within each of these castles a trumpet was thrice sounded; and immediately after, from each castle, a cloth "about the breadth of a table-cloth," was flung or shaken to the ground (probably as a sign that the spirits had done breakfast). Then a grand procession issued from the gates of each castle. First marched a trumpeter, blowing his instrument lustily; next came three "ensigne-bearers;" and after these, "six ancient men with white beards, and staves in their hands." The four-and-twenty old gentlemen thus simultaneously issuing from the four castles, were no other, we are told, than the four-and-twenty seniors mentioned by St. John in the "Apocalypse." (These seniors, who, like the Irishman's bird, seem to have had the faculty of being in two places at once, are represented at the centre of the diagram as holding a consultation together.) After the seniors strode forward "a comely man with very much apparel on his back, and having a long train." After this gentleman five spiritual princes followed, bearing up his train, for he happened to be no less a person than one of the four great angels of the earth, "the four overseers that Providence hath placed against the usurping blasphemy, misuse, and stealth of the wicked and great enemy the Devil." Next were five crosses, moving, not on the earth, but in the air: from each of these crosses looked out ten spirits, being the "angels of all the aires, which presently give obedience to the will of men when they see them." After each cross marched sixteen angels, "dispositors of the will of those that govern the castles." The tail of each procession was composed of a countless multitude of spirits.

The meaning of this wondrous vision was explained to the Doctor next day by the spirit *Ave*. By the instrumentality of the spirit host who had shown themselves in solemn procession, was Dee to rule the waves and have authority over the land. "*Hereby*," said the interpreting spirit, "*you may subvert whole countries without armies, which you must and shall do for the glory of God. By these you shall get the favour of all the princes whom you take pity of or wish well unto.*" This was the intimation to Dee, who was thus constituted king-maker and kingdom-upsetter in general.

Such were the magnificent promises of the spirits. Now for a few hurried glances at the performances, both of spirits and mediums, in the latter part of the grand spiritualist drama played out with such skill and boldness by the Elizabethan conjurors. In the first place, the brows of the "Noble Polonian" were never encircled by kingly crown, and having eaten the credulous Count almost out of house and home, Dee and Kelly, and their wives and families, left him and his impoverished exchequer to try their chances with the Emperor of Germany. But Rudolph was the reverse of a gullible person, and after repeated but fruitless efforts to inoculate him with a belief in their possession of the philosopher's stone, the worthy pair were one morning ordered to quit Prague within twenty-four hours. Had they tarried six hours longer, they would have obtained the dungeon or the stake at the beck of the Pope's nuncio. They now returned to Poland, sought an interview with Stephen, King of that country, predicted to him by means of spirits in the "crystall globe" that the Emperor was about to be assassinated, and that Stephen (if he behaved well to the mediums) should reign in Rudolph's stead. Stephen was befooled by the conjurors, and advanced large sums of money, from time to time, in order that they might follow their alchemical pursuits. Eventually, however, he got disgusted at their hollow promises; upon which a new dupe opportunely turned up in the person of Count Rosenberg, a nobleman of large estates in Bohemia. Him they assured of the crown of Poland, and a term of life extending to 500 years. After remaining in Rosenberg's domains, however, for four years, faring sumptuously and provided with money to a marvellous amount, the confederates quarrelled and separated. During the five years following Kelly roved throughout Germany, gaining a livelihood by telling fortunes and pretending to transmute the baser metals into gold. At length he was thrown into prison on a charge of sorcery, and, attempting to escape, broke both his legs, and died of the injuries. Dee returned to England, and obtained a small appointment from the Government. This appointment old age compelled him to resign in 1602. During the last six years of his life he supported himself by telling fortunes, and died in extreme poverty at Mortlake, in 1608.

That these notorious mediums worked upon the minds of their dupes by means of ventriloquism, optical delusions, &c. &c., we firmly believe; but at this time of day we have, of course, no means of verifying these opinions. To such as wish for further information respecting their career, we strongly recommend that book to which we have been indebted for so much of our information on Elizabethan spiritualism, and from which we have quoted more than once. The account of the alchemists John Dee and Edward Kelly in "Memoirs of Extraordinary Popular Delusions," will be found one of the most curious chapters in one of the most interesting and instructive histories of human error and credulity that ever was penned.

We have now indicated, in so far as the limited space at our disposal permitted, the main points of resemblance and difference between Spiritualism Elizabethan and Spiritualism Victorian. Ere closing this series of papers, we shall give utterance to a few reflections which have suggested themselves during our progress.

