

PRESIDENTIAL ADDRESS.

A. H. LEIM.

(Read October 10, 1934).

It is my pleasure to discharge the duties laid upon the President of the Nova Scotian Institute of Science and to report on the events of the 1933-34 Institute year. I regret that circumstances do not permit me to be present at the 73rd Annual Business meeting.

Since the last annual meeting two members of the Institute have died. The first to pass was the late Dr. John Stewart, who died on December 26th, 1933. Born in 1848 at Black River, Richmond County, N. S., he had a long and distinguished medical career. In 1894 he was a member of the teaching staff of the Halifax Medical College. He was associated with Dalhousie University for over twenty years, becoming Professor of Surgery in 1913 and serving as Dean of the Medical School from 1919 to 1931. Dr. Stewart joined the Institute in January, 1885, and at the time of his death was the senior member. In recent years he was rarely seen at the meetings of the Institute but your President recalls his attendance about three years ago on a stormy evening when a paper on a natural history subject was being read.

The other passing was that of the late Professor Donald Sutherland McIntosh who was born at Pleasant Bay, Inverness Co., N. S., in 1862, and who died on July 20th, 1934. From 1910 to 1931 he was associated with the teaching of Geology and Mineralogy at Dalhousie University. He joined the Institute in 1911 and was elected to the Council in the following year, serving on it continuously until 1932. His quiet and unassuming presence will be missed after so long an association.

During the year five ordinary members and one associate member were elected to the Society.

Seven ordinary meetings of the Institute were held during the past session and twenty-two papers were read. These papers may be classified as follows:

Bacteriology.....	1
Biochemistry.....	1
Biology.....	2
Botany.....	1
Chemistry.....	3
Dentistry.....	1
Geology.....	3
Hydrology.....	1
Meteorology.....	1
Physics.....	4
Physiology.....	4

The average attendance at the meetings was twenty.

The Provincial Government grant of five hundred dollars was continued.

Part 3 of Volume XVIII of the "Proceedings of the Nova Scotian Institute of Science", for the session of 1932-33, was issued during the year. It contained nine complete papers, totalling one hundred and forty pages. It is gratifying to see the increase in size in the publication, and the Editor, Dr. King, deserves the thanks of the Institute for his work in connection therewith.

The Council sanctioned an attempt to compile a catalogue of the scientific publications available in the Maritime Provinces in University and other libraries, and the Corresponding Secretary, Dr. Hess, is largely responsible for the very considerable progress made in securing lists from the various libraries. In the absence of any up-to-date catalogues of this kind the Institute would perform a very useful function by having these lists correlated and made available.

In my address of a year ago I stressed the desirability of another Science Exhibition being arranged by the Institute. It did not prove feasible to provide for such an exhibition during the year. I can only express the hope that at some future date it will be possible to again bring some of the methods and results of scientific research before the public of Halifax in this way.

I should like to take this opportunity of making a few remarks on the field of research in oceanology. I trust that it will be considered a proper part of this address under the section of the constitution which reads that a President may

treat "such other topics as he may deem conducive to the welfare of the Institute and to the promotion of its objects". An important part of the resources of Nova Scotia is related to the sea, and the events that occur therein should be of importance to the exploitation of that resource. From a non-commercial and purely scientific point of view the study of the sea is filled with interest. Such studies are apt to be thought of as involving only biology, but in the broad view each one of such sciences as physics, chemistry, biochemistry, physiology and geology will find much to be done in its own field in a study of the oceans. This is not the time nor place to elaborate on what these problems are. They have been summarized in recently published treatises on the subject by experts in oceanology.

In this connection I wish to draw your attention to the fact that each of the three larger Universities in Nova Scotia is located almost within a stone's throw of the sea. One is on the open Atlantic coast; one on the Bay of Fundy and one on the Gulf of St. Lawrence. These waters are strikingly different and these Universities possess unrivalled opportunities for marine research by virtue of their geographical position.

