

their own people to bring that education up to something like the level which has been attained in those countries. And the Associated Chambers of Commerce the other day presented a memorial, a most important memorial, to the Government urging upon them that greater attention should be paid by the educational departments of the State, not to art and scientific instruction only, but to the study of foreign languages and other subjects indispensable to the successful prosecution of a commercial career. And therefore I say it is not educational enthusiasts only, but it is practical and far-headed men of business who are beginning to realise the absolute necessity of bringing up our education somewhere near, at all events, to the levels which have been attained in other countries.

ORGANISATION OF SECONDARY EDUCATION.

I have not the smallest desire to see our secondary education modelled upon one uniform pattern. I believe that we require great variety and great freedom, but I do think that it would be of advantage if both central and local organisations existed with which these private institutions might place themselves in voluntary, but, at the same time, in close connection—organisations which, by means, perhaps, of inspection, by their guidance, and by their counsel—might enable them so to organise themselves, so to co-relate themselves, as to render the instruction which they may give more valuable to the public. These are, of course, observations of a very general character, which, if they have any substance, apply equally to schools in every part of the country. Speaking of this particular district—of your own schools—I cannot help thinking that it might be of great advantage, both to them and to the community of Eastbourne, if, under the county educational authority or under your borough educational authority—there ought not to be any jealousy between different bodies of that kind—there could be established in this town of Eastbourne a scientific and technical institute, which might be of great value to the inhabitants of Eastbourne itself and also of great assistance to those educational establishments which are so numerous amongst you, and which might make use of such establishments as part of their educational course.

PRIZE SUBJECTS OF THE PARIS ACADEMY OF SCIENCES.

THE *Comptes rendus* of the Paris Academy of Sciences, for January 10, contains the list of subjects proposed for the various prizes offered by the Academy for 1898 and three succeeding years.

For the year 1898, the subject for the Grand Prize of the Mathematical Sciences is to examine and extend the part played by divergent series in analysis; for the Bordin Prize (3000 fr.), to study the questions relating to the determination, properties, and applications of systems of orthogonal curvilinear coordinates of n variables, indicating especially the degree of generality of these systems; the Francœur Prize (1000 fr.) and Poncelet Prize (2000 fr.), for the most useful work in the field of pure or applied mathematics. In Mechanics, the Extraordinary Prize of 6000 fr., for progress in any direction calculated to increase the efficiency of the French naval forces; the Montyon Prize (700 fr.), for inventing or improving instruments useful to the progress of agriculture, the mechanical arts or sciences; the Plumey Prize (2500 fr.), for improvements in steam engines, or any other invention contributing to the progress of steam navigation; the Fourneryon Prize (500 fr.), for the theory of the motion of bicycles, discussing more especially the conditions of stability of both rectilinear and curved motion on a horizontal or inclined plane.

In Astronomy, the Lalande Prize (540 fr.), for the most interesting observation, or the work or memoir most useful to the progress of astronomy; the Damoiseau Prize (1500 fr.), for an exposition of the theory of the perturbations of Hyperion, the satellite of Saturn, taking account principally of the action of Titan, comparing the observations with the theory, and hence deducing the mass of Titan; the Valz Prize (460 fr.), for the most interesting astronomical observation made during the current year; the Janssen Prize (a gold medal), for discoveries in physical astronomy.

In Statistics, the Montyon Prize (500 fr.), for questions relating to French statistics; and in Chemistry, the Jecker Prize (10,000 fr.), for work in organic chemistry.

In Mineralogy and Geology, the Vaillant Prize (4000 fr.), for a work discussing and making known the indications furnished

by the microscopical study of sedimentary rocks (particularly secondary and tertiary) from the point of view of their genesis and of the modifications which they have undergone since their deposit in structure and composition, organised bodies being included.

