

Canada. The report includes twenty-seven analyses of igneous rocks collected by Dr. R. A. Daly during the work of the International Boundary Commission in 1902-5. Some of these analyses show that rocks rich in alkali extend far westward through the mountains of western Canada toward the Pacific province, where such rocks are not expected. The most numerous analyses are of lignites and iron ores. An appendix by Mr. H. A. Leverin describes the commercial methods of analyses of oil shales.

Dr. T. L. Walker contributes an interesting report on the molybdenum ores of Canada, in which he describes their distribution and geological conditions. Dr. Walker personally examined most of the chief molybdenum deposits in Canada. They usually occur in Archæan rocks near the border of intrusive masses of granite. Some of the chief occurrences of molybdenite are in pegmatite veins traversing gneisses, slates, and quartzites. Some of these pegmatites are so poor in felspar that they become practically veins of quartz; and, as is usual with such veins, they are very poor in metallic constituents.

Molybdenite also occurs along joint planes in granite, and it is then usually associated with fluor-spar, and fine scales of it impregnate the granite along the joints. Some important deposits have been found along the contact between granite or pegmatite with crystalline limestone. The reaction between these rocks has produced a band of pyroxenite containing pyrite, pyrrhotite, and molybdenite.

In most of the ores the molybdenum is so scattered that its concentration is necessary. Dr. Walker says that none of the processes hitherto employed are very satisfactory.

The larger part of the report describes the chief known Canadian molybdenum occurrences. It includes a list of twelve, which are regarded as the most promising; but the author is very cautious in expressing his opinion as to their value. His conclusion (p. 57) that "some of these are more promising than others" is a very safe hypothesis.

J. W. G.

PROF. EDUARD STRASBURGER.

THE science of botany has sustained an irreparable loss through the death, on May 19, of Prof. Eduard Strasburger. It is especially sad that this melancholy event should have occurred at a time when it had been arranged by his many friends to celebrate his approaching seventieth birthday. A *Festschrift* was in course of preparation, toward which contributions had been promised by botanists in all parts of the world.

It has fallen to few men to have achieved so much, and to have taken so active a share in the many and diverse branches of the science to which Strasburger devoted his life. There is scarcely any comprehensive modern botanical memoir concerned with cytology, anatomy, embryology, and even certain aspects of plant physiology, which does not contain references to Strasburger's contributions to the subject.

NO. 2224, VOL. 89]

Apart from the work of his earlier years on the gymnosperms and the problems therewith connected, it is in the field of cytology, and in a lesser degree in anatomy also, that his claim to enduring fame will be everywhere recognised.

In the seventh decade of the last century Strasburger began publishing those remarkable series of investigations which have rendered his *Histologische Beiträge* indispensable to the cytologist and anatomist, and will ever stand out as landmarks in the history of the science. Considering the time at which they were written, the papers on the nucleus and the cell are really wonderful productions. They ushered in a new epoch, and introduced certainty and clearness where nebulousity and chaos had previously reigned. In reading his work and comparing it with that of his contemporaries in the early 'seventies, one seems to pass in one step from mediævalism into modern science. Much brilliant work had, of course, already been accomplished by others, but it was largely due to Strasburger that cytology emerged so rapidly from the mists of speculation and developed into a science founded on demonstrable facts, which the more recent work has shown to be, in the main, of great and far-reaching importance.

Naturally his earlier work did not escape the need of revision here and there, but having regard to the means at his disposal, and to the relatively primitive character of the technique at that time available, it is little short of marvellous that his genius should have proved to have been so little at fault. The reason for this is to be sought partly in the strength of the highly trained intellect which he focussed on every problem that interested him, and partly in the untiring industry with which he pursued his extensive investigations. He was not satisfied with elucidating, as far as might be, the course of events in this or that single instance, but he checked his observations and inferences by researches extending over a wide choice of objects. In reading any of his more important memoirs, one cannot fail to realise the effectiveness with which Strasburger drew on his immense store of first-hand knowledge in attacking the problems confronting him. The meticulous accuracy which marks the description of his observations is continually illuminated by that indefinable but very real quality of greatness which enabled him so well to grasp essentials, and to separate them from relatively unimportant masses of new facts. It is true that in his later years perhaps this very quality became magnified almost into a fault. Where he thought he saw clearly, he was apt, as he used himself to say, to attach great weight to aspects of a problem that coincided with theoretical anticipation, but even in this he bore no more resemblance to the inferior minds who often endeavour to adopt a similar attitude than does a great artist of the impressionist school to the man who cannot draw, but can only daub and smudge.

Strasburger has sometimes been reproached for the rapidity with which he occasionally changed his attitude towards an interpretation of results.