I would therefore commend to the Institute that it continue to welcome papers on marine research and provide an avenue of publication for them and to its University members that they give some thought to this aspect of research, since it is only when an active interest in these problems is awakened in the minds of the investigators that real progress is made.

In conclusion I wish to thank the members of the Institute again for the honour of its Presidency for two years, and to thank the members and particularly the members of the Council for their assistance.

PROCEEDINGS OF MEETINGS.

SESSION OF 1934-35.

(All meetings were held in the Medical Science Building, Halifax).

73rd Annual Business Meeting, Oct. 10, 1934. In the absence of the President, Dr. A. H. Leim, his address was read by the Recording Secretary.

The Treasurer's report showed the financial situation to be as follows: Receipts during the year, \$1,580.32; expenditures, \$954.47; balance in hand (current account), \$625.85; reserve fund, \$738.03; permanent endowment fund, \$2,500.00.

The Corresponding Secretary reported that 216 back copies of the Proceedings had been sent out.

Steady progress in the Institute's library was revealed by the Librarian's report, which showed: books and pamphlets in the Provincial Science Library, 92,920; books and pamphlets received through exchange and purchase during the year, 3,861; books and pamphlets borrowed during the year, 1,001; volumes bound during the year, 92.

Officers elected for 1934-35: *President*, Harry Piers, Esq; *vice-presidents*, Prof. George H. Henderson, Ph.D., Prof. Harold S. King, Ph.D.; *treasurer*, Donald J. Matheson, B.Sc.; *corresponding secretary*, Prof. Ernest Hess, Ph.D.; *recording secretary*, Prof. F. Ronald Hayes, Ph.D.; *librarian*, Harry Piers; *members of the council*, Capt. W. F. Mitchell, Rev. Bro. Cornelia, Prof. C. C. Coffin, Ph.D., Prof. R. J. Bean, Margaret R. Butler, Ph.D., Prof. S. A. Beatty, Ph.D., Prof. G. V. Douglas.

1st Ordinary Meeting, Nov. 12, 1934. New members announced (elected by Council Nov. 5): Ordinary members, D. B. Finn, E. P. Linton, V. D. Vladykov, R. A. McKenzie; Student members, W. R. Inman, D. M. Ross, Helen R. Belyea.

Obituary:—Professor Daniel Alexander Murray, Ph.D., scholar of international repute and author of many mathematical treatises, died Oct. 19, 1934. After graduating with honours from Dalhousie in 1884, he studied at Johns Hopkins Berlin and Paris. He came to Dalhousie as professor of mathe-

matics in 1908, having previously held a similar post at New York University. Five years later he was called to McGill as professor of mathematics; at the time of his retirement in 1930 he was chairman of the department. Joining the Institute Dec. 18, 1903 (auditor for the two years 1905-7) he retained his membership until his death.

Papers: 1—Some Unreported and Rare Fishes for the Coast of Nova Scotia, by V. D. Vladykov. 2—Some Properties of the Polysaccharide Complex Extracted from a Marine Alga, *Chondrus crispus*, by M. R. Butler. 3—Further Studies on Explosive Antimony, by C. C. Coffin.

2nd Ordinary Meeting, Dec. 10, 1934. New student member announced (elected by Council Nov. 26), A. J. C. Wilson. Papers: 1—Note on a May-fly from the Halifax Region, by G. H. Henderson. 2—Cod and Water Temperature, by R. A. McKenzie.

3rd Ordinary Meeting, Jan. 14, 1935. New members announced (elected by Council Jan. 7). Ordinary member, Herbert Baxendale. Student members, R. W. Begg, W. E. Parker. Capt. W. F. Mitchell, having duly given notice of motion in the manner provided, proposed to amend the Constitution by reducing the annual fee for student members from one dollar to fifty cents. Passed unanimously. Papers: 1—Hot Wire Anemometry, by D. LeB. Cooper and E. P. Linton. 2—The "Imidazoles" of Fish Muscle, by W. W. Johnston. 3—The Goldenville-Halifax Boundary at Fairview, N. S., by Elizabeth King.