In Botany, the Barbier Prize (2000 fr.), for discoveries bearing upon the art of healing; the Desmazières Prize (1600 fr.), for the best study of Cryptogams; the Montagne Prizes (1000 fr. and 500 fr.), for memoirs bearing on the anatomy, physiology, and development of the lower Cryptogams; the De la Fons-Melicocq (900 fr.), for botanical work on the North of France; and the Thore Prize (200 fr.) to the author of the best work on the cellular Cryptogams of Europe.

In Anatomy and Zoology, the Savigny Prize (975 fr.), for the assistance of young travelling zoologists, not receiving Governmental support, who have specially occupied themselves with the invertebrate fauna of Egypt and Syria.

In Medicine and Surgery, a Montyon Prize for discoveries or inventions bearing on medicine or surgery; the Barbier Prize (2000 fr.), for the most valuable discovery in relation to the art of healing (surgery, medicine, pharmacy or botany); the Bréant Prize (100,000 fr.), for a discovery leading to the complete suppression of Asiatic cholera; the Godard Prize (1000 fr.), for the best memoir on the anatomy, physiology, and pathology of the genito-urinary organs; also the Bellion (1400 fr.); Mège Lallemand (1800 fr.), and Baron Larrey Prizes.

In Physiology, a Montyon Prize (750 fr.); the Pourat Prize (1400 fr.), for a memoir on the motor nerves of the stomach, and the Philipeaux Prize (890 fr.).

In Physical Geography, the Gay Prize (2500 fr.), for a comparison between the marine flora of the Bay of Biscay with that of neighbouring regions and of the Mediterranean; also to see if the fauna and flora lead to similar conclusions. Other general prizes offered are the Arago Medal, the Montyon Prize (unhealthy trades), the Trémont Prize (1100 fr.), the Gegner Prize (4000 fr.), the Delalande-Guérineau Prize (1000 fr.), the Jérôme Ponti Prize (3500 fr.), the Leconte Prize (50,000 fr.), for a new and important discovery in mathematics, physics, chemistry, natural history, or medical science; the Tchiatcheff Prize (3000 fr.), for exploration of the lesser-known portions of Asia; the Houlléviqgue Prize, the Cahours Prize (3000 fr.), for the assistance of young chemists of promise; the Saintour Prize (3000 fr.), the Kastner-Boursault Prize (2000 fr.), for the best work on the applications of electricity in the arts, industry, and commerce; and the Estrade-Delercos Prize (8000 fr.).

Of these prizes, those of Montagne and Delalande-Guérineau are expressly restricted to Frenchmen, whilst the Lalande, La Caze, Delesse, Desmazières, Tchiatcheff, and Leconte Prizes are awarded without distinction of nationality.

MR. CAVENDISH ON HIS JOURNEY TO LAKE RUDOLF.

ON Monday last, Mr. H. S. H. Cavendish described his recent journey in East Africa before the Royal Geographical Society. Accompanied by Lieut. H. Andrew, Mr. Cavendish left Berbera on September 5, 1896, and proceeded in a southerly direction to Lugh, on the Juba River, afterwards striking westwards up the Dau. Here it proved very difficult to get into communication with the natives, as the caravan was at first taken for an Abyssinian force. The country of the Boran Gallas, with whom Dr. Donaldson Smith had so much trouble, was, however, soon reached. Mr. Cavendish gave some interesting details respecting this tribe, which he found most friendly, and anxious to be placed under British protection. Whilst in the Boran country the travellers were able to wander about at will without escort. At Egder, in about lat. 4° N., long. 39° E., Dr. Donaldson Smith's route was left, and the caravan made direct for Lake Stefanie, passing a remarkable crater with a lake at the bottom, from which salt is obtained. At the south end of Lake Stefanie a large outcrop of coal was discovered, which had evidently been laid bare by the action of the water. It was in this neighbourhood that Mr. Cavendish had an adventure with an elephant which well-nigh proved fatal. Some valuable information was collected with regard to the tribes on the western side of the lake, the principal of which are the Wanderobo (allied to the Borans), the Harbora, Hamerkoke (nomads), Galubba. Striking across to the north end of Lake Rudolf, the travellers reached the country of the Reshiat or Darsonich, a race of traders, but, like other tribes of the

country, almost entirely unclothed. A remarkable weapon in use among them is a kind of knife-bracelet, which is covered with a sheath, except during a fight.

