The 28th Annual Report was presented by the Chairman, the Rt. Hon. the Viscount Knollys, at the Annual General Meeting held at the Royal College of Physicians, Regent’s Park, London, on May 6, 1965.

The Chairman expressed the Council’s pleasure that the President, Dr. W. S. C. Copeman, had been made a C.B.E. in recognition of his services to rheumatology.

In the past 10 years the Council’s investment in research had multiplied more than ten-fold, the chief contribution in 1964 being £25,000 to help establish a new Research Institute under the direction of Prof. Sir Charles Dodds at the Middlesex Hospital Medical School.

The building of the Kennedy Institute at the West London Hospital had been started towards the end of the year.

Another new unit for clinical research had been set up at St. Stephen’s Hospital, London, and many new lay committees had been formed throughout the country to raise funds. A new department was also to be endowed at the London Hospital Medical College.

The Report (see p. 11) includes a digest for the layman of the Council’s programme. There are now two Research Institutes, six Units at different hospitals and medical schools, and two full-time Professorships. Five Rheumatology Departments are in receipt of grants from the Council, as well as forty individual research projects in the British Isles, Australia, New Zealand, and Nigeria (Report, pp. 16-17).

RESEARCH

PROGRESS REPORTS†

Mobile Field Survey Unit based in the University of Manchester (Director: Dr. J. S. Lawrence, M.R.C.P.).—The unit has partly completed a very complex and important survey programme which consists of four interlocking studies designed to get more information about the roles of heredity and environment in a variety of rheumatic diseases and to study their inter-relationships.

1. A survey of twins in which the index twins with a variety of rheumatic diseases have been collected by many rheumatological clinics throughout the United Kingdom.

2. A study of the relatives of patients with hypogammaglobulinaemia included in the Medical Research Council’s study of this disease which is a rare disorder of immunity and may be related to rheumatoid arthritis.

3. A study of the families of patients with Reiter’s syndrome, collected from clinics in many parts of Britain.

Since the persons surveyed live all over the United Kingdom, it was obviously economic to carry out these studies simultaneously on a geographic basis and at the same time to make the study of the families of the patients with various rheumatic diseases obtained from the Manchester Rheumatism Centre more complete by including their relatives living elsewhere. During this year respondents living in the North-West of England, Ulster, Scotland, and Tyneside were surveyed which represents over a third of the total programme. This is the most ambitious project of its kind ever undertaken and will provide a tremendous wealth of new information.

4. Leigh and Wensleydale. Follow-up.—This was designed to test the hypothesis that infection may contribute to the development of rheumatoid arthritis. Previous surveys had shown that rheumatoid serum factor was most prevalent in densely populated urban areas with marked air pollution, and a very high prevalence of rheumatoid factor has been noted in certain decades in some populations suggesting a cohort effect resulting from some special past experience. It was therefore decided to make a follow-up survey of individuals seen in Leigh and Wensleydale 5 to 10 years previously and to combine it with bacteriological studies carried out by the Departments of Bacteriology of the University of Manchester (Prof. Collard) and the University Hospital, Leyden (Dr. Valkenburg).

At the follow-up examination unexpected and most interesting changes in the prevalence of positive tests for rheumatoid factor were observed; their interpretation awaits correlation with the bacteriological and other data.

The present programme illustrates very well the key position of the Field Unit as a unique organization for the collection of data of immense value to a wide circle of medical and scientific workers throughout the United Kingdom.

* Full details of the activities of the Council for the year 1963-64 are given in the Report, which may be obtained from the Secretary, Mr. M. C. G. Andrews, Faraday House, 8 Charing Cross Road, London, W.C.2.

† Fuller scientific reports from the Units are given on pp. 36-50 and from 23 of the 40 individual projects on pp. 51-67.
Industrial Survey Unit based on Edinburgh University (Director: Dr. J. J. R. Duthie, F.R.C.P.E.).—This was formed to study the social and economic effects of rheumatic diseases in the working population and is accommodated in the Northern General Hospital, Edinburgh.

Further surveys were carried out during the year in a group of iron foundries in the Falkirk and Bonnybridge area of Scotland, and in Leith Commercial Docks.

