

The field trials on which the B.B.C. now reports extended over a total period of seventeen months and involved the analysis of more than a thousand questionnaires, filled in by members of the B.B.C. staff and others who watched the results on special sets. So far as reception of the colour picture is concerned, the B.B.C.'s verdict is that the colour pictures produced by the N.T.S.C. system as adapted to 405 lines, with the picture sources and display tubes that are at present available, are satisfactory. The problem of registration with the three-tube colour camera requires attention, and certain features of the display tube could with advantage be improved, but the technical performance of the system is adequate for a satisfactory colour television service in the frequency bands at present in use. The tests radiated from Crystal Palace during November 1956–April 1957 included live studio performances, film and slides. Of the observers, 89 per cent regarded the reception of the live scenes as satisfactory. The 35-mm. film was regarded as satisfactory by 100 per cent of the observers, the 16-mm. film by 93 per cent, and the slides by 98 per cent. The compatibility of the transmissions was very good indeed. This means that the quality of ordinary black and white television, when received on a colour television set, was found to be generally satisfactory; and likewise the quality of the colour transmissions, when received in black and white on ordinary television sets, was completely acceptable to 94 per cent of technical observers.

The results of the tests have been communicated to the Television Advisory Committee, which has the

task of advising the Postmaster-General on the whole field of television. The results have also been sent to the International Radio Consultative Committee which recently met in Moscow to consider colour television. The B.B.C. will carry out further experimental transmissions from time to time. It is pointed out that there are many other problems to be solved: for example, the production of a reasonably priced colour-receiving set and agreement on the future standards to be applied to the development of television in the United Kingdom. The decision whether or not there is to be a public service of colour television, and if so the system to be used, rests with the Postmaster-General.

A national television network requires to be adequately supported by inter-connecting line and radio links capable of transmitting without distortion the complex signals conveying the sound and vision information. Where outside broadcasts are concerned, mobile equipment is usually necessary, and the design and development of such equipment is described in Monograph No. 19, by K. C. Quinton, under the title "A V.H.F. Television Link for Outside Broadcasts". This provides, first, a brief historical introduction to the problems of radio linkage, leading to the need for using ultra-high frequencies, with particular reference to moving-camera applications and to propagation over water. The relative merits of amplitude and frequency modulation are explored in theory and practice; and details are given of the equipment developed for use in the frequency-range 610–660 Mc./s. The first year's operational experience with such equipment has been very successful.

ROAD RESEARCH

THE work of the Road Research Laboratory is concerned partly with the behaviour of traffic on the road, and partly with the performance of materials and with the methods of construction of the road itself. The Laboratory's annual report for 1957* is interesting and well presented.

Some problems of traffic and safety can be solved by a controlled experiment. For example, the Laboratory conducted a full-scale experiment with streams of traffic weaving through each other as the vehicles entered and left a roundabout. This led to an empirical formula, from which the limiting traffic flow could be predicted accurately. The Laboratory has also developed an apparatus for measuring accurately the resistance of a road surface to skidding; one graph shows a seasonal variation of this resistance which corresponds closely with the seasonal variations in the number of skidding accidents.

To study other problems, the Laboratory conducts various field surveys. For example, a survey of the flow of traffic in the streets of London and Glasgow showed an average journey-speed of ten miles per hour with vehicles stopped for about a third of their journey time. Detailed field studies of accidents suggest that the doors of British cars tend to jam in a crash, while the doors of American cars tend to fly open. Their conclusion from a study of reports of a sample of fatal accidents was that 13 or 14 per

cent of fatal accidents involved a person who had drunk alcohol (the official statistics suggest a figure of only 2 per cent), and showed further that, "one half of the drivers and more than one half of the pedestrians involved in fatal accidents at night had been drinking".

Experiments to reduce accidents have sometimes been very successful: a big roundabout can eliminate three-quarters, and a smaller roundabout a half, of the accidents at an intersection. Sometimes success is more elusive. A full-scale attempt to reduce road casualties in Slough over a two-year period produced only an "apparent reduction" compared with the increasing numbers of casualties in Great Britain as a whole, which must have been something of a disappointment. Perhaps it was a mistake for the Laboratory to be too much concerned with traffic conditions in a town so close at hand.

In the work on materials and methods of construction a major experimental section of road has been constructed as part of the new north-bound carriageway of the Great North Road at Alconbury Hill in Huntingdonshire: there are seventy different variations in the pavement construction within a length of 2½ miles, although the passing motorist is probably only aware of the changes at one or two points in this length. This experiment is concerned with fairly conventional pavement construction, but it is interesting to read of the continued satisfactory performance of some other experiments of previous years when lengths of cement-stabilized gravel base

* Department of Scientific and Industrial Research. Road Research 1957: The Report of the Road Research Board with the Report of the Director of Road Research. Pp. iv+93+8 plates. (London: H.M. Stationery Office, 1958.) 5s. 6d. net.

were constructed. Such a base is inherently cheaper and quicker to construct than a normal base; perhaps British engineers in the past have concentrated too much on the stabilization of the soil that happens to be on the site, and have given insufficient attention to the possibility of stabilizing low-grade unwashed gravel which may be available close by. Work on concrete and bituminous materials is also described.

