

beds, together with separate outpatient facilities, if only in terms of waiting-rooms.

I would also suggest that it is imperative for the successful containment of the heroin-addiction problem that there should be a maximum control of the amount of heroin available on prescription, and that this control can be achieved only through a rather rigid structuring of treatment centres. This would not in itself vitiate the maximum concern which one has clinically for the individual addict. There is perhaps a more important general and national issue to be decided, and this arises from the number of statutory agencies involved and the number of voluntary associations active in the field. The situation now demands that there be appointed someone with powers to control and to integrate all measures to deal with the narcotic-addiction problem.

The functions of a treatment centre are then, as I see it, (1) the containment of the number of addicts and the prevention of further cases being created; (2) the treatment of the

individual addict, which demands a high degree of co-operation between physician, psychiatrist, and nursing staff; (3) provision of leadership necessary to create a therapeutic team, working closely in continuous care of the individual addict within and without the treatment centre; (4) the conduct of research, much of which initially must be of a fact-finding nature (to this end there is the need for an accepted system of records, which might well be tied up with the system of identification of addicts); (5) to offer education in this field to postgraduate doctors, nurses, health visitors, probation officers, and other key people in the community who could influence the climate of opinion against indiscriminate drug-taking.

These thoughts on the development of treatment centres arise from our two years' experience and it can be seen from the accompanying graph that we have in fact contained the problem of narcotic addiction in Birmingham (compare with the national graph).

JOHN OWENS.

CONFERENCES AND MEETINGS

Collection and Handling of Medical Data

[FROM A SPECIAL CORRESPONDENT]

A symposium was held on the collection and handling of medical data at the University of Salford on 6 May, under the chairmanship of Sir EDWARD COLLINGWOOD, F.R.S. (Treasurer, Medical Research Council). Opening the conference, Dr. B. RICHARDS (Manchester University Institute of Science and Technology) described some of the equipment available, pointing out that at present medical computing was the most expensive kind of activity in which doctors could indulge. In his view computer technology was now well ahead of requirements, and the next revolution must come from the users. For example, equipment available at present included a line printer, whose output was 2,400 lines per minute, and optical character readers which could cope with 100 documents per minute. Co-ordination between the Ministry of Health and the National Computing Centre would ensure that no duplication of computer programmes would occur in future.

Medical Computing in the U.S.A.

Describing some impressions of medical computing in the U.S.A., Dr. D. E. CLARK (Director of Medical Computation, University of Manchester) said that experience in that country went back to 1957. At present all medical schools there had at least one computer, and in many centres students were being taught to use them. Already the long-term benefits of using computers and automated laboratory procedures had been found to be considerable—including raising the bed usage in a children's hospital from 85% to 95%, reducing blood wastage, and lowering the cost of a battery of 10 laboratory tests from 15 dollars to 1.25 dollars. By 1980 Dr. Clark predicted that half the doctors graduating would have some knowledge of medical computing, while by 1970 the number of computers in American hospitals was expected to rise to 1,000. Another project was that five major centres would be set up

in the next few years for literature retrieval, in association with Medlars, which was shortly to be expanded.

The use of computers as an aid to diagnosis was discussed by Dr. PATRICIA M. FRASER (Royal Free Hospital, London), who described an attempt to derive "profiles" of various forms of liver disease using features derived from the patient's case history, the results of physical examination, and the results of laboratory, radiological, and special investigations. So far the results had not been sufficiently in agreement with current medical knowledge to be useful, and when many other features based on the result of liver-biopsy examination were added the confusion had become worse. In future work it was planned to adopt a weighting system for the individual features used in the study similar to that which had been used in the Medical Research Council leukaemia trial.

Chromosome Analysis

Some work in progress on techniques of computer recognition of chromosomal patterns was described by Miss J. HILDITCH and Dr. D. RUTOVITZ (Clinical Effects of Radiation Research Unit, M.R.C. London and Edinburgh). They pointed out that conventional techniques of this kind might take up to 20 minutes for each cell studied, and, moreover, a large number of cells had to be scrutinized. This made large-scale surveys difficult—either of population genetics (where a large number of people had to be studied), or of environmental damage (where a large number of individual cells had to be examined in order to determine the true incidence). Automatic chromosome analysis would involve at least two stages: firstly, a search phase (when a suitable cell was being found), and, secondly, an analysis phase (when the individual cell would be scrutinized). Two particular problems needing solution at present were, firstly, how to distinguish by an automatic device the chromo-

somal pattern from some extraneous object, and, secondly, the analysis of chromosomes that were bent or overlapped other chromosomes.

The use of computers in the biochemistry laboratory was discussed by Dr. T. P. WHITEHEAD (Queen Elizabeth Hospital, Birmingham). In 1960 his laboratory had been faced with well-known problems, such as overcrowded working space, a work-load that doubled every five years, and skilled scientific workers spending a third of their time in routine clerical work. On analysis there were three obvious main bottle-necks in the work: firstly, the transport of specimens and reports from the ward to the laboratory and vice versa; this had been rationalized by a work-study programme. Secondly, the analytic procedures; the length of time spent on these had been reduced by automation. The third bottle-neck was the clerical work, which had involved five separate pieces of paper being handled; this had been tackled with the computer. Dr. Whitehead considered that the advantages of automatic procedures and mechanization in the laboratory included accurate identification of the specimen, the analysis of a series of reports for the clinician, and a check on the workings of the laboratory itself. He suggested that a great deal of information lay hidden in laboratory data which could be revealed only by using the computer—for example, in his laboratory this had altered their views on the true range of the serum-potassium concentration, as well as reminding them of the differences in the serum-potassium concentrations between males and females. At present a trial was in progress in his hospital whereby one blood specimen from some of the patients would be routinely examined by about 16 biochemical and five haematological investigations. Already this procedure had been found to be remarkably cheap, and Dr. Whitehead thought that it might well lead to better turnover of patients in the hospital.