

gizzards, that we might not report, to his prejudice, the hardness of our usage.' At Puckeridge the coachman stopped, 'to wash the dust out of his mouth. All that was remarkable here was an axe, which they showed us, kept as sharp and as bright as if it were whetted as often as their knives, or scoured as often as their anvilons. This antiquated weapon, as they tell you, had the honour of cutting off some great man's head, but who, or upon what account, they are at a great loss to inform you. From thence we jogged on, till we came to our evening's stage, a town called Barley; where we put into an inn distinguished by the name of Old Pharaoh, which title it acquired from a stout elevating malt liquor under the same name, for which it hath long been famous. Here our entertainment was very good, though not so cheap as to be attended without fault; here we heartily enjoyed the true English pleasure of good substantial eating, and supplied that emptiness the slippery ceils had left in our stomachs with well-fed mutton and fat fowls, which we washed down with Old Pharaoh, till we made ourselves as merry as bumpkins at a harvest-home.' The company having travelled what was then considered a fair day's distance, namely, thirty-seven miles, went, after this good supper, leisurely to bed, and next morning, after a famous breakfast, 'to keep the fogs from offending our stomachs, we set forward on our journey, and proceeded without anything remarkable till we came to Saffron Walden, so called from the great quantities of that most excellent flower that grows there, so valued by physicians for its admirable virtues in abundance of distempers, being held to be one of the greatest cordials the whole universe produces. It is said the yellow jaundice is never incident to the inhabitants of this place, against which lazy distemper this true English medicine is so infallibly efficacious, that, let a person but ride through the town who is under this disorder, and the effluvia that arise from their saffron gardens shall fill the air with such a salubrious quality, that the odoriferous breath you suck into your nostrils shall prove an effectual cure for not only the afore-mentioned, but many other distempers. As for my own part, I found myself quite enlivened, which I may justly ascribe to the great influence of this golden-coloured product, which is of a nature so good, that physicians themselves allow it can scarce be used amiss.'

From Saffron Walden they jogged on at an 'ass's gallop' to within four miles of Cambridge, 'at which distance the top of King's College chapel was discernible, appearing in a figure resembling a cradle, and by travellers is so called; which happened to draw into my noddle this following scrap of poetry—

Old Cambridge brings forth men of learning and parts,
 Dame nature's dark law to unriddle;
 And since she's the midwife of science and arts,
 'Tis fit she be known by a cradle.

When from thence we had travelled about three miles further, we came to a small village called Trumpington, a mile on this side Cambridge; and the last place we arrived at was our journey's end, Cambridge, where black and purple gowns were strolling about town, like parsons in a country metropolis, during the bishop's visitation; some looking with as meagre countenances, as if, in search of the philosopher's stone, they had studied themselves into a hypochondriac melancholy; others seeming so profoundly thoughtful, as if, in pursuance of Agrippa's notions, they were studying how to raise sparagrass (asparagus) out of rams' horns, or to produce a homunculus (ranunculus) as gardeners do pumpkins, by burying the sermon in a dunghill; some looking as plump and as jolly as a painted Bacchus bestriding a canary butt, smiling, as he passed by, at his own soliloquies, as if he was muttering over to himself some Bacchanalian ode he had conceived in praise of good claret; others seeming as sottishly sorrowful as if they were maudlin fuddled, and lamenting the misfortune of poor Anacreon, who choked himself with a grape-stone; some strutting along, about eighteen years

of age, in new gown and cassock, as if they had received orders about two hours before. After the coach had set me down, and I had taken a fair leave of my fellow-travellers, I walked about to take a more complete survey of the town and university.' Our author found the town 'so abominably dirty, that Old Street, in the middle of a winter's thaw, or Bartholomew Fair after a shower of rain, could not have more occasion for a scavenger than the Miery Street of this famous corporation; and most of them so very narrow, that should two wheelbarrows meet in the largest of their thoroughfares, they are enough to make a stop for half an hour before they can clear themselves of one another, to make room for passengers.'

Such was Cambridge, and such a journey to it a century and a half ago, presenting a striking contrast to things as they are. We are now whisked down to the seat of learning in less time than Ward and his fellow-travellers occupied in eating their dinners at Ware. Since his visit, the streets of Cambridge have become patterns of cleanliness, and though one or two narrow thoroughfares still remain, yet we question whether there be one in which that ancient vehicle, the wheelbarrow, does not find ample 'room and verge enough.'