The report begins with an attempt to gauge the importance of the road problem in Britain. The cost of road accidents is about £100 million a year, and that of time and fuel wasted in congested traffic is several times that figure. The present programme of road improvements is based on information that appears to be inadequate as a basis for design, and in comparison with the sums of money that have

been mentioned above the expenditure on road research is negligible. The civil engineering industry itself does relatively little research, and the paucity of the support which the work of the Road Research Laboratory receives can be gauged from a disturbing sentence on the Alconbury Hill experimental section which "... was planned some twelve years ago" but was only constructed last year. This is a straightforward experiment for which a site should have been found so that the work could be carried out well in advance of the present road-construction programme. It must be hard to continue with research that apparently receives slight encouragement, and know that for lack of design data the new roads that are now being built are probably not so good as they could be.

A. N. SCHOFIELD

JANE COFFIN CHILDS MEMORIAL FUND FOR MEDICAL RESEARCH

THE Jane Coffin Childs Memorial Fund for Medical Research, of New Haven, Connecticut, made appropriations totalling 312,779.93 dollars in support of research and fellowships in cancer for the year July 1, 1957–June 30, 1958. This brought to slightly more than four million dollars the total distributed by the Fund since its establishment in 1937.

Support is given by the Fund to research in both the basic and clinical sciences; for postdoctoral fellowships providing opportunity for advanced training and research; and for conferences and meetings of national and international societies concerned with cancer research. Among publications to the support of which the Fund has contributed since it helped to establish them are the journal, *Cancer Research*, and the "Atlas of Tumor Pathology".

Applications for research grants and fellowships are reviewed by the Board of Scientific Advisers, directed by Dr. M. C. Winternitz, three times a year at the offices of the Jane Coffin Childs Memorial Fund for Medical Research, 333 Cedar Street, New Haven 11, Connecticut.

Although most of the Fund's grants are given to American investigators, no geographical restrictions are placed on its allocations. Austria, Britain, France, Japan and Sweden are represented on the current list of grants for 1958. Dr. Bengt E. G. V. Sylvén, associate professor of experimental cancer research in the Karolinska Institute at Stockholm, received a first grant (30,000 dollars for three years) for development of cytochemical methods to be used in attacking a long-standing controversial question in cancer—the relation of proteolytic enzymes in the malignant cell to the penetration of surrounding tissues by cancer. Dr. Jacques Monod, director of the Department of Cellular Biochemistry at the Pasteur Institute, Paris, received a fifth grant (totalling 29,400 dollars since 1954) for studies of specific enzymes involved in the selective penetration of certain organic molecules into bacterial cells. Grants made to the Institute of Cancer Research, Royal Cancer Hospital, London, beginning in 1938 when the late Sir Ernest Kennaway, then director of the Institute, visited the Fund in New Haven, now total 73,500 dollars. American investigators supported by the Fund in 1958 were working chiefly in university and medical school departments of the basic and clinical sciences,

ranging from genetics and botany to surgery and medicine.

Among the long-term programmes at present supported by the five-year grants is that of Dr. Charles B. Huggins and his associates (25,000 dollars a year) at the Ben May Laboratory of Cancer Research, University of Chicago.

In accordance with the developing trend in most of the research on cancer, biochemical approaches outnumber all others in the work of both investigators and Fellows supported by the Fund, with especial concern for the chemical reactions in normal and neoplastic cells and tissues and with particular interest in protein and nucleoprotein metabolism. These and other chemical approaches to the problems of cancer were being studied in tumour and other viruses, in immunological mechanisms, in connexion with the steroid hormones.

Among other grants made by the Fund for the first time in 1958 are those to Dr. L. L. Engel (Massachusetts General Hospital) for work on methods for studying urinary steroid metabolites in cancer; to Dr. E. H. Stotz (University of Rochester) to investigate the occurrence and role of peroxidase in proliferating tissue and its response to hormones; to Drs. R. W. McKee and H. Cook (University of California) for work on physico-chemical and biological characterization of nucleic acids and proteins from several different ascites tumours; to Prof. J. N. Davidson (University of Glasgow) to investigate nucleic acid metabolism in cancer tissue; to Dr. Osamu Hayaishi (Kyoto University) for work on the biological synthesis and degradation of peptides and proteins; and to Dr. Stanfield Rogers (University of Tennessee) to investigate the mechanism of action of the Shope papilloma virus in producing papillomas in rabbit epithelium.

New Fellows supported by the Fund in 1958 include Dr. P. Ottolenghi (Copenhagen), Dr. G. L. Hagen (Harvard), Dr. M. Richter (Indiana), Dr. L. Del Gatto (California), Dr. E. V. W. Yamada (U.S. National Institute of Arthritis and Metabolic Diseases), Dr. K. R. Hanson (New York), Dr. Monto Ho (Harvard), Dr. D. Rubinstein (Michael Reese Hospital, Chicago), Dr. A. Iodice (University of California, Berkeley), Dr. E. A. Carusi (California Institute of Technology), Dr. J. Rothschild (Rockefeller Institute for Medical Research), Dr. J. B. Mudd (University of California, Berkeley).