

PRESIDENTIAL ADDRESS.

E. Gordon Young.

(Read October 14, 1931).

This occasion marks the close of the sixty-ninth annual session and the beginning of the seventieth. It is fitting that at this time the president should be required to give an account of his stewardship during the year and that he should link the achievements of the past with the problems of the future.

During the course of the year the Institute has suffered a loss by death of one of its members. On February 14th, 1931, there occurred the tragic death of one of our young student members due to a toxaemia subsequent to severe burns received in an accident in the organic chemical laboratory of Dalhousie University. Hugh Graeme Fraser was in his fourth year of the honours course in chemistry and looking forward to a professional life in that subject. All those who knew him testify to his admirable personal qualities and his devotion to science.

The Institute has also suffered a loss in the departure of its former president, Dr. Douglas MacIntosh, from Halifax to Shawinigan Falls, Quebec. Our good wishes follow him there as well as our thanks for his years of admirable and exemplary service to the society.

In order to enhance the dividend return on moneys invested in a savings account with the Bank of Nova Scotia the council authorized the purchase of a \$500 Victory Bond maturing in 1934 bearing interest at the rate of five and a half percent. This was later in the year converted into an equivalent bond in the Conversion Loan of maturity 1959 at four and one-half percent interest.

A new form of membership was established by the following minute of the last annual meeting.

“Resolved that students in any educational institution be allowed to join the Nova Scotian Institute of Science as student members with a fee of one dollar but without vote.”

We have thus created a membership equivalent to that of associate membership but open only to a restricted group which we wish to encourage in the pursuit of science. Twenty-one individuals were elected to membership by the council on this regulation. The membership of the Institute was

otherwise well maintained. Seven ordinary and three associate members were elected. Our total enrollment now stands at about 100. It is not an exaggeration to state that in so far as professional scientists are concerned our roll carries the names of most of those in the province.

Our Editor, Dr. H. S. King, has given much thought to ways and means of facilitating the publication of the Proceedings. Certain changes have been adopted by way of reducing the cost of publication and accelerating the printing of original articles during the year. In order to accomplish this it has been found necessary to change the sequence of material. Papers published in full will have precedence in the order of their acceptance. These will be followed by papers published in abstract, then condensed reports of business and ordinary meetings. This should facilitate printing of original articles as soon as received and the delivery of separates to the author before the appearance of the part. The term "Transactions" has been omitted from the title because of the new order of material and because of the arbitrary division between Proceedings and Transactions previously recognized but now abolished.

It is a source of gratification to your executive that the main purpose of the Institute has been served in that the promotion of research has been its only activity and that the number and quality of original papers presented has been well maintained. The number of papers read before the society this year was fifteen. Classified according to the different branches of science there were nine chemical papers, four biological, (two zoological and two pharmacological), one physical and one meteorological. A very small proportion of those read before the society will appear in the Proceedings. And it is anticipated that this state of affairs will continue for various reasons. This is the most important issue before the society at the present time.

The encouragement of research into provincial and maritime problems is, I venture to state, one of the functions of this Institute. The systematic paper on the flora and fauna of this province has disappeared entirely from our publication. This is regrettable and deserves a careful study by the new executive and the society as a whole.

May I be permitted to take this opportunity of thanking the members for the honour which they have done me in entrusting to me the chairmanship of the society. I would also express my thanks to the members of the council for their generous co-operation at all times.

PROCEEDINGS OF MEETINGS.

SESSION OF 1931-32.

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

70.h Annual Business Meeting, Oct. 14, 1931.—The President, Dr. E. G. Young, in the chair. Others present: D. J. Matheson, Dr. H. R. Chipman, Dr. H. S. King, Prof. G. A. Burbidge, Dr. G. H. Henderson, Capt. W. F. Mitchell, Prof. R. J. Bean, Prof. W. P. Copp, Prof. E. Hess, Dr. J. H. L. Johnstone, Prof. C. B. Nickerson, Dr. S. G. Ritchie, and H. Piers.

The President delivered an address dealing with the progress of the society during the past session. Attention was drawn to the death of Prof. W. F. MacKnight and Hugh Graham Fraser. The Treasurer's report showed that the receipts for the past year were \$2,148.75; expenditure, \$1,247.68; balance in current account, \$901.37; reserve fund, \$718.84; and permanent endowment fund, \$1,500.00. The Librarians report showed that during the year ended Sept. 30, 1931, 2,031 books and pamphlets had been received through the Institute's exchange-list; and the total number in its library on that date was 62,901. The number of accessions of the entire Provincial Science Library (with which that of the society is incorporated) in the same period was 2,302; and the total number in the Library on Sept. 30, 1930, was 82,613. During the year 264 books were borrowed. Reports were also presented by the Corresponding Secretary and the Editor of the Proceedings.