EXTINCT RACES OF SOUTH AMERICA.

WITHOUT speculating on the changes which South America may have undergone previous to assuming its present configuration, we have certain evidence that the great river plains or *Pampas*, lying between the Cordilleras and the Atlantic, are of comparatively recent origin. The nature of the deposits, and the character of the remains imbedded in them, indicate a period subsequent to the European tertiary, and demonstrate, beyond doubt, that while the Paris and London basins were emerging into dry land, the *Pampas* were submerged estuaries, receiving the detritus of the western elevations, and the mingled spoils of terrestrial and marine animals. Mr Darwin's discoveries* are conclusive on this point, and prove that the great plains of South America are but recent elevations from the ocean, in a continent still gradually rising above the waters.

Knowing, as we do, that animal and vegetable life are intimately dependent upon conditions of climate, altitude, and the like, we need only expect to find these vast physical changes accompanied by the extinction and appearance of certain races—each perfectly adapted to the conditions then existing. Compared with the old world, South America is but scantily peopled with native quadrupeds; but a time did exist, and that not very remote, when its animals were more numerous and gigantic than anything that the most favoured region of Asia can boast of. Mr Darwin is the first who has successfully broken ground in this new field of research, his earliest discovery of gigantic remains being made on the plains bordering the present estuary of the river La Plata. In this district, as in most of the *Pampas*, the formation consists of reddish clay and a soft marly rock, overlaid in many places by more recent alluvium and beds of gravel. Nearer the coast, there are minor plains, formed of the wreck of the upper plain, and from mud, gravel, and sand, thrown up by the sea during the slow elevation of the land, of which elevation there is evidence in upraised beds of recent shells, and in rounded pebbles of pumice scattered all over the country. It was in an exposed section of one of these minor plains, near Punta

* Journal of Researches into the Natural History and Geology of the Countries Visited during the Voyage of H. M. S. Beagle round the world. By Charles Darwin, F.R.S. London: Murray. 1845.

Alta, that the relics of gigantic land animals were first disinterred by our author.

Within the space of two hundred yards, there were found the remains of nine great quadrupeds, varying from the size of a camel to that of the largest elephant, besides a number of detached bones belonging to other species—the whole proving how numerous in kind the ancient inhabitants of this continent must have been. The recentness of their existence was demonstrated by the facts, that shells still found in the surrounding seas were mingled with the debris in which they were imbedded. Of these quadrupeds, one was the megatherium, or 'great wild beast,' described in every geological work; another, the megalonyx, a nearly allied animal; and a third, the scelidotherium, an animal as large as a rhinoceros, but partaking of the structure of the Cape ant-eaters and armadillos. The others were large edental quadrupeds; a great armadillo-like animal with a bony covering; the macrauchenia, a huge beast with a long neck like a camel; and the toxodon, perhaps the strangest animal ever discovered. The macrauchenia is described as belonging to the same division of the pachydermata as the rhinoceros and tapir; but showing, in the structure of its long neck, a clear relation to the camel, or rather to the alpaca and llama. As to the toxodon, it equalled in size the elephant or megatherium; but the structure of its teeth proves indisputably that it was intimately related to the gnawers, the order which, at the present day, includes most of the smallest quadrupeds. In many details it is allied to the pachydermata; and judging from the position of its eyes, ears, and nostrils, it was probably aquatic, like the dugong and manatee, to which it is also allied. 'How wonderfully,' remarks the discoverer, 'are the different orders, at the present time so well separated, blended together in different points of the structure of the toxodon!'

