

professors, those at the head of our large schools and seminaries, should receive such salaries as will enable them to live adequately. By this policy not only would our promising young men be encouraged to pursue learning, but those in the highest places would not be forced by poverty to live in comparative retirement, but could become active social figures and leaders."

Evolution, and problems belonging to it, crop up periodically as subjects of magazine articles. In the *Contemporary*, A. Fogazzaro, "writer of verses and novels," devotes a number of pages to the polemic battles that have been fought over the evolutionary idea, from the time of Lamarck. "For the Beauty of an Ideal" is the title of his article, which mostly aims at showing how the new wine of evolution may be put into old bottles of Catholic doctrine." A paper on "Evolution and Heredity" is contributed by Dr. G. Symes Thompson to the *Humanitarian*. An introduction to a series of articles on "Professional Institutions," by Mr. Herbert Spencer, appears in the *Contemporary*. The articles will, in their eventual form, constitute part vii. of the "Principles of Sociology."

Two papers in the *Century* call for brief notice. In one, Mr. W. E. Smythe shows how parts of the great arid region to the west of the one-hundredth meridian in the United States have been benefited by careful irrigation. "The work of reclamation has been going forward silently, but gradually and surely, for the better part of a generation. Between ten and twenty millions of acres are now under ditch, and some slight rivulets of population have begun to trickle in upon the lands. But the threshold is scarcely passed. The arid region as a whole comprises more than 800,000,000 acres. Of this empire more than half a billion acres is still the property of the Government." The second paper to which reference has been made, is a short description of three reproductions from photographs of the tree beneath which was buried the heart of Dr. Livingstone. The tree was found near the site of the deserted village of Chitambo, on the south shore of Lake Bangweolo. Upon it, Jacob Wainwright, the Nassich boy who read the Burial Service, chiselled the words, still plainly visible, "Dr. Livingstone, May 4, 1873. Jazusa, Mniasere, Vchopere."

The *Reliquary and Illustrated Archaeologist* (April) contains an account, by Mr. Miller Christy, of the exploration of "Deneholes" in Essex and Kent, conducted by the Essex Field Club. Deneholes are ancient artificial caverns in the chalk, having deep, narrow, vertical entrances. They are found in various parts of England, but especially along the banks of the Thames, in Essex and Kent. Mr. Christy has explored many of them, and his opinion as to their origin is—"On the whole, the only conclusion which it seems as yet safe to arrive at is that the mystery surrounding the origin of the Deneholes and the purposes of their makers still constitutes one of the most interesting and perplexing problems yet remaining unsolved in British archaeology, perhaps we may say in prehistoric British archaeology."

Mr. A. Symons Eccles, in the *National*, writes on "Headaches," and, in the course of his paper, gives the opinion of a distinguished neurologist, that almost every man of science of distinction in London suffers from sick-headache, or migraine, on account of excessive intellectual activity. Mr. Eccles says if they "will sit down to dinner in a state of nervous exhaustion, or do brain work directly after taking food, they can hardly hope to escape from an attack of migraine." In the same review, Miss Balfour concludes the account of her journey through the British South Africa Company's territory, in 1894.

A brief notice will suffice for the other articles in the magazines and reviews received by us. A previously unpublished paper of Richard Jefferies' appears in *Longman's Magazine*, and also a poem by the late Dr. G. J. Romanes. In the *English Illustrated*, the articles from which natural knowledge may be gathered are "Mountaineering in Westmoreland," by Mr. J. F. Fraser; "Stalking the Haplocerus in the Selkirks," by Mr. W. A. Baillie-Grohman; and a "Moorland Idyll," by Mr. Grant Allen. In the *Quarterly Review*, the recently published biographies of Buckland and Owen are used as the basis for an article on advances in the science of biology during this century. *Good Words* contains a short illustrated paper on the Dandelion, by Dr. Hugh Macmillan, and one on "The Sea Birds of the Cape," by the Rev. W. Greswell. Another readable article on birds is Mr. C. J. Cornish's "Birds of the Cliffs," in the *Sunday Magazine*. *Chambers's Journal* has the usual complement of instructive articles on more or less scientific topics. Finally, the *Photographic Quarterly Review* contains contributions by Dr. W. R. Gowers and Sir Henry Howorth.

