

RECRUITMENT IN THE ENGINEERING INDUSTRY IN BRITAIN

A JOINT discussion between Section G (Engineering) and Section L (Education) at the British Association meeting at Oxford on September 7 was opened by Dr. Willis Jackson, director of research and education, Metropolitan-Vickers Electrical Co., Ltd., who emphasized the great gap between the numbers and quality of recruits needed by the engineering industry and the boys actually coming from the schools. He stressed the importance of continued education, general as well as technical, and of systematic practical training. He believes, however, that there is a fundamental change in attitude on this question based on the recognition of its national importance and arising from the increasing number of men in high executive positions who themselves have had a sound engineering education. The engineering industry, Dr. Willis Jackson said, needs recruits at three levels—professional engineers, technicians, and craftsmen. These sometimes overlap; but each has an essential place in the industry, and he believes that it is the facilities for training technicians which are the least satisfactory, partly because the need for training them systematically has not been clearly appreciated. More deliberately organized courses of practical training and technical study are needed here; but Dr. Jackson stressed the need for more flexibility in training all types of recruits, and also the importance of corporate life during industrial training and the value of the activities of apprentice associations.

Dr. Jackson was particularly concerned with the recruitment of professional engineers. The number of corporate members admitted to the Institutions of Civil, Mechanical and Electrical Engineers has increased from 2,741 in 1951 to 3,310 in 1953, of whom 1,444 possessed a university degree, as compared with 1,215 in 1951. Nevertheless, while the facilities for engineering students at the universities have increased, they are not being used: three hundred first-year places in university engineering schools were unfilled this year and two hundred more will be available in the next three years. More disturbing still, in one university thirty per cent of those accepted failed to pass their first-year examination. Dr. Jackson wondered whether we are trying to draw into the university engineering schools boys who would be better served by entering industry as student apprentices. He also thought that there is a need for better means of informing boys and parents as to the nature and prospects of engineering as a career.

Mr. Donald Lindsay, headmaster of Malvern College, who followed, flatly challenged the assumption that it is the business of the grammar school to produce engineers or any other particularly qualified group. The percentage of able boys is limited to about ten per cent of the school population, and this proportion has to supply all the professions with their best men. In his opinion, the school should be neutral, and should not attempt to influence recruitment for any particular profession. Nevertheless, Mr. Lindsay believes that the engineering profession could do more to attract not the outstandingly able boy, who usually knows his own mind, but the less-able boy, who, like his parents, often has the vaguest ideas of what it means to become an engineer. He

suggested that the engineering industries could follow the example of the Armed Services in preparing a single-page document explaining clearly methods of entry and age and educational requirements for their various branches. Mr. Lindsay is also concerned at the possible effect on the prospects of the less-able boys of the new certificate examinations at ordinary level, and still more at the consequences for such boys of the shortage of science teachers and especially the decline in quality of science teachers.

Mr. H. A. Warren, principal of East London Technical College, outlining the contribution of the technical colleges to recruitment and training for the engineering industries, pointed out that grammar schools provided 45 per cent of the technical college students who obtained their Higher National Certificate in 1953. He said that the quality of the work of the technical colleges reaches as high a standard as the grade of student entry permits. The standard of teaching is good, the scale of equipment excellent and also the co-operation from industry, and so far as the student is characterized by a narrowness of outlook, it should be corrected by the philosophy and outlook of this age. Technology, he urged, should be restored to the service of the liberal ends of human life and character; and, referring to the proposals for a new national award in technology, Mr. Warren said that not only has any new award to prove its worth, but also it is essential for it to encourage breadth of outlook and height of aspiration, thus bearing witness to those social, cultural and philosophical qualities which were the original characteristics of a university degree.

ATTITUDES TO WORK

IN an address to the Industrial Section of the British Psychological Society*, Prof. L. S. Hearnshaw stated that as soon as psychologists have become convinced that values have a place in the world of fact and not only in the heads of philosophers, and that they are capable of being investigated by empirical means, the main resistances to their study will have been overcome, and one of the chief regulators of human behaviour brought within the framework of psychological study.

The growing number of attitude surveys that have been carried out among industrial workers since the War is a recognition that this area of psychology is industrially important. For the study of attitudes merges necessarily into the study of values. The difficulties confronting the psychologist in these studies are formidable and even discouraging.

The most suggestive observations on attitudes to work have come not from industrial psychologists—with the exception possibly of Mace, who is a man of many parts—but from an economist, like Zweig, a historian, like Carr, a philosopher, like Salmon, or from the mainly amateur members of productivity teams.

On the whole, the studies carried out by industrial psychologists themselves in the field of industrial attitudes have been restricted in their frames of

* *Occupational Psychology*, 28, No. 3 (July 1954).

reference. They have been concerned, broadly speaking, with three main topics. First, there have been studies of attitudes to specific features of the industrial environment, to wages and wage systems, security, status, supervision, working conditions, unions, industrial relations policies, types of job, and so on. Secondly, there have been comparative studies of the sort carried out by Marriott in Britain and by various groups in the United States, in which different factories have been compared with regard to attitudes, and an attempt made to link differences in attitude to features of the industrial situation. Thirdly, there have been studies of changes in attitudes resulting from changes in the industrial situation, both planned and unplanned.

