Cambridge, about six years ago, and departed in the fall, with their young. The eggs measure one inch and half an eighth in length, five-eighths and a third in breadth, and are thus elongated, although the smaller end is well rounded.

In a male preserved in spirits, the palate ascends very abruptly, and has two very elevated soft ridges, at the junction of which anteriorly is a prominent soft space, on the lower mandible beneath are three longitudinal ridges with four grooves, of which the two lateral are much wider. The tongue is $4\frac{1}{2}$ twelfths long, emarginate and papillate at the base, convex and fleshy above, as high as broad, horny beneath, tapering to a point. The width of the mouth is 6 twelfths. The lower mandible is broader than the upper, exceedingly strong, and very deeply concave. The œsophagus is 2 inches 5 twelfths in length, 3 twelfths in width. The stomach pretty large, roundish, $7\frac{1}{2}$ twelfths long, 7 twelfths broad; its lateral muscles strong, the tendons large, the epithelium very dense, longitudinally rugous, brownish-red. The stomach is filled with seeds, which have all been husked. Intestine $10\frac{1}{4}$ inches long, its width from 3 twelfths to 2 twelfths. Cœca 3 twelfths long, $\frac{1}{2}$ twelfth broad, 1 inch distant from the extremity. Cloaca ovate, 4 twelfths in width.

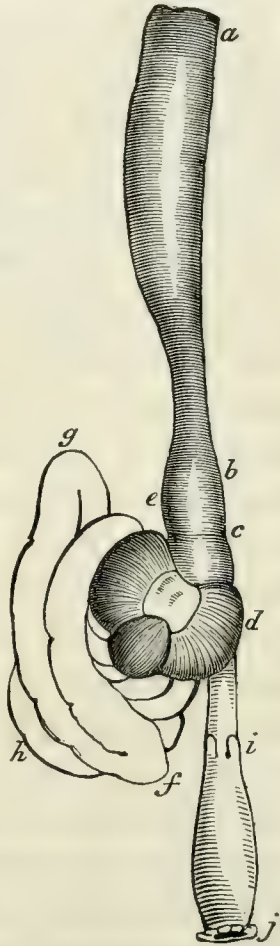
Trachea 1 inch 10 twelfths long, from $1\frac{1}{4}$ twelfth to $\frac{1}{2}$ twelfth in breadth; its rings 52; the muscles as in the other species. Bronchial half rings about 12.

WHITE-CROWNED SPARROW.

FRINGILLA LEUCOPHRYS, BONAP.

PLATE CXIV. Vol. II. p. 88.

THE lower mandible is broader than the upper, and deeply concave ; the palate ascending, with two longitudinal ridges, forming a soft protuberance at their junction anteriorly ; the upper mandible beneath with three ridges and four grooves. Tongue 4 twelfths long, deeper than broad, with a median groove above, and tapering to an acute point. Œsophagus, *a b c*, 2 inches 3 twelfths in length, its greatest width when dilated 5 twelfths. Proventriculus, *b c*, 3 twelfths in breadth. Stomach, *d e*, placed obliquely, 6 twelfths long, $7\frac{1}{2}$ twelfths broad, its lateral muscles large and distinct, the lower muscle also prominent, but thin, the epithelium as usual, with strong longitudinal rugæ. Intestine, *e f g h i j*, 8 inches long, from 2 twelfths to $1\frac{1}{2}$ twelfth in breadth ; cæca, *i*, $1\frac{1}{2}$ twelfth long, and $\frac{1}{2}$ twelfth in breadth, 9 twelfths distant from the extremity, *j*. Trachea 1 inch 8 twelfths long, the rings 70 with 2 dimidiate, pretty firm and a little flattened. Bronchial half rings about 12. Muscles as usual, the inferior laryngeal moderately large.



SAVANNAH FINCH.

FRINGILLA SAVANNA, WILS.

PLATE CIX. VOL. II. p. 63.

THE Savannah Finch was found by Dr TOWNSEND on the Rocky Mountains and about the Columbia River, where it was common. It extends along the coast of the Gulf of Mexico to within the Texas. As it is plentiful in Labrador, it might have been expected to move still farther northward in summer, but no mention is made of it by Dr RICHARDSON. The situation and size of the nests, as well as the colour of the eggs of this bird, found by myself or the members of my party, differed from those examined in Maine, or in any other part of the United States. The nests were deeply sunk in the moss, always placed under the cover of creeping branches of low firs, and much more bulky than usual, although composed of the same materials. The eggs in most instances were of an extremely pale-greenish hue, slightly spotted and splashed with light umber. They measured $6\frac{1}{2}$ eighths of an inch in length, and rather more than four and a half eighths in breadth. I am inclined to think that my friend Mr NUTTALL mistook the notes of another species for those of the Savannah Finch, and, as he says, they were heard in Georgia in the month of March, I suspect they must have been those of *Fringilla Bachmanii*, some of which are indeed "as fine and lively as those of the Canary, loud, echoing, and cheerful." The notes of the present species, as he afterwards more aptly says, are "almost exactly similar to the chirpings of a cricket, so that it might easily be mistaken for that insect." I feel the more confident of the correctness of this suggestion, first, because Mr NUTTALL has in that paragraph described the *habits* of *F. Bachmanii* perfectly, in saying that "on being suddenly surprised they flew off at a little distance, and then, if followed, descended to the ground, and ran and hid closely in the tufts of grass;" and secondly, because the Savannah Finch *never* sings whilst in Georgia or Carolina. It breeds abundantly among the high grass at Chelsea Beach, near Boston.

PAINTED FINCH.

FRINGILLA CIRIS, TEMM.

PLATE LIII. VOL. I. p. 279.

I HAVE nothing to add to my account of the habits of this beautiful species ; but my friend Dr BACHMAN has favoured me with the following very interesting notice regarding its change of plumage, and which is greatly at variance with my report on that subject, as well as those of WILSON and all other writers. “ I have kept these birds for many years in aviaries. The males and females of a year old were of a uniform colour, but I have invariably found them to assume their perfect plumage in the second year. This bird could be easily domesticated and multiplied in Europe, in the manner of the Canary. I have had them to raise three broods of young in the year in confinement. The plumage, however, in this state, was never so brilliant as when wild.”

CHIPPING SPARROW.

FRINGILLA SOCIALIS, WILS.

PLATE CIV. VOL. II. p. 21.

I AM now of opinion that this small species is altogether confined within the range of the United States and a small portion of the eastern adjoining provinces. It does not extend westward beyond the head waters of the Missouri, nor south-westward beyond the Opelousas. None were observed by the members of my party in Texas. The Chipping Sparrow is almost as abundant in our country, as the Domestic Sparrow is in Europe, and it is nearly as familiar, though otherwise different in its habits. Dr BREWER has sent me the following notice respecting it : “ With hardly a single exception, it is the most numerous species in Massachusetts. It does not, however, arrive here so soon by seven

weeks as most of the same genus, *Fringilla melodia* and *F. graminea* having commenced incubation by the time when it makes its appearance. It is one of the most confiding of our visitors, not unfrequently forming its nest among the vines planted as ornaments to our piazzas. In this part of the country there appears to exist a kind of tacit compact between the Chipping Sparrow and the Field Sparrow, by which all the cultivated ground is appropriated to the former, while the wild retired fields and pastures are occupied by the latter, for the purpose of breeding. I have never met with an instance where the two species bred in the same field. The eggs of the Chipping Sparrow measure six-eighths in length by five-eighths in breadth." Probably the reason of the division of the tracts of land above mentioned is, that the Field Sparrow being more shy or retiring, and reaching the same districts at an earlier period, it has the opportunity of choosing such grounds as suit it best, and is afterwards able to maintain its position.

SUMMER RED-BIRD.

TANAGRA ÆSTIVA, GMEL.

PLATE XLIV. VOL. I. p. 232.

I FOUND this species in the Texas about the middle of April, when it was arriving from the south. At this period many of the males were in full plumage, while almost as many were imperfect; but I observed that before we left Galveston, about the middle of May, scarcely one was met with in the latter state; and, although a considerable number reach even our middle Atlantic districts, in a mottled and incomplete livery, it is the opinion of my friend Dr BACHMAN, as well as my own, that the males obtain all the beauty of their colours when about twelve months old. This opinion is founded on the fact, that mottled birds of this species are comparatively but rarely found in the act of breeding. I now feel almost quite certain that too great an extent of time has hitherto been supposed necessary for this bird to acquire its perfect plumage; and this is equally the case with several other species. My

friends Mr HARRIS and Dr TRUDEAU have procured female Summer Red-Birds almost as red as the males. They were obtained while breeding, and I am informed by these gentlemen that such cases are not rare. I also find that I was wrong in saying that this species has no song; for it sings pleasantly during the spring, for nearly half an hour in succession, and, although its notes have some resemblance to those of the Red-eyed Vireo, they are sweeter and more varied, surpassing, indeed, those of the Baltimore Bird, and nearly equalling those of the Orchard Oriole.

The palate is ascending, concave in the middle, with two ridges, and a small soft prominence in front; the upper mandible has three ridges beneath, of which the lateral are broader. The posterior aperture of the nares is linear, and papillate on the edges. The tongue is 7 twelfths long, somewhat triangular, sagittate and papillate at the base, fleshy and convex above, the point horny, thin-edged and lacerated. The width of the mouth is $5\frac{1}{2}$ twelfths. The œsophagus is 2 inches 10 twelfths long, its greatest width 4 twelfths. The stomach is very small, broadly elliptical, $5\frac{1}{2}$ twelfths long, 5 twelfths in breadth; its lateral muscles rather small; the epithelium thin, tough, and longitudinally rugous. Intestine $7\frac{1}{4}$ inches long, from 2 twelfths to 1 twelfth in breadth; cœca extremely small, scarcely distinct from the intestine. The trachea is 2 inches long, about 1 twelfth in breadth; its rings about 75. Bronchial half rings about 15. The muscles are as usual; the inferior laryngeal very small. Salivary glands very slender, extending to behind the articulation of the lower jaw.

YELLOW-BILLED CUCKOO.

COCYZUS AMERICANUS, BONAP.

PLATE II. VOL. I. p. 18.

WHILST at Charleston in South Carolina, in the early part of June 1837, I was invited by JAMES SMITH RHETT, Esq., residing in the suburbs of that city, to visit his grounds for the purpose of viewing the nest of this bird. This I did in company with my friend Dr SAMUEL WILSON, and we found ourselves highly gratified, as we were enabled to make the following observations :—

A nest, which was placed near the centre of a tree of moderate size, was reached by a son of the gentleman on whose ground we were. One of the old birds, which was sitting upon it, left its situation only when within a few inches of the climber's hand, and silently glided off to another tree close by. Two young cuckoos nearly able to fly scrambled off from their tenement among the branches of the tree, and were caught by us after a while. The nest was taken, and carefully handed to me. It still contained three young Cuckoos, all of different sizes, the smallest apparently just hatched, the next in size probably several days old, while the largest, covered with pin-feathers, would have been able to leave the nest in about a week. There were also in the nest two eggs, one containing a chick, the other fresh or lately laid. The two young birds which escaped from the nest, clung so firmly to the branches by their feet, that our attempts to dislodge them were of no avail, and we were obliged to reach them with the hand. On now looking at all these young birds, our surprise was indeed great, as no two of them were of the same size, which clearly shewed that they had been hatched at different periods, and I should suppose the largest to have been fully three weeks older than any of the rest. Mr RHETT assured us that he had observed the same in another nest placed in a tree within a few paces of his house, and which he also shewed to us. He stated that *eleven* young Cuckoos had been successively hatched and reared in it, by the same pair of old birds, in one season, and that young birds and eggs were to be seen in it at the same time for many weeks in succession.

On thinking since of this strange fact, I have felt most anxious to discover how many eggs the Cuckoo of Europe drops in one season. If it, as I suspect, produces, as our bird does, not less than eight or ten, or what may be called the amount of *two* broods, in a season; this circumstance would connect the two species in a still more intimate manner than theoretical writers have supposed them to be allied. And if our Cow-pen Bird also drops eight or ten eggs in a season, which she probably does, that number might be considered as the amount of two broods, which the Red-winged Starling usually produces.

I requested Mr RHETT to write me a letter on the subject, which he did, but, to my great mortification, I am unable to find it. Having mentioned the above facts to my friend Dr T. M. BREWER, and desired him to pay particular attention to these birds while breeding, he has sent me the following note.

“ The fact which you intimated to me last July I have myself observed. The female evidently commences incubation immediately after laying her first egg. Thus I have found in the nest of both species of our Cuckoos one egg quite fresh, while in another the chick will be just bursting the shell; and again I have found an egg just about to be hatched while others are already so, and some of the young even about to fly. These species are not uncommon in Massachusetts, where both breed; and both are much more numerous some years than others.”

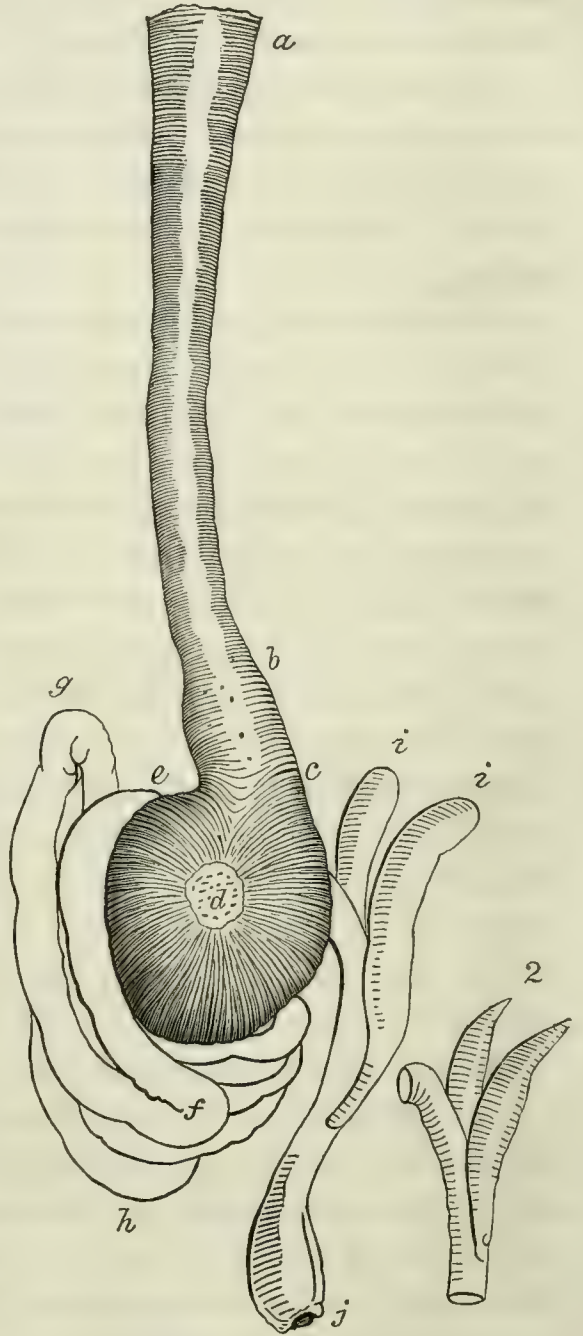
I found the Yellow-billed Cuckoo plentiful and breeding in the Texas; and it is met with, on the other hand, in Nova Scotia, and even in Labrador, where I saw a few. It has been observed on the Columbia River by Dr TOWNSEND. No mention is made of it in the Fauna Boreali-Americana. Many spend the winter in the most southern portions of the Floridas.

The eggs measure one inch three and a half eighths in length, seven and a quarter eighths in breadth, and are, as already described, of a uniform greenish-blue colour. They are longer, as well as lighter in their general colour, than those of the Black-billed Cuckoo. I must not omit to say that during calm and pleasant nights, the well known notes of this bird frequently fall on the ear of him who may be reposing in his lonely camp, or on that of him who rests on his downy couch. I have often enjoyed this monotonous music in the Floridas, during the winter which I spent there.

In a female of this species preserved in spirits, the length to the

end of the tail is $11\frac{3}{4}$ inches; to end of wings 9, to end of claws $8\frac{1}{4}$; extent of wings $15\frac{1}{2}$; wing from flexure $5\frac{8}{12}$; tail $5\frac{7}{12}$.

The roof of the mouth is flat, and covered with a transparent skin, as in Goatsuckers and Owls; the upper mandible very narrow towards the end, and slightly concave, with three longitudinal ridges; the posterior aperture of the nares oblong behind, linear before, only 4 twelfths long; the width of the mouth 7 twelfths; the lower mandible channelled. The tongue is very slender, $10\frac{1}{2}$ twelfths long, emarginate at the base, with long slender papillæ, its breadth at the middle only $1\frac{1}{4}$ twelfth, horny in the greater part of its length, with the edges lacerated, the tip rather acute and slight. Œsophagus, *abc*, 3 inches 7 twelfths long, at its commencement 6 twelfths in width, gradually diminishing to 4 twelfths; the proventriculus, *bc*, 5 twelfths in breadth. The stomach, *cde*, very large, broadly elliptical, compressed, 1 inch 2 twelfths long, 1 inch in breadth, and when distended seeming to occupy almost the whole cavity of the abdomen; in which respect, as well as in its structure, it is precisely similar to *Cuculus canorus*; its walls are extremely thin, its muscular coat being formed of a single series of small fasciculi. It is turgid with the remains of insects, among which



is a great quantity of hairs, some of them adhering to, or thrust into the inner coat, which is soft, destitute of rugæ, and of a bright red colour. The proventricular glands are large, cylindrical, $1\frac{1}{4}$ twelfth in length and about $\frac{1}{4}$ twelfth in breadth, forming a belt about 9 twelfths in breadth. The pylorus is extremely small, with a thickened margin. The intestine, *efghj*, is $14\frac{3}{4}$ inches long, $3\frac{1}{4}$ twelfths in width, diminishing to $2\frac{1}{2}$ twelfths. The cœca, *ii*, 1 inch 8 twelfths long, $3\frac{1}{2}$ twelfths in width for 1 inch 5 twelfths, its extremity obtuse. Cloaca *j*, oblong, about $4\frac{1}{2}$ twelfths in width.

Trachea $2\frac{1}{2}$ inches long, narrow, roundish, flattened toward the lower part, of 60 rings, with five dimidiate rings. The lateral muscles extremely slender, as are the sterno-tracheal. There is one pair only of very slender inferior laryngeal muscles. Bronchi of about 12 half rings.

BLACK-BILLED CUCKOO.

COCYZUS ERYTHROPHthalmus, BONAP.

PLATE XXXII. VOL. I. p. 170.

THE observations respecting the curious manners of our Yellow-billed Cuckoo, the subject of the last article, might be repeated here, for the present species is similar in this respect, as has been ascertained by Dr T. M. BREWER of Boston. Its eggs are not only smaller than those of the other species, but also rounder, and of a much deeper tint of green; they measure one inch and half an eighth in length, and seven-eighths in breadth.

The Black-billed Cuckoo is rare in all the Southern States, my friend Dr Bachman never having seen it in the maritime districts of South Carolina, nor myself in any part of Georgia, although Wilson, who first distinguished this species, says that Mr Abbot of Georgia found it there, and was well aware of its being distinct from the yellow-billed species. I met with it in Texas, arriving from the south; and found some individuals in winter, in the central parts of the southern districts of Florida. On the other hand, it is not uncommon in Nova

Scotia and Newfoundland, and we saw a few in Labrador, amid the clumps of low trees a few miles from the shore of the Gulf in secluded and pleasant valleys. It does not appear that it reaches the Fur Countries, or the Rocky Mountains, as no mention is made of it by Dr RICHARDSON, or Dr TOWNSEND.

A male preserved in spirits measures to end of tail 12 inches, to end of wings $8\frac{1}{2}$, to end of claws 8; extent of wings $15\frac{1}{2}$; wing from flexure $5\frac{1}{2}$; tail $5\frac{1}{4}$.

The interior of the mouth presents the same appearances as that of the other species, its width 7 twelfths; the tongue 8 twelfths long, of the same form, but black, as is the whole of the mouth. The œsophagus is 6 twelfths in width at the commencement, and gradually contracts to 3 twelfths; but the proventriculus is 6 twelfths in breadth; its glands smaller than in the other species, and forming a belt $\frac{1}{2}$ inch in breadth. The stomach is similar to that of the Yellow-billed Cuckoo; its tendons about 4 twelfths in length, and 3 twelfths in breadth; the inner surface soft, with faint longitudinal rugæ, although quite smooth. Pylorus small, with a semilunar margin. The lobes of the liver are very unequal, the left 5 twelfths, the right 10 twelfths in length. The contents of the stomach are remains of insects, with a few short hairs scattered here and there over its internal surface. The intestine is $11\frac{1}{4}$ inches long, very slender, its width from $2\frac{1}{2}$ twelfths to $1\frac{1}{2}$ twelfth; the cloaca oblong, 5 twelfths in width; the cœca, Fig. 2. p. 522, 1 inch 1 twelfth long, their greatest width about the middle $2\frac{1}{2}$ twelfths, narrowed toward the extremity. The trachea is 2 inches 2 twelfths long, moderately flattened, from $1\frac{1}{2}$ twelfth to 1 twelfth in breadth; its rings 58, with 5 additional dimidiate rings. Bronchi of about 10 half rings. The muscles as in the other species.

IVORY-BILLED WOODPECKER.

PICUS PRINCIPALIS, LINN.

PLATE LXVI. VOL. I. p. 341.

I HAVE only to add to what I have said of the habits and distribution of this species, that I found it very abundant along the finely wooded margins of that singular stream, called "Buffalo Bayou," in the Texas, where we procured several specimens.

Two of these, preserved in spirits, have afforded an opportunity of making the following observations, the value of which will be estimated by those interested in this branch or basis of ornithology, which the ignorant would have us to believe of no value; as if in the description of a city, an account of the walls, windows, roofs and steeples, could afford us a perfect idea of the domestic economy of its inhabitants.

The length to end of tail is $19\frac{1}{2}$ inches, to end of wings $16\frac{1}{2}$, to end of claws 15; wing from flexure 10; tail $9\frac{3}{4}$.

The width of the mouth is 1 inch. The bill, Fig 1, *a b*, p. 528, is much longer than the head, straight, robust, its horny covering of extremethickness and solidity. It is broader than high at the base, in the proportion of 1 inch to 8 twelfths. The upper mandible, *a*, has its dorsal outline very slightly arched and deflected, the ridge narrow, the lateral ridge at the base equidistant from the median ridge and the margin, running parallel with the former, and passing out at the margin at the distance of 10 twelfths from the tip; the space between the ridges concave, the margins overlapping and obtuse; the tip wedge-shaped and truncate. The lower mandible, *b*, has the angle of moderate length and width, the dorsal line ascending and very slightly convex, the ridge narrow with a broad groove on each side, beyond which the sides become erect and convex, the edges very broad, for two-thirds of their length roundish, afterwards flattened, the tip wedged-shaped, and abrupt. The gape-line is almost straight.

The roof of the mouth is somewhat convex: there are upon it two longitudinal papillate ridges, meeting anteriorly to the palatal slit, whence to the tip is a median groove, at the anterior extremity of which is a small hole; the upper mandible is but slightly concave. The

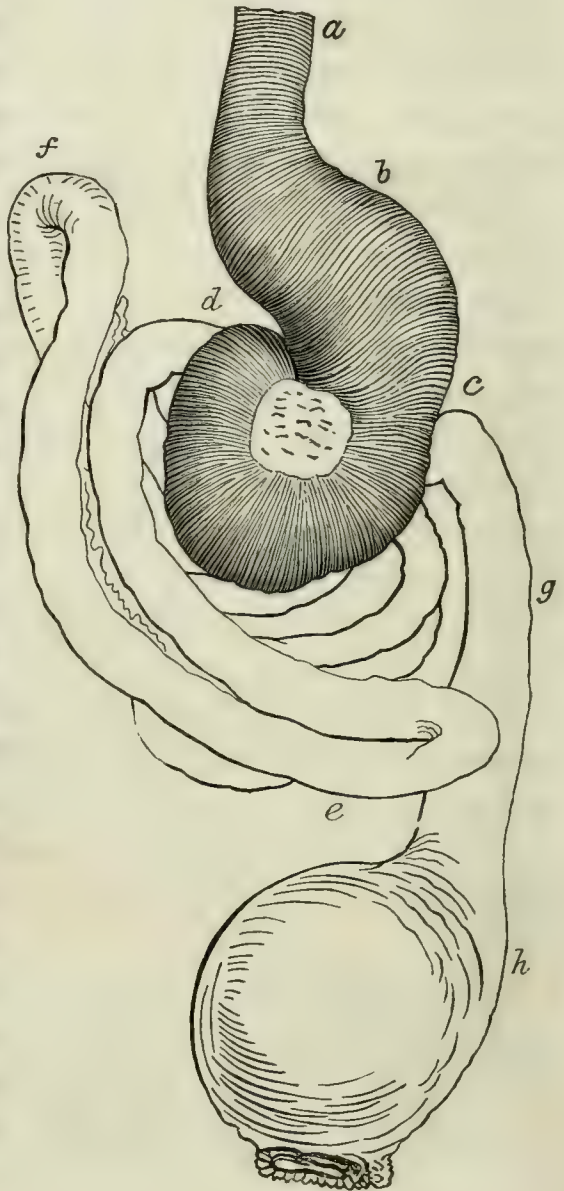
posterior aperture of the nares is oblongo-linear, margined with acute papillæ, the space between it and the ridges also papillate.

The nostrils are oblong, 3 twelfths in length, $1\frac{1}{2}$ twelfth in height, entirely covered by the bristly reversed feathers. The aperture of the eye is $4\frac{1}{2}$ twelfths in width. That of the ear horizontally oblong, 35 twelfths in length, and 2 twelfths in height.

The heart is of moderate size, broadly conical, 1 inch 2 twelfths long, 1 inch 1 twelfth in breadth at the base. The liver is very small, the right lobe much larger than the left, the former being 11 twelfths long and 1 inch broad, while the latter is $10\frac{1}{2}$ twelfths long and 7 twelfths in breadth. There is no gall-bladder.

The œsophagus, *abc*, is $6\frac{1}{2}$ inches long, and of the nearly uniform width of 6 twelfths. On entering the thorax, at *a*, it curves considerably to the left side, and becomes very muscular; the proventriculus, *bc*, has a breadth of $7\frac{1}{4}$ twelfths. The stomach, *cd*, is of moderate size, of a broadly elliptical form, directed a little towards the right, somewhat compressed, 1 inch 2 twelfths long, and of about the same breadth. The muscular fasciculi on the proventriculus are extremely large. On the stomach also they are of great size, and the greatest thickness of its muscular coat is $1\frac{1}{2}$ twelfth. This organ is completely filled with very hard seeds of different kinds, and some pulpy matter, but without any insects or larvæ. Its inner coat is thin, dense, very tough, nearly smooth, and of a dusky brown colour. The proventricular

Fig. 1.



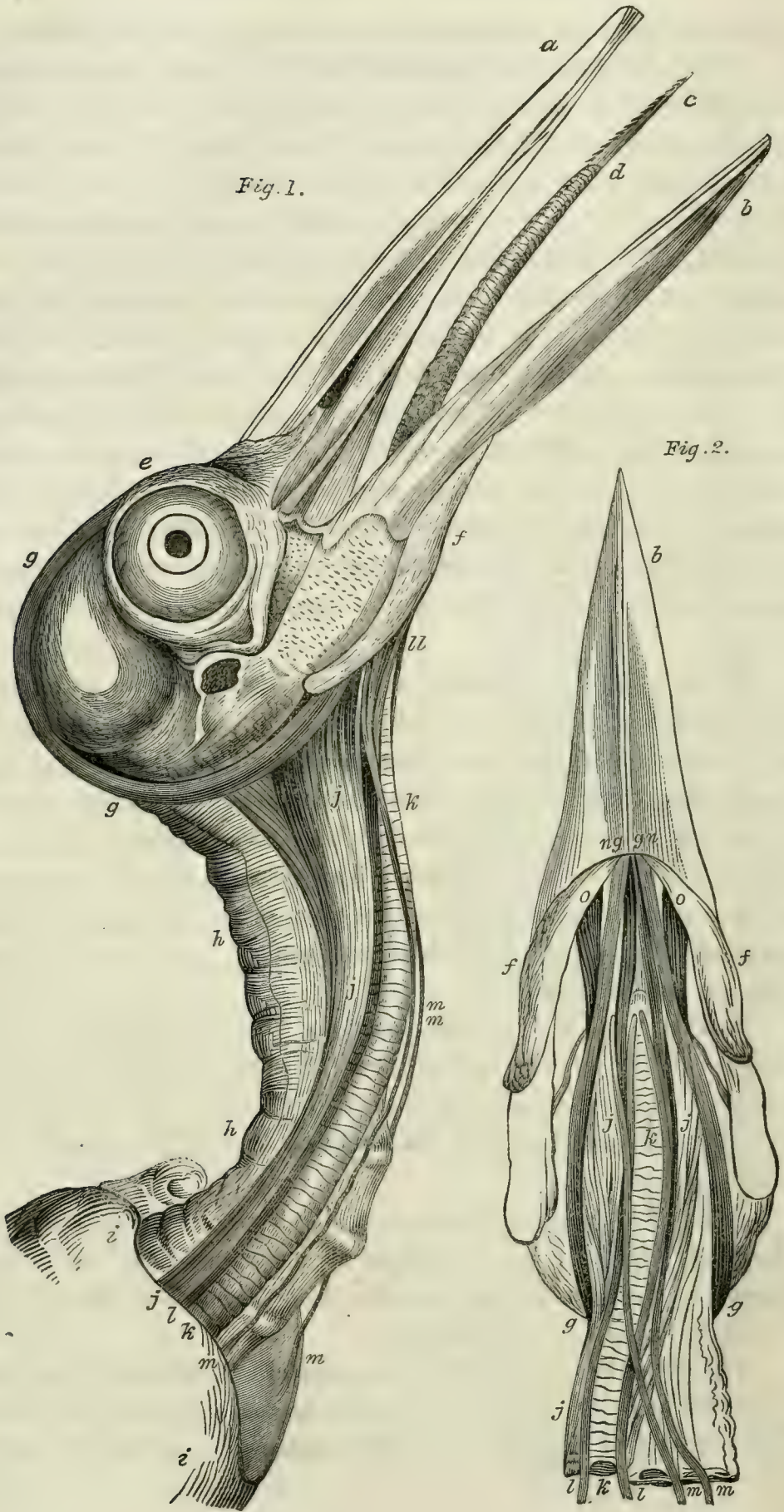
glandules, which are very small, form a belt 1 inch in breadth. The intestine, *defgh*, is of moderate length and very wide. The duodenum curves at the distance of $3\frac{1}{4}$ inches. The pylorus is about two-twelfths in width, with an elevated margin, and allows the untritured seeds and other refuse to pass into the intestine, which in some parts is turgid with them. The intestine measures 24 inches in length; its width in the duodenal portion is $3\frac{1}{4}$ twelfths, and so continues to the length of 12 inches, when it gradually enlarges, so as at the commencement of the rectum to be 6 twelfths. The rectum itself, *egh*, continues of that width, and is enlarged into a globular cloaca, *h*, $1\frac{1}{2}$ inch in diameter. The whole intestine is more or less filled with pulpy matter, together with a vast number of grape seeds and others of a much larger size, but all having a strong shell. Hence it appears that the stomach of this Woodpecker is not adapted for pounding very hard substances, and that the seeds of berries and pulpy fruits pass undigested through its intestinal canal. The same remark applies to all the other species examined. There are *no traces of caeca*.

The apparatus, by means of which the tongue of this and other Woodpeckers is protruded and retracted, is so beautiful a specimen of mechanism, and at the same time so perfectly simple, although by bungling describers it has been rendered almost unintelligible, that it may be expedient to present it here in detail, the more especially that this species, although not that in which it is exhibited in the highest degree of development or extension, is yet, as being one of the largest known, peculiarly well adapted for such an examination. Two figures, therefore, are here introduced.

In Fig. 1 are seen:—The upper and lower mandibles *ab*, the tongue *cd*, the terminal barbed portion *c*, the fleshy part *d*, the orbit and eye *e*, the salivary gland *f*, the hyoid bones *gg*, the neck *hh*, the furcula *ii*, the œsophagus *jj*, the trachea *k*, its lateral muscles *ll*, the cleido-tracheal *mm*.

In Fig. 2 are seen:—The lower mandible *b*, the salivary glands *ff*, the hyoid bones *gg*, the œsophagus *jjj*, the trachea *k*, the lateral muscles *ll*, the cleido-tracheal *mm*, the glosso-laryngeal *nn*, the muscles by which the tongue is exerted *oo*.

The bill of this species, Fig. 1, *ab*, measures 3 inches and 2 twelfths from the angle of the mouth; and the tongue, *cd*, which lies in the broad groove of the lower mandible, reaches to 2 twelfths of the ex-



treme tip, but at the will of the bird may be exerted so as to extend $3\frac{1}{2}$ inches beyond the point of the bill. The tongue itself presents the appearance of a slender fleshy worm-like body, having a middle longitudinal groove on its upper surface, which is transversely wrinkled, and terminated by a slender tapering bony point, of which the margins and part of the upper surface are covered with acicular prickles, which are in some degree moveable and directed backwards, but not capable of being bent outwards, much less in the direction of the tip of the tongue. The length of this organ is apparently 2 inches 8 twelfths; but if measured from the base of the basi-hyal bone, only 1 inch 11 twelfths; its breadth at the base $2\frac{1}{2}$ twelfths, slightly tapering to the end of its fleshy part, where it somewhat suddenly contracts, so as to have a breadth of little more than 1 twelfth. The length of the horny tip is 9 twelfths. The tongue at the base is entirely destitute of the lobes and papillæ which in other birds give it a sagittate appearance; and there is no uro-hyal bone, which in them slips into a groove along the front of the thyroid bone of the larynx. The mouth is of moderate width, its breadth being, as already mentioned, 11 twelfths, it being in this respect very different from that of Flycatchers, Goatsuckers, Swallows, and such birds as seize on living insects while on wing. The lower mandible is deeply concave within, wider than the tongue, and covered with mucous membrane until 1 inch 5 twelfths from the point, beyond which it is horny, with a median groove, near the commencement of which is a small aperture for the ducts of the salivary glands. The tongue is capable of being retracted 10 twelfths of an inch from the tip of the mandibles, and is then seen to slide into a sheath, formed by an induplication or intussusception of the membrane covering it, and having two frænula of elastic tissue inserted into the angle of the jaw. Here it may be proper to state, that in birds generally the bony elements of the tongue are seven, as may be represented by the accompanying diagram, in which the first or upper piece is named the glosso-hyal, the next the basi-hyal, the third, in the same line, the uro-hyal; the two coming off from the base of the second piece or basi-hyal are the apo-hyal, to each of which is appended another, the cerato-hyal. The tongue itself is in no degree extensile or contractile, but has for its solid basis a very slender basi-hyal bone, 1 inch $2\frac{1}{2}$ twelfths in length,



terminated by a glosso-hyal bone $\frac{1}{2}$ inch in length, but, as already said, has no basal or uro-hyal bone, which, on account of the unusual extent of its motion, would form an impediment.

From the base of this basi-hyal bone, there proceed backwards and slightly diverging, two slender apo-hyal bones, 1 inch 1 twelfth in length, each of which is continuous with an extremely elongated cerato-hyal bone, 4 inches and 1 twelfth in length, $\frac{3}{4}$ twelfth in breadth at the commencement, gradually tapering to a blunt point, convex on its lower surface, concave or channelled on the upper, passing under and internally of the articulation of the jaw, and curving upwards along the occiput, until the two meet on the top of the head at the level of the posterior margin of the orbit, in the median line of the cranium, which is much depressed, whence they proceed in mutual contact, inclining slightly to the right side, and terminate a little before the anterior margin of the orbit, half an inch behind the right nostril, and a quarter of an inch from the base of the bill. These prolongations of the os hyoides being of an osseo-cartilaginous texture, are possessed of much elasticity, so as in some measure to resemble a curved spring.

From near the angle or point of union of the two crura of the lower mandible internally, there proceeds on each side a slender muscle, *oo*, which running backwards, comes in contact with the prolongation of the hyoid bone at the joint between the apo-hyal and cerato-hyal portions, and is thence continued along the whole extent of the latter, *og, og*, running chiefly along its upper side, but partially enclosing it, and bound to it by a sheath of cellular tissue, which allows it considerable motion. The bone and muscle are together enclosed in an extremely delicate, transparent, tenacious sheath, moistened internally with a serous fluid, and terminating at the end of the bone, where it is attached by elastic tissue to the cellular substance and periosteum near the base of the bill. This delicate sheath, perfectly smooth and lubricated on its inner surface, is on the outer attached by delicate filaments to the dense cellular tissue which forms a kind of external sheath. It is fixed in its place, and the hyoid bone with its muscle, *gg*, slides backwards and forwards in it.

The entire length from the tip of the tongue, *c*, to the tip of each prolongation of the hyoid bone at *e*, is 7 inches 2 twelfths. The protrusion of the tongue is effected by the contraction of the slender muscle above described, *o*, which having a fixed basis in the lower jaw near its angle,

and acting upon the tip of the hyoid bone, which is in this bird situated anteriorly to the eye, on the forehead, near the base of the upper mandible at *c*, causes the hyoid bone to glide within its sheath until its tip has moved backwards over the forehead, the crown, and occiput, and then advanced forwards until beneath the articulation of the lower jaw, thus traversing a space of $3\frac{1}{2}$ inches; so that the tongue is protruded to 3 inches and 4 twelfths beyond the tip of the bill. When the muscle is relaxed, the parts regain their ordinary position by the aid of the elasticity of the prolongations of the hyoid bones, and the action of another pair of muscles, to be presently described.

