Fig. 4. Section through myelin sheath from guinea pig sciatic nerve, fixed in 2 per cent osmic acid for 24 hr. 135,000 ×

It is impossible to measure the thickness of these sections; but judging from the contrast of the sections as compared to the contrast of the supporting film when doubled at folds and ruptures, the thickness of the thinnest parts of the sections is estimated to be of the same order of magnitude as the supporting films ordinarily used, or a few hundred angstroms.

A more detailed description of the technique will be published elsewhere. [May 15.

[1–7] Fullam, E. F., and Gessler, A. E., *Rev. Sci. Instr.*, **17**, 23 (1946). Pease, D. C., and Baker, R. F., *Proc. Soc. Exp. Biol. and Med.*, **67**, 470 (1948). Newman, S. B., Borysko, E., and Swerdlow, M., *J. Res. Nat. Bur. Stand.*, **43**, 183 (1949). Gettner, M. E., and Hillier, J., *J. App. Phys.*, **21**, 67 A (1950). Hillier, J., and Gettner, M. E., *J. App. Phys.*, **21**, 889 (1950); *Science*, **112**, 520 (1951). Latta, H., and Hartmann, J. F., *Proc. Soc. Exp. Biol. and Med.*, **74**, 436 (1950).

[8–10] Sjöstrand, F., *Nordisk Medicin*, **19**, 1207 (1943); *Nature*, **151**, 725 (1943); *Arkiv för Zoologi*, **35** A, 1 (1943).

[11–12] Sjöstrand, F., *Nature*, **165**, 482 (1950); Proc. Conf. Electr. Micr., Delft, 144 (1950).

[13] Fernandez-Moran, H., *J. Exp. Cell Research*, **1**, 309 (1950).

RESEARCH DEPARTMENT OF THE BRITISH BROADCASTING CORPORATION

NEW SITE AT BANSTEAD

IN the early days of broadcasting in Great Britain, the British Broadcasting Corporation soon found itself faced with a variety of technical problems which could not be resolved by the engineering maintenance and operating staff. A Research Department was formed in 1929, and five years later this section of the Corporation was housed at Nightingale Square, Balham. When, after the War, the normal work of the Department was resumed, it became clear that larger premises were necessary to deal with an enhanced programme of research. A suitable building, standing in twenty-seven acres of ground, was found at Kingswood Warren, Banstead, some twenty miles south of London. The mansion itself has been adapted to the needs of the Research Department staff with laboratories, offices and restaurant facilities. In addition, there is ample space for outdoor experimental work, as well as for the erection of two new laboratory blocks, one of which has been completed.

An 'open day' at this new site of the Corporation's Research Department was held on June 20, at which a number of exhibits and demonstrations were available for inspection to illustrate the work of the Department. On this occasion, also, an illustrated brochure, entitled "BBC Research Department, Engineering Division, 1951", was issued. This publication shows that the Department is organized into four Sections at Kingswood Warren, in addition to the Electro-Acoustics Group, which is still housed at Nightingale Square.

Among the most interesting activities at the present time is that of the Television Section, which deals with investigations into the electrical and optical performance of camera tubes as developed by the radio industry, and with the properties of the various circuits used in television technique. In addition, work is directed to an appraisal of the various problems involved in colour television, including its fundamental physiological aspects. The recording of television programmes on film is an item of investigation about to be undertaken.

The very limited number of frequency channels available for sound broadcasting has made it necessary for some time past for the Field-Strength Section of the Department to study the propagation of radio waves within the service area of each transmitting station. This work has recently been extended from medium frequencies to those involved in television and very-high-frequency sound broadcasting. Closely associated with this is the work of the Aerial and Transmitter Section, which is concerned with the development of aerial systems designed to give the largest local-service area of coverage or, in international broadcasting, to direct the programmes to the zone or country in which reception is desired. The Receiver and Measurements Section keeps abreast of developments in the design of broadcasting receivers and carries out tests on typical commercial products. It also designs receivers for special purposes, such as, for example, the standard receivers being used in tests on the relative merits of amplitude- and frequency-modulation in transmissions at very high frequencies.

At Nightingale Square, the Acoustics Section is responsible for experimental work connected with the design of studios and the basic principles of reverberation. Techniques have been developed in which the response of a studio to transient sounds is displayed on a cathode-ray oscillograph. A new method, not so far used elsewhere, makes use of a pulsed gliding tone, in which the frequency of the tone is gradually increased, and the changing form of the oscillograph display is photographed on slowly moving film. In the Recording Section, a thorough investigation of the disk-recording process has led to the design and construction of a disk-recording machine, since no equipment available commercially provides all the facilities required while meeting the standard of fidelity considered essential. Investigations in magnetic recording now absorb the major part of the Section's effort.

To assist in all this work, the Research Department has built up its own model shop, which is fully equipped to undertake the construction of the majority of the apparatus required; this is of a varied nature and may be of mechanical, electrical or optical type. As a normal part of its activities the Department maintains close touch with other broad-

casting authorities, with research organizations and with industry. Finally, great importance is attached to the publication of the results of research work; and the staff are encouraged to prepare papers for reading before scientific societies, or for publication in scientific and technical journals and in the *BBC Quarterly*.

