

There are certain methods of prevention, diagnosis and treatment which are powerful allies in the anti-tuberculosis campaign. These are as follows.

(1) *Research.* There is close association of research work in tuberculosis with practical application by clinicians. Important work in this field is done by tuberculosis committees of the Medical Research Council, the Ministry of Health, the Proffit Trust of the Royal College of Physicians, the Papworth Research Institute, the Tuberculosis Association and other research bodies. Studies are being made on immunization with B.C.G.

(2) *Pasteurization of milk.* It is estimated that 30 per cent of non-pulmonary tuberculosis is due to infection by bovine strains of the tubercle bacillus, almost always conveyed by milk. In England some 80 per cent of liquid milk is heat-treated, and if only the remaining 20 per cent were so treated a further large reduction in these deaths might well follow.

(3) *X-rays.* In the past twenty years the improvement in X-ray technique has helped the diagnosis of pulmonary tuberculosis and the control of collapse therapy. The value of tomography was established by the work of McDougall and Turning in Great Britain. Lastly came mass radiography, which has developed much of late years for the diagnosis of the early case of pulmonary tuberculosis.

(4) *Surgical treatment.* The extended use of artificial pneumothorax from 1920 onwards marked a great advance. It may be associated, however, with certain severe complications, such as air embolism, spontaneous pneumothorax, empyema and bronchopleural fistula. Difficulties also arise in the termination of an artificial pneumothorax, for the lung will not always re-expand. The type of case, a limited lesion, which did well with this treatment is often treated by chemotherapy to-day. Artificial pneumothorax is still of value in appropriate cases, although some practitioners, especially in Holland, have abandoned it in favour of other surgical measures. Pneumoperitoneum is still employed, both as a useful accessory to chemotherapy and as a temporary procedure to prepare a patient for operation; but phrenic crush, which partly paralyses the diaphragm, often permanently limits respiratory function and is seldom advised. R. Laird is of opinion that thoracoplasty (usually done in two stages) has still a definite place in the treatment of pulmonary tuberculosis. In the six years 1944-50, of 580 patients treated in this way there was a mortality-rate of less than 1 per cent per operation, and 72 per cent of these patients were sputum-negative during the two-months before their discharge. Various extrapleural and extrafascial operations may be grouped with thoracoplasties. A one-stage operation followed by no deformity is attractive, but the fate of the dead space and its plastic packing has yet to be determined. Cavity drainage is not often done in Great Britain. Excision of diseased lung formerly had a high mortality from the risk of spread of tuberculous infection. Improvement in operative technique and the use of antibiotics, notably streptomycin, have made pneumonectomy, lobectomy, segmental resection and wedge excision safer and of benefit to many patients unsuitable for collapse therapy. In Laird's series, resection of lung gave a sputum-conversion rate of more than 90 per cent, and the mortality among 132 patients so treated was 4.5 per cent. Despite the increased risk, excision in the United States has

largely replaced thoracoplasty, and it is an operation which has now a definite place in treatment.

(5) *Chemotherapy.* The clinical application of antibiotics, streptomycin and *p*-aminosalicylic acid is being actively pursued with encouraging results. Many patients with pulmonary tuberculosis are initially thus treated at home, and, consequently, a higher proportion of those admitted to sanatoria for active treatment have become sputum-negative. This favourably influences medical and surgical treatment alike in sanatoria.

Prevention and treatment must go hand-in-hand in the attack on tuberculosis. As infected cases in the community become fewer, so will the prevalence and mortality of the disease further decline. The new methods of treatment here discussed are highly encouraging; but the older and simpler methods of prevention, notification, contact examination, environmental hygiene and good nutrition must be associated with them.

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CARNEGIE UNITED KINGDOM TRUST

REPORT FOR 1951

THE thirty-eighth annual report of the Carnegie United Kingdom Trust, covering the year 1951*, refers to the impeding of the village-hall building programme by the general restrictions on capital expenditure: work proceeded on twenty-one schemes throughout Great Britain, and grant instalments amounting to £11,679 were paid; a sum of £30,000 remains available for schemes approved before the end of 1947 but still awaiting a starting date.

Sums of £15,000 were allocated to the Family Welfare Association and to Family Service Units for the quinquennium. The former is conducting an experiment in the approach to personnel problems from the point of view of community relationships and also another experiment involving the employment of a specially trained worker to deal with problem families as part of the case-load at one of the Association's centres. The Family Service Units undertake practical work in the homes of problem families and, as a corollary, practical research in close association with the field-work of the separate units now established in some of the larger cities. A grant of £6,000 to Stanley House, a community centre in Liverpool for coloured people and their friends, is for a development plan involving structural alterations and provision of additional facilities to make the centre a house of friendship for everyone, irrespective of colour, class or creed. The Joint Committee on Museums Policy is surveying several provincial museums which have been selected as potential centres for installing experimental demonstration galleries embodying the most modern ideas of the technique of presentation.

* Carnegie United Kingdom Trust. Thirty-eighth Annual Report, 1951. Pp. viii+48. (From the Trust, Dunfermline, Fife, 1952.)

