

## MEDICAL RESEARCH COUNCIL

## ANNUAL REPORT, 1929-30

## I

The sixteenth annual report<sup>1</sup> of the Medical Research Council, which was issued this week, records advances in many departments of research, several of which are of immediate interest to general practitioners. The usual annual grant by Parliament of £148,000 was devoted as follows: £86,000 to general scientific investigators, for research work in clinical medicine, and for the work of the Industrial Research Board; £52,000 for the expenses of the National Institute for Medical Research at Hampstead and of the farm laboratories at Mill Hill; and £10,000 for administration. In addition to this grant, financial help for special purposes was received from various sources, including the Miners' Welfare Fund, the Empire Marketing Board, the Dental Board of the United Kingdom, the British Empire Cancer Campaign, the Distemper Research Council of the Field, and the Foot-and-Mouth Disease Research Committee. The Council is co-operating closely with the Ministry of Health and the Scottish Department of Health, and is directly represented on the Scientific Advisory Committee set up last autumn by the Secretary of State for Scotland. In the past year Sir Frederick Hopkins and Sir Charles Martin retired from the Council under the terms of the Royal Charter; Sir Charles Sherrington, who retired in 1929, was reappointed, and Dr. J. A. Arkwright became a member.

## GENERAL SUMMARY

The increased responsibility of the Medical Research Council in respect of work within the range of the Therapeutic Substances Act is manifest in the report. Advice has to be given on the routine administration of the Act, and active research work is in progress concerning the preparation and use of standards of reference for the proper assay of biological substances which cannot be measured by direct chemical means. Special attention is also being devoted to the study of the accessory food factors, and it is confidently hoped that in this way Great Britain will play an honourable part in the further development of a branch of medical science which is now receiving special attention in several other countries.

The appointment of Sir Thomas Lewis last June as physician in charge of the Department of Clinical Research at University College Hospital is mentioned in the report as a forward step of the greatest importance, indicating the value of such a research organization; the creation of a position which will appeal to the ambition of younger workers hereafter should stimulate clinical research throughout the country. Somewhat similar appointments are contemplated at Leeds, Birmingham, and Aberdeen, reproducing conditions such as exist already at Sheffield, where the professor of pharmacology, Dr. Edward Mellanby, has had charge of forty hospital beds for the past ten years. Last year the report of the Medical Research Council reviewed the efforts it had made to assist the scientific development of clinical work as such; it is now pointed out that the establishment of such new posts, in which men freed from the claims and restrictions of private practice may devote their whole energies to the advancement of clinical medicine by research within the hospitals, calls urgently for further endowments.

*Puerperal Infections*

Maternal mortality and puerperal fever have for long engaged the close attention of the Council, and a special

committee has been at work supervising the study of streptococci. The concentration of cases for observation has been made more possible at Manchester, where a 50 per cent. reduction in the mortality was thus achieved. In this connexion reference is made in the report to the removal of Queen Charlotte's Hospital to Hammersmith, where already a special block for the aggregation and treatment of septic cases has been built and equipped with suitable laboratories for bacteriological and biochemical work. The Council is assisting the hospital in this undertaking; Dr. Colebrook, working in the Council's service, will act as honorary director of the laboratories, and as consulting pathologist will co-operate with the clinical staff. The belief is expressed that definite knowledge is steadily accumulating as regards the adoption of valuable preventive methods, but the curative aspect is less hopeful. Thus Dr. Colebrook has been investigating the efficacy of different methods for the sterilization of the hands in midwifery, and has also revealed the fact that puerperal fever cases not infected with haemolytic streptococci frequently harbour gas-forming anaerobic streptococci.