NO. 1332, VOL. 52]

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

OXFORD.—The Term is now in full swing, and the usual courses of lectures are being delivered in the various departments of Natural Science. The changes from last Term's list are, that Sir J. Conroy and Mr. Frederick Smith have returned to Oxford, and are lecturing on Radiation and Mechanics, respectively, at Balliol and Trinity Colleges. In the Physiological Department, Prof. Gotch has begun his duties as Waynflete Professor, and is lecturing on Mondays and Tuesdays on the Physiology of the Central Nervous System.

Mr. H. Balfour, Curator of the Pitt-Rivers Museum, has been seriously ill, and is absent from Oxford for this Term, being obliged to go abroad for the sake of his health.

In a Congregation, held on Tuesday, May 7, the proposed Statute on Research Degrees was again under discussion, having reached what is technically known as the twelve-member amendment stage. The House reaffirmed by the narrow majority of 39 against 37, the clause which was passed by a large majority last Term, which states that Science shall be held to include Mathematics, Natural Science, Mental and Moral Science. Other clauses, mostly of consequential importance, were added or rejected, amongst them being one of some importance to intending Candidates, which allows residence in the Vacation to count towards the residence of eight terms required by the Statute.

In the same Congregation, Dr. E. B. Tylor, Reader in Anthropology, was constituted Professor in Anthropology during the tenure of his office as Reader in Anthropology.

The seventh summer meeting of University Extension and other Students will be held this year in Oxford. The meeting, as in previous years, will be divided into two parts: the first part will last from Thursday evening, August 1, to August 12, the second from August 12 to August 26. There will be lectures during both parts of the meeting on Natural Science, with classes for practical work. Among the lecturers will be Prof. Green, Prof. Odling, Dr. Kimmins, Dr. Fison, Mr. Carus-Wilson, Mr. J. E. Marsh, Mr. P. Groom, Dr. Wade, and Mr. G. C. Bourne.

The fourth "Robert Boyle" lecture of the Oxford University Junior Scientific Club will be delivered by Prof. Crum-Brown, F.R.S., on Monday next. His subject will be "The Relation between the Movements of the Eyes and the Movements of the Head."

CAMBRIDGE.—Mr. W. G. P. Ellis, of St. Catharine's College, has been appointed a Demonstrator in Botany.

Applications for permission to occupy the University's tables at the Naples Zoological Station, and the Marine Biological Laboratory at Plymouth, are to be sent to Prof. Newton, Magdalene College, by May 23.

The Syndicate for Advanced Study and Research have proposed new statutes for carrying out the scheme recently approved by the Senate, and have extended the scheme so as to include advanced students in law who are graduates of other Universities.

The honorary degree of Doctor of Science is to be conferred on Mr. Francis Galton, F.R.S.

MR. A. E. TUTTON has been appointed Inspector of Schools and Classes under the Science and Art Department.

THE Report of the Council of the City and Guilds of London Institute, upon the work of the Institute during the year 1894, has just been issued. The Council expressed their satisfaction at the renewal of the contribution of the Corporation of London to the funds of the Institute. Special subscriptions have been received, or promised, from the Salters' Company, in addition to their annual subscription, for the encouragement of chemical research; from the Cordwainers' Company, in addition to their annual subscription to the Institute, and the Leather Trades' School, for the inspection of classes in boot and shoe manufacture in connection with the Technological Examinations Department, and, for the first time, from the Tylers' and Bricklayers' and the Coach-makers' Companies. The proposal of the Salters' Company to place at the disposal of the Institute a sum of £150 a year to be applied to founding one or more Fellowships, to be entitled the Salters' Company Research Fellowships for the encouragement of higher research in Chemistry in its relation to manufactures, has already been referred to in these columns. The scheme for the

