

The Coorgs and the Yeruvans belong to two distinct ethnic types. The latter tribe falls into a group with the Kurumbas, Irulas, Paniyans and Kadirs, who have been so ably studied by Mr. Thurston and are the South Indian cousins of the Kols and Gonds living on the central highlands. In all their physical characters the Coorgs differ from the Yeruvans, and, indeed, they possess more of the superior characteristics which are supposed to indicate an Aryan origin than do many of the South Indian tribes who claim a higher caste position, and fewer signs of aboriginal blood than even the Brahmins of the Madras Presidency. Their almost brachycephalic index of 79.9, however, leaves, the question of their ethnic relationship an unsolved problem.

A. C. H.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

OXFORD.—The Rolleston memorial prize for original research in morphology has been awarded to Mr. Francis J. Cole, Jesus College.

CAMBRIDGE.—The Balfour managers have made grants for zoological research in Africa to Mr. C. Crossland and Mr. J. S. Budgett.

An exhibition of astronomical photographs from the Yerkes and Lick Observatories will be given at the Cavendish Laboratory on May 29 by Sir Robert Ball.

Applications for tables at the Naples and at the Plymouth zoological stations should be addressed to Prof. A. Newton by June 5 next.

The complete degree of M.A. *honoris causa* is to be conferred on Mr. T. H. Middleton, the new professor of agriculture.

Mr. W. B. Hardy and Mr. F. G. Hopkins have been appointed examiners for the Gedge prize in physiology.

The Thurston prize for original research in physiology, pathology or practical medicine, open to members of Gonville and Caius College of not more than fifteen years' standing from matriculation, will be awarded this year. The prize is triennial and amounts to about 54*l.* Applications are to be addressed to the master on or before September 30.

A CONVERSAZIONE will be held at University College, London, on Thursday, June 19. A large number of friends and old students will be present, and exhibits will be arranged in connection with the various departments, to illustrate the work being carried on at the College.

THERE is every likelihood that another University will soon be added to the large number of such institutions at present existing in the German Empire. Frankfort a. M. is the city which is thus to be enriched. It already possesses the Senckenberg's Institute for natural sciences and medicine, and also an academy for the study of social and commercial science. To the former—at which, it may be mentioned, important scientific work is carried on—there has recently been added a laboratory specially constructed for the investigation of cancer. This department is richly endowed, partly, it is said, by the Emperor William, and is placed in the care of an eminent bacteriologist. The academy is very largely attended by foreign as well as German students, America in particular being well represented. And now it is announced that the trustees of the Karl Juegel's bequest have decided to devote the interest on the capital sum of 2,000,000 marks (100,000*l.*) to the erection in Frankfort a. M. of an academy for the study of history, law, philosophy and allied subjects. When this third institution is established, Frankfort will possess practically all the faculties, with the exception of theology, which go to form a University; and therefore the authorities have decided to draw up a Bill which, if passed by Parliament, will unite the three institutes of learning into one University. There is strong reason to suppose that no particular difficulty will be encountered in carrying out this plan, for Frankfort is in many ways eminently suitable for the position of being an University city.

Now that the second reading of the Education Bill has been passed, efforts should be made in Committee to remove the permissive clause, especially in so far as it affects higher education. At present, as Mr. Henry Hobhouse points out in a letter to the *Times*, there is little more than a framework for legislation. "No statutory duty is laid on the local authority to aid

education 'other than elementary,' and no permanent fund is appropriated for this object. The 'whisky money' is not safeguarded, despite the obvious danger that the ratepayers in certain localities will press for compensation out of this fund for the additional burdens necessitated for the purposes of elementary education. Nor are the objects of higher education in any way defined. The intention of the Government apparently is (though it is not expressed in the Bill) to impose on the new authority the provision of evening continuation schools, pupil teachers' centres, and even training colleges. The restrictions of the Technical Instruction Acts on aiding private profit schools and on teaching trades are swept away. In a word, under part ii., as it now stands, it would seem that a local authority may do anything and need do nothing. Surely Parliament ought to give more guidance than this to the new authorities, or there will be great danger that in certain localities most important developments of educational work will be wholly or partially neglected." As the Bill at present stands, there is a danger that the last case of higher education will be worse than the first.