In reality, however, there is but little foundation for such a reproach. A correct observation is one thing; the interpretation of it is another. Interpretation must almost necessarily change as new facts become known, and a mere clinging to exploded theories affords no claim to distinction. But no one has ever accused Strasburger of carelessness in observation. His scientific memoirs are repositories of facts many of which as yet cannot be fully utilised. He, no less than others, strove to fit the facts into their place, but unlike many people, he was always ready to reconsider the grouping.

Amongst his many contributions to our knowledge of important problems of wide biological importance, special allusion may be perhaps made to a paper that appeared in the *Biologisches Centralblatt* about twelve years ago, in which he traced the effect of *Ustilago violacea* in causing the normally latent stamens in *Lychmis dioica* to develop within the female flower. In this paper are also detailed many experiments on the possibility of influencing the numerical ratio of the sexes in dioecious plants.

Limitations of space, however, quite forbid any attempt to do justice here to Strasburger's scientific work. That will be more appropriately dealt with in another place. It is rather of the man and of his personality that one would speak, even though briefly.

He was possessed of a singular charm of manner, which also makes itself felt in many of his writings. In controversy he was always a courteous opponent, and set in this respect an example which is unfortunately not always followed.

He attracted to his laboratory students from all parts of the world, and many who have studied at Bonn will recall the respectful affection in which the Geheimrath, as he was generally spoken of, was held. A country walk with him was a delight not easily forgotten; he would talk deeply and lucidly on many subjects—the philosophy of science and of politics, of art and of literature—and there was always abundant food for reflection in what he said.

In his later years Prof. Strasburger was an occasional visitor to this country, where he was always sure of a warm welcome from a wide circle of scientific *confrères*. He was a foreign member of the Royal and the Linnean Societies. His loss will be felt as a very real and a very personal one by those who were privileged to count him as a friend.

J. B. F.

NOTES.

WE are asked to say that Lady Hooker will be grateful if any of her friends who possess letters written by her late husband, Sir Joseph Hooker, will lend them to her for the purposes of a biography which Messrs. Smith, Elder and Co. will publish. The letters, which should be forwarded to Lady Hooker at The Camp, Sunningdale, will be carefully returned.

NO. 2224, VOL. 89]

It is officially announced that Captain H. G. Lyons, F.R.S., has been appointed assistant director of the Science Museum, South Kensington.

D. STENQUIST, Frejgatan 69, Stockholm, Sweden, asks us to say that he will be glad to receive papers or unpublished observations of terrestrial magnetism and electricity, meteorological phenomena, and optical effects such as halos, luminous night-clouds, auroræ, &c., for the following dates:—1908, June 30 to July 1; 1909, September 25; 1910, May 19.

THE Albert medal of the Royal Society of Arts for the current year has been awarded by the council, with the approval of the president, H.R.H. the Duke of Connaught, to the Right Hon. Lord Strathcona and Mount Royal, G.C.M.G., F.R.S., for his services in improving the railway communications, developing the resources, and promoting the commerce and industry of Canada and other parts of the British Empire.

THE death is reported of Dr. W. McMichael Woodworth, assistant in the Harvard Museum of Comparative Zoology. He had been a member of the teaching staff of Harvard for more than twenty years. His researches were devoted chiefly to the study of worms. Dr. Woodworth was a close friend of the late Prof. Alexander Agassiz, whom he had accompanied on several of his explorations in Pacific islands.

IN the course of his address at the annual general meeting of the Linnean Society of New South Wales on March 27, the president, Mr. W. W. Froggart, reported that the fellowships endowment capital has increased to 40,000*l*. In response to the invitation of the council of the society for applications for two fellowships for the period 1912-13, Mr. E. F. Hallmann and Mr. A. B. Walkom have been appointed. Mr. Hallmann has selected zoology as his branch of study, and will devote his attention particularly to the further elucidation of the characters of the Monaxonellid sponges. Mr. Walkom has been appointed in geology, and will proceed to a detailed study of the stratigraphical relations of the Permian-Carboniferous areas of Australia and Tasmania, with special reference to the palæogeography of that period.

A CIRCULAR letter from Mr. R. T. A. Innes informs us that the Transvaal Observatory at Johannesburg is now renamed "The Union Observatory," and its activities will be mainly of an astronomical nature, but the first-order meteorological observations will be continued, and the observatory will also collect seismological data for the Union. The Natal Observatory at Durban has been closed, and the Cape Meteorological Commission dissolved. On April 1 a new Department of Meteorology was formed in Pretoria, which will embrace the meteorology of the four provinces of the Union (Cape Colony, Transvaal, Orange Free State, and Natal). In future, communications relating to meteorological affairs should be addressed to the Chief Meteorologist, Department of Irrigation, P.O. Box 399, Pretoria, Union of South