Special Meeting, Feb. 11, 1935. Mr. T. E. Kloss of the Mersey Paper Company, Liverpool, N. S., delivered a popular lecture on "The Chemistry of Paper Making".

4th Ordinary Meeting, Mar. 11, 1935. New associate members announced (elected by Council Feb. 28), H. B. Hachey, M. W. Smith. Papers: 1—The Pre-treatment of Fresh Fillets for Smoking, by D. LeB. Cooper and E. P. Linton. 2—Some New Types of Pleochroic Haloes, by F. W. Sparks. Demonstration: 3—Chemiluminescence, by J. R. Dacey.

Special Meeting, Apr. 8, 1935. New student member announced (elected by Council Mar. 25), Elisabeth C. Saunderson. Capt. W. F. Mitchell delivered a popular illustrated lecture on "Life Saving Methods Used on Board Merchant Ships, Past and Present". Shorter Papers: 1—The Life and Scientific Accomplishments of Simon Newcomb, by G. H. Henderson. 2—The Historical Development and Programme of the Nova Scotian Institute of Science, by R. J. Bean.

Fifth Ordinary Meeting, May 3, 1935. Papers: 1—The Early Development of the Cartilage Skull of *Salmo salar*, by E. C. Saunderson. 2—Notes on the Criteria for Determining the Tops of Stratified Beds, by H. R. Belyea. 3—Silicosis: its Implications and Importance, by P. Isaacson and E. D. Levittan. 4—The Halo Complex of March 4th, 1935, at St. Andrews, N. B., by H. B. Hachey. Papers read by title: 5—The Marine Fishes of Nova Scotia, by V. D. Vladyskov and R. A. McKenzie. 6—Fresh-water Cladocera and Copepoda from New Brunswick and Nova Scotia, by M. W. Smith.

ABSTRACTS.

(Papers read before the Institute but not published in the Proceedings).

SOME PROPERTIES OF THE POLYSACCHARIDE COMPLEX EXTRACTED FROM A MARINE ALGA, *Chondrus Crispus*. Margaret R. Butler, Dept. of Biology, Dalhousie Univ., Halifax, N. S. (Read Nov. 12, 1934). The material responsible for the gelatinising property of *Chondrus crispus* has been prepared in a relatively pure state, under standard conditions. The material, while largely carbohydrate in nature, leaves an ash equivalent to approximately 20% of its dry weight. The extract, previously described as an ethereal sulphate of calcium, is now shown to be a mixture of sulphates, and other substances, e. g. organic phosphates. The potassium salts of the ethereal sulphates which occur in situ have been prepared by dialysis, and found to be superior in purity to the original extract. Calcium salts were prepared by replacing the potassium in the potassium salts. Ammonium salts were also prepared. The *Chondrus* extract is compared with a purified sample of agar-agar to which it is frequently likened.

FURTHER STUDIES ON EXPLOSIVE ANTIMONY. C. C. Coffin, Dept. of Chemistry, Dalhousie Univ., Halifax, N. S. (Read Nov. 12, 1934). Experimental data bearing on the structure, electrical conductivity and rate of crystallization of explosive antimony are discussed.

A MAYFLY FROM THE HALIFAX REGION. G. H. Henderson, Dept. of Physics, Dalhousie Univ., Halifax, N. S. (Read Dec. 10, 1934). Mayflies, in subimago and imago stages, were collected in the neighbourhood of Halifax, May 3 to 8, 1934. These specimens were identified by Dr. J. McDunnough, Dept. of Agric., Ottawa, as belonging to the single species, *Blasturnus nebulosus*, Walker.