Now, as in the sixteenth century, do we note those people of imaginative temperaments, who are ready to believe anything, if it only belongs to the wild and the wonderful, who, in the words of the illustrious Faraday, "leave the faculties which relate to judgment almost entirely uneducated, and their decisions at the mercy of ignorance, prepossessions, the passions, or even accident." But now, and *not* in the time of Elizabeth, do we observe a large class of minds who, informed and armed with a knowledge of the principles of natural philosophy, steadily refuse their assent to the arrogant assumptions of spiritualism so-called, and decline to believe in a new revelation, which, paraded before them in all the pomp of scientific formulæ, will not condescend to allow of the application to its phenomena of ordinary scientific tests. While firm opponents of empiricism, these men possess that humility which belongs pre-eminently to the true votary of science. They will not undertake to render a reason for all phenomena which may be brought under their notice; but they believe that Nature never contradicts herself; that, like her great Author, she is the same yesterday, to-day, and for ever. They remember, moreover, how many things which are now clear as sunlight to the mass of men would have been set down to supernatural interposition not a great while since.

As one illustration of this superstition out of multitudes pressing upon our memory, let us suppose that before balloons had been heard of, or the laws of pneumatics generally known, two persons were in dispute as to the gravitating principle. Suppose that one of these disbelieved in it altogether, and that he was invited by the other to witness an experiment, being no less than the ascent from the earth in broad daylight of at least half a ton of iron and other matter through the agency of a balloon. Unacquainted with the laws of pneumatics, would not the doubter, if made of ordinary stuff, be inclined to ascribe these strange phenomena to supernatural influences? And yet, patiently investigated, the ascent of the balloon is simply a question of the relative weight of gases. When thoroughly understood, it is no more wonderful than that a cork, when pressed to the bottom of a vessel filled with water, should rise to the surface. The skyward flight of the balloon is, indeed, but another evidence to the truth of the principle of gravitation.

Amongst the honest believers in spiritualism are many highly-gifted individuals. In fact it is mainly owing to the countenance offered to this doctrine by estimable but imaginative men, whose minds, as we believe, have never been accustomed to weigh evidence impartially, or trained to beware of "the *tendency to deceive ourselves* regarding all we wish for, and the necessity of *resistance to these desires*,"*—it is owing, we believe, to such patronage, that spiritualism has attained to its present dimensions. We may be wrong in our intellectual estimate of these remarkable persons. If proved to be so, we shall make a full recantation. Meanwhile, it is clearly of importance that we should have the co-operation of these honest and gifted spiritualists in the settlement of this question. We earnestly appeal to them, therefore, for aid and assistance in putting spiritualism upon its fair trial. At the same time we must frankly avow our thorough distrust in experiments conducted in darkened chambers. We shall not believe, indeed, without the amplest, plainest proof that the spirits of the illustrious dead, or of those whom we have loved in life, can be summoned for half a sovereign to answer impertinent questions and spell out vulgar names. Nor shall we believe, without the strongest corroborative evidence, that a fat lady or a stout gentleman can, by supernatural means, be suspended between a West End carpet and a West End ceiling. This last feat, indeed, involving as it does the upsetting of the greatest physical law, reminds us that this principle of gravitation is the *only* point upon which the spiritualists have fairly joined battle with the unbelievers. "What truth beneath that of Revelation can have an assurance stronger than this!" exclaimed he upon whose shoulders the mantle of Newton has descended. With two bits of pasteboard, four little glass rods, two India-rubber rings, a slip of foolscap, a haystalk, and a pin, Professor Faraday constructed an anti-spiritualist machine, in the shape of a lever and index,† and speedily put to the rout the whole host of enthusiastic believers in the supernatural character of table-turning; showing, as he clearly did, the unconscious movements of the hands upon the tables, so that either the index moved before the table, or neither table nor index moved, while in many cases all moving power was annihilated. No wonder they still chafe at the recollection of their sad overthrow and dire defeat, and hurl maledictions at the glorious head of their conqueror.

We cannot better conclude than by reproducing the suggestions offered to the spiritualists some years since, we are sorry to say without being turned to account. Thus spoke the greatest natural philosopher alive, in his lecture on "Mental Education," delivered at the Royal Institution in 1854.

