

The book is indispensable as a general reference for taxonomists, teachers and students of economic botany and wood technology, and others who are

interested in the economic products of the forest, including wood utilization.

DAVID A. KRIBS

SOCIETIES AND MEETINGS

THE ANNUAL MEETING OF THE ROYAL SOCIETY OF CANADA

THE annual meeting of the Royal Society of Canada was held at McMaster University, from May 25 to 27. The scientific sections of the society held their meetings in the Science Building of the university and the general meetings took place in Convocation Hall. The president of the society, Professor J. B. Collip, F.R.S., presented the medals at the evening meeting on May 25. The Flavelle medal was awarded to Professor B. P. Babkin for his outstanding work in analyzing the secretory mechanism of the digestive glands. Professor John L. Synge received the first award of the Henry Marshall Tory medal for outstanding contributions to applied mathematics, and the Willet G. Miller medal, also awarded for the first time, was presented to Professor Norman Levi Bowen in recognition of his contributions to geology. Following the presentation of the medals, Dr. Collip read his presidential address on "Science and War." After briefly reviewing the part played by science in former conflicts, Dr. Collip emphasized the important contributions of physicists, chemists and other scientists in the present war. He dealt in some detail with aviation medicine and the cooperation between the men of science and the armed forces in solving many of the problems which modern warfare presented. He referred to the recognition and support that scientists were now receiving as an integral part of the war effort and pointed out that much of this research work is producing results that will be equally important in the post-war period.

A further feature of the meeting was the symposium, held after the dinner on May 26, on "Medical Investigations as Applicable to the Armed Forces," at which Surgeon Captain A. McCallum, Medical Director General of the Royal Canadian Navy, spoke in general terms of the organization for research in this service and of the work already accomplished. Surgeon Commander C. H. Best, F.R.S., director of the Royal Canadian Naval Medical Research Unit, gave a more detailed account of some of the results achieved in connection with nutrition, night-vision and similar problems. Brigadier J. C. Meakins outlined briefly the medical research going on in the army and Group Captain J. W. Tice, director of Medical Services (Air), spoke of some problems of interest to the Air Force in particular. This was followed by Squadron Leader K. A. Evelyn, who discussed in

further detail many of the special problems in aviation medicine, at the conclusion of which he showed a moving picture film entitled "Oxygen." This film was shown as a special feature, permission for which had been specially granted. The film was prepared under the auspices of the Associate Committee on Medical Research of the National Research Council for use in training enlisted aircrew in the essentials of physiology and the effects of high altitude flying, pointing out the importance of the special precautions required.

Professor J. K. Robertson delivered the presidential address in Section III (Chemical, Mathematical and Physical Sciences) on "The Role of Physical Optics in Research," in which the speaker reviewed the discoveries into the nature of light, atomic and molecular structure and in astronomy that have resulted from the application of physical optics in spectroscopy, interferometry and diffraction. This historical account was followed by an address on "Chemical Reactions of Excited Atoms," by Dr. E. W. R. Steacie, and a paper on "Molecular Spectra and their Applications," by Dr. Andrew McKellar, who spoke particularly of applications in astronomy. Thirty-eight papers were presented to the section, the majority of which were read by title. Owing to the pressure of war work few physicists and chemists were in attendance, but mathematics and astronomy were well represented. Among those papers which were read, mention may be made of a few of some general interest. Professor Lachland Gilchrist and J. W. Britton gave an account of further experiments on the use of drill holes in electrical methods as an aid to the location of mineralized bodies and rock structure. Dr. J. A. Pearce announced the orbital elements of H.D. 222107 λ Andromedae as revised on the basis of recent measurements and also the orbital elements of the spectrographic Binary H.D. 34333. A paper of particular interest was given by Dr. L. M. Pidgeon on the production of light metals, in which he reviewed the methods for the separation of magnesium and the difficulties which had to be overcome. He gave an account of his own experiments which resulted in the present method used in obtaining large quantities of magnesium metal in Canada since the outbreak of hostilities. Dr. H. F. Manske and L. Marion reported the isolation of eight alkaloids from *Lycopodium annotinum* L. Several papers were presented by Dr. Paul E. Gagnon and

his co-workers, among which mention may be made of one in which the isolation of some new sulfamides in the 1-1-Diphenylindane was announced. Perhaps the most interesting paper presented to the section was one of those given by Professor E. F. Burton, in which J. H. L. Watson showed how stereoscopic photographs had been taken with the electron microscope and exhibited several examples to the members present. This new technique enables one to view the objects photographed so as to bring them out in three dimensions, thus adding depth to the pictures and revealing new features in the structure of smoke and metallic particles. At the conclusion of the sectional meetings, Professor T. Thorvaldson was elected president of the section for the year 1943-44.

