

as well as in "Redbrick University" and in Dr. Snow's recent article in the *Political Quarterly*. It will be noted that in fact the report provides for two of the three practical steps emphasized as necessary by Dr. Snow: a standing Government committee to report at least once each year on trends in employment of graduates; and that the Appointments Department of the Ministry of Labour should act in close touch with this standing committee and have as its essential task the diffusion of information to undergraduates.

There can be little doubt that a Government department would be much better equipped to discharge such responsibilities as those which the National Union of Students suggests should be entrusted to the university appointments boards. Furthermore, the observations on the staffing of the appointments offices have a close bearing on the staffing of university appointments boards, and if the latter are, as Dr. Snow suggests as the third step, strengthened in the large universities on the Cambridge scale and developed on tutorial lines in the smaller universities, their effectiveness cannot fail to be increased by contact and co-operation with a Government Appointments Department staffed as advocated in this report.

There is a further point with regard to co-operation with the professional institutions which are active in this field. Some of them have old-established and efficient appointments bureaux and may tend to look askance at a new Government agency, at least until it has gained their confidence by good work. The report, which establishes beyond question the need for a national organization, should equally dispose of any fears as to competition and rivalry. What is required is in fact complete and friendly co-operation—a co-ordinated effort to ensure the best possible use of the specialized knowledge and ability which constitute one of the most precious assets of Great Britain. It may well be that one consequence will be some diminution, if not elimination, of overlapping activities in this field on the part of rival professional organizations. The engineers are clearly moving in this direction. Even more fundamentally, it is a reminder that the functions and duties of professional associations change, and that, as Prof. H. Laski has pointed out, in a new age of full employment, their protective and defensive functions may have less meaning and importance, while other duties increasingly invite their zeal and service.

## UNIVERSITY GRANTS IN GREAT BRITAIN

SIR JOHN ANDERSON'S statement in the House of Commons on the Treasury grants to be made available to the universities and university colleges of Great Britain during the next few years must have come as a great relief to those who are responsible for the finances of these institutions, for the recurrent grant for general university purposes is to be nearly doubled by an addition of £2,000,000 in each of the

next two years, and there is to be a further grant of £1,000,000 for developments in the medical schools arising out of the recommendations of the Inter-Departmental Committee's report, and £500,000 for grants to the teaching hospitals on the recommendation of the same committee. The grants for future years will be reviewed at the end of the two-year period. For capital expenditure, a token sum of £250,000 is to be made available to the University Grants Committee for distribution during the coming year. A sum of £5,900,000 in all will thus be included in the 1945 estimates as a grant in aid of the universities, colleges, medical schools, and teaching hospitals of Great Britain.

The Chancellor's statement is noteworthy not only because of the generous allocation of funds which it discloses, but also because of the evidence it affords of the receptiveness shown by him to the advice tendered by the representatives of the universities and university colleges, and by the University Grants Committee, which is charged with the duty of administering the grant.

The approximate doubling of the grant for general university purposes will, however, provide little more than is required for the long overdue increase in the salary scales of members of university staffs. An increased income of not less than £1,500,000 per annum is needed immediately to adjust these salaries to a level comparable with that prevailing in other professions which are recruited from students of similar training and standard of attainment. It is greatly to be hoped that the lead now given by the Government will be generously followed by local authorities, so that provision will be forthcoming to make university education available to the greatly increased numbers of students who will soon be seeking it. This will require an increase in the existing staffing of departments and a larger provision for maintenance charges of all kinds.

Sir John Anderson stated that in view of the restrictions on building which are likely to operate during the years immediately following the War, it seems unlikely that the universities will have opportunities for any considerable capital expenditure during the next year or two; but he added that if the grant of £250,000 for capital expenditure should prove insufficient, the possibility of its being increased within the financial year would not be ruled out. Capital expenditure is needed not only for the erection of new buildings but also, and more immediately, for the purchase of sites on which the new buildings can be erected. In many universities and colleges the need of funds for the acquiring of land, now available, is a matter of pressing urgency if the opportunity of expansion on to convenient sites is not to be permanently lost. It thus seems probable that the University Grants Committee will receive requests from the universities, during the present year, for a greater total sum than that provisionally allocated by the Chancellor to capital expenditure in 1945. It is obvious, for example, that £250,000 would not go very far towards providing the additional sites now urgently needed by the many colleges and institutions of the University of London alone.

Universities are rightly zealous in safeguarding their autonomy, and satisfaction will no doubt be derived from the fact that, in announcing the special grants for medical schools, the Chancellor did not threaten the imposition of financial sanctions, as did the Minister of Health in a reply he made in the House of Commons a few weeks ago. On that occasion, in a written reply relating to the report of the Inter-Departmental Committee on Medical Schools, Mr. Willink indicated that the Government's acceptance of the principle of increased grants for medical education and research was dependent on a revision of the medical curriculum being carried out at an early date. Such a decision by the Government, taken without prior consultation with the university authorities, however well-founded it might be, would be a grave departure from established procedure and a menace to the academic freedom of the universities.

