REPORTS

REPORT OF THE BANTING RESEARCH FOUNDATION FOR THE YEAR 1938–1939

THE annual meeting of the trustees was held late in January, 1940, and at this meeting was submitted the Annual Report of the Honorary Secretaries. This revealed that twenty grants had been made during the year. Slightly less than half of the foundation's income was placed at the disposal of Sir Frederick Banting in the Department of Medical Research, University of Toronto, to finance research of his choice. The remainder of the foundation's income was distributed to nineteen applicants in different parts of Canada, whose research projects were favorably viewed by the trustees.

It was noted in this report that from the character of the applications being received by the foundation, it was obvious that the modern trend of medical research is increasingly toward learning more about the formation, nature and action of substances which exert physiological effects and which, in deficiency, excess or altered forms, induce pathological states. The relation of this type of research to a better understanding of many of the diseases of middle life which have not yielded to the researches of the Pasteur era was noted.

The fact that the foundation was able in the past year to finance a relatively vast amount of research in relation to its income also received comment. The chief reason for this, it was suggested, is to be found in the fact that there are in Canada many competent research workers who must necessarily spend most of their time in work which provides them with their livelihood, but who can arrange for enough time to carry on either additional research or a research problem if they have funds for technical help and research materials. In the case of these individuals a relatively small Banting grant is frequently the marginal factor in allowing a research problem of a superior quality to be prosecuted.

SUMMARIES OF REPORTS MADE TO THE FOUNDATION BY NINETEEN INDIVIDUALS IN CANADA WHO WERE WORKING UNDER INDIVIDUAL GRANTS WHICH TERMINATED DURING THE YEAR

Dr. W. J. Auger, Department of Pathology, Hospital for Sick Children, Toronto, reports that by using carbon dioxide to stimulate the growth of pneumococci on solid media he has developed a practical means of isolating pneumococci in sputum. He also reports his results with regard to serum therapy and serum plus chemotherapy in lowering the incidence of empyema in Type I pneumonia in children.

Dr. K. W. Baldwin and Dr. A. W. Ham, working in the Department of Anatomy, University of Toronto, report that the epithelium in the respiratory portion of the foetal lung becomes discontinuous in the latter part of pregnancy and that capillaries thereafter form the chief lining of alveoli. They suggest intra-uterine respiratory movements are potent factors in affecting the position and growth of capillaries in the later part of foetal life.

Mr. R. W. Begg, Department of Pharmacology, Dalhousie University, Halifax, reports that he has investigated the sedimentation rate in 164 cases of disease and is making a statistical survey of his results to discover whether there is any correlation between sedimentation rate and the concentration of certain constituents of blood (cholesterol, plasma, proteins, etc.).

Miss M. G. Chapman, working in the Department of Anatomy, University of Toronto, reports that to date she has been unable to demonstrate in tissue cultures growth-stimulating effects of certain hormones comparable with those seen when they are injected into the living body.

Dr. H. B. Collier, Department of Biochemistry, University of Toronto, reports that he has studied the enzymic synthesis of plastein with papain, from both peptic and papain digests of ovalbumin, as well as various factors affecting the synthesis. He also submits further evidence that plastein is a protein.

Mr. B. F. Crocker, Department of Biochemistry, University of Toronto, for the study of digestion in dogs prepared with the type of fistula he devised, is using protein labelled with deuterium in order to distinguish fed from secreted protein.

Dr. G. H. Ettinger, Department of Physiology, Queen's University, Kingston, reports his results with regard to assaying esterase in the human placentae and his experiments in which oestrogens were not found to exert a cholinergic effect on the placentae of common laboratory animals.

Dr. R. D. H. Heard, working in the Department of Biochemistry, Dalhousie University, Halifax, reports the isolation of a new saturated hydroxy-ketone from the neutral fraction of pregnancy urine.

Dr. W. Hurst Brown, working at the Western Hospital, Toronto, reports he has found no correlation between the efficacy of sulfapyridine in bacteriostatic tests and in the treatment of pneumonia. He also reports results of his studies on the absorption, distribution and excretion of administered sulfapyridine in eighty patients.

Dr. E. Kuitunen, working in the Department of Hygiene, University of Toronto, by means of facilities

placed at her disposal by the Hospital for Sick Children, Toronto, has found the incidence of intestinal parasites in Toronto children to be much higher than is generally appreciated.