COD AND WATER TEMPERATURE. R. A. McKenzie, Atlantic Biological Station, St. Andrews, N. B. (Read Dec. 10, 1934). The experimental feeding, to date, of cod kept in cement tanks supplied with running salt water has shown that, as the water gradually warms during the spring and summer, the amount of food consumed per fish increases until a certain temperature (tentatively placed between 10°C. and 15°C.) has been reached. Above this, the amount of food taken decreases rapidly as the temperature goes higher. During the season, any comparatively sudden rise in temperature has been found to bring about a decrease in the amount of food taken, while a drop in temperature causes increased feeding. The order obtaining at the extremes of the temperature range has not yet been definitely established. The small cod have a higher optimum and a wider range of feeding temperature than the large cod. While these results have not yet been fully correlated with the fishery, still they do explain the sudden cessation of fishing when the temperature rises rapidly at certain times of the year.

THE "IMIDAZOLES" OF FISH MUSCLE. W. W. Johnston, Fisheries Exp. Sta., (Atlantic), Halifax, N. S. (Read Jan. 14, 1935). The occurrence of an "imidazole" in different muscles of marine fish found off the coast of Nova Scotia is reported and some remarks are made on the properties and nature of the substance.

THE PRE-TREATMENT OF FRESH FILLETS FOR SMOKING. D. LeB. Cooper and E. P. Linton. Fisheries Exp. Sta. (Atlantic), Halifax, N. S. (Read March 11, 1935). The determination of the optimum conditions for the production of a satisfactory sheen and surface by a combination of salting and drying has been carried out on single fillets in small tunnels. The results obtained in this manner have been applied to the design of tunnels of commercial length, operated under conditions approximating those used in plant practice. It has been demonstrated that fresh fillets may be prepared for smoking in a continuous manner in all classes of weather in approximately one sixth to one third the time required at present.

SOME NEW TYPES OF PLEOCHROIC HALOES. F. W. Sparks, Dept. of Physics, Dalhousie Univ., Halifax, N. S. (Read March 11, 1935). Description and measurements of new types of haloes, particularly in a biotite from Star Lake, Manitoba, are given.

NOTES ON THE CRITERIA FOR DETERMINING THE TOPS OF STRATIFIED BEDS. H. R. Belyea, Dept. of Geology, Dalhousie Univ., Halifax, N. S. (Read May 3, 1935). It is often difficult to determine whether a series of beds is showing the original order of superposition. There are several useful criteria which may prove helpful. The occurrence of cross-bedding, graded bedding, ripple mark, and rain prints preserved in sediments, the bending of the laminae around a pebble in a conglomerate, drag-folding, and cleavage developed in a slate are all of use in determining the tops of beds. The inclination of a pegmatite dyke may be recognized. When the dip is inclined the coarse crystallization favours the hanging wall, and when the dip

is vertical the coarse crystallization is in the centre. In a lava the top of the bed is scoriaceous and the bottom chilled.

SILICOSIS: ITS IMPLICATIONS AND IMPORTANCE. Philip Isaacson and Edwin D. Levittan, Dept. of Geology, Dalhousie Univ., Halifax, N. S. (Read May 3, 1935). The close connection of the fields of geology and medicine is positively illustrated by their interrelation in the problems of silicosis. The implications of silicosis in geology are the studies of the rocks and minerals, in man's external environment, which are the causative agents. The implications in medicine are the concomitant and resultant diseases which develop from excessive intake of injurious dusts, the pneumoconioses and tuberculosis. Importance of silicosis is soon realized when the increasing death rate and our present inability to control it are considered. Prevention, although in the early stages, also emphasizes the necessity for studying geology and medicine together. The former investigates dust from its formation to its contact with the nasal membranes. Medicine considers the effects of dust on man after it has entered the nares and studies (1) prevention of silicosis, if possible, and (2) prevention of complicating tuberculosis in silicotics. The present status of silicosis leaves yet much to be desired as regards knowledge of causes, cure and prevention. Prognosis is both good and bad depending on how early the condition is discovered and treated.