

of latex, the author concludes that the latex tubes do not serve for conduction of useful organic substances, that such substances when present in latex are probably not utilised at all by the other tissues of the plant, and that the question belongs to ecology rather than to physiology, the chief functions of latex being essentially that of protection against animals, and in some cases that of closing over injuries to the plant.

(6) Koriba deals in this long and very detailed paper with the many problems raised by the curious flower-spike of the orchid genus *Spiranthes*, in which the inflorescence is so twisted as to bring the flowers into from one to three rows. The paper is of great general interest, since, in addition to his own exhaustive observations extending throughout the life-history of the plant from germination to flower development, the author discusses the general question of the arrangement of leaves and other lateral organs in plants, torsion and other displacements of organs, etc., with a very full bibliography of these aspects of general morphology, nowadays somewhat neglected by botanists.

F. C.

#### ROYAL SOCIETY OF CANADA.

THE annual meeting of the Royal Society of Canada was held this year at Montreal on May 26-28, under the presidency of Prof. Frank D. Adams, F.R.S. The general and sectional meetings were held in the new medical building, McGill University, and in the Laval University, and there was an excellent attendance of fellows and of visitors. Dr. R. F. Stupart presided over Section III. (Mathematical, Physical, and Chemical Sciences), and in the absence of the president of the section, Prof. A. P. Coleman, Prof. A. H. R. Buller presided over the proceedings of Section IV. (Geological and Biological Sciences).

In his presidential address, Prof. Adams spoke on the national domain in Canada and its proper conservation. As a member of the Canadian Commission of Conservation, Prof. Adams was well qualified to review in all its aspects the national importance of the proper conservation of the natural resources of the Dominion, and he considered, in a comprehensive manner, agriculture, forests, water-powers, mines, fisheries, and the fur trade. By means of statistics and charts he described the manner in which the supplies of iron and coal were being exhausted, how the supply of merchantable timber, which is usually over-estimated, is disappearing at a rapid rate, and the reckless destruction of the natural fertility of the soil brought about by growing only a single crop and bad farming. He indicated the manner in which the conservation of these resources was dependent upon the application of scientific methods to the various forms of production and the dependence of manufactures and transportation systems upon careful conservation. Conservation does not mean hoarding up, but development without waste. "Each generation," the president said, "is entitled to the interest on the natural capital, but the principal should be handed on unimpaired."

The president of Section III. (Dr. Stupart) considered in his address the present position of meteorological science. He contended that the success achieved in storm warnings and forecasts was ample warrant for the system, largely empirical, now in vogue in all civilised countries. The general international scheme for the exploration of the upper atmosphere was outlined and a comparison was given of the results obtained in Europe, Canada, and the equatorial regions. The present ignorance of many of the factors which lead to cyclonic and anti-cyclonic

disturbances in higher latitudes was pointed out, and the factors concerning which more knowledge was available were described. In opening a discussion on the structure of the atom, Drs. A. S. Eve and J. C. McLennan considered the rapid progress in blending the Thomson electron rings with the Rutherford nucleus, Moseley's experiments on the atomic number with the isotopic theory of Fajans and Soddy, Bohr's views with the Rydberg number of Planck's quanta, and the hydrogen nucleus as positive electron, according to Rutherford's recent suggestion.

Among the series of important papers presented before Section III., the following may be mentioned. Prof. H. T. Barnes, in a paper on the expansive force of ice, showed that an ice-sheet over water expands and contracts similarly to a bimetallic rod, and results in the formation of peculiar cracks. An estimate was given from available data of the expansive pressure and the tensile strength of ice. Prof. C. J. Lynde described a new method of showing that soil solutions move through the soil by osmotic pressure from points of low concentration to points of high concentration. Dr. J. S. Plaskett discussed prism material for stellar spectrographs, and showed that a marked gain in efficiency, especially towards the ultra-violet, was gained by the use of lighter flint. He also described the new 72-in. reflecting telescope which is to be erected by the Dominion Government near Victoria, B.C. Dr. F. T. Shutt read a paper on the nitrogen compounds of rain and snow. For the year ending February, 1914, the eighth of the investigation, the total nitrogen furnished by precipitation amounted to 6.207 lb. per acre, and for the total period during which the inquiry has been carried on the average per annum is 6.182 lb.

A large proportion of the papers communicated to Section IV. were of a physiological character. Prof. A. T. Cameron described the distribution of iodine in plant and animal tissues. He showed from a wide series of iodine analyses that iodine is an almost invariable constituent of all organisms, plant and animal, the amount present depending upon the diet and mediums of the organism. With greater development there is greater specificity of the tissue concerned in storing iodine, until in the vertebrates no tissue except thyroid contains appreciable quantities. Miss D. Duff described the trematode, *Amphistomum subtriquetrum*, Rudolphi, found in the cæcum and colon of the Canadian beaver. This species was described by Rudolphi as a parasite of the European beaver, a fact of interest from the point of view of geographical distribution. Mr. L. Lambe described a new species of *Aspideretes* from Alberta, and a new species of *Platysomus*, noteworthy on account of its large size. Dr. C. Gordon Hewitt communicated the results of a series of observations on the feeding habits of the stable-fly, *Stomoxys calcitrans*, in which investigation the flies had been fed chiefly on human blood. Duration of feeding lasted from two to twenty-five minutes; the time required for the digestion of the whole meal varied from 49½ to 95 hours. Prof. A. H. R. Buller described the subterranean parts of the fruit bodies of certain Hymenomycetes, such as *Collybia radicata*, *C. fusipes*, *Mycena galericulata*, *Coprinus macrorhizus*, etc., in which the extensions of the fruit bodies below the ground occur when the mycelia are deep-seated. Development is from below upwards, and a useful purpose is served in allowing the fungus to reach the surface of the ground before the spore-pilei are developed.