Rev. Bro. Cornelia was congratulated on his appointment to the principalship of St. Mary's College.

The following were elected officers for the year 1931-32: *President*, Prof. E. G. Young, Ph. D.; *vice-presidents*, Prof. D. S. McIntosh, M. Sc., A. H. Leim, Ph. D.; *treasurer*, D. J. Matheson, B. Sc.; *corresponding secretary*, Prof. E. Hess; *recording secretary and librarian*, H. 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., Capt. W. F. Mitchell, Rev. Bro. W. Cornelia, and Prof. N. B. Dreyer, M. R. C. P.; *Auditors*, P. R. Colpitt and Prof. W. P. Copp, B. Sc.

Dr. Young and Dr. Johnstone were nominated as the Institute's representatives on the Provincial Science Library Commission.

Votes of thanks were presented to the treasurer, Mr. Matheson, to the retiring corresponding secretary, Dr. Chipman, and to the recording secretary, Mr. Piers.

1st. Ordinary Meeting, Nov. 9, 1930.—It was announced that on Oct. 26, Dr. D. McIntosh has been elected a corresponding member; Dr. M. Jacobson and Dr. R. Morash, ordinary members; and Dr. A. R. Prince, an associate. A committee appointed on Oct. 26 to consider the question of popular lectures, recommended "that the Institute do not undertake to furnish lectures for the general public or for high school students, but that the occasional presentation of papers or lectures on matters of general scientific interest, at the regular meetings of the Institute be favourably considered and that two such papers or lectures be provided for this winter." The committee was authorized to arrange a programme as recommended. A. F. Chaisson, Ph. D., presented a paper on "The Effect of Destruction of the Spinal Cord on Osmotic Control in Elasmobranches"; and Dr. H. L. Bronson gave a brief account of the London meeting of the British Association for the Advancement of Science, of the Faraday Celebration, the Royal Institution, the Maxwell Celebration in Cambridge and the Cavendish Laboratories.

2nd Meeting, Dec. 14, 1931.—Prof. H. P. Bell, presented a paper on "The Algal Flora of Hudson Bay;" and D. Mainland, one on "Quantitative Methods in the Study of Early Mammalian Development."

Popular Lecture, Jan. 11, 1932.—It was announced that Miss D. Pelluet, Ph. D., Halifax, had been elected an ordinary member on Jan. 4th. Prof. F. R. Hayes, delivered a popular lecture on "The Life of the Salmon."

3rd Meeting Feb. 8 1932.—It was announced that Hon. Mr. Justice Mellish had been elected an ordinary member on Jan. 25th. Miss C. MacFarlane presented a paper on "Seasonal Changes occurring in the Marine Algal in the Vicinity of Halifax"; and S. A. Beattie, on "The Proteins of Fish Muscle and their possible Relation to Muscular Movement and Rigor."

4th Meeting, Mar. 14, 1932.—It was announced that C. H. Connolly, Halifax, had been elected an ordinary member on Feb. 29th. Prof. E. G. Young, and H. C. Graham, presented "Further Observations of the Influence of Electrolytes on the Formation and Decomposition of Urate Gels", and E. Hess a paper on "Bacterial and Chemical Changes in Canned Lobster."

5th Meeting, Apr. 11, 1932.—S. Bateson presented a paper on "Pleochroic Halves in Biotite"; and R. A. Morash, and F. C. MacIntosh, one on "Responses of the Rat's Bladder, Seminal Vesicle and Vas Deferens."

6th Meeting, May 11, 1932.—It was recorded that the Institute learns with deep regret of the death of its senior corresponding member and oldest surviving member, the Rev. Charles James Stewart Bethune, D. C. L., F. R. S. C., a highly distinguished entomologist and educationist, which sad event took place at Toronto, Ont., on Apr. 18, 1932, in his ninety-fourth year. He was elected a corresponding member of the Institute on Dec. 29, 1868, and prepared a list of Nova Scotian Lepidoptera, with notes by J. M. Jones, which appeared in the Transactions, Vol. 2, p. 78 (1869), and he also identified nearly all the Nova Scotian Coleoptera included in Mr. Jones's list published in the same volume, p. 141. C. R. K. Allen, presented a paper on "Physical Changes in the Early Development of the Salmon"; F. C. MacIntosh, one on "The Action of Some Anthraquinone Purgatives on the Intestine," and J. F. Horwood and Prof. H. S. King, one on "An Organo-Mercury Compound Formed in Pinacol Reduction."