The tongue, *d*, is covered externally with a dense sheath of fibrous tissue. On its lower surface is seen on each side a very slender muscle, commencing at the extremity of the glosso-hyal bone, and running along the whole length of the basi-hyal bone, as well as of the apo-hyal, to be inserted into the cerato-hyal, at the distance of one inch from its base, on the outer edge. The action of this muscle, which has a strong tendon in its whole length, is to bend the tip of the tongue downwards, or to move the horn of the hyoid bone outwards. It may be called the glosso-hyal. It has another tendon running parallel to that mentioned, along its upper edge, of which the action must be to bend the tongue upwards upon the apo-hyal. Besides these muscles, there is another pair, forming the greater part of the fleshy portion of the tongue. They commence at the tip of the basi-hyal bone, or at *d*, proceed along the upper surface of the tongue, and, after running a course of $2\frac{3}{4}$ inches, pass along the anterior surface of the thyroid bone, wind along its edge, and are inserted near the middle surface of the trachea, about its tenth ring. The action of these muscles, alluded to at the end of the last paragraph, and marked *n n*, is to retract the tongue, when extended, as well as to pull forward the larynx.

Another pair of very slender muscles, *mm*, commence upon the edge of the thyroid bone externally of those last described, separate immediately from the trachea, pass directly down the neck in front, under the subcutaneous muscle and skin, to which they are firmly attached by cellular tissue, and are inserted into the furcular bone about the middle of its length. These muscles, the cleido-tracheales, are not peculiar to Woodpeckers, and have nothing particular to do with the movements of the tongue in those birds.

Parallel to the lower edge of the jaw, and extending from 4 twelfths anteriorly to its articulation to the junction of its crura, is, on each side, an elongated salivary gland, *ff*, attached to the jaw by cellular tissue. It is of a yellowish colour, internally parenchymatous, and sends off a duct, which enters the mouth by the aperture already mentioned, at the commencement of the groove in the horny part of the lower mandible. The fluid which it secretes is a glairy mucus, of a whitish colour, which being poured forth around the tip of the tongue covers it with a glutinous substance well adapted for causing the adhesion of any small body to it.

The Ivory-billed Woodpecker, then, having discovered an insect or larva in a chink of the bark, is enabled by suddenly protruding its tongue, covered with thick mucus, and having a strong slender sharp point furnished with small reversed prickles, to seize it and draw it into the mouth. These prickles are of special use in drawing from its retreat in the wood those large larvæ, often two or three inches in length; but it does not appear probable that the bristly point is ever used to *transfix* an object, otherwise how should the object be again set free, without tearing off the prickles, which are extremely delicate and not capable of being bent in every direction?

The trachea, *kk*, is 5 inches 4 twelfths in length, considerably flattened, nearly of the uniform breadth of 3 twelfths throughout. The aperture of the glottis is 4 twelfths long, with a posterior flap of several series of papillæ. The rings of the trachea are very strong, firmly ossified, 92 in number. At the upper part 3 are incomplete; the last entire ring is very broad and bipartite, and there are 2 additional dimidiate rings. The bronchi are short, of 12 half rings. The lateral or contractor muscles, *ll*, commence in front, at the base of the thyroid bone, diverge, presently become lateral, and thus proceed until $4\frac{1}{2}$ twelfths from the extremity, when they terminate partly in the sterno-tracheal, but also send down a very thin slip, which is inserted on the first dimidiate ring.

The explanation of the mechanism by which the tongue is protruded as above given differs materially from any of those to be found in English works at least, in some of which there is a very unnecessary prolixity as well as ambiguity. It does not appear that hitherto the real sheath in which the horns of the hyoid bone, with its muscle,

move, has been observed, and the two very slender muscles which run from the sides of the thyroid bone to the furcula, are common to almost all birds, although they have been supposed to be peculiar to Woodpeckers.

PILEATED WOODPECKER.

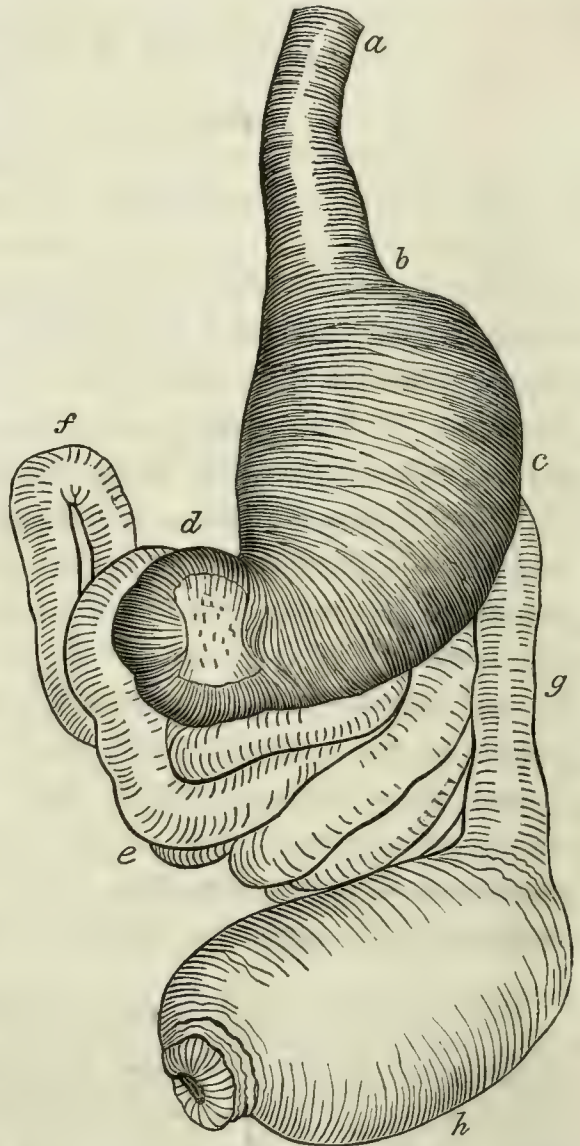
PICUS PILEATUS, LINN.

PLATE CXI. VOL. II. p. 74.

THIS handsome species inhabits the Oregon territory about the Columbia River, whence I have procured specimens from Dr TOWNSEND. According to Dr RICHARDSON, it is a constant resident in the interior of the Fur Countries, up to the 62d or 63d parallel, rarely appearing near Hudson's Bay, but frequenting the most gloomy recesses of the forests that skirt the Rocky Mountains. I found it more abundant in the Texas than any where else, and whilst on Galveston Island, saw one tapping against the roof of a house, the first and only instance of so much familiarity in a bird of this species that has occurred to me. So much attached is this Woodpecker to the tree in which it has a hole, that during winter it is often seen with its head out, as if looking to the weather, the unfavourable state of which induces it to sink out of sight, and probably compose itself to rest. It may be found in the same neighbourhood during the whole year, and, like many others of this family, it usually spends the night in the same hole.

The bill of this species is similar to that of the Ivory-billed, but is proportionally broader at the base, less robust, with the horny covering much thinner, and the two lateral ridges of the upper mandible nearer the middle ridge than the margin. The interior of the mouth is also similar; the upper mandible beneath has three parallel slight ridges, the palate two diverging ridges; the posterior aperture of the nares is linear, 8 twelfths long, margined with papillæ. The width of the mouth is $8\frac{1}{2}$ twelfths. The œsophagus, *a*, is $6\frac{1}{2}$ inches long, funnel-shaped at the commencement, at the distance of 1 inch contracted to $4\frac{1}{2}$

twelfths, continuing thence nearly uniform, its greatest width on the neck being $\frac{1}{2}$ inch. The proventriculus, *b c d*, forms an immense sac, resembling a crop, $2\frac{1}{4}$ inches in length, 1 inch 5 twelfths in width. The stomach itself, *d*, is very small, of a roundish form, and having the structure of a true gizzard; its length 9 twelfths, its breadth about the same, a little compressed, with two distinct lateral and an inferior muscle, the tendons 7 twelfths in breadth. The lobes of the liver are unequal; there is no gall-bladder, but there are two biliary ducts. The walls of the proventriculus and stomach are extremely thin. The proventricular glands are globular, very small, and form a belt of irregular breadth, in one place 10 twelfths, in another only $\frac{1}{2}$ inch; it is situated much farther up than usual, to-wit at the commencement of the dilated portion, upwards of an inch distant from that of the muscular part of the stomach. The lateral muscles of the latter are strong, and 3 twelfths in thickness; its epithelium is very thin, tough, of a light brownish-red colour, with broad longitudinal rugæ. (In another individual, the epithelium having been dissolved, the inner surface of the stomach was quite soft and smooth. The same circumstance has several times occurred in the course of these dissections, and is apt to lead the observer astray, so that in all cases where this horny cuticle seems wanting, it would be well to examine other specimens.) The intestine, *defgh*, is very short and wide, its length being $15\frac{1}{2}$ inches, its width in the duodenal portion 5 twelfths, about the



inner surface of the stomach was quite soft and smooth. The same circumstance has several times occurred in the course of these dissections, and is apt to lead the observer astray, so that in all cases where this horny cuticle seems wanting, it would be well to examine other specimens.) The intestine, *defgh*, is very short and wide, its length being $15\frac{1}{2}$ inches, its width in the duodenal portion 5 twelfths, about the

middle 4 twelfths, about 1 inch from the anterior end of the rectum 8 twelfths. The aperture of the pylorus is large, its width being 3 twelfths, and it is destitute of valve. The intestine curves at the distance of 1 inch 10 twelfths, passes forwards to the liver, bends backwards, forms three curves, and terminates in the rectum over the stomach. There are no traces of cœca. The cloaca, *h*, is of enormous size, of an oblong form, 1 inch 9 twelfths in length, $1\frac{1}{4}$ inch in breadth. The proventriculus and stomach were filled with a vast mass of ants and insects of various kinds, without any other admixture; and the intestine contains remains of insects, but no seeds.

The trachea is 4 inches 9 twelfths long, from $2\frac{1}{2}$ twelfths to 2 twelfths in breadth, but at the lower part only $1\frac{1}{3}$ twelfth. It is roundish at the two extremities, but considerably flattened in the rest of its extent. The rings are 90, with 2 dimidiate rings. The lateral muscles are of moderate strength expanded over the fore part of the trachea at their commencement; the sterno-tracheal also moderate. There is a very slender slip going to the first dimidiate ring. The cleido-tracheal muscles are also as in the Ivory-billed Woodpecker. The bronchi are of moderate length and width, of 12 very feeble cartilaginous half rings.

The individual examined was a male. In another, the length of the intestine is $18\frac{1}{2}$ inches, and in a third $20\frac{1}{4}$. In the stomach of one of these were some very large larvæ.

On immersing a specimen in hot water for some time, it is found that the tongue can be drawn out so that its tip is 2 inches 4 twelfths beyond that of the bill. In the ordinary state its tip is 2 twelfths distant from the latter, so that the extent of its elongation is 2 inches 6 twelfths.

When the specimen is examined in this state, the tongue is exerted to its utmost, the tips of the horns of the hyoid bone are brought to near the articulation of the lower jaw, and their muscles are found corrugated into a short space within the sheath, which remains in its proper situation. This fact proves the mode of protrusion of the tongue as described in the preceding article.

In this species the horns of the hyoid bone are extremely slender, in fact quite filamentary and roundish, whereas in the Ivory-billed Woodpecker they are of considerable breadth and more osseous. They advance on the forehead as far as the level of the anterior part of the orbit, inclining to the right side as usual, and their sheaths are attached to the cellular tissue near the right nostril.

RED-HEADED WOODPECKER.

PICUS ERYTHROCEPHALUS, LINN.

PLATE XXVII. VOL. I. p. 141.

ACCORDING to Dr RICHARDSON, this species ranges in summer as far north as the northern shores of Lake Huron. A specimen in the Museum of the Hudson's Bay Company is stated to have been brought from the Columbia River. No mention is made of this species as occurring there by Dr TOWNSEND, who saw it only on the Missouri. I found none in Newfoundland or Labrador, though it is not uncommon in Nova Scotia, from which I have traced it to the Texas, where it breeds.

In a male preserved in spirits, the width of the mouth is $6\frac{1}{2}$ twelfths. The tongue is $1\frac{1}{4}$ inch long; its horny part $7\frac{1}{2}$ twelfths, flat above, convex beneath, for 4 twelfths from the tip furnished on each side, not with prickles, but with several series of very slender filaments, which are directed obliquely backwards. The covering of the fleshy part of the tongue is also bristled all over with minute papillæ directed backwards. The horns of the hyoid bone curve round the occiput as in the other species, and then pass along the median line until about 3 twelfths from the base of the bill. The œsophagus is 3 inches 7 twelfths long, passes as usual along the right side of the neck, and has a nearly uniform width of $3\frac{1}{2}$ twelfths. The breadth of the proventriculus is 4 twelfths. The stomach is rather large, of an elliptical form, placed obliquely, its length $9\frac{1}{2}$ twelfths, its greatest breadth 1 inch. The lateral muscles are very large, one of them being 5 twelfths, the other 4 twelfths in thickness; the epithelium thin, tough, longitudinally rugous. The contents of the stomach are remains of maize, some very hard small seeds, and numerous particles of quartz. The intestine is rather short and wide, its length $10\frac{1}{2}$ inches, its width $3\frac{1}{2}$ twelfths. There are no cœca. The cloaca is ovato-oblong, 9 twelfths long, $7\frac{1}{2}$ twelfths in width.

The trachea is 2 inches 8 twelfths in length; its breadth at the upper part $1\frac{1}{2}$ twelfths, somewhat less toward the lower end, a little flattened; the rings 65 with 2 dimidiate, well ossified. The contractor muscles are moderate; the sterno-tracheal slips come off at the distance

of only 2 twelfths from the lower extremity ; and the inferior laryngeal slips are thus scarcely distinguishable. The cleido-tracheal muscles are inserted about the middle of the furcula. The bronchial half rings are 12, slender, and cartilaginous.

YELLOW-BELLIED WOODPECKER.

PICUS VARIUS, LINN.

PLATE CXC. VOL. II. p. 519.

RESPECTING this species my friend Mr T. MACCULLOCH thus writes to me :—“ Did you ever observe the noise made by the young of the *Picus varius*, when in the nest ? In this part of the country (the neighbourhood of Halifax, Nova Scotia) the nest may be discovered at a considerable distance by their noise. The sound is curious, and a person on first hearing it would suppose the young were affected by cold, from the wheezing they make. This, however, cannot be the case, as the noise is as incessant in the hottest as well as in the coldest weather, and seems to be uttered with double rapidity when the old ones enter the nest. It is the only bird I know whose nest is betrayed by the young.”

In this species are observed several curious modifications of structure. The interior of the mouth presents the usual appearance, only the edges of the mandibles are thin and sharp, those of the lower being a little involute. In the second place, the tongue, which is 9 twelfths long, *has no sheath*, but is horny in its whole length, sagittate at the base, deeply grooved above, somewhat abrupt at the extremity, and terminated by a tuft of bristles directed *forward*, of which also there are many on the sides, to the distance of 2 twelfths. Besides these minute bristles, there are also reversed acicular papillæ on the edges for nearly half the length of the tongue. This bird has not the faculty of extending its tongue to any distance, and therefore the horns of the hyoid bone do not rise on the head beyond the level of the upper part of the cerebellum, or the middle of the occiput ; and the glosso-laryngeal mus-

cles are inserted in front of the trachea on its third and fourth rings. The cleido-tracheal muscles, instead of being inserted upon the furcula, pass over its angle, and run down on the edge of the crest of the sternum all the way to its posterior extremity.

The width of the mouth is 5 twelfths. The œsophagus is 3 inches long, funnel-shaped at first, but for the greater part only $1\frac{1}{2}$ twelfth in width. The proventriculus is very much enlarged, as in the other species. The stomach is an irregularly elliptical gizzard, of moderate strength, $7\frac{1}{2}$ twelfths long, $5\frac{1}{2}$ twelfths in breadth; the right muscle much larger than the left; the epithelium thin and rugous, as in the other species. The stomach is partially filled with insects. The intestine is 9 inches long, from $2\frac{1}{2}$ twelfths to 2 twelfths in width; the cloaca oblong, 4 twelfths in width. There are no cœca.

The trachea is 2 inches $1\frac{1}{2}$ twelfth long, considerably flattened, its rings 70, with 2 large dimidiate rings. The muscles as in the other species. Bronchi of moderate length, narrow, with 12 slender cartilaginous half rings.

THREE-TOED WOODPECKER.

PICUS TRIDACTYLUS, BONAP.

PLATE CXXXII. VOL. II. p. 197.

AN egg sent to Dr T. M. BREWER from Coventry in Vermont, as that of the Three-toed Woodpecker, measures five-sixths of an inch in length and five-eighths in breadth. It is thus nearly spherical, and its white ground is covered pretty equally with reddish-brown spots.

In a specimen preserved in spirits, the tongue is 1 inch $2\frac{1}{2}$ twelfths long, its horny point $7\frac{1}{2}$ twelfths, tapering, and margined toward the extremity with a few reversed bristles. Œsophagus $3\frac{3}{4}$ inches long, its width nearly uniformly 2 twelfths; proventriculus 3 twelfths. Stomach roundish, 7 twelfths long, 7 twelfths in breadth; its lateral muscles well developed; the epithelium longitudinally rugous, and reddish-brown. Intestine 10 inches long, 3 twelfths in width in the duodenal

portion. No cœca. The horns of the hyoid bone meet on the upper part of the head, and pass to the ridge of the upper mandible. Trachea 2 inches 2 twelfths long, 2 twelfths in breadth; its rings 58; bronchial rings 12. The lateral muscles, which are moderate, become anterior, passing to the left side, until near the lower part, when they become lateral. A single pair of inferior laryngeal muscles as in all the other species of this group.

This species, the *Apternus arcticus* of SWAINSON, is stated by him to have been “*observed only on the eastern declivity of the Rocky Mountains, where the common species, A. tridactylus, was also procured.*”

DOWNY WOODPECKER.

PICUS PUBESCENS, LINN.

PLATE CXII. VOL. II. p. 81.

IN a male preserved in spirits, the width of the mouth is $4\frac{1}{2}$ twelfths, the tongue is $8\frac{1}{2}$ twelfths long, its horny part $3\frac{1}{2}$ twelfths, slender, tapering, flat above, furnished on the edges with a single row of rather strong deflected bristles, about 12 in number. The hyoid bones converge on the top of the head as usual, but do not proceed farther forward than opposite the centre of the eye, terminating at the distance of 4 twelfths from the base of the bill, in which respect they contrast strongly with those of the Hairy Woodpecker. The œsophagus is $2\frac{1}{4}$ inches long, its width scarcely 1 twelfth, it being in its contracted state narrower than the trachea; the proventriculus enlarges to 3 twelfths. The stomach is elliptical, $7\frac{1}{2}$ twelfths long, $5\frac{1}{2}$ twelfths in breadth, its muscles well developed; the epithelium thin, tough, rugous, and of a reddish-brown colour. It is filled with farinaceous vegetable substances of a whitish colour. Intestine of moderate length, wide, 8 inches long, its width at the upper part 2 twelfths. No cœca. Trachea 1 inch 5 twelfths long, its breadth nearly 1 twelfth; its contractor muscles moderate; its rings about 50; the bronchial half rings 12. The salivary glands are of large size.

GOLDEN-WINGED WOODPECKER.

PICUS AURATUS, LINN.

PLATE XXXVII. Vol. I. p. 191.

THIS species visits the Fur Countries in summer, advancing as far north as Great Bear Lake, and, according to Dr RICHARDSON, resorting in greatest numbers to the plains of the Saskatchewan, where it frequents open downs, and feeds on larvæ. Dr TOWNSEND has traced it high on the upper Missouri, but saw none near the Columbia, where it is represented by the Red-shafted Woodpecker, which is there as abundant as the present species is in our Eastern Districts. I have met with it from Texas to the northern extremity of Nova Scotia, but saw none in Labrador. The eggs measure an inch and a twelfth in length, by nearly seven-eighths in breadth. Mr T. MACCULLOCH has favoured me with the following notice respecting this species.

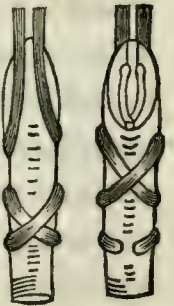
“ While rambling through the woods one afternoon with my brothers, I observed a considerable quantity of chips, which seemed, from the freshness of their colour, to have been but recently detached from the tall decayed stump, at the foot of which they were laid. A glance at a round hole near the top of the stump was sufficient to apprise us of their origin, and a few smart raps upon the trunk brought a Golden-winged Woodpecker to the aperture, to ascertain the cause of the disturbance below. Having eyed us for a moment, he jerked himself out, and flew to the top of a neighbouring tree, where, uttering a few shrill notes, he was immediately joined by his mate, and both seemed anxiously to watch all our movements while we remained near the cradle of their future progeny. By us the possession of one of these beautiful birds had long been ardently desired, and we determined not to permit the present opportunity to pass unimproved. The situation of the nest was therefore carefully marked, and we resolved to return when the young birds should be fully fledged, and secure one at least as our lawful prize. During the interval the nest was often visited, and many plans were formed to effect our purpose, but when the period which we supposed necessary had expired, we discovered with no little mortification that the stump was too much decayed to be climbed with safety, and

too insecure to admit of any thing being applied to facilitate the ascent. To overturn the nest was the only way then by which we could obtain the object of our wishes. To effect this all our strength was exerted, so that we soon had the satisfaction of seeing the stump yield, and eventually give way with a heavy crash, by which it was broken into many pieces. Eager to secure our prize, we hastened to the spot, but conceive our disappointment when, instead of the full-fledged birds which we expected to obtain, a large number of naked objects, apparently just out of the shell, some of them scarcely half the size of others, and all with their eyes yet unopened, lay scattered upon the ground. This was a result which we had never anticipated, and disappointment quickly yielded to strong feelings of compunction, as we surveyed the poor sightless creatures writhing their necks and quivering under the severity of the shock. To repair the mischief, if possible, the fragments of the nest were speedily gathered and neatly joined, and having collected the brood for the purpose of replacing it, we were astonished to find that the nest had contained the almost incredible number of *eighteen young birds*, besides three eggs, which still remained unbroken, notwithstanding the violence of the fall. For this singular instance of fecundity I am wholly unable to account, unless by the supposition that, from the nest being in the immediate vicinity of a public road, one of the birds had been shot after the usual deposit of eggs had been made. The survivor having procured another mate, an addition was made to the number of eggs, and most probably from the same cause a third, ere the work of incubation commenced. The vigour of one of the parents being impaired may perhaps explain the diversity of size, while the eggs which remained were probably the first deposited, but in which the vital principle had become extinct ere the last was laid. Perhaps it may be interesting to mention that our efforts to repair the injury were not attended by the result that we desired. Upon a subsequent visit the whole brood was found cold and dead; and if the parent birds had ever re-entered their prostrate nest, it was merely to witness the devastation we had wrought, and then to abandon it for ever."

An adult male preserved in spirits has the interior of the mouth as in the other species, its width $5\frac{1}{2}$ twelfths; the posterior aperture of the nares oblongo-linear, 6 twelfths in length. The tongue is 1 inch $5\frac{1}{2}$ twelfths long, $1\frac{1}{2}$ twelfth in breadth at the base, gradually narrowed toward the

end, with a small horny rather blunt tip, on which are two series of small reversed pointed papillæ. The horns of the hyoid bone are recurved in the usual manner, and extend to the right nasal membrane, to which their sheath is attached. The other apparatus connected with the tongue is the same as in the Ivory-billed Woodpecker. The pyramidal or salivary glands are very large, extending half an inch beyond the articulation of the lower jaw. The œsophagus is 4 inches long, of moderate width. The proventriculus is very much enlarged, as in the other species, its greatest width being 8 twelfths. The stomach is a muscular gizzard of moderate size, its right lateral muscle twice as large as the left, the tendons very large; the epithelium strong, longitudinally rugous, and reddish-brown. In the stomach are grains of maize, seeds of grasses, and insects. The proventricular glands are very small, and form a belt 9 twelfths in breadth at the right side, but narrower toward the left. The intestine is 15 inches long, from 3 twelfths to 2½ twelfths in width. There are no cœca. The cloaca is large and elliptical.

The trachea is 2 inches 9 twelfths long, 1½ twelfth in breadth, considerably flattened, its rings, which are well ossified, 90 in number, with 2 additional dimidiate rings. The muscles are as in the other species; but the glosso-laryngeal differ very considerably in their insertion, as is represented by the accompanying figures in which they are seen before and behind. They come down parallel to each other, as far as the commencement of the thyroid bone, then diverge, each of them passing toward its own side, winding behind the trachea, crossing it at the back part, reappearing in front at the opposite side, and crossing obliquely to the other side, thus forming a figure of eight, and finally inserted at its back part at the distance of 9 twelfths from the tip of the thyroid bone. The bronchi are of moderate length, narrow, of 15 half rings.



There is a very curious gradation in the degree of elongation of the horns of the hyoid bone in the different American Woodpeckers, some of which consequently have the power of thrusting out their tongue to a much greater extent than others. Thus:

In *Picus varius*, the tips of the horns of the hyoid bone reach only to the upper edge of the cerebellum, or the middle of the occipital region.

In *Picus pubescens*, they do not proceed farther forward than opposite to the centre of the eye.

In *Picus principalis*, they reach to a little before the anterior edge of the orbit, or the distance of $\frac{1}{2}$ inch from the right nostril.

In *Picus pileatus*, they extend to half-way between the anterior edge of the orbit and the nostril.

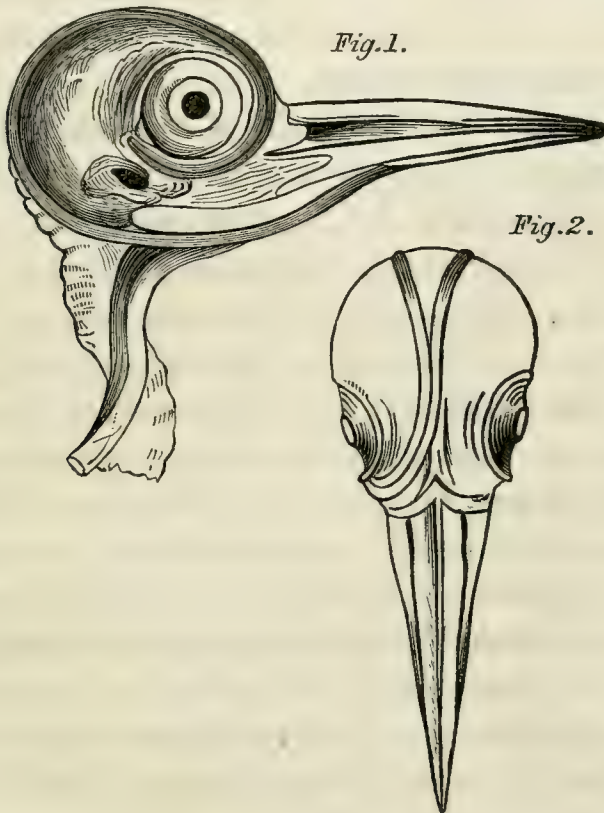
In *Picus erythrocephalus*, they reach to 3 twelfths of an inch from the base of the bill.

In *Picus tridactylus*, they reach the base of the ridge of the upper mandible.

In *Picus auratus*, they attain the base of the right nasal membrane.

In *Picus canadensis*, they curve round the right orbit to opposite the middle of the eye beneath.

Lastly, in *Picus villosus*, they receive the maximum of their development, and, as represented in the accompanying figures, curve round the right orbit, so as to reach the level of the posterior angle of the eye. Fig. 1 is a lateral view of the parts, shewing the hyoid bones curving round the eye. Fig. 2 shews these bones as viewed from above.



RUBY-THROATED HUMMING BIRD.

TROCHILUS COLUBRIS, LINN.

PLATE XLVII. Vol. I. p. 248.

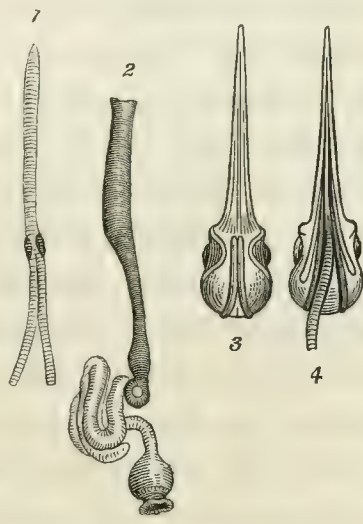
THIS interesting gem of the feathered tribe proceeds as far north in summer as the 57th parallel. Dr RICHARDSON obtained it on the plains of the Saskatchewan, and Mr DRUMMOND found its nest near the sources of the Elk River. It does not occur on the Columbia River, where the Nootka Humming bird is abundant. A few were seen by me in Labrador, and, on the other hand, I met with it entering the United States in crowds in the beginning of April, advancing eastward along the shores of the Mexican Gulf. The weather having become very cold one morning, many were picked up dead along the beaches, and those which bore up were so benumbed as almost to suffer the members of my party to take them with the hand. My friend Dr BACHMAN has heard this species uttering a few sweet notes, sometimes when perched on a twig, and at other times on wing. The eggs measure half an inch in length by $4\frac{1}{4}$ lines in breadth.

On depriving a specimen of this bird of its feathers, one finds its proportions very different from what he may have previously imagined. Thus, the body is remarkably robust, of an ovate form, much deeper than broad, on account of the extreme size of the crest or keel of the sternum, which is so extended as to leave for the abdomen a space not more than a fifth of its own length. The feet, although very small, are yet proportionally as large as those of a Cormorant; the femur and tibia being relatively large, while the tarsus is extremely short, and the toes of moderate size, the anterior incapable of being widely spread, and the middle or third scarcely exceeding the two lateral; in which respect the foot has some resemblance to that of the Swifts. The hind toe is articulated remarkably high on the tarsus, it being placed very nearly at the height of one-third of its length. The bones of the wings are very short; the humerus and cubitus extremely so, although proportionally strong. The neck is very elongated, being 10 twelfths of an inch in length, whereas the body, including the coccyx, is only 9 twelfths. The head is rather large, depressed in front, with a deep

hollow between the eyes, which are very large, and the bill is disproportionately elongated. The pectoral muscles are of extreme size, exceeding by much the entire bulk of the rest of the body with the neck and head, the height of the crest of the sternum being 4 twelfths, or nearly half the length of the body. The body of the sternum is remarkably flat, and so thin as to be almost perfectly transparent; it is narrow anteriorly, where it is $2\frac{1}{4}$ twelfths in breadth, but gradually enlarges to 4 twelfths; the posterior edge forms a semicircle, and is destitute of notch. The pubic bones almost meet in front, where they are cartilaginous. The heart is extraordinarily large, occupying half the length of the cavity of the body, of an elongated conical form, $3\frac{1}{4}$ twelfths long, and 2 twelfths in breadth at the base. The right lobe of the liver is much larger than the left, the former being 5 twelfths in length, the latter 4 twelfths.

The whole length of the head is $1\frac{1}{4}$ inch, of which the bill is 10 twelfths. The upper mandible is slightly concave beneath in its whole length, the lower a little more deeply concave, the edges of both thin, those of the lower erect and overlapped by the upper. The nostrils are covered by a very large projecting membranous flap feathered above. The tongue is, to a certain extent, constructed precisely in the same manner as that of the Woodpeckers.

The basi-hyal bone is $1\frac{1}{2}$ twelfth long, the apo-hyal bones 2 twelfths, the apo-hyal and cerato-hyal together 1 inch 2 twelfths, the glosso-hyal or terminal bones $4\frac{1}{2}$ twelfths. There is no uro-hyal bone, any more than in the Woodpeckers, and the glosso-hyal is double at the end. The horns of the hyoid bone are thus greatly elongated, recurving over the occiput, near the top of which they meet, and thence proceed directly forward, in mutual proximity, lodged in a deep and broad groove, along the middle of the forehead, until near the anterior part of the eye, where they terminate, Fig. 3 The crura of the lower mandible, Fig. 4, do not meet until very near the tip, and from the inner and lower surface of each near the junction or angle, there proceeds backward a slender muscle, which is attached to the



hyoid bone at the junction of the apo-hyal and cerato-hyal, whence it proceeds all the way to the tip of the latter, the muscle and bone being inclosed in a very delicate sheath, which is attached to the subcutaneous cellular tissue between the nostrils. The tongue, properly so called, moves in a sheath, as in the Woodpeckers; its length is 10 twelfths. When it is protruded, the part beyond this at the base appears fleshy, being covered with the membrane of the mouth forming the sheath, but the rest of its extent is horny, and presents the appearance of two cylinders united, with a deep groove above and another beneath, for the length of 3 twelfths, beyond which they become flattened, concave above, thin-edged and lacerated externally, thick-edged internally, and, although lying parallel and in contact, capable of being separated. This part, being moistened by the fluid of the slender salivary glands, and capable of being alternately exerted and retracted, thus forms an instrument for the prehension of small insects, similar in so far to that of the Woodpeckers, although presenting a different modification in its horny extremity, which is more elongated and less rigid. All observers who have written on the tongue of the Humming Birds, have represented it as composed of two cylindrical tubes, and the prevalent notion has been that the bird sucks the nectar of flowers by means of these tubes. But both ideas are incorrect. There are, it is true, two cylindrical tubes, but they gradually taper away toward the point, and instead of being pervious form two sheaths for the two terminal parts or shafts of the glosso-hyal portion of the tongue, which run nearly to the tip, while there is appended to them externally a very thin-fringed or denticulate plate of horny substance. The bird obviously cannot suck, but it may thrust the tip of the tongue into a fluid, and by drawing it back may thus procure a portion. It is, however, more properly an organ for the prehension of small insects, for which it is obviously well adapted, and being exsertile to a great extent enables the bird to reach at minute objects deep in the tubes and nectaries of flowers. That a Humming Bird may for a time subsist on sugar and water, or any other saccharine fluid, is probable enough; but it is essentially an insect-hunter, and not a honey-sucker.



The œsophagus, Fig. 2, is 1 inch 4 twelfths long, $1\frac{1}{2}$ twelfth in width at the top, but toward the lower part of the neck enlarged to $1\frac{3}{4}$ twelfth. On entering the thorax, it contracts to $\frac{1}{3}$ twelfth; and the proventriculus is $1\frac{1}{4}$ twelfth. The stomach is extremely small, of a roundish or broadly elliptical form, $1\frac{1}{4}$ twelfth in length, and 1 twelfth in breadth. The proventricular glands form a complete belt, 2 twelfths in breadth. The walls of the stomach are moderately muscular; the epithelium dense, with broad longitudinal rugæ, four on one side, three on the other, and of a pale red colour. In the stomach were fragments of small coleopterous insects. The intestine is 2 inches 2 twelfths in length, from $1\frac{1}{4}$ twelfth to $\frac{1}{2}$ twelfth in width. It forms six curves, the duodenum returning at the distance of 3 twelfths. There are no cœca. The cloaca is very large and globular.

The trachea, Fig. 1, is 9 twelfths long, being thus remarkably short, on account of its bifurcating very high on the neck, for if it were to divide at the usual place, or just anteriorly to the base of the heart, it would be $4\frac{1}{2}$ twelfths longer. In this respect it differs from that of all the other birds examined, with the exception of the Roseate Spoonbill, *Platalea Ajaja*, the trachea of which is in so far similar. The bronchi are exactly $\frac{1}{2}$ inch in length. Until the bifurcation, the trachea passes along the right side, afterwards directly in front. There are 50 rings to the fork; and each bronchus has 34 rings. The breadth of the trachea at the upper part is scarcely more than $\frac{1}{2}$ twelfth, and at the lower part considerably less. It is much flattened, and the rings are very narrow, cartilaginous, and placed widely apart. The bronchial rings are similar, and differ from those of most birds in being complete. The two bronchi lie in contact for 2 twelfths at the upper part, being connected by a common membrane. The lateral muscles are extremely slender. The last ring of the trachea is four times the breadth of the rest, and has on each side a large but not very prominent mass of muscular fibres, inserted into the first bronchial ring. This mass does not seem to be divisible into four distinct muscles, but rather to resemble that of the Flycatchers, although nothing certain can be stated on this point.

The above particulars, it is to be hoped, will furnish, in so far, an acceptable addition to the very little generally known of the structure of these diminutive birds; and may afford some slight help to the dry skin philosophers in "working out" their arrangements.

BELTED KINGFISHER.

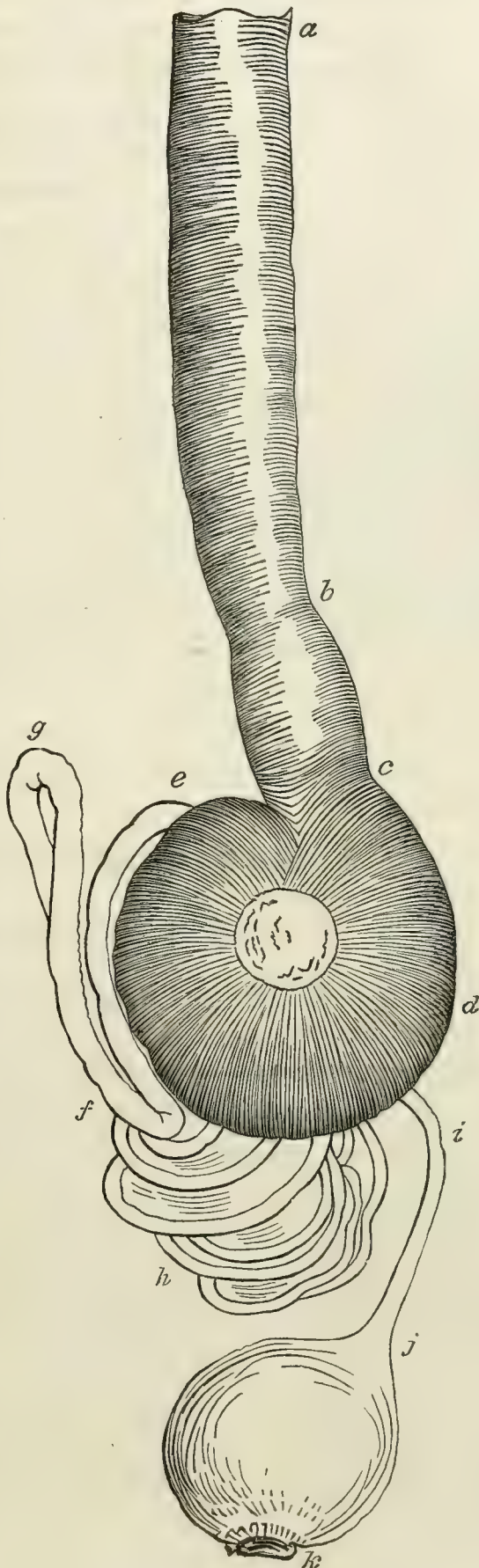
ALCEDO ALCYON, LINN.