administration of this grant, prepared by a Special Committee of the Institute and adopted by the Executive Committee, has since received the sanction of the Court of the Salters' Company. The first award was made in January of the present year to Dr. Martin O. Forster. A sum of £333 4s. 3d. has also been received from the Committee of the Siemens Memorial Window Fund, "as an endowment to furnish a small sum to the recipient of the Siemens Memorial Medal, which is awarded annually to the student of the greatest merit in the Department of Electrical Engineering at the Central Technical College of the City and Guilds of London Institute." The Report deals in detail with the operations of the several colleges, schools, and departments of the Institute's work.

MISS GRACE CHISHOLM has just taken the degree of Doctor of Philosophy at Göttingen, this being the first degree obtained by a lady since Göttingen became a Prussian University. Miss Chisholm was a scholar of Girton College, Cambridge, and was placed between the 22nd and 23rd Wranglers in Part I. of the Mathematical Tripos in 1892, and in Class 3 of the Mathematical Tripos, Part II., in 1893. In 1892 she also took a first class in the Final Mathematical School at Oxford. After leaving Girton, she proceeded to Göttingen, and, receiving permission to attend the mathematical lectures, was in residence there about a year and a half. It was with the express sanction of the Prussian Minister of Education that the doctor's degree was conferred on her, and it is thought that the precedent thus established will probably lead to a substantial development in the opportunities offered for the higher education of women in Germany.

SILVER MEDALS have been awarded to Mr. R. H. Turnbull, Mr. G. F. Mair, and Mr. And. Robertson, of the Glasgow and West of Scotland Technical College. The medals were purchased with funds placed at the disposal of Prof. A. H. Sexton, by the West of Scotland Iron and Steel Institute, for the award of prizes for knowledge of the metallurgy of iron and steel.

SCIENTIFIC SERIALS.

American Meteorological Journal, April.—Recent foreign studies of thunderstorms: Switzerland, by R. De C. Ward. The systematic study of thunderstorms has been regularly carried on in Switzerland since 1883, and the results have been published yearly in the *Annalen* of the Central Meteorological Office, but there has been no general summary of the whole data. The general conditions of thunderstorm development in Switzerland are the presence of cyclonic depressions over Northern Europe, high temperatures, southerly winds and secondary depressions over Switzerland.—Note on Croll's glacial theory, by Prof. W. M. Davis. This is a reprint from the *Transactions* of the Edinburgh Geological Society (vol. vii.). The author thinks that the recent studies of Dr. J. Hann, on the origin of cyclones and anti-cyclones, suggest an amendment to Croll's physical explanation of the climate of the glacial period.

Symons's Monthly Meteorological Magazine, April.—Earth temperatures and water-pipes, by the Editor. A table shows the earth temperatures at nineteen stations in various parts of the country, from which it is seen that frost penetrated to 1 foot at eleven stations, to 1 foot 6 inches at three stations, to 2 feet at one station, and nowhere reached 2 feet 6 inches. The fact that ice formed in many pipes buried 2 feet 6 inches, and probably lower, is indisputable, but the explanation is not given of the apparent discordance between the temperature of the water and that shown by the earth thermometers.—The great gale in the Midlands on March 24, by H. A. Boys and A. W. Preston. This appears to have been, locally, one of the heaviest gales for many years. In a park near East Dereham, it is said that 1100 trees were uprooted. The worst part of the hurricane was from 1h. 30m. to 2h. 15m. p.m., and both observers state that the gusts were little short of force 12 of the Beaufort scale, which is equivalent to a velocity of ninety miles in the hour.—Snow from a cloudless sky, by C. L. Prince. The author states that at Crowborough, Sussex, on February 6, some snow crystals and minute spiculae of ice fell at intervals, without any visible cloud.

