

Lump-fish, *Cyclopterus lumpus*, of very large size. It is remarkable that during the whole of my experience I have never (judging by colour) seen a male or red Lump-fish. The female or blue Lump-fish occurs frequently. I received a second female taken in the mackerel drift-nets, and on the 5th April my boatman caught another in a very singular manner. He was fishing at night in the Bay, with his brother, when they observed something phosphorescent making its way towards their boat on the surface of the water. As it passed them my man struck it with the gaff and secured it. It turned out to be a blue Lump-fish of large size and shotten.—
THOMAS CORNISH (Penzance).

THE TORPEDO ON THE YORKSHIRE COAST.—A specimen of the Torpedo, *T. hebetans*, the first that has occurred on the shores of this county, so far as I have been able to ascertain, was captured while among the breakers on the beach at Easington, on the 14th April, and kindly sent to me for identification. In length it measured two feet five inches, and was one foot five inches from pectoral to pectoral at its greatest width. The fish was in a dying condition when caught, and no shock was felt by its captors.—W. EAGLE CLARKE (Leeds).

MEMOIR OF THE LATE CHARLES DARWIN, LL.D., F.R.S.

THE name of Charles Darwin has so long been a "household word" that the news of his decease, which took place on April 19th, will be received with profound regret by the entire civilized world. At the ripe age of seventy-three, in the arms of those nearest and dearest to him, he passed calmly and peacefully away, full of honours, and leaving behind him an illustrious and imperishable name.

The studies and researches which contributed to render his name so famous appear to have been commenced at an early period of his life, when, meditating the pursuit of medicine as a profession, he was sent to Edinburgh, then at the height of its reputation as a medical school, and in the University of which city his grandfather, Dr. Erasmus Darwin, had taken his degrees. After two years of study there he proceeded to Cambridge, where in due course, at Christ College, he graduated B.A. and M.A. Finding about this time that his private means were sufficient to render him independent of a profession, he abandoned the idea of adopting the practice of medicine, and devoted himself, from the love of it, to the study of Biology.

Although known at this time to only a small circle of scientific friends, his abilities as a naturalist soon became more widely recognised; and in 1831, when the Hon. Capt. Fitzroy—afterwards better known as Admiral Fitzroy, of meteorological fame—was ordered, with the 'Adventure' and 'Beagle,' to survey the coasts of Antarctic America, Charles Darwin was appointed Naturalist to the Expedition.

He sailed in December, 1831, and returned in October, 1836, during which interval he visited the Straits of Magellan and the coasts north of that Strait, and crossed the country from Valparaiso to Buenos Ayres, visiting besides the Galapagos, Ascension, the coasts of Australia, and other regions touched by the vessels during their voyage. In every locality visited he made large and important collections of rare or new animals and plants, recording in his journal a mass of valuable notes to be afterwards utilised. His services on this expedition were highly appreciated by Capt. Fitzroy, who paid a deserved tribute to his merits when receiving the medal voted him by the Royal Geographical Society; and the esteem in which he was held by his fellow voyagers has been fitly perpetuated in the names bestowed on Port Darwin in North Australia, and Darwin Mount and Sound, in Tierra del Fuego.

On his return from this expedition he settled at Down, near Beckenham, in Kent, where he has ever since resided, and where he commenced and prosecuted those literary and scientific labours which have since procured for him a world-wide reputation. In 1839 appeared his 'Journal' of a Naturalist, giving a narrative of his voyage, and written in a style so pleasing, and withal so instructive, that it has maintained a popularity to this day, and is regarded as quite a model work of its kind.

Between 1839 and 1842 appeared the official 'Zoology of the Voyage of Her Majesty's ship Beagle,' in four quarto volumes, by "various eminent hands," though the whole work was edited by Mr. Darwin, and the habits of the animals and their range were given by his own pen. In this work, for the first time, were described those great mammals of geological ages which are found on the Argentine Pampas, in addition to a series of observations on almost every other group of mammals. Not to enumerate many detached memoirs of interest, the next conspicuous work of

Mr. Darwin was 'The Structure and Distribution of Coral Reefs' (1842-46), in which was enunciated the theory of their growth which is now generally accepted. This treatise was the first part of the Geology of the 'Adventure' and 'Beagle'; the 'Geological Observations on Volcanic Islands' (1844) formed the second volume; 'Geological Observations on South America' appeared in 1846, as the third section of the work; and this, with the exception of a number of detached papers, may be said to have completed the formal systematic account of the task he had officially undertaken between 1831 and 1836. 'A Monograph of the Fossil *Balanidæ* and *Verucidæ* of Great Britain' (1854), published by the Palæontographical Society, was an elaborate and laborious treatise on the extinct Barnacles; while that on 'Fossil *Lepadidæ*' (1851), published three years before, referred to another section of the same group. In the same year he also published, through the Ray Society, a monograph of the living forms of Barnacles.