PLATE LXXVII. VOL. I. p. 394.

Dr TOWNSEND found this species on the Missouri, the Rocky Mountains, and the Columbia River. Dr RICHARDSON informs us that it frequents all the large rivers in the Fur Countries up to the 67th degree of latitude, and I have met with it from within the Texas to the shores of Labrador. I have also seen it on the higher and sandy Keys of the Floridas, where, however, I am not sure that it breeds. I have seen this bird fishing in salt water in a great number of instances. It is extremely hardy, and those individuals, which migrate northward to breed, seldom return towards our Southern States, where they spend the winter, until absolutely forced to do so by the great severity of the weather. The eggs measure $1\frac{1}{4}$ inch in length, by 1 inch in breadth, and are thus of a roundish form. Dr BREWER of Boston informs me, that it abounds on the borders of all the ponds and rivers in Massachusetts, and that he found a nest containing two eggs on a hard gravel bank, on the borders of Charles River, Cambridge.

An adult male preserved in spirits measures to end of tail $13\frac{1}{2}$ inches, to end of wings $11\frac{1}{2}$, to end of claws $10\frac{1}{2}$; wing from flexure $6\frac{1}{2}$; tail 4. The roof of the mouth is rather flat behind, with the sides sloping upwards; it has two short longitudinal ridges, and is covered with minute papillæ. The posterior aperture of the nares is linear behind, oblong before, $\frac{1}{2}$ inch in length. The anterior part of the palate is moderately concave, with a median ridge and numerous oblique lateral grooves. The lower mandible is also moderately concave, with a prominent middle line. The tongue is very short, only 5 twelfths in length, $2\frac{1}{2}$ twelfths in breadth, fleshy, with two lateral prominent lamellæ at the base, its upper surface slightly convex, its sides parallel until 2 twelfths from the tip, when it tapers abruptly to a bluntish point. The breadth of the mouth is $11\frac{1}{2}$ twelfths. The œsophagus, *a b c*, is $5\frac{1}{4}$ inches long, of the uniform width of 7 twelfths; its parietes very thin, the inner coat thrown into longitudinal rugæ. The liver is large, its left lobe much

smaller than the other, the former being 1 inch 11 twelfths in length, the latter 1 inch 4 twelfths. There is no gall-bladder. The stomach, *cde*, is very large, roundish, a little compressed, its diameter 1 inch 7 twelfths. The proventricular glands are extremely small, and occupy a belt 5 twelfths in breadth. The muscular coat of the stomach is very thin, but composed of strong fasciculi, the middle coat is nearly of equal thickness; internally there is a complete epithelium, which however, although tough, is very thin, almost membranous, and raised into numerous tortuous rugæ, without any part being thicker than another. The pylorus has six marginal roundish fleshy papillæ. The duodenum, *efg*, presents the usual curvature, being folded back upon itself at the distance of 1 inch 8 twelfths; the intestine, *ghi*, then forms several convolutions, and



is of great length, but very narrow, and disposed in 24 folds. Its length is 3 feet 10 inches, its width from $1\frac{1}{2}$ twelfth to 1 twelfth. The cloaca, *jk*, is globular, 1 inch in diameter. There are *no caeca*; the rectum in its interior part has a width of only $\frac{1}{2}$ twelfth.

The trachea is 4 inches $1\frac{1}{2}$ twelfth long, $3\frac{1}{4}$ twelfths in breadth at the top, rapidly decreasing, so that at the distance of 1 inch to be $2\frac{1}{2}$ twelfths, and at the lower part 2 twelfths. Its rings are firm, slightly flattened, excepting those at the top, of which about 12 are cartilaginous. There are 72 rings, the lowest entire ring very large, with a middle partition. The lateral muscles are very slender, as are the sterno-tracheal; and there is a very large inferior laryngeal muscle inserted into the first bronchial ring, as well as into the last ring of the trachea. The bronchi are rather short and narrow, of about 15 half rings. The inferior laryngeal muscles may be divided into three portions, an anterior, a middle, and a posterior; and thus supply a desideratum, no bird having hitherto been examined in which there are four inferior laryngeal muscles, including the sterno-tracheal slip.

BLUE-GREY FLYCATCHER.

MUSCICAPA CÆRULEA, WILS.

PLATE LXXXIV. Vol. I. p. 431.

THIS species breeds very abundantly in South Carolina. A few spend the winter there. I found them also at that season in the Floridas. It is also resident in the Texas, where I found it breeding in the latter part of April. Thus those which retire southward from the United States in winter, return to the Southern Districts as early as February, at which period they are found about Charleston. It occurs sparingly in Nova Scotia, and a pair were observed in one of the valleys of Labrador.

CANADA FLYCATCHER.

MUSCICAPA CANADENSIS, LINN.

PLATE CIII. Vol. II. p. 17.

ALTHOUGH this species reaches very far up the Missouri, where it was seen by Dr TOWNSEND, and extends into the Fur Countries to Cumberland House, where Dr RICHARDSON procured a specimen in June, while I have traced it from Pennsylvania to Labrador, the time and manner of its entering the United States in spring, as well as its retrograde movements before the cold weather sets in, are yet unascertained. Among the thousands of Warblers which I met with on my way to the Texas, all of them progressing eastward, in April and May, not a single individual of this species was seen by any of our party. The eggs of this bird measure six and a half eighths in length, and four-eighths and a quarter in breadth.

PASSENGER PIGEON.

COLUMBA MIGRATORIA, LINN.

PLATE LXII. Vol. I. p. 319.

THIS celebrated bird is mentioned by Dr RICHARDSON as “annually reaching the 62d degree of latitude, in the warm central districts of the Fur Countries, and attaining the 58th parallel on the coast of Hudson’s Bay in very fine summers only. Mr HUTCHINS mentions a flock which visited York Factory and remained there two days, in 1775, as a very remarkable occurrence. A few hordes of Indians that frequent the low flooded tracts at the south end of Lake Winnipeg, subsist principally on the Pigeons, during a part of the summer, when the Sturgeon-fishery is unproductive, and the *Zizania aquatica* has not yet ripened; but farther north, these birds are too few in number to furnish a material article of diet.” Dr TOWNSEND states that this species is found on the Rocky Mountains, but not on the Columbia River, where the Band-tailed Pigeon, *Columba fasciata* of SAY, is abundant. Whilst in the

Texas, I was assured that the Passenger Pigeon was plentiful there, although at irregular intervals. In the neighbourhood of Boston it arrives, as Dr T. M. BREWER informs me, in small scattered flocks, much less numerous than in the interior of that State.

Some persons have thought fit to consider my account of the roosting and breeding of this species as fabulous; but I freely forgive them, well knowing that they have never seen even a single flock. Eight years and a half have elapsed since the publication of my first volume of Ornithological Biography. I have since that time spoken to many persons who have been witnesses of such scenes as I have described, and from whom I could easily have obtained corroborative statements; but what I have related is true, and why should I attempt to satisfy those who doubt its accuracy?

My friend Dr BACHMAN says, in a note sent to me, "In the more cultivated parts of the United States, these birds now no longer breed in communities. I have secured many nests scattered throughout the woods, seldom near each other. Four years ago, I saw several on the mountains east of Lansinburgh, in the State of New York. They were built close to the stems of thin but tall pine trees (*Pinus strobus*), and were composed of a few sticks; the eggs invariably two, and white. There is frequently but one young bird in the nest, probably from the loose manner in which it has been constructed, so that either a young bird or an egg drops out. Indeed, I have found both at the foot of the tree. This is no doubt accidental, and not to be attributed to a habit which the bird may be supposed to have of throwing out an egg or one of its young. I have frequently taken two of the latter from the same nest and reared them. The Wild Pigeons appear in Carolina during winter at irregular periods, sometimes in cold, but often in warm weather, driven here no doubt, as you have mentioned, not by the cold, but by a failure of mast in the western forests."

A curious change of habits has taken place in England in those Pigeons which I presented to the Earl of Derby in 1830, that nobleman having assured me that ever since they began breeding in his aviaries, they have laid only one egg. My noble friend has raised a great number of these birds, and has distributed them freely. It is not therefore very surprising that some which have escaped from confinement have been shot; but that this species should naturally have a claim to be admitted into the British Fauna appears to me very doubtful. The

eggs measure one inch five-eighths in length, one inch one-eighth and a half in breadth, and are nearly equally rounded at both ends.

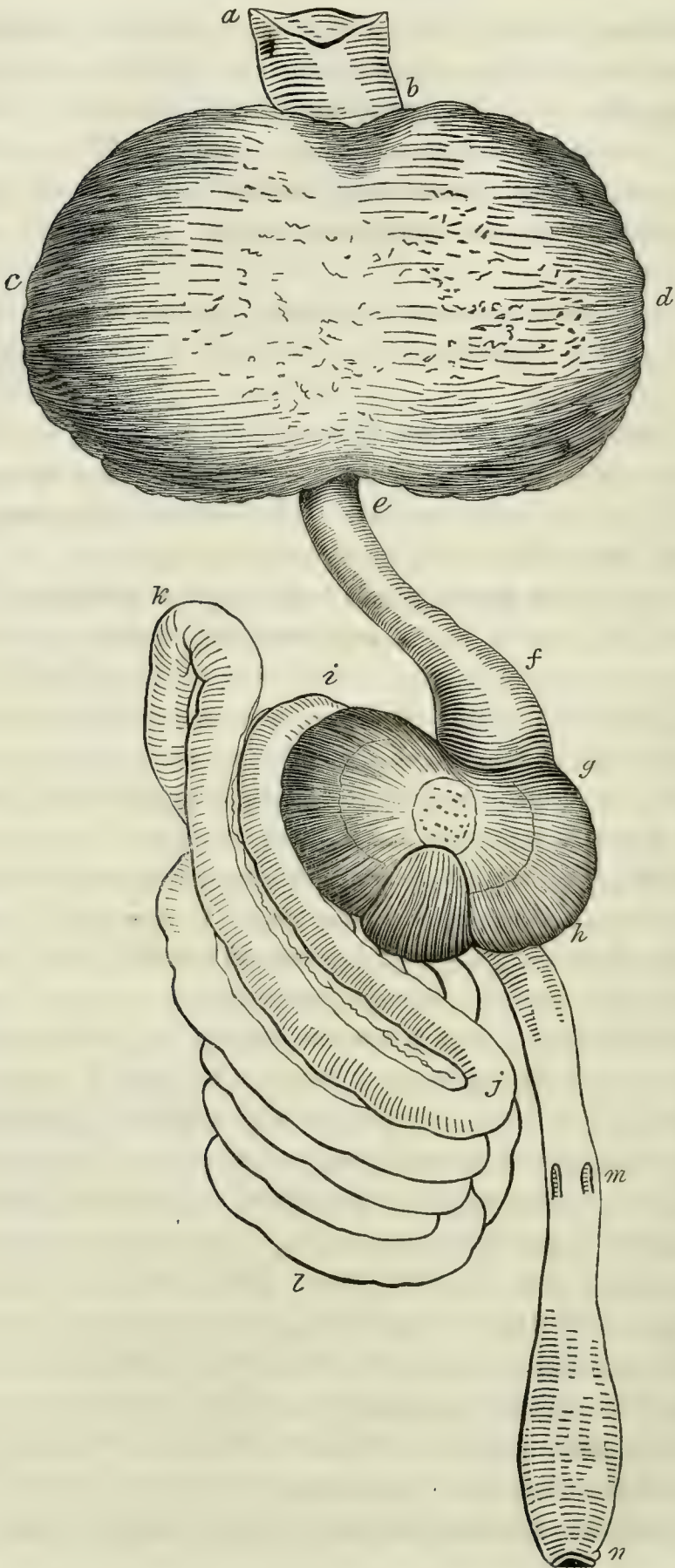
On my last visit to England I brought with me some live Pigeons, which I presented to my generous and excellent friend JOHN HEPPENSTALL, Esq. of Uppertorpe, near Sheffield, with the view of ascertaining whether they will also lay a single egg.

An adult male preserved in spirits. Length to end of tail 17 inches, to end of wings $12\frac{3}{4}$; extent of wings 24, wing from flexure $8\frac{2}{12}$; tail 8.

The mouth is very narrow, being only $4\frac{1}{2}$ twelfths in breadth, but capable of being dilated to the width of 1 inch by means of a joint on each side of the lower mandible. There are two thin longitudinal ridges on the palate, of which the sides slope upwards. The posterior aperture of the nares is $\frac{1}{2}$ inch long, margined with papillæ. The tongue is $7\frac{1}{2}$ twelfths long, rather broad and sagittate at the base, with numerous small papillæ, but at the middle contracted to $1\frac{1}{2}$ twelfth, afterwards horny, very narrow, induplicate, and ending in a rather sharp point. Œsophagus, *a g*, $5\frac{1}{2}$ inches long, immediately dilated to 1 inch, and at the lower part of the neck enlarged into an enormous sac, *b c d*, 3 inches in breadth, and $2\frac{1}{2}$ inches in length, a little contracted in the middle; with its inner surface smooth, and at the lower aperture running into longitudinal prominent plicæ; in the rest of its extent, the width of the œsophagus, *e f*, is about 10 twelfths. The stomach, *g h i*, is a very large and strong gizzard, placed obliquely, 2 inches 2 twelfths in breadth, 1 inch 1 fourth in length; its lateral muscles exceedingly thick, the left being $7\frac{1}{4}$ twelfths, the right 8 twelfths; the lower muscle prominent; the tendons very large; the epithelium of a horny texture, of moderate thickness, with longitudinal broad rugæ, and two opposite longitudinal grinding surfaces, of a yellowish colour. In the crop were found three entire acorns, and in the stomach fragments of others, and three pieces of quartz. The intestine, *i j k l m n*, is 4 feet long, 4 twelfths in width, at the narrowest part only 2 twelfths. The duodenum, *i j k*, curves in the usual manner, at the distance of 3 inches. The intestine forms six folds. The cœca, *m*, are extremely diminutive, being only $1\frac{1}{2}$ twelfth in breadth; they are 2 inches distant from the extremity; the cloaca, *n*, oblong.

The trachea passes along the left side, as usual in birds having

PASSENGER PIGEON.



a large crop : its length is $2\frac{3}{4}$ inches ; its breadth varying from $2\frac{3}{4}$ twelfths to $1\frac{1}{2}$ twelfth ; its rings 105, feeble ; the last ring large, formed laterally of two rings, with an intervening membrane. Bronchi of about 15 half rings, and narrow. The lateral muscles strong, as are the sterno-tracheal, which come off at the distance of $\frac{1}{2}$ inch. There is a single pair of inferior laryngeal muscles going to the upper edge of the last tracheal ring.

CAROLINA DOVE.

COLUMBA CAROLINENSIS, LINN.

PLATE XVII. Vol. I. p. 91.

THIS species does not extend very far eastward or northward. It is exceedingly rare in New Brunswick and Nova Scotia, and none were seen by my party in Newfoundland or Labrador. Dr RICHARDSON makes no mention of it as having been observed in the Fur Countries. Yet it was met with on the shores of the Columbia River by Dr TOWNSEND, who informs me, that although *Columba migratoria* is found on the Rocky Mountains, *C. carolinensis* and *C. fasciata* are the only species which he observed on the Columbia. On the other hand, I found the present species abundant in the Texas, where it was breeding on the ground, as well as on low bushes, and feeding on blackberries late in the month of April.

The Carolina Dove breeds in aviaries, even although caught when old, raising several broods in the season, insomuch that my friends Dr BACHMAN and Dr SAMUEL WILSON of Charleston, have had to kill the young for the table. The former intimates to me that a male was put into a cage with a female European Turtle Dove, on which they paired, formed a nest, and laid eggs, but the cage having accidentally fallen, the eggs, which now contained young, were broken, and the Carolina Dove escaped. The same friend has found this species breeding on the ground in the States of New York and South Carolina, among tall wheat and rye. In the latter country it is very numerous

during winter, and is shot in great numbers by sportsmen, who hide themselves under low huts at the foot of moderately tall trees, such as persimons, while their servants drive the Doves from the adjacent fields. In this manner more than a hundred have been shot by one man in the course of a morning. When snow is on the ground, wonderful havoc is committed among them, and he has heard of a party of sportsmen having shot about five hundred in one day.

The egg of the Carolina Dove measures one inch one-eighth in length, by five and a half eighths in breadth, is equally rounded at both ends, and is of a pure white colour, somewhat translucent.

A male preserved in spirits measures to end of tail 12 inches, to end of wings $8\frac{1}{2}$; wing from flexure $6\frac{1}{2}$: tail $5\frac{1}{2}$; extent of wings $17\frac{3}{4}$.

The tongue is $7\frac{1}{2}$ twelfths long, sagittate and papillate at the base, rapidly contracted, and tapering to a point. The width of the mouth is $3\frac{1}{4}$ twelfths, but the lower mandible may be dilated to 8 twelfths. The œsophagus is 4 inches long, about 8 twelfths in width for $1\frac{1}{2}$ inch, then enlarges into a crop of the same form and structure as in the preceding species, and 1 inch 9 twelfths in breadth. The stomach is a transversely oblong gizzard, 9 twelfths in length, $1\frac{1}{4}$ inch in breadth; the left muscle 4 twelfths, the right $4\frac{1}{2}$ twelfths in thickness; the epithelium very thick and of a horny texture; the grinding surfaces concave. The contents of the stomach are buck-wheat, and grains of quartz. The intestine is $23\frac{1}{2}$ inches long, from 3 to 2 twelfths in width; the cœca 2 twelfths long, $\frac{1}{2}$ twelfth in breadth; the cloaca globular, and about 8 twelfths in diameter.

The trachea is 3 inches 2 twelfths long, 1 twelfth in breadth, considerably flattened; the rings 90, cartilaginous behind; the last ring as in the preceding species. Bronchi moderate, of about 15 half rings. The muscles are as in the Passenger Pigeon.

WHITE-HEADED PIGEON.

COLUMBA LEUCOCEPHALA, LINN.

PLATE CLXXVII. Vol. II. p. 443.

THE White-headed Pigeon does not occur to the westward of the Florida Keys on the shores of the Gulf of Mexico ; at least I have seen none in any portion of all that extensive range of country as far as Galveston Island in Texas. The eggs of this species measures one inch and two and a half eighths in length, an inch and half an eighth in breadth ; although in more than fifty instances I found two eggs in each nest, the Earl of DERBY informs me that in captivity, like *Columba migratoria*, this Pigeon lays only one.

In a specimen preserved in spirits, the interior of the mouth is similar to that of the Passenger Pigeon ; as is the tongue, which is 8 twelfths long, but broader towards the end than in that species. The œsophagus is 5 inches 9 twelfths long ; its width at the upper part nearly 1 inch ; the crop of the same form and structure as in the species above named, and nearly of the same size. The stomach is $1\frac{1}{2}$ inch in breadth, $1\frac{1}{4}$ inch in length ; its muscles very strong, the left 6 twelfths, the right 7 twelfths thick ; the epithelium of a horny texture, with two concave grinding surfaces. It contains seeds of fruits. The intestine is 28 inches long : the duodenum is 6 twelfths in breadth ; the average width of the rest of the intestine is 3 twelfths. The cœca are $2\frac{1}{2}$ twelfths long, $\frac{1}{2}$ twelfth in width ; the cloaca very little dilated, its width about 9 twelfths.

The trachea is $4\frac{1}{4}$ inches long, from 3 twelfths to $2\frac{1}{4}$ twelfths in breadth ; the rings extremely feeble, unossified on the back part, and 90 in number ; the last ring of the same form as in the other species, and the muscles are similar. Bronchi moderate, of about 15 half rings.

The brain in these Pigeons is proportionally much smaller than in any other bird examined, excepting the Goat-suckers and Cuckoos.

ZENAIDA DOVE.

COLUMBA ZENAIDA, BONAP.

PLATE CLXII. Vol. II. p. 354.

THE eggs of this species measure one inch and a quarter in length, by nearly seven-eighths in breadth; and are abruptly pointed at the smaller end. I am informed by the Earl of DERBY that this Pigeon is raised with ease in aviaries, so much so as to have induced him to let some loose. Should it thrive in a wild state in England, it forms a valuable accession, as its flesh is excellent.

GROUND DOVE.

COLUMBA PASSERINA, LINN.

PLATE CLXXXII. Vol. II. p. 471.

THIS beautiful Pigeon is rarely met with to the westward of the mouths of the Mississippi, along the coast of the Gulf of Mexico. None were seen on our way to the Texas. The eggs measure seven and a half eighths of an inch by rather more than five-eighths, and are thus of an elongated form.

WILD TURKEY.

MELEAGRIS GALLOPAVO, LINN.

PLATE I. Vol. I. p. 1. MALE.

PLATE VI. Vol. I. p. 33. FEMALE AND YOUNG.

I HAVE ascertained that some of these valuable birds are still found in the States of New York, Massachusetts, Vermont, and Maine. In the winter of 1832-3, I purchased a few fine males in the city of Boston. This species is abundant in the wooded portions of Texas, but none have been observed either on the Rocky Mountains, or to the westward of them. They are, however, becoming less numerous in every portion of the United States, even in those parts where they were very abundant thirty years ago. My friend Dr BACHMAN assures me, that in a state of domestication, the Wild Turkeys, though kept separate from tame individuals, lose the brilliancy of their plumage in the third generation, becoming plain brown, and having here and there white feathers intermixed. The eggs measure 2 inches 7 eighths in length, by 2 inches in breadth, and are rather pointed; their ground-colour is a uniform pale yellowish tint, and marked all over with pale rusty brown spots and dots. I found this species pretty abundant on James River in Virginia, as well as in the market of Washington city, where, in the winter of 1836-7, they sold at the low price of seventy-five cents the piece.

PINNATED GROUS.

TETRAO CUPIDO, LINN.

PLATE CLXXXVI. Vol. II. p. 490.

THIS species is becoming rarer every season in all those portions of our Middle and Atlantic Districts, where twenty years ago it was pretty abundant. In New Jersey it is nearly extirpated. It is abundant on all the prairies of the Texas, and ranges along the shores of the

Missouri as far as the head waters of that stream ; but none have been observed on the Rocky Mountains, or on the plains of the Columbia River. The eggs measure two inches in length, by rather more than one and a half in breadth, and are nearly equally rounded at both ends. All the birds of this family that alight on trees and roots there, have the toes either destitute of feathers or partially naked. On the contrary, those which keep constantly on the ground, have these parts thickly feathered to the claws, more especially during winter. The latter birds roost standing in an almost erect posture, sometimes singly, sometimes in the manner of Partridges, that is, with their tails together and their heads outward. Those which roost on trees *lie down* on the branches, and perhaps do not need feathers on their toes, as these parts receive the warmth from their body while they are in this crouching posture, which they can enjoy in continuance, being less liable to be disturbed by quadrupeds than those that repose on the ground, and sleep erect, in order to be ready to fly off when surprised or approached at night.

RUFFED GROUS.

TETRAO UMBELLUS, LINN.

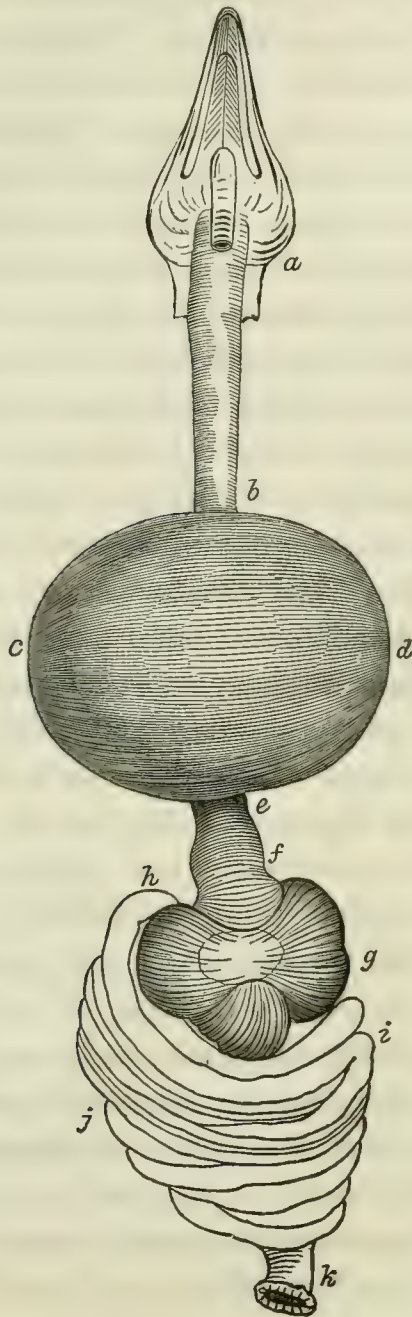
PLATE XLI. VOL. I. p. 211.

It is now ascertained that this species extends over the whole breadth of the Continent, it being found from our Atlantic districts to those bordering the Pacific Ocean, Dr TOWNSEND having observed it on the Missouri and along the Columbia River, and Mr DRUMMOND having procured specimens in the valleys of the Columbia River. According to Dr RICHARDSON, it reaches northward as far as the 56th parallel, and spends the winter on the banks of the Saskatchewan, where it is plentiful. It also exists in the Texas. It is more abundant in our western, middle, and eastern districts, than in our southern States. In the maritime portions of South Carolina it does not exist. In Massachusetts, Maine, New Brunswick, and Nova Scotia, it is very plentiful ; but I saw none in Labrador, although I was assured that it occurs there, and did not hear of it in Newfoundland.

A remarkable difference of plumage is observed in specimens from the opposite parts of the Continent, those from the eastern districts being invariably much greyer, especially on the tail-feathers, than those procured along the Ohio, or in Virginia. These constant differences have tempted some persons to suppose that we have two nearly allied species, instead of one; but after the closest examination of all their parts, as well as of their habits, I never could find anything tending to support this supposition. In some instances, the eggs of what I conceive a young female, have proved much smaller than others, and Dr T. M. BREWER has procured in Massachusetts a laying of them minutely spotted with dull reddish-brown, on a ground of a light salmon colour. The eggs usually measure an inch and a half in length, by an inch and two-twelfths in breadth, and are of a uniform dull yellowish tint.

In this species the palate is flat, with two longitudinal ridges converging anteriorly; the space between these ridges and the slit covered with small papillæ. The tongue is triangular, flattened, sagittate and papillate at the base, 9 twelfths long, fleshy and pointed. The width of the mouth is 8 twelfths. The liver is extremely small, its lobes equal, and 1 inch in length. The heart is also small, 11 twelfths long, 7 twelfths in breadth. The œsophagus, *abf*, is $7\frac{1}{4}$ inches in length; for three inches, *ab*, it has a width of only 5 twelfths; it then enlarges to form a vast crop, *bcd*, $3\frac{1}{2}$ inches in breadth, and $2\frac{1}{2}$ inches in length, that part of it connected with which is 1 inch 5 twelfths in length; it then contracts to $\frac{1}{2}$ inch, *e*; the proventriculus, *ef*, $7\frac{1}{2}$ twelfths in breadth. The stomach, *cd*, is a very powerful muscular gizzard, 1 inch 8 twelfths long, 1 inch 9 twelfths broad; the inferior muscle very large, 1 twelfth thick; the lateral muscles extremely developed, the left 6 twelfths, the right 5 twelfths in thickness; the epithelium thick, tough, yellowish-brown, with two concave surfaces, which are deeply grooved longitudinally. The proventricular glands are large, 3 twelfths long, occupying a space of only 7 twelfths of an inch in breadth. The duodenum, *hi*, curves at the distance of 4 inches. The intestine, *hijk*, is 4 feet 1 inch long; the cœca come off at the distance of $6\frac{1}{4}$ inches from the extremity; one of them $17\frac{1}{2}$, the other $16\frac{1}{2}$ inches long; their width for three inches 4 twelfths, in the rest of their extent 6 twelfths; they are narrowed toward the end, and terminate in a blunt nipple-like point; their inner surface has 7 longitudinal ridges, and they are filled with a pultaceous mass. The width of the duo-

denum is $5\frac{1}{2}$ twelfths; that of the greater part of the rest of the intestine 6 twelfths; the cloaca, *k*, is not enlarged.



The trachea is 6 inches long, rather slender, its breadth at the top 3 twelfths, at the lower part $2\frac{1}{2}$ twelfths. The rings are feeble and unossified, 100 in number. There are no inferior laryngeal muscles. The bronchi are very short, rather wide, of about 12 half rings. The lateral muscles are rather large, the sterno-tracheal slips moderate.

SPOTTED OR CANADA GROUS.

TETRAO CANADENSIS, LINN.

PLATE CLXXVI. Vol. II. p. 437

ACCORDING to Dr RICHARDSON, all the thick and swampy black-spruce forests between Canada and the Arctic Sea abound with this bird, and considerable numbers exist in the severest seasons as high as the 67th parallel. I am informed by Dr TOWNSEND that it is also plentiful on the Rocky Mountains and the plains of the Columbia, from which parts I have obtained specimens differing in nothing from others procured in Maine and Labrador. I have also compared those in the Edinburgh Museum, which Mr DOUGLASS was pleased to name *Tetrao Franklinii*, with several of my own, and feel perfectly confident that they are all of one and the same species.

In a male preserved in spirits, the mouth is of the moderate width of $10\frac{1}{2}$ twelfths; the palate flat, with two longitudinal ridges, the posterior aperture of the nares 8 twelfths long, strongly papillate on the edges; the tongue short, being only $7\frac{1}{2}$ twelfths in length, triangular, a little concave above, emarginate at the base, with long pointed papillæ, disposed in two series, the tip somewhat obtuse. The œsophagus is $6\frac{1}{2}$ inches in length; its width from 10 twelfths to 8 twelfths for the length of $3\frac{1}{2}$ inches, where it opens into a globular sac 2 inches 9 twelfths in diameter, the space between the upper and lower aperture of which is only 9 twelfths. The stomach is a very large and powerful gizzard, of an irregular elliptical form, $1\frac{1}{2}$ inch in length, $2\frac{1}{4}$ inches in breadth; the right muscle 9 twelfths, the left 11 twelfths in thickness; the tendons large and radiated; the epithelium tough, horny, with two nearly flat smooth grinding surfaces. The intestine is 3 feet 2 inches long, with a nearly uniform width of 3 twelfths. The cœca commence at the distance of 4 inches from the extremity, and are $16\frac{1}{2}$ inches long, their width $3\frac{1}{2}$ twelfths, excepting for 3 inches at the commencement, where it is only $2\frac{1}{2}$ twelfths; on their inner sur-

face are six longitudinal villous ridges, the intervals between which are also covered with prominent villi, as is the whole interior of the intestine. There is no enlargement of the rectum.

The trachea is $5\frac{1}{2}$ inches long, much flattened, at first 3 twelfths in breadth, presently contracting to $2\frac{1}{4}$ twelfths, and so continuing until toward the lower end, where it gradually enlarges to $3\frac{1}{4}$ twelfths. The rings are very feeble, slightly ossified, 102 in number, with 2 dimidiate rings. The lateral muscles are slender, as are the sterno-tracheal. There are no inferior laryngeal muscles.

VIRGINIAN PARTRIDGE.

PERDIX VIRGINIANA, LATH.

PLATE LXXVI. VOL. I. p. 388.

THIS species occurs far up the Missouri; and is extremely abundant in the Texas, where it principally keeps on the prairies. In the Floridas I found it all over the pine barrens; but none were seen on any of the Keys. In the Texas, the Floridas, and as far eastward as the neighbourhood of Charleston, in South Carolina, it breeds twice in the year, first in May, and again in September. The following is an account of some attempts to domesticate this bird made by my friend Dr BACHMAN:—

“Several years ago I made an attempt to domesticate the Virginian Partridge, and, contrary to the usually received opinion, I was quite successful. The eggs had been obtained from the fields, and were hatched under a Bantam Hen. By confining the young with their foster-mother for a few days, they soon learned to follow her like young chickens. They were fed for a couple of weeks on curds, but soon began to eat cracked Indian corn, and several kinds of millet. They were permitted to stray at large in my garden; but fearing that they might be induced to fly over the enclosure and stray away, I amputated a joint of the wing. There was no difficulty in preserving them during the summer and winter, and they became so very gentle

that they were in the habit of following me through the house, and often seated themselves for hours on the table at which I was writing, occasionally playfully picking at my hand, and running off with my pen. At night they nestled in a coop placed for that purpose in the garden. The cats in the neighbourhood, unfortunately for my experiment, took a fancy to my birds, and carried off several, so that at the breeding season my stock was reduced to two females, with a greater number of males. The latter now commenced their not unmusical notes of "bob-white," at first low, but increasing in loudness and energy till they were heard through the whole neighbourhood. These notes were precisely similar to those of the wild birds, affording a proof that they were natural and not acquired by an association with those of their own species, as these birds had no opportunity of hearing any other notes than those of the poultry on the premises. As the spring advanced, the males became very pugnacious, and continual contests took place among themselves, as well as with the Pigeons, and the young poultry that occasionally intruded on their domicile. In May they commenced laying, both in one nest, in a box placed for the purpose. The eggs were all impregnated, and on being placed under a hen were hatched. A variety of engagements interrupted my attending to them afterwards, and by some accident I was prevented from pursuing my experiment farther. My friend Dr WILSON, however, was still more successful than I had been. He placed in his aviary several birds of this species that had been caught in a trap in an adult state. These, in the following spring, sought out secluded nooks overhung by branches of shrubbery, where they built their nests, and laid their eggs. The males and females both sat upon them by turns, and in some instances all the eggs in the nest were hatched. They were much attached to their young, sheltered them under their wings, and endeavoured to protect them from the persecution of other birds confined in the aviary. Owing, however, to the small space in which they were confined, none of the young were finally raised. These experiments, however, as far as they went, convinced us that this species may be easily domesticated, and that if they are preserved from being molested by cats and other enemies, they may be kept in enclosures and multiplied to a considerable extent."

The eggs measure an inch and a quarter in length, seven and a half eighths in breadth, and taper to a small rounded point.

In a male preserved in spirits, the roof of the mouth is covered posteriorly with large flattened papillæ, and has a very prominent median ridge anteriorly; its width is $5\frac{1}{2}$ twelfths. The tongue is triangular, fleshy, emarginate and papillate at the base, with one of the papillæ on each side very large. The œsophagus, Fig. 1, *a e*, which has at first a width of 4 twelfths, forms an ovate oblique crop, *b c*, 1 inch 2 twelfths in its great-

Fig. 1.

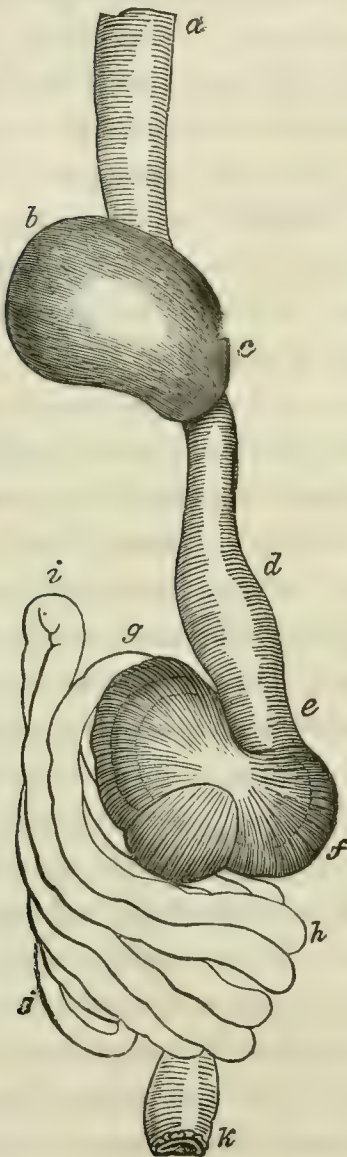
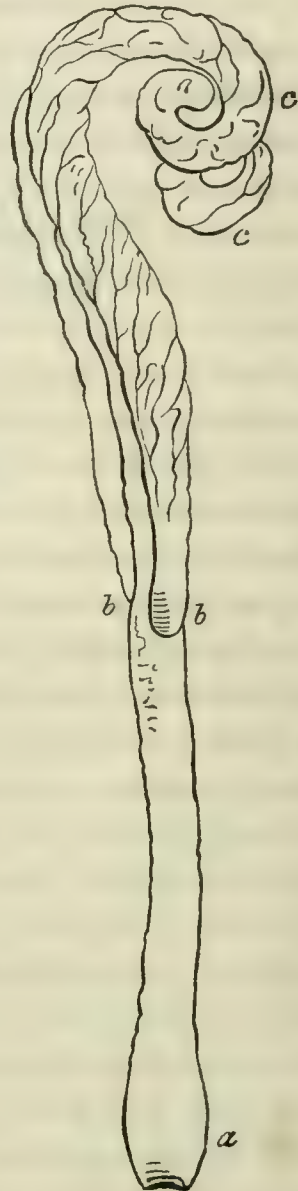


Fig. 2.



est length, and 9 twelfths in breadth, which, together with the œsophagus, lies on the right side of the neck; it then passes obliquely to the left side, forms a proventriculus, *d e*, of an oblong form, 5 twelfths in

width, with very large cylindrical glands arranged so as to form a belt $\frac{1}{2}$ inch in breadth. The stomach, *efg*, is a very large and strong gizzard, broader than long, and placed obliquely, its length 1 inch, its breadth $1\frac{1}{4}$ inch; the left muscle $3\frac{1}{2}$ twelfths, the right 5 twelfths thick, the lower muscle very thin but prominent; the tendons very large; the epithelium very dense and horny, longitudinally rugous; the grinding surfaces concave. The proventricular glands are 3 twelfths in length, the upper inclining downwards, the lower perpendicular. The liver is rather small, the right lobe 1 inch 1 twelfth in length, the left divided into two lobes, of which the anterior is 10 twelfths, the posterior 1 inch in length. The intestine, *ghk*, is of great length and width, the former 26 inches, its average diameter being $2\frac{3}{4}$ twelfths. The duodenum, *ghi*, curves round the lower edge of the stomach, returns at the distance of $4\frac{1}{2}$ inches, ascends to the liver, which has two ducts, but is destitute of gall-bladder, then forms seven curves, and terminates in the rectum above the stomach. The cœca, Fig. 2, *bc*, come off at the distance of $2\frac{1}{4}$ inches, and are $4\frac{1}{4}$ inches in length; their width at the commencement 3 twelfths, their greatest width $4\frac{1}{2}$ twelfths, their extremity obtuse and convoluted. They are marked with oblique branched ridges on the inner surface. The intestine at this part is 2 twelfths in width; the rectum, *ab*, $2\frac{1}{2}$ twelfths, without cloacal enlargement.