Respecting the habits and life of these wonderful quadrupeds, Mr Darwin, adopting the views of Professor Owen, makes the following remarks:—'The teeth indicate, by their simple structure, that these megatheroid animals lived on vegetable food, and probably on the leaves and small twigs of trees: their ponderous forms and great strong curved claws seem so little adapted for locomotion, that some eminent naturalists have actually believed that, like the sloths, to which they are intimately related, they subsisted by climbing back downwards on trees, and feeding on the leaves. It was a bold, not to say preposterous idea, to conceive even antediluvian trees with branches strong enough to bear animals as large as elephants. Professor Owen, with far more probability, believes that, instead of climbing on the trees, they pulled the branches down to them, and tore up the smaller ones by the roots, and so fed on the leaves. The colossal breadth and weight of their hinder quarters, which can hardly be imagined without having been seen, become, on this view, of obvious service, instead of being an incumbrance: their apparent clumsiness disappears. With their great tails and their huge heels firmly fixed like a tripod on the ground, they could freely exert the full force of their most powerful arms and great claws. Strongly rooted, indeed, must that tree have been which could have resisted such force! The mylodon, moreover, was furnished with a long extensible tongue like that of the giraffe, which, by one of those beautiful provisions of nature, thus reached with the aid of its long neck its leafy food.'

'The beds including the above fossil remains stand only from fifteen to twenty feet above the level of high-water; hence the elevation of the land has been small since the great quadrupeds wandered over the surrounding plains; and the external features of the country

must then have been very nearly the same as now. What, it may naturally be asked, was the character of the vegetation at that period?—was the country as wretchedly sterile as it now is? For my own part, I do not believe that the simple fact of many gigantic quadrupeds having lived on the plains round Bahia Blanca, is any sure guide that they formerly were clothed with a luxuriant vegetation: I have no doubt that the sterile country a little southward, near the Rio Negro, with its scattered thorny trees, would support many and large quadrupeds. That large animals require a luxuriant vegetation, has been a general assumption which has passed from one work to another; but I do not hesitate to say that it is completely false, and that it has vitiated the reasoning of geologists on some points of great interest in the ancient history of the world. The prejudice has probably been derived from India and the Indian islands, where troops of elephants, noble forests, and impenetrable jungles, are associated together in every one's mind. If, however, we refer to any work of travels through the southern parts of Africa, we shall find allusions in almost every page either to the desert character of the country, or to the numbers of large animals inhabiting it.' This is a most important suggestion, and one which should at all times enter into our estimate of the past conditions of our globe. Pringle, Moffat, Backhouse, and other travellers, describe large tracts of South Africa as comparatively barren, and subject to severe droughts, and yet we know that immense herds of elephants, hippopotami, rhinoceroses, buffaloes, gnus, and deer, inhabit that region.

At a subsequent period, when Mr Darwin ascended the Parana, he discovered the osseous armour of a gigantic armadillo-like animal, the inside of which, when the earth was removed, was like a great caldron; he also found the greater part of the skeleton of a macrauchenia, the teeth of the toxodon and mastodon, and of the horse. 'This latter tooth greatly interested me, and I took scrupulous care in ascertaining that it had been imbedded contemporaneously with the other remains; for I was not then aware that, amongst the fossils from Bahia Blanca, there was a horse's tooth hidden in the matrix: nor was it then known with certainty that the remains of horses are common in North America. Mr Lyell has lately brought from the United States a tooth of a horse; and it is an interesting fact, that Professor Owen could find in no species, either fossil or recent, a slight but peculiar curvature characterising it, until he thought of comparing it with my specimen found here: he has named this American horse, *Equus curvidens*. Certainly it is a marvellous fact in the history of the mammalia, that in South America a native horse should have lived and disappeared, to be succeeded in after ages by the countless herds descended from the few introduced with the Spanish colonists!'

Such is an outline of our author's important discoveries—important as regards the light they throw upon the past conditions of our globe, and specially important as confirming that immutable law of external conditions by which every living being is governed. We see a relationship between the past and present races inhabiting South America—between the macrauchenia and alpaca, the toxodon and capybara, the extinct edentata and the living sloths, ant-eaters and armadillos, now so characteristic of the zoology of that continent. But this relationship is all. The extinct races were huge and numerous—the living are diminutive and comparatively few. The geological changes which South America has undergone are no doubt great; but not, according to our conceptions, such as to have wrought such a startling revolution in the character of its fauna; and yet on this head science is not warranted to decide, for we know almost nothing of those nice conditions, relations, and balances, which are necessary to the existence or extinction of a single species. Mr Darwin's reflections on this topic are replete with sound reasoning, and apply with equal effect to similar changes which have taken place in other regions of the world:—

