

exist for some time, then they couple up and move towards the solar poles, while in the meantime a new belt begins to form in low latitudes (*Proc. Roy. Soc.*, vol. lxxi. pp. 446-452).

The existence of prominences in the polar regions is coincident with great magnetic disturbances on the earth just previous to or about the time of sun-spot maxima (*ibid.*, pp. 244-250). Further, these polar prominences are responsible for the existence of large coronal streamers near the solar poles, as seen during solar eclipses about the time of sun-spot maximum. In fact, recent research seems to indicate that this prominence circulation is intimately associated with all the different forms of the corona (*Monthly Notices R.A.S.*, vol. lxiii., 1903).

There seems little doubt, therefore, that we must look to the study of the solar prominences not only as the primary factors in the magnetic and atmospheric changes in our sun, but as the instigators of the terrestrial variations.

In dealing with solar phenomena, especially from a meteorological point of view, it is of great importance that the solar disc be treated in zones and not as a whole.

Just as it has been shown that the prominences sometimes exist in three zones in one hemisphere at one time, so is this the case with spots, but unfortunately it is only very recently that the phenomena occurring in each hemisphere have been treated in this manner.

It has already been pointed out that a possible connection existed between changes in the spotted area of the sun and terrestrial temperatures. Quite recently this question has been studied by Charles Nordmann (*Comptes rendus*, No. 18, May 4, 1903, vol. cxxxvi.), who finds that

"The mean terrestrial temperature exhibits a period sensibly equal to that of solar spots; the effect of spots is to diminish the mean terrestrial temperature, that is to say, the curve which represents the variations of this is parallel to the inverse curve of the frequency of solar spots."

UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

OXFORD.—Four resolutions referring to compulsory Greek were submitted to Congregation on Tuesday. The resolution permitting candidates intending to read for the honour school of natural science to offer a substitute for Greek was carried by a majority of 2, the voting being 164 in favour and 162 against. The second resolution, giving the same option to honours students in mathematics, was approved by a majority of 29—the voting being 131 and 102. The two remaining resolutions providing alternative subjects for Greek in the examination in Holy Scripture, and in Responsions, were agreed to without a division. The resolutions will now be embodied in a Statute by Council, and will be submitted to Congregation and Convocation in due form.

The 255th meeting of the Oxford University Junior Scientific Club was held at the museum on Wednesday, February 3. Mr. J. F. Hornsey, Wadham, read a paper on "Photographic Films," with numerous exhibits. The following are the officers elected for this term:—President, Mr. W. E. Smith, Balliol; biological secretary, Mr. P. T. Spencer-Phillips, New College; chemical secretary, Mr. B. M. Jones, Balliol; treasurer, Mr. C. P. D. A. Pereira, Keble; editor, Mr. G. P. Poulton, Balliol.

CAMBRIDGE.—It is announced that when His Majesty the King visits the university on March 1 for the purpose of opening the new museums and medical school, he will be accompanied by the Queen and by Princess Victoria.

Mr. C. E. Inglis, King's, and Mr. A. H. Peake, St. John's, have been reappointed demonstrators in mechanism and applied mechanics.

Recent donations to the benefaction fund have raised the total to 71,658*l.* A number are specially ear-marked for various scientific departments.

The Balfour studentship, vacant by the untimely death of Mr. J. S. Budgett, will be filled up in the Easter term. The studentship is of the value of 200*l.* a year; the student need not necessarily be a member of the university, and he must devote himself to original research in animal morpho-

logy. Application is to be made to the registry, Mr. J. W. Clark.

Dr. Guillemard, Prof. Darwin, Dr. Marr, Prof. Bury, and Dr. A. W. Ward have been appointed members of the newly created Board of Geographical Studies.

The following have been appointed electors to the chairs respectively named:—Prof. Thomson, F.R.S. (chemistry), Prof. Larmor; Sec.R.S. (Plumian of astronomy), Sir M. Foster, F.R.S. (anatomy and Downing of medicine), Prof. Allbutt, F.R.S. (botany and physiology), Mr. A. C. Seward, F.R.S. (geology), Sir William Ramsay, F.R.S. (Jacksonian of chemistry), Prof. Liveing, F.R.S. (mineralogy and agriculture), Mr. J. W. Clark (zoology), Prof. R. B. Clifton, F.R.S. (Cavendish of physics), H. Darwin, F.R.S. (mechanism), Sir Frederick Treves, Bart. (surgery), Prof. Muir (pathology).

Prof. Marshall Ward, Prof. Hughes, Mr. R. H. Adie, Mr. T. B. Wood, Prof. Middleton, Mr. A. E. Shipley, Mr. J. H. Widdicombe, and Mr. W. McCracken have been appointed examiners for the diploma in agriculture.

DR. H. KENWOOD has been appointed professor of hygiene at University College, London, in succession to the late Prof. W. H. Corfield.