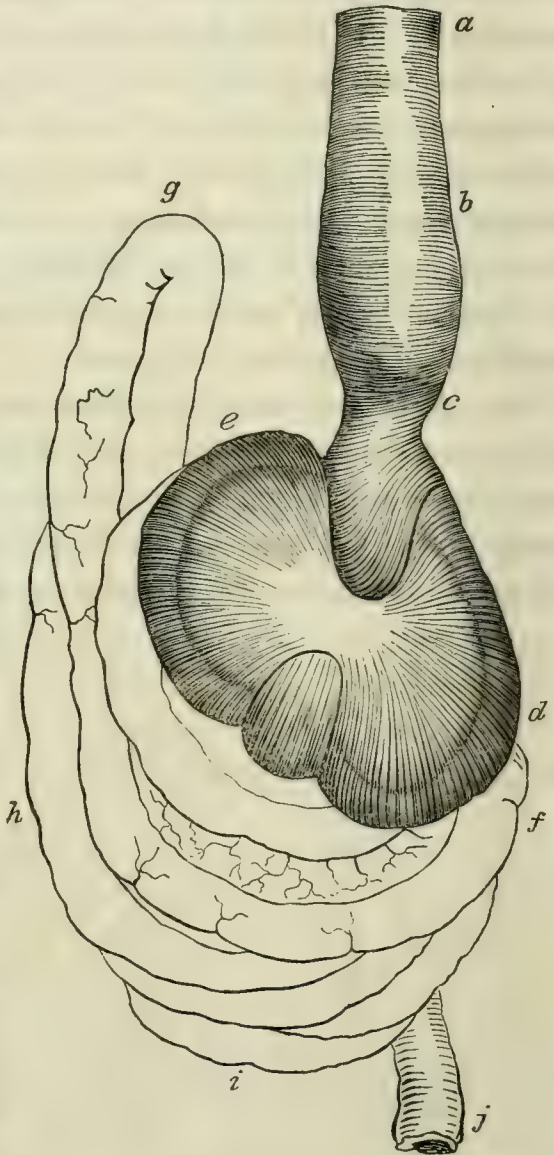
The trachea is 3 inches 2 twelfths long, flattened; its breadth at the top 2 twelfths, at the lower part 1 twelfth; its rings cartilaginous, about 85; the lower very large, with a membrane intervening between its two portions. The lateral muscles are strong, but there are no inferior laryngeal muscles. The rings of the bronchi are only 10.

AMERICAN COOT.

FULICA AMERICANA, GMEL.

PLATE CCXXXIX. VOL. III. p. 291.

IN an adult male preserved in spirits, the roof of the mouth is narrow, flattened, with two middle series of acute reversed papillæ, and two lateral elevated lines extending to the tip ; the lower mandible deeply concave ; the edges of both sharp, and the tips narrow but obtuse. The width of the mouth is $\frac{1}{2}$ inch. The tongue is fleshy, thick, 11 twelfths long, concave above, with the tip narrowed, but rounded. The cesophagus, *abc*, is 8 inches long, of the uniform width of $\frac{1}{2}$ inch ; the proventriculus 9 twelfths in breadth. The stomach, *cde*, is a very large, extremely muscular, transversely elliptical, oblique gizzard, $1\frac{1}{2}$ inch long, 2 inches in breadth ; its lateral muscles extremely developed, the right 10 twelfths, the left 1 inch in thickness ; the tendons radiated, and covering nearly the whole surface ; the inferior and superior muscles narrow and prominent. Its contents are sand and remains of shell-fish. The epithelium forms two large grinding plates, of which the right is concave, the left convex. The intestine,



efghij, is long and very wide ; it first curves along the edge of the stomach to the distance of $4\frac{1}{4}$ inches, returns to the liver, runs along the right side to the extremity of the abdomen, is convoluted in an elliptical form, with 12 folds. Its length is 4 feet 8 inches, its width from $\frac{1}{2}$ inch to $3\frac{1}{2}$ twelfths, toward the rectum enlarging to $\frac{1}{2}$ inch, and so continuing to the end. The cœca are extremely elongated, being 11 inches in length, for 2 inches at the commencement only 2 twelfths in width, afterwards 4 twelfths, and again contracting to 2 twelfths, toward the end, which is obtuse ; their distance from the extremity 4 inches. There is no cloacal dilatation.

The extremely developed gizzard, with its large grinding surfaces, the very long and wide intestine, and the extraordinarily large cœca, together with the uniform undilated rectum, indicate the most direct proximity to the Gallinaceous birds. The digestive organs, however, differ from those of the Rasores in one essential respect, namely, in there being no crop, or dilatation of the œsophagus. They are also very nearly allied to those of the Ducks, differing only in having the cœca proportionally larger. The *Anatinæ* in fact are in some respects aquatic *Gallinacæ*.

The trachea is $6\frac{1}{4}$ inches long, from $4\frac{1}{2}$ twelfths to 2 twelfths in breadth, flattened, with the rings feeble, until 1 inch from the lower extremity, when it becomes laterally compressed, with the rings much narrower. The number of these is 154. Bronchi very short, of 20 half rings, which are not ossified as in the Grebes, but cartilaginous. The rings of the trachea are narrowed in the middle in front and behind, so as to be perfectly flexible there, as well as on either side. The lateral muscles are moderate. There are no inferior laryngeal muscles, excepting on each side a very thin slip going to the last ring.

I found this species very abundant in the Texas, in May 1837. It breeds in Maine and Massachusetts.

CLAPPER RAIL OR SALT-WATER MARSH HEN.

RALLUS CREPITANS, GMEL.

PLATE CCIV. Vol. III. p. 33.

IN an adult male of this species preserved in spirits, the anterior part of the roof of the mouth has a prominent median ridge, and two deep grooves. The tongue is very long, remarkably slender, trigonal, canalliculate, tapering to a bristly point, its base emarginate and papillate, its length 1 inch 11 twelfths. The width of the mouth is only 4 twelfths. The œsophagus, Fig. 1, *a b c*, is 8 inches long, narrow in its upper third, where its width is four twelfths, enlarging a little at the lower part. The breadth of the proventriculus is 9 twelfths. The lobes of the liver are very unequal, the right being 2 inches 10 twelfths, the left 2 inches in length. The stomach, *c d e*, is a remarkably muscular gizzard of a roundish form, $1\frac{1}{2}$ inch long, and of about the same breadth; its lateral muscles very prominent, the left large, the inferior muscle well pronounced; the epithelium dense, hard, of a bright red colour, and forming two oblong flat grinding plates, with intermediate rugæ. The proventricular glands are cylindrical, 1 twelfth in length, forming a belt 9 twelfths in breadth. The contents of the stomach are fragments of small shells. The intestine, *f g h*, is $31\frac{1}{2}$ inches long; its average width $4\frac{1}{2}$ twelfths; rectum, *b c d*, Fig. 2, 3 inches long; cœca, *b e*, $3\frac{1}{2}$ inches in length, their width for an inch and a quarter, $1\frac{1}{2}$ twelfth; cloaca globular, nearly 1 inch in diameter.

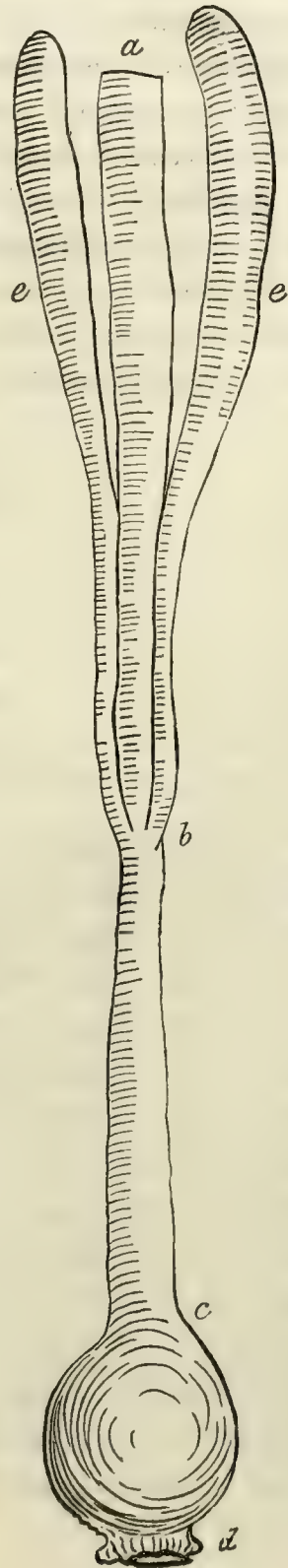
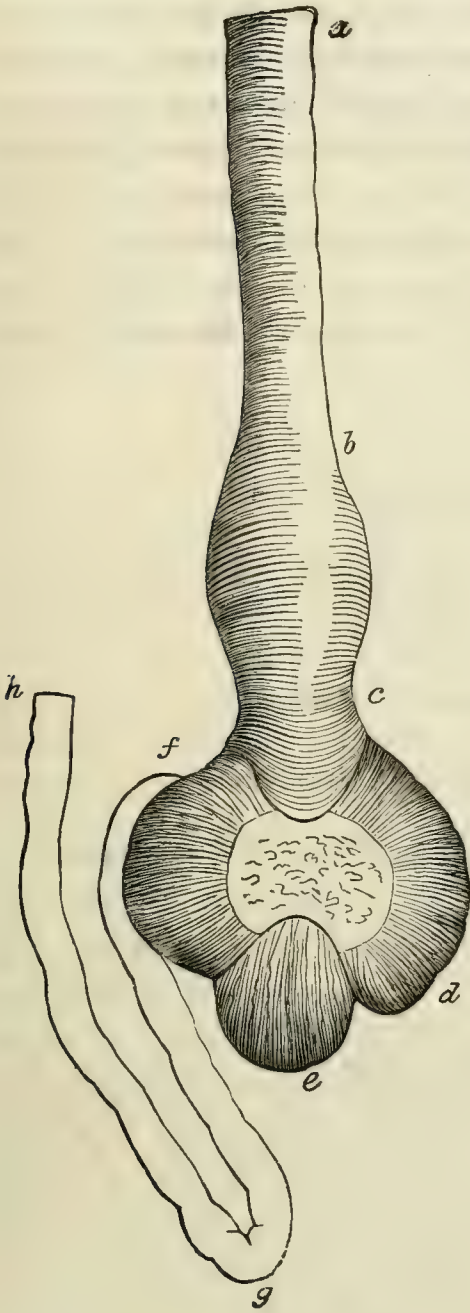
The trachea is 6 inches long, flattened, its breadth at the upper part 4 twelfths, soon diminishing to 3 twelfths, and so remaining to near the end; the rings ossified, 145 in number; the last rings contracted to $1\frac{1}{2}$ twelfth. Bronchi moderate, the half rings about 20, very slender and cartilaginous.

The sternum in this, as in the other Rails and Gallinules, has the body extremely narrow, with two very deep and narrow notches at its posterior extremity, the crest moderately elevated, and extending its whole length; the furcula very narrow and slender, the coracoid bones little diverging and of moderate strength. In these respects, the sternal apparatus agrees with that of the Gallinules and Coots, and pre-

sents a strong affinity to that of the Scolopaceous Courlan, in which the body of the sternum, though much broader, is of the same form,

Fig. 1.

Fig. 2.



and the crest perfectly similar. In the Rails, Gallinules, and Coots, the innutritious part of the food, whether fragments of shells, or husks of seeds, passes into the intestine, not being ejected by vomiting, in which respect the birds of this family are analogous to the Gallinaceous group, of which the cœca attain the maximum size, while in the Rails and Gallinules these organs are next in development. It is not merely a vague and distant analogy that the *Rallinæ* thus present to the Gallinaceous birds, but a direct gradation, insomuch that they might with more propriety be considered as the aquatic group of the Rasores, the Coots forming the extreme part of the series.

I found this species exceedingly abundant, and breeding along the shores of the Gulf of Mexico, from the mouth of the Mississippi to Galveston Island, in the Texas.

SORA RAIL.

RALLUS CAROLINUS, LINN.

PLATE CCXXXIII. VOL. III. p. 251.

IN an adult male preserved in spirits, the mouth is very narrow, its width being only 3 twelfths; there are on the palate two longitudinal ridges destitute of papillæ, and anteriorly two elevated lines running to the point of the mandible. The tongue is $7\frac{1}{2}$ twelfths long, emarginate and papillate at the base, flat above, with the point narrow, but rounded and thin-edged. The œsophagus 3 inches 9 twelfths long, uniformly 4 twelfths in width. The stomach is a very large transversely elliptical gizzard, 1 inch long, 1 inch $4\frac{1}{2}$ twelfths in breadth, and placed obliquely; its lateral muscles very large, the left 7 twelfths thick, the right 6 twelfths; the tendons very large, covering nearly the whole surface; the lower muscle narrow but prominent; the epithelium dense, tough, with two elliptical concave grinding surfaces. The contents of the stomach are numerous particles of quartz, with vegetable fibres, and seeds of grasses. The proventriculus is oblong, with a belt of glands $\frac{1}{2}$ inch in breadth. The lobes of the liver are nearly

equal, and 1 inch 2 twelfths long. The intestine is $19\frac{1}{2}$ inches long, of the uniform width of $2\frac{1}{2}$ twelfths, and forming 9 folds. The cœca are $2\frac{1}{4}$ inches long, 2 twelfths in their greatest width, $2\frac{1}{4}$ inches from the extremity. The cloaca is globular, $7\frac{1}{2}$ twelfths in diameter.

The trachea is 3 inches long, much flattened, from 2 twelfths to $1\frac{1}{2}$ twelfth in breadth; its rings very narrow, faintly ossified, with four contractions, one at the middle in front, another behind, and one on each side, as in all the Rails, Gallinules, and Coots. The rings are 106 in number. Bronchi moderate, of 18 half rings. Lateral muscles thin; a very slender inconspicuous pair of inferior laryngeal muscles.

VIRGINIAN RAIL.

RALLUS VIRGINIANUS, LINN.

PLATE CCV. VOL. III. p. 41.

IN an adult male, the width of the mouth is only 3 twelfths; on the palate are two papillate ridges, then anteriorly a single series of strong reversed papillæ, and towards the end a median ridge. The tongue is 1 inch 2 twelfths in length, very slender, broadly channelled above in its whole length, horny beneath, the tip narrow, thin-edged, and slightly slit. The œsophagus is 3 inches 10 twelfths long, 3 twelfths in width; the proventriculus ovate, $3\frac{1}{2}$ twelfths in breadth. The stomach is of moderate size, 10 twelfths long, 11 twelfths broad; its lateral muscles very large, as are the tendons, the lower muscle prominent; the epithelium dense, bright red, with numerous longitudinal rugæ, being thus less adapted for grinding than that of the Sora Rail. The contents are numerous fragments of small shells, and remains of insects. The lobes of the liver are very unequal, the left 1 inch, the right $1\frac{1}{2}$ inch in length. The intestine is 18 inches long, its average width $2\frac{1}{2}$ twelfths; the cœca 1 inch 7 twelfths long, $2\frac{1}{2}$ twelfths in width, rounded at the end, 1 inch 10 twelfths from the extremity; the cloaca globular 10 twelfths in diameter.

The trachea is 3 inches long, much flattened, from $1\frac{1}{2}$ twelfth to 1 twelfth in breadth; the rings feeble, divided as in the Sora Rail, and 120 in number; bronchi moderate, of 15 half rings.

This species also I found in the Texas, and from thence to the mouths of the Mississippi.

YELLOW-BREASTED RAIL.

RALLUS NOVEBORACENSIS, BONAP.

PLATE CCCXXIX. Vol. IV. p. 251.

Dr TRUDEAU has favoured me with the following notice respecting this species:—"The Yellow-breasted Rail winters in the Southern States of the Union. It arrives in Louisiana in company with *Rallus jamaicensis*, about the end of October or the beginning of November. As well as that species it is very common in the marshes in the vicinity of the woods. It is a very difficult thing to force either of these two Rails to take flight; for if chased by a dog, they will only fly when the animal is near catching them. However, it is much easier to kill them at this season of the year than in the spring, in the Northern States. It is there I can say almost impossible to put them up. The reason of this is probably their attachment to their eggs or young ones. Some of them nestle in Louisiana. About the beginning of March, these two species begin to migrate northward. They are to be seen at Salem, in New Jersey, by the end of April. A few of the Yellow-breasts remain there, and a great number of the other species breed. I suppose that many proceed as far as Hudson's Bay."

AMERICAN GOLDEN PLOVER.

CHARADRIUS MARMORATUS, WAGLER.

BESIDES the species described in the third volume, p. 627, and which is identical with the Golden Plover of Europe, there is extensively distributed in America another species, of which a brief description is here taken from specimens presented to me by Captain Ross. Two of these specimens are of adult birds in their summer plumage, the other of a young individual. They seem to be of the same size as British specimens, with which they are compared, and in their form and proportions differ very slightly; the tarsus of the present species being slightly longer than that of the other, while the toes are shorter.

Bill black. Feet bluish-grey, claws dusky. The upper part of the head, hind neck, and the upper parts of the body, are variegated with brownish-black and bright yellow, the latter in spots along the edges of the feathers. The quills and their coverts are dark greyish-brown, the secondaries paler, the inner margined with yellowish-white spots, the smaller coverts spotted with the same; the tail-feathers are greyish-brown, faintly banded with paler, the two central with marginal yellowish spots. In another individual, the tail is destitute of bars, the outer webs of the lateral feathers only being marked with yellowish-white spots. A band across the forehead, extending on each side over the eye, and down the neck, white, the rest of the lower parts brownish-black, excepting the lower tail-coverts, which are chiefly white, and the axillars and lower wing-coverts, which are light grey, the axillars of the other species being always white.

Dimensions of a female preserved in spirits. Length to end of tail 10 inches, to end of wings 11, to end of claws $11\frac{8}{12}$; wing from flexure $7\frac{4}{12}$; tail $2\frac{1}{12}$; extent of wings $22\frac{1}{4}$; bill along the ridge $1\frac{1}{2}$; along the edge of lower mandible 1 inch; bare part of tibia $\frac{3}{4}$; tarsus $1\frac{7}{12}$; inner toe $\frac{8}{12}$, its claw $\frac{2}{12}$; middle toe 1 inch, its claw $\frac{5}{12}$; outer toe $\frac{9}{12}$, its claw $\frac{1}{12}$.

As in all the species of this group, the mouth is exceedingly narrow, it being in the present only 4 twelfths in width; and the mandibles are

connected by skin so as to render the gape-line very short. The palate is very narrow, flattened, with two longitudinal ridges, and anteriorly with a few large papillæ placed in a double series. The upper mandible is moderately, the lower deeply concave. The tongue is 9 twelfths long, very narrow, involute, and deeply channelled above, its base emarginate and papillate, the tip narrow and entire. Posterior aperture of nares linear, with the margins papillate. Œsophagus 4 inches long, without dilatation, narrow, its greatest width being 3 twelfths. Proventriculus bulbiform, 4 twelfths in breadth. Stomach a rather small gizzard, of an elliptical form, moderately compressed, 10 twelfths long, 9 twelfths in breadth; its lateral muscles large, as are the tendons; the inferior muscle prominent; the epithelium thick, with strong longitudinal rugæ, which are impressed on the muscular coat. The proventricular glandules are small, and very numerous, forming a belt 7 twelfths in breadth. The intestine is long and narrow; its length 19 inches, its average width 2 twelfths, a little wider toward the rectum; cæca 1 inch 9 twelfths long, cylindrical, $\frac{1}{1\frac{1}{2}}$ in breadth, but for half an inch at the commencement only $\frac{1}{2}$ twelfth; the rectum $1\frac{1}{2}$ inch long, its greatest breadth $3\frac{1}{2}$ twelfths, there being no cloaca.

Trachea 2 inches 10 twelfths long, 2 twelfths broad, much flattened; its rings cartilaginous, very narrow, 120 in number, with 2 dimidiate rings. Bronchial half rings about 20. The lateral muscles thin; the sterno-tracheal slender; a single pair of inferior laryngeal muscles.

KILDEER PLOVER.

CHARADRIUS VOCIFERUS, WILS.

PLATE CCXV. Vol. III. p. 191.

THE mouth is exceedingly narrow, its width being only 2 twelfths. The palate has two longitudinal ridges, and anteriorly a few very prominent papillæ. The tongue 7 twelfths long, very narrow, deeply channelled above, with involute edges. The œsophagus is 3 inches 10 twelfths long, 2 twelfths in width; the proventriculus $5\frac{1}{2}$ twelfths. The stomach is broadly elliptical, 10 twelfths long, $8\frac{1}{2}$ twelfths in breadth; its lateral muscles very large; the epithelium thick, with prominent longitudinal rugæ. The proventricular glands form a belt $6\frac{1}{2}$ twelfths in breadth. The intestine is $14\frac{1}{2}$ inches long, its width 2 twelfths. Cœca 1 inch 9 twelfths long, their greatest width $1\frac{1}{2}$ twelfth; their distance from the extremity $1\frac{1}{2}$ inch. The trachea is 2 inches 9 twelfths long, from 2 twelfths to $1\frac{1}{2}$ twelfth in breadth, flattened; the rings feeble, about 90 in number. Bronchi of moderate width and about 15 half rings. The lateral muscles thin, the sterno-tracheal slender. There is a single pair of inferior laryngeal muscles, or a prolongation of the lateral muscles, going to the first bronchial ring. The individual examined is a male.

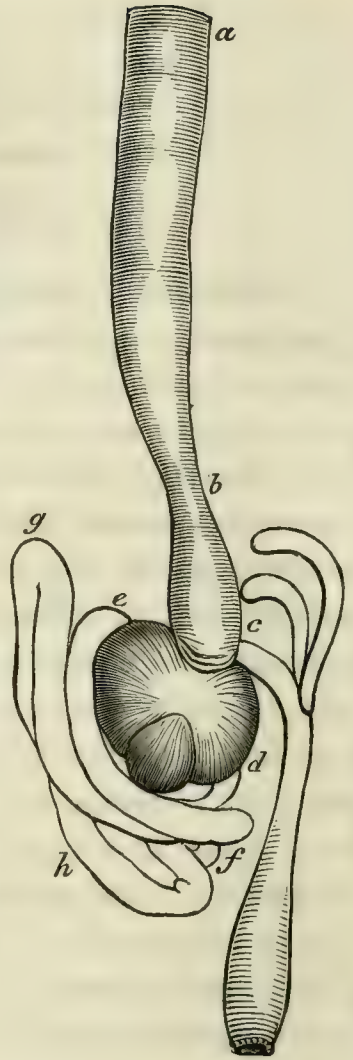
WILSON'S PLOVER.

CHARADRIUS WILSONIUS, ORD.

PLATE CCIX. Vol. III. p. 73.

THE palate as in the other species, but at its anterior part commence three prominent ridges, which run to the end of the upper mandible. The tongue is 8 twelfths long, rather fleshy, narrow, flattened above, with a median groove, the point narrow, but rounded, with a thin horny edge. The width of the mouth is $4\frac{1}{4}$ twelfths. The œsophagus, *abc*, is 3 inches 4 twelfths long, much wider than in the two preceding species, its breadth at the top being 5 twelfths, at the distance of

1 inch 4 twelfths ; the proventriculus, *b c*, 4 twelfths in breadth, its glandules forming a belt 6 twelfths in breadth. The stomach, *c d e*, is rather large, roundish, compressed, 9 twelfths in length, 10 twelfths in breadth ; the lateral muscles 5 twelfths in thickness ; the epithelium remarkably dense, thick, with two broad granulated ridges on each side forming grinding surfaces. The intestine, *e f g h*, is rather short, and wider than in the other species ; its length $9\frac{1}{2}$ inches, its width at the upper part 4 twelfths, diminishing to 2 twelfths. Cæca 1 inch 4 twelfths long, cylindrical, 1 twelfth in width ; their distance from the extremity $1\frac{1}{4}$ inch. Trachea $2\frac{1}{4}$ inches long, flattened, from 2 twelfths to 1 twelfth in breadth ; its rings about 90, cartilaginous. Bronchial half rings about 15. Lateral and sterno-tracheal muscles strong ; a single pair of inferior laryngeal muscles. Adult male.



PIPING PLOVER.

CHARADRIUS MELODUS, ORD.

PLATE CCXX. VOL. III. p. 155.

IN this species the upper mandible is more concave than in any of the preceding ; but the structure of the mouth is similar. Its width is $4\frac{1}{2}$ twelfths. The tongue is 5 twelfths long, deeply concave above, fleshy, the tip rounded, thin-edged, and horny. The œsophagus is $2\frac{1}{2}$ inches long, 2 twelfths in width, its inner coat longitudinally plicate, as in all the other species. Proventriculus 3 twelfths in breadth, its belt of glandules 5 twelfths. The stomach rather small, elliptical, $7\frac{1}{2}$ twelfths long, 6 twelfths in breadth ; the lateral muscles large, the

epithelium with 24 longitudinal rugæ. Intestine 12 inches long, narrow; the duodenum $1\frac{1}{4}$ twelfth in width, the rest uniform, the rectum only being a little enlarged. Cæca 1 inch 1 twelfth from the extremity, 1 inch 2 twelfths in length, and $\frac{3}{4}$ twelfth in breadth. Trachea 1 inch 10 twelfths long, $1\frac{3}{4}$ twelfth in breadth, contracting to 1 twelfth; its rings about 70, cartilaginous. Bronchial half rings about 15. Muscles as in the last species. Male.

AMERICAN RING PLOVER.

CHARADRIUS SEMIPALMATUS, BONAP.

PLATE CCCXXX. Vol. IV. p. 256.

WIDTH of mouth 2 twelfths. Tongue 4 twelfths long, very concave above, rounded at the point. Œsophagus 2 inches 8 twelfths long, 3 twelfths in breadth. Proventriculus $3\frac{1}{2}$ twelfths broad, its glandular belt 6 twelfths. Stomach oblong, 9 twelfths by 7 twelfths; its muscles large; the epithelium with numerous rugæ. Intestine 14 inches long, 2 twelfths in breadth. Cæca 1 inch from the extremity, $1\frac{1}{2}$ inch long, $1\frac{1}{2}$ twelfth in width. Trachea 2 inches long, $1\frac{1}{2}$ twelfth in breadth; its rings about 70, very feeble. Bronchial half rings about 15. The muscles as in the last species.

In the genus *Charadrius*, the œsophagus is thus narrow or of moderate width, without crop or remarkable dilatation. The proventriculus is large, bulbiform, with very numerous small cylindrical glands disposed in a broad belt. The stomach is roundish or broadly elliptical, moderately compressed; its lateral muscles large, as are the tendons; the lower muscle prominent and thin; the upper of considerable size; the epithelium dense, and longitudinally rugous. The intestine is rather long, and of moderate width; the rectum considerably dilated; the cæca long, very slender, cylindrical, contracted at the base, with the tip blunt. The lobes of the liver are very unequal, the right being largest; there is no gall-bladder. The trachea is rather wide, flattened; its rings very numerous, narrow, cartilaginous, the lower ring large; two dimidiate rings. Bronchi rather wide, of from 15 to 20 half rings. Lateral muscles moderate, sending a slip to the last dimidiate ring.

AMERICAN OYSTER-CATCHER.

HÆMATOPUS PALLIATUS, TEMM.

PLATE CCXXIII. Vol. III. p. 181.

At Derniere Island, on the 15th of April 1837, we met with a flock of Oyster-catchers, fourteen or fifteen in number, flying compactly, and uttering their usual cry of *weep, weep*. Two were shot down into the water, but one of them that had only been winged, dived so effectually as to escape from us, in spite of the most strenuous exertions of the sailors. At Galveston Island on the 26th of April, they were quite away from the water, and running among the grass, so that they probably had either eggs or young.

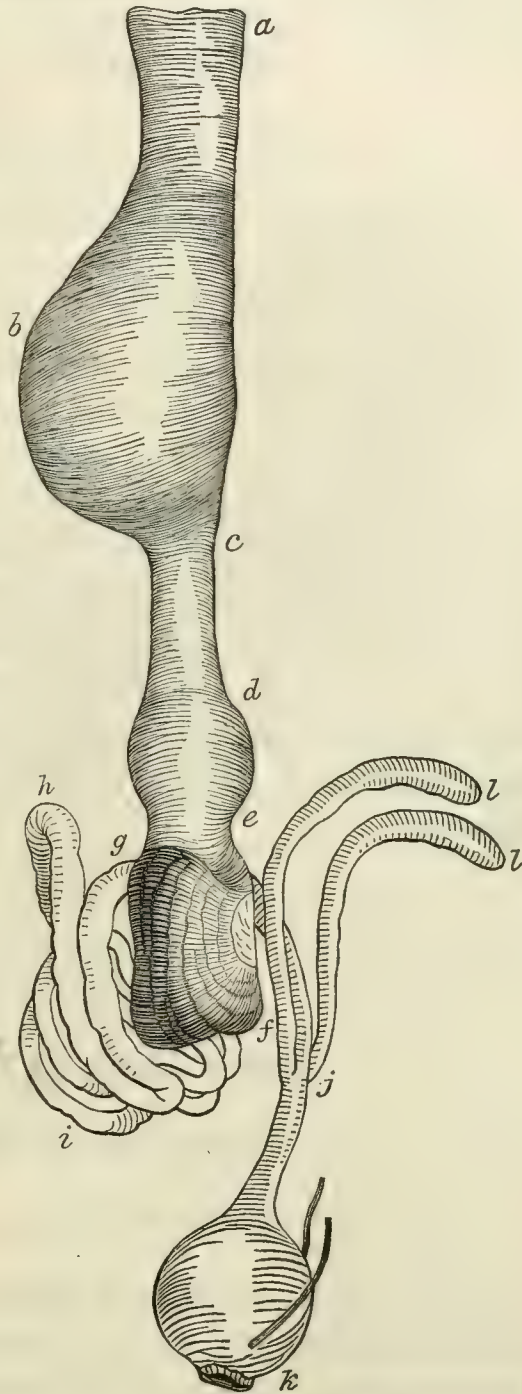
An individual obtained at Derniere Island, weighed 1 lb. 12 oz. ; its alar extent 37 inches ; length to end of tail $19\frac{3}{8}$, to end of claws 19.

One of many specimens preserved in spirits, a female, presents the following particulars. The roof of the mouth is flat, with a median groove towards the end ; the palate with two longitudinal ridges covered with reversed papillæ ; the posterior aperture of the nares linear, margined with papillæ. The tongue is short, $9\frac{1}{2}$ twelfths long, triangular, tapering to a blunt point, emarginate and papillate at the base, flat above, thin and fleshy. The œsophagus, *abcde*, is $8\frac{1}{2}$ inches long, at the upper part 9 twelfths in width, but at the lower part of the neck dilated into an elongated sac or crop, 1 inch 10 twelfths wide ; on entering the thorax it contracts to 9 twelfths. The proventriculus, *de*, is $1\frac{1}{2}$ inch in breadth. The stomach, *fg*, is oblong, $1\frac{3}{4}$ inch long, 1 inch 2 twelfths in breadth ; its muscular coat thick, and disposed into two lateral muscles of moderate strength ; the epithelium tough, dark red, with numerous longitudinal rugæ. The proventricular glands are cylindrical, 2 twelfths long, forming a continuous belt $1\frac{1}{4}$ inch in breadth. The contents of the stomach are testaceous mollusca, with a few fragments of shells and opercula. The lobes of the liver are very unequal, the right $3\frac{1}{4}$ inches long, the left $2\frac{1}{4}$. The intestine, *ghjk*, 58 inches long. It forms the duodenal curve in the usual manner, then runs backward nearly to the extre-

mity, forms several folds or convolutions, then curves up over the stomach, and passes directly to the anus. Its average width is 4 twelfths. The cœca, *ll*, are $4\frac{1}{4}$ inches in length, their greatest width 3 twelfths, their distance from the anus 3 inches; the cloaca, *k*, globular. This bird was nearly ready to lay eggs. One of them has a diameter of 1 inch, which is the full size of the yolk, the albumen not being added until it has entered the oviduct.

The trachea, which is $5\frac{1}{2}$ inches long, gradually tapers from the width of $4\frac{1}{2}$ twelfths to that of $2\frac{3}{4}$ twelfths. Its rings are unossified, 115 in number. The bronchi are of moderate length, wide, of about 20 very thin cartilaginous half rings. The lateral muscles are strong; the sterno-tracheal slips come off close to the inferior larynx, which has no peculiar muscles.

In a male, the œsophagus is 8 inches long, its greatest width near the lower part of the neck $1\frac{1}{2}$ inch. The stomach is small, being $1\frac{1}{2}$ inch long, and 1 inch in breadth. The intestine measures 4 feet 4 inches in length; its average width 4 twelfths. The cœca 4 inches long.



SANDERLING.

TRINGA ARENARIA, BONAP.

PLATE CCXXX. Vol. III. p. 231.

MOUTH extremely narrow, its width only 2 twelfths. Palate moderately concave, as in the Snipes, with two series of reversed papillæ. Tongue 11 twelfths long, slender, tapering, concave above, horny toward the end. Œsophagus 3 inches 2 twelfths long, 2 twelfths wide; proventriculus 3 twelfths in breadth. Stomach large, roundish, oblique, 10 twelfths long, 9 twelfths in breadth; its lateral muscles large; the epithelium dense, longitudinally rugous, and of a reddish colour. Contents of stomach remains of insects and sand. Intestine $9\frac{3}{4}$ inches long, its width $2\frac{1}{2}$ twelfths; cæca 1 inch 1 twelfth long, $1\frac{1}{2}$ twelfth in width, their distance from the extremity $1\frac{1}{4}$ inch; rectum slightly dilated at the end. Trachea $2\frac{1}{2}$ inches long, its breadth 2 twelfths, much flattened; the rings very narrow, unossified, 130 in number. Bronchial half rings about 15. Muscles as in the Tringas, and other genera of this family.

PECTORAL SANDPIPER.

TRINGA PECTORALIS, BONAP.

PLATE CCXCIV. Vol. III. p. 601.

MOUTH very narrow, its width $2\frac{1}{2}$ twelfths. Palate with two rows of reversed papillæ. Tongue very slender, tapering, channelled above, 11 twelfths long. Œsophagus $4\frac{1}{2}$ inches long, its average width $2\frac{1}{2}$ twelfths; proventriculus $3\frac{1}{2}$ twelfths. Stomach oblique, roundish, 10 twelfths long, 9 twelfths in breadth; its lateral muscles large; epithelium dense, longitudinally rugous. Contents of stomach remains of small crustacea, seeds, and fragments of quartz. Intestine $11\frac{1}{2}$ inches long, $1\frac{1}{2}$ twelfth wide; cæca $1\frac{1}{4}$ inch long, 1 twelfth in width, 1 inch

5 twelfths distant from the extremity; rectum 2 twelfths in width, slightly dilated at the end. Trachea $3\frac{1}{4}$ inches long, 2 twelfths in breadth, much flattened; the rings 102, slender, unossified. Bronchi wide, of about 12 half rings. Muscles as in the other species of this family. Male.

SOLITARY SANDPIPER.

TOTANUS CHLOROPYGIUS, VIEILL.

PLATE CCLXXXIX. VOL. III. p. 576.

MOUTH very narrow, $2\frac{1}{2}$ twelfths in width. Tongue 11 twelfths long, channelled above, extremely slender toward the point. Œsophagus 3 inches 2 twelfths long, 2 twelfths wide; proventriculus 3 twelfths in breadth. Stomach roundish, oblique, 9 twelfths by 8 twelfths; its lateral muscles large; epithelium dense and longitudinally rugous. Intestine $13\frac{1}{2}$ inches long; duodenum 2 twelfths in width, the rest $1\frac{1}{2}$ twelfth; cœca 1 inch 2 twelfths long, 1 twelfth wide, and $1\frac{1}{4}$ inch distant from the extremity; rectum slightly dilated toward the end. Trachea $2\frac{1}{4}$ inches long, $1\frac{1}{2}$ twelfth in width, much flattened, the rings narrow, unossified, 128. Bronchial half rings about 15. Muscles as in the other species of this family. Male.

COMMON AMERICAN SNIPE.

SCOLOPAX WILSONI, TEMM.

PLATE CCXLIII. VOL. III. p. 322.

MR T. M. MACCULLOCH writes me thus:—"In your article upon the Snipe, you seem to be unable to say whether the male incubates or not. I am inclined to think he does not. A pair of them have a nest this year close to our house, though I have not been able to find the spot. During any hour of the day, for some time past, the mal

could be heard uttering his curious notes in circles high up in the sky, beyond the reach of sight, and at night, even as late as eleven o'clock, I have heard him serenading his beloved with as much ardour as any lover who ever tried to win his way by music to his mistress' heart. The Snipe flies low at night, and in circles, as in the day; but it is only in particular spots and at short intervals that the sound is heard. The note is exceedingly like the winnowing noise which the wings of Pigeons make when alighting on the ground, and I have never yet been able to determine whether it is actually the voice of the Snipe which is heard, or whether it is produced by the bird's stopping in certain parts of his course and beating the air in some particular way with his wings."

In an adult male, the mouth is excessively narrow, its breadth being only 2 twelfths; on the palate are three longitudinal ridges of strong reversed papillæ, terminating anteriorly in a single ridge of similar papillæ. Both mandibles are moderately concave, with very thick sloping edges. The tongue is 1 inch 8 twelfths long, very slender, induplicate, so as to be deeply channelled in its whole length, emarginate and papillate at the base, tapering to a narrow, horny point. The œsophagus is 9 inches 9 twelfths long, $2\frac{1}{2}$ twelfths in width; the proventriculus $3\frac{1}{2}$ twelfths in breadth. The stomach of moderate size, roundish; its lateral muscles large, the inferior prominent; its length 9 twelfths, its breadth the same; the epithelium thin, dense, with numerous longitudinal rugæ, and of a reddish colour. The right lobe of the liver is 1 inch 8 twelfths, the other only 10 twelfths in length; gall-bladder ovate, 4 twelfths long, $2\frac{1}{2}$ twelfths in breadth. Intestine $14\frac{1}{2}$ inches, its greatest width $1\frac{1}{2}$ twelfth, the least 1 twelfth; the cœca 7 twelfths long, $\frac{3}{4}$ twelfth in breadth, $1\frac{1}{2}$ inch from the extremity; the cloaca ovate, 6 twelfths in width. The intestine curves at first in the usual manner, at the distance of 1 inch 4 twelfths, then advances toward the right lobe of the liver, proceeds backward, forms a single convolution, and terminates in the rectum over the stomach, making altogether only 5 turns.