Foundrymen.—Of 759 men who were interviewed in the iron foundries 291 (38.4 per cent.) had complained of rheumatism in the previous year. When allowance was made for the age of the sample, the complaint rate was slightly lower than that found in coal miners and brewery workers, and on a par with that of workers in the shipyard. (See p. 19.)

Men with rheumatic complaints in the year before interview had a higher sickness absence from other illnesses than most men not so affected. Further information will be available eventually on the illness pattern in both groups.

Dockers.—Preliminary results from this survey of 220 dockers show an overall prevalence of rheumatic complaints of 42.7 per cent. in the past year. The average age of the dockers was higher than that in other industries; when this is taken into account, the complaint rate was slightly less than the average and on a par with that in the iron foundries and shipyard.

Sickness absence from rheumatism amounted to 51.7 weeks per 100 men per annum, or 18.4 per cent. of the total sickness absence.

Further studies will be carried out during the coming year in co-operation with the College of General Practitioners, members of which have been collecting information for the Unit relating to rheumatic complaints as seen in General Practice.

Rheumatic Diseases Research Unit at the Northern General Hospital, Edinburgh (Director: Dr. J. J. R. Duthie, F.R.C.P.E.).—In the new Macfarlane Wing iron-binding protein in rheumatoid arthritis and controls is being investigated by chromatographic and other special techniques. Serum enzyme levels in polymyalgia and polyarthritis are being studied. The morphology and other properties of synovial cells in tissue culture are being examined.

Early in the year equipping of the orthopaedic workshop was completed. The main effort is now the design of appliances for prolonged use. This involves investigation along two main lines:

1. Assessment of the suitability of various types of material.
2. Design of appliances for both weight-bearing and non-weight-bearing joints which will effectively stabilize the joints without undue interference with functional use.

Unit on Drug Action at King’s College Hospital Medical School, London (Director: Dr. M. J. H. Smith, M.Pharm., Ph.D., F.R.I.C.).—This Unit established by the Council in April, 1961, consists of two senior research Fellows and a research assistant.

The main object of the work is to discover how drugs act in the treatment of rheumatism. Many drugs have been tried and some have stood the test of time and clinical experience, but they are still imperfect, as some are not powerful enough, and others may cause unpleasant side-effects during prolonged treatment. It is important to find out exactly how they relieve the pain and other symptoms of rheumatism. If this were done, then the way could be open to increase their effectiveness by suitable alterations to their chemical structure. Not only might their potency be improved, but simple and reliable methods of laboratory testing for new drugs could be devised. It should also be possible to find out which chemical parts of the established drugs are responsible for the undesirable side-effects and to remove or diminish them.

The unit has studied the actions of the established drugs, including aspirin and cortisone, on normal cells. All cells in the human body carry out certain vital chemical reactions, which produce energy, build new cells, and change substances formed by breakdown of foodstuffs into a large variety of body constituents. These processes are controlled by enzymes systems and the Unit has been investigating the actions of antirheumatic drugs on these enzyme systems and the substances formed by them. It has been found that one of the best known drugs, aspirin, affects at least three important enzyme systems. Current work in the Unit is concerned with accurately defining these actions of aspirin, studying their implications in relieving inflammation, which is the principal reaction of the body to rheumatism, and carrying out similar experiments with other drugs known to be effective in the treatment of rheumatic disorders.

Electron Microscopy Unit at St. Thomas’s Hospital Medical School (Director: Prof. D. V. Davies, D.Sc., M.A., F.R.C.S.).—The microscope has been in constant use and a rotating specimen holder has been acquired.

Prof. Barnett has been given leave of absence for 3 years, to help to establish a new Medical School in Tasmania, and Dr. H. J. Gamble has joined the Unit from St. Mary’s Hospital Medical School. Dr. Gamble is already an experienced electron microscopist and is particularly interested in the connective tissue associated with peripheral nerves both normal and pathological.

The work on the absorption of substances by articular cartilage and synovial membrane is being extended. In the case of cartilage, it is hoped that, by studying the absorption of a variety of substances, the mode of transport will be elucidated. In the synovial membrane the study is being extended to elucidate the mode of formation of multivesicular bodies and myelin forms.