## SCIENCE AND SALVAGE

### Science and Salvage

From the German "Verwertung des Wertlosen". Editor, Claus Ungewitter. Translated by L. A. Ferney and G. Haim. Pp. 183. (London: Crosby Lockwood and Son, Ltd., 1944.) 12s. 6d.

**W**ASTE, begotten of ignorance out of laziness, is no new phenomenon; it is probably coeval with man, if not with his progenitors. But primitive man had neither the knowledge and incentive nor the use of machines to convert his scrap into utilizable material; modern man has all these, but in general fails to apply them on any considerable scale, unless he is compelled thereto by war or by the expectation of profit. Modern industries based upon science have, however, not only realized the need of recovering materials hitherto wasted, but also they themselves have created new wastes to be recovered, such as chemical by-products and metallurgical scrap.

The words 'waste' and 'salvage' are sometimes used loosely. Strictly speaking, a waste material is one which might be recovered and re-used, with or without pre-treatment; but many, including the author(s) of the book under review, use them in connexion with low-grade minerals, with certain constituents of sea water, and even with certain atmospheric gases. Such raw materials, of actual or potential use, can scarcely be called 'waste', and the term should be restricted to substances and articles that have already been manipulated by man, either directly or by means of machines.

The German original of this book, entitled "Verwertung des Wertlosen" (utilization of the worthless), comprises a series of articles that appeared in *Die Chemische Industrie* shortly before the outbreak of the present War; they were published in book-form in 1938, with an introduction by Field Marshal Goering, and may therefore be taken as authoritative and up to date in regard to pre-war German practice, for most of the processes mentioned—few are described in detail—have either originated or been developed in Germany. The amount of work done there in this connexion can only be described as amazing; but, unfortunately, one cannot repress the thought that most of it was undertaken to render Germany as self-sufficing as possible and to build

up the *Wehrmacht* with the ultimate object of attaining world domination. In 1939, Germany produced about 80 per cent of her food requirements and almost two-thirds of her industrial raw materials. If, in the future, she were cut off economically from the outside world, and were left with her present territory, it is quite possible that she might live on her own resources. Although starch-bearing tropical crops like rice and cassava could easily be dispensed with, luscious tropical and sub-tropical fruits, tea and coffee would have to go by the board; fats, oil, rubber and fibres could be made artificially, and cellulose in its various forms could be readily produced at home. Further, if metallurgical science continues to advance at its present rate, substitutes for some of the commoner metals and more particularly for certain rarer metals, like tungsten and molybdenum, would be forthcoming. Coal ash, as the authors point out, could supply appreciable quantities of zinc, arsenic, cobalt, nickel, molybdenum, chromium, vanadium, silver, gold, platinum and beryllium. National self-sufficiency in Germany and in many other countries is distinctly possible; but, as many will think, very undesirable in a peace-loving progressive world.

The wide range of subjects discussed in the book may be gleaned from the following abbreviated chapter headings: atmospheric gases, the sea, low-grade mineral resources, peat, forestal products, agricultural wastes, scrap and worn materials, municipal refuse, sewage, chemical by-products and coal ash. Few, if any, of the processes outlined will be unfamiliar to specialists, but even they will be interested in the efforts made in fields other than their own. It is to directors of large laboratories and research institutions, and not least to economists and 'business executives', that the book will make a special appeal. During the War of 1914-18, many patents for the recovery of waste were taken out, and but very few survived the ordeals of peace, the chief reason being that they did not 'pay'. Hence the future of scientific salvage will depend as much upon economic and political conditions as upon advances in science and technology. In certain cases it may well be advisable for Government or local authorities to assist in the initiation, development, and perhaps the operation of processes that may be deemed of primary importance, for it can scarcely be expected that public companies should risk their shareholders' money in such enterprises. Processes essential to public health and the national economy, like the treatment of sewage and of household refuse, would here come into the picture; and generally it may be postulated that public money should be used only for the provision of materials, etc., to meet basic needs, such as those used for food, power, clothing, shelter and communications. Apart from these, it may well be found that many of the ingenious processes evolved are inadvisable and redundant; for example, the recovery of materials that are renewed annually or at slightly longer periods by solar radiation.

Cupidity, ultra-nationalism and bad economics have in the past prevented many of the gifts bestowed by a bounteous Nature from becoming available to the people who need them. If nations could be made to realize, however slowly, by enlightened education that they are all members one of another, and if the fourth term of the Atlantic Charter, that all nations have free access, on equal terms, to the trade and to the raw materials of the world, could be implemented, much of the human effort that may be devoted to