But the treatises here enumerated were merely the forerunners of that work which, more than any other, has made the name of Darwin famous, namely, 'The Origin of Species,' which appeared in 1859, and which in its turn became the preface, as it were, to the elaborate series of works which at intervals followed it. The theory, as set forth in this remarkable volume, of the evolution of species from a few simple organisms, by a system of natural selection, is now too well known to require comment, but the circumstances which led to its somewhat premature publication may be briefly referred to.

In 1858 Mr. Alfred Russel Wallace, who was exploring the Malay Islands, sent home a paper describing his own views as to the "Origin of Species." Sir Charles Lyell and Dr. Hooker on reading it were struck by the fact that Mr. Wallace had arrived at conclusions almost identical with those which Mr. Darwin had already communicated to them. It was felt that delay would no longer be fair to Mr. Wallace, or just to Mr. Darwin, whose manuscript was still unpublished. Accordingly, on the 1st July, 1858, papers by both authors were read to the Linnean Society, and from that period must be dated the birth of the "Darwinian Theory," though it was not till the 24th November, 1859, that Mr. Darwin's 'Origin of Species' appeared.

In 1862 was published 'The Various Contrivances by which Orchids are Fertilised,' and, 1865, 'The Movements and Habits

of Climbing Plants,' both works of the highest botanical value. In 1868, 'The Variations of Plants and Animals under Domestication,' and in 1871 'The Descent of Man' revived the controversy regarding the character of the Darwinian doctrines which had been occasioned by the appearance of 'The Origin of Species.' 'The Expression of the Emotions in Men and Animals' did not do much to allay this, though none could deny that the author had enriched knowledge with a marvellous series of curious observations. In 1875, 'Insectivorous Plants,' describing the carnivorous propensities of certain plants, *Drosera*, *Dionæa*, &c., contained another excellent series of botanical observations. 'The Effects of Cross and Self Fertilisation' (1876), 'The Different Form of Flowers on Plants of the same Species' (1877), and 'The Movements of Plants' (1880), at once proved Mr. Darwin not only to be an ingenious theorist, but the first physiological botanist of his age. Finally, in 1881, his now familiar treatise on the Earthworm and its ways has only served to enhance his reputation.

Whether his now well-known theory of evolution will meet the fate of others which have preceded it, or become more enduring amongst scientific doctrines than the views of Lamarck and the author of 'The Vestiges of Creation,' it is of course impossible to say; but the impetus which his various works have given to modern thought and research, and the extraordinary number of biological facts which have been collected and brought to light by his untiring industry, will cause naturalists of every nation to be for ever indebted to him.

PROCEEDINGS OF SCIENTIFIC SOCIETIES.

LINNEAN SOCIETY OF LONDON.

March 16, 1882.—Sir JOHN LUBBOCK, Bart., M.P., F.R.S., President, in the chair.

Messrs. H. M. Brewer, V. I. Chamberlain, and A. P. Withiel Thomas were elected Fellows of the Society.

Mr. Worthington G. Smith called attention to certain very destructive Australian Fungi new to England, viz., *Capnodium australe*, fatal to conifers, especially *Thuyas* and *Isaria fuciformis*, a great pest to grass in Kent and Sussex. The latter plant is popularly supposed to induce a

disease similar to diphtheria, and said to be fatal to cattle. *Isaria* frequently grows on animal substances, dead and living, as on larvæ and pupæ of ichneumons, spiders, moths, wasps, &c.

Mr. Smith showed a bee caught alive in this country, and having a profuse growth of the *Isaria* condition of the *Cordiceps sphecocephala*, a W. Indian form, the latter genus being closely allied to *Claviceps*, or Ergot.

