

PRESIDENTIAL ADDRESS.

Douglas McIntosh.

(Read at the Annual Meeting, October 15, 1931).

While custom has made an address from the retiring President a duty, our constitution views the opportunity as a privilege which a retiring officer has earned by the interest he has shown in the society; and so I regard it. With this in mind, I ask your indulgence while I review briefly the events of the past year. It is with regret that I end the pleasant relationship with this society, its council and members, and this regret is increased by my inability to meet with you this evening.

It was my sad duty to refer to the deaths of two of our members on the occasion of our first meeting last year. Tonight, I must speak of the passing in August, 1930 of a member well known to many of us. William F. McKnight, B.Sc., Professor of Electrical Engineering at the N. S. Technical College for many years, has made for himself a place in the teaching profession and in technical science, which is being widened and deepened by the growing reputations of his students. An able scientist, he preserved an equitable balance between his scientific and his civic and social duties. Prof. McKnight served on the council of this society for the year 1928-9. Latterly, due to ill health, he was seldom seen at our meetings. In his brave struggle with a dread disease he went down with colours flying. His death is regretted by all who had the privilege of his acquaintance.

Seven general meetings for the reading of papers were held during the year. Our programme was exceptionally full, and the discussions were interesting and inspiring. The papers may be roughly classified: 8 in physics, 7 in chemistry and bio-chemistry; 3 in zoology, 3 in pharmacology and 1 in geology. Probably the meeting at which the greatest interest was shown was that at which an account of the earthquake of November 18, 1929, was given by the Professors of Physics and Geology of Dalhousie University; and the facts collected, to be published in our transactions, will be a more complete record of this great disturbance that has yet appeared in print. Five demonstra-

tions of new apparatus or new scientific methods were given during the session.

Regret was expressed by one of our oldest members that so few papers dealing with the natural history of the province had been read during the last few years. This is the fault, not of the officers or council, but of our naturalists. It is hardly necessary to say that contributions from them will be welcomed in the same spirit as those received from our physicists or chemists.

The appearance of our Transactions for 1928-29 was somewhat delayed due to circumstances familiar to all of you. Those for 1929-30 will appear shortly. Let me take this opportunity of congratulating Prof. King, our editor, on his work, and in the name of the society thanking him and the other members of the committee for the time they have so generously given us.

Our notices are now sent out in a way which should eliminate all omissions, so that no member should fail in his attendance at meetings through lack of knowledge.

The Government grant has been continued and our finances are in satisfactory state. This will be gone into fully by our treasurer.

Our library has been added to both by exchanges and by the expenditure of the Government grant. Mr. Piers will tell you of its condition in his report.

Two years ago a science exhibition was held in the buildings of Dalhousie University. It would be out of place for one who will be unable to take part in the work necessitated by such an undertaking, to offer advice on future displays. In view of the interest taken by the citizens of Halifax, the members of the society should not let time pass without discussing this question.

Of recent years, the retiring President has not, as a rule, been elected to the council, and the society loses his assistance and advice. This I believe is a mistake. I feel that it would be a good measure to revise our constitution and make the past president an ex-officio member of council.

Our society has lost several members through resignation from the Experimental Station for Fisheries and from Dalhousie. May we hope that the loss to the Institute will be more than made up by the young and energetic men who are filling these vacancies.

The handsome piece of plate, which we had hoped to present to our most distinguished member at a dinner in his honour,

has been engraved and will be given to his family. It bears the following inscription:

Presented to
Alexander Howard MacKay, Esq., LL.D., F.R.S.C.
by
The Nova Scotian Institute of Science
on the 11th of May, 1929,
as a token of deep respect and in recognition
of his long and eminent service in the cause
of Science and Education.

May I thank the members for the aid they have given and the forbearance they have shown to the officers and members of the Council. I ask for a continuance of their kindness to the officers elected this evening.

THE RESPONSE OF INVOLUNTARY MUSCLE TO PITUITRIN, MORPHINE AND QUININE. N. B. Dreyer, Dept. of Pharmacology, Dalhousie Univ., Halifax, N. S. (Read May 11, 1931). On the intestines, morphine (.1-.5 mg. per kg.) produces an increase of tone and movements. Peristalses become more frequent. The tonic effect passes off somewhat earlier than the motor effect. On the non-pregnant uterus morphine and quinine have no demonstrable effect on motility; on the pregnant uterus morphine occasionally produced a complete inhibition of movements. In many cases the rhythm was unaffected. On the involuting uterus forty-eight hours post partum, no change was observed. In this uterus adrenaline produces an inhibition of movements. The stimulant action of morphine seen in the intestine is absent in the uterus.