Attitude studies along these lines have a twofold value. They provide a knowledge of the features within the industrial situation that influence and modify attitudes, and they provide local knowledge of attitudes to various situations which is of diagnostic value in troubled industrial conditions and a pointer to management.

In modern technical civilizations work has increasingly become a demarcated area of life. There is for more and more people a recognizable meaning in phrases such as 'on the job', 'working hours', 'retirement', in a sense quite unlike anything that obtains, or has obtained, in a simpler peasant or craft economy. A characteristic feature of work is that it is an activity performed under obligation. The individual undertakes to carry out certain duties (this word in itself is significant) in a certain manner, and usually, though not always, to be in certain places at certain times.

There are other attributes of work such as the fact that it usually implies activity continued over a period of time, perhaps a lifetime, and pursued with some regularity—odd jobs are the vanishing point of work—and also the fact that it is commonly integrated into the economic system.

If work is a demarcated area of life, this area can be evaluated in importance in relation to other areas. An individual's attitude to work will partly depend upon this evaluation. Secondly, if work implies obligations, an individual's attitude to work depends partly on his grasp and his acceptance of these obligations, and the qualitative standards of performance which serve as his norms or models.

Certain broad conclusions seem clearly to emerge from cross-cultural studies of this kind and to confirm qualitative studies which have been made. First, attitudes to work are cultural acquisitions bound up with many features of social organization, economics and ideology, and linked to personality structure; secondly, the roots of these attitudes go deep into the historical past; thirdly, though extremely persistent, such attitudes are not unchangeable.

There is a good deal of clinical and psychoanalytical evidence suggesting that personality structure and attitude to work are closely related, that work is one of several ways of securing reassurance against neurotic anxiety—a way agreeable to some, to others profoundly disagreeable. Attitudes to work cannot be understood except against the whole background of a culture and the predominant personality structure that goes with it.

Attitudes, however, though often persistent and stretching back into history, are not unchanging or unchangeable. Strong attitudes may slowly and imperceptibly erode and decay. New attitudes may emerge in response to the challenges of man or Nature.

Although there are difficulties in interpreting this evidence, it all points in the same direction and to suggest that attitudes to work have eroded more in Great Britain than elsewhere. Not much can be done about this until more is known.

Into the problem of attitude to work three lines of research suggest themselves: the comparative, the genetic, and the psychometric.

Less is known about the character structure of the good workman, technician or professional man than the character structure of the young delinquent; the underworld has had more than its share of psychological attention. Attitudes to work are acquired in the process of growing up. What in fact are the formative influences upon which such attitudes primarily depend? What part do family influences play? To what extent in our culture are attitudes to work acquired at school? What is the effect of different types of education, or vocational placement, of the way a young person is introduced to work, of methods of industrial training, of blind-alley jobs? Again, what permanent influence do breaks in continuity of work have—military service, for example, or periods of unemployment? These and numerous other questions can be asked, but scarcely answered.

Work, not in the sense of physical effort, but work as a mastery of technique, as control, attention and service is the lynch-pin of modern society; and work in this sense depends even more than does physical labour on the attitude of those who perform it. Attitude to work is fundamental to the very continuance, still more to the progress, of society. There is no more important question for the industrial psychologist to turn his attention to than the way attitudes to work arise, grow and are transmitted.

COMMONWEALTH SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANIZATION, AUSTRALIA

ANNUAL REPORT FOR 1952-53

FOLLOWING the practice adopted in the previous report, in the fifth annual report of the Commonwealth Scientific and Industrial Research Organization, Australia, covering the year ended June 30, 1953*†, material is arranged according to its subject and not the Division or Section concerned. Expenditure for the year totalled £4,526,270, including £1,044,392 from sources other than the Commonwealth Treasury, notably £327,283 from the Wool Industry Fund and £455,273 from the Wool Research Trust Fund. Continued progress is reported in the erection of new buildings, and the new laboratory for the Division of Tribophysics was practically complete.

Detailed surveys carried out by the Division of Soils covered about seventy thousand acres and broad-scale surveys about fifty thousand square miles, the field-work for about half the Melbourne sheet of a revised soil map of Australia being completed during the year. In soil chemistry, work on

* Commonwealth of Australia. Commonwealth Scientific and Industrial Research Organization. Fifth Annual Report for the Year ending 30th June, 1953 (1952-1953). Pp. vi+290. (East Melbourne: Commonwealth Scientific and Industrial Research Organization, 1953.) n.p.

† Commonwealth of Australia. Fifth Annual Report of the Commonwealth Scientific and Industrial Research Organization for the Year ending 30th June, 1953. Pp. 191. (Canberra: Government Printer, 1953.) 11s.