

# NATURE

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## SCIENTIFIC MAN-POWER IN GREAT BRITAIN

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THE recent debates on defence and on man-power in the House of Commons have one feature in common. Through the more responsible speeches there ran a thread of anxiety as to the man-power resources of Great Britain; whether that distribution was, in fact, the most appropriate for current and future needs, and whether the most effective use was being made of man-power in the occupations where it is at present deployed. In the defence debate, concern as to the actual targets for man power was expressed on the Government side of the House, notably in regard to recruiting both for the Army and for the Air Force. Further, the Minister of Defence referred to his intention of expanding the research staffs in the scientific services, which for the last two or three years have been kept below the desired strength because of what were regarded as the more urgent claims of the universities, the teaching profession and industry, in accordance with the priorities recommended in the Barlow Report on scientific man-power.

In the man-power debate, however, the note of anxiety was more apparent on the Opposition side. Sir David Maxwell Fyfe pointed out that the Economic Survey for 1949 suggests that the Government no longer considers a better distribution of man-power to be an urgent necessity. While the personnel of the public services has continued to increase, the higher man-power targets for the basic industries of coal, agriculture and textiles have not been achieved. The Minister of Labour, Mr. Isaacs, claimed in his reply that in the greater part of the field the estimated distribution of man-power has been achieved, and he did not appear to be seriously worried by the admitted failure to attain the targets for the basic industries. He claimed that there is little to be done by way of distribution of man-power, and that the objective must now be increased productivity or higher output.

The importance of that objective cannot be overstressed; but there is far too large a proportion of the nation's man-power and woman-power engaged in what are essentially non-productive occupations for the question of distribution to be dismissed so lightly, quite apart from the repercussions of one section of the field on another. One undercurrent in the defence debate was a marked anxiety as to whether under the National Service Acts we are getting the right type of Army and Air Force; and, though the question was not asked, it was clearly in the minds of members that, despite the inherent justice of national service when fairly applied, it is scarcely compatible with a highly efficient long-service regular or professional army, or even with a territorial army.

The reality of the disruption and disturbance caused by national service cannot be denied. Whatever advantages a period of national service may have for many, for some it has real disadvantages: they become unsettled and are slow to adjust themselves to a civilian life and efficient production. This



may in part be a by-product of life in the Services under conditions of peace-time, and may possibly be mitigated as we succeed in eliminating waste in the Services themselves and utilizing civil personnel more effectively for non-combatant duties. On the other hand, it may be inherent in the system, and the consequent inefficiency and waste a part of the price to be paid.

The interruption of university training is another matter, and even if the vast majority of students do their national service before entering the university, some waste of talent is unavoidable. At the present time this is a serious matter for those firms who wish to expand their research and other scientific staff to seize what may be fleeting opportunities so far as export trade is concerned. It was announced last month by the Ministry of Labour and National Service that there will be no allocation to industry of science and engineering students completing their normal courses at universities and technical colleges in 1949. The only students allowed to defer their military service, apart from a small number taking up special posts in agriculture or coal mining, will be those who are allowed to continue at the universities in postgraduate research, for example, and a small number allocated to priority posts in the Scientific Civil Service. The former of these will in any event be required to carry out their military service before they attain the age of twenty-six. Once the principle of national service is adopted, it is clear that on grounds of equity there should be no exceptions; nevertheless, the policy thus announced is *prima facie* reasonable. Certainly, on economic grounds it is undesirable to employ a professionally trained scientific man or engineer in any capacity other than that for which he is professionally qualified, even in the Services; this is in itself a further argument for the completion of military service before admission to the universities. Nevertheless, the application of the policy will be viewed with dismay by firms which are already experiencing acute difficulty in recruiting scientific staff and which do not share the optimism of the Ministry of Labour as to the numbers available of trained scientific workers and technologists.

