

of this single stem is not to be assigned to either chance or to chemico-physical, but to an "Entwickelungs-gesetz" yet to be discovered. This, we confess, is to us a disappointing termination to a clever and spirited essay. Surely Dr. Dohrn would not expect a scientific man to understand by the word "chance" anything but a periphrasis for the operation of hidden cause. And what can he expect any law of development to be, if not an expression of the operation of chemico-physical causes?

As to the original form under which life made its first appearance, Dr. Dohrn's words would almost lead to the impression that he believes in the creation of a "type-form" something like the Cherubim, with an account of which Archdeacon Freeman favoured Section D of the British Association when it met at Exeter in 1869. His language is, however, sufficiently vague to warrant the supposition that, as an orthodox physical philosopher, he holds the doctrine of the evolution of organic forms subject to the larger doctrine of general evolution, and consequently we may suppose that he would hold that the single stem which has blossomed in man, and from which all other forms have descended by retrograde development, *did* take its origin from simple protoplasm, which had naturally been evolved from carbon compounds. If the animal pedigree did originate from these very simple beginnings, we suppose Dr. Dohrn would say that all trace of them is gone, what is simple *now* in the way of organisms is not the simplicity of the original stock, but a simplicity attained by degeneration. We do not see any reason to accept this hypothesis of *universal* degradation (man alone being excepted from its influence), any more than we can see reason to accept the competing hypothesis of *universal* progress. We are very strongly inclined to think that neither hypothesis can have the whole field to itself. We should expect to find in some directions progress, in others retrogression.

The extent to which each of these processes has gone on in past ages in connection with the family history of the animal kingdom is the great problem for zoological research.

E. R. L.

THE NEW METAL GALLIUM

THE discovery, by M. Lecoq de Boisbaudran, of a supposed new element in a blende from the Pierrefite mine in the Argeles Valley, Pyrenees, was made known in our "Notes" of last week. This element, which the discoverer proposes to name *Gallium*, has revealed itself by the following chemical reactions:—

The oxide, or possibly suboxide, is precipitated by metallic zinc from a solution containing chlorides and sulphates.

In a mixture of the chlorides of the new metal and of zinc, ammonia throws down the new element first if added in a quantity insufficient to precipitate the whole of the metals present. Nearly the whole of the gallium is thus thrown down in the first fraction.

Under conditions competent to peroxidise the new metal, the oxide is soluble in excess of ammonia.

Ammonium sulphhydrate produces a precipitate insoluble in an excess of the reagent. The sulphide appears to be white.

Sulphuretted hydrogen produces a precipitate in presence of ammonium acetate and excess of acetic acid. In presence of zinc salts the new substance concentrates itself in the sulphides first deposited, but six fractional precipitations were requisite to remove the greatest part of the zinc sulphide. In presence of hydrochloric acid no precipitate is formed.

The oxide, like that of zinc, dissolves in excess of ammonium carbonate.

The salts of gallium are readily precipitated in the cold by barium carbonate.

The chloride may be frequently evaporated with great

excess of *aqua regia* without undergoing any loss by volatilisation.

When hydrated zinc chloride containing a trace of the new substance is heated to the point when zinc oxychloride begins to form, the gallium remains in an insoluble condition, possibly as oxychloride.

The quantity of the substance procured was too small to attempt its isolation. Some drops of zinc chloride solution in which the new metal had been concentrated were examined spectroscopically by the electric spark. The spectrum is composed chiefly of a violet line about wavelength 417, and a feeble line about 404.

In his communication to the French Academy, the author states that he obtained the first indications of the new metal on Friday, Aug. 27. It is to be hoped that a good supply of the mineral will be procurable, so that the new element may be isolated, its atomic weight determined, and its reactions studied in detail. This now makes the fifth terrestrial element which the spectroscope has been instrumental in bringing to light.