AT the presentation day of the University of London, on May 14, Lord Rosebery was welcomed as the new Chancellor. Principal Rücker read his report upon the work of the University during the past year, and referred to the following points among others. The organisation of the University has been completed by the addition of a new department for University extension and the inspection of schools. Regulations have been passed for the admission of post-graduate students from other Universities to study for the doctorate in London, and it is satisfactory to be able to record that a considerable number of such students are, or are about to be, placed upon the books of the University. Two chairs of chemistry are to be established at University College, one for general chemistry, which will be filled by Prof. Ramsay, the other for organic chemistry. In no subject has the difference between the completeness of English and foreign educational equipment been more marked than in chemistry. Only two or three educational institutions in this country have more than one professor of chemistry, while in Germany even a University of the second-class usually has several professors in that department. It is hoped that the chairs now founded in University College will be the beginning of a great chemical department worthy of London. A very large scheme, which will have an important bearing on the future organisation of the University, has been set on foot in consequence of the munificent offer of the Drapers' Company to give 30,000*l.* in aid of the incorporation of University College in the University. The authorities, both of the University and of the College, have agreed in principle to the main outlines of a plan for incorporation, provided that an initial sum of 110,000*l.* can be raised. There is every reason to hope that this condition will before long be fulfilled. While the University has been engaged in entering into closer relations with the various schools, and in negotiations for the complete absorption of one of them, it has also been undertaking teaching on its own account. All the leading physiologists in London have banded themselves together to give courses of lectures on that subject for advanced and post-graduate students, and Mr. Walter Palmer has generously given a sum of 2000*l.* to enable the experiment to be tried as to whether such lectures would attract an adequate number of students. The University has contributed another 400*l.*, and has also placed a suite of rooms in the University buildings at the disposal of the teachers as laboratories and lecture rooms. To obtain an idea of the research work being done in London, recognised teachers of the University were asked to supply a short statement as to the publications of themselves, their assistants and students during the past twelve months. Nearly six hundred memoirs, papers and minor communications to scientific and literary journals have been reported. As might have been expected from the large number of its members, the medical faculty takes the lead in the number of its publications, somewhat less than half the above total being communications to professional medical societies and journals. Teachers of the University, their assistants and students have made about 220 additions to general scientific literature. They have been the authors, or joint authors, of eleven papers in the *Transactions* of the Royal Society, or of about eighty papers which have appeared in the *Proceedings* of the Royal Society, and in the journals of the Chemical, Linnean, Physiological and other kindred societies. University College heads the list

with a total of about 100 memoirs and papers, while the Polytechnics have contributed about a score. In concluding his report, the Principal remarked: "It is time that London should realise that it is not the want of men, or a dearth of intellectual effort, which has hindered the University of London from taking its place as a great centre of teaching and research. Our needs are organisation, which shall make the results of the work of the teachers, their assistants and students more fruitful and better known as results of which London may be proud, and funds to supply them with the materials for their work."

SCIENTIFIC SERIALS.

American Journal of Science, May.—Notes on living Cycads, by G. R. Wieland. A study of *Zamia floridana*. Particular attention is drawn to the presence on one of the cones of a pinnule of normal form and structure which had grown out from beneath the outer hexagonal tip of one of the upper abortive sporophylls. As in a similar example described by Sir W. T. Thiselton-Dyer, this structure is regarded as a reversion, exhibiting evolutionary stages which may be found in fossilised forms. To speak of these growths as "monstrous cones" is regarded as almost misleading.—On crystals of Croconite from Tasmania, by R. G. Van Name.—Notes on unusual minerals from the Pacific States, by R. W. Turner. Among the phosphates found were pyromorphite, apatite and monazite, the latter occurring in abundance in the Idaho basin.—On the use of the stereographic projection for geographical maps and sailing charts, by S. L. Penfield. A continuation of previous papers on the same subject.—Note on the application of the phase rule to the fusing points of copper, silver and gold, by T. W. Richards. It has been found by Holborn and Day that gold gives a very constant melting point, copper two constant points at 1065° and 1084° C., whilst silver gives no fixed point. It is shown that all these results could have been deduced by the application of the phase rule.—The initiative action of iodine and other oxidisers in the hydrolysis of starch and dextrans, by F. E. Hale.—Note on the possibility of a colloidal state of gases, by C. Barus.—Some glacial remains near Woodstock, Connecticut, by J. W. Eggleston.

American Journal of Mathematics, vol. xxiv, No. 2, April.—L. E. Dickson, on the canonical form of a linear homogeneous transformation in an arbitrary field of rationality. In a previous paper (*A. J.* xxii, p. 121) the author obtained a reduction to a canonical form for transformation in a Galois field; it is here proved that the same process applies when the field is arbitrary.—H. B. Newson, a new theory of collineations and their Lie groups. A geometrical theory of collineation in the plane, independent of Lie's analytical method of transformation-groups.—L. P. Eisenhart, infinitesimal deformation of surfaces. A discussion of the transformation $x' = x + \epsilon x_1$, $y' = y + \epsilon y_1$, $z' = z + \epsilon z_1$, with $dx dx_1 + dy dy_1 + dz dz_1 = 0$, and ϵ a small constant, of which the square is neglected.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, March 6.—"On the Spark Discharge from Metallic Poles in Water." By Sir Norman Lockyer, K.C.B., F.R.S.

