

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—This week twelve of the larger colleges are holding their entrance scholarship examinations. They are divided into two groups of five and seven colleges respectively. Judging from the number of candidates, which is larger than ever before, there is an unprecedented desire amongst schoolboys to share in the endowments of Cambridge.

The annual dinner of the Cambridge Philosophical Society will take place on Saturday, December 9. It will be held in the hall of Christ's College, and Prof. Marshall Ward will be in the chair.

The regulations for the diploma in mining engineering have been published in the *Reporter* by the special board for physics and chemistry, together with the schedules of the proposed examinations.

The general board of studies has approved Dr. W. L. H. Duckworth, of Jesus College, for the degree of Sc.D.

The special board for biology and geology has adjudged the Walsingham medal for 1905 to Mr. W. S. Perrin, of Gonville and Caius College.

THE new buildings of the Glasgow and West of Scotland Technical College, which when completed will be the largest of the kind in Great Britain, are to be opened by the Marquess of Linlithgow, Secretary for Scotland, on December 21.

WE learn from *Science* that by the will of the late Mr. Joseph E. Gillingham, numerous bequests are made to educational institutions, including 10,000*l.* each to the University of Pennsylvania for the veterinary department, to Haverford College, to Swarthmore College, and to Bryn Mawr College.

THE *British Medical Journal* announces that Prof. Czerny has resigned the chair of surgery in the University of Heidelberg, which he has held since 1877, in order to devote himself entirely to the duties of director of the Institute of Cancer Research. He will be succeeded in the chair of surgery by Prof. Garré, who accepted a call to Breslau after the death of Prof. von Mikulicz.

A FEW months ago Sir Donald Currie offered a sum of 20,000*l.* to Queen's College, Belfast, provided a like sum was contributed by the friends of the college before the end of the present month. The sum of 3000*l.* was required to complete this contribution, and this has now been subscribed by Sir Otto Jaffe, chairman of the executive committee of the better equipment fund of Queen's College. The college will therefore now receive 40,000*l.* toward its better equipment.

At the annual meeting of the court of Liverpool University on November 30, the Pro-Chancellor announced that the university would shortly receive from the executors of the late Mr. J. L. Bowes, of Liverpool, a sum of about 8000*l.*, to be divided between the departments of modern languages and chemistry. A resolution was adopted to the effect that the decision of the court as to the formation of a school of military instruction be deferred until the court is in possession of fuller information as to the need of such a proposed school, and that meanwhile the council be requested to take no further steps towards its establishment.

THE new techno-chemical institute of the Charlottenburg Technical High School was opened on November 25 in the presence of a distinguished scientific audience, which included the Imperial Minister of Education, Dr. Studt, accompanied by Geh. Rat. Naumann and Freiherr von Thielmann, Profs. Emil Fischer, van 't Hoff, Landolt, Nernst, Beckmann, Will, von Knorre, Liebermann, and the following representatives of chemical industries:—Prof. Duisberg, Prof. Lepsius, Dr. Oppenheim, Dr. Knietsch, Dr. von Martius, Dr. Kunheim Kommerzienrat Brunnck, Messrs. Birkeland, Eyde, Pettersson, and others. The new institute is a fine five-storeyed building, excellently equipped with the best of modern chemical laboratory arrangements and apparatus. The director, Prof. Dr. O. N. Witt, in his opening address, after dwelling upon the history and the aim of this, the newest addition

to the Charlottenburg High School, detailed Birkeland and Eyde's method for the fixation of atmospheric nitrogen, and illustrated his account by an experiment carried out on a large scale. After the address the Educational Minister, Dr. Studt, decorated Prof. Witt with the Order of the Red Eagle, third class, and the architect, Dr. Körber, with the Order of the Red Eagle, fourth class.

A DEPUTATION from colleges connected with the teaching of agriculture who desired additional grants for research and higher education in agricultural science from the Imperial Exchequer was received by Sir Thomas Elliott at the Board of Agriculture on Tuesday. Sir Isambard Owen, the principal of the Armstrong College, Newcastle-upon-Tyne, stated the case on behalf of the deputation. It was urged that higher agricultural education was a public necessity, the cost of which could not be reasonably expected to be met in a very large proportion from local sources, and that they were amply justified in asking for State assistance. Sir Thomas Elliott, in reply, said that the Treasury had not hitherto met the demands of agriculturists illiberally altogether. Fifteen years ago the grant was 4500*l.*, and now it was 10,550*l.* Of course, it was difficult to get increased local contributions owing to the increase of educational burdens upon local authorities. He quite agreed with the deputation that there was great room for the development of scientific research. There were great problems to be solved of an economic character which would produce results far beyond the cost of investigation or experiments. He thought the time had come for the coordination of the various agencies for agricultural research in this country. The Board had the fullest sympathy with the work which the colleges had done, and he hoped it would be able in some measure to meet their aspirations.