Quinine sometimes shows slight stimulation on the early pregnant uterus but this stimulation was transitory. In the involuting uterus quinine has no effect. In the intestine quinine heightens the tone and increases the movements slightly in doses of 2 mg. per kg. In doses of 4 mg. per kg. there is an appreciable increase in the amplitude of the movements.

Pituitary extract shows a brief stimulation on the intestine followed by an inhibition of several minutes. This is followed by a return of tone above normal, and an increase in the amplitude of movements. Pitressin behaves like crude pituitary extract. Pitocin produces a pure inhibition on the intestine. The effects on the uterus were those usually described for these two constituents.

PROCEEDINGS OF MEETINGS.

SESSION OF 1930-31.

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

69th Annual Business Meeting, Oct. 15, 1930.—The First Vice-President, Dr. E. G. Young, in the chair. Others present: Prof. D. S. McIntosh, D. J. Matheson, Dr. H. R. Chipman, Dr. H. S. King, Prof. G. A. Burbidge, Capt. W. F. Mitchell, Dr. H. L. Bronson, Prof. C. B. Nickerson, Dr. J. H. L. Johnstone, Prof. E. Hess and H. Piers.

In the absence of the President his address was read by Mr. Piers. The Treasurer's report showed that the receipts for the past year were \$2,033.66; expenditures, \$623.43; balance in current account, \$1,410.23; reserve fund, \$212.48; and permanent endowment fund, \$1,500.00—The Librarian's report showed that during the year ended Sept. 30, 1930, 1,827 books and pamphlets had been received through the Institute's exchange-list; and the total number in its library at that date was 19,237. The number of accessions of the entire Provincial Science Library (with which that of the society is incorporated) in the same period was 2,149; and the total number in the Library on Sept. 30, 1930, was 80,311. During the year 144 books were borrowed. In response to a request from the Council of the Institute, the Governor in Council on March 18, 1930 appointed Dr. F. H. Sexton and H. Piers, and on recommendation of the Institute, Dr. E. G. Young and Dr. J. H. L. Johnstone, to be members of a Commission to administer the Provincial Science Library of Nova Scotia, to hold office for one year. The Commission held its first meeting on April 16. —Reports were also made by the Corresponding Secretary and the Editor of the Transactions.

It was resolved that the Institute learns with deep regret of the death of its member, William Falconer McKnight, B.Sc., A.M.E.I.C., professor of electrical engineering at the N. S. Technical College, which occurred at Riverglade, N. B., on Aug. 25th., at the age of forty-six years, and desires to express its deep sympathy with his widow in her sad bereavement.

It was resolved that students registered in any educational institution be allowed to join the Institute as student members, with a fee of one dollar, but without a vote.

The following were elected officers for the year 1930-31:

President,—Prof. E. G. Young, Ph.D.; *vice-presidents*,—Prof. D. S. McIntosh, M. Sc., Prof. A. H. Leim, Ph. D.; *treasurer*,—D. J. Matheson, B.Sc.; *corresponding secretary*,—H. R. Chipman, Ph.D.; *recording secretary and librarian*, Harry Piers; *councillors without office*,—Prof. H. S. King, Ph.D., Prof. G. A. Burbidge, Prof. G. H. Henderson, Ph.D., D. J. Mackenzie, M.D., Rev. Bro. W. Cornelia and Prof. H. P. Bell, Ph.D.; *auditors*,—P. R. Colpitt and Prof. W. P. Copp, B.Sc.,

A vote of thanks was passed to the retiring president, Dr. D. McIntosh, who had removed from Halifax.

1st Ordinary Meeting, Nov. 17, 1930.—It was announced that on Nov. 3 the following had been elected ordinary members: Dr. C. C. Coffin, Dr. D. Mainland, Dr. N. B. Dreyer, and Dr. R. F. Ross.—Dr. E. G. Young read a paper on "An Analysis of Fox Milk," and Dr. G. H. Henderson and J. L. Nickerson one on "The Ranges of Alpha Particles from Thorium."