"Why not consent to apply the knowledge we have to that which is under development? Shall we educate ourselves in what is known, and then, casting away all we have acquired, turn to our ignorance for aid to guide us among the unknown? If so, instruct a man to write, but employ one who is unacquainted with letters to read that which is written; the end will be just as unsatisfactory, though not so injurious, for the book of nature which we have to read is written by the finger of God. Why should not one who can thus lift a table proceed to verify and simplify his fact, and bring it into relation with the law of Newton. Why should he not take the top of his table (it may be a small one), and placing it in a balance, or on a lever, proceed to ascertain how much weight he can raise by the draught of his finger upwards; and of this weight, so ascertained, how much is unrepresented by any pull upon the fingers downward? He will then be able to investigate the further question, whether electricity or any new force of matter is made manifest in his operations, or whether, action and reaction being unequal, he has at his command the source of perpetual motion. Such a man, furnished with a nicely-constructed carriage on a railway, ought to travel by the mere draught of his own fingers. A far less prize than this would gain him the attention of the whole scientific and commercial world, and he may rest assured, that if he can make the most delicate balance incline or decline by attraction, though it be only with the force of an ounce, or even a grain, he will not fail to gain universal respect and most honourable reward."

S. L.

WHAT CONSTITUTES A SPECIES.

It is perfectly obvious that the history of nature is the work of man. It is his description of what has been and what is. Though his acts have great influence over much that exists, for he modifies several characteristics of animals to suit his purposes, and, by working with the forces of nature, gives a riot otherwise-created strength to the dray-horse and swiftness to the racer. He wars against beasts of prey, and extirpating them makes room for the sustenance and life of animals more suitable to his wants. Sheep with large carcasses, small bones, and heavy fleeces, and oxen which fatten quickly, bear a vast amount of flesh and differ almost as much as bears or elephants from their pristine parents, are the produce of his skill. Nevertheless, when he writes or speaks of these and other portions of the material world, he only describes, and can only describe, what is and has been. In order to accomplish this purpose conveniently, and convey knowledge from one person to another, he classifies objects together as they sensibly resemble, and apart as they sensibly differ from each other. Thus we have in common life from noticing obvious similarities and differences, dogs, horses, men, sheep, cats, snails, monkeys, apple-trees, oak trees, &c. &c., each of which is called a species.

This rough kind of classification, though useful and essential, does not satisfy the scientific inquirer. He notices a vast number of very minute and yet substantial differences; and he requires, for the purpose of expressing what he ascertains and what he wishes to convey to others, a much more extended

* Professor Faraday. † See *Athenæum*, July 2, 1853.

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and elaborate classification and nomenclature. He separates objects according as they belong to the animal, mineral and vegetable kingdoms, into classes, genera, orders, groups, species, &c.; and he does not base his description on outward appearances and obvious functions. He dissects animals and plants; he ascertains the forms in which minerals crystallize; he watches growth and formation, and he classifies objects by what he discovers or supposes to be their fixed forms and the principles of their structure. From first to last, however, from the most general and common classification by the rudest savage, of objects, into rivers, mountains, animals, fish, birds, plants, to the more recondite researches of a Cuvier or an Owen ascertaining the invariable form of a tooth or a cranium, the whole of natural history is merely description. It is worthy of notice that only from the minute researches of the learned do any differences of opinion or dispute arise as to species. Whatever may be the scientific differences or resemblances, the multitude will never confound man with an ape, nor a pigeon with an eagle. Genera, species, and varieties are all, therefore, human inventions for human convenience. They are dictated by certain differences and certain resemblances in the objects classified; but the most complete classification is altogether a work of art—the creation of man, not the creation of nature.

A species, accordingly, about which of late so many and such heated disputes have been generated amongst naturalists (some contending that one species may be transmuted by the influence of circumstances into others, like Mr. Darwin; other naturalists, like the author before us,* contending that species are not transmutable), is merely a group or number of individuals classified together by man, and is transmutable from one to another or not as man pleases. Under this aspect the question of the transmutation of species merely concerns classification. It is a dispute about the use of words. Whatever science may propound the people will continue to speak of men and dogs and horses as different species, and believe in their difference.

