

## Medical Research At Dalhousie

### Article 3. — Department of Biochemistry

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The Department of Biochemistry has been active in research since it was first organized. The former Head of the Department, Dr. E. G. Young published many papers from this laboratory. Dr. R. D. H. Heard, Dr. H. B. Collier and Dr. R. W. Beggs while they worked in the Department as members of the staff were active in adding their contributions to the published work of the Department and to its reputation. Assistance in the research projects of the staff has always been given by graduate students. Although the number of graduate students that have passed through the Department is not large, the list contains the names of men who have risen to prominence. The teaching of graduate students is an important part of the work of the Department and it is hoped that this work will expand.

The research activity of the Department was never so great as it is now. Members of the staff have always been fortunate in securing funds for their research for the purchase of equipment and supplies and for the employment of technical assistants. The continued and expanding support given to the efforts of the staff by such granting bodies as the National Research Council, the National Cancer Institute and the Defence Research Board is evidence

of the esteem in which the work of the Department and the capabilities of its staff are held. In the present year, 1954-55 the total funds made available to the Department for research were \$14,021. Applications totalling \$20,312 were submitted in requesting support for the coming year.

The University has been particularly helpful in providing facilities essential to this work. The most recent contribution was an addition to the animal colony and the provision of the services of a full-time attendant. These facilities and services, shared by the Departments of Biochemistry, Pharmacology and Physiology have made it possible to carry on experiments using rodents on a large scale — a thing which it was not possible previously to do.

The activities of the present staff cover a wide field of interest. Dr. J. A. McCarter is carrying on two investigations. One of these, which has engaged his attention for several years is supported by the Defence Research Board. This investigation is being slowly discontinued so that he can devote more attention to his major field of interest: epidermal chemical carcinogenesis. Comparative studies are being made of the fate of carcinogenic and noncarcino-

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genic hydrocarbons in the skin of the mouse. Attempts are being made to assess the relationships that may exist between the metabolism of the carcinogenic agent and the biological events that lead to neoplasia in the skin.

Using inbred strains of mice, studies are being made of the rate of penetration of hydrocarbon into the skin, of the rate of conversion of the hydrocarbon in the skin to metabolites and of the rate of fixation of metabolites to skin constituents. These studies are being made employing conditions of dosage that ensure the maintenance of a constant concentration of the hydrocarbon on a known area of skin for a known period of time after which time the excess of hydrocarbon on the skin is removed. Some of the animals thus treated are taken for analysis. Others are kept for measurement of the tumor incidence resulting from the treatment. This is a long term project and it will be some time before the experiments can be expected to yield definite results.

Dr. L. B. Macpherson is concerned with phospholipids, a little known class of compounds that are universally present in plant and animal cells. The phospholipids, closely related to the common fats but containing in addition phosphorus and other constituents, mostly exist in tissues combined with proteins. These lipoproteins constitute mitochondrial material of cells and exist in the blood plasma and in many other tissues. There seems to be a correlation between the concentra-

tions of lipoprotein in human plasma and the onset of arteriosclerosis. The better known phospholipids, of which lecithin is an example, are derived from glycerol just as are the common fats or glycerides. Dr. Macpherson is especially interested in a series of phospholipids that are derived from inositol. He is concerned with the isolation and identification of new types of these compounds and in this work is making use of the latest physical methods of separation: counter current distribution, paper chromatography and the ion exchange resins.

Dr. R. D. Stewart is concerned with working out relationships which may exist between a newly discovered hormone of the pancreas and the disease diabetes mellitus. The "new" hormone glucagon has the effect of opposing some actions of insulin. For instance, it elevates the blood sugar level and may be an important factor in some cases of diabetes whose cause is at present obscure. One usually thinks of disturbances in sugar metabolism when thinking of diabetes but disturbances in fat metabolism are equally important and Dr. Stewart is chiefly interested in the effects of glucagon, insulin and other factors on the metabolism of fat. In addition plans have been going forward for an investigation of hormone production by the placenta during pregnancy but work on this project has not yet been started.

In summary, the existence of excellent facilities, and of adequate funds for research in a variety of projects covering a wide field of interest provide exceptional opportun-

ities for advanced work in the Department of Biochemistry of Dalhousie. The Department is happy to offer assistance in obtaining Fellowships and in providing problems and space to those contemplating the inclusion of basic science training for certification in a Specialty.

#### WHAT IS THE DALHOUSIE UNIVERSITY MEDICAL POST-GRADUATE PROGRAM?

In keeping with changing trends of our mode of living and recognizing that the position of the general practitioner has altered or been altered for him by the changed outlook of his patients, there were a few far-sighted men in the Faculty of Medicine of Dalhousie who felt that providing the ways and means for these rural practitioners to keep abreast of current concepts in the practice of Medicine was a responsibility of the University. Consequently they sought to interest others and were successful in securing financial support from the W. K. Kellogg Foundation for a three year period. With this initial success a Dean's Committee was appointed and this Committee developed the program. It has undergone several changes as more general practitioners become interested and their wishes became known for this program is designed exclusively to meet the wishes of this group.

Since the College of General Practice which came into being last year, sets forth as one of its functions the encouragement of post-graduate study and requires that its members have a minimum average of 25 hours formal study a year the Post Graduate Committee has aligned itself with that group.

The program provides for the presentation of regular courses varying from two to five days in length, in Halifax. Each of the major branches of Medicine undertakes to present a course in its specialty and the lectures are given by members of the Faculty, sometimes with the assistance of a guest speaker.

Faculty members visit local Medical Society and Hospital Groups throughout the four Atlantic Provinces and in addition to giving a lecture or two are prepared to discuss problem cases.

A "Day in the Hospital" is also presented in some towns where the local physicians present a series of cases to the visiting Clinician, which provide the basis for informal teaching.

Recently added to this program is the "Regional Course" consisting of a series of five or six consecutive weekly three hour evening sessions in which two Faculty members participate, with local physicians, in presenting a co-ordinated course in a particular area. The program for these courses is drawn up by a locally appointed committee.

Prominent guest speakers are invited to visit the larger centres throughout the four Provinces and wherever possible, their addresses are recorded and published, either in the Nova Scotia Medical Bulletin or in abstract form in the Dalhousie Post-Graduate Programme.

The foregoing is a summary of the activities being conducted by this committee which draws upon a large and wide-spread advisory committee for an extensive cross section of opinions of the Medical Profession.