Co-operation with the M.R.C. Rheumatism Unit at Taplow continues and it is hoped to analyze some further results in the near future. The Electron Microscopy Unit has also been co-operating with Dr. Wimborne and his colleagues at the Royal National Orthopaedic Unit in a study of the effects of vitamin A and ultra-violet light on lysozomes in the liver and skin.
GEIGY TRAVELLING FELLOWSHIPS


Dr. Helen Muir, M.A., D.Phil. attended congresses in the United States (see Report, p. 67).

Dr. E. T. Owen (Australia) is to work for a year in Great Britain.

Drs. I. C. Isdale and G. A. Q. Lennane (New Zealand) is to visit centres in Great Britain in 1965.

EDUCATION

During the year the Council continued to send its Reports on Rheumatic Diseases to all general practitioners in the National Health Service as it has done during the past 5 years. Three reports were issued: “The Painful Knee”, by Dr. A. St. J. Dixon, M.D., M.R.C.P., and Mr. Alexander Kates, F.R.C.S.; “Still’s Disease”, by Dr. Barbara M. Ansell, M.R.C.P.: “Complications and Extra-articular Manifestations of Rheumatoid Arthritis”, by Dr. A. G. S. Hill, F.R.C.P.E.

A new handbook for patients, Ankylosing Spondylitis, brings the total to six, other subjects being Rheumatoid Arthritis, Osteo-arthritis, Gout, Rheumatic Fever, and Lumbar Disk Disorders. The booklets are available only to doctors for issue to patients. The Council is very grateful to Mr. Leslie Starke for his kindness in illustrating them.

To help gardeners disabled by arthritis and rheumatism the Council has published and put on sale at 1s. 6d. an illustrated booklet entitled Your Garden and Your Rheumatism. This was written by Dr. C. B. Heald, and nearly 20,000 copies have already been sold.

The Council encourages research workers to publish their results in the Annals of the Rheumatic Diseases.

COMMONWEALTH

A full report of the work of the autonomous affiliated Associations in Canada, Australia, and New Zealand is included in the Annual Report, pp. 23-26.

THIRD CANADIAN CONFERENCE ON RESEARCH IN THE RHEUMATIC DISEASES

Toronto, 1965

The Third Canadian Conference on Research in the Rheumatic Diseases was held in the Royal York Hotel, Toronto, from February 25 to 27, 1965, under the auspices of the Canadian Arthritis and Rheumatism Society and the Canadian Rheumatism Association; 41 papers were presented, and the Proceedings will be published by the University of Toronto Press early in 1966.

The present understanding of the pathogenesis of rheumatoid arthritis was described by two specially invited guest speakers, Dr. R. C. Mellors (New York) and Dr. Morris Ziff (Dallas, Texas). The pathological lesion in the synovial membrane is characterized by a lymphocyte and plasma cell infiltration, often giving rise to actual lymphoid follicles. These findings are the hallmarks of an immune reaction and in fact the rheumatoid lesion has a similar appearance to a stimulated germinal centre. The earlier studies of Dr. Mellors had demonstrated the production of rheumatoid factor in the plasma cells of the infiltrate and this could be demonstrated even in sero-negative cases. Further evidence of an immunological stimulus was the marked production of the three types of immunoglobulins (\(\gamma G, \gamma M, \) and \(\gamma A\)) in rheumatoid arthritis. Thus both the histological appearances and the serological findings supported the concept that the pathogenetic mechanism of the disease was immunological. Moreover, the decrease in serum and synovial fluid complement provided additional evidence. The antigenic stimulus was evidently a persistent one and this was indicated, not only by the histology, but by the existence of rheumatoid factor which was probably a non-specific sequel to any continued antigenic stimulus.

The aetiological event leading to this immunological response was, of course, quite obscure at present. No new information was available to support the autoimmune hypothesis of Burnet, in which aberrant forbidden clones of immunologically competent cells have the perverted capacity for immunologically attacking normal synovial antigens. Similarly, explanations of aetiology based on variations in tolerance of the immune system for synovial antigens had no direct support. Dr. Ziff noted that the synovial cell layer itself was not infiltrated with lymphocytes and plasma cells and that this indicated that the antigen responsible for the immune response probably did not lie in these cells. The possibility that a foreign antigen resided in the synovium and was responsible for evoking the immunological reaction kept alive the suggestion that an infectious agent could be the eliciting factor; but no such agent had yet been discovered.