The two Europeans now separated, Mr. Cavendish proceeding northwards to explore the river flowing into the north end of Lake Rudolf, whilst Lieut. Andrew marched down the east side of the lake. Like Captain Böttego, Mr. Cavendish is confident that the river, which he followed up for some distance, is identical with the Omo of travellers in the south of Abyssinia. The Legumi and Murle, who dwell on its banks, wear caps of human hair, into which ostrich feathers are stuck to denote the number of men killed by the wearer. The Murle also use the wrist-knife above described, as well as a kind of battle-axe with a wooden blade, covered with a tightly-stretched skin. Crossing the Omo, Mr. Cavendish proceeded southwards to the country of the Turkana on the west of Lake Rudolf, which had previously been entered by no travellers except the members of Böttego's expedition. Mount Lubur, an extinct volcano, was here ascended. The crossing of a sort of neutral zone at the border of the Turkana country is taken as a declaration of war, and the caravan was in consequence continually harassed by attacks from this warlike people. They are in the habit of making night attacks, and it was only by camping each night on spits of sand running out into the lake that these were successfully resisted. Finally friendly relations were established, and the Turkana guided the party through the difficult mountainous country towards the south. At the south end of Lake Rudolf Mr. Cavendish found that the Teleki volcano had entirely disappeared, the Ligob who dwelt in its neighbourhood telling him that, six months before, the lake had overflowed, and as the waters rushed towards the mountain there was a great explosion, since which a lava-plain has taken the place of the volcano, while a new crater has opened about three miles further south. The whole country seems to show signs of recent volcanic activity, for on the further march to the south, the caravan being once more united, a new lake was discovered containing a smouldering volcano, near which the water was quite hot to the touch. Where the water had dried up, the lake-bed was of black mud, hard on the surface, but hot and liquid below. Beyond this the country was exceedingly difficult, and water was scarce; but the caravan finally reached Lake Baringo, and thence made its way through known country to the east coast.

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—Dr. E. W. Hobson, F.R.S., has been appointed a Governor of Derby School.

The original researches of Mr. J. A. McClelland, advanced student of Trinity College, have been approved by the Special Board for Physics and Chemistry as a qualification for the B.A. degree. Mr. McClelland's papers refer to work on the kathode, Lenard, and Röntgen rays.

Eighteen additional freshmen, including one advanced student, were matriculated on January 28.

MR. W. R. LANG has been appointed lecturer on organic chemistry at Glasgow University.

MR. PERCY A. HILLHOUSE has been appointed professor of naval architecture in the Imperial University, Tokio.

THE Cameron Prize of the University of Edinburgh, open each year to any one who in the preceding five years has made any "highly important and valuable additions to practical therapeutics," has (says the *British Medical Journal*) been awarded to Prof. T. R. Fraser, F.R.S., in recognition of his researches and practical therapeutic observations in connection with strophanthus.

THE fifth annual meeting of the Association of Technical Institutions was held on Friday last. Sir Bernhard Samuelson, Bart., who was elected president of the Association for the year 1898, delivered an address on the need of organised technical instruction. Resolutions were passed in favour of a system of examination and diplomas suitable more especially for day students who aspire to take leading positions in the various technical industries; and urging upon the Department of Science and Art the necessity of modifying the recent circular respecting the proportion of students who continue their studies in Schools of Science.