Trachea 2 inches 10 twelfths long, from $1\frac{3}{4}$ twelfth to $1\frac{1}{2}$ twelfth in breadth, flattened, like that of every other species of the family; the rings very narrow, completely unossified, 108 in number, with 2 additional dimidiate rings. Bronchial half rings 15. Muscles as usual in this family.

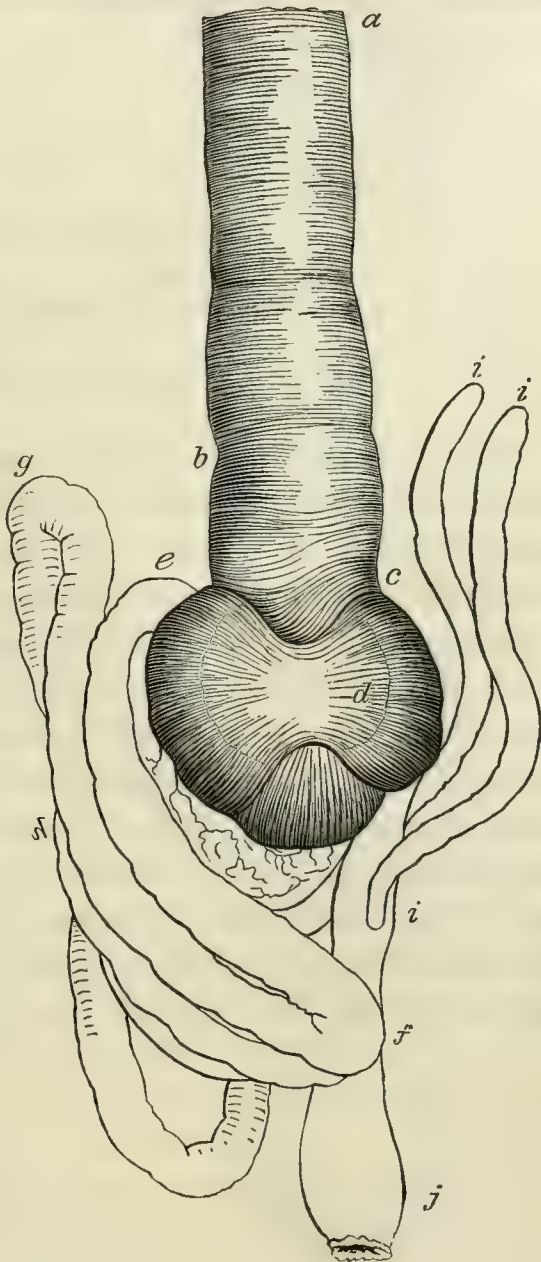
SEMIPALMATED SNIPE OR WILLET.

TOTANUS SEMIPALMATUS, TEMM.

PLATE CCLXXIV. Vol. III. p. 510.

FEMALE. Length to end of tail $15\frac{1}{2}$ inches, to end of wings 16, to end of claws $18\frac{1}{4}$; wing from flexure $9\frac{1}{2}$; tail $3\frac{1}{2}$; bill along the ridge $2\frac{7}{12}$, along the edge of lower mandible $2\frac{8}{12}$; bare part of tibia $1\frac{5}{12}$; tarsus $2\frac{7}{12}$; first toe $\frac{5}{12}$, its claw $\frac{1}{12}$; second toe $1\frac{2}{12}$, its claw $\frac{1\frac{1}{2}}{12}$; third toe $1\frac{4\frac{1}{2}}{12}$, its claw $\frac{3\frac{1}{2}}{12}$; fourth toe $1\frac{2}{12}$, its claw $\frac{2}{12}$; extent of wings $30\frac{1}{4}$.

Mouth very narrow, its width being only 5 twelfths; the two longitudinal ridges on the palate remarkably elevated and thin; two series of papillæ; posterior aperture of nares linear; anterior part of upper mandible flat, with a median prominent line, and thin projecting edges; lower mandible deeply grooved. Tongue 1 inch 8 twelfths long, trigonal, slender, tapering to a slender horny channelled point; its base emarginate and papillate. Œsophagus, *abc*, $6\frac{3}{4}$ inches in length, 11 twelfths in width; proventriculus, *bc*, 10 twelfths broad. Sto-



mach, *cde*, a very strong gizzard, of a roundish form, $1\frac{1}{2}$ inch long, and of the same breadth; its lateral muscles very large and distinct, as are the tendons; epithelium very thick, dense, with two oblong grinding plates, each having four broad longitudinal rugæ, and of a bright red colour. Intestine, *efghij*, 3 feet 3 inches long, only 3 twelfths in width at the upper part, toward the rectum 2 twelfths. Cœca, *ii*, $3\frac{1}{4}$ inches long; their distance from the extremity 3 inches; their width 2 twelfths, the extremity rounded.

Trachea $5\frac{1}{4}$ inches long, from $3\frac{1}{2}$ twelfths to 2 twelfths in breadth, much flattened; its rings unossified, 125, and 1 dimidiate. Proventricular half rings 15. Lateral muscles rather strong; a single pair of inferior or laryngeal muscles.

YELLOW-SHANK.

TOTANUS FLAVIPES, VIEILL.

PLATE CCLXXXVIII. Vol. III. p. 573.

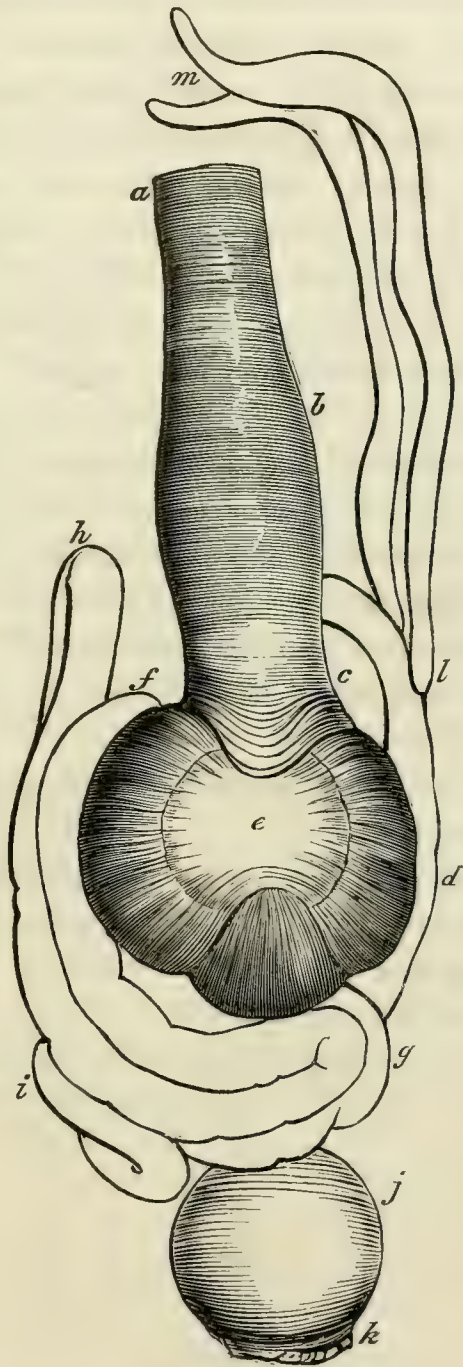
Two series of papillæ on the anterior part of the roof of the mouth. Tongue $1\frac{1}{4}$ inch long, emarginate and papillate at the base, as deep as broad, channelled above, tapering to a narrow but obtuse horny point. Œsophagus $4\frac{1}{4}$ inches long, 3 twelfths in width; proventriculus $3\frac{1}{2}$ twelfths. Stomach rather small, elliptical, 8 twelfths long, 6 twelfths broad; the lateral muscles rather strong; epithelium dense, rather thin, with numerous longitudinal rugæ, and of a dark red colour. Intestine 18 inches long, its greatest width in the duodenal part $1\frac{1}{2}$ twelfth, the smallest toward the rectum 1 twelfth. Cœca 1 inch 2 twelfths long, 1 twelfth wide, $1\frac{1}{3}$ inch distant from the extremity. Cloaca obovate, 5 twelfths in width. Trachea 3 inches 2 twelfths in length, from $2\frac{1}{2}$ twelfths to $1\frac{1}{2}$ twelfth in width; rings 130, extremely narrow, and cartilaginous. Bronchial half rings. Muscles as in the last species.

LONG-BILLED CURLEW.

NUMENIUS LONGIROSTRIS, WILS.

PLATE CCXXXI. VOL. III. p. 240.

THE two palatal ridges meeting anteriorly to the aperture of the nares form an elevated line in the middle, running all the way to the tip of the upper mandible, and the lower mandible has a median groove; both are internally formed by two inclined planes, which leave a vacant space when the bill is closed. The tongue is very small, triangular, narrow, flat above, pointed, horny beneath; its base sagittate and papillate; its length only 1 inch 2 twelfths, whereas that of the bill, from the opening to the tip, is 8 inches. The width of the mouth is 10 twelfths. The œsophagus, *abc*, is $8\frac{3}{4}$ inches long, of the nearly uniform width of 7 twelfths, contracting to $\frac{1}{2}$ inch within the thorax; but the proventriculus, *bc*, expanded to 9 twelfths; at the top, however, it is funnel-shaped, where its greatest width at the hyoid bone is 1 inch. The stomach, *cdef*, is a large and very strong gizzard, of a roundish or transversely elliptical form, $1\frac{1}{2}$ inch long, $1\frac{3}{4}$ inch in breadth; its



lateral muscles very strong, the left 9 twelfths thick, the right 1 inch; the lower muscle very prominent; the tendons large and strong; the epithelium very thick, with broad longitudinal rugæ. The proventricular glands are oblong, forming a belt 9 twelfths in breadth. The contents of the stomach are remains of crustacea. The intestine, *fghijk*, which is $39\frac{1}{2}$ inches long, 5 twelfths in width in the duodenal portion, *fgh*, 3 twelfths toward the middle, curves in the usual manner at the distance of $3\frac{1}{2}$ inches, passes forward as far as the proventriculus, then turns backward to near the cloaca along the right side, again forward, backward, forward, backward, and lastly forward to above the tip of the heart, where it ends in the rectum, and sends off the cœca; the rectum is 5 twelfths long, opening by a very small aperture into a globular cloaca, *jk*, 1 inch in diameter. The cœca, *lm*, which come off at the distance of 3 inches from the extremity, are 4 inches long, $1\frac{1}{2}$ twelfth in width for $1\frac{1}{2}$ inch, then from 1 twelfth to 3 twelfths, being enlarged and contracted at intervals, the tip for $\frac{1}{2}$ inch only $\frac{3}{4}$ twelfth in width. The lobes of the liver are very unequal; the left lies beneath the proventriculus and the anterior part of the gizzard, under the lower edge of which it sends a long thin process; the right lobe is very much larger, narrow, and passes under the whole length of the stomach.

Trachea 6 inches 2 twelfths long, a little flattened, from $3\frac{1}{2}$ twelfths to $2\frac{1}{4}$ twelfths in breadth; its rings firm, 120 in number, with 2 dimidiate rings. Bronchi rather wide, of 18 half rings. Lateral muscles strong; a single pair of inferior laryngeal muscles going to the last half ring.

Dimensions of two male individuals, killed on 26th April 1837, at Galveston:

Length to end of tail, $20\frac{1}{4}$, $20\frac{3}{4}$ inches, to end of wings the same; to end of claws 24, $29\frac{1}{2}$; extent of wings $36\frac{3}{4}$, $38\frac{1}{2}$; weight 1 lb. 1 oz., 1 lb. 9 oz.

HUDSONIAN CURLEW.

NUMENIUS HUDSONICUS, LATH.

PLATE CCXXXVII. VOL. III. p. 283.

Dimensions of a male :—From point of bill to end of tail 18 inches, to end of wings 18, to end of claws $19\frac{2}{12}$; extent of wings 33; bill $3\frac{7}{12}$, along the edge of lower mandible $3\frac{7}{12}$; bare part of tibia $1\frac{1}{4}$ inch; tarsus $2\frac{1}{4}$ inches, hind toe 5 twelfths, its claw 3 twelfths; second toe $1\frac{11}{12}$, its claw $\frac{31}{12}$; third toe $1\frac{41}{12}$, its claw $\frac{4}{12}$; fourth toe $1\frac{23}{12}$, its claw $2\frac{3}{4}$ twelfths; wing from flexure $9\frac{3}{4}$; tail $3\frac{1}{2}$.

The heart and liver are very large, as in the other species, the right lobe of the latter passes under and beyond the stomach, and is 3 inches in length, the left lobe 1 inch 9 twelfths. The mouth is in all respects as in the preceding species, as is the tongue, which is 1 inch long. The œsophagus is 7 inches long, at the upper part 8 twelfths in width, afterwards uniformly 5 twelfths; the proventriculus large, 8 twelfths in width. The stomach is of moderate size, roundish, $1\frac{1}{2}$ inch long, 1 inch 5 twelfths in breadth; its muscles of moderate thickness; the epithelium thick, horny, with two broad longitudinal plates on each side. Its contents are small crabs. Intestine 30 inches long, its width in the duodenal portion 4 twelfths, and nearly the same throughout, but at the distance of 10 inches from the end enlarging to 6 twelfths. Cœca $2\frac{1}{2}$ inches from the extremity, 1 inch 9 twelfths long, $1\frac{1}{4}$ twelfth in width, with the tip slender as in the other species.

Trachea $5\frac{1}{4}$ inches long, $3\frac{1}{4}$ twelfths broad at the top, 2 twelfths at the lower part, very little flattened; the rings firm, 122, with 2 dimidiate rings. Bronchi moderately wide, of about 18 half rings. Lateral muscles of moderate strength; the sterno-tracheales come off at the distance of 5 twelfths from the extremity; there is a very slender slip of muscle on each side going to the first bronchial ring.

ESQUIMAUX CURLEW.

NUMENIUS BOREALIS, LATH.

PLATE CCVIII. VOL. III. p. 69.

THE mouth is similar to that of the preceding species. Tongue 1 inch long. Œsophagus $6\frac{1}{4}$ inches long, $\frac{1}{2}$ inch wide at the upper part, 5 twelfths in the rest of its extent; the proventriculus 6 twelfths in breadth. Stomach roundish, $1\frac{1}{3}$ inch long, 1 inch $2\frac{1}{2}$ twelfths broad; the lateral muscles moderate; the epithelium thick, reddish-brown, as in the other species, but with numerous longitudinal rugæ. Contents of stomach, remains of insects, seeds, and small pieces of quartz. Intestine 28 inches long; its width in the duodenal portion $3\frac{1}{2}$ twelfths, so continuing until 7 inches from the extremity, when it enlarges to 5 twelfths. Cæca 3 inches from the end, $2\frac{3}{4}$ inches in length, of the uniform width of 1 twelfth, and slightly pointed. Trachea 4 inches 8 twelfths long, its width from 3 twelfths to 2 twelfths, considerably flattened; the rings 115, firm, with 2 additional dimidiate rings. Bronchial half rings about 18, extremely feeble. Muscles as in the last species.

GREAT MARBLED GODWIT.

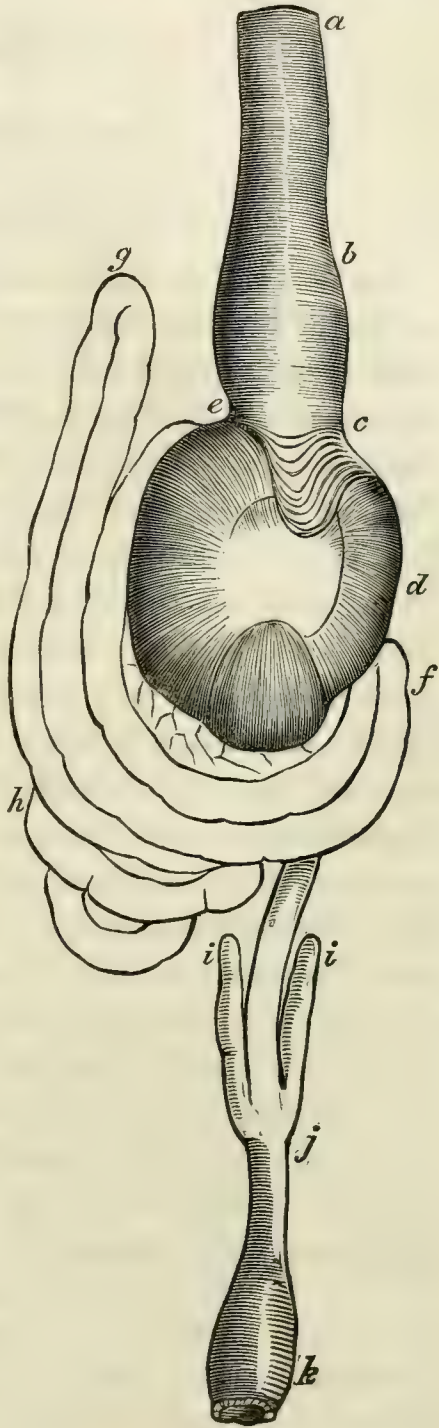
LIMOSA FEDOA, VIEILL.

PLATE CCXXXVIII. VOL. III. p. 287.

ADULT Male. Length to end of tail $16\frac{1}{2}$ inches, to end of wings 17, to end of claws 20; extent of wings $28\frac{1}{2}$; wing from flexure $8\frac{3}{4}$; tail $3\frac{2}{12}$; bill along the ridge $3\frac{10}{12}$, along the edge of lower mandible $3\frac{9}{12}$; bare part of tibia $1\frac{9}{12}$, tarsus $2\frac{9}{12}$; hind toe $\frac{1}{2}$, its claw $\frac{2}{12}$; second toe $1\frac{3}{4}$, its claw $\frac{3}{12}$; third toe $1\frac{5}{12}$, its claw $\frac{4}{12}$; fourth toe $1\frac{23}{12}$, its claw $\frac{23}{12}$.

Palate flat, narrow, with two longitudinal papillate ridges, and four series of very large papillæ, terminating anteriorly in a single ridge. The edges of the mandibles flat. Tongue very long, 2 inches 1 twelfth,

trigonal, tapering to a point, concave above, with two series of large papillæ, its base emarginate and papillate. The upper mandible is entirely destitute of motion; the lower with a joint on each side, as in the Herons. Width of mouth $4\frac{1}{2}$ twelfths. Œsophagus, *abc*, $6\frac{1}{4}$ inches long, at the commencement $\frac{1}{2}$ inch in width, presently contracting to 4 twelfths, and so continuing as far as the proventriculus, which is 7 twelfths in breadth. Stomach, *cde*, of an oblong form, 1 inch 4 twelfths in length, 9 twelfths in breadth; its lateral muscles moderately strong, the tendons broad and radiated; the epithelium dense, thick, with numerous longitudinal rugæ. Its contents are remains of small shell-fish. Proventricular glands small and very numerous, forming a belt 10 twelfths in breadth. Intestine, *efghjkl*, 2 feet 6 inches long; it curves at first in the usual manner, passes forward to above the heart, then runs backward, and forms seven turns; its width from $4\frac{1}{2}$ twelfths to 3 twelfths. Rectum, *jk*, very short, being only $1\frac{1}{4}$ inch in length; cæca, *ii*, 9 twelfths in length, $1\frac{1}{2}$ twelfth in width; the cloaca, *k*, an oblong dilatation, 5 twelfths in width.



Trachea $4\frac{3}{4}$ inches long, 3 twelfths in breadth, its rings very feeble, 132, with a single dimidiate ring. Bronchial half rings 18. The lateral muscles strong; the sterno-tracheal moderate; a single pair of slender laryngeal muscles going to the first bronchial half ring.

HUDSONIAN GODWIT.

LIMOSA HUDSONICA, SWAIN.

PLATE CCLVIII. VOL. III. p. 426.

THE following are the dimensions of a very fine specimen selected from among five presented by Dr T. M. BREWER of Boston. Length to end of tail $16\frac{3}{4}$ inches, to end of wings $17\frac{3}{4}$, to end of claws $18\frac{1}{2}$; extent of wings 2 feet 5 inches; bill along the ridge $3\frac{1}{2}$, along the edge of lower mandible also $3\frac{1}{2}$; wing from flexure $6\frac{2}{12}$; tail $3\frac{2}{12}$; bare part of tibia $\frac{1}{2}$; tarsus $2\frac{1}{2}$; hind toe $\frac{4\frac{1}{2}}{12}$: its claw $\frac{1\frac{1}{2}}{12}$; second toe 1, its claw $\frac{2\frac{1}{2}}{12}$; third toe $1\frac{3\frac{1}{2}}{12}$, its claw $\frac{3\frac{1}{2}}{12}$; fourth toe $1\frac{1\frac{1}{2}}{12}$, its claw $\frac{1\frac{1}{2}}{12}$.

The interior of the mouth as in the other species, its width $4\frac{3}{4}$ twelfths, the fore part of the palate with three series of large papillæ. Tongue $1\frac{10}{12}$, slender, tapering to a point, trigonal. Channelled above, horny beneath. Œsophagus $6\frac{3}{4}$ inches long, 4 twelfths wide, proventriculus 5 twelfths, Stomach a muscular gizzard of an oblong form, 1 inch 3 twelfths long, 1 inch in breadth; its lateral muscles strong and well marked; the epithelium dense, thick, with numerous longitudinal rugæ, and of a brownish-red colour. Contents of the stomach, particles of quartz. Proventricular belt 9 twelfths in breadth. Intestine 1 foot 8 inches long, $2\frac{3}{4}$ twelfths in width; rectum 3 twelfths wide, dilated into an ovate cloaca, 8 twelfths in width; cœca 4 twelfths long $1\frac{1}{4}$ twelfth in width, and $2\frac{3}{4}$ inches distant from the extremity.

Trachea 5 inches long, much flattened, from 3 twelfths to 2 twelfths in breadth; its rings feeble, 120, and a single dimidiate ring. Bronchial half rings 15. Muscles as in the other species.

WHITE IBIS.

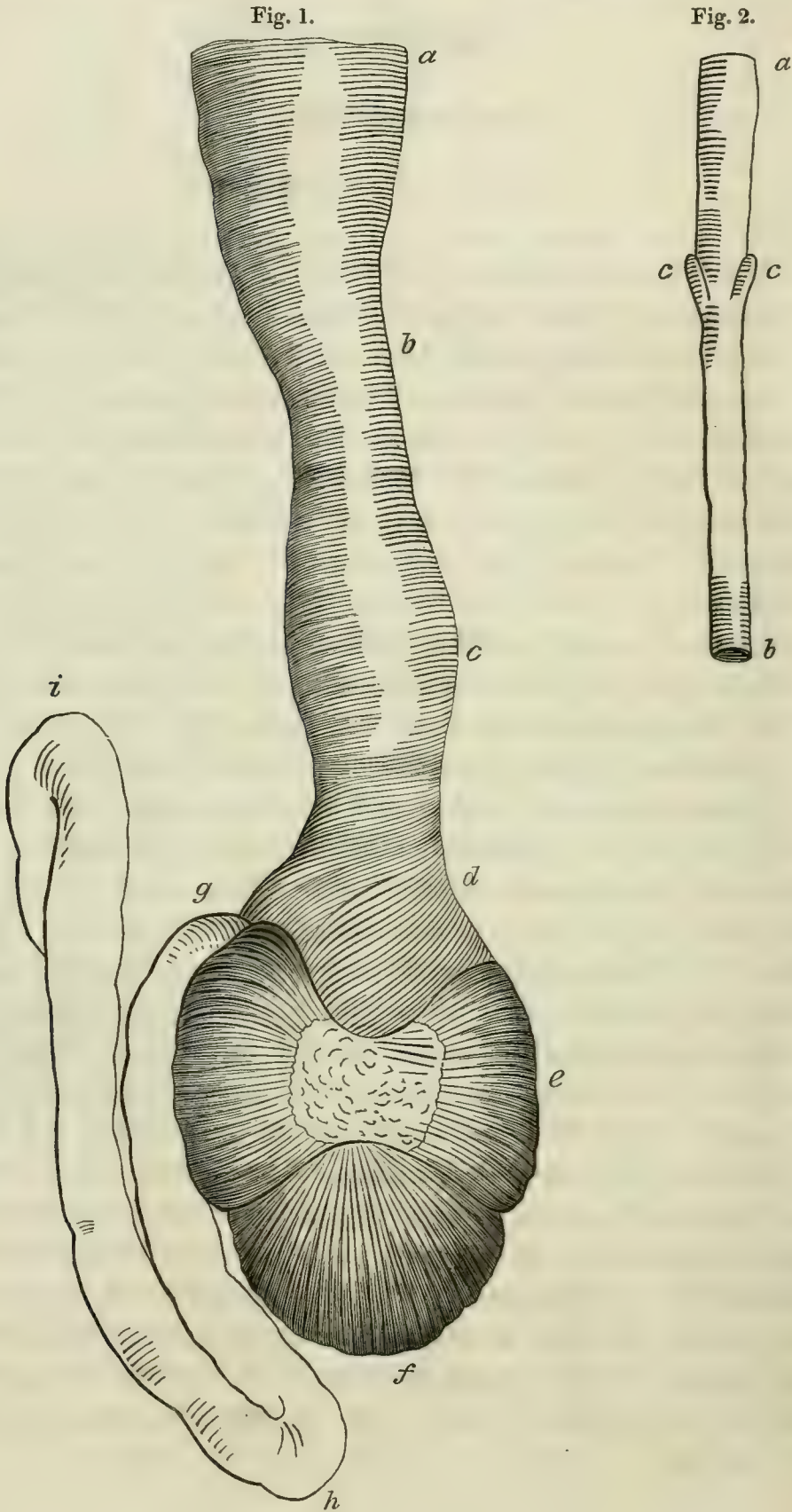
IBIS ALBA, VIEILL.

PLATE CCXXII. Vol. III. p. 173.

IN a female preserved in spirits, the roof of the mouth is flattened, with an anterior median longitudinal ridge ; and the two sides or crura of the lower mandible are united for more than half their length from the tip. The tongue is triangular, extremely short, being only $5\frac{1}{2}$ twelfths in length, flat, and extremely thin, broadly emarginate and papillate at the base, the two lateral papillæ much larger, its upper surface covered with numerous small crypts, its tip obtusely pointed. The posterior aperture of the nares is linear, with an anterior slit. The mouth is rather narrow, being only 7 twelfths in width. The tongue and the general form of the mouth are thus similar to those of the Spoonbill ; and the former is entirely different from that of the Curlews and Snipes, to which this genus approaches in the form of the bill. The aperture of the ear is remarkably small, its diameter being only $1\frac{1}{2}$ twelfth.

The œsophagus, Fig. 1, *abcd*, is 11 inches long, wide, like that of a Heron, its diameter varying from 1 inch to $1\frac{1}{4}$ inch, being greater at the lower part of the neck, and contracting to 9 twelfths as it enters the thorax. The stomach, *defg*, is large, muscular, broadly elliptical, $2\frac{1}{4}$ inches long, 1 inch 10 twelfths in breadth ; the lateral muscles strong, the inferior very large. The duodenum, *ghi*, curves in the usual manner, returning upon itself at the distance of $3\frac{1}{4}$ inches ; its width $4\frac{1}{2}$ twelfths. There is a small gall-bladder about $\frac{1}{2}$ inch long, and two biliary ducts ; beyond the entrance of which the intestine forms several convolutions, and preserves a nearly uniform width throughout. The rectum is 3 inches long, and the cœca, Fig. 2, *cc*, are reduced to the minimum size, being only $1\frac{1}{2}$ twelfth in length. In this respect, as well as in the structure of the stomach, this bird differs entirely from the Herons, to which it approximates in the form of the œsophagus, although not in that of the tongue. The contents of the stomach are remains of cray-fish and aquatic insects. Its epithelium is thick, tough, longitudinally rugous, but not

presenting two distinct grinding plates. The proventriculus, *c*, is 10



twelfths in breadth, and its glands are of a cylindrical form, about 2 twelfths long, with wide apertures. The length of the intestine is 3 feet 9 inches.

The trachea is $9\frac{1}{2}$ inches long, of the nearly uniform breadth of 4 twelfths; the rings 132, broad, but very thin and unossified. The bronchi are very short, of about 15 half rings. The lateral muscles are thin; the sterno-tracheal slips slender. There are no inferior laryngeal muscles.

The sternum approaches in form to that of the Herons, the ridge is very prominent, with its outline rounded; but the body differs in having two very distinct deep notches on each side posteriorly.

On the whole, the most direct affinity of this bird is to the Spoon-bill; then to the Oyster-catcher; in a less degree to the Herons, and still less to the Curlews.

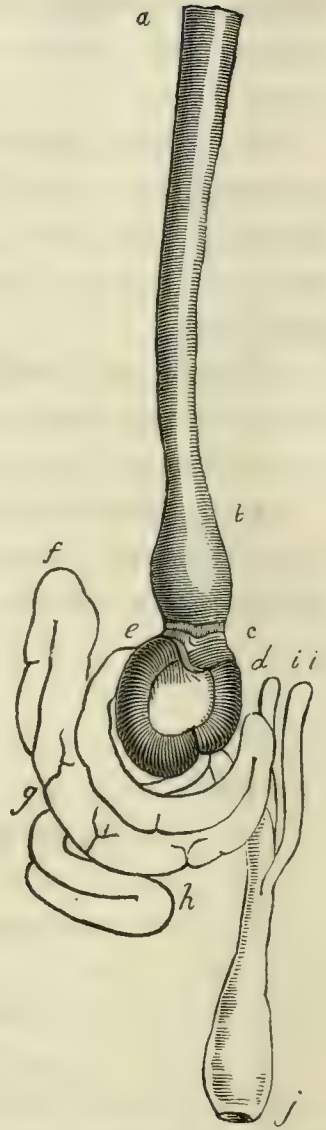
HYPERBOREAN PHALAROPE.

PHALAROPUS HYPERBOREUS, LATH.

PLATE CCXV. Vol. III. p. 118.

THE mouth is extremely narrow, its breadth being only $2\frac{1}{2}$ twelfths; the palate straight, with two longitudinal ridges, and three anterior series of papillæ; the upper mandible concave, with a median prominent line, the lower more deeply concave; the posterior aperture of the nares linear. The tongue $10\frac{1}{2}$ twelfths long, emarginate and papillate at the base, immediately after contracted, extremely slender, as high as broad, grooved above, tapering to a point, and horny on the greater part of its extent. Œsophagus, *abc*, $3\frac{1}{2}$ inches long, its width 2 twelfths; proventriculus, *bc*, 4 twelfths in breadth. Liver very large, the right lobe $1\frac{1}{2}$ inch long, the left 10 twelfths. Stomach, *cde*, roundish, oblique, of moderate size, 8 twelfths long, 7 twelfths broad; the lateral muscles large and distinct, the lower prominent and thick; the epithelium of moderate thickness, dense, with numerous longitudinal rugæ. Contents of stomach small crustacea. Intestine, *efghij*,

of moderate length and width, the former $11\frac{1}{4}$ inches, the latter 3 twelfths, diminishing to $1\frac{1}{2}$ twelfth; cœca, *i i*, 10 twelfths, $\frac{1}{4}$ twelfth in width for $1\frac{1}{4}$ inch, afterwards 1 twelfth, their distance from the extremity $1\frac{1}{4}$ inch; cloaca, *j*, ovate, 5 twelfths in width. Trachea 2 inches 7 twelfths long, much flattened, $1\frac{1}{2}$ twelfth in width; the rings 90, cartilaginous. Bronchi wide, of about 15 half rings. Lateral muscles rather strong; a single pair of inferior laryngeal. Female.



GREAT WHITE HERON.

ARDEA OCCIDENTALIS.

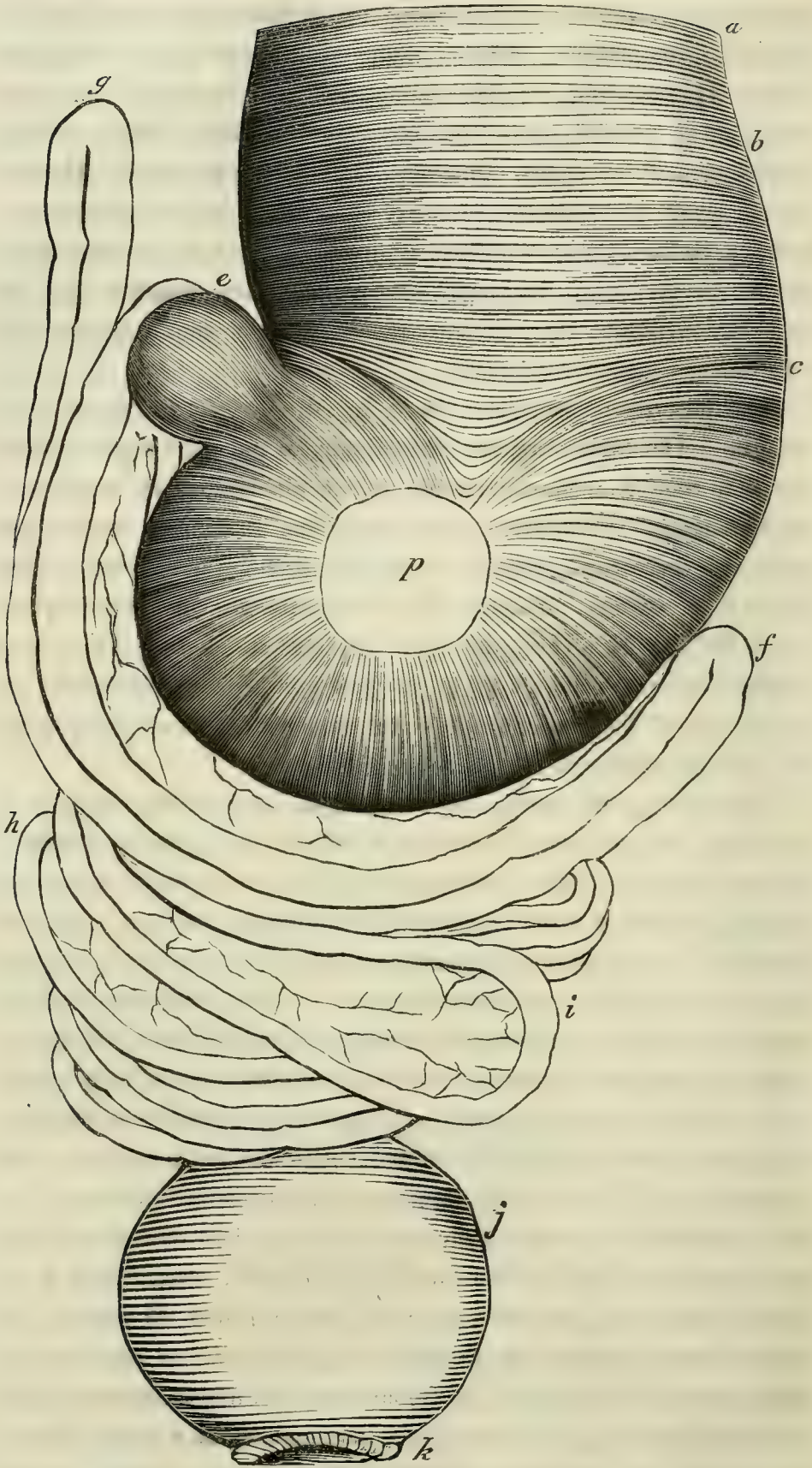
PLATE CCLXXXI. Vol. III. p. 542.

AN adult male, received from Captain NAPOLEON COSTE, of the United States Revenue Cutter the Campbell. The width of the mouth is $1\frac{1}{4}$ inch; but the lower mandible is capable of being dilated to $2\frac{1}{2}$ inches, by means of an articulation on each side, the palate ascending, convex, with two longitudinal ridges, anteriorly with two

papillate ridges and a median ridge, which runs to the point of the mandible; the posterior aperture of the nares linear, $1\frac{1}{2}$ inch in length. Tongue $4\frac{1}{4}$ inches long, slender, tapering, trigonal, sagittate at the base, with a large pointed papilla on each side, flat above, with a median groove for half its length, afterwards convex, the tip acute. There is a large gular sac, although covered by feathers. The œsophagus is 2 feet 7 inches long, of great width in its whole extent, its diameter opposite the glottis being $2\frac{1}{2}$ inches, in the other parts from 2 to $1\frac{3}{4}$. Its walls are very thin, but with the external muscular fibres distinct; the inner coat longitudinally plicate.

The heart is of moderate size, 1 inch 10 twelfths in length, $1\frac{1}{3}$ in breadth. The aorta branches immediately in the usual manner, sending off to the left a common carotid and subclavian, which branches at the distance of $7\frac{1}{2}$ twelfths; to the right the same; and more to the same side, the carotid properly so called, which is smaller than either of the other vessels. The liver is of moderate size, its lobes very unequal, the left $2\frac{1}{4}$ inches, the right $3\frac{1}{4}$ inches in length. There is an enormous accumulation of fat in the omentum, covering nearly the entire surface of the proventriculus and stomach, and extending under the intestine, being in one place 9 twelfths thick.