At the winter session last week the General Medical Council considered the report of the education committee on the question whether the adoption of the following resolutions would not help to secure the attainment of the object which the council had in view in instituting the five years' curriculum:—“(1) That the preliminary scientific examination in physics, biology, and chemistry should be passed before the student begins the qualifying study of anatomy and physiology; (2) that before being admitted to the final examination the student should produce evidence that he has devoted the last year of his curriculum exclusively to practical and clinical work and study.” The committee reported that the main effect of the proposed change would be seriously to lengthen the curriculum and thus to render entrance to the profession more difficult and expensive. At present the curriculum is far more often one of six or even more years—and this even in the case of industrious students—than one of five. With regard to the second resolution, the committee held that distinct evidence of clinical and practical study in the fifth year should be produced by the student, showing that his time in that period of his curriculum had been mainly occupied in such work, but they would not suggest any regulation which should absolutely limit the work of each session of the period of professional study. Dissatisfaction was, however, expressed with the committee's report, and the subject is to be re-considered. The two following questions were referred to the education committee to be investigated and reported upon:—(1) As to the desirability of transferring the preliminary science subjects of physics, biology, and chemistry from the curriculum of medical studies to a stage preliminary to the commencement of the curriculum; and (2) as to the advisability of requiring a five years' period of study, even after removing from the curriculum these preliminary science subjects.

THE report of the Board of Education for the year 1904-5 has now been published. After a general review of the work of the Board, detailed particulars of the following classes of schools are given in order:—public elementary schools, secondary schools and technical institutions, evening schools and schools of art. In the section dealing with secondary schools, the report lays it down that, “although it would be inexpedient and unjust to withdraw approval, and the support hitherto given, from those schools which have already been organised with a curriculum which is specialised from the first on the side of applied science, if

it can be shown that such a course is suitable to the circumstances of the locality in which the school is placed, yet it is not the intention of the Board to sanction the adoption of this special course in any fresh school." This decision is a little difficult to understand. If it can be shown at present that some schools, in which science takes a specially prominent part, are suitable to the locality in which the school is placed, it would appear reasonable to suppose that other localities in the future may demonstrate the need for a precisely similar type of school, and yet the Board has decided beforehand that—such demonstration notwithstanding—there shall be no more such schools. Experience has shown that the so-called "school of science" is capable of supplying just the training boys from elementary schools in manufacturing centres require to prepare them for their work in life, and it is to be hoped in these cases that every encouragement will be given to a definite course of study in science in the schools. All educationists of experience agree with the Board's opinion, expressed in subsequent paragraphs of the report, that premature specialisation in the work of ordinary secondary schools is to be discouraged, and that a well balanced curriculum, comprising literary and practical subjects taught in a scientific manner, is of prime importance; but such agreement does not preclude the possibility of applying special remedies to special needs. It is satisfactory to find that the report contains abundant evidence of a continued improvement in the work of secondary schools and technical institutions.

SOCIETIES AND ACADEMIES.

LONDON.

Royal Society, November 16.—"The Transit of Ions in the Electric Arc." By A. A. Campbell **Swinton**. Communicated by the Hon. C. A. Parsons, C.B., F.R.S.

The paper describes an experiment designed to show that in the electric arc the positive and negative electrodes emit carriers or ions which are respectively positively and negatively charged, and, after travelling across the arc, bombard the opposite electrode. The method adopted resembles that employed by Perrin to prove the negative charge carried by cathode rays. A small hole was pierced axially through one of the carbon electrodes, and immediately behind this aperture was fixed an insulated Faraday cylinder of brass which had its aperture in line with, and facing the aperture in, the electrode. A galvanometer connecting the insulated cylinder and the pierced electrode measured any difference of potential between the two. The second electrode was an ordinary carbon pencil, and as this was made positive or negative it was found that positive or negative charges respectively were communicated to the insulated Faraday cylinder, provided the arc covered the aperture in the pierced electrode, but not otherwise. These results, which confirm the theory as enunciated above, were obtained both in air at atmospheric pressure and also *in vacuo* up to what could be obtained with a mechanical air pump. The galvanometer deflections increased considerably with the degree of exhaustion, and at any given degree a much larger deflection was obtained when the second electrode was made negative and the cylinder was being charged negatively than when the contrary was the case, this corresponding with the known fact that negative ions have a higher velocity than have positive ions.