Dr. Francis Day read a paper upon the *Salmones* found in the British Isles, remarking how great changes are occasioned by retaining any of them in unsuitable localities. He objected to the augmentation in number of the British forms of non-migratory Trout from three to seven, as made by Dr. Günther, holding that we possess only two:—the Loch Leven Trout, which is in reality a marine form acclimatized to fresh water, whereas the remainder are solely local races of the common Brook Trout. A most interesting fact was brought forward, *viz.* that Mr. Arthur, in New Zealand, having lately examined the Trout which were introduced there in 1869, from ova originally obtained from the Thames and the West of England, found great structural changes had taken place. The fish in question, moreover, living in different streams in New Zealand, had also assumed local peculiarities of size and change of form; and, due doubtless to increased food, the annual increment of weight had risen from $1\frac{1}{2}$ to $2\frac{1}{2}$ pounds, and an example had been seen weighing 20 pounds. The cœcal appendages, hitherto held as significant of species, were found augmented from 33 to 50, as exemplified in British fish, to from 43 to 54 in the New Zealand examples, showing that these organs are inconstant in number. Having alluded to the different species, Dr. Day concluded that, as the various species of non-migratory Trout, accepted by Dr. Günther, interbreed, and the hybrids are not sterile, the fact gives increased reason for supposing these various forms are merely local races, and not different species; that if they are really distinct species, division has not proceeded sufficiently far, because the Gillaroo, a form of Trout with a thickened middle coat of the stomach, has been termed *Salmo stomachicus*, Günther, whereas the Great Lake Trout with a thickened stomach, and the Charr, having a similarly transformed organ, have not yet been differentiated into species. Dr. Day considers that all our non-migratory freshwater Trout (excluding the Loch Leven) are merely local races; that interbreeding will produce mongrels, in which sterility need not be anticipated, while introducing new races (unless on the principle of preventing breeding in and in) will not be of much benefit to fisheries, unless the food is in excess of local requirements, for if not the new-comers will revert to the colour, form, and size of the original tenants of the water.

Two papers by Mr. Charles Darwin—(1) on the action of carbonate of ammonia on the roots of certain plants, and (2) the influence of carbonate of ammonia on chlorophyll bodies—were read. The observations which led

to the first of these papers were originally made many years ago on *Euphorbia peplus*, and have now been extended to other genera. A plant of *E. peplus* having been dug up and carefully washed, the smaller rootlets may be placed under the microscope without further preparation, the thicker roots may be examined by means of sections. If such roots are left, before being examined, in a solution of carbonate of ammonia (1 to 7 per 1000) for a short time (varying from a few minutes to several hours), they present a wonderfully changed appearance. The most striking alteration is that the surface of the root assumes a *longitudinally striped appearance*, due to longitudinal rows of darker brown cells, alternating with lighter-coloured rows. The darker colour is seen under a high power to be due to the presence of innumerable rounded granules of a brown tint, which the lighter-coloured cells are without. Similar brown granules are deposited in cells scattered throughout the parenchyma, and markedly in the elongated endoderm cells surrounding the vascular bundle. The granules are apparently neither resinous nor fatty, for they are not removed by alcohol or ether; they are, however, slowly acted on by caustic potash, and seem to be of the nature of protein. The most remarkable part of the phenomenon is that the granules are only formed in some of the external cells, and that these cells are, before the treatment with ammonia, indistinguishable by their shape or by their contents from their fellows, which are unaffected by the solution. There is, however, a curious functional difference between the two classes of cells, namely, that the granular cells do not produce root-hairs, which arise exclusively from the cells of the light-coloured rows. Effects similar to those now described were observed in some other Euphorbiaceous plants, e. g., *Phyllanthus compressus*, though not in all the genera of this family which were observed. Among genera belonging to other families may be mentioned *Drosophyllum* and *Cyclamen*, as showing the phenomenon especially well. Altogether 49 genera were observed; of these 15 were conspicuously acted on, and 11 in a slight degree, making together 26 genera, while the roots of the remaining 23 genera were not acted on in any plain manner.

The view suggested by Mr. Darwin is that the granular matter is of the nature of an excretion, the arrangement of the dark-coloured cells in rows agreeing with what is known of the disposition of certain cells whose function admittedly is to contain excretions. The granules, moreover, are deposited in the loose exfoliating cells of the root-cap, where they cannot take part in the life of the root; and this fact points in the same direction.

In his second paper, above referred to, Mr. Darwin adduces facts to prove that carbonate of ammonia causes a kind of aggregation in chlorophyll bodies, and as these are protoplasmic, the belief in the protoplasmic nature of the aggregated masses in *Drosera* and other carnivorous plants is supported.