L'Anthropologie, 1895, tome vi. No. 1.—Note sur l'âge de la pierre en Ukraine, par M. le Baron de Baye. The author collected the materials for this article while residing in the province of Kiev, during the years 1893 and 1894. Little Russia contains three kinds of tumuli of the Stone age: (1) Small

tumuli each containing a single skeleton resting on clay or white sand, and wrapped in birch bark; and in which small stone arrow-heads are found, but no stone implements of large size. (2) Cists, constructed of stone slabs, containing vases filled with ashes and burnt bones, with which are associated polished stone weapons. (3) Tumuli containing skeletons, certain parts of which, particularly the bones of the head, are coloured red. Opinions differ as to whether this colouration has been produced naturally or artificially; but the interments may probably be referred to the end of the Stone age, as only three bronze relics have been found in sixty of these tombs opened by Prof. Antonowitch.—La sculpture en Europe avant les influences géométriques, par M. Salomon Reinach. In this number the author describes and figures relics of the Bronze age, chiefly swords and dagger hilts, many of them of great beauty.—De l'art du potier de terre chez les Néo-Calédoniens, par M. Glaumont. The pots of the New Caledonians are made of clay; they are spheroidal in shape, and have large mouths, the lips of which are turned over and pierced with two, or sometimes four, holes, through which a cord is passed to facilitate transportation from one place to another. They never have feet, but, when used for cooking, are either supported on two or three stones fixed in the ground, or they are suspended from a branch driven obliquely into the earth so as to project over the hearth. The ornamentation is usually very simple, consisting merely of lines, but on one vase from the north of the island, figured by M. Glaumont, there appears a human face in relief.—Les races de l'Ogooué. Notes anthropologiques, par M. Liotard. It is now fully recognised that the population of the Gaboon consists of several peoples of different types, each having special characteristics. M. Liotard has had exceptional opportunities of studying these people, and here records some of the results of his observations.

IN Nos. 1-4 of the *Bullettino* of the *Società Botanica Italiana* for 1895 is an article by Sig. P. Voglino, on the part played by snails and toads in the propagation of certain fungi. In the digestive canal of these animals he found abundance of the spores of species of *Russula*, *Tricholoma*, *Lactarius*, and other species of Agaricini. The faculty of germination of these spores had not been destroyed by passing through the body of the animal. Sig. A. De Bonis contributes a paper on the cleistogamous flowers of *Portulaca grandiflora*, *Salpiglossis sinuata*, and *Lamium amplexicaule*. The production of these flowers he attributes to unfavourable vital conditions, especially sterility of the soil. The remaining articles are chiefly of interest to Italian botanists.

SOCIETIES AND ACADEMIES.

LONDON.

Physical Society, April 26.—Mr. Walter Baily, Vice-President, in the chair.—Prof. S. P. Thompson read a note on a neglected experiment of Ampère. Ampère, in 1822, made an experiment which, if it had been properly followed up, must have led to the discovery of the induction of electric currents nearly ten years before the publication of Faraday's results. While attempting to discover the presence of an electric current in a conductor placed in the neighbourhood of another conductor, in which an electric current was flowing, Ampère made the following experiment. A coil of insulated copper strip was fixed with its plane vertical, and a copper ring was suspended by a fine metal wire, so as to be concentric with the coil, and to lie in the same plane. A bar magnet was so placed that if an electric current was induced in the suspended ring, a deflection would be produced. No such deflection, however, was observed. In 1822, in conjunction with de la Rive, Ampère repeated this experiment, using in place of the bar magnet a powerful horse-shoe magnet. He describes the result in the following words:—"The closed circuit under the influence of the current in the coil, but without any connection with this latter, was attracted and repelled alternately by the magnet, and this experiment would, consequently, leave no doubt as to the production of currents of electricity by induction if one had not suspected the presence of a small quantity of iron in the copper of which the ring was formed." This closing remark shows that they were looking for a permanent deflection. When, however, Faraday's results were published in 1831, Ampère, after again describing the experiment made in 1822 by himself and de la Rive, says:—"As soon as we connected a battery to the terminals of the conductor the ring was attracted