It is not only industry that is affected. At the annual meeting of the Carnegie Trust for the Universities of Scotland in Edinburgh on February 21, the complaint was made that Government departments, as well as industrial concerns, were outbidding the universities for their staffs, and that in open competition for brains, scholarship and particularly character, the Scottish universities were severely handicapped by lack of means.

This position has not, of course, escaped the notice of the University Grants Committee, and in the House of Commons on March 15 the Chancellor of the Exchequer said that he accepted the view of the University Grants Committee that the increase of salaries which had become necessary in the medical faculties carried with it, as a necessary consequence, a revision of salaries in the other faculties. The provision made for the universities in the Civil Estimates for 1949-50 will allow supplementary grants to be made to adjust such salaries as from October 1, 1949,

on the basis of £1,600 for professors (in London, £1,650), up to £1,600 for readers and senior lecturers, £500-1,100 for lecturers and £400-500 for assistant lecturers. This announcement indicates that steps will be taken to rectify a situation which has been regarded with increasing concern by one body after another that has looked at university finance in recent years.

Nevertheless, that is not the most important aspect of the situation. The central fact to be realized is that a satisfactory distribution of scientific and of general man-power and a correct overall policy may be distorted by action taken to rectify an admitted weakness, or even grievance, in one particular field, because of its repercussions in other sectors. Quite recently, reference was made in these columns (see *Nature*, December 25, 1948, p. 977) to the new tensions which the recommendations of the Spens Report threatened to introduce, particularly when the operation of the economic factors which would normally restore the balance was retarded. Further point is given to those comments by the announcement on March 17 of the salaries and conditions of service for specialists in the new health service which, based on the recommendations of the Spens Committee, the Government proposes to adopt. We are here only concerned with the fact that the standard set for specialists is bound to influence the earnings of other medical men and, through them, the earnings of other professions. The importance of the financial motive can be over-estimated; but it is sometimes a decisive factor in the choice of profession and, perhaps more important still, in the choice of occupation within a profession. To use it without much forethought and careful preparation to adjust the distribution of man-power within a profession is a delicate operation and liable to be attended with awkward and undesirable effects elsewhere.

Although it is a tool to be used only as a last resource, the economic motive is one that cannot be ignored. Hitherto, the professional classes generally have exercised considerable restraint in the matter of remuneration during an inflationary period. The Parliamentary and Scientific Committee has therefore done well to appoint a broadly based sub-committee to inquire into the whole subject of payment of scientific and medical teaching staff at the universities, and the general effects on those of similar standing in other spheres. In that unenviable task, they may well find some whose training is far more exacting and starts at a much higher intellectual level than that of the medical graduate but whose financial rewards are far lower; they may well also uncover unfounded claims to higher personal incomes. A report from so representative a committee may be invaluable in restoring some balance and sense of justice.

Economic factors are, however, only one disturbing element; but they well illustrate the way in which Government action itself may have repercussions which affect the distribution of man-power and the balance it desires. More, they remind us that the distribution of man-power is a dynamic and ever-changing element in the nation's affairs. It is rarely



static, being affected by internal changing circumstances such as technological developments, and also by external events. Man-power policy can never be finally determined. It must be reviewed continually in the light of the needs of the day, and with the fullest possible informed public discussion, if the Government is to be sure of the public support without which no man-power policy can succeed.

Vital as it is to secure maximum productivity, neither industry nor the nation can afford to accept the view that the distribution of its workers does not require continuous, rigorous and impartial scrutiny. Before embarking on a policy of continued expansion of the Government services, the Minister of Labour should satisfy himself—and also industry and the universities—that there are weighty reasons for it. In view of the general restriction of research activities outside the Government service, due to the present shortage of scientific man-power in Great Britain, the case for increased staffs in Government establishments and the Service departments requires careful consideration.

## 101/2 CHEMISTRY OF THE CAROTENOIDS

### Carotinoide

Von Paul Karrer und Ernst Jucker. (Lehrbücher und Monographien aus dem Gebiete der exakten Wissenschaften, 17: Chemische Reihe, Band 3.) Pp. 338. (Basel: Verlag Birkhäuser, 1948.) 43 Swiss francs.