2nd Meeting, Dec. 8, 1930.—It was announced that on Nov. 24, Dr. F. R. Hayes, Dr. E. R. Jones and Miss C. I. MacFarlane had been elected ordinary members; Prof. R. M. Fisher and Prof. H. W. Harkness, associate members; and eleven others as student members.—Dr. N. B. Dreyer presented a paper on "Some Effects of Opium Alkaloids on the Intestines of Different Animals."

3rd Meeting, Jan. 12, 1931.—It was announced that seven student members had been elected on Dec. 28—Dr. E. R. Jones presented a paper on "Intranuclear Deutoplasm in the Turbellarian *Prorhynchus applanatus*," and Dr. F. R. Hayes one on "The Physiological Response of Paramecium to Sea-water."

4th Meeting, Feb. 9, 1931.—It was announced that Prof. D. G. Macgregor, Sackville, N. B., had been elected an associate member on Jan 26. The following papers were presented: "High Acidity of Quarry Water," by S. A. Beatty and Dr. A. H. Leim; "Some Actions of Mercury Salts on the Intestine," by Dr. N. B. Dreyer; and "The Polysaccharide of *Chondrus crispus*," by Dr. E. G. Young and Miss M. R. Butler.

5th Meeting, Mar. 9, 1931.—It was announced that three student members had been elected on Mar. 2. A minute of the Council meeting of Jan. 26, with reference to changes in the title, contents and arrangement of the Institute's publication, was read and confirmed. The following papers were presented: "Some New Physico-Chemical Apparatus," by Dr. C. C. Coffin; "Circulation of Wind in a Cyclonic Area in the Northern Hemisphere," by Capt. W. F. Mitchell.

6th Meeting, Apr. 15, 1931.—Dr. H. L. Bronson was appointed delegate to the Faraday Celebration of the Royal Institution of G. B., London, in Sept. It was resolved that the Institute place on record its deep sense of loss at the death of one of its student members, H. Graeme Fraser. Mr. Fraser, a native of Truro, was an honors student in Chemistry at Dalhousie University and was working on a research shortly to be published in these Transactions when his death, due to an accident in the laboratory, occurred. He was a young man of much promise and had made an excellent beginning in his chosen field of research. He possessed a modest charm of manner which made him well liked by all who knew him. The Institute desires to express sympathy with his family.—The following papers were presented: "Detection and Estimation of Methyl Alcohol in Presence of Ethyl Alcohol," by A. C. Bell and Dr. H. S. King; "Preparation of Hydrazine Sulphate," by H. R. Fraser and Dr. H. S. King; "Influence of Electrolytes on Gelation of Methyl Amine Urate," by Dr. E. G. Young and F. F. Musgrave.

7th Meeting, May 11, 1931.—The following papers were presented: "Studies in Aldehyde-Anhydride-Ester Systems: Introduction," by Miss P. Miller and Dr. C. C. Coffin; "Response of Involuntary Muscle to Pituitrin, Morphine and Quinine," by Dr. N. B. Dreyer.

HARRY PIERS,
Recording Secretary.

ABSTRACTS.

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

AN ANALYSIS OF FOX MILK. E. Gordon Young and G. A. Grant Dept. of Biochem., Dalhousie Univ., Halifax, N. S. (Read Nov. 17, 1930). A sample of fox milk is described quantitatively and qualitatively. The ash is very high in its content of calcium and phosphate (86%).

THE RANGE OF THE ALPHA PARTICLES FROM THORIUM. G. H. Henderson and J. L. Nickerson, Dept. of Physics, Dalhousie Univ., Halifax, N. S. (Read Nov. 17, 1930). The range of the α particles from thorium has been determined by a Wilson chamber method to be $2.59 \pm .05$ cm. at 0°C. and 760 mm. (Published in full in Phys. Rev., Oct. 15, 1930).

SOME EFFECTS OF OPIUM ALKALOIDS ON THE INTESTINES OF DIFFERENT ANIMALS. N. B. Dreyer, Dept. of Pharmacology, Dalhousie Univ., Halifax, N. S. (Read Dec. 8, 1930). Morphine stimulates the intestine of all the usual laboratory animals. The effect is particularly pronounced in the large intestine. Atropine has an inhibitory action on the morphine stimulation. Codeine, heroine, dionine all have actions similar to that of morphine. Heroine action is as strong as that of morphine, dionine is weaker and codeine has only $\frac{1}{4}$ th the activity. Papaverine and narcotine cause relaxation of the gut wall.