It is stated by *Science* that by the will of the late Mr. Charles F. Doe, of San Francisco, more than 100,000*l.* is bequeathed to the University of California for a library.

AMONG the names of those upon whom the Senatus Academicus of the University of St. Andrews has resolved to confer the honorary LL.D. at its annual graduation ceremony in March next are those of Prof. A. H. Keane and Prof. J. N. Langley, F.R.S.

MR. FREDERICK PURSER, fellow of Trinity College, Dublin, has, says the *Lancet*, presented a sum of 2000*l.* to the equipment fund of Queen's College, Belfast, to found a studentship in mathematics in memory of his brother, the late Prof. John Purser, of Queen's College, Belfast.

In a pamphlet published by Messrs. Ginn and Co., Prof. J. W. Adamson, professor of education in King's College, London, deals with what he calls our defective system of training teachers. He argues that "professional training is a post-graduate business. The general, as distinct from technical, studies of the teacher are admittedly part of his professional equipment, since he cannot teach what he does not know, and mental gymnastic is at least as necessary for him as for the layman. Nevertheless, it remains true that purely technical instruction is also requisite, while the teacher's general culture, whether of the university or other type, should not be inferior in range or depth to that of the layman of similar intellectual status." He consequently urges that the general education of the teacher should be separated from technical instruction, the first being more or less completed before the second is begun.

THE following appointments are announced in the current number of the *Physikalische Zeitschrift*:—Dr. Ludwig Berend, professor of chemistry at the University of Kiel. Dr. Paul Spies, professor of physics at the Royal Academy of Posen; Prof. H. Berg, professor of mechanical engineering at the Stuttgart Technical School; Dr. Eberhard Rimbach and Dr. Georg Frerichs, professors of chemistry at Bonn; W. Wendelin, of Vienna, professor of electro-technics and applied mechanics at Leoben; and Dr. Frederik Carl Mulertz Strömer, professor of mathematics at Christiania in succession to the late Prof. C. A. Bjerknes. Prof. Herrmann Struve is to succeed Prof. Wilhelm Förster as professor of astronomy at the University of Berlin, and Dr. Robert Freiherr Daublebsky von Sterneck has been transferred from Vienna to the chair of mathematics in the University of Czernowitz. The course of lectures at Bonn on chemistry of foodstuffs has been placed in the hands of Prof. Karl Kippenberger. The following teachers in technical high schools have been raised to the standing of professor:—R. Lutz, professor of mechanical engineering at Aachen; Dr. Carl Frenzel, professor of electrochemistry at Brunn; and Dr. Bernhard Neumann, professor of chemistry at Darmstadt.

THE first volume of the report for 1902 of the Commissioner of Education of the United States Bureau of

Education has now been published. The subjects included in the volume of 1176 pages relate to educational problems in all parts of the world, and prominence is given to the needs and condition of higher education in various countries. Among chapters likely to interest men of science may be mentioned the first instalment of a compilation of the general laws relating to colleges in the United States founded, under Acts of Congress, for the establishment and for the more complete endowment and support of colleges for the benefit of agriculture and the mechanic arts. An account of education in British South Africa reviews the facts with reference to Cape Colony, and enumerates the efforts being made in the Transvaal and the Orange River Colony to supply efficient education. Interesting particulars concerning university work in France are given in an article on education in France. It appears that the number of students in the French State universities rose from 17,605 in 1887-88 to 29,931 in 1901, of whom 3910 were registered in the faculty of sciences. It should be added that there are also in France 3500 students in State technical schools of a high order. A chapter on Italian education reveals evidence of the increasing favour in which technical instruction is held in Italy. In 1899-1900 there were 37,900 students attending the Government and private technical high schools, and of these 3900 were women. In Russia, according to an article by E. Kovalevsky, there are thirteen superior technical institutions with 8000 students. It is impossible even to enumerate the complete contents of this valuable report; it will provide students of education with material for much study and thought.

A SPECIAL subcommittee on technical instruction for women, appointed by the Technical Education Board of the London County Council, has issued a report. The subcommittee found that it could get little help from the study of foreign institutions, as the women's technical schools in Continental countries are day schools in which general education and technical training are given together. Technical classes like those carried on at London polytechnics, and work-girl students like those who attend such classes, are practically unknown on the Continent. The report first reviews the opportunities for technical instruction now open to women, and then proceeds to make suggestions for promoting further developments in such technical instruction. It is urged that, wherever possible, women teachers should be appointed for those trade classes which are reserved exclusively for women; that the attention of leading employers be directed to the action which has already been taken by certain firms in arranging for their apprentices to attend technical classes; and that the attention of girls in the elementary schools be directed to the opportunities for industrial training, and that every encouragement be offered to them to attend technical classes. Among the proposals—which number twenty-six—made by the subcommittee, a few seem of special importance. For instance, that classes be established for the training of women in hygiene and sanitation with the view of their taking up the occupation of sanitary, workshop, or public health inspectors, or of rent collectors; that in domestic economy schools more thorough instruction be given in the care and management of young children; that day classes for the training of daily servants or charwomen be conducted; and that technical day schools for girls, with a course planned to cover three years, be opened as opportunity offers.