*Nutrition Studies*

Much recent work has been devoted to vitamin A, which probably represents a main constituent of the original "growth factor" first demonstrated by Sir Frederick Hopkins in 1912. An ample supply of the special concentrate of this substance has now been obtained by the Council, and carefully controlled investigations will be conducted to determine whether it is really the case that this vitamin has a primary value, both in defending the body against infective diseases and also in promoting recovery after infection has become established. Thus it has already been possible to test it on a large scale in the prevention of colds during the winter months, under various conditions of indoor and outdoor work. Another inquiry in progress is an examination of the possibility that this vitamin may have some value in the treatment of infective middle-ear disease after scarlet fever, and in the prevention of dangerous infective sequels after the common infective fevers. Again, at the Dunn Nutritional Laboratory, recently completed and equipped at Cambridge, work has been in progress on carotene, the yellow pigment which produces effects closely resembling those of vitamin A. Pure recrystallized carotene can effectively replace vitamin A in the diet, and it had been concluded that it was stored unchanged in the liver. Dr. Moore, working for the Council in the Dunn Laboratory, has shown that the effects following ingestion of carotene are not due to its being stored in the body, or to any identity with vitamin A, but that carotene in the diet leads to a proportionate appearance of vitamin A as such in the liver fat. His work suggests strongly that carotene is a precursor of this vitamin, and leads to its production within the animal body. This affords an explanation of the fact previously demonstrated by Dr. Moore that the carrot, which contains carotene in abundance but no vitamin A as such, can give rise to the production in the animal body of as much vitamin A as that contained in an equivalent weight of cod-liver oil, calculated as dry substance.

Progress has also been made in the standardization of vitamin preparations. The discovery, made in the Council's laboratories at the National Institute, of the method of producing vitamin D artificially from ergosterol has led to its manufacture on an extensive scale, its issue in many forms for therapeutic use, and its addition to many types of food materials. An attempt to indicate the degree of activity of various such preparations has led to the appearance of several unofficial so-called "units," with no clearly defined relations. It was

<sup>1</sup> Cmd. 3785. Report of the Medical Research Council for 1929-30. London: H.M. Stationery Office. 1931. (2s. 6d. net.)

accordingly arranged to maintain at the National Institute a standard solution of irradiated ergosterol to facilitate the comparative estimation of vitamin D. The unit of this vitamin was defined as the antirachitic potency of a quantity of the first-named preparation, corresponding to 0.0001 mg. of the ergosterol used in its production. Methods were devised for thus estimating vitamin D, and supplies of the standard material were made available for general distribution to approved users last August, since when samples of the standard have been sent to twenty-eight institutions in Great Britain and to eight other countries. To promote the studies necessary for the establishment of other standards subcommittees have been already formed by the Accessory Food Factors Committee to deal with vitamins A, B<sub>1</sub>, and C; they are actively at work.

#### *Alcohol and Fertility*

An experimental estimation of the effect of alcohol on the fertility of guinea-pigs has just been concluded at the National Institute, after having continued for nine years. In 1913 and 1914 Professor Stockard, in America, published the results of a similar experiment, his records seeming to prove that the daily administration of alcohol in quantities large enough to produce visible intoxication, but not otherwise to impair the health of the parents, caused a fall in the number of births, an increased liability to stillbirths, and the production of weakly and defective offspring. A still more serious point was that these tendencies appeared to be inherited, so that without further exposure of the stock to alcohol the proportion of animals showing weakness and deformity continued to be high in later generations. Stockard's results clearly suggested that alcohol in the circulation could injure the germ plasm, and bring about permanent deterioration of the race, even without obvious injury to the generation directly exposed. It was unlikely that alcohol would be the only poison acting in this deferred way; it was, indeed, quite possible that any circulating poison, such as those occurring in the acute infections, might inflict similar damage, only recognizable in later generations. So grave a threat to the future of humanity necessitated the careful repeating of Stockard's experiments, and this has now been done.