The trustees are defraying the cost of twelve small experimental alphabet-into-braille machines, which are to be given an exhaustive trial by the two National Institutes for the Blind and Deaf, and a grant of £2,000 over five years on a diminishing scale has been promised to the newly formed Scottish Institute of Adult Education; also, on certain conditions, £5,000 to the British Association for the Advancement of Science for the adaptation of Down House as a residential centre for scientific work and courses in natural science. The survey of agencies and activities concerned with juvenile delinquency was concluded during the year, and the report is being drafted; Miss E. L. Youngusband's supplementary report on the employment and training of social workers, published in September 1951 under the title "Social Work in Britain", had a very favourable reception. The bulk of the report is devoted to a review of the trustees' policy in regard to music and drama, a field from which they have withdrawn now that it is a statutory responsibility of local education authorities.

ENERGY IN THE SERVICE OF MAN

IT is not yet too late to be worth while directing attention to the series of papers presented in Paris last year under the auspices of the United Nations Educational, Scientific and Cultural Organization (Unesco, 19 Avenue Kléber, Paris 16^e). One such theme for discussion is to be proposed annually. The first was "Food and People"; now we have "Energy in the Service of Man", which covers an equally wide field. There is some duplication in the six papers; but this is not very important, as the subject is treated from widely different points of view, the authors being free to express their own opinions.

Sir Alfred Egerton, of the Imperial College of Science and Technology, London, discusses "Civilization and the Use of Energy". This long paper considers energy as a determining factor in the growth of civilization, emphasizing the tremendous effect of the new discoveries in the era following the Renaissance. The extent to which available energy resources are at present utilized is also discussed. There are tables and charts provided, but this very general historical approach does not make easy reading. It provides a background against which the ideas in the other papers can be more usefully assimilated.

Dr. L. C. McCabe, of the U.S. Bureau of Mines, in "World Sources and Consumption of Energy", considers the different forms of energy reserves—those such as coal, oil and nuclear fuels, which will ultimately be consumed, and others like water-power, tides, wind and solar radiation, which are continually renewed. He believes that, even with the present rate of technological advance and ever-increasing energy consumption, the world's annual energy requirements in the year 2000 are not likely to exceed 1 per cent of even the known mineral reserves. There are numerous tables giving precise data.

Dr. G. Eichelberg, of the Federal Polytechnic, Zurich, presents a very thought-provoking paper on the "Utilization of Energy". He emphasizes that solar radiation is the ultimate source of all our energy; the greater part of that which we use is

stored as chemical energy, which must be converted to mechanical energy by combustion in a heat-engine plant. Dr. Eichelberg discusses the fundamental thermodynamic relationships and traces the thermodynamic evolution of the steam engine, the steam turbine, the internal-combustion reciprocating engine and finally the internal-combustion turbine. His remark that "for the great air-liners jet-propulsion is therefore scarcely a practical proposition", because of its low fuel-efficiency, is already out-dated. He ends with a mention of the theoretical merits of binary-vapour systems, both with independent and combined circuits, and advocates a more intensive research in the field of solution thermodynamics. There are some revealing statements as to the efficiency of domestic heating and the possibility of greatly improved efficiencies by coupling to industrial plant or the use of heat pumps.

Prof. P. Ailleret, of the National School of Roads and Bridges, discusses "Energy in its International Aspects". Since the geographical distribution of natural sources of energy bears practically no relation to the distribution of human needs, great international exchanges of energy are desirable. He gives very interesting maps which demonstrate world movements of fuel, continental electricity grids and oil and natural gas lines. He gives facts to show the scale on which energy exchanges exist at present. He shows that a continental area is usually adequate to form an economic grid—little gain would accrue from intercontinental linkage. Prof. Ailleret discusses the convenience of different forms of energy from the point of view of transport; the ease of transport of oil and gas and the difficulty of transporting electricity economically over great distances are remarkable. He also considers energy storage: it is, of course, cheaper to carry alumina to the electrical generating station and then transport back the aluminium produced from it than to transmit the electrical power to the mineral source. The aluminium metal, having a higher 'potential' energy content than the alumina, represents a form of energy storage. This paper is full of interesting ideas: it is not so much the facts that are new as the way in which they are presented and their interrelation shown.

Prof. M. S. Thacker, of the Indian Institute of Science, Bangalore, treats "The Role of Energy in the Under-developed Areas". This is also a long paper, and the typographical arrangement is different from that of the remaining contributions. It does not make easy reading, largely because of the author's elaborate prose style. He discusses the comparative development of the countries of the world and the distribution of resources among them, considering the factors responsible for the backwardness of various countries. Finally, he outlines a programme of development, including technical and material assistance. He supports his arguments with many tables and much statistical data.

Prof. F. E. Simon, of the Clarendon Laboratory, Oxford, considers "Energy in the Future". Like Prof. Ailleret's paper, this is a challenging and readable document, which ought to provoke much thought and discussion. This is exactly what was intended of the series. The exposition is masterly in its lucid and scholarly approach, while retaining and exploiting the inherent interest of its theme. After dividing energy into its two main categories of 'free' or ordered energy and 'heat' or disordered energy, Prof. Simon recalls the limitations and difficulties