It is impossible to reflect on the changed state of the American continent without the deepest astonishment. Formerly, it must have swarmed with great monsters: now we find mere pigmies, compared with the antecedent allied races. If Buffon had known of the gigantic sloth and armadillo-like animals, and of the lost pachydermata, he might have said, with a greater semblance of truth, that the creative force in America had lost its power, rather than that it had never possessed great vigour. The greater number, if not all, of these extinct quadrupeds lived at a late period, and were the contemporaries of most of the existing sea-shells. Since they lived, no very great change in the form of the land can have taken place. What, then, has exterminated so many species and whole genera? The mind at first is irresistibly hurried into the belief of some great catastrophe; but thus to destroy animals, both large and small, in Southern Patagonia, in Brazil, on the Cordillera of Peru, in North America up to Behring's Straits, we must shake the entire framework of the globe. An examination, moreover, of the geology of La Plata and Patagonia, leads to the belief that all the features of the land result from slow and gradual changes. It appears, from the character of the fossils in Europe, Asia, Australia, and in North and South America, that those conditions which favour the life of the larger quadrupeds were lately co-extensive with the world: what those conditions were, no one has yet even conjectured. It could hardly have been a change of temperature, which at about the same time destroyed the inhabitants of tropical, temperate, and arctic latitudes on both sides of the globe. In North America, we positively know from Mr Lyell, that the large quadrupeds lived subsequently to that period, when boulders were brought into latitudes at which icebergs now never arrive: from conclusive but indirect reasons, we may feel sure that in the southern hemisphere the macrauchenia also lived long subsequently to the ice-transporting boulder period. Did man, after his first inroad into South America, destroy, as has been suggested, the unwieldy megatherium and the other edentata? We must at least look to some other cause for the destruction of the little tucutuco at Bahia Blanca, and of the many fossil mice and other small quadrupeds in Brazil. No one will imagine that a drought, even far severer than those which cause such losses in the provinces of La Plata, could destroy every individual of every species from Southern Patagonia to Behring's Straits. What shall we say of the extinction of the horse? Did those plains fail of pasture, which have since been overrun by thousands and hundreds of thousands of the descendants of the stock introduced by the Spaniards? Have the subsequently-introduced species consumed the food of the great antecedent races? Can we believe that the capybara has taken the food of the toxodon, the alpaca of the macrauchenia, the existing small edentata of their numerous gigantic prototypes? Certainly no fact in the long history of the world is so startling as the wide and repeated exterminations of its inhabitants.

Nevertheless, if we consider the subject under another point of view, it will appear less perplexing. We do not steadily bear in mind how profoundly ignorant we are of the conditions of existence of every animal; nor do we always remember that some check is constantly preventing the too rapid increase of every organised being left in a state of nature. The supply of food, on an average, remains constant; yet the tendency in every animal to increase by propagation is geometrical; and its surprising effects have nowhere been more astonishingly shown than in the case of the European animals run wild during the last few centuries in America. Every animal in a state of nature regularly breeds; yet in a species long established, any great increase in numbers is obviously impossible, and must be checked by some means. We are, nevertheless, seldom able, with certainty, to tell, in any given species, at what period of life, or at what period of the year, or whether only at long intervals, the check falls; or, again, what is the

precise nature of the check. Hence, probably, it is that we feel so little surprise at one of two species closely allied in habits being rare, and the other abundant in the same district; or, again, that one should be abundant in one district, and another, filling the same place in the economy of nature, should be abundant in a neighbouring district differing very little in its conditions. If asked how this is, one immediately replies, that it is determined by some slight difference in climate, food, or the number of enemies: yet how rarely, if ever, we can point out the precise cause and manner of action of the check! We are therefore driven to the conclusion, that causes generally quite inappreciable by us determine whether a given species shall be abundant or scanty in numbers.