NUFFIELD FOUNDATION

ANNUAL REPORT

THE outstanding feature of the sixth report of the Nuffield Foundation*, covering the year ended March 31, 1951, is the passage in which is considered the prospect of some curtailment of scientific research through rising costs, and whether the resources of such charitable trusts as the Nuffield Foundation should be used for sustaining academic activities thus endangered or for encouraging novel projects which may find it even more difficult to secure support. The present report indicates that, for the remaining three years of its present programme, the Foundation will continue to give preferential support to fundamental biological and social studies. This policy is succeeding, but its other main preference for the period—the encouragement of specialists in various fields to apply their knowledge and techniques to the study and solution of practical contemporary problems—has not attracted the same support. In addition, the Foundation continues to assist research of exceptional merit in any branch of science, and its schemes of training fellowships and travel grants are being expanded, and from the year's income of more than £550,000, some £55,250 was allocated for new or continuing schemes of this type, with a further £88,000 to be met from succeeding years. Of new grants totalling £336,194, £20,950 was used from the Oliver Bird Fund and other resources for research in rheumatism, £46,640 for fundamental biological and £111,000 for sociological research in the United Kingdom and £71,500 for research overseas within the Commonwealth. The original contribution of £500,000 to the National Corporation for the Care of Old People is not yet exhausted, and medical research on ageing is still similarly financed from an earlier allocation; no new grants have been necessary. As provision for a new headquarters when the Foundation is required to vacate its present premises, £135,000 has been set aside this year.

In continuation of its past programme the Foundation has increased by £3,650 the grant to the University of Bristol for Dr. C. R. Burch's work on the development of the reflecting microscope. Patents covering the present processes of manufacture offered to the Foundation are being put before the National Research Development Corporation for development in the national interest. In the medical sciences, the Foundation has made a grant of £750 for an additional full-time worker for epidemiological and bacteriological studies in the 'thousand-family' investigation being conducted by the Department of Child Health, University of Durham. In the social sciences, the Foundation is continuing its aid to Political and Economic Planning on the diminishing scale of £4,500 over the years 1951–53, while an additional grant of £1,000 has been made to the Caldecott Community to enable the children's reception centre to follow up the children who have passed through the centre or been 'placed' on its advice.

A gift of 1 kgm. of cortisone was made by Merck and Co., Inc., jointly to the Medical Research Council and the Foundation, and a new joint committee was set up to examine projects of clinical trial and research and allocate supplies both of cortisone and adrenotropic hormone. A three-year grant totalling £5,000 has been made to the Department of Human Ecology at the University of Cambridge for a medico-social survey of the Fen district of East Anglia covering the types and prevalence of rheumatic disease. A grant of £4,000 has been made to the Department of Chemistry, University of Birmingham, for the study of tendons, cartilage and tissue components and their structural chemistry, and £1,000 to the Medical School, University of Leeds, for special equipment for chromatographic techniques in the study of pathological collagen, while a grant of £1,050 a year for two years has been made for the appointment of a senior and a junior research fellow to work under Dr. D. M. R. Barton at Birkbeck College, London, on the synthesis of cortisone by the ergosterol route. The grant to the rheumatic unit at the Department of Medicine, University of Edinburgh, has been increased to £2,364, and that to Mr. A. Law, of the Orthopædic and Accident Department, London Hospital, for perfecting techniques of reconstructive surgery in chronic arthritis of the hips and spines, was renewed, as well as that to the South-West and Oxford Regional Research Unit, Bath.

New grants for fundamental research include £5,340 over five years, for a research assistant and technician under Prof. F. G. Young at the School of Biochemistry, University of Cambridge, for the perfection and running of the mass-spectrograph, and £1,000 a year for five years to the Physiological Laboratory at the same University for equipment and materials for workers under Prof. E. D. Adrian. A five-year grant totalling £20,000 has been made to Prof. C. Rimington, of the Department of Chemical Pathology, University College Hospital Medical School, London, for a small unit to continue and develop his investigations on the chemistry and biochemistry of hæm and other pyrrole pigments, and a grant of £500 for equipment and £400 a year for two years for a technical assistant has been made to Dr. E. Wangermann to enable her to continue at University College, Leicester, the work initiated under Prof. E. Ashby at Manchester on growth-rates of populations of common duckweed (*Lemna minor*) under controlled conditions. A further grant of £1,000 a year for five years has been made for an additional research worker to collaborate with Dr. C. Causey in work on certain aspects of nerve-cell body and axon as part of the work under Prof. J. Z. Young on the physiology of learning at the Department of Anatomy, University College, London, in which Mr. F. Roberts has now devised and built a 'flying-spot' microscope which has novel possibilities both for magnification and for counting and measuring particles of living tissues. A grant of £10,000 over the next five years has been made to the Department of Zoology and Comparative Anatomy, University of Oxford, for research under Dr. E. B. Ford on the evolutionary genetics of wild populations.

In the sociological field, the Foundation has offered a grant of £2,000 to the University of Birmingham to complete, under Prof. Charles Madge, the survey of a Midland market-town commenced in the Department of Social Science, and one of £4,000 to

* Nuffield Foundation. Report for the Year ending 31 March 1951. Pp. 113. (London: Nuffield Foundation, 1951.)