In Section IV (Geological Sciences), Professor M. B. Baker gave the presidential address and spoke on "Gold and Iron Prospects in Canada." This address was followed by sixteen papers on various geological investigations. Among these Dr. E. A. Hodgson delivered a very interesting paper on the "Rock Burst Experiments at Lake Shore Mines, Kirkland Lake." The author outlined the program of the investigations carried out since 1939 and gave some of the results already obtained. Equipment has been designed to pick up, amplify and record the small subaudible snaps which occur in a rock under pressure and which increase in number as the pressure increases. The records of a severe rock burst which occurred on January 29, 1943, show conclusively that the method clearly delimits the area under pressure to within a hundred feet or less. So far, attempts to predict bursts as to time have not been successful; but it is hoped that further work will result in some measure of time prediction.

Professor G. B. Reed, president of Section V (Biological Sciences), spoke on "Wound Infections and Local Chemotherapy." This paper dealt with the treatment of wounds with the sulfa drugs and the speaker emphasized the necessity of applying the drug as soon as possible after the wound has been inflicted in order to obtain the greatest benefit. Fifty-six papers were presented to this section, many of which will appear in scientific journals. Space permits the mention of the two invited papers only. The one by Dr. Babkin, on "Secretory Mechanism of the Digestive Glands," contained a survey of the work of his laboratory on this subject. Briefly it might be stated that the investigations established that the mucous, demilune and myo-epithelial cell groups of the submaxillary gland each have a separate innervation, and that the surface epithelium cells of the gastric mucosa and the mucoid, peptic and parietal cells of the gastric glands are under independent nervous or humoral control. The conclusions to be derived from this work were stated and further analysis of the secretory function of the digestive glands given. The second paper, by Professor G. W. Searth, on "The Mechanism of Frost Resistance," contained an account of the modes of frost injury to plant cells and of the protoplasmic changes which accompany frost-hardening. He also discussed how the different hardening changes afford protection. The new president of this section is Professor H. S. Jackson.

At the general meeting of the society, Monsignor Olivier Maurault, rector of the University of Montreal and a fellow of Section I, was elected president of the Royal Society of Canada and Professor J. K. Robertson was elected vice-president.

DAVID A. KEYS

SPECIAL ARTICLES

THE PRODUCTION OF FOLIC ACID BY RAT LIVER IN VITRO

A PRELIMINARY study,¹ using *Streptococcus lactis R*, indicated that the urine of man contains only very small amounts of folic acid. We have found, using *Lactobacillus casei*, that the daily urinary excretion of this factor by 15 normal individuals, based on the assay of 42 samples, averages 0.0108 mgm units (0.0038 to 0.0238 mgm units).² The average daily folic acid intake of well-fed adults has been reported to be about 1.4 mgm units per day.³ Evidently folic

acid is unlike other members of the vitamin B complex (thiamine, riboflavin, pantothenic acid, biotin) in that only a trace appears in the urine of man (< 1 per cent. of the probable dietary intake).

To test the possibility that the folic acid is excreted in the urine in a complex form without microbiological activity, urine samples were subjected to autoclaving, autoclaving with very dilute acid or alkali, and digestion with takadiastase (an enzyme preparation used to release folic acid from tissue combination²). These procedures did not increase the amount of folic acid found in the urine. We have observed, however, that incubation of urine with a fresh rat liver preparation causes the appearance of more folic acid than can be accounted for by the analysis of the constituents of the digestion mixture. In conducting such experi-

¹ L. D. Wright, J. R. McMahan, V. H. Cheldelin, A. Taylor, E. E. Snell and R. J. Williams, University of Texas Publication, 4137: 38, 1941.

² V. H. Cheldelin, M. A. Eppright, E. E. Snell, B. M. Guirard, University of Texas Publication, 4237: 15, 1942.

³ R. J. Williams, *Jour. Am. Med. Assn.*, 119: 1, 1942.