On entering the thorax the œsophagus immediately enlarges to $2\frac{1}{2}$ inches, and gradually increases to 3, which is the greatest breadth of the proventriculus, *abc*. The stomach, *cpe*, is a very large round sac, 3 inches in width, a little compressed, with roundish tendons, *p*, $\frac{3}{4}$ inch in diameter; its muscular coat extremely thin, and formed of very slender fasciculi; the inner coat soft and smooth. The proventricular glands form a complete belt, $1\frac{1}{2}$ inch in breadth, at the upper part of which are numerous irregularly dispersed very large apertures of mucous crypts. The pyloric lobe of the stomach, *e*, is globular, 9 twelfths in diameter. The aperture of the pylorus $1\frac{1}{2}$ twelfth in diameter, without valve. The intestine, *efjk*, doubles in the usual manner, to form the duodenum, *efg*, at the distance of 6 inches, then proceeds to the right lobe of the liver, bends backward, and is convoluted, with 18 turns, terminating in the rectum above the proventriculus; its length 7 feet 10 inches; the width of the duodenum $3\frac{1}{2}$ twelfths, that of the rest of the intestine pretty uniformly 3 twelfths, a little narrowed towards the rectum, which is $5\frac{1}{2}$ twelfths long, and at its commencement forms a single cœcum, $\frac{1}{2}$ inch long, and 3 twelfths in width. The average width of the rec-



tum is 5 twelfths, and it terminates in a globular cloaca, *j k*, 1 inch 10 twelfths in diameter.

Trachea 22 inches long, considerably flattened, 5 twelfths in breadth at the upper part, $4\frac{3}{4}$ twelfths at the middle, and lastly contracting to $3\frac{1}{2}$ twelfths. The rings cartilaginous, 270, the last 4 dimidiate. The right bronchus has 25 rings, the left 28; they are wide and compressed. There is a pair of cleido-tracheal muscles, passing from the thyroid bone to near the middle of the furcula. The lateral muscles are thin and slender at the upper part, at the lower part thicker and expanded over the whole surface before and behind; the anterior part gives off the sterno-tracheal, at the distance of 9 twelfths from the last ring, and the posterior part passes in the form of a compact slip, to the last half ring.

GREAT BLUE HERON.

ARDEA HERODIAS, LINN.

PLATE CCXI. VOL. III. p. 87.

ADULT Male. The interior of the mouth is similar to that of the last species, there being three longitudinal ridges on the upper mandible; its width is $1\frac{1}{4}$ inch, but the lower mandible can be dilated to $2\frac{1}{4}$ inches. The tongue is $3\frac{1}{2}$ inches long, trigonal, and in all respects similar to that of *Ardea occidentalis*. The œsophagus is 24 inches in length, opposite the larynx its width is $2\frac{3}{4}$ inches, it then gradually contracts to the distance of 7 inches, becomes 1 inch 10 twelfths in width, and so continues until it enters the thorax, when it enlarges to 2 inches and so continues, but at the proventriculus is $2\frac{1}{3}$ inches in breadth. The stomach is roundish, a little compressed, $2\frac{1}{2}$ inches in diameter; its muscular coat thin, and composed of a single series of fasciculi, its inner coat soft and smooth, but with numerous irregular ridges. There is a roundish pyloric lobe, 9 twelfths in diameter. The proventricular glands form a belt 1 inch 4 twelfths in width; at its upper part are 10 longitudinal irregular series of very large mucous crypts, the right lobe of the liver is 3 inches in length, the left 2 inches; there is a gall-

bladder of a curved form, $1\frac{1}{4}$ inch in length, and 6 twelfths in its greatest breadth. The intestine is 7 feet $7\frac{1}{2}$ inches in length; its greatest width, in the duodenum, is $3\frac{1}{2}$ twelfths, at the distance of 3 feet, it is $2\frac{3}{4}$ twelfths; a foot and a half farther on it is scarcely $2\frac{1}{4}$ twelfths; and a half a foot from the rectum it is 2 twelfths; it then slightly enlarges. The rectum, including the cloaca, is 5 inches 9 twelfths in length; there is a single cœcum, 5 twelfths long, and $2\frac{1}{2}$ twelfths in width, the average width of the rectum is $\frac{1}{2}$ inch, and it expands into a globular cloaca 2 inches 2 twelfths in diameter. The duodenum curves at the distance of 5 inches, then passes to the right lobe of the liver, bends backward, and is convoluted, forming 22 turns, terminating in the rectum above the stomach.

The trachea is 21 inches in length, from $4\frac{1}{2}$ twelfths to 3 twelfths in breadth, toward the lower part enlarged to 4 twelfths, finally contracted to 3 twelfths. The rings are 252, with 4 terminal dimidiate rings. The right bronchus has 19, the left 20 half rings. The muscles are in all respects as in *Ardea occidentalis*.

NIGHT HERON.

ARDEA NYCTICORAX, LINN.

PLATE CCXXXVI. Vol. III. p. 275.

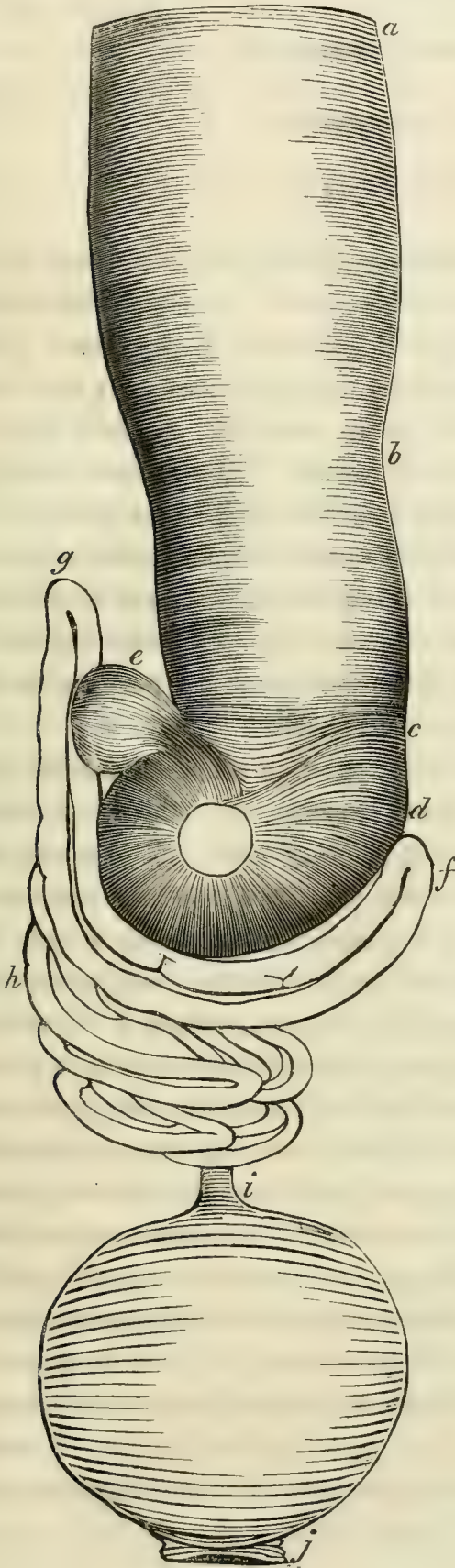
DR T. M. BREWER of Boston has favoured me with an interesting notice respecting a tame individual of this species:—"Although the habits of the Night Heron are thoroughly known to you, yet, as I have had an opportunity of watching it in confinement and reduced to a state of perfect domestication, if the following account affords you no additional information, it may perhaps serve to amuse you. In the summer of 1835, I obtained three of the young of this bird, from the heronry at Cambridge, which, so far from being an island, as mentioned by NUTTALL in the passage quoted by you, is a swampy wood, not ten rods from the public road, and united with the land on all sides excepting one, on which is a small brook. I succeeded in rendering them quite tame in a short time. In their younger days they were quite voracious,

often swallowing large bull-frogs at once, and devouring a number at a single meal ; but after a month's time, the only one which survived so long lost the greater part of its greediness. They were not all particular as to their food, devouring anything of an animal nature that was given to them, frogs, fish, flesh, liver, snakes, &c. The last-mentioned article of food was only once given to them, for although readily eaten, it proved fatal to two of them, and nearly so to the third. What made this result the more unexpected was, that the snake was the common and apparently innoxious Striped Snake. Although this Heron has never been regarded as possessing any great share of sagacity, the surviving bird certainly evinced, on many occasions, what seemed nearer to reason than instinct. I have seen him, on perceiving a cat approach his roost, hide himself until she came near enough, when he would all at once start up, and extending his throat to its fullest capacity, utter one of the most frightful cries, apparently enjoying puss's alarm and flight in the highest degree. Whenever attacked by any of the poultry, he never manifested the least alarm, but waited their onset with the greatest composure, knowing that he had only to open his mouth and remonstrate, with one of his discordant *quâks*, to insure their speedy retreat. He was always very methodical in his movements, and also appeared to possess a very tenacious memory as regarded some matters ; for, in the course of the summer our pond becoming dry, it became necessary to remove him to another ; but, whenever an opportunity presented, he did not fail to manifest his love of localities, by returning to his accustomed haunts. Whenever I found him there, I used to draw him back, and he would never fail to take precisely the same path, which was none of the most direct, as he did the first time. Thus, for instance, there was a cart in the way on the first occasion, and it was necessary for him to go round it. It had been removed the second time, and yet, on coming to where it had been, he would take a circuitous route, as if it still stood there. A pile of stones lay in his path, which he had to jump over, and although they were removed in the course of the summer, yet, on coming to where they had been, he would stop, look around, and then give a jump, as if some obstacle were really in the way. In this, however, he certainly shewed more method than reasoning. As the month of October was passing away, he began to manifest great uneasiness, evidently shewing that the promptings of

nature told him the period of migration had arrived. In obedience to these feelings, he repeatedly strolled off (his wing having been cut he could not fly); but what was most unaccountable, all these attempts were uniformly in the northern direction, shewing, as it would seem, that experience is necessary, as well as instinct, to enable them to know their proper route. In one or two of these attempts at migration, which were always made in the night, he very much alarmed some of the neighbourhood by his incessant cries, which were mistaken for those of persons supposed to have fallen into the adjacent brook. The stream was several times examined, to no purpose, and no little curiosity, and even alarm, was felt, to know the source of these midnight outeries. The mystery was, however, solved, when one of the neighbours happened by accident to hear the genuine note, which had excited so much anxiety, as our servant was one day bringing home the vagrant after one of these rambling excursions. He continued for some time to excite the interest of visitors and the family, by his gaunt figure and unmusical note, which yet was interesting from its singularity. At length, the memorable 16th of December, the coldest day ever known in New England, put an end to his career, to the sorrow of many, although to the gratification of others, who never forgave him the hoax he had played off upon them."

Female. The interior of the mouth as in the preceding species, but the upper mandible more concave; the width of the mouth 1 inch 1 twelfth; the lower mandible dilatible to 1 inch 7 twelfths. Tongue 2 inches 1 twelfth long, trigonal, tapering, in all respects as in the other species. Œsophagus, *a b c*, 12 inches long; at the commencement 2 inches in width, at the distance of $2\frac{1}{2}$ inches it contracts to $1\frac{1}{4}$ inch, and then continues of the width of 1 inch; on entering the thorax it enlarges to 1 inch 8 twelfths, and in the proventricular part, *b c*, contracts to 1 inch 2 twelfths, which is also about the breadth of the stomach. The proventricular glands form a belt 10 twelfths in breadth. The walls of the stomach, *d*, are thin; its inner surface soft and nearly smooth, being faintly rugous, in the same tortuous manner as in the last species. The pyloric lobe, *e*, has a diameter of $\frac{1}{2}$ inch, its inner surface smooth. The lobes of the liver unequal, the right 1 inch 9 twelfths, the left 1 inch 5 twelfths in length; the gall-bladder of an ovate form, 1 inch long, $\frac{1}{2}$ inch in

breadth. The duodenum, *efg*, curves at the distance of 3 inches, and proceeds toward the liver. The



intestine, *ghij*, is then singularly convoluted, forming 24 folds, and is 4 feet 5 inches in length; its width at the upper part $2\frac{3}{4}$ twelfths, gradually contracting to 1 twelfth; the rectum 5 inches long, its average width 4 twelfths; the cloaca globular, 1 inch 9 twelfths in diameter; there is a single cœcum $2\frac{1}{2}$ twelfths long and 1 twelfth wide.

Trachea $8\frac{1}{4}$ inches long, 4 twelfths wide at the commencement, $3\frac{1}{2}$ twelfths in the greater part of its length, at its lower part $2\frac{1}{2}$ twelfths. The rings are firm, 135 with 4 dimidiate rings. Both bronchi have 25 rings. The muscles as in the preceding species, but the inferior laryngeal muscles extremely slender, and inserted upon the last tracheal and first bronchial half ring.

REDDISH EGRET.

ARDEA RUFESCENS.

PLATE CCLVI. Vol. III. p. 411.

IN this species a long series of elongated feathers commences at the lower fourth of the neck, on each side above, the intervening space being bare for the breadth of $\frac{1}{2}$ inch; they pass directly down along the back, terminating on the scapulæ, at the distance of $\frac{1}{2}$ inch from its extremity, gradually becoming more elongated, the first being 1 inch $\frac{8}{12}$ in length, the last 14 inches. These feathers occupy a ridge $\frac{1}{4}$ inch in breadth at its lower part, and ought more peculiarly to be named scapulars, for the feathers so called, which are also elongated and tapering, run across the head of the humerus, close to its articulation. These series are terminated by four large and broad feathers of the ordinary texture. The elongated feathers on the fore part of the neck also form two similar series on each side.

The mouth is as in the preceding species, its width 10 twelfths; the lower mandible dilatable to 1 inch $\frac{5}{12}$; the tongue very small, 1 inch $\frac{7}{12}$ in length, tapering to a fine point, but flattened, and very thin. Œsophagus 18 inches long, 2 inches wide at the commencement, $1\frac{1}{4}$ at the distance of 3 inches, after that uniformly 1 inch; on entering the thorax it enlarges to 1 inch $\frac{3}{12}$; and between it and the stomach is a contraction, the breadth of which is 9 twelfths. The stomach is very small, of an irregular roundish form, 1 inch in diameter, compressed; its tendons 8 twelfths in breadth; the pyloric lobe 9 twelfths in length, 7 twelfths in width, being much more elongated than in the other species. The proventricular glands are very small, and form a complete belt $1\frac{1}{4}$ inch in breadth. The inner surface of the stomach is soft and irregularly rugous, as in the other species; that of the pyloric lobe quite smooth. Right lobe of the liver 2 inches $\frac{2}{12}$ in length, left 2 inches; gall-bladder oblong, $1\frac{1}{4}$ inch long, and 5 twelfths in breadth. Intestine 6 feet long, forming 26 folds; duodenum $2\frac{1}{4}$ twelfths wide; the smallest diameter 1 twelfth; rectum $4\frac{1}{2}$ inches long; its width 3 twelfths; cloaca globular, $1\frac{1}{2}$ inch in diameter; cœcum 2 twelfths long, and of the same width.

Trachea 13 inches long, its breadth uniformly 3 twelfths. It is considerably flattened, which is not the case with the other species. The rings 180, and 4 dimidiate. Bronchial half rings 20 and 18. The muscles as in the other species.

LOUISIANA HERON.

ARDEA LUDOVICIANA, WILS.

PLATE CCXVII. VOL. III. p. 136.

MALE from Galveston Island. In all the Herons that are furnished with elongated feathers on the fore part of the back, these feathers form part of a series on each side, arranged in the line of the scapulæ, and extending to the middle of the neck above. In all the Herons also, when the neck is curved, the œsophagus and trachea pass above the line of the vertebræ at its lower part on the right side. The mouth is in this as in the other species, its width 8 twelfths, the lower mandible dilatable to 1 inch 1 twelfth. Tongue 1 inch 1 twelfth long, flattened, thin; grooved above, tapering to a point. Œsophagus 16 inches long, at its commencement $1\frac{1}{4}$ inch in width, soon after contracting to 10 twelfths, and so continuing until it enters the thorax, where it enlarges to 1 inch. The right lobe of the liver is 1 inch 11 twelfths in length, the left lobe $1\frac{1}{2}$ inch; the gall-bladder 8 twelfths long, 3 twelfths in breadth. The proventricular glands form a belt 10 twelfths in breadth. The stomach is small, only 1 inch in diameter, its muscular coat rather thick, the tendons roundish, half an inch in breadth; the pyloric lobe $7\frac{1}{2}$ twelfths long, 4 twelfths in diameter; the inner surface of the stomach as in the preceding species. The intestine forms 30 folds, and measures 4 feet 7 inches in length; its greatest width scarcely greater than that of a crow quill, being only 1 twelfth in the duodenal part, and almost precisely uniform in its whole length. The rectum is $3\frac{1}{2}$ inches long, 3 twelfths in width; the cœcum 3 twelfths long, $1\frac{1}{2}$ twelfth wide; the cloaca globular, 1 inch 2 twelfths in diameter.

Trachea $12\frac{1}{2}$ inches long, of the uniform breadth of 2 twelfths, moderately flattened. The rings firm, 218, and 4 dimidiate. Bronchial half rings 20 and 18. Muscles as in the other species.

SNOWY HERON.

ARDEA CANDIDISSIMA.

PLATE CCXLII. VOL. III. p. 317.

THE elongated feathers of the back are composed of two scapular series, and of those crossing the humerus. The mouth as in the other species. Tongue 1 inch 3 twelfths long, as in the last species. Œsophagus 14 inches long, at the commencement 1 inch 9 twelfths in width, contracting to 10 twelfths ; its greatest diameter within the thorax 1 inch 4 twelfths ; proventricular belt 8 twelfths in breadth. Stomach remarkably small, roundish, 10 twelfths in diameter, with a globular pyloric lobe, $4\frac{1}{2}$ twelfths in diameter ; its muscular coat thin, the tendons 4 twelfths in breadth ; the inner surface smooth and soft. Lobes of the liver $1\frac{1}{2}$ inch and $1\frac{1}{4}$ inch in length ; gall-bladder oblong, 9 twelfths long, 5 twelfths broad. Intestine 3 feet $10\frac{1}{2}$ inches long, of 24 folds ; its greatest width in the duodenal part $1\frac{1}{2}$ twelfth, its smallest near the rectum 1 twelfth. The rectum is 2 inches 10 twelfths long, $2\frac{3}{4}$ twelfths in breadth ; the cloaca globular, $1\frac{1}{4}$ inch in diameter ; the cœcum a small knob 1 twelfth long, and of the same width.

Trachea 10 inches long, its average breadth $2\frac{1}{4}$ twelfths, considerably flattened ; the rings 188, with 4 dimidiate. Bronchial half rings 18 and 16. Muscles as in the other species.

LEAST BITTERN.

ARDEA EXILIS, GMEL.

PLATE CCX. VOL. III. p. 77.

AT Cayo Island, Oppelousas, 13th April 1837. Mr HARRIS saw a flock of about twenty individuals of this species arriving from the westward, before a heavy gale from that quarter, all of which plunged, as it were, into the marsh, and hid themselves so closely, from fatigue or

otherwise, that neither he nor the dog could raise one of them. We have now observed several species of Herons arriving in the same manner from the westward, and it seems that their stay in their roosting places continues only for a night, as on going to the same spot on the next day, none have been found. At Galveston Island, on the 26th April, we saw many individuals of this species.

In an adult male preserved in spirits, the interior of the mouth is of the same structure as in the other Herons; the tongue 1 inch 4 twelfths long, very slender, trigonal, tapering to a point. Width of mouth 5 twelfths. Œsophagus 8 inches long, its width at the upper part 1 inch 2 twelfths, gradually tapering to 8 twelfths, and within the thorax enlarged to 10 twelfths. Belt of proventricular glandules $\frac{1}{2}$ inch in breadth. Stomach large, 1 inch in diameter, its tendons 3 twelfths in breadth, its walls extremely thin, being quite membranous. The contents are three small fishes, and remains of others. Lobes of the liver unequal, the right $1\frac{1}{4}$ inch, the left 1 inch in length; gall-bladder 8 twelfths long, $2\frac{1}{2}$ twelfths in breadth. Intestine 2 feet $9\frac{1}{2}$ inches long, $\frac{3}{4}$ twelfth wide in the duodenal portion, gradually diminishing to $\frac{1}{2}$ twelfth; cœcum a small knob nearly 1 twelfth long, and of the same breadth; rectum $2\frac{1}{2}$ inches long, and 2 twelfths in width; cloaca globular, $\frac{1}{2}$ inch in diameter. It forms 20 folds.

Trachea 6 inches long, 1 twelfth in breadth; its rings 170, and 4 dimidiate. Bronchi very wide, of 12 rings.

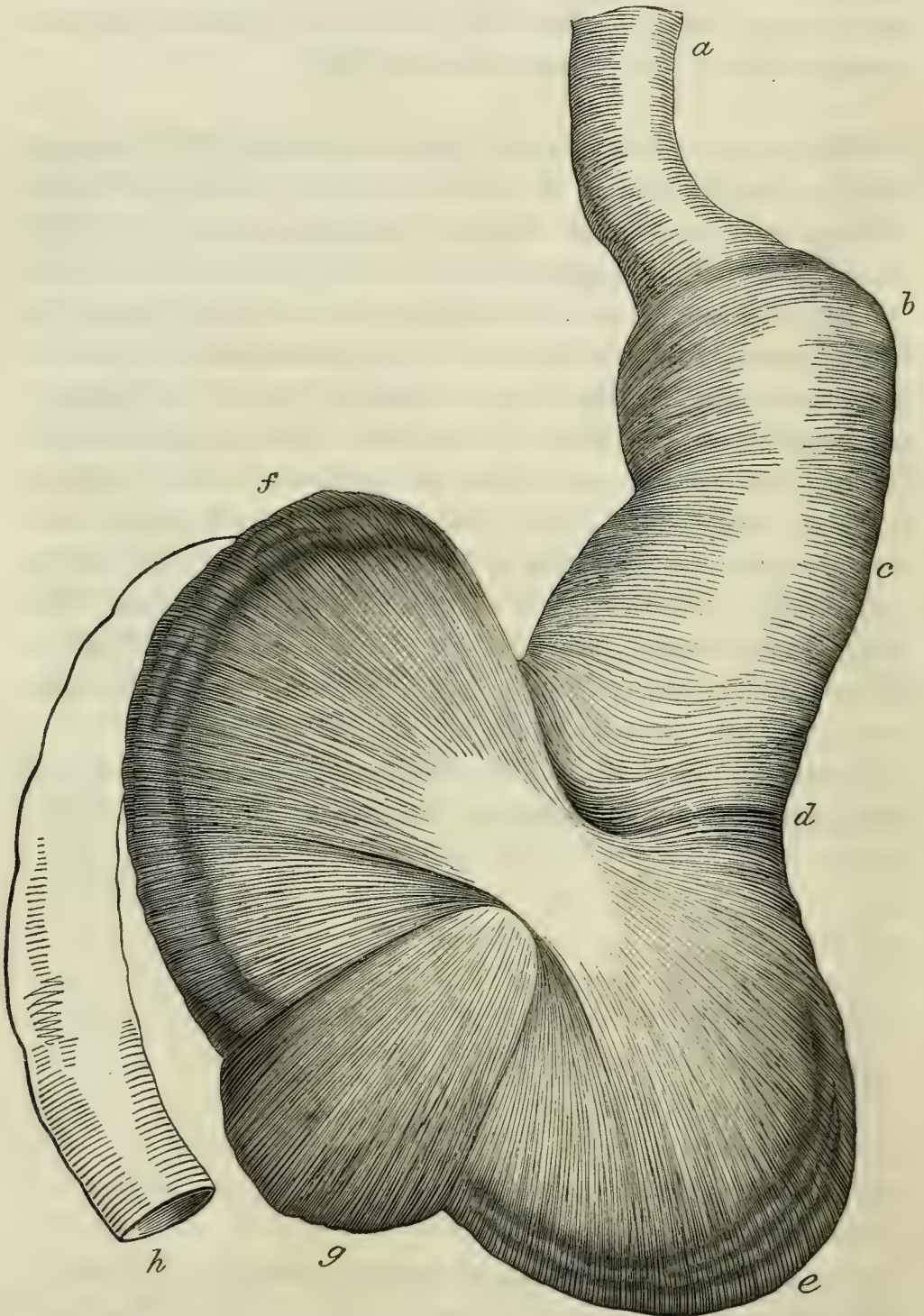
CANADA GOOSE.

ANSER CANADENSIS, VIEILL.

PLATE CCI. VOL. III. p. 1.

MALE, presented by Dr T. M. BREWER of Boston. The mouth is 1 inch 2 twelfths in width; the anterior part of its roof, which is concave, is beautifully marked with a middle tuberculated ridge, two lateral ridges of lamelliform tubercles, and between them a number of

irregularly dispersed tubercles, besides the lateral lamellæ properly so called, of which there are 38 on each side ; the lamellæ of the lower mandible are 50. The tongue is $2\frac{1}{4}$ inches long, fleshy, with a deep median



groove, a lateral series of small, tapering, acute, reversed papillæ, and a semicircular tip, having a very thin horny edge. The posterior aper-

ture of the nares is oblongo-linear, $1\frac{1}{4}$ inch in length. The œsophagus, *ab* *cd*, is 22 inches long; for 12 inches its width is only 9 twelfths, but on entering the thorax it expands, at *b*, to $1\frac{5}{12}$ inch, then contracts a little, in the proventricular portion, *cd*, again enlarges to $1\frac{1}{2}$ inch, and finally to $1\frac{3}{4}$ inch. The stomach, *defg*, is an extremely developed gizzard, of a transversely elliptical form, placed obliquely, $4\frac{1}{2}$ inches in breadth, 2 inches 10 twelfths in length; the left muscle 1 inch 9 twelfths thick, the right 2 inches; the epithelium forms two transversely, elliptical, concave, grinding surfaces, of great density (but is altogether wanting on the rest of the inner surface, although this may have happened after death). The proventricular glands are very small, cylindrical, $2\frac{1}{2}$ twelfths in length, and form a belt 2 inches in breadth. The duodenum curves at the distance of 8 inches, and there are formed 12 folds by the intestine, which is 10 feet in length, 10 twelfths in width at the upper part, afterwards $7\frac{1}{2}$ twelfths, until towards the rectum, when it enlarges to 9 twelfths. The cœca are $9\frac{1}{2}$ inches long, 7 twelfths in their greatest width, but only 2 twelfths at the commencement, their extremity narrow but obtuse. The rectum is $8\frac{1}{2}$ inches long; there is no remarkable cloacal enlargement.

The sternum is very similar to that of a Swan; its length $6\frac{1}{2}$ inches, its breadth at the anterior costal processes 3 inches; the height of the crest 1 inch 10 twelfths. The liver is small, the left lobe, which is 3 inches in length, covering but a very small portion of the stomach; the right lobe is 5 inches in length; the gall-bladder 2 inches 9 twelfths in length, 8 twelfths in breadth, but contracted to 3 twelfths at the distance of 10 twelfths from the extremity, where it enlarges to about 5 twelfths. The heart is 3 inches long, $2\frac{1}{4}$ inches in breadth at the base.

The trachea measures $20\frac{1}{2}$ inches in length. At first it inclines a little to the left side, then on the anterior concave curve of the neck passes gradually to the right side, along which it proceeds as far as the lower part of the convex curve, when it separates in front from the neck, and forms a loop or abrupt curve, which is attached to the anterior part of the sternum, between the coracoid bones, thus approximating to the trachea of the Swans, but not entering the crest of the sternum. It then passes directly along the spine to behind the middle of the heart, where it bifurcates. In this respect also it is singular, in being more elongated than in the other species, of which the bifurcation is considerably anterior to the heart. At the commencement its

breadth is 6 twelfths ; presently after it enlarges to 8 twelfths, then contracts to 6 twelfths, and so continues until it begins to form the loop, on which its breadth is again 8 twelfths ; after this it gradually tapers, so as to be only $2\frac{1}{2}$ twelfths wide at the inferior larynx, where its depth, however, is 5 twelfths. The form of that part is much the same as in the Swans, there being a similar elevated, bony, curved edge on each side, projecting beyond the commencement of the membrane of the bronchus, which is $\frac{1}{2}$ inch in length before the first ring appears. These membranes form a pretty large sac of a triangular form ; and the continuation of the bronchus is extremely diminutive, with only 10 very small and slender cartilaginous half rings. The lateral muscles are large ; their anterior part gives off the sterno-tracheal at the distance of $2\frac{1}{4}$ inches from the inferior larynx ; but the posterior part, which is much larger, runs down 1 inch farther, and then terminates in a pointed form, not extending so far as to constitute an inferior laryngeal muscle. The rings of the trachea are broad, very firm, considerably flattened, 220 in number.

BRENT GOOSE.

ANSER BERNICLA, BONAP.

PLATE CCCXCI. VOL. V. p. 24.

“ A few years ago,” Mr THOMAS MACCULLOCH writes to me, “ a Brant Goose, slightly wounded in the tip of the wing, was brought us, but it rejected sea-grass and every thing else which was offered it, and died in a few days after it came into our possession. Shortly after we procured another which had been disabled in the same manner. Like the first it rejected every thing but water, and would certainly soon have shared the fate of its predecessor, had not my mother thrown a handful of unshelled barley into the tub of water, in which it was accustomed to swim. The grain was immediately devoured by the bird, with as much avidity as if it had been its usual fare ; and during the time it remained with us, it would taste no other food. It having re-

covered the use of its wing, we usually placed it at night, for greater security, in a room near the one in which the man-servant slept. This arrangement, however, did not prove agreeable to all the parties concerned. Though the Brent was perfectly silent, yet the disposition for early rising which it evinced by pattering about the floor sorely disturbed the Irishman's predilection for a lengthened nap. To relieve himself from the annoyance, early one morning, when he thought there was no danger of detection, he let the bird free. It, however, no sooner found itself loose than it began to exult most loudly in its liberty, and my mother, who was awakened by the singular and unusual noise, rose and lifted the blind, just as it took wing for the water, where doubtless it soon rejoined its former companions. The time it was in our possession was too short to admit of many observations being made on its habits. We remarked, however, that it was by no means deficient in courage. When approached, it would lower its head, writhe its glossy serpent-like neck, and, with open mouth, protruded tongue, and eyes flashing with rage, prepare to defend itself, emitting at the same time a strong hissing sound. This was the only noise which it made while in our possession, and until the morning of its departure it was never heard to use the hoarse call of the species."

EIDER DUCK.

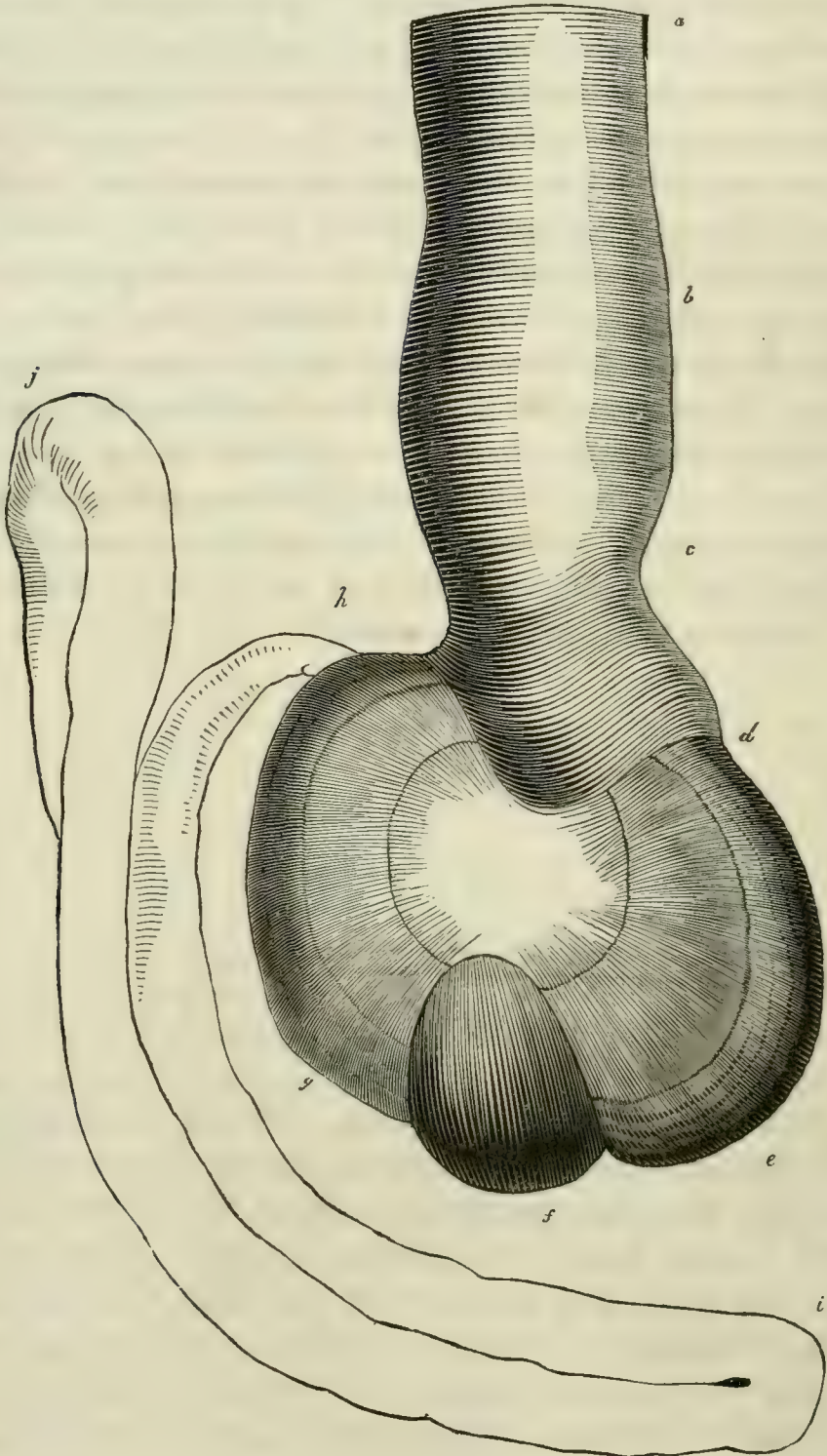
FULIGULA MOLLISSIMA, BONAP.

PLATE CCXLVI. VOL. III. p. 342.

ADULT Male, from Dr T. M. BREWER. The roof of the mouth is broadly and deeply concave; the posterior aperture of the nares linear, 10 twelfths long, margined with two rows of very pointed papillæ. Tongue 2 inches long, convex above, with a large median groove, fleshy, very thick, with a semicircular thin-edged horny tip; the breadth at the base $4\frac{3}{4}$ twelfths, at the tip 4 twelfths; the sides with two longitudinal series of bristles. The width of the mouth is 1 inch 3 twelfths. The œsophagus is $10\frac{1}{2}$ inches long, for $4\frac{1}{2}$ inches, its width

is 1 inch, it then enlarges so as to form what might be considered as a kind of crop, 1 inch $\frac{7}{12}$ in width; after this it continues of the uniform diameter of 1 inch, but in the proventriculus, Fig. 1, *b c*, enlarges to $1\frac{1}{4}$ inch. Its muscular walls are very thick, and the external fibres con-

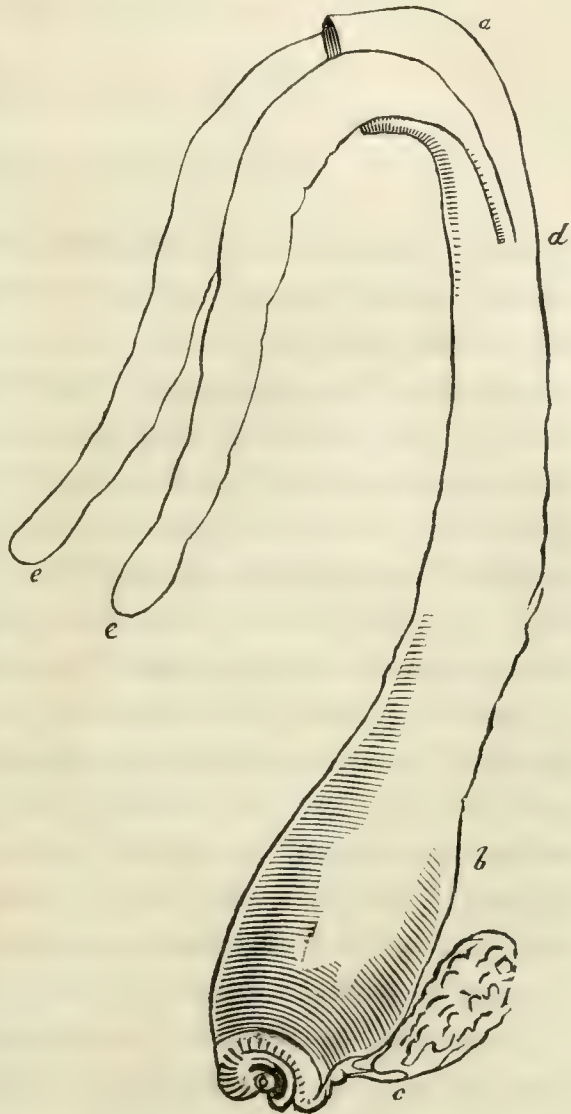
Fig. 1.



spicuous, the inner coat longitudinally plicate. The left lobe of the liver is 2 inches 2 twelfths long, the right lobe 4 inches.

Fig. 2.

The gall-bladder elliptical, 1 inch 5 twelfths in length, 11 twelfths in breadth. The stomach, *cdefgh*, is a gizzard of enormous size, placed obliquely transversely elliptical, its length $2\frac{1}{2}$ inches, its breadth 3 inches. The proventricular glands are extremely numerous, and form a belt 2 inches in breadth. The left muscle of the stomach, *de*, is $1\frac{1}{4}$ inch thick, the right, *gh*, 1 inch 2 twelfths; the epithelium very thick, and of a horny texture, with two elliptical convex grinding plates, of which the right is 2 inches in length, the left 1 inch 7 twelfths. Intestine 74 inches long; the width of the duodenum, *hij*, $\frac{1}{2}$ inch, diminishing to 5



twelfths; the rectum, Fig. 2, *ab*, 7 twelfths in width; the cœca, *cc*, $3\frac{1}{2}$ inches long, 4 inches distant from the extremity; their greatest width $4\frac{1}{2}$ twelfths, for an inch at the base only 1 twelfth; the cloaca very slightly dilated, its breadth being only 8 twelfths.

The trachea is $9\frac{1}{4}$ inches long, nearly of the uniform width of 5 twelfths, moderately flattened; the rings 130, well ossified, ending in a transversely oblong dilatation, projecting more toward the left side, 1 inch in breadth, $\frac{1}{2}$ inch in length. Bronchial half rings 32, the bronchi very wide, rings very narrow and cartilaginous. The contractor muscles are very large, and expanded over the whole anterior surface. At the distance of $1\frac{1}{2}$ inch from the tympanum they give off the cleido-tracheal muscles, and at the tympanum itself the sterno-tracheal.

