

THE USE OF MANPOWER

ONCE more the annual conference of the Institute of Personnel Management has been concerned with an issue of vital importance to the national well-being. Held at Harrogate during October 7-9, the conference was attended by more than 1,000 members and visitors from all parts of the world and considered how Britain should make the best use of manpower.

In an opening address, the Minister of Labour suggested ways in which productivity could be improved to achieve the 25 per cent increase required in the National Plan, without the 400,000 extra workers who would appear to be required and who will not be forthcoming. First, he suggested increased investment in labour-saving plant and machinery. Innovations, such as numerically controlled machine-tools, automatic welding techniques and automatic lathes, are all helping the engineering industry to produce more goods with proportionately fewer workers. Automation is being introduced to the coal mines, where considerable increases in productivity are being achieved through the use of remotely controlled faces. Computers are being used for many routine office jobs and an increasing number of firms appreciate that computers can also be used for advanced design work and for production control.

Secondly, if we are to take full advantage of technological progress, it is inevitable that some industries will decline, and release workers. Other industries will expand and will need these workers. There should be no obstacles to this movement. Firms which keep workers they do not need help neither themselves nor the country, nor—in the long run—the workers themselves.

Thirdly, the deployment and use of our available manpower resources should be critically examined. This is equally important at all levels—on an industry basis and in the individual firm, as well as over the economy as a whole. A number of industries have already estimated possible increases in output per head if various obstacles to the efficient use of labour can be overcome. In a number of other industries, management organizations and unions are together examining the measures which must be undertaken to ensure a more effective use of manpower. It is at the level of each factory and office that the problem must finally be tackled.

What are the obstacles to achieving greater efficiency in the use of labour? A great deal is heard about restrictive practices such as unnecessarily high manning scales, restrictions on the introduction of new machinery or working methods, on the entry of trainees, and insistence on outmoded demarcations. They cannot be tolerated in the battle for economic objectives. They must be vigorously tackled by both management and unions. In recent months there has been a significant increase in the number of agreements between management and the unions allowing for a greater flexibility of working and the removal of practices which impede efficiency.

Deliberate restrictive practices are, however, only a part of the problem. A much greater problem is the ready acceptance of traditional ways of doing things. Industry must be prepared to reappraise objectives and the means of achieving them. The initiative for this rests primarily with management although joint productivity committees also have a most important part to play. A well-developed system of joint consultation is essential to the orderly development of progressive ideas.

There is also need not only for rigorous scrutiny of the deployment of manpower at present, but for a forward look. The report on the metal industries published recently by the Manpower Research Unit of the Ministry

of Labour showed that fewer than one in four of the firms approached made manpower forecasts for more than two years ahead. Half the firms appeared to do no forecasting at all. A firm that wants to develop a systematic training programme—any firm that is planning to expand its production or introduce major technical changes—cannot afford to neglect the vital element of manpower in its forward planning.

The Government itself recognizes that a firm cannot plan ahead if it feels at the mercy of outside forces, not knowing what the Government and the firms which are its customers and suppliers intend to do. This is one of the reasons why the National Plan has been published.

The Government also recognizes that it has an obligation to help men to adapt their skills or to learn new skills. During the past two years, the number of places in Government Training Centres has been more than doubled and the number of centres has been increased from 13 to 30, providing, by the end of 1965, 6,000 training places. A further expansion, bringing the number of centres to 38 and places to 8,000, has been announced. When all the expansion plans have been completed, the centres will be capable of producing some 15,000 trained men a year.

But this is only a small contribution to the training that is needed, and industry must still play by far the greatest part in this. The Industrial Training Act was passed to encourage employers to accept this responsibility. Nine boards are now established and by early 1966 the boards will cover some 8 million employees—one-third of British industry. The Government must also do everything possible to minimize hardship caused by necessary changes of employment.

A further obstacle to growth is the present regional imbalance in the economy. While firms in the South and Midlands are plagued by shortages of labour, unemployment in areas like Scotland, Wales and the North is still well above the national average. Financial assistance is being given to firms which build or expand factories in Development Districts and control is being exercised over the issue of Industrial Development Certificates in areas where the demand for labour is high.

Mr. Gunter was followed by D. A. C. Dewdney, vice-chairman of the National Board for Prices, Incomes and Productivity, who stated that responsibility for employment in British industry has been much too fragmentary. One part of an organization decides that it needs so many people of such-and-such grades to do a particular kind of work. Then another part of the organization does the hiring, looks after the workpeople when they have been employed, and probably carries out the negotiations with the unions. The processes of employing are thus divorced from those of deciding what the employed person is actually supposed to do, and management all too rarely asks itself the really fundamental question—why am I employing this man at all? It is extraordinary that this attitude should have persisted into the post-war years, when the problems have not been those of shortages of work but shortages of labour. This is reflected in the replies of a number of industries to the Government while it was preparing the National Plan, when many industries admitted to having under-employed labour resources. Such a situation will have to be radically changed if national ambitions for economic growth are to be fulfilled. Productivity is at the heart of the policy of which the National Board for Prices, Incomes and Productivity is the instrument. Productivity is one of the three complementary and inseparable themes of the policy,

all three components of which have been steadily neglected in the past. This neglect represents an idleness of habit which it is the purpose of the policy, and the Board, to change.