But the things classified are not the classification; and about them—about what some observers notice and others do not; about what some active men effect and others do not; about what some poetically-minded men imagine or conclude and others do not, there are virtual and important differences. The one at present which excites so much interest in the learned world is not really whether one species or group of beings, artificially arranged apart from others, can be run into another—for this the definition, as long as it is preserved, forbids,—but the purely speculative and far more important difference whether animals, plants, &c., were originally created as we see them, or were created differently, and were successively modified by the influence of some other forces, the work of the same Creator. Did all objects come as they now appear to us from the hand of the Creator, or have they undergone, and are they still undergoing, successive modifications by and from causes controlled and ordained by Him? Was creation wholly and fully completed at once, or is it for ever going on? and if so, by what agencies is it effected? This is obviously a very wide and very important difference, which requires the whole knowledge of our race, and almost infinitely patient investigation to ascertain. We presume not to decide such a matter in a few paragraphs. We can only indicate the principle at issue.

The whole science of geology rests on the assumption, the result of many observations, that the whole surface of the globe has undergone several successive changes, and is not now as it formerly was. However closely the men and animals of this age resemble the men and animals of a former age, nobody denies that many sensible differences in individuals are observed and traced. History is a succession of changes. The man or the people who can command to the extent which the Europeans command them, the services of electricity, gravity, and affinity, is very different from the man or the people who had only their mere muscular untutored force to rely on for subsistence and safety. His form may be the same—his mind is different. With these and many similar evidences of change ever present to us, which have given rise to the supposition that the whole visible, tangible, and measurable universe is for ever undergoing some kind of change, the degree in time being the only question at issue, it is impossible to avoid concluding that similar changes have always been going on. There is, in fact, a coincidence of opinion on this subject among the warring naturalists, and all agree that change, *within certain limits*, is universal.

But the limits are not defined. Why or how shall man, when change is admitted, not knowing and being incapable of knowing the whole, presume to define those limits? This, however, is exactly what both classes of disputants do. The gentlemen who say one species cannot be transmuted into another, and the gentlemen who say that transmutation is provided for, and creation is limited to one primordial material type, or a few types, equally set bounds to Almighty Power. Both imply that some one line of conduct is imposed on the Creator, and that He can follow no other. Both, from the logical necessities of their own minds, which flow from their organization, infer equally stringent necessities on His actions. Professor Agassiz and others suppose that they found a proof of His existence in a design which implies that He is a Being thinking like man himself. But thought in us is subject to limits and laws; all our designs are formed with a view to *matter* or force, and in subserviency to it, which is very different from creation. At present, when the limitations imagined of Divine power are for ever receding, and the further we push our inquiries the more we are filled with wonder at what we cannot comprehend, it seems very extraordinary that *soi-disant* philosophers should plume themselves on prescribing limits by their own arbitrary and convenient definitions to the Almighty Power. From defining a species for their own advantage they fix a limit to the illimitable.

The science which loses itself in contradictions ceases to command the public confidence. A slight retrospect of modern progress teaches us that learned men, rather mortified than exalted by the diffusion of knowledge, which tends to equalize mankind, and destroys any hope of forming a class apart, commanding homage and securing power by a peculiar wisdom, have fled for refuge into a mysterious nomenclature, and endeavoured rather to make their pursuits incomprehensible, than adapt their knowledge to the level of the vulgar. What is the meaning of the following passage quoted by our author as a model and an authority on "species," and resembling much writing on this subject?—

"In endeavouring to form a conception of what constitutes *species*, our ideas must be separated from the *individual*, which is merely the representative of species in some one of its special states or conditions. Every mature or perfected being has had an anterior organic history included in the history of its structural progression, from a collection of simple cells to a natural body possessing individual and distinctive characteristics. No one of its states or conditions constitutes species; neither the perfect insect, nor the pupa, nor the larva, nor the ovum, fulfil in themselves the conception involved in this term, but simply represent the various relations the individual maintains to physical and animated nature, and during the continuance of which its structural and peculiar biography is written.

"The perfect being is the temporary expression of a thought, or conception involved in the series of actions which constitute in their entity a *special* and *definite creation*, and in this state has reached the acme of its perfectibility, a point beyond which it cannot pass; but after a variable period its organic part is broken up, and resolved again into the simple or primary elements of matter. The species, or the thought, however, does not cease to exist during the process of organic disintegration of the individual, and previously to its disappearance or death it represents its special organism, or rather its *species*, by means of an ovum, in which the organic actions destroyed in the previous representation, are recommenced, and again carried through a series of changes or states to the point of its previous organic perfection; commencing in the simplest organic state, and continually returning to renew a *series of predetermined special developments*.

