

### UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

THE Government of the French Republic has, by a decree of the Minister of Public Instruction and Fine Arts, conferred upon Prof. J. Wertheimer, the principal of the Merchant Venturers' Technical College, Bristol, the order of Officier d'Académie.

DR. DONALD MACALISTER, fellow and director of medical studies of St. John's College, Cambridge, Linacre lecturer of physic, and president of the General Medical Council, has been appointed principal of the University of Glasgow in succession to the late Principal Story.

M. LIARD, Vice-Rector of the University of Paris, has informed the Paris Municipal Council that it is the intention of the University of London to return the visit made to it last year by the Paris University. The representatives of the University of London are to arrive in Paris in the middle of May, and a luncheon will be given at the Hôtel de Ville to the members of both universities.

MR. F. DARWIN has been nominated to represent the University of Cambridge at the celebration of the two-hundredth anniversary of the birth of Linnæus, to be held at Upsala in May. Dr. Hill, Dr. A. Caldecott, and Mr. D. H. S. Cranage have been nominated to represent the University at a federal conference on education, convened by the federal council of the League of the Empire, to be held in London on May 24 to June 1.

It would be difficult to find a more useful book for parents selecting a school for their sons than the "Public School Year-book" (Swan Sonnenschein and Co., Ltd., price 3s. 6d. net), the eighteenth issue of which has just appeared. Full particulars of all the schools represented at the headmasters' conference are given, and these are supplemented by much useful information about preparatory schools, the entrance to the professions, public examinations, and kindred subjects.

WE have received from Washington copies of the reports of the librarian of Congress and of the superintendent of the library building and grounds for the fiscal year ending June 30, 1906. The amount expended on the library during 1906, exclusive of sums spent on printing and binding, reached 117,500*l.* During the same year the net accessions to the library were nearly 35,000. The librarian's report gives interesting particulars of numerous bequests and gifts to the library and information concerning the complete system of cataloguing which has been elaborated. The second report deals with such matters as the cost of care and maintenance.

HIGHER education in the United States continues to benefit by the generosity of public-spirited American men of wealth. We learn from *Science* that an announcement has been made that Mr. J. D. Rockefeller will endow the University of Chicago with 600,000*l.* to maintain a pension fund, the institution having been excluded from the scope of the Carnegie foundation, owing to its denominational control. It is also reported that Mr. Rockefeller has agreed to give 400,000*l.* for the endowment of a university for Louisville, provided a similar amount is raised by those interested in the new institution. The chair of chemistry at the University of Pennsylvania has been anonymously endowed by a gift of 20,000*l.* Mr. S. W. Bowne has given to Syracuse University a chemical laboratory, costing 20,000*l.* Finally, the packing interests of Chicago have offered to the University of Illinois the sum of 50,000*l.* with which to establish in that city a veterinary college.

MR. J. D. ROCKEFELLER has given the General Education Board, which is designed to help educational institutions, 6,400,000*l.* for the purpose of assisting the work of the Board throughout the country. Referring to this announcement, the New York correspondent of the *Times* remarks that the donation is believed to be the largest single sum ever given for a philanthropic purpose. So far as is known, Mr. Rockefeller has up to the present made donations for educational purposes amounting to a total of 18,000,000*l.*, and he is believed to have given anonymously 6,000,000*l.* more. The General Education Board will now be in a position to aid educational institutions all over the

United States. No State universities share in its gifts, and in every case the Board endeavours to encourage institutions which may eventually come to be self-supporting rather than those dependent on charity for their maintenance.

THE report of the higher education subcommittee of the London County Council, which was adopted at a recent meeting of the Council, recommends that certain grants be made to the governors of fifty secondary schools. The total amount available out of the current estimates is 120,000*l.* It is estimated that 11,945*l.* will be required in respect of the building grants voted in March, 1906. The proposals amount to 74,825*l.*, of which 2355*l.* is for equipment. Last year the corresponding figures were 66,745*l.*, of which 3895*l.* was for equipment. This represents a gross increase of 8080*l.*, of which about 6000*l.* may be taken as the cost of the education of the increased number of the Council's scholars. To make the comparison accurate, however, this sum should be increased by 1789*l.*, the amount of the grants paid last year, which for different reasons are not included in this year's list. The net increase in aid, apart from the cost of the Council's scholars, is therefore under 4000*l.*

DR. M. W. TRAVERS, F.R.S., who is at present making a tour in India in connection with the Tata Research Institute, of which he is the first director, has, the *Pioneer Mail* reports, expressed disappointment at the standard required for degrees in science at Indian universities. In chemistry the courses are defective, Dr. Travers finds; few of the universities introduce quantitative practical courses, and the theoretical courses are hardly up to the intermediate standard of English universities. The lack of suitable students among bachelors of science will be a drawback to research in the Tata Institute, and may lead to a difficult situation. Indian universities have hitherto confined their research courses to masters of arts or science who have received two years' special training after graduating. The total number of research students in all the Indian universities is probably considerably less than twenty. It is consequently feared that there may be a difficulty in supplying the Tata Institute with properly qualified students.