R. MELDOLA

UNPUBLISHED LETTERS OF GILBERT WHITE

AT the meeting of the Norfolk and Norwich Naturalists' Society, held on the 28th inst., the secretary read an interesting series of ten unpublished letters, written by Gilbert White, of Selborne, to Robert Marsham, F.R.S., of Stratton Strawless, Norfolk, and communicated by the Rev. H. P. Marsham, great-grandson of the latter. The letters, which are dated between August 13, 1790, and June 15, 1793, are excellent examples of Gilbert White's delightfully discursive style, their contents being of a very varied nature. Mr. Marsham, to whom they were addressed, was a great planter, and communicated his experiments on growing trees to the Royal Society; the beauty and great size of the timber at Stratton bear testimony at the present day to his judgment and successful treatment. As might be expected, under these circumstances, a large portion of the correspondence is devoted to forest-trees, the love for which was shared in an almost equal degree by both correspondents. The "Indications of Spring," of which Mr. Marsham left such a remarkable register, and which have been continued by his family, with one slight interruption, from the year 1736 to the present time (see "Philosophical Transactions" for 1789, and the "Transactions" of this Society for 1874-5), of course form an annual topic, as well as the rainfall; but perhaps the most valuable part of the correspondence is the gossip about birds, some of which is of very great interest. On the 30th October, 1792, Marsham writes to White: "My man has just shot me a bird which was flying about my house; I am confident I have never seen its likeness before." On reference to his Willoughby, he declares it to be "the Wall-creeper, or Spider-catcher," and a description, endorsed by him on one of White's letters, as well as a manuscript note in his copy of Willoughby's "Ornithology," still in the possession of the Marsham family, places it beyond doubt that the bird was a veritable *Tichodroma muraria*. White, after saying he is persuaded that the bird is the "very *Certhia muraria*," continues: "You will have the satisfaction of introducing a new bird of which future ornithologists will say, 'Found at Stratton, in Norfolk, by that painful and accurate naturalist, Robert Marsham, Esq.,"—a prophesy which, after an interval of eighty-two years, will at length be fulfilled. Nearly a whole letter is devoted to an extract from an unpublished "Natural History of Gibraltar," by Gilbert White's brother, the Rev. John White, who resided many years on the "Rock." By this it is shown that John White, who went to reside there in 1756, soon discovered the Crag Swallow

(*Cotyle rupestris*) to be distinct from the Sand Martin, for which it was then mistaken. He gives an interesting account of its habits, and names it *Hirundo hyemalis*, from its great abundance at Gibraltar in the winter months. The last letter of the series, dated June 15, 1793, has a special interest attached to it from the fact that it was written only eleven days before the death of this estimable man and ardent naturalist. The whole of this interesting series will be published in the Transactions of the Society, and it is hoped, through the kindness of Prof. Bell, in whose hands they now are, that Marsham's letters to White may be added.

NOTES

DURING the last week there has been a goodly talk about education, and Mr. Cross has come to the front in a most unexpected manner, while the modern English Cardinal has been acting as his foil. Cambridge, too, in the shape of Mr. James Stuart, has been active at Nottingham, and the world thinks that the University is active. The truth is, however, that the University is too poor to do anything, and that the Colleges are simply looking on while a private benefactor is providing both with those means of teaching which third-rate institutions on the Continent have possessed to a greater or less extent any time during the present century. Mr. Cross not only foreshadows compulsion, but he shows that we have now a Minister who knows the difference between Education and Instruction. "It is not mere book learning that I am talking of. That is not the object of these schools. It is the school discipline, the training of the mind of the child, the teaching him how to teach himself, the self-control and the self-respect which he gets at school, which do more for him than all the book learning that you put into his head." The Cardinal, on the other hand, defines "Secular Education" as "secular knowledge," and then adds: "Education means the full possession and understanding and enjoyment of the inheritance of faith, which the child has by virtue of his regeneration in baptism." It is clear that the Cardinal, if he means anything, confounds instruction with education as successfully as ninety-nine out of every hundred who talk on the subject confound education with instruction.

AT a meeting of the Entomological Club of the American Association for the Advancement of Science, Mr. C. V. Riley, the secretary, read a paper on "Locusts as Food," in which he gave his own experience in cooking and eating them. On one occasion he ate nothing else for a whole day. He found them to have an agreeable nutty flavour, and especially recommended them deprived of their legs and wing-cases, and fried in butter, and also spoke very highly of a soup made from them. He referred to John the Baptist, who had often been pitied for the scantiness of his fare, locusts and wild honey, and expressed his opinion that he was rather to be envied than otherwise. The writer regarded it as absurd that parties should actually die of starvation, as some had done in the districts where this locust plague had prevailed, while surrounded by such an abundance of nutritious and palatable food.