Mrs. H. T. Malloy, working in the University Clinic, Royal Victoria Hospital, Montreal, has investigated hereditary jaundice in rats and has found that it does not depend upon enhanced hemolysis but rather in the inability of parenchyma liver cells to deal properly with blood bilirubin, *i.e.*, the hereditary factor concerns parenchyma liver cells rather than haemopoietic tissue.

Dr. D. G. H. Macdonald, working in the Department of Physiological Hygiene, University of Toronto, reports the results of his study with regard to vitamin B deficiency and slow heart rate. It was found that this latter condition was due specifically to lack of vitamin B_1, but that it was not alleviated by B_1 alone; adequate food intake was needed as well.

Dr. D. W. G. Murray and Dr. R. G. MacKenzie, Department of Surgery, University of Toronto, report results on further experimental and clinical use of heparin. Heparin is shown to facilitate blood-vessel surgery by preventing thrombosis. Its ability to prevent thrombosis in thrombophlebitis, as well as its ability to prevent further thrombosis and embolism in cases where it has already occurred was also established.

Dr. B. Rose, University Clinic, Royal Victoria Hospital, Montreal, reports the results of several studies on histamine. The kidney was found to take up most of the histamine injected into the rat's blood stream. Kidney, however, was found to be devoid of histaminase. Adrenalectomized rats were unable to inactivate histamine. Injections of cortin restored their normal ability to inactivate it.

Mr. E. A. Ryan, working in the Department of Biochemistry, University of Toronto, reports that previously used methods have not been productive in allowing him to isolate and identify a new compound in male urine. New methods have, however, been utilized which promise to be of considerable help in this and similar researches, and already there is indication that a new ketone has been found.

Dr. M. A. Sergeyeva, working in the Department of Physiology, McGill University, Montreal, reports that definite changes occur in the islet cells of the pancreas when the autonomic nerves supplying that organ are cut or stimulated experimentally. She has furthermore found that, under certain experimental procedures of this type, numbers of cells displaying characteristics of both islet and acinar cells appear.

Drs. R. W. I. Urquhart and D. L. Selby, working in the Department of Pathological Chemistry, University of Toronto, report further progress with their study of experimental nephrosis. They have tested the effects of a standard damage to a more or less specific part of the tubule of one kidney with regard to the elimination of many ions in addition to the chlorine ion.

Dr. P. G. Weil, working in the University Clinic, Royal Victoria Hospital, Montreal, has found that normal individuals do not excrete cortin. It was found, however, that cortin was excreted (1) in certain disease conditions and (2) following operations where its excretion reached a peak in four or five days. Studies on the relationship of cortin to surgical shock are in progress.

V. E. HENDERSON
A. W. HAM
Honorary Secretaries

SPECIAL ARTICLES

THE EFFECT OF THIOL COMPOUNDS ON GONADOTROPHINS[1]

CYSTINE and cysteine in protein molecules have hitherto been regarded as existing in two definite forms —one in which the sulfur-containing groups give the reactions for sulfhydryl or disulfide compounds as these are given by the free amino acids and another form in which these reactions are not given. Denaturation is known to cause the transformation of many nonreactive to reactive[2] groups.

It has only recently been recognized that –SH groups of intermediate reactivity occur in both native and denatured proteins. It has also been shown that –SH groups exist which will react with some and not with other reagents.[3, 4, 5, 6] Results here reported indicate that –S–S– bonds of intermediate reactivity may exist in native proteins. This study was done on highly physiologically active proteins—gonadotrophins—which, however, are not chemically pure; analytical data concerning the state of reduction of such mixtures

[1] Aided by grants from the Research Board of the University of California; from the Rockefeller Foundation of New York and from Parke, Davis and Company of Detroit, Michigan. Assistance was rendered by the Federal Works Progress Administration, Project OP 65-1-08-62, Unit A-5.

[2] The terms "reactive" and "reactivity" are used here only to indicate whether or not the reactions typical for a certain chemical group are given.

[3] J. P. Greenstein, *Jour. Biol. Chem.*, 125: 501, 1938.

[4] M. L. Anson, *Jour. Gen. Physiol.*, 23: 239, 1939.

[5] A. K. Balls and H. Lineweaver, *Nature*, 144: 513, 1939.

[6] M. L. Anson, *Jour. Gen. Physiol.*, 23: 321, 1940.