Geological Society, November 8.—Dr. J. E. Marr, F.R.S., president, in the chair.—The coast-ledges in the south-west of the Cape Colony: Prof. E. H. L. **Schwarz**. The author compares the shelves of Cape Colony with those described on the European and American sides of the North Atlantic, and he places the "absolute base-level of erosion" at 12,000 feet in North America, 8000 feet in Europe, and 1200 feet in South Africa. With these varying heights he correlates the topography of the bordering continents—the sharp divides, open river-valleys, permanent rivers and deltas, of Europe and America, where the movement has been downward and has almost reached bottom, in contrast with the flat undenuded divides, the steep, narrow gorges, the waterfalls, and the rocky river-gates, of South Africa, which is on the upgrade and prob-

ably near the top.—The Glacial period in Aberdeenshire and the southern border of the Moray Firth: T. F. **Jamieson**. One of the most interesting features in the glacial geology of Aberdeenshire is the Red Clay found along the eastern coast of the county. The purer masses of clay seem to have formed in a sheet of water lying in front of the ice, between it and the land, during the retreat of the Aberdeenshire ice, and at a time when the coast was submerged beneath water to a level exceeding 300 feet above the present coast-line. Evidence of the northward motion of the ice is given from striæ, the transport and removal of flints, and the bending-over of the edges of folia of gneiss. The Red Clay is underlain by a Grey Clay, and sometimes covered by a similar one. The author has recently discovered remains of a still older, dark indigo in colour, and containing small fragments of sea-shells. On the southern border of the Moray Firth the author gives examples of glacial marking on the rocks, and refers to the transport of boulders, including a huge mass of Oolitic rocks 40 feet thick, a mass of clay once considered to be an outlier of Lias, "pipe-rock," and the fossiliferous Greensand débris at Moresate, now considered to have been transported by ice.

November 22.—Dr. J. E. Marr, F.R.S., president, in the chair.—On a new specimen of the chimæroid fish *Myriacanthus paradoxus*, Ag., from the Lower Lias of Lyme Regis (Dorset): Dr. A. S. **Woodward**. The author, having proved that the dorsal fin-spine of the so-called *Ischyodus orthorhinus* is identical with an ichthyodorulite which has been named *Myriacanthus granulosus*, inferred that the larger ichthyodorulite *M. paradoxus* belonged to the same fish as the larger dentition named *Prognathodus Guentheri* by Egerton. This question has been settled by the discovery by Mr. S. Curtis, in the Lower Lias of Black Ven, of a dorsal fin-spine in direct connection with a mass of decayed cartilage, dermal plates, and teeth. The new fossil warrants the conclusion that *Myriacanthus* is a chimæroid, closely similar to the Upper Jurassic *Chimæropsis*, with (1) a median chisel-shaped tooth in front of the lower jaw; (2) a few tuberculated dermal plates on the head; and (3) a tuberculated dorsal fin-spine. In these respects it differs from all other known chimæroids—even from the comparatively primitive types which have been discovered during recent years in the Japanese seas. The *Myriacanthidæ*, in fact, have still no nearer ally than *Callorhynchus*, with which Egerton originally compared his so-called *Ischyodus orthorhinus*.—The rocks of the cataracts of the River Madeira and the adjoining portions of the Beni and Mamoré: Dr. J. W. **Evans**. The crystalline rocks of the cataracts of the River Madeira and the lower waters of its tributaries are part of a ridge with a north-westerly and south-easterly strike, similar to that of the Andes in the same latitudes. This strike is especially prevalent in equatorial regions. With the exception of comparatively recent alluvial deposits and a few pebbles of chert, pronounced by Dr. G. J. Hinde to be of marine origin, but uncertain date, only crystalline rocks are met with in the falls. They all appear to be igneous, and are mostly massive in character, though some dyke-rocks occur. In places they are typical gneisses, and they are often banded, but in some cases they show no signs of foliation. The prevailing type is acid, with a considerable proportion of alkalis, especially soda; but some of the rocks are distinctly basic in character.—The Doncaster earthquake of April 23, 1905: Dr. Charles **Davison**. The Doncaster earthquake of 1905 was a twin, with its principal epicentre half a mile north of Bawtry, and the other about 4 miles east of Crowle and close to the centre of the disturbed area of the Hesse earthquake of April 13, 1902. The distance between the two epicentres is about 17 miles. The disturbed area contains about 17,000 square miles, including the whole of the counties of Lincoln, Nottingham, Derby, Stafford, Leicester, and Rutland, the greater part of Yorkshire, and portions of Lancashire, Cheshire, Shropshire, Worcestershire, Warwickshire, Northamptonshire, Cambridgeshire, and Norfolk. The originating fault runs from about E. 38° N. to W. 38° S., and appears to be nearly vertical within the south-western focus and inclined to the south-east in the north-eastern focus. The first and stronger movement took place within the south-western focus. A twin-earthquake