SCAUP DUCK.

FULIGULA MARILA, STEPH.

PLATE CCXXIX. Vol. III. p. 226.

MALE. Breadth of mouth 8 twelfths ; its roof broadly concave, with a median prominent line, on which are four papillæ, and at the anterior part two very short prominent lines ; on the upper mandible on each side are 42 lamellæ, not projecting beyond the margin, and about 90 on the lower mandible. Tongue 1 inch 8 twelfths long, fleshy, with a deep groove above, a thin-edged series of lamellæ on each side, the tip somewhat semicircular and thin-edged. Œsophagus 8 inches long, its width from 5 twelfths to 4 twelfths, at the lower part of the neck enlarged to 6 twelfths, on entering the thorax contracted to 3 twelfths ; the proventriculus oblong, 10 twelfths in breadth. The stomach is a very muscular gizzard, of a transversely elliptical form, placed obliquely, 1 inch 8 twelfths long, 2 inches 3 twelfths broad ; the right muscle 10 twelfths thick, the left 9 twelfths ; the grinding surfaces of the epithelium longitudinally rugous, and of a brownish-red colour. Lobes of the liver $1\frac{1}{2}$ inch and 1 inch 1 twelfth long ; gall-bladder oblong, 1 inch long by 4 twelfths. The intestine makes 16 turns ; its length is 4 feet 7 inches, its width 4 twelfths ; duodenal fold 3 inches ; cæca 4 inches 9 twelfths long, only $1\frac{1}{2}$ twelfth in breadth, narrower at the base and at the extremity ; rectum 3 inches 9 twelfths long, $3\frac{1}{2}$ twelfths wide.

Trachea $6\frac{1}{4}$ inches long, a little flattened, carinate behind at the upper part, from $5\frac{1}{4}$ twelfths to $3\frac{1}{4}$ twelfths in breadth ; its rings moderately firm, unless at the back part, where they are cartilaginous ; 108 in number, with about 8 more incorporated with the tympanum, which is very large, of an irregular form, its projection on the right side having a semicircular carina, and a great portion of it being membranous ; its breadth 1 inch, its greatest height 1 inch 2 twelfths. Bronchi short, one of 25 half rings, the other of 30. Muscles as usual in this family.

PINTAIL DUCK.

ANAS ACUTA, LINN.

PLATE CCXXVII. VOL. III. p. 214.

MALE. Width of mouth 8 twelfths ; its roof very deeply concave, with a median prominent line, on which are 8 papillæ ; the lamellæ on the upper mandible 50, and not reaching the margin ; those on the upper edge of the lower mandible about 116. Tongue 2 inches 1 twelfth long, fleshy, prominent at the base, with a narrow median groove, thinner and broadly channelled toward the end, the edge thin and bristled, with 6 large papillæ toward the base, on each side, the tip somewhat semi-circular, very thin, and horny. Œsophagus 11 inches long, 4 twelfths in width, at the lower part of the neck dilated to 8 twelfths, then contracting to 4 twelfths ; the proventriculus 8 twelfths in breadth. The stomach a very muscular oblique gizzard, 1 inch 11 twelfths in breadth, 1 inch 4 twelfths long, the right muscle 9 twelfths, the left 11 twelfths thick ; the epithelium with two very thick concave grinding plates. Intestine 4 feet long, its average width 4 twelfths ; cœca 4 inches 9 twelfths long, their greatest width 2 twelfths, narrow at the commencement and toward the end, 3 inches from the extremity. Liver with the right lobe 2 inches 8 twelfths long. The left 2 inches ; gall-bladder 1 inch long, 5½ twelfths broad.

Trachea 8½ inches long, narrow at the commencement, its breadth being 2½ twelfths, gradually enlarging to 4½ twelfths ; then contracting to 3 twelfths, and terminating in a transversely oblong bony dilatation, projecting on the left side, with a rounded bulge similar to that of the Dusky Duck and Teal. The rings are firm, 140, besides about 8 which are blended with the tympanum. Bronchial half rings 22 and 26. Muscles as usual.

GREEN-WINGED TEAL.

ANAS CRECCA, LINN.

PLATE CCXXVIII. Vol. III. p. 219.

MALE. Width of mouth 5 twelfths ; upper mandible very deeply concave, with a median prominent line, which is papillate for half its length ; the lamellæ of the upper mandible 55, projecting a little beyond the margin, of the lower about 180, and extremely inconspicuous. Tongue $1\frac{1}{2}$ inch long, fleshy, deeply grooved above, with thin lamellate margins, the tip semicircular, thin, and horny. Œsophagus $6\frac{1}{2}$ twelfths long, its width 4 twelfths, at the lower part of the neck enlarged to 7 twelfths, then contracting to 3 twelfths ; the proventriculus oblong, 5 twelfths in breadth. Stomach a transversely elliptical, oblique gizzard, 1 inch 1 twelfth long, 1 inch 3 twelfths broad, its lateral muscles extremely developed, the right 6 twelfths, the left 5 twelfths in thickness, the inferior muscle narrow and prominent, as in all birds of this family ; epithelium very dense, with two opposite concave grinding surfaces. Intestine 3 feet $7\frac{1}{2}$ inches, with 16 folds, its general width only $1\frac{1}{2}$ twelfth, enlarging here and there to 2 twelfths ; cæca $4\frac{1}{2}$ inches long, for $1\frac{1}{2}$ inch 1 twelfth in breadth, enlarging to 3 twelfths, and toward the extremity 2 twelfths. Rectum $2\frac{1}{4}$ twelfths long, its width $2\frac{1}{2}$ twelfths. Right lobe of the liver 1 inch 5 twelfths, the other 1 inch 2 twelfths.

Trachea 5 inches long, from $2\frac{1}{2}$ twelfths to 2 twelfths in width, moderately flattened, ending in a transversely elongated tympanum, projecting to the left side, with a roundish thin bony prominence ; its greatest breadth 8 twelfths, its length 3 twelfths ; the rings rather broad, firm, 115, besides a few blended with the tympanum. The muscles as usual. Bronchial half rings 28 and 34.

HARLEQUIN DUCK.

FULIGULA HISTRIONICA, BONAP.

PLATE CCXCVII. Vol. III. p. 612.

MALE from Dr T. M. BREWER. Width of mouth 9 twelfths ; its roof deeply concave as in most other Ducks ; the posterior aperture of the nares oblongo-linear, 8 twelfths in length, margined with very slender acute papillæ ; the lamellæ on each side of the upper mandible about 35 ; those on the edge of the lower mandible about 60 ; the tongue 1 inch 4 twelfths long, fleshy, broad, thick at the base, becoming thin toward the end, with thin, fringed margins, and a semicircular tip. Œsophagus 7 inches 2 twelfths long, of the uniform width of 8 twelfths on the neck, the proventriculus 9 twelfths in breadth. Stomach a strong muscular gizzard, 1½ inch long, 1 inch 7 twelfths broad ; the lateral muscles very large, the tendons covering almost its whole surface ; the epithelium very thick, dense, with two opposite elliptical flat grinding surfaces. The proventricular glands form a belt 1½ inch in breadth. The liver is very large, its lobes very unequal, the right 2 inches 8 twelfths long, the left 1 inch 8 twelfths. Intestine 58½ inches long, its average width 5 twelfths.

The trachea, which is 6½ inches in length, has at first a breadth of only 3 twelfths, but at the distance of three-quarters of an inch enlarges to 4½ twelfths, and so continues for 2 inches ; it then contracts to 2½ twelfths, and again at the lower part enlarges to 5½ twelfths, and terminates in a large transverse bony dilatation or tympanum, of which the length is 7½ twelfths, the breadth 1 inch 2 twelfths ; it projects as usual to the left side, where it is of a rounded form. The rings of the trachea are 124, broad, firm, and well ossified. The bronchi are of moderate width, of about 25 half rings. The lateral muscles are strong, the sterno-tracheal of considerable size, coming off at the commencement of the tympanum, and there are no inferior laryngeal muscles.

In a female, the intestine is 57 inches long ; its width in the duodenal part 3 twelfths ; the cœca 4 inches long, 3 twelfths in breadth at the widest part, at the base 1 twelfth, and toward the end 2 twelfths ; their distance from the extremity 3 inches.

WOOD DUCK.

ANAS SPONSA, LINN.

PLATE CCVI. Vol. III. p. 52.

Dr BACHMAN, who has kept a male of this species several years, states that after moulting he is for six weeks of a plain colour, like the young males, and the feathers gradually assume their bright tints.

Male. Width of mouth 8 twelfths ; the upper mandible is widely concave, with a prominent line, on which are a few papillæ ; there are about 30 lamellæ on each side of the upper mandible, of which only five about the middle project beyond the margin, on the edge of the lower are 35. The tongue is fleshy, 1 inch 5 twelfths long, papillate at the base, contracted toward the middle, the edges thin and lamellate, the tip semicircular, thin, and horny. Œsophagus $8\frac{1}{2}$ inches long, its width uniformly 10 twelfths; the proventriculus 4 inches in breadth. The stomach is a very large muscular gizzard of a transversely elliptical form, placed obliquely, 1 inch 5 twelfths long, 1 inch $8\frac{1}{2}$ twelfths broad ; the lateral muscles very thick, and forming a singularly thin edge ; the tendons covering the whole surface ; the left muscle 7 twelfths thick, the right 8 twelfths ; the epithelium very thick, dense, with two elliptical grinding surfaces. Proventricular belt 1 inch 5 twelfths in breadth. Lobes of the liver 1 inch 8 twelfths, and 2 inches 8 twelfths long. Intestine 37 inches long, for a short space at the commencement, its width is 4 twelfths, but presently contracts to $2\frac{1}{2}$ twelfths, and ultimately to 2 twelfths, being more slender than that of any other species of this family examined. The cœca are $2\frac{1}{4}$ inches long, $1\frac{1}{2}$ twelfth in width, and placed at the distance of $3\frac{1}{2}$ inches from the extremity.

Trachea $6\frac{1}{2}$ inches long, much flattened, of the uniform width of 3 twelfths ; its rings rather firm, 120 in number, of which about 15 at the lower part are extremely narrow and distant in front. There is an irregular transverse bony ovate dilatation, 10 twelfths in breadth, 6 twelfths in length, with its greatest protuberance to the left side, as is usual. Bronchi of moderate length, the left of 28, the right of 30 half rings. There are no inferior laryngeal muscles, and both the sternotracheals come off on the right side, the left one winding behind the right end of the tympanum.

HOODED MERGANSER.

MERGUS CUCULLATUS, LINN.

PLATE CCXXXII. VOL. III. p. 246.

DR BACHMAN has favoured me with the following note respecting this species:—"On the 19th April 1838, at the plantation of Major PORCHES, on the Santee River, in South Carolina, I obtained an old female Merganser and her five young ones, the latter apparently from two to three weeks old. They were in a very small pond, and could not be driven from it. As we approached, the female sunk deep into the water, exhibiting only a very small portion of her back above the surface, and swimming with neck outstretched and low along the water. In endeavouring to drive the young to the high grounds, for the purpose of capturing them, they all dived in various directions, like Grebes. On conversing with an overseer, on the following day, he mentioned to me that he had on the previous week obtained several of the young in order to domesticate them, but having neglected to feed them on animal food they had all died. On the following day I met with two other broods, each of five, and was also shewn a cypress tree (*Cupressus disticha*) in the hollow of which a pair had been breeding during the present season. As far as I could learn, they breed in similar situations with the Summer Duck (*Anas Sponsa*), although generally a little earlier. They were all peculiarly marked with two white spots behind the wings on the back.

In an adult male, the width of the mouth is $7\frac{1}{2}$ twelfths; the palate is flat, as is the anterior part of the roof of the mouth, on which are two longitudinal series of slender oblique lamellæ, besides the prominent tooth-like plates of the margins, of which there are 33 on the upper, and about 40 on the lower mandible, on each side. Tongue $1\frac{1}{2}$ inch long, and of the same form as in the other species. Œsophagus $7\frac{1}{4}$ inches long, 1 inch in width in the greater part of its extent, 1 inch 2 twelfths within the thorax. The stomach is a gizzard of moderate strength, $1\frac{1}{2}$ inch long, $1\frac{1}{3}$ inch in breadth; its lateral muscles large, being 7 twelfths in thickness; the epithelium dense, tough, and form

ing two flat grinding surfaces. The proventricular glands are very small, forming a belt $1\frac{1}{4}$ inch in breadth. The intestine is 51 inches long; its width from $3\frac{1}{2}$ twelfths to $2\frac{3}{4}$ twelfths; the cœca 9 twelfths long, 2 twelfths wide, 3 inches from the extremity; the rectum 5 twelfths wide, forming at the end a globular cloaca, 1 inch in width. Lobes of the liver nearly equal, $2\frac{1}{4}$ inches in length; gall-bladder $\frac{1}{2}$ inch long.

Trachea $6\frac{1}{4}$ inches long, much flattened, for 3 inches diminishing from $3\frac{1}{2}$ twelfths to $2\frac{1}{2}$ twelfths, then enlarging to $4\frac{1}{2}$ twelfths; from this place to the tympanum it is of a trigonal form, with an acute carina anteriorly, and the rings are widely separated. There are 102 rings, besides 8 which are united and form part of the tympanum, which is of an irregular form, projecting anteriorly with a rounded bulge, and dilated on the left side, its greatest breadth 9 twelfths. The bronchi are of moderate length, the left with 32, the right with 26 half rings. The muscles as in the other species; the contractor muscles exceedingly large at the upper part.

RED-NECKED GREBE.

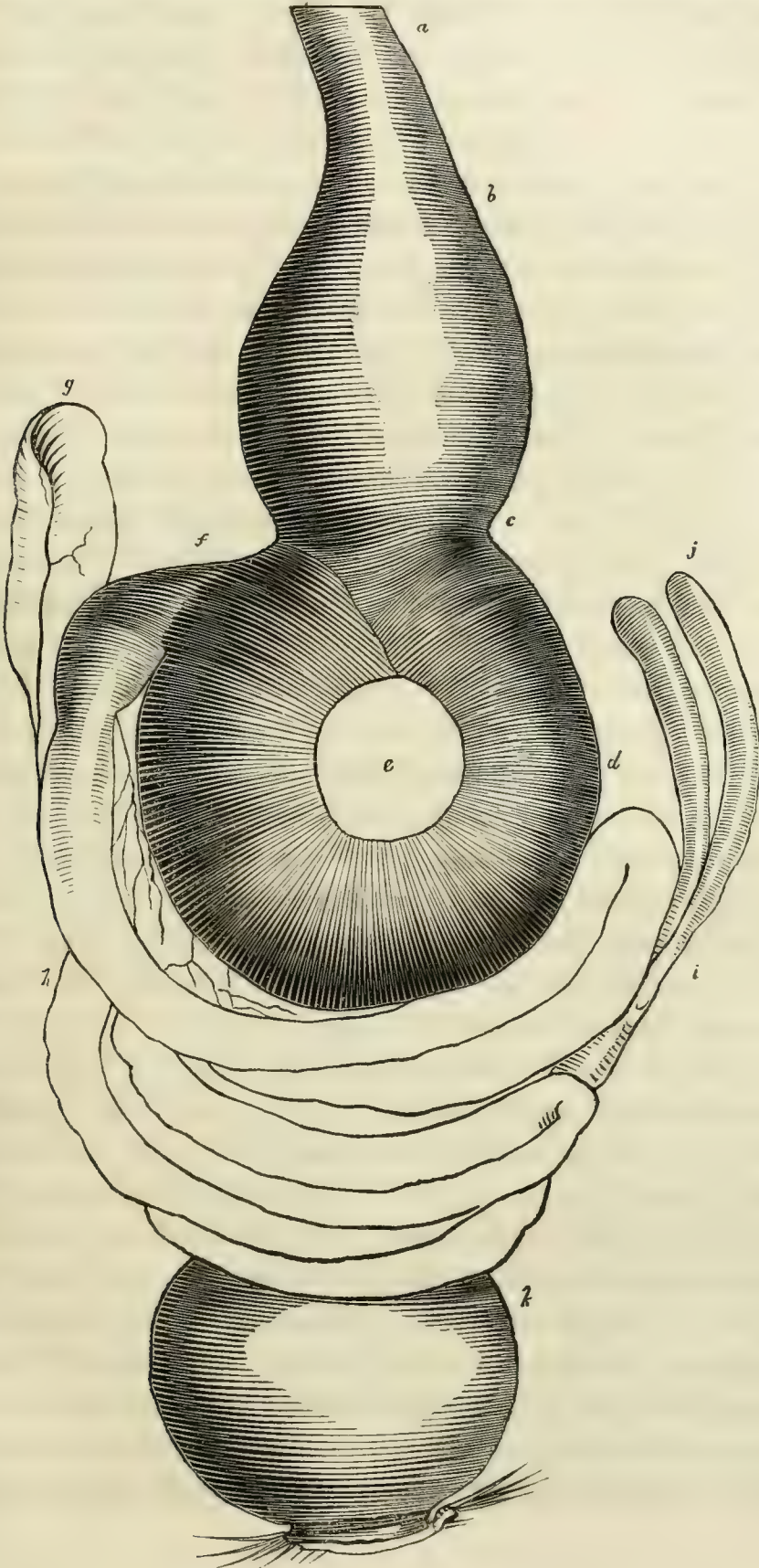
PODICEPS RUBRICOLLIS, LATH.

PLATE CCXCVIII. Vol. III. p. 617.

Female from Dr T. M. BREWER. Length to end of tail $19\frac{1}{2}$ inches, to end of wings $17\frac{1}{2}$, to end of claws $24\frac{1}{4}$; wing from flexure $7\frac{3}{4}$; tail $1\frac{3}{4}$; extent of wings $32\frac{1}{4}$; bill along the ridge $1\frac{1}{2}$; tarsus $2\frac{2}{12}$; hind toe $\frac{7}{12}$, its claw $\frac{1\frac{1}{2}}{12}$; second toe $1\frac{1}{2}$, its claw $\frac{3\frac{1}{2}}{12}$; third toe $2\frac{4\frac{1}{2}}{12}$, its claw $\frac{5}{12}$; fourth toe $2\frac{9}{12}$, its claw $\frac{5}{12}$.

The mouth is narrow, $9\frac{1}{2}$ twelfths in width; the palate slightly convex, with two faint lateral ridges on each side; its anterior part extremely narrow, with three longitudinal ridges, the lower mandible still narrower, and deeply channelled. Tongue 1 inch 7 twelfths long, slender, tapering to a thin horny point, trigonal, as deep as broad, fleshy and concave above, horny beneath. Œsophagus, *abc*, $10\frac{3}{4}$ inches long; its width uniformly $\frac{1}{2}$ inch along the neck; the proventriculus, *bc*, however, is dilated to a very large ovate sac nearly $1\frac{1}{2}$ inch broad, 1 inch 9 twelfths in

breadth. The stomach, *cdef*, is of enormous size, roundish, slightly compressed, $2\frac{1}{4}$ inches in diameter ; its muscular coat reduced to a single



series of large fasciculi ; its tendons, *e*, circular, 9 twelfths in breadth ; the epithelium thick, soft, longitudinally rugous. The proventricular glands are of a cylindrical form, the largest being $\frac{1}{2}$ inch long, and 1 twelfth in breadth ; they form a complete belt $1\frac{1}{3}$ inch in breadth. The inner coat of the stomach is destitute of epithelium, being quite soft and smooth. The stomach, therefore, is in all respects similar to that of the truly piscivorous birds, such as Divers and Herons, and totally different in structure from that of the Coots, to which the Grebes might be supposed to be allied, on account of the structure of their feet. On the other hand, they differ from the Divers and Cormorants in the form of the œsophagus, which in these birds is extremely wide, whereas in the Grebes it is exceedingly contracted, and more resembles that of the Coots, Gallinules, and Rails. The proventriculus is intermediate between that of the birds just mentioned, and the Cormorants. There is a pyloric sac of small size, approximating to that of the Pelican family. The stomach is moderately distended with a great quantity of feathers, apparently those of the bird itself, or of some species of the same genus. These feathers are intermixed with vertebræ of small fishes, easily distinguishable by their concave surfaces and three prominent spines. The duodenum curves round the stomach, returning at the distance of $5\frac{1}{2}$ inches, ascending to the liver as usual, passing down the right side, and forming several convolutions, the number of turns being twelve. Its length is 33 inches ; its width $\frac{1}{2}$ inch at the upper part, towards the rectum only 3 twelfths. The cœca are 2 inches long, 2 twelfths in breadth, uniform, unless at the base, where they are narrower ; their distance from the extremity 3 inches. The cloaca is globular, $1\frac{1}{2}$ inch in diameter.

The trachea is $9\frac{1}{4}$ inches long, of the nearly uniform width of $3\frac{1}{4}$ twelfths, unless at the lower part, when it is narrowed to 2 twelfths ; flattened in its upper half, and compressed in the lower ; the rings moderately firm, 180 in number. The Grebes differ from almost all other birds in having the bronchial rings complete and firmly ossified. In the present species, they are only 8 in number, the remaining part of the bronchi being membranous. There are the usual cleido-tracheal muscles ; the sterno-tracheal, part of which is continuous with the lateral muscles, but the inferior portion distinct, and attached to several of the rings ; there is also a single pair of inferior laryngeal muscles.

The jugular veins are of vast size, and toward the lower part of the

neck form an immense dilatation ; that of the left side being distended with coagulated blood to 9 twelfths of an inch, and so continuing until it enters the heart. The other is $\frac{1}{2}$ inch in breadth. In this respect there seems to be an analogy to the diving mammifera, such as the Seals and Dolphins.

EARED GREBE.

PODICEPS CORNUTUS, LINN.

PLATE CCLIX. VOL. III. p. 429.

Male. The mouth as in the last species, $4\frac{1}{2}$ twelfths wide ; the tongue 11 twelfths long, and similar to that of the Red-necked Grebe. Œsophagus 7 inches in length, along the neck only 4 twelfths broad ; the proventriculus excessively large, ovate, 10 twelfths in breadth. The stomach is an enormous sac, 2 inches long, $1\frac{1}{2}$ broad, a little compressed, of the same structure as in the last species ; its tendons 4 twelfths in breadth. There is a small flattened pyloric lobe. The contents of the stomach are feathers, and bones of fishes. There is in this species a very distinct, thick, soft, bright red, longitudinally rugous epithelium. The proventricular glands are of great size, the largest 3 twelfths long, 1 twelfth in breadth ; they form a belt $1\frac{1}{4}$ inch in breadth. The lobes of the liver are very large, the left 2 inches 4 twelfths long, the right 2 inches ; the gall-bladder oblong. The intestine forming 12 curves ; its length is 49 inches, its breadth at the upper part 5 twelfths, diminishing to 3 twelfths ; the cœca 2 inches long ; their greatest width 2 twelfths, their distance from the extremity 1 inch 9 twelfths. Cloaca globular, about 7 twelfths in width.

The trachea is $6\frac{1}{4}$ inches long, much flattened in its whole length, excepting half an inch at the lower part ; for half its length, it is 2 twelfths in breadth, then enlarges to 3 twelfths, and finally diminishes to $1\frac{1}{2}$ twelfth. The rings are 184, firm. The bronchi are slender, with the rings complete, ossified, 12 in number : the remaining part being membranous. The muscles as in the last.

The jugular veins are not enlarged in this species.

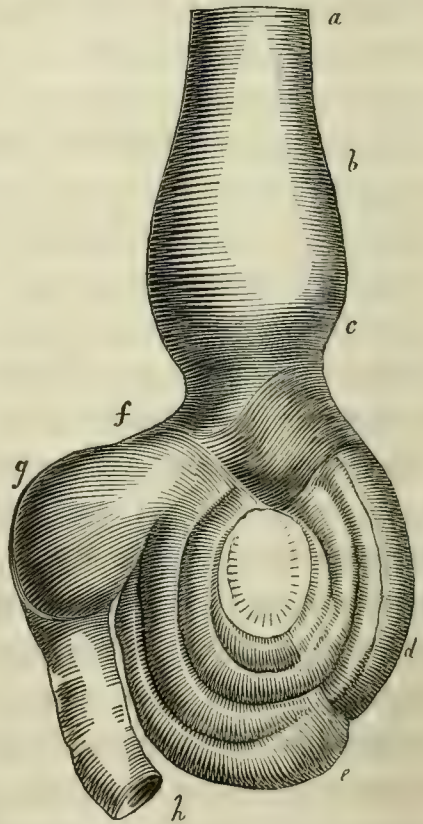
PIED-BILLED DOBCHICK.

PODICEPS CAROLINENSIS, LATH.

PLATE CCXLVIII. VOL. III. p. 359.

MALE. Mouth 7 twelfths wide ; the palate flat, with two longitudinal ridges on each side ; the anterior part with three. The tongue is 10 twelfths long, slender, slightly concave above, trigonal, tapering to a thin horny point. Œsophagus 8 inches long, $\frac{1}{2}$ inch in width along the neck. The proventriculus, *b c*, forms a very large sac, as in the other species, 10 twelfths in width ; but the stomach, *c d e f*, although still very large, is more muscular in structure, and approaches in character to a true gizzard. It is of an irregularly elliptical form, $1\frac{3}{4}$ inch long, $1\frac{1}{4}$ inch broad ; there are distinct lateral muscles 5 twelfths thick, a very prominent inferior muscle, *e*, and large oblong tendons. The epithelium is very thick, dense, tough, with remarkably strong longitudinal rugæ, transversely fissured, and also lining the large pyloric cavity, *f*, which is 8 twelfths in extent. The proventricular glands are exceedingly large, those in the middle being 3 twelfths long, and $\frac{1}{4}$ twelfth broad ; they form a belt $1\frac{1}{4}$ inch in breadth. The intestine forms 8 folds, and measures 31 inches in length ; its width at the upper part is $3\frac{1}{4}$ twelfths, at the lower 3 twelfths. The cœca are only 3 twelfths long, and 1 twelfth broad. The cloaca is globular, and of moderate size.

The trachea is 5 inches 10 twelfths long, much flattened ; $1\frac{3}{4}$ twelfth in breadth, toward the lower part 2 twelfths, and lastly contracted to $1\frac{1}{2}$ twelfth ; the rings 150. The bronchi differ in this species from the rest in being com-



posed of distinctly separated cartilaginous half rings, 15 in number. The muscles as in the other species.

In another individual, a female, the stomach is of a regularly elliptical form, 1 inch 9 twelfths long, $1\frac{1}{2}$ inch in breadth; the muscular coat of moderate thickness, composed of strong fasciculi; the epithelium thinner and more corrugated. The stomach contains a great quantity of feathers, scales of fishes, numerous elytra of aquatic coleoptera, and a fish 3 inches long, and 11 twelfths in depth.

It is very remarkable, and equally singular, that all the Grebes should have the stomach distended with feathers. These bodies being indigestible, and not the remains of objects devoured, for none of these birds prey upon birds, must be swallowed for the purpose of aiding digestion; but in what manner they accomplish this object is not easily determinable. They may keep the stomach distended by their elasticity, but why should that organ require to be more so than that of the Divers, which live on the same sort of food?

RED-THROATED DIVER.

COLYMBUS SEPTENTRIONALIS, LINN.

PLATE CCII. VOL. III. p. 20.

THE width of the mouth is 10 twelfths; but the lower jaw is dilatible to $1\frac{1}{2}$ inch. On the palate are two papillate ridges, with two series of papillæ on each side of the posterior aperture of the nares, which is oblongo-linear, $1\frac{1}{4}$ inch long, and margined with papillæ. On the anterior part of the upper mandible are three ridges. The tongue is 1 inch 8 twelfths long, very slender, trigonal, flat above, tapering to a horny point. Œsophagus, *abc*, 14 inches in length, at its commencement $1\frac{1}{2}$ inch in width, but at the lower part of the neck enlarging to 2 inches; on entering the thorax it contracts to $1\frac{1}{2}$ inch; the proventriculus, *bc*, again enlarges to 2 inches, forming a very large ovate sac. The lobes of the liver are very large and nearly equal, the length of the one being 3 inches 10 twelfths, that of the other 3 inches 8 twelfths. The stomach, *cdef*, is rather large, roundish, 1 inch 9 twelfths in diameter, a little com-

RED-THROATED DIVER.

pressed, its lateral muscles rather thin, the lower somewhat prominent. Its contents are remains of fishes, and a great quantity of small stones and pebbles. The epithelium is pretty thick, dense, with numerous

Fig. 1.

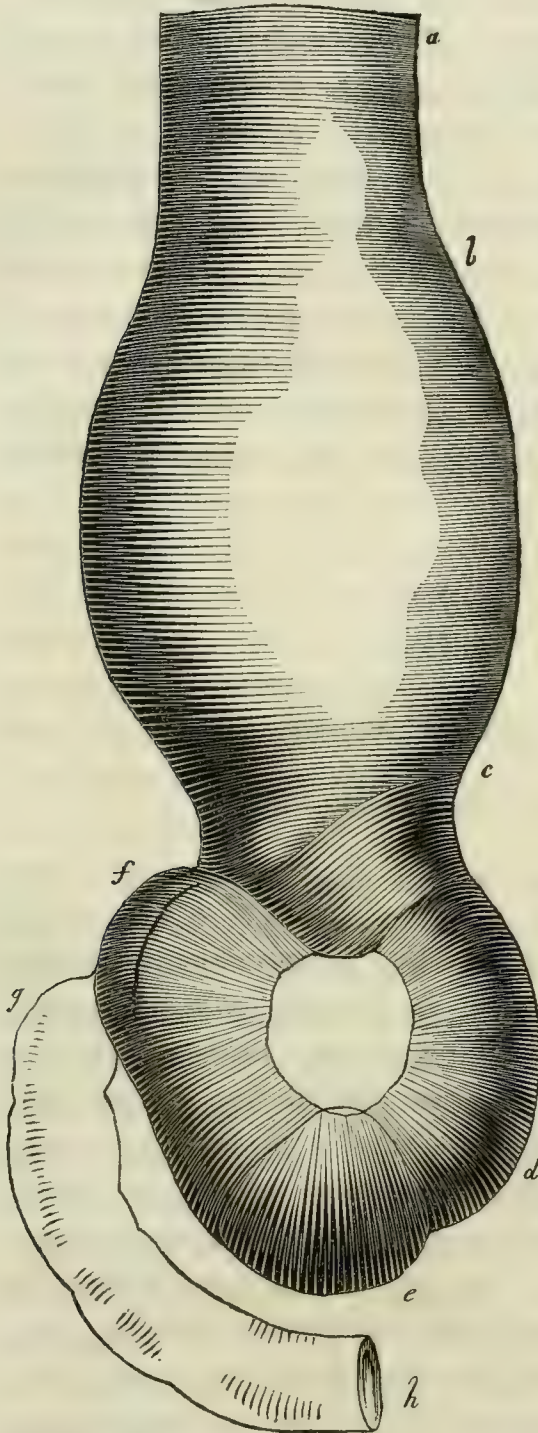
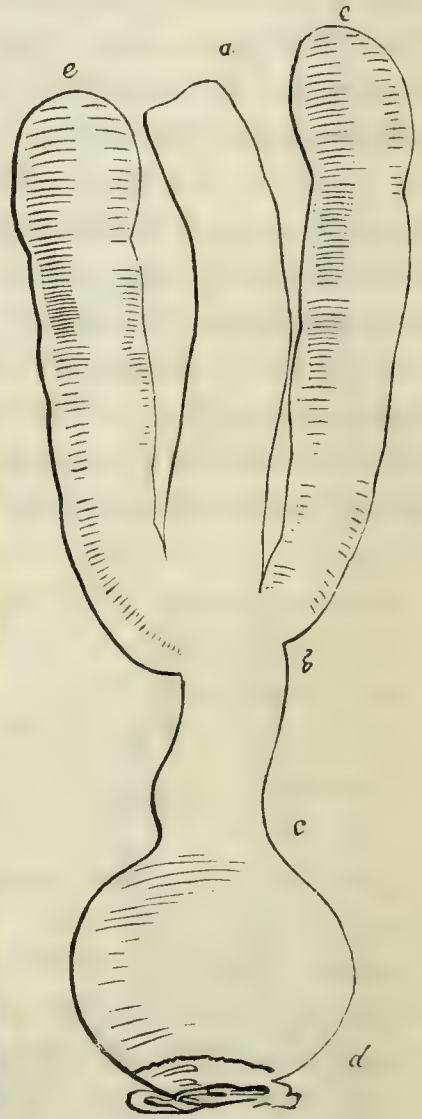


Fig. 2.



longitudinal rugæ. The proventricular glands form a belt 1 inch 10 twelfths in breadth. The intestine is 4 feet 11 inches long; its ave-

rage with 8 twelfths. The cœca, Fig. 2, *cc*, $2\frac{1}{2}$ inches long, $4\frac{1}{2}$ twelfths broad, towards the end 6 twelfths, with the extremity rounded. The rectum is 2 inches long, with a globular cloaca, *b*, $1\frac{1}{2}$ inch in diameter.

Trachea $11\frac{1}{2}$ inches long, much flattened, from 6 twelfths to 4 twelfths in breadth; the rings 145, with 2 dimidiate. Bronchi moderate, of 20 half rings. Lateral muscles strong; a single series of inferior laryngeal muscles going to the last half ring of the trachea.

BLACK GUILLEMOT.

URIA GRYLLE, LATH.

PLATE CCXIX. VOL. III. p. 148.

MALE from Dr T. M. BREWER. The palate is flat, with two papillate ridges, and a series of papillæ on each side, parallel to the posterior aperture of the nares, which is linear, and 10 twelfths long; the anterior part concave, with five prominent lines. Tongue $1\frac{3}{4}$ inch long, slender, tapering, trigonal, horny beneath, papillate at the base, and channelled towards the extremity, the tip pointed and thin-edged. Œsophagus $6\frac{1}{2}$ inches long, 9 twelfths in width along the neck, within the thorax dilated into an enormous sac, 2 inches in length, $1\frac{1}{4}$ in breadth. The stomach is rather large, $1\frac{1}{2}$ inch long, $1\frac{1}{4}$ broad; the epithelium dense, tough, light red, with strong longitudinal rugæ. The proventricular glands form a belt $1\frac{1}{4}$ inch in width, extending over the wider part of the sac. The left lobe of the liver is $2\frac{1}{4}$ inches long, the right lobe 3 inches; the gall-bladder 9 twelfths long, $4\frac{1}{2}$ twelfths in breadth. The intestine is 4 twelfths in width; the cœca 1 inch 4 twelfths long, $3\frac{1}{4}$ twelfths in their greatest breadth, $2\frac{1}{4}$ inches distant from the extremity; the cloaca ovate, 10 twelfths long. Trachea 4 inches 4 twelfths long, from 4 twelfths to $2\frac{1}{2}$ twelfths in breadth; the rings 115. Bronchial half rings 26. The tracheal rings are feeble, unossified, narrow in the middle and behind, as in the Auks, Gulls, Terns, and generally in all birds of which the rings are unossified. There are cleido-tracheal muscles, lateral muscles, sterno-tracheal, and a single pair of inferior laryngeal.

RAZOR-BILLED AUK.

ALCA TORDA, LINN.

PLATE CCXIV. VOL. III. p. 112.

ON the palate are several series of reversed papillæ, and two longitudinal papillate ridges; on its anterior part are five prominent lines; the posterior aperture of the nares linear, 1 inch in length; width of mouth 11 twelfths. Tongue $1\frac{1}{4}$ inch long, fleshy, slender in its whole length, trigonal, flat above, with a median groove, and tapering to a very thin horny point. Œsophagus $8\frac{1}{2}$ inches long, its width along the neck 10 twelfths, but within the thorax it forms an enormous sac $3\frac{1}{2}$ inches long, 1 inch 11 twelfths in breadth; the proventricular glands very numerous, forming a complete belt $3\frac{1}{4}$ inches in length, and occupying almost the whole of the sac above mentioned. Stomach very small, 10 twelfths long, 9 twelfths in breadth; its muscular coat thin, the tendons round, and about 5 twelfths in breadth; the epithelium thin, dense, and longitudinally rugous. Intestine 53 inches long, its average width 5 twelfths; the cœca 9 twelfths long, $1\frac{1}{2}$ twelfth in breadth, 2 inches 1 twelfth distant from the extremity; cloaca globular, and about 1 inch in diameter.