POSSIBLY no better example can be found of astonishingly rapid development of the chemistry of a widely distributed and exceedingly complex group of natural compounds, following upon the introduction of micromethods and specially devised processes, than is afforded by the carotenoids. The first monograph devoted to this topic, "Carotenoids and Related Pigments" (by L. S. Palmer; New York, 1922), contained virtually no detail of structural significance, though this was soon to appear (see, for example, "Carotinoide", by F. Meyer in Meyer-Jacobsen's "Lehrbuch der organischen Chemie", first and second editions, vol. 2, chapter 5; 1929). The adoption of micromethods of oxidation and reduction, the recognition of light absorption of the carotenoids as a valuable characteristic, and, above all, the timely revival of chromatographic analysis, without which the development of carotenoid chemistry might well have been delayed for years, resulted in a surprisingly swift revelation of the main outlines of the chemistry of natural polyenes.

For fifteen years L. Zechmeister's "Die Carotinoide" (Berlin, 1934) has been the sole text dealing exclusively with this detailed carotenoid chemistry. These years, despite the attention of chemists in many countries having been directed elsewhere, have seen much in this field beyond the normal addition to what was known of structural detail. This growth has certainly been notable, for there are now some seventy known naturally occurring carotenoids, the structure of about 50 per cent of which is now fairly precisely elucidated, together with a very large number of stereoisomerides and polyene degradation

products. The carotenoids are no longer, however, of interest solely to the academic chemist concerned with the structural patterns of natural molecules. Connexions with vitamin A, visual purple, phototaxis, and even fertilization in micro-organisms, among other topics, afford them outstanding biochemical interest, and it may be said at once that in the volume under review this old and new material has been surveyed and mostly reproduced in all essential detail in masterly fashion.

All that the chemist can reasonably expect in respect of historical data, occurrence, preparative detail, physical and chemical characteristics, derivatives, and original references to individual pigments is set out with exemplary clarity and, it seems, accuracy, in the special section of this book. Readers will be specially grateful to the authors for having withstood the temptation to abbreviate the necessarily cumbersome structural formulæ, as well as their lavish use of tables and the inclusion of representative spectral curves and coloured plates of carotenoid crystals.

General occurrence, determination of structures, physiological significance, and, among other features, distribution of the carotenoids are summarized with scholarly precision, often in tabular form, in a general part; all information such as the organisms producing specific pigments and the pigments produced by specific organisms is made almost instantly accessible, and few facts only (for example, work on vitamin A) seem to have escaped inclusion, obviously because of their recent discovery.

This is in every way a finely produced and very timely work which, so far as can be foreseen, will be the standard text and largely meet the needs of workers in the field of carotenoids for some considerable time ahead.

A. H. COOK

## 101/2 GEOLOGY AND GLACIOLOGY OF THE PLEISTOCENE PERIOD

### Glacial Geology and the Pleistocene Epoch

By Prof. Richard Foster Flint. Pp. xviii+589+6 plates. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1947.) 36s. net.

PROF. R. F. FLINT'S distinguished work in the broad field of glacial geology has been prominent for a generation, and his book is important for that and for other reasons. It deals with the Pleistocene period from the points of view of a geologist and of a glaciologist. Characteristically, perhaps, the author has used stream-terrace data as little as possible, and indeed much of the field work in North America lends itself to the successful pursuit of other methods. Correlation, perennially a difficult subject, is treated so far as possible on geological evidence, not on archaeology. The author strives to avoid deduction from any theory of climatic fluctuation which sets up a fixed chronology; he incorporates with his own wide knowledge and experience a considered opinion of an enormous amount of literature, of which a formidable list occupies some forty pages. Significant is the author's introductory statement that "a continuous effort has been made to discriminate between reasoning by induction from field evidence and reasoning by deduction from assumed general conditions"; and there, in a sentence, lies the duty of every scientific worker in the field, laboratory and library.