THE report of the Departmental Committee on Educational Rates, appointed in October, 1905, has been published as a Blue-book (Cd. 3313). An important section of the report deals with expenditure on higher education—in this connection an elastic term including all forms of instruction other than elementary. A summary, relating to the rates required in 1905-6 by county and county borough councils for the purposes of higher education, shows that the councils of nineteen counties raised no rates for higher education at all, and that seven county borough councils had the same unenviable notoriety. Of the forty-three counties levying such a rate, sixteen required something under 1*d.* in the pound, nineteen under 2*d.*, seven (including the London County Council) less than 3*d.*, and one between 3*d.* and 4*d.* Of sixty-five councils of county boroughs, one (West Ham) required more than 5*d.* in the pound, three more than 4*d.* but less than 5*d.*; nine more than 3*d.* but less than 4*d.*, six more than 2*d.* but less than 3*d.*, thirty-four more than 1*d.* but less than 2*d.*, and twelve less than 1*d.* The sum of 2,477,327*l.* was devoted in 1904-5 to higher education of the kind explained, and of this amount 31.5 per cent. was raised by rates, 20.6 per cent. was received from the Board of Education, and 38.1 per cent. was allocated from Exchequer contributions. The report states, as, indeed, is much to be hoped, that the expenditure of local authorities in respect of higher education may be expected to continue to increase in amount. Altogether, the Blue-book provides an abundance of useful information.

THE fourteenth annual general meeting of the Association of Technical Institutions was held on February 8 and 9 in London. The meeting was preceded by a luncheon given to the members of the association by the Clothworkers' Company. Sir Horace Plunkett, the president for 1907, delivered an address, during which he said that among the many admitted defects of our educational system there is one most hopeful sign—the evening technical institutes, of which we may be justly proud. It is true

that their very success emphasises the defectiveness of the present condition of things in regard to higher technical training. This condition is due to the difficulty of securing attendance at day courses in our many excellent institutions. There has been some improvement in this respect, but the number of students taking systematic higher courses is lamentably small. Sir Horace Plunkett is convinced that the tendency to bring the instruction in the evening technical institutes into the closest relationship with industrial requirements will go far to secure what is admittedly one of the most important desiderata to-day—the cooperation of employers and workers. It must be frankly recognised that the *raison d'être* of the evening technical school is industrial efficiency, that the apprenticeship system under modern industrial conditions must fail to educate the young worker effectively, and that the evening technical school must now undertake some of the teaching previously conferred in the workshop. The great usefulness of American technical institutions is due in a large measure to the individual interest taken in the students, not only during their attendance at the school, but during their subsequent career. The following papers were read and discussed:—The cooperation of adjacent authorities in the supply of higher technical education, by Principal A. F. Hogg, of West Ham, and monotechic institutions, by Mr. Charles Harrap, of the St. Bride Foundation Institute, London.

### SOCIETIES AND ACADEMIES.

LONDON.

**Royal Society,** November 1, 1906.—“The Nitrification of Sewage.” By Dr. G. Reid. Communicated by Prof. Gotch, F.R.S.

The author gives an account of certain observations he recently made which point to the conclusion that by using fine-grain filter particles the depth of percolating filters may be greatly reduced. A filter composed of  $\frac{1}{2}$ -inch medium, which had been in constant use for three years, was tapped at four depths in such a way that samples could be collected to show the degree of purification effected at 1-foot intervals downwards, and the conclusions arrived at are based upon the analysis of numerous samples collected during a period of about twelve months, the delivery to the filter being constant throughout and at a rate of 200 gallons per superficial yard. As regards the organic matter, both in suspension and solution in the septic tank effluent applied to the filter, the author found that the work of purification was effected at a depth of 1 foot from the surface, leaving very little work for the deeper layers to accomplish.