SOCIETIES AND ACADEMIES.

LONDON.

Geological Society, January 6.—Sir Archibald Geikie, Sec.R.S., vice-president, in the chair.—On a Palæolithic floor at Prah Sands, in Cornwall: Clement **Reid**, F.R.S., and Eleanor M. **Reid**. Prah Sands lie about 7 miles east of Penzance, and have long been known as exhibiting a good section of "head" or rubble-drift, over raised beach, which rests on a wave-worn rocky platform. Recent storms have cleared away the talus at the foot of the cliff, and have exposed, between the "head" and the raised beach, a Palæolithic land-surface, consisting of loamy soil pene-

trated by small roots. In and above this occur black seams full of small fragments of charcoal and bone; these are particularly abundant round groups of large flat stones, which seem to have formed ancient hearths. The black seams contain implements made of vein-quartz. For a few feet above this land-surface the angular "head" consists mainly of loam with fragments of vein-quartz, some of which are worked. This seems to be the first record of Palæolithic man in Cornwall.—Implementiferous sections at Wolvercote (Oxfordshire): A. M. **Bell**. This section shows the following beds:—(1) Oxford Clay; (2) old surface, in which are pits or troughs chiefly filled with gravel and enveloped in weathered clay; (3) a large river-bed, containing gravel at the base, and layers of clay above; (4) Neolithic surface-layer, 2 feet thick. The gravel of the river-bed contains quartzite-pebbles, some of exceptional size, and is covered by a thin lenticular layer of peat and sand, yielding thirty flowering plants and many mosses; the clays over this have probably been formed in a lake, possibly due to a beaver-dam. In the gravel-bed are found implements formed of flint quarried from the Chalk, or of quartzite from pebbles of the Northern Drift, all remarkable for their size, beauty, and freshness, together with the remains of large mammals, including the mammoth. The old surface, from which the river-bed has been eroded, has also yielded implements associated with quartzites, quartz-pebbles, and lydianstone, gravel from the Thames Valley, limestone-pebbles. Oolitic fossils. and sand.

Zoological Society, January 19.—G. A. Boulenger, F.R.S. vice-president, in the chair.—A communication from Mr. Guy A. K. **Marshall**, entitled "A Monograph of the Coleoptera of the Genus *Hipporhinus*, Schh.," was read. It contained an enumeration of 138 known species of the genus, of which 50 were described as new.—Dr. Walter **Kidd** proposed the use of two additional characters in the description of genera and species of certain mammals. These were the arrangement of the hair on the naso-frontal region and the distribution of hair-whorls.—Dr. W. G. **Ridewood** read a paper on the skull of the giraffe, based on sections made in five different places through a skull of that animal.—Mr. F. E. **Beddard**, F.R.S., read a note on the brains of the potto (*Perodicticus potto*) and the slow loris (*Nycticebus tardigradus*), and made some observations upon the arteries of the brain in certain primates that had died in the society's menagerie.—Dr. C. W. **Andrews** read a paper on the pelvis and hind-limb of the ratite bird *Mullerornis betsilei*, and described a new struthious bird, from the Upper Eocene beds of the Fayum, Egypt.

Royal Meteorological Society, January 20.—Annual general meeting, Captain D. Wilson-Barker, president, in the chair.—The Symons gold medal for 1904, awarded to Hofrath Dr. Julius Hann, of Vienna, in consideration of his eminent services to the science of meteorology, was received by Count L. Széchenyi, First Secretary to the Austro-Hungarian Embassy, on behalf of Dr. Hann.—The **President** in his address dealt with the present condition of ocean meteorology, and began by referring to the early workers in meteorological science, Lieut. M. F. Maury in America and Admiral R. FitzRoy in England, also to the address on the same subject delivered to the society by Dr. R. H. Scott, F.R.S., in 1886. He then sketched the present state of our knowledge, illustrating his remarks by numerous maps. He reviewed the meteorological work of different nations, pointing out the energetic action of the United States in particular, and of Germany and England. He regretted the want of liberality shown by the Government in affording financial aid for the development of this important science, and in conclusion he urged the necessity of interesting the youth of the country in the matter by making it a special subject of school and college curricula.

Royal Microscopical Society, January 20.—Annual meeting, Dr. Hy. Woodward, F.R.S., president, in the chair.—The curator, Mr. C. **Rousselet**, exhibited an old microscope by Plössl, of Vienna, which had been sent on approval.—Dr. **Woodward**, the retiring president, gave his annual address, taking as his subject "The Evolution of Vertebrate Animals in Time."