In the cases where we can trace the extinction of a species through man, either wholly or in one limited district, we know that it becomes rarer and rarer, and is then lost: it would be difficult to point out any just distinction between a species destroyed by man, or by the increase of its natural enemies. The evidence of rarity preceding extinction, is more striking in the successive tertiary strata, as remarked by several able observers: it has often been found that a shell very common in a tertiary stratum is now most rare, and has even long been thought to be extinct. If, then, as appears probable, species first become rare and then extinct—if the too rapid increase of every species, even the most favoured, is steadily checked, as we must admit, though how, and when, it is hard to say—and if we see, without the smallest surprise, though unable to assign the precise reason, one species abundant, and another closely allied species rare, in the same district—why should we feel such great astonishment at the rarity being carried a step further, to extinction? An action going on, on every side of us, and yet barely appreciable, might surely be carried a little further, without exciting our observation. Who would feel any great surprise at hearing that the megalonyx was formerly rare compared with the megatherium, or that one of the fossil monkeys was few in number compared with one of the now living monkeys? And yet in this comparative rarity we should have the plainest evidence of less favourable conditions for their existence. To admit that species generally become rare before they become extinct—to feel no surprise at the comparative rarity of one species with another, and yet to call in some extraordinary agent, and to marvel greatly when a species ceases to exist, appears to me much the same as to admit that sickness in the individual is the prelude to death—to feel no surprise at sickness—but when the sick man dies, to wonder, and to believe that he died through violence.

These remarks put the matter in a clear and satisfactory light. No great geological changes have taken place in Britain during the last two thousand years, beyond the cutting down of some forests, the draining of morasses, the silting up of a few estuaries, and the like; and yet these changes have been the proximate cause of the disappearance of portions of its former fauna. The elk, bear, wild hog, wolf, and beaver, which once plentifully inhabited our island, have passed away; and if we go back a little further, the same could be proved of the rhinoceros, elephant, and mastodon. From their era till now, our island has experienced no overwhelming cataclysm, no eruptive fires; and why should we seek for violent causes to produce similar results in other regions? A small elevation of the land above the sea might drain innumerable lakes; a further elevation would exalt extensive forests to an altitude in which they could not flourish; and, with the disappearance of the luxuriant swamps and the verdant foliage, numerous races fitted for such localities would as inevitably perish. All existence is mutually dependent, and not a loop of the linked web can be let down without affecting many others, according to their proximity or remoteness. It is only because we are ignorant that we marvel, and because we fail to comprehend that we are prone not

to believe. But if we could comprehend the whole plan of creation, in its progress from past to present, and from present to what shall inevitably follow, we would be no more surprised at the extinction of old, and the appearance of new races, than at the familiar alternation of day and night, with their attendant phenomena.

LADIES' LOGIC.

THERE is a sort of reasoning very prevalent in domestic circles, and especially amongst the female members of them, that may be called the non-sequential. It is a style of argument which, although perfectly satisfactory to the propounder, and to most of the household, is found, on being analysed, to be quite inconclusive. It consists either of a simple assertion, destitute of all support from evidence; or—in its more complicated form—of an argument, the first and last parts of which have not the faintest connexion. My fair friends must not imagine me too severe on this little peculiarity; which is, after all, an amiable weakness, often arising from a fervent impulse towards truth, and what they believe to be justice, which men—generally of colder, more calculating temperaments—do not possess. I only desire to extract a little amusement, or perhaps edification, out of a peculiarity which themselves will hardly deny forms a prominent characteristic of their sex.

Ladies' logic is, as above stated, of two kinds. The first is an asseverative substitute for argument, so frequently employed by the fair sex, that a proverb has truly designated it 'a woman's reason.' Your wife, for instance, presents you with the draper's quarterly account for payment. You glance at it, and though you take a pride in seeing the chosen of your heart well dressed, yet the amount is startling. The lady sees a play of dissatisfaction hovering over your countenance, and divining the cause, thinks that it is hard to be thought extravagant, when she had, during the past three months, been unusually economical. She therefore determines, should there be a demur, to question your right of objection and investigation by resorting to the unanswerable woman's reason. 'How happens it, my love,' you ask, 'that the draper's bill is so much greater this quarter than it was last?'

'How happens it?' she repeats, 'because it is!'

'Because it is!' The assertion is unanswerable: it summarily cuts off discussion, and blows up the best-laid train of argument. However eloquent and convincing the rejoinder you had arranged in your mind, you feel it impossible to tail it on to 'because it is.' Before 'because it is' was uttered, 'it was a very pretty quarrel as it stood;' but now it is no quarrel at all: the elements of disagreement are withdrawn. Your beloved opponent admits that the bill 'is' large. You cannot contradict that, because it forms the ground of your complaint; unless, indeed, you change sides, and contradict yourself. In short, you are as effectually disarmed as if you had—however 'cunning of fence'—taken up a finely-tempered rapier to defend yourself against a bludgeon. One blow from the formidable club shivers your fragile foil to pieces, and leaves you at the mercy of your opponent.