FROM different settlements on the West Coast of Africa young living gorillas have several times been shipped for Europe under auspices apparently the most favourable. On one occasion, about six years ago, a Dutch merchant at St. Paul de Loanda took the trouble to keep a young male in company with a black boy for some considerable time on the coast, and when the two had become good friends, took passages for them both to Holland. The animal only survived a fortnight from the date of its embarkation, dying rather suddenly, as most others seem to have done, from a kind of depression or home-sickness, not from any well-marked disease. No gorilla, exported as such, has reached Europe alive. Quite recently, within the last month or so, one

destined for Hamburg arrived within two days of its journey's end, when it shared the fate of its predecessors. This specimen was, immediately after its death, placed into spirit, and will, we believe, form the subject of a monograph by Dr. Bolau, of the Zoological Museum of Hamburg, from whom we may expect the settlement of several important and doubtful points in the anatomy of the greatest of the anthropoid apes. In about the year 1852, in one of Wombwell's travelling menageries, there was exhibited for some months a monkey very like a chimpanzee. The animal was expert at tricks, and was clad in a grotesque costume. From a daguerreotype photograph in the possession of Mr. A. D. Bartlett, resident superintendent of the Zoological Gardens in Regent's Park, that gentleman was enabled to identify the specimen as one of a young gorilla, and not a chimpanzee. Its face was dark, its arms and legs proportionately larger, its ears very much smaller, and the distance between the eyes greater than in the chimpanzee. A still more interesting instance of the same kind has, however, recently occurred. For the last two years there has been a female "chimpanzee" at the Zoological Gardens at Dresden, named Mafota, which has attracted considerable attention. She was purchased by Herr Schöpf, the Director of the Dresden Gardens, in a very unpromising condition, being much denuded of hair, and covered with an unhealthy skin eruption. Since the animal has been under Herr Schöpf's skilful care, it has become quite a different creature. It has grown very rapidly; surprisingly so. The hair now forms an abundant covering, and the skin is in a perfectly healthy condition. It is quite tame with its keepers, whose boots it is in the habit of taking off and replacing for the amusement of visitors. It performs many other tricks, showing great intelligence. Herr Carl Nissle, an artist, we believe, whilst studying the figure and movements of Mafota, became rapidly impressed with the idea that she is not a chimpanzee at all. Her great size, the numerous black spots on the naked skin of the face, which in the chimpanzee is simply flesh-colour, the black instead of pink hands, the slight webbing between the fingers, and the different expression, with a broader nose, all led him to the conviction that she is a gorilla. He carefully studied the stuffed specimens of the gorilla and chimpanzee, both at Berlin and Lubeck, and, what is more, has had the opportunity of seeing the new Hamburg spirit specimen above referred to. These all confirmed his surmise, towards the complete verification of which we have the affirmative opinion of Prof. R. Hartmann, prospector to the Anatomical Museum of Berlin. So there is strong reason for the belief that Mafota is a gorilla, the first living specimen recognised as such in this continent.

THE following are the hours of the various Introductory Lectures at the London Medical Schools, which will be delivered to-morrow (Oct. 1st), with the names of the respective lecturers:—

HOSPITAL.	LECTURER.	HOOR.
Charing Cross	Mr. Fairlie Clarke	4 P.M.
St. George's	Dr. Barnes	4 "
Guy's	Dr. Stevenson	2 "
King's College	Dr. Curnow	4 "
London	Dr. B. Woodman	3 "
St. Mary's	Dr. Randall	3 30
Middlesex	Mr. Lowne	3 "
St. Thomas's	Dr. Payne	3 "
University College	Dr. Corfield	3 "
Westminster	Mr. R. Davy	3 "

DR. JAMES BELL PETTIGREW, F.R.S., Lecturer on the Institutes of Medicine at the Royal College of Surgeons, Edinburgh, has been appointed to the Chair of Medicine in the University of St. Andrews, vacant by the death of the late Dr. Oswald Home Bell.

THE following is a list of candidates who have been successful in obtaining Royal Exhibitions of 50*l.* per annum each for three