The following are the means of the more important figures of analyses:—

	Parts per 100,000				
	Septic Tank	1 ft.	2 ft.	3 ft.	4 ft.
Solids in Suspension	7.60	0.25	0.09	0.14	0.00
Free Ammonia ...	1.716	0.036	0.020	0.009	0.043
Albuminoid Ammonia	0.340	0.052	0.037	0.031	0.027
Oxygen absorbed in 4 hours at 80°F. ...	2.184	0.328	0.286	0.244	0.259
Nitrous Nitrogen ...	0.000	0.003	0.007	0.008	0.002
Nitric Nitrogen ...	0.00	2.07	1.99	1.85	1.99

As regards the carbonaceous matter, the oxidation appeared to be equally rapid, for not only did the reduction in oxygen absorbed reach practically its maximum at 1 foot depth, but the air collected from the filter at different depths gave the following amounts of CO<sub>2</sub> per 1000:—1 foot, 19.5; 2 feet, 21.5; 3 feet, 20.0; 4 feet, 20.0. As regards the suspended organic solids, they are practically all retained within the first foot, where liquefaction is effected (it is suggested by aerobic organisms). In confirmation of this, the following mean figures of percentage loss on ignition of filter particles taken from different depths are given:—6 inches, 3.25; 1 foot, 0.99; 2 feet 0.65; 3 feet, 0.53; 4 feet, 0.53.

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As regards the remarkable increase in the free ammonia in the samples from the lowest tray, it is suggested that the circumstance may be accounted for by a revival of anaerobic changes, the result of the asphyxiating effect of the products of combustion produced above.

**Anthropological Institute,** January 22.—Annual General meeting.—Prof. W. Gowland, president, in the chair.—Address on the dolmens and burial mounds of the early emperors of Japan: the **President**. It is extremely probable that the Japanese obtained the idea of raising mounds from the Chinese, the earliest burial mound in China dating from 1848 B.C. Little is known about the earliest Japanese mounds, but the later ones are always more or less large, and invariably contain either a sarcophagus or dolmen. There is an extremely large number of these mounds in Japan, and Prof. Gowland himself examined 406. It is of interest to note that the dolmens are always near the coast or in the basins of the larger rivers, which points to the fact that at the time of their erection the Japanese only occupied these districts, the other parts of the country being inhabited by the primitive aborigines—the Ainu. The distribution of the early Imperial mounds is also of importance historically. They are found in four districts, which goes to prove that at an early date the country had no central Government, but that there were at least four independent tribes, each occupying one of the districts where the large Imperial mounds are found. The date of these mounds is between the second century B.C. and the fifth or sixth of our era. As to the mounds themselves, the Imperial ones are double, with a conical peak at one end. They are all of very great size, and are terraced and moated. In plan they are seen to be a combination of the square and circular varieties, but whether this has any significance is not known. One interesting feature is that round each terrace a series of terra-cotta tubes—“Haniwa”—about 18 inches high and 15 inches broad, are set in rows. They may have been placed there for structural reasons, or they may represent the wives, attendants, &c., who formerly were buried with the emperor. This practice was discontinued in 2 B.C., and by an Imperial decree terra-cotta figures were substituted for the human victims. Many of these figures have been found, and in some cases they terminate in a “Haniwa.” The largest of the Imperial mounds are in the central provinces; the largest of all is 2000 feet long, and covers approximately an area of eighty-four acres. The interment is always in the conical peak of the circular part of the mounds. They are, as a rule, entirely artificial, but occasionally a natural eminence has been turned to account.

**Physical Society,** January 25.—Prof. J. Perry, F.R.S., president, in the chair.—The strength and behaviour of brittle materials under combined stress: W. A. **Scoble**. The results described in the paper are a continuation of a series obtained from tests on a ductile material. The bars were of cast iron,  $\frac{3}{4}$ -inch diameter, 30 inches between the bending supports, subjected to bending and twisting to fracture. The maximum principal stress and the maximum shear, calculated on the assumption that there was no yield, each varied about 40 per cent. Plotting the corresponding bending and twisting moments, the points lie on an ellipse, the twisting moment being about 3000 lb. inches, and the bending moment 2200 lb. inches at fracture. In all cases, except that of simple bending, the fracture was a spiral, completed by a part making a small angle with the axis and invariably coming under the knife-edge.—Recent improvements in spectrophotometers: F. **Twyman**. The paper deals with a form of Hüfner spectrophotometer designed in 1904, and consists of two parts:—(A) The evaluation of the errors due to the polarisation produced by the dispersion-prism and by the Hüfner rhomb which brings about the accurate juxtaposition of the two beams of light the intensities of which are to be compared; and the method by which in the recently constructed instruments it is arranged for these effects to neutralise one another. (B) The use of the instrument as a spectropolarimeter by placing in the space between the dispersion-prism and the second Nicol the media the optical rotations of which it is required to measure.