To understand the full efficiency of 'because it is,' let us for a moment cast a glance back to the days of ancient schoolmen, and suppose some of them to have changed their sex. Imagine such lady logicians sticking their theses against college gates, and daring all comers to disprove them, in the manner of the admirable Crichton and the inimitable Gil Blas. Picture a whole class of capped and gowned reasoners coming forth from the cells of learning, and assailing the aforesaid with catalogues of pithy 'whys?' and hosts of pungent 'wherefores?' Fancy—to bring the illustration more home to you—your wife 'gating' her linen-draper's bill at Trin. Coll. Cam., as a mathematical thesis, and, in answer to all the whys and wherefores, exclaiming, 'Because it is.' Why, the most the

senior wrangler himself could do, would be to sneer at it as an 'identical proposition,' and slink away to his rooms. Then what chance of you, my good friend? Believe me, only one available kind of rejoinder exists, and that is—Pay, and have done with it.

That, however, you may not take my dictum unsupported, or act upon the expensive advice without reason, let me calmly conduct you a few turns into the maze of dispute in which you will assuredly be involved should you make any other rejoinder. If you are so presumptuous as to reply in words, the lady will resort to the second sort of logic for which her sex is famous. She will cite a multitude of so-called reasons, which have no relevancy whatever, except in her own mind. Finding the links of a good argumentative sequence there, she will not condescend to take you along with her, but merely raps out the results of her rapid reasonings, as if she had never heard of such a thing as a non-sequitur. Some day, about dinner-time, for instance, you will innocently ask, 'My dear, what o'clock is it?' and perhaps your wife's reply will be, 'Why, dinner was not ordered till six.' To your unsophisticated ears this is no reply at all; yet, if you follow the process of reasoning by which it was dictated, you will find it more or less in point. The truth may have been, that when you put the query, it was a little after six, and your anxious wife mistook your inquiry for a piece of delicate satire on the unpunctuality of her domestic arrangements—as a hint that dinner ought to be then on table. With this little dive into her plan of ratiocination, the reply must be deemed more or less apt. But the case in hand—the draper's bill—will illustrate this branch of ladies' logic much more forcibly.

Having been signally beaten from your first position, you must needs take up a new one. Suppose you run over the items of the bill till you come to 'twelve yards of satin velvet, at 30s. per yard . . . L.18,' and upon this frame a *viva voce* indictment, putting the first count into the mildest possible form—'Do you not think, dearest, that L.18 is an extravagant price for a single article of dress?'—the defence is immediately entered upon. 'What! do you consider L.18 for a Genoa silk-velvet extravagant? Impossible! Why, did not you give seventy-five guineas for a park-hack only last Thursday? And I should like to know what you paid for that Italian picture: I heard it was L.200, though you were ashamed to tell me. Then there was the diamond clasp you gave to your sister on her birthday; I am convinced you did not get it under L.25.'

It instantly strikes you that, according to logic of the other gender, your laying out a few hundreds on horses, pictures, and diamonds, does not prove that L.18 is cheap for your wife's velvet. You tell her this: she denies the conclusion, and demands that you shall make it good. Nothing can be easier, and, intreating the lady's attention, you pull out your pocket-book, and put down the terms of the argument in logical order on a clean leaf of asses'-skin.

PROPOSITION.—L.18 for twelve yards of velvet is an extravagant price.

'But I say it is not,' urges the lady.

'Well, we shall see! Be patient, my dear, and let us proceed.'

OPPOSITION.—But to spend L.300 on a horse, a picture, and a clasp, is also an extravagance.

'Ah, you own that!' is the next interruption. 'Very well, then, with all your cleverness, see if I do not convict you out of your own mouth.'

'But the DEMONSTRATION comes next, love.'

'I'll demonstrate for you. Just tell me'—and here the partner of your life assumes a look of triumph—'is not L.300 more than L.18? You can't deny it. Well, if it be extravagant to throw away L.300, how can it be otherwise than economical to spend only L.18?'

It is in vain that you endeavour to show the fallacy: useless are your efforts to impress upon her that velvet and horses, pictures and trinkets, have nothing whatever in common; consequently, what might