This, with all its emphasized words (so in the book), may be correct natural history; regeneration may be, as the same "elegant writer" also says, a "manifestation of continuous growth in species in their respective cycles of organic evolution around which the structural processes revolve and repeat themselves:" but all this is not common sense; and if it be the expression of correct and recondite knowledge, it is better caculated to hide than show it. That our author quotes such passages with approval, is an all-sufficient proof that he is quite inadequate to discuss the great phenomena in question. His book, in fact, is a collection of small and captious objections in detail, sneeringly expressed, to Mr. Darwin's opinions, and is quite unworthy of the great subject on which this gentleman, reviving and much extending his father's doctrine, has interested the public.

* Species not Transmutable, nor the Result of Secondary Causes. Being a Critical Examination of Mr. Darwin's work, entitled "Origin and Variation of Species." By C. R. Bree, Esq., M.D., F.L.S., Physician to the Essex and Colchester Hospital. Groombridge & Sons.

THE COLD ON CHRISTMAS-DAY.

The temperature of the air in the neighbourhood of London on Christmas-day, at eight o'clock in the morning, was as low as 8° of Fahrenheit, that is 24° below the freezing point of water; at 9h. A.M. it rose to 12°; at 10h., to 13°; at noon, to 18°; and it gradually increased to 30° by 11h. P.M., which was the highest temperature during the day; at midnight it began to decrease, and fell to 25° by 7h. A.M. of December 26. In my account of the weather at the end of the month, I shall speak of the cold weather of this week in connection with previous cold seasons.

James Glaisher.

NECROLOGY OF EMINENT PERSONS.

MARQUIS OF DALHOUSIE.

On Wednesday, the 19th, at Dalhousie Castle, Midlothian, aged 48, the Most Noble the Marquis of Dalhousie, K.T. James Andrew Broun-Ramsay, 10th Earl and 1st Marquis of Dalhousie, was the youngest of the three sons of George, 9th Earl (who was a General in the army and G.C.B.), by Christian, only child and heir of Charles Broun, Esq., of Colstoun, co. Haddington, and was born in April, 1812. He was educated at Harrow and Christ Church, Oxford, where he graduated in 1833, taking fourth-class honours in classics. He contested, but without success, the representation of Edinburgh, on Conservative principles, in 1815, with Mr. Abercromby, subsequently Speaker of the House of Commons (afterwards Lord Dunfermline), and with Sir John Campbell, the present Lord Chancellor. By his frankness and manly straightforwardness, however, he won golden opinions, not less from his adversaries than from his own partisans. In 1837 he was returned to the House of Commons for the county of Haddington, and on the death of his father, in 1838, he succeeded to the earldom of Dalhousie. In 1843 he was appointed Vice-President of the Board of Trade, and in 1845 President, with a seat in the Cabinet, resigning with the Ministry in 1846. In 1847, on the return of Lord Hardinge from India, he was offered, and accepted, the Governor-Generalship, being the youngest man ever appointed to that responsible office. Shortly after he landed in India, the Sikhs broke out a second time into war, but they were defeated everywhere. He then "annexed" the Punjaub to the British dominions, and it was in the reduction of this important territory that he first employed the administrative energy and ability of Sir John Lawrence and his brother, the late lamented Sir Henry Lawrence, K.C.B. Lord Dalhousie subsequently followed out the same line of policy by annexing Pegu and Nagpore, and finally the vast and wealthy kingdom of Oudh. The opinions of statesmen will probably differ to the end of time as to the justice and expediency of the course of Indian administration with which Lord Dalhousie's name will be for ever identified; but, while conquering and annexing, he did not forget to develop the resources of the country. Railways, canals, and telegraphs were established; he also laboured strenuously to reform the administration of the civil and legal departments, he extended education and public works, more especially promoted railways, canals, and electric telegraphs. In 1849 he was elevated to the dignity of a marquis, receiving at the same time the thanks of both Houses of Parliament. About the same time he was made a K.T.; and, on the Duke of Wellington's death, in 1852, Lord Derby conferred on him the Lord Wardenship of the Cinque Ports and the Governorship of the Castle at Walmer. The marquis returned to England, in shattered health, in May, 1856. His marchioness, the Lady Susan G. Hay, daughter of the Marquis of Tweeddale, to whom he was married in 1836, died on her way home from India, when just within sight of the Land's End, in 1853. As by her he had issue only two daughters, his marquisate in the peerage of the United Kingdom expires; as does also the English Barony of Dalhousie, conferred on his father in 1815, after the battle of Waterloo. The Scottish titles devolve on

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