THE report of the Board of Agriculture on the distribution of the Parliamentary grant in aid of agricultural education in Great Britain during the year 1896-7 shows that sums amounting to a total of 6950*l.* were distributed in specific grants to fourteen institutions as follows:—Durham College of Science, Newcastle-on-Tyne, 1000*l.*; University College of North Wales, Bangor, 800*l.*; Yorkshire College, Leeds, 800*l.*; University College of Wales, Aberystwyth, 800*l.*; Reading University Extension College, 800*l.*; Nottingham University College, 600*l.*; Cambridge and Counties Agricultural Education Committee, 500*l.*; South-Eastern Agricultural College, Wye, 400*l.*; Eastern Counties Dairy Institute, Ipswich, 300*l.*; British Dairy Institute, Reading, 300*l.*; Bath and West and Southern Counties Society, 300*l.*; Royal Botanic Garden, Edinburgh, 150*l.*; Highland and Agricultural Society, 100*l.*; Agricultural Research Association, Aberdeen, 100*l.* The *Record of Technical and Secondary Education* states that in addition to the distribution of these sums, the Board have also undertaken the inspection of the agricultural work of the institutions and bodies assisted, as well as that of seven County Councils. A valuable feature of the report is the detailed information given regarding the agricultural instruction provided by the English and Welsh County Councils. From statistics compiled from this Return, it appears that a total sum of over 80,000*l.* (including a proportion of capital expenditure) was devoted during 1896-7 to agricultural instruction by sixty English and Welsh County Councils. Dairy instruction was taught in all but eight English and Welsh counties, and the manual processes of agriculture in about one-half the English counties.

AT the meeting of the London County Council on Tuesday, the Technical Education Board submitted an estimate of the amount that should be appropriated for technical education during the year 1898-99. The sum of 150,000*l.* was granted for the year 1896-97, and of this a balance of 13,384*l.* was unexpended. For the year ending March 31, 1899, it is estimated that 170,000*l.* will be required, in addition to this balance. The amount of the estimated expenditure is arrived at as follows:—For technical departments of polytechnics, 35,900*l.*; for various technical institutes, 36,000*l.*; for technical departments of public secondary day schools and allowance for fees, books, &c., of the Board's county scholars, 28,500*l.*; for higher education, 5500*l.*; for county scholarships, 31,025*l.*; for teaching in art, science, and technology and manual instruction, 27,800*l.*; for domestic economy, 7350*l.*; for commercial subjects, 3300*l.*; for museums (chiefly art examples), 1500*l.*; and for expenses of administration, 7300*l.* In a tabular statement the Board gives since the year 1890 the amount of the Exchequer contribution from beer and spirit duties, out of which the grant for technical education is made. From this it appears that the amount now asked for technical education, 170,000*l.*, will absorb almost the whole of the amount which the Council will receive from the beer and spirit duties, which is estimated for the ensuing year at 177,000*l.* The Council's grants towards technical education in London have gradually increased from the year 1892-93, when the grant was only 29,000*l.*, up to the present year, when the grant was 150,000*l.* For the ensuing year an additional 20,000*l.* is asked for.

ON Thursday last, at Grocers' Hall, the Speaker distributed the awards gained by students attending the technical colleges and schools which have been established by the City and Guilds of London Institute, under the direct management of its executive committee and maintained out of the funds of the institute contributed by the Corporation and Livery companies of the City of London. In the course of an address to the company, the speaker expressed surprise that more Englishmen did not come forward to fill in their own country posts in which a knowledge of chemistry was required. He confessed that, speaking as an outsider, he did not understand why it was that Germany was not only able to manufacture all the chemists she needed herself, but also to export to different parts of the world fifty chemists for every one who was exported by this country. He ventured to suggest, speaking in all humility, that there was a large field in this direction for the youth of England, if scientifically inclined. He thought it probable that most of those present who were practically acquainted with technical education would agree with him that they had not done nearly as much in this matter—and chemistry was an example of it—as they ought to do and would have to do. A great deal had been done in the past ten or twenty years; but