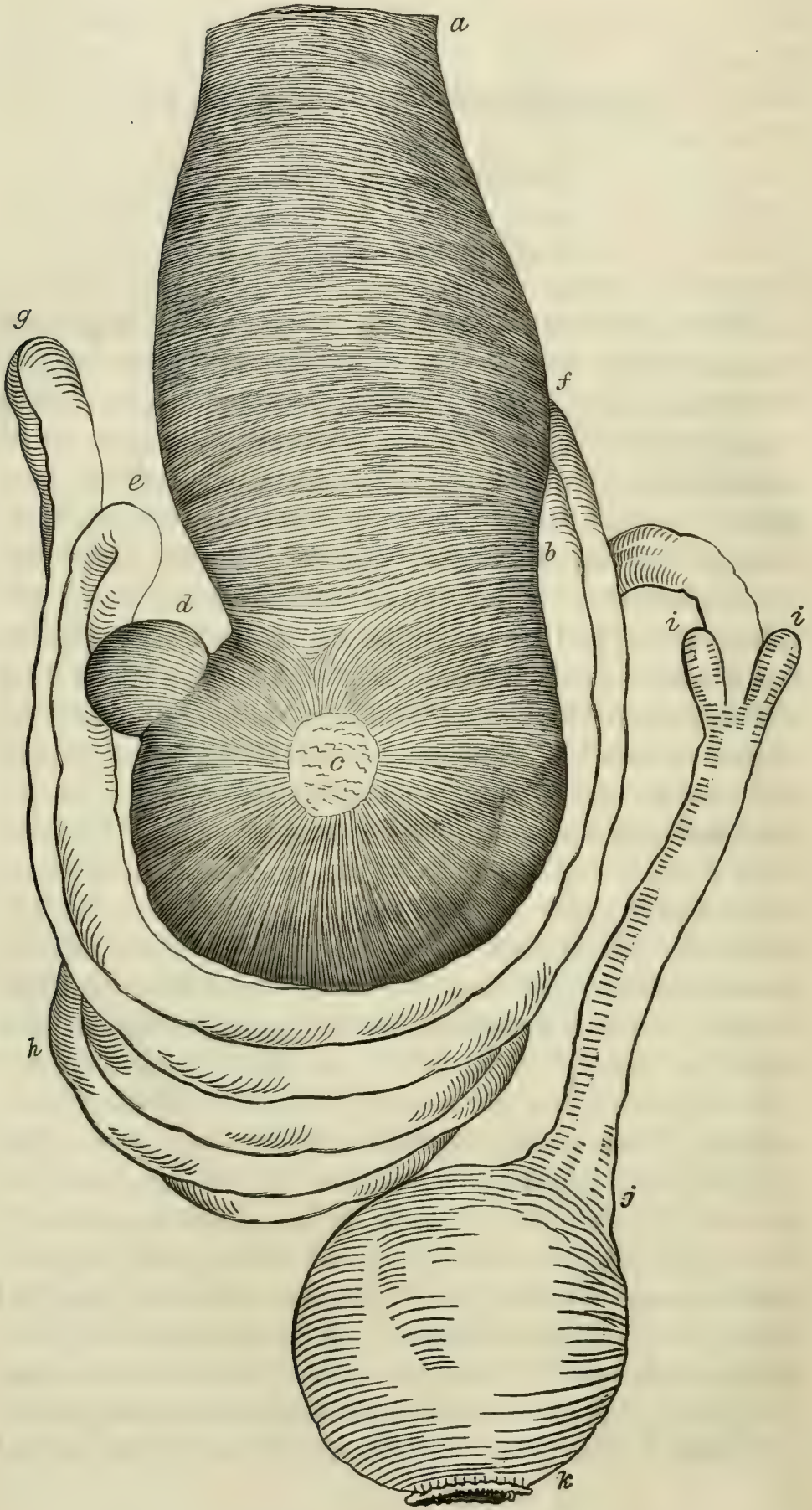
Trachea 5 inches long, from $4\frac{1}{2}$ twelfths to 3 twelfths in width, a little flattened; its rings 95, unossified. Bronchi very wide, of 18 half rings. Cleido-tracheal muscles, lateral muscles, sterno-tracheal slips, and a single pair of inferior laryngeal muscles.

DOUBLE-CRESTED CORMORANT.

PHALACROCORAX DILOPHUS.

PLATE CCLVIII. VOL. III. p. 420.

Female. The mouth of this bird, and those of the other Cormorants, differ from those of all the birds hitherto examined and described in these volumes, in having the posterior aperture of the nares placed much farther forward, commencing nearly opposite the anterior angle of the eye, and in this species only 10 twelfths long, with a very prominent ridge on each side, running backwards over the hind part of the palate, which is flattened. The width of the mouth is 1 inch 4 twelfths; but the lower jaw can be dilated to 2 inches, there being a joint on each side at the base, as in Herons. The tongue is a very diminutive ovato-lanceolate, thin, strongly carinate body, $\frac{1}{2}$ inch in length, 3 twelfths in its greatest breadth, with two basal knobs placed close together. Œsophagus 16 inches long, at its commencement $2\frac{1}{2}$ inches in width, afterwards 2 inches; contracting to $1\frac{1}{2}$ inch as it enters the thorax, and again dilated into a sac $2\frac{1}{4}$ inches in width, *a b*, which is directly continuous with the stomach, that organ seeming to form its fundus. Its muscular fibres are very distinct, the external being transverse, the internal longitudinal; the inner coat is thrown into prominent longitudinal plicæ. The stomach, *b c d*, is of a roundish form, 2 inches 2 twelfths in diameter; its muscular coat extremely thin, being reduced to a single series of slender muscular fibres; the inner coat quite smooth and soft, as is that of the pyloric lobe, *d*, which is $\frac{1}{2}$ inch in diameter. The proventricular glands, which are very numerous, form a belt, of which the greatest breadth is 1 inch 9 twelfths, but at one place only $1\frac{1}{4}$ inch. The lobes of the liver are extremely unequal, the right being 4 inches, the left only 2; the gall-bladder 1 inch 9 twelfths in length, oblong, 4 twelfths in breadth. The duodenum, *d e f g*, which is $3\frac{1}{2}$ twelfths in breadth, curves upwards at first to the length of 9 twelfths, *d e*, then bends round the stomach, ascends on the left side to the upper part of the proventriculus for the length of $6\frac{1}{2}$ inches, retraces the same course until it reaches the liver, then passes down the right side, and



is convoluted, forming twelve turns in all. It measures 5 feet 10 inches in length; its width in the duodenal part is $4\frac{1}{2}$ twelfths, afterwards 3 twelfths; the cœca, *ii*, 6 twelfths long, 3 twelfths broad, 4 inches from the extremity; the rectum, *ijk*, for 3 inches has a width of $4\frac{1}{2}$ twelfths, and terminates in a globular cloaca, *k*, 1 inch 10 twelfths in width.

The trachea is 11 inches long, from $5\frac{1}{2}$ twelfths to $4\frac{1}{2}$ twelfths in breadth, considerably flattened; its rings moderately firm, broad, 138, with 2 additional half rings. Bronchi of moderate width, one with 20, the other with 22 half rings. Lateral muscles large, as are the sternotracheal slips.

This species has a slender trigonal bone $10\frac{1}{2}$ twelfths in length, articulated to the crest of the occipital bone. The anterior part of the cerebrum tapers to a point much in the same manner as in the Turkey Buzzard, forming a similar lobe, 4 twelfths in height at its base, from the extremity of which comes off the olfactory nerve, which is about the 5th part of a twelfth in breadth, runs a course of half an inch along the septum of the eyes, and is distributed to the membrane of the nasal cavity, which is of a triangular form, 6 twelfths in length, 5 twelfths in breadth, with a single large turbinated bone. The external aperture of the nostrils is completely obliterated, its place being filled by bony matter. The large branch of the 5th pair of nerves passes in its usual direction to the anterior part of the upper mandible.

FLORIDA CORMORANT.

PHALACROCORAX FLORIDANUS.

PLATE CCLII. Vol. III. p. 387.

Male. The mouth presents the same appearance as that of the last species; the posterior aperture of the nares is 11 twelfths in length; the tongue 6 twelfths long, and exactly of the same form. Œsophagus 14 inches long; its width at the commencement $2\frac{1}{2}$ inches, along the neck 1 inch 8 twelfths; within the thorax it forms a sac of enormous size, 2 inches 2 twelfths in breadth, of which the stomach, as in the other species, seems to form the fundus. The stomach is 2 inches in diameter, in all respects similar to that of the last species, with a pyloric lobe $\frac{1}{2}$ inch in diameter. The proventricular glands form a belt 2 inches 2 twelfths in breadth, but at one place entirely separated, with an interval of $\frac{1}{2}$ inch, in which there are no glands, and at another for $\frac{1}{4}$ inch, being thus disposed in two circular masses, as in *Phalacrocorax Carbo*. The intestine curves precisely as in the species above described, at first ascending for $\frac{1}{4}$ inch, and forming 15 curves; its length is 5 feet 2 inches, its width from 4 twelfths to 3 twelfths; the cæca $4\frac{1}{2}$ twelfths long, 3 twelfths wide, 5 inches distant from the extremity; the cloaca globular, 1 inch 5 twelfths wide.

Trachea 10 inches long, from 5 twelfths to 4 twelfths in breadth, slightly flattened; the rings moderately firm, 148, with 2 additional half rings. Bronchi with 20 half rings. Cleido-tracheal muscles, lateral muscles, sterno-tracheal, and a single pair of inferior laryngeal.

The lobes of the liver are extremely unequal, the right 3 inches 2 twelfths, the left 2 inches in length; gall-bladder oblong, 1 inch 4 twelfths long, 4 twelfths in breadth.

A young bird taken from the nest, $11\frac{1}{2}$ inches long, has its mouth 10 twelfths wide, but with the lower mandible dilatable to the extent of $1\frac{1}{2}$ inch. The length of the œsophagus and stomach is 8 inches; these organs are of enormous width, that of the former being 1 inch 2 twelfths, and the stomach and proventriculus together form a vast sac $3\frac{1}{2}$ inches in length, and 2 inches in diameter when inflated. The pro-

ventricular glands are disposed in two roundish masses, separated by an interval of half an inch; one of these masses is $2\frac{1}{4}$ inches in breadth, and $1\frac{1}{2}$ inch in length. The intestine is 5 feet 2 inches long, 3 twelfths in breadth; the cæca 4 twelfths long, 3 twelfths wide; the cloaca 1 inch in diameter; the gland 9 twelfths long, 8 twelfths in breadth, hollow, with its inner surface corrugated; it opens by a single aperture into the upper posterior part of the cloaca.

The nostril is still open, linear, 2 twelfths long, $\frac{1}{2}$ twelfth in breadth. The posterior aperture of the nose is 6 twelfths in length, and there is a free communication between the anterior and the posterior openings, passing from the former obliquely backwards; and a sinus, 4 twelfths in length, proceeds as far as the edge of the orbit. The anterior part of the cerebrum gives off the olfactory nerve, which runs along the septum of the orbit, like a thread, a quarter of a twelfth in breadth, and is distributed upon the membrane of the nasal cavity, some of its branches extending along the interior of the mandible.

We have seen that in the adult Cormorant, of which the external nares are completely closed, the nasal cavity of moderate size, and communicating with that of the mouth, the nasal membrane is supplied with filaments of an olfactory nerve, not very much inferior in size to that of the Turkey Buzzard and Raven, which are supposed by some to smell their prey at enormous distances: yet the Cormorants, it appears, cannot possibly smell, as the air does not pass through their nasal cavities.

FRIGATE PELICAN.

TACHYPETES AQUILUS, VIEILL.

PLATE CCLXXI. VOL. III. p. 495.

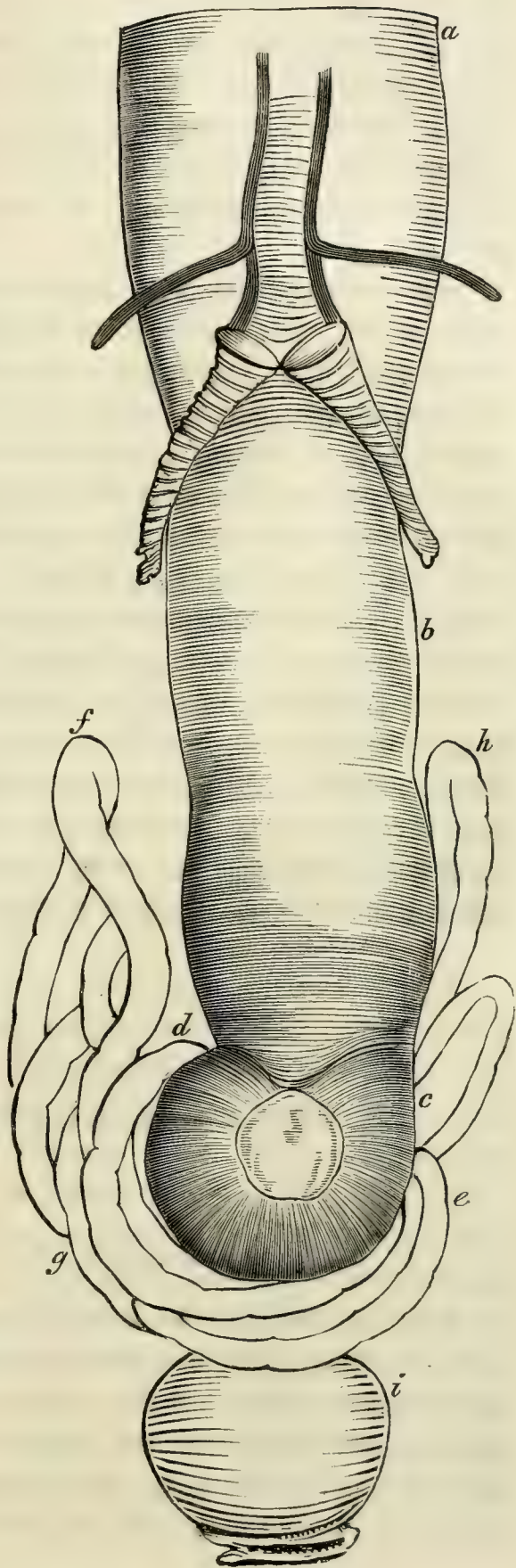
Male. As in the Gannets and Pelicans, the cells of the subcutaneous cellular tissue are extremely large and distensible. The mouth is very wide, its breadth being 1 inch 7 twelfths, opening to nearly beneath the posterior angle of the eye. The palate is convex, with two horny thin-edged ridges, and anteriorly a median ridge of the same kind extending to the tip. The posterior aperture of the nares is linear, $1\frac{1}{4}$ inch in length. The lower mandible is extremely narrow toward the end, and deeply grooved, with a kind of joint on each side near the base, rendering it capable of being extended to 2 inches 5 twelfths. The tongue is similar to that of the Pelicans, Gannets, and Cormorants, being exceedingly small, $7\frac{1}{2}$ twelfths in length, fleshy, flattened, $4\frac{1}{2}$ twelfths in breadth at the base, 2 twelfths at the middle, the tip obtuse. The nostrils, which are situated at the commencement of the groove on each side of the ridge, are so inconspicuous as to be with difficulty detected, being quite linear, $3\frac{1}{2}$ twelfths long, and covered above by a membranous edge. The aperture of the ear is of moderate size, 3 twelfths in width; that of the eye is $\frac{1}{2}$ inch.

The heart is of an ovate form, broader and rounder than usual, its length 1 inch $4\frac{1}{2}$ twelfths, its breadth 1 inch 2 twelfths. The lobes of the liver are very unequal, the right being 2 inches 1 twelfth long, the left 1 inch 5 twelfths; the gall-bladder oblong, 9 twelfths in length, 5 twelfths in breadth.

The œsophagus, *abc*, is $11\frac{1}{2}$ inches long, at the commencement $2\frac{1}{2}$ inches in width, presently contracting to 1 inch 9 twelfths, at the lower part of the neck expanded to 2 inches, within the thorax 1 inch 4 twelfths; the proventriculus, *bc*, 1 inch 5 twelfths, its belt of glandules complete, 1 inch 2 twelfths in breadth, 7 prominent rugæ. The stomach, *cd*, is very small, roundish, 1 inch 4 twelfths in diameter, considerably compressed; its muscular coat very thin, consisting of a single series of fasciculi; the tendons circular, $\frac{1}{2}$ inch in diameter; its inner coat soft and corrugated, several of the proventricular rugæ running down upon it.

The walls of the œsophagus are of moderate thickness, the external transverse fibres distinct, the inner coat longitudinally plaited. The stomach differs from that of all the other *Pelecaninæ* in having no pyloric lobe. The duodenum also, *d e f*, does not at first pass forward, but directly curves round the stomach, returning at the distance of $2\frac{1}{2}$ inches, and the intestine, *d e f g h i*, is convoluted with 9 folds. It is 36 inches long, 5 twelfths wide in the duodenal portion, contracts to 3 twelfths; the cœca are two small knobs 2 twelfths long, $1\frac{1}{2}$ twelfth in breadth; the rectum 3 inches long, for 1 inch 8 twelfths its width is $3\frac{1}{2}$ twelfths, the remaining part forming a globular cloaca $1\frac{1}{2}$ inch in diameter.

The trachea is $8\frac{1}{2}$ inches long, its width at the commencement $4\frac{1}{2}$ twelfths, presently after 4 twelfths, contracting to $3\frac{3}{4}$ twelfths. It is a little flattened :



the rings 112, cartilaginous. The inferior larynx is greatly expanded antero-posteriorly, and the first dimidiate ring is 5 twelfths in extent, with a somewhat smaller ring beyond it. The lateral muscles are very slender; the sterno-tracheal, which passes off at the distance of $\frac{1}{2}$ inch from the bifurcation, is strong; there is a slender slip on each side going to the bronchial membrane. The bronchi are wide, and formed of 20 half rings.

The sternum is extremely singular, on account of its great width and concavity, compared with its length; the latter being only $2\frac{1}{4}$ inches, while the breadth at the anterior costal processes is $2\frac{1}{2}$ inches. The crest is thus extremely short, but of considerable height, its most prominent part being $10\frac{1}{2}$ twelfths. The coracoid bones are remarkably large, and so firmly fixed in the joint as to have just the slightest perceptible motion. The furcula is also very large and wide, of the form of the letter U, its crura at their union forming a large mass of solid bone, continuous with the crest of the sternum. The posterior edge of the sternum has a very slight sinus on each side.

Now, in this bird, which is confessed to be inferior to none in its power of flight, the sternal crest is not nearly so prominent as that of a Grouse or Partridge, so that the supposed indication which this part affords of vigorous flight is evidently fallacious. The sternum, although much shorter, resembles that of the Pelicans, Cormorants, and Anhingas, as well as in a less degree of the Gannets.

GREAT BLACK-BACKED GULL.

LARUS MARINUS, LINN.

PLATE CCXLI. VOL. III. p. 305.

Male, from Dr T. M. BREWER. The mouth is of moderate width, its breadth being 1 inch 9 twelfths; the palate flat, with two very prominent papillate ridges, and four series of intervening papillæ; on the upper mandible beneath are five ridges, and the horny edges are prominent and thin, but very strong; the posterior aperture of the nares linear, 1 inch 9 twelfths long. The tongue is 2 inches 2 twelfths in length,

fleshy above, horny beneath, rather narrow, deeply channelled, the base emarginate and finely papillate, the tip narrowly rounded.

The left lobe of the liver is larger than the right, which, however, is more elongated, being 4 inches in length, the other 3 inches; the gall-bladder oblong, 1 inch 2 twelfths by 7 twelfths. There is a large accumulation of fat under the parietes of the abdomen, and appended to the stomach.

The œsophagus is 14 inches long; at the commencement its width is $2\frac{1}{2}$ inches, it then contracts to 1 inch 9 twelfths, at the lower part of the neck enlarges to 2 inches, and towards the proventriculus to $2\frac{1}{2}$ inches; it then suddenly contracts at the commencement of the stomach. This organ is rather small, and of an oblong form, $2\frac{1}{2}$ inches long, 1 inch 9 twelfths broad; the lateral muscles of moderate size, the inferior prominent, the tendons large and radiated; the epithelium extremely dense, thick, with strong longitudinal ridges, and of a bright red colour. It contains remains of crabs. The proventricular glands, which are very small, being $1\frac{1}{2}$ twelfth in length, and $\frac{1}{4}$ twelfth broad, form a belt $1\frac{1}{4}$ inch in breadth, traversed by very prominent rugæ, continuous with those of the stomach. The inner membrane of the œsophagus is strongly plaited, and that part is capable of being distended to 3 inches. The intestine is 50 inches long, its greatest width $4\frac{1}{2}$ twelfths; the cœca $\frac{1}{2}$ inch long, $\frac{1}{4}$ inch wide, their distance from the extremity 5 inches; the rectum is 8 twelfths in width, and the cloaca forms a globular dilatation $1\frac{1}{2}$ inch in diameter.

The trachea is 12 inches long; at the top $7\frac{1}{2}$ twelfths wide, gradually contracting to $4\frac{1}{2}$ twelfths, considerably flattened, its rings slightly ossified, 148 in number, of moderate breadth, very thin, contracted in the middle line before and behind; the last half ring is large, moderately arched. In this, as in all the other Gulls, there is a pair of slender muscles arising from the sides of the thyroid bone in front, separating from the trachea, attaching themselves to the subcutaneous cellular tissue, and inserted into the furcula. Another pair arise from the same bone in front, spreading over the whole anterior surface of the trachea, then become collected on the sides, send off a slip to the costal process of the sternum, and continue narrow, to be inserted into the last arched half ring of the trachea; thus forming what is called a single pair of inferior laryngeal muscles. Bronchi wide, each with 28 half rings.

HERRING GULL.

LARUS ARGENTATUS, BRUNN.

PLATE CCXCI. Vol. III. p. 588.

Male. The mouth is of the same structure as in *Larus marinus*, 1 inch 4 twelfths in width. The tongue is 1 inch 10½ twelfths long, and similar to that of the species just named. Lobes of the liver 3 inches, and 3¼ inches; gall-bladder 1 inch 4 twelfths long, 8 twelfths wide. Œsophagus 10½ inches long, at the commencement 2 inches wide, on the neck 1 inch 10 twelfths, and within the thorax 2 inches; it is thus very wide, and its walls are of moderate thickness, the muscular fibres distinct, and the inner coat longitudinally plicate. The stomach is proportionally small, of an elliptical form, 2 inches long, 1 inch 9 twelfths in breadth, its lateral muscles thin. It contains bones and scales of fishes. The epithelium in all respects as in *Larus marinus*. Cæca ½ inch long, 3 twelfths broad; cloaca globular, 1½ inch in diameter. Trachea 10 inches long, from 5 twelfths to 4 twelfths in breadth, moderately flattened, its rings 150, feeble. Bronchi wide, each of 28 half rings.

COMMON AMERICAN GULL.

LARUS ZONORHYNCHUS, RICHARDSON.

PLATE CCXII. Vol. III. p. 98.

Female, from Dr T. M. BREWER. Mouth 1 inch 1 twelfth in width; palate with two very prominent papillate ridges, the space between which is covered with reversed papillæ, its anterior part with five prominent lines, and moderately concave; the posterior aperture of the nares, oblong-linear, 11 twelfths in length. Tongue 1 inch 5 twelfths long, emarginate and finely papillate at the base; its sides nearly parallel as far as the middle, its breadth being 3 twelfths, then tapering

to a narrow emarginate point, and trigonal. Œsophagus 7 inches long, extremely wide, its breadth being $1\frac{1}{2}$ inch; that of the proventriculus 1 inch 9 twelfths. The stomach is rather small, elliptical, 1 inch 5 twelfths long, 1 inch 2 twelfths broad; its lateral muscles distinct and of moderate size, the lower prominent, the tendons large, the epithelium dense, with very prominent large rugæ; the inner coat of the œsophagus is longitudinally plicate; the proventricular belt 1 inch in breadth, with six broad plates. Intestine 30 inches long, its width at the upper part 5 twelfths, diminishing to $2\frac{1}{2}$ twelfths, cœca 3 twelfths long, 1 twelfth broad, 3 inches distant from the extremity, rectum 5 twelfths broad, with a globular cloaca 9 twelfths in diameter. The duodenum curves at the distance of $2\frac{1}{4}$ inches, advances toward the liver in the usual manner, and is afterwards very regularly coiled in an elliptical form, with 10 bends. Trachea 5 inches long, from 3 twelfths to $2\frac{1}{2}$ twelfths in breadth, not flattened, its rings slightly osseous, 130. Bronchi wide, of 20 half rings. The lateral and sterno-tracheal muscles are slender, and a slip on each side extends to the last half ring of the trachea.

CAYENNE TERN.

STERNA CAYANA, LATH.

PLATE CCLXXIII. VOL. III. p. 505.

THE width of the mouth is $1\frac{1}{4}$ inch; the palate flat, with 2 prominent papillate ridges, the anterior part with five faint elevated lines; the posterior aperture of the nares linear, $1\frac{1}{4}$ inch long, margined with papillæ. Tongue 1 inch 11 twelfths long, narrow, fleshy above, horny beneath, channelled, and tapering to a slit horny point. Œsophagus 9 inches long, at its commencement 1 inch 9 twelfths wide, presently after $1\frac{1}{2}$ inch, then contracting to $1\frac{1}{4}$ inch, and within the thorax enlarging to $1\frac{1}{2}$ inch. In its form and structure it is exactly similar to that of the Gulls. The stomach is of moderate size, 2 inches long, 1 inch 9 twelfths broad; its lateral muscles rather thin; the epithelium

thin but very dense, longitudinally rugous, and of a bright red colour. The proventricular glands, which are very numerous and small, form a belt only 7 twelfths in breadth. The lobes of the liver are unequal, the right $2\frac{1}{2}$ twelfths, the left $2\frac{1}{4}$ twelfths in length; the gall-bladder 8 twelfths long, $4\frac{1}{2}$ twelfths broad. The intestine measures 34 inches in length, 6 twelfths in width at the upper part, contracting to 3 twelfths. Cœca $4\frac{1}{4}$ twelfths long, 2 twelfths wide; their distance from the extremity only $2\frac{1}{4}$ inches; rectum 4 twelfths wide, but enlarging into a globular cloaca 10 twelfths in diameter.

The trachea is $6\frac{1}{4}$ inches long, very wide at the top where it measures 6 twelfths, gradually diminishing to 3 twelfths; its rings unossified, very feeble, contracted before and behind, in the middle being 112 in number. Bronchi large, one with 28, the other with 30 half rings. The muscles exactly as in the Gulls.

In the œsophagus, stomach, and intestine, this bird, as well as the other Terns, is precisely similar to the smaller Gulls, as it is also in the form, structure, and muscles of the trachea. In these respects, the Terns also resemble the Shear-Water. The bill of the Cayenne Tern evidently indicates an affinity to the Phætons, and in a less degree to the Gannets, as does the head, which is very large in proportion to the bird. On the other hand, as regards the bill, the affinity is to the larger Gulls and the Shear-Water. The feet resemble those of the Gulls, but are proportionally smaller, these birds being more volatorial, and the Gulls combining that character with an affinity to the Wading Birds, while the Shear-Water exhibits the abbreviated feet of the purely Flying birds in a still greater degree.

SOOTY TERN.

STERNA FULIGINOSA, LATH.

PLATE CCXXXV. Vol. III. p. 263.

Female. The mouth is formed as in the Cayenne Tern ; its width $8\frac{1}{2}$ twelfths. Tongue 1 inch 4 twelfths long, emarginate and papillate at the base, very slender, channelled above, horny beneath, tapering to a point. Œsophagus $6\frac{3}{4}$ inches long, 1 inch wide at the commencement, 9 twelfths along the neck, but within the thorax dilated into an enormous sac 1 inch 9 twelfths in width. Stomach exceedingly small, being only $10\frac{1}{2}$ twelfths long, 7 twelfths broad ; its muscles very thin, the epithelium strong, longitudinally rugous, and of a bright red colour. The belt of the proventricular glands only 3 twelfths in breadth. The walls of the œsophagus are extremely thin, so as to be membranous and transparent. Lobes of liver 1 inch 9 twelfths, and 1 inch 2 twelfths long ; gall-bladder $\frac{1}{2}$ inch long, 3 twelfths broad. Intestine 15 inches long, 3 twelfths broad at the commencement, diminishing to 2 twelfths ; cœca 1 inch 2 twelfths long, their greatest width $1\frac{1}{2}$ twelfth, at the base only $\frac{3}{4}$ twelfth ; in form and proportion they are thus like those of the genus *Lestris* ; their distance from the extremity 2 inches, cloaca globular, 9 twelfths in diameter.

Trachea 4 inches long, from $2\frac{1}{2}$ twelfths to $1\frac{1}{2}$ twelfth in breadth, roundish, the rings 95, unossified. Bronchi very wide, of 28 rings. Muscles as in the other species.

NODDY TERN.

STERNA STOLIDA, LINN.

PLATE CCLXXV. Vol. III. p. 516.

WIDTH of mouth 9 twelfths. Tongue 1 inch 3 twelfths long, very slender, tapering to a horny point, grooved above, emarginate and papillate at the base. Œsophagus 4 inches 4 twelfths long, its width along the neck 8 twelfths, within the thorax dilated as in the last species, its breadth 1 inch 1 twelfth; the proventricular belt 4 twelfths broad. Stomach very small, 10 twelfths long, 8 twelfths in breadth, of the same structure as in the last. Lobes of liver 1 inch 2 twelfths and 11 twelfths; gall-bladder oblong, 6 twelfths in length, 3 twelfths in breadth. Intestine 13 inches long, $2\frac{1}{2}$ twelfths wide at the commencement, $1\frac{1}{2}$ twelfth towards the rectum; cœca $2\frac{1}{4}$ twelfths long $\frac{1}{2}$ twelfth wide, $1\frac{1}{2}$ inch from the extremity; cloaca ovate, 7 twelfths in width. Trachea 3 inches long, from $2\frac{3}{4}$ twelfths to $1\frac{1}{2}$ twelfth in breadth, roundish; the rings 110, very feeble. Bronchi very wide, one with 26, the other with 24 half rings.

BLACK OR SHORT-TAILED TERN.

STERNA NIGRA, LINN.

PLATE CCLXXX. Vol. III. p. 535.

TONGUE 1 inch in length, very slender, grooved above in its whole length, tapering to a very fine horny point, which is a little slit. Œsophagus $3\frac{1}{2}$ inches long, $\frac{1}{2}$ inch wide, within the thorax dilated to a very large sac, 9 twelfths in breadth. Stomach of moderate size, roundish, 8 twelfths long, 7 twelfths broad; the lateral muscles moderate, the tendons large, the epithelium dense, with large longitudinal rugæ. The proventricular belt 8 twelfths in breadth. Intestine $12\frac{1}{2}$ inches long,

from 2 twelfths to 1 twelfth in width; cœca $1\frac{1}{2}$ twelfth long, $\frac{1}{2}$ twelfth wide, 1 inch 2 twelfths from the extremity; cloaca globular, 7 twelfths in width. Liver very large, the left lobe 10 twelfths long, the right 1 inch 2 twelfths. Trachea 2 inches 7 twelfths long, $2\frac{1}{2}$ twelfths wide, tapering to 1 twelfth; the rings slender, unossified, 102 in number. Bronchi rather wide, of 20 half rings. Muscles as in the other Terns.

POMARINE JAGER.

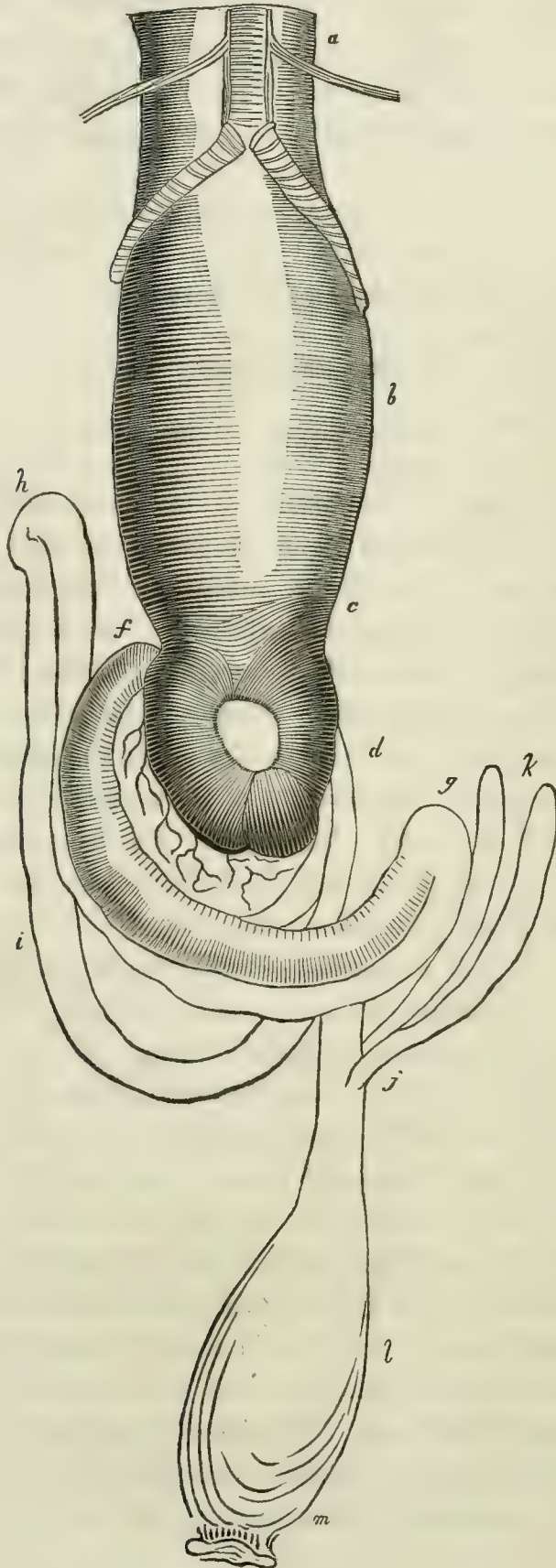
LESTRIS POMARINUS, TEMM.

PLATE CCLIII. VOL. III. p. 396.

Female, from Dr T. M. BREWER. The mouth rather wide, 1 inch 2 twelfths across; the palate flat, with two longitudinal papillate ridges, the space between which and the palatal slit is also covered with papillæ; anteriorly, on the mandible, are three ridges; posterior aperture of the nares oblongo-linear, with its margins papillate; the lower mandible dilatible, as in the Gulls. Tongue 1 inch long, emarginate and papillate at the base, broadly channelled above, contracted and induplicate toward the end, horny beneath, and thin-edged, with the point slit to the depth of $1\frac{1}{2}$ twelfth. Lobes of the liver very unequal, the right $2\frac{1}{4}$ inches long, the left 1 inch 10 twelfths; gall-bladder oblong, $7\frac{1}{2}$ twelfths long, 3 twelfths broad. The stomach, *cd*, is small, 1 inch 2 twelfths long, $\frac{1}{2}$ inch in breadth; its lateral muscles thin; the epithelium thin, longitudinally rugous, of a reddish colour. The proventricular glands extremely small, roundish, forming a belt 7 twelfths in width. Intestine, *fg hlm*, $24\frac{1}{2}$ inches long, 6 twelfths wide at the top, but contracting to 4 twelfths; it forms 7 curves; the cœca, *jk*, 1 inch 10 twelfths in breadth. Trachea 5 inches long, from $3\frac{1}{2}$ twelfths to $2\frac{1}{2}$ twelfths long, for 8 twelfths their width is 1 twelfth, afterwards $2\frac{1}{2}$ twelfths, diminishing to $1\frac{3}{4}$ twelfth, the extremity blunt; rectum 2 inches 3 twelfths long, for 1 inch 4 twelfths in width, then enlarging into an oblong cloaca 10 twelfths in breadth; considerably flattened; the rings 98, unossified, of the same structure as in the Gulls. Bronchi rather wide, of 20 half rings. Muscles as in the Gulls.

The digestive organs of this bird differ from those of the Gulls only in having the cœca much more elongated; the cloaca oblong, instead of

being globular, and the stomach less muscular. The tongue differs greatly from that of either the Gulls or Terns.

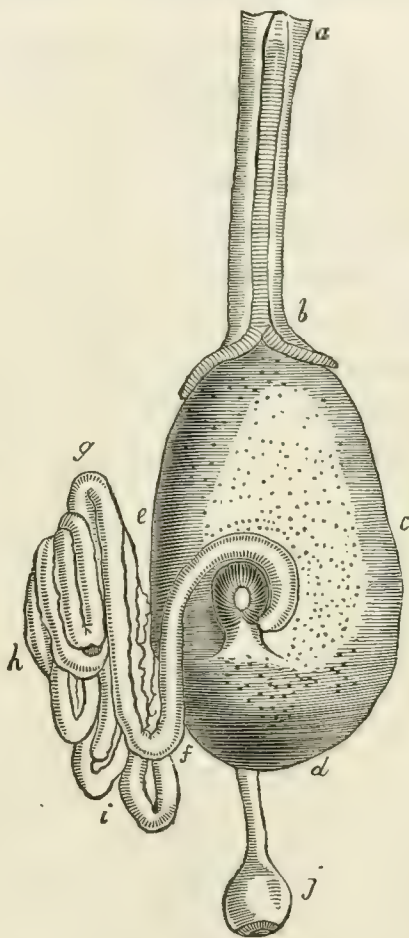


WILSON'S PETREL.

THALASSIDROMA WILSONII, BONAP.

PLATE CCLXX. Vol. III. p. 486.

THE palate is marked behind with four longitudinal ridges, which are papillate, and before with three ridges; the mouth $4\frac{1}{2}$ twelfths in width, but capable of being dilated to .9 twelfths; the tongue $\frac{1}{2}$ inch long, triangular and acuminate, at the base concave and emarginate, flat above, with a slight median groove. The lobes of the liver are equal, their length $7\frac{1}{2}$ twelfths. The œsophagus, *ab*, has a uniform width of 3 twelfths until it enters the thorax, when it at once expands into an immense ovate sac, *bcde*, 1 inch 11 twelfths long, viewed anteriorly 1 inch 1 twelfth in breadth, laterally 1 inch 2 twelfths. This sac is formed, properly speaking, of the proventriculus; its walls are extremely thin and transparent, and it is studded all over with roundish glandules placed at a considerable distance from each other. It curves upwards in front, and becomes narrowed to 2 twelfths, ending in the stomach, which is an extremely diminutive gizzard, of an oval form, only $3\frac{1}{2}$ twelfths long, and 3 twelfths in breadth. The stomach is thus reversed in position, its fundus being anterior; and accordingly the intestine, *fg hi*, comes off from its left instead of its right side, forms a semicircular sweep round the fundus, then passes backward for 1 inch, to *f*, bends forward to the liver, at *g*, and forms a number of loops, *ghi*, making in all 9 turns. The duodenum is 1 inch $\frac{3}{4}$ twelfth wide, and the intestine continues so for half its length, when it gradually contracts



to $\frac{3}{4}$ twelfth, and is rather less in the rectum, which is terminated by a very small globular cloaca, *j*, $3\frac{1}{2}$ twelfths in diameter. There are no cœca. The intestine measures 14 inches. The stomach properly so called is lined by a rugous epithelium, and is in fact a true gizzard. It contains a quantity of shell-sand. The inner surface of the proventriculus is soft and smooth; that of the œsophagus longitudinally plicate. The trachea is $1\frac{1}{2}$ inch long, from $1\frac{1}{2}$ twelfth to 1 twelfth in breadth, flattened, with rings 84 in number, slender, and unossified. Bronchi wide, of 25 half rings.

In the structure of the digestive organs this species closely agrees with that of *Thalassidroma pelagica*, as will be seen by referring to Vol. IV. p. 314; and the curious modifications which they present are among the most interesting of the many that have been briefly described and figured in these volumes. With this interesting bird terminates a series of anatomical details, which, imperfect as they are, however carefully they have been executed, it is hoped will form a basis for more extended observations. They present a new and most important feature in the ornithology of North America, which in this respect at least is not now much behind that of other countries.

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