Miss Durham, using a specially chosen stock of guinea-pigs, has followed exactly Professor Stockard's lines, full controls being maintained. The diet was standardized for all the animals, care being taken to ensure an adequate ration of the essential vitamins. The results were statistically analysed, but no confirmation was obtained of a single essential point of Stockard's findings. The litters obtained from alcoholic parents, or from their descendants, were as numerous as those from the control matings; there was no excess of stillbirths or deformity. Their offspring for several generations exhibited no transmitted defects of the kind described by Professor Stockard, from which it appears that those defects were not attributable to the alcohol. This section of the report closes with the pertinent remark that "these negative findings have no relation whatever to the effects of alcoholic parentage on the upbringing of children in an organized human society."

[To be concluded]

The sixteenth Congress of French-speaking Medical Jurists will be held in Paris from May 25th to 27th, when the following subjects will be discussed: medical study of motor accidents, introduced by M. Simonin; traumatic ulcer of the stomach, introduced by M. E. Martin; crimes due to passion, introduced by M. Lévy-Valensi; and medical responsibility, introduced by MM. Duvoir and Donnedieu de Vabre.

## THE SPLEEN: ITS STRUCTURE, FUNCTIONS, AND DISEASES

### DR. MCNEE'S LETTSOMIAN LECTURES

The Lettsomian Lectures were delivered before the Medical Society of London on February 16th and 25th, and March 4th. The lecturer was Dr. J. W. McNEE, who discussed the spleen, its structure, functions, and diseases.

#### HISTORICAL INTRODUCTION

In his first lecture Dr. McNee said that splenic enlargement presented itself as a clinical problem in all sorts of medical and surgical conditions. The subject of the spleen was a difficult one, and he might appear bold in attempting to give an account of its structure, functions, and diseases in three brief lectures. The matter, however, was one which, on the whole, was poorly understood, and seemed worthy of attention at the present time, because recent physiological and pathological researches had cleared up some points of difficulty and had indicated methods by use of which the solution of others might be expected. The human spleen was of considerable size, very easily accessible, and, when enlarged, palpable through the abdominal wall. Numerous records of curious beliefs and speculations about splenic function were found in the early history of medicine, but real knowledge of its intimate structure had accumulated slowly. One reason for this was no doubt the fact, established from the earliest times, that the spleen had not any function absolutely essential for life, so that some less fundamental reasons for its presence in the body had to be discovered. The spleen was described by Hippocrates, who stated that its work was to draw the watery part of the food from the stomach. Aristotle, in describing the organ, thought it had a somewhat similar function. Galen termed the spleen an organ full of mystery, and in the Galenic physiology it was associated with melancholia, a view which persisted for a thousand years. Numerous allusions having that significance were to be found in the works of Shakespeare and of other poets. In the first translation of Pliny into English, in 1601, there was a definite reference to the extirpation of the spleen in runners. There was a well-known tradition that in the earliest times Greek runners had their spleens removed in order to increase their speed and endurance. The first recorded splenectomies were carried out on dogs in 1680. Before that date Malpighi had ligatured the splenic vessels in dogs, without apparently injuring them, and later on he performed splenectomy in the same animals. The first operation for the removal of the human spleen was said to have been performed in 1549. Possibly the first human splenectomy carried out in this country was described by Dr. Timothy Clarke, who was physician to Charles II. Coming to modern times, Spencer Wells in 1866 operated on one of the first English cases in which the abdomen was deliberately opened and the spleen removed; in this case, however, the patient died. With the advent of Listerian principles, splenectomy became commoner, but the mortality at first was high.

The lecturer referred at length to the work of William Stukeley, who, in the introduction to his Goulstonian Lecture in 1722 to the Royal College of Physicians, on "The spleen: its description, history, use, and diseases," said that "the uses of the apparatus [the contents of the abdominal cavity] are by the industry of the curious pretty manifest, except that of the spleen; which yet has not failed to be a subject of inquiry in all ages, and has racked the brains of physicians as well as the bowels of their patients." Stukeley recognized that this spongy organ, when filled with blood, could by contraction