

the land areas, for the former are now more readily accessible than the latter. At the end of the preceding fiscal year the *Carnegie* was at Batavia, Java. On November 21, 1911, she set sail for an additional circuit of the Indian Ocean, when she proceeded to Manila, Philippine Islands, where she arrived February 3, 1912. From Manila she proceeded to Suva, thence to Tahiti, and afterwards to Coronel, Chile. During the fiscal year she traversed about 28,000 miles. Her courses are arranged to intersect as frequently as possible her own previous tracks, those of the *Galilee*, and those of previous expeditions on which magnetic elements were observed. Valuable checks on the determinations of these elements are thus secured, and in case of considerable intervals between the dates of different determinations, data for secular variation of the magnetic elements are also obtained. As related in the report of a year ago, unexpectedly large errors were found in the best magnetic charts of the Indian Ocean and for some parts of the Pacific Ocean.

Observations have been continued simultaneously on land areas, embracing portions of five continents and about twenty different countries. Many noteworthy series of transcontinental stations have now been completed. Of these, one extending across the entire continent of South America, beginning at Para, at the mouth of the Amazon, and extending to Callao on the Pacific coast, by way of the Amazon and Ucayali rivers and Lima, has been finished during the past year.

The past year has been one of minimum sun-spot activity; but effective progress has been made in many other branches of solar and stellar research undertaken by the solar observatory. The wide range of this work may be indicated by the fact that the results of the investigations of the year are summarised by the director under thirty-five different heads. The new tower telescope has been completed, and important auxiliary apparatus has been added to the equipment of the 60-in. reflector. A fireproof office building, which will afford adequate quarters for the staff and safety for the original records and photographic plates of the observatory, has been constructed and made ready for occupancy during the year.

The 150-ft. tower telescope with its spectrograph and spectroheliograph has been tested and found to be quite up to expectations. The 60-in. reflector has proved increasingly effective in the wide variety of work undertaken with it. Between forty and fifty new spectroscopic double stars have been found; and amongst the many stars the radial velocities of which have been measured is one which surpasses all others hitherto observed, its velocity being about 150 miles per second.

Two eminent research associates, namely Prof. Kapteyn, of Groningen, and Prof. Störmer, of Christiania, have taken part in the work of the observatory during the year.

The laborious task of shaping and testing the glass disc for the proposed 100-in. telescope has proved a disappointment in showing that this disc, which was accepted provisionally from the makers several years ago, will not answer the requirements. It appears possible that some expedients may be adopted to overcome the instability of this disc; but the probability that it may be made to work satisfactorily is small. In the meantime the makers of such large discs have not succeeded in making one of sufficient uniformity in density. In view of these difficulties the director is disposed to try a thinner disc if one can be found possessing the requisite degree of homogeneity. Thus this project must suffer further delay, although it is practically certain that the difficulties presented may be ultimately overcome.

## UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—The subject selected for the Adams prize in 1914 is "The Phenomena of the Disturbed Motion of Fluids, including the Resistances encountered by Bodies moving through them." A theoretical re-discussion of the problem of fluid resistance may be undertaken, either in general or in special cases, in the light of the experimental knowledge regarding the resistances and the nature of the broken motion of the fluid which is becoming available in the publications of the aeronautical laboratories of various countries. Information has been accumulating regarding the nature and mode of travel of meteorological atmospheric disturbances, such as cyclonic movements and line squalls, the propagation of minute waves of barometric pressure, and the nature of the lower boundary of the upper calm region of the air. A dynamical discussion of these topics, or of simpler problems in illustration of them, might be undertaken. The prize is open to the competition of all persons who have at any time been admitted to a degree in the University of Cambridge. The value of the prize is about 220*l.* The essays must be sent to the Vice-Chancellor on or before the last day of December, 1914.

The Linacre lecture at St. John's College will be delivered by Dr. Norman Moore, on Tuesday next, May 6, on the physician in English history.

The professor of botany has recently received for the botanical museum a collection of 100 water-colour studies of Italian and other South European flowering plants from Mrs. Latimer-Jackson. The sketches, which were made by Mrs. Latimer-Jackson in the course of several visits to Sicily and different parts of the mainland, have not only great artistic merit, but will be useful to students and of considerable interest to many members of the Senate other than professional botanists.

A syndicate has been nominated to consider what changes, if any, are desirable in the regulations relating to the Previous Examination, in the mutual relations of the Previous Examination and the examinations held by the Highest Grade Schools Examination Syndicate and the Local Examinations and Lectures Syndicate, and in the relations of the Previous Examination to examinations held by other bodies. The syndicate has power to confer with the Highest Grade Schools Examination Syndicate, the Local Examinations and Lectures Syndicate, and such other bodies and persons as it may think fit. This is another attempt to bring what is practically the entrance examination of the University into line with modern thought.

OXFORD.—On April 29 Congregation approved a decree authorising the expenditure of 600*l.* in adapting the chemical laboratory at the museum to the immediate needs of the Waynflete professor of chemistry (Prof. W. H. Perkin).

WE learn from *Science* that Princeton University has received three gifts: 20,000*l.* from Mr. and Mrs. Russell W. Moore, of New York City, to endow a professorship of chemistry; 25,000*l.* given anonymously for a professorship not named; and 6000*l.* from Mr. J. D. Cadawallader, of New York City.