In this paper various modifications produced in the spectra of metals by alterations of the conditions under which the substances are volatilised are discussed and new observations made at the Solar Physics Observatory are described. The investigation was undertaken partly in consequence of a suggestion put forward by Dr. Wilsing, of Potsdam, to the effect that certain conditions, viz. the production of spark spectra in liquids, gave rise to the formation of structural peculiarities in the constituent lines which are characteristic of the spectra of new stars.

One of the chief characteristics of the spectra of Novæ is the occurrence of a series of double lines, each consisting of a bright and a dark component, the latter being always situated on the violet or more refrangible side of the bright line and in contact with it. The usual interpretation of this appearance has been to consider the composite spectrum produced by two bodies in relative motion, but the necessary velocity is greatly in excess of

other known cosmical motions. Recent experiments dealing with the spectra of elements under pressure having shown that by this means the wave-lengths of the lines are altered, Dr. Wilsing suggested that if the pressure were sufficiently great, displacements might be obtained of equal magnitude to those observed in the case of new stars. As the direct application of high pressures is attended with difficulties, he utilised the fact that exceedingly high tensions are produced when electric sparks are discharged in liquids.

Using an induction coil, with jar and air break in the secondary circuit, a brilliant discharge is produced in water, giving a very intense continuous spectrum crossed by faint metallic lines. In this way Dr. Wilsing obtained the spectra of iron, nickel, platinum, copper, tin, zinc, cadmium, lead and silver, and from the examination of the photographs he arrived at the conclusion that displacements of lines and double lines occurred which were in every way similar to those in the spectra of Nova Aurigæ, and that therefore, in all probability, pressure is the cause of the duplication and broadening of the lines in the spectra of new stars.

On examining the first few spectra obtained under these special conditions, the appearances presented were so suggestive of many of the well-known effects of reversal that a further inquiry was advisable. It has long been known that in ordinary arc spectra many instances occur in which the absorption line is asymmetrical with respect to the emission line; and reference is made in the paper to communications by the author to the Royal Society more than a quarter of a century ago describing these peculiarities in certain silver and rubidium lines.

The experiments at the Solar Physics Observatory were made first with the large Spottiswoode coil, capable of giving a 42-inch spark in air, this being intensified by the insertion of a large glass-plate-condenser in the secondary circuit, so that the sparks obtained were about 3 mm. long in air and 0.5 mm. in water.

Later a 10-inch coil was used with a smaller condenser in circuit, and about the same sparking conditions. The photographs of the spectrum were taken on a large scale by means of a 6-inch Rowland concave grating of 21.5 feet radius, with 14,438 lines to the inch. The first-order spectrum was employed, arranged to photograph the region from λ 3800 to λ 4800, occupying a length of 18 inches on the plate. Distilled water was used in all cases.

Of the metals examined (iron, silver, lead, copper, zinc and magnesium) only iron, magnesium and zinc showed reversals, and those of zinc were extremely weak. In all cases the lines of the spectrum of the spark in water are much broader than the corresponding lines in the spectrum of the air-spark. From an examination of several plates of different intensity, however, it appeared that the broadening was, for the most part, of similar nature to that observed in the arc spectrum in air when an excess of material is introduced between the poles.

When the cases of non-symmetrical absorption were considered, it was noted that very different appearances were presented according to the exposure of the spectrum. For example, in the best exposed plate of iron, the line at λ 4260.64 is well reversed in the water-spark, with the part of the emission line towards the red several times stronger than the portion on the violet side of the absorption. An even diminution of the whole composite line, as shown by photographs of less exposure, results in the persistence of the less refrangible portion only of the emission line, which alone would suggest the presence of a line greatly displaced towards the red with regard to the original spark line in air. Several of the iron lines show the intermediate stage, where the violet component is on the verge of visibility, and in these cases the appearance is suggestive of a bright line with a dark companion on its more refrangible border. It is important to note, however, that in these cases the absorption line is usually normal with the position of the original line, the bright component being displaced towards the red.

In the water-spark spectrum of copper it is only with difficulty that any existing line spectrum can be distinguished from the intense continuous emission, and the few lines so recorded present the appearance of broad bands, displaced towards the red. The probability of their being produced in the manner suggested, however, is rendered feasible by the fact that, although no actual absorption is visible, their more refrangible edges are fairly sharply defined, while the other edges are quite diffuse.