Instead of the annual popular lecture, illustrated addresses on popular subjects were given by representatives of the sections. Dr. L. G. Herdt, representing Section III., dealt with "The Development

of our Water Powers and their Effect on the Progress of Canada." Dr. C. Gordon Hewitt, representing Section IV., spoke on the destruction of trees by insects in Canada and modern methods of fighting them.

The following officers were elected:—President, Sir Adolphe B. Routhier; vice-president, E. F. Burton; hon. secretary, Duncan C. Scott; hon. treasurer, C. Gordon Hewitt; hon. librarian, D. B. Dowling. Three new fellows were elected on the scientific sections:—Section III., F. B. Allan and F. M. G. Johnson; Section IV., Sir Thomas G. Roddick.

### UNIVERSITY AND EDUCATIONAL INTELLIGENCE.

CAMBRIDGE.—It has been decided by the Council of the Senate to allow terms and leave to postpone examinations to all undergraduates who are prevented from residing by the requirements of military service at the present time. There is no reason for supposing that the University will not reassemble as usual for the Michaelmas term.

LONDON.—The Vice-Chancellor has written to the *Times* to say that the Senate is anxious to do all in its power to render it easy for members of the University, and especially for cadets of the Officers' Training Corps, to offer their services to the Government. To this end, in the first place, all fees paid in for examinations which a student is for the above reason unable to take will be remitted. In the second place the Senate will take each and every step possible to prevent students who are serving their country from being in any way prejudiced in their university career, and will willingly make any special arrangements that may be possible for the same purpose.

Emergency first-aid and nursing classes have been arranged to be held daily, under the direction of Sir John Collie, who will lecture on first aid. Dr. Christine Murrell will lecture on nursing. The courses began on Monday last. Particulars are obtainable from Miss Claire Gaudet, care of the University Extension Registrar, University of London, South Kensington.

OXFORD.—The Vice-Chancellor has sent a letter to the daily Press with reference to the measures likely to be taken by the University in order to relieve undergraduates from any disabilities which might arise under statutes relating to them, in consequence of their absence on military service. He says:—“(1) At the time of the war in South Africa a general decree was passed allowing men who owing to their absence would have passed the time-limit for entering the honour schools to have an extension of time. I propose to introduce a similar decree when the term begins. (2) Other undergraduates were allowed to count the terms which had elapsed during their absence as if they had been in residence. These cases were provided for by a separate decree for each individual. I should propose that this procedure should be repeated. (3) The case of candidates for scholarships who may, owing to their absence, be unable before the age of nineteen to come up for examination is much more difficult, and can only be dealt with by cooperation amongst the colleges.” The Vice-Chancellor further states that he sees no reason why term should not proceed as usual.

It is stated in the *Lancet* that several citizens of Toronto have agreed to contribute sums amounting to 15,000 dollars for five years in order that research work may be engaged in at the University of Toronto. It also states that Dr. D. A. Campbell, of Halifax,

Nova Scotia, has promised 60,000 dollars to endow a chair of anatomy at Dalhousie University, Halifax, in memory of his son, the late Dr. George Campbell.

The prospectus for the session 1914-15 of courses and regulations for degrees in arts and science in the University of Leeds has been received. We notice that, in common with other of the more modern English universities, the degree of bachelor of science may be taken in applied as well as in pure science. In his final course the candidate for a degree may select from the following branches of applied science: mechanical, civil, electrical, mining, or gas engineering; agriculture; and applied chemistry. Applied chemistry includes two branches, namely, colour chemistry and dyeing, and the chemistry of leather manufacture. The university also awards diplomas in applied science and technology, and offers facilities to persons desiring to pursue original research in the University laboratories.

THE Staffordshire County Council Education Committee has issued its directory for higher education, 1914-15, containing the regulations of the committee and details of schemes in operation throughout the county. The arrangements outlined are very complete, covering many branches of pure science and technology, and it is possible to refer to one or two departments only. Instruction in mining is provided by means of lecturers, whose whole time is devoted to the work, and their assistants. For this purpose the county is divided into two portions, comprising the North Staffordshire Coalfields and the South Staffordshire Coalfields respectively. Theoretical and practical classes in metallurgy and iron and steel manufacture are conducted in accordance with the regulations of the Board of Education and the City and Guilds of London Institute. The principal centre in South Staffordshire is Wednesbury, where it is hoped the new County Metallurgical and Engineering Institute will be opened this autumn. Lectures and laboratory classes in subjects related to engineering will be conducted at the new institute. The course will include instruction in mathematics, physics, applied mechanics, theory of heat engines, and so on, with the necessary workshop practice. Among other subjects in which instruction is to be provided in various parts of the county may be mentioned: pottery and porcelain manufacture, silk manufacture, agriculture, horticulture and hygiene, home-nursing, and first aid. The system of scholarships of which particulars are given seems well designed to ensure that every student should have the opportunity of carrying his education as far as his powers make possible.

### SOCIETIES AND ACADEMIES.

LONDON.

**Geological Society**, June 24.—Dr. A. Smith Woodward, president, in the chair.—V. C. Illing: The paradoxical fauna of a part of the Stockingford Shales. This communication deals mainly with a small subdivision of the Stockingford Shales occurring at the base of the Oldbury division. The beds have been termed the Abbey Shales, and are about 100 ft. thick, consisting mainly of blue laminated shales, although glauconitic sandy horizons occur at frequent intervals. This small subdivision passes down into the Purley Shales, while it is separated from the overlying shales (which are probably of Lower Maentwrog age) by a calcareous conglomerate lying upon an eroded surface of the underlying blue shales, although the irregularity of the eroded surface does not appear to be great in the somewhat poor exposures. The beds have been examined in a series of trenches