INTRANUCLEAR DEUTOPLASM IN THE TURBELLARIAN *PRORHYNCHUS APPLANATUS*, RENNELS, E. Ruffin Jones, Dept. of Biology, Dalhousie Univ., Halifax, N. S. (Read Jan. 12, 1931). A new type of deutoplasm, hitherto unreported, is described for *Prorhynchus applanatus*. Formation takes place within the nucleus through the growth and fusion of nucleoli. The food material contained in the yolk cells is utilized by the developing embryo in the following order,—(1) Cytoplasm of yolk cell, (2) yolk particles in the cytoplasm, (3) intranuclear deutoplasm, (4) nucleoplasm.

HIGH ACIDITY OF QUARRY WATER. S. A. Beatty and A. H. Leim, Fisheries Exp. Sta. (Atlantic), Halifax, N. S. (Read Feb. 9, 1931). Water of high acidity (pH3.0) was found issuing from a quarry near Windsor, N. S. Even on considerable dilution it was fatal to hatchery eggs. An explanation of the high acidity is offered based on the occurrence of iron pyrites from which free sulphuric acid is formed.

SOME ACTIONS OF MERCURY SALTS ON THE INTESTINE. N. B. Dreyer, Dept. of Pharmacology, Dalhousie Univ., Halifax, N. S. (Read Feb. 9, 1931). Soluble inorganic mercury compounds placed in the gut lumen increase intestinal motility, reflexly, by irritation of the intestinal mucosa. Intravenously, mercury salts dissolved in serum have no action on gut movements. On the isolated perfused intestine, soluble mercury compounds can cause an increase in movements but this is merely part of the toxic action of mercury salts. Dissolved in serum, the toxic action is less marked and motility is not affected to the same extent. The toxicity is also somewhat diminished.

THE POLYSACCHARIDE OF *CHONDRUS CRISPUS*. E. Gordon Young and Margaret R. Butler, Dept. of Biochem., Dalhousie Univ., Halifax, N. S. (Read Feb. 9, 1931). The optimal conditions for extraction from the dried plant have been investigated and a method described by which a product free from nitrogen may be obtained. The physical properties of this polysaccharide have been determined. An attempt has been made to ascertain the approximate chemical composition.

SOME NEW PHYSICO-CHEMICAL APPARATUS. C. C. Coffin, Dept. of Chem., Dalhousie Univ., Halifax, N. S. (Read March 9, 1931). A lamp bank rheostat, an internal gas heater and thermoregulator and a "volumestat" have been tried out and found to be satisfactory. The "volumestat" which is based on the electrolytic production of H_2 and O_2 and their recombination on a platinum catalyst has several useful applications which are indicated and discussed.

THE CIRCULATION OF THE WIND IN A CYCLONIC AREA IN THE NORTHERN HEMISPHERE. W. F. Mitchell, Halifax, N. S. (Read March 9, 1931). Actual experiences and observations in the Indian Ocean, Pacific and in the Cabot Straits.

THE PREPARATION OF HYDRAZINE SULPHATE. H. Roy Fraser and Harold S. King, Dept. of Chem., Dalhousie Univ., Halifax, N. S. (Read April 15, 1931). Raschig's method of preparing hydrazine sulphate has been studied in detail and the following major modifications have been devised: (a) By partial hydrolysis of the gelatine by ammonia, prior to the addition of sodium hypochlorite, troublesome foaming has been eliminated; (b) by collecting the ammonia given off during the reaction, the cost of the process is considerably decreased; (c) by making the process semi-continuous, the process has been made practicable on a commercial scale.

THE INFLUENCE OF ELECTROLYTES ON THE GELATION OF METHYL AMINE URATE. E. Gordon Young and Forrest F. Musgrave, Dept. of Biochem., Dalhousie Univ., Halifax, N. S. (Read April 15, 1931). The effect of various electrolytes in promoting gelation of aqueous supersaturated solutions of methyl amine urate has been studied. The cation has been shown to be the active agent. The mineral concentration of the cation which is effective depends upon its valence as in the case of the coagulation of typical suspensoids. Salts of sodium, potassium, ammonium and rubidium have been found to induce gelation. Salts of lithium and caesium were negative in their effect.