Harry Piers,
Recording Secretary.

AN ORGANO-MERCURY COMPOUND FORMED IN PINACOL REDUCTION. J. F. Horwood and Harold S. King, Dept. of Chem., Dalhousie Univ., Halifax, N. S. (Read May 11, 1932). In the preparation of pinacol hydrate by the reduction of acetone with magnesium in the presence of a benzene solution of mercuric chloride, an organo-mercury compound is formed in small quantities. This compound is a non-volatile, syrupy liquid, soluble in benzene and in water. It decomposes at about 130° with liberation of metallic mercury and water. With dilute hydrochloric acid it gives no precipitate, therefore does not contain the C-Hg-OH group. Heated with mercuric chloride solution, it forms a yellowish precipitate, therefore it may contain the C-Hg-C group. This precipitate is insoluble in benzene, water, acetone, etc., but soluble in aniline. It decomposes at 136-137°. A benzene solution of acetone reduced by magnesium amalgam yields a similar liquid which, with mercuric chloride, gives a precipitate evidently identical with that mentioned above. It also decomposes at 136-137°. Since the liquid organo-mercury compound is difficult to purify, only inconclusive analyses were obtained. The following provisional formula is suggested: $(\text{CH}_3)_2\text{C}-\text{Hg}-\text{C}(\text{CH}_3)_2$. Its formula



would be explained by the addition of a mercury atom between the two trivalent carbon atoms which normally would unite directly together to yield pinacol.

BACTERIAL AND CHEMICAL CHANGES IN CANNED LOBSTER. Ernest Hess, Fisheries Exp. Sta. (Atlantic), Halifax, N. S. (Read March 14, 1932). Formation of *Iron sulfide* ("black discoloration" of can and meat) is known to be caused through liberation of volatile S from lobster meat by bacterial action in non-sterile cans, or in boiled meat during incipient decomposition before canning, together with the corrosion of the tin lining of the can, thus allowing the S to react with the iron body of the can. Observed in cans within pH range 6.7 to 7.7 (in test tube, reaction occurs at pH 6.65 and higher), in contrast to data of Japanese workers on canned crab: black discoloration only at pH 7.5 and higher. Iron sulfide observed in sterile cans, packed and sterilized immediately after boiling of live lobsters, led to investigation of effect of vitality of live lobsters at time of boiling on iron sulfide formation in the cans. Increasing period of keeping live lobsters on ice, previous to boiling and canning, led to increase of pH of can contents (from pH 6.9 to 7.7) and increased black discoloration (after 13 months' storage). Determination of pH of body fluid of live lobsters, kept on ice, showed slight increase in first 24 hours (from pH 7.1 to 7.3), followed by decrease when lobsters lost vitality (became "sick") and second decrease immediately after lobsters died (lactic acid production). Lobster meat packed at this latter stage gave a can with pH 6.3 and showed no iron sulfide after 13 months' storage. No correlation observed by other workers between amount of volatile S in meat and length of time live lobsters kept on ice. Formation of crystals of *Magnesium ammonium phosphate*, observed in sterile cans within pH range of 6.5 to 7.7, especially in cans showing much iron sulfide formation (pH 7.1 to 7.7). Precipitation of crystals from natural constituents of lobster meat in alkaline medium. Crystal formation also observed in bacterial stab cultures in media containing lobster meat infusion, especially at slightly alkaline reaction (pH 7.4) at incubation temperatures from 5° to 37°C. Amount of crystal formation in cans increases with age of cans at storage temperatures from 0° to 35°C. Formation of *Blue-Green Discoloration*, in coagulated food in cans, little investigated. Copper occurring in lobster blood (in place of iron in mammalian blood). Formation of Ammonia Cupric salt (Fellers and Park) not likely, as reaction in cans hardly alkaline enough for this reaction. Observed in cans with pH 6.9 to 7.35. Other compounds of copper (with Cl, S, As, PO₄ etc.) possible, as all these elements occur in canned lobster.

PLEOCHROIC HALOES IN BIOTITE. Sydney Bateson, Dept. of Physics, Dalhousie Univ., Halifax, N. S. (Read April 11, 1932). Pleochroic haloes in biotite have been studied quantitatively. The intensity of discoloration has been measured directly by a microphotometer. The resulting photometer curve shows close agreement with the integrated ionization curve for the Uranium family.