THE London County Council will be prepared to award for the session 1913-14 a limited number of free places at the Imperial College of Science and Technology, South Kensington, S.W. The instruction will be of an advanced nature, and therefore only



advanced students who are qualified to enter on the fourth year of the course should apply. There is no restriction as to income, but intending candidates must be ordinarily resident within the area of the administrative County of London, and must be students who have been in regular attendance at appropriate courses of instruction for at least two sessions. The free studentships do not entitle the holders to any maintenance grants, but cover all ordinary tuition fees. The free places will be awarded on consideration of the past records of the candidates, the recommendations of their teachers, the course of study which they intend to follow, and generally upon their fitness for advanced study in science as applied to industry. Candidates will not be required to undergo a written examination. Application forms (T. 2/268) may be obtained from the Education Officer, L.C.C. Education Offices, Victoria Embankment, W.C., and must be returned not later than Saturday, May 24.

VACATION courses for foreigners are to be held in Hamburg from July 24 until August 6 next. In all seventy-five lectures and courses have been arranged in connection with the scientific institutions of the State of Hamburg, with the hospitals and the Colonial Institute. The courses will aim at acquainting foreigners with the position of scientific studies in Germany. Scientific problems of the day will be treated by competent specialists in a manner intelligible to educated persons. Some sixty-five professors from German universities and institutes will assist at the courses. For the convenience of foreigners, special practical courses in German have been arranged daily between June 16 and July 26. These courses offer an opportunity of acquiring a practical knowledge of the language. Courses have been arranged also for medical students, including practical work at the Eppendorf Hospital, and a series of lectures on diseases of the heart and lungs. Students will be given opportunities of sight-seeing in Hamburg and its environs. Prospectuses and all information may be obtained gratis on application to "Geschäftsstelle der Akademischen Ferienkurse," Hamburg 20, Martinistrasse 52.

THE organiser for technical education in the Transvaal, Mr. W. J. Horne, has amplified a paper he read before the South African Institution of Engineers at Johannesburg shortly after the establishment of the Johannesburg Trades School, and the result is a volume on the Trades School in the Transvaal, a copy of which has been received. After explaining the need for vocational instruction, he gives a description of the character and scope of the work done in the urban trades schools of the Transvaal, explains the nature and cost of the buildings and equipment in different centres, and reviews what is being done to meet the special needs of rural areas on one hand, and of girls on the other. The volume shows that considerable progress has been made already in the provision of technical education in the Transvaal. The Pretoria Trades Schools and Polytechnic, for example, has accommodation for 200 pupils, and is provided with shops for blacksmiths and farriers, workers in wood, electricians, mechanical engineers, plumbers, wagon-builders, and printers. As Mr. J. Percy FitzPatrick, the chairman of the Witwatersrand Council of Education, says, in the introduction he contributes to the volume, "the motto of the Transvaal Trades Schools is 'theory and practice.'" and Mr. Horne insists that the mission of the trades schools must be to unite and harmonise these two essential things. The volume is full of practical suggestions for ensuring this end and of providing means

for boys and girls to proceed as far in their study of technology as their capabilities permit.

THE Indian newspapers recently received in this country contain fuller particulars of what is in future to be the Government policy with regard to education in India. The statement circulated in India in February last, we learn from *The Times*, after a recognition of the beneficial effects of the Universities Act of 1904, refers to the new decentralising policy. It is pointed out that there are only five Indian universities for 185 art and professional colleges in British India, besides several affiliated institutions in native states. The day is probably far distant, it is remarked, when India will be able to dispense altogether with the affiliating university. But it is necessary to restrict the area over which the universities have control, securing in the first instance a separate university for each of the leading provinces, so far as possible on a teaching and residential basis. A university of this new type is being founded at Dacca, and the establishment of universities at the provincial capitals of Rangoon, Patna, and Nagpur is contemplated. The Government is also prepared to sanction, under certain conditions, teaching and residential universities at Aligarh and Benares, and elsewhere as occasion may demand. The importance of secondary and high-school education as the basis of all professional or industrial training in India is emphasised. Private enterprise in this field is so extensive that of 3,852 high and middle English schools only 286 are Government institutions. Unsatisfactory schools have in certain cases gained recognition and eluded the control of inspection. The Government intends to increase largely the grants-in-aid in order that non-State institutions may keep pace with improvements in Government schools; to multiply and improve training colleges; and to found Government schools where a survey of local conditions leads to the conclusion that they are needed. The provision for technical, industrial, and scientific studies is surveyed, and incidentally the statement is made that "the grave disadvantages of sending their children to England to be educated away from home influence at the most impressionable time of life are being realised by Indian parents."

## SOCIETIES AND ACADEMIES.

### LONDON.

**Royal Society**, April 24.—Sir Archibald Geikie, K.C.B., president, in the chair.—A. G. **Huntsman**: (1) Protostigmata in Ascidians. (2) The origin of the Ascidian mouth.—F. A. **Bainbridge**, S. H. **Collins**, and J. A. **Menzies**: Experiments on the kidneys of the frog. When the frog's kidneys are perfused through the aorta and the renal portal veins with oxygenated normal or hypotonic Ringer's solution the urine formed is hypotonic to the perfusing fluid and is derived entirely from the glomeruli, since the tubules secrete no urine under these conditions. When the tubules are poisoned with corrosive sublimate or (temporarily) with caffeine the urine becomes isotonic with the perfusing fluid. On the contrary, if the glomeruli are killed by the arterial perfusion of boiled Ringer's solution, while the tubules still receive an adequate supply of oxygen through the renal portal veins, the urine formed continues to be more dilute than the perfusing fluid.—Cecil **Revis**: (1) The probable value to *Bacillus coli* of "slime" formation in soils. When kept in sterilised soils, particularly if these contain excreta, *B. coli* shows a great tendency to the formation of "slime," a property which is retained for some time when the organism is plated out on ordinary