Productivity cannot be separated from the problems of prices and incomes and, in the short run, our present position requires that demands for increases in incomes be moderated. If they are not moderated through the exercise of self-discipline, other factors will take over and moderation will be imposed. The usual alternative to self-restraint has been found to be a rise in unemployment. The only other method of restoring equilibrium is strict physical control.

It has become increasingly clear that the problems with which we are faced are both economic and social. The diagnosis is a matter of economics, but the solution is much more social and educational.

The main role of the Board should be as a part of the educational process. Its reports should not merely be admonitory but constructive. A second requirement for the reports is that they should be of as wide a general significance as possible.

Mr. Dewdney also made it clear that in order to implement the prices and incomes policy with institutions as they now stand, management must take the initiative in trying to balance the expectation of the people of Britain for better things against our ability to earn them. Such initiative will be welcomed by the Trade Unions.

Sir John Hunter, chairman of the Central Training Council, discussed the role of training in a technological age. He indicated that the most important steps in the approach by management to training policy are:

(1) Training is an integral and essential part of management function. Top management must therefore be closely involved in development of training policy; and basic responsibility for implementation of policy is a matter for line management—not to be devolved on training staff, and conveniently forgotten.

(2) A survey of training requirements should be undertaken. This involves analysing the responsibility, skill and knowledge of different jobs, and an examination of the extent to which staff discharge them inadequately. Are such problems as high turnover, production bottle-necks and lack of promotable staff due to lack of training?

(3) Management needs to be able to call on expert advice and assistance in analysing job and training requirements, and implementing training programmes.

(4) Is training effective? There should be a regular check on training programmes to ensure that staff get what help they need to carry out their responsibilities satisfactorily.

Among the many problems to be faced is that of management development. It is generally recognized that far too many firms adopt a haphazard approach to management recruitment, development and succession. This is not merely a matter of prestige courses: there must be a planned programme which starts with selection of potential managers, and includes relevant and challenging experience on the job, regular reviews of progress and development of specific required skills and knowledge through carefully chosen courses (internal and external).

A second key problem is the need for training officers. The Boards will have to make a big effort to train considerable numbers of training advisers and training officers capable of providing firms with expert support in the development and implementation of training policy. This effort will involve introductory courses for post-graduate students and for people with suitable industrial experience, arrangements to enable relatively new or inexperienced training officers to gain experience in firms under the supervision of a senior training officer, specialist courses in technique and particular subjects for those who are already training officers, and advanced courses to enable experienced training officers to study new methods and undertake research.

The role of the universities in a technological age was outlined by Sir John Cockcroft, Master of Churchill College, Cambridge, who, after indicating the country's great lack of and need for technologists, suggested that there are different varieties of technologists, a broad spectrum requiring different training. There are, first of all, the technologists whose major role is to force the pace of technological change. Their work is predominantly intellectual and requires a deep knowledge of science. They require a strong scientific base in their undergraduate training and good postgraduate training. The second broad group of technologists are those who design and build engineering systems and make them work. Good design engineers are the most scarce of all categories and the role of the university in helping to produce them has been the subject of a recent enquiry, on behalf of the Department of Scientific and Industrial Research, chaired by G. B. R. Fielden. In the evidence given to the Committee, there was no consensus of opinion about how, or to what stage, design should be taught in the education and training of an engineer, and a large number of approaches to the problems are being tried in universities and colleges.

The Committee came to the conclusion that the 'sandwich' course is the most suitable preparation for a career as a professional design engineer. This was the type of course first adopted by the Colleges of Advanced Technology. The Committee, however, felt that it was essential that the period spent in industry by these students should be tested on what they learned during their industrial training. An alternative to the 'sandwich' course is for an engineering student entering a university to spend a year in industry before his entry, and to spend part of one long vacation in a works. In this way he will obtain a better three-dimensional feeling for the equipment he will be hearing about in the more analytical lectures. The Fielden Committee also supported experiments in teaching design at postgraduate levels, which are under way in the University of Cambridge and Imperial College. Manchester College of Science and Technology is also carrying out advanced training in machine tool design, and the College of Aeronautics is giving training in design of aircraft and aero-engine industries.

In order to teach design, it is essential that the teachers have had some personal experience of design work in industry, and since the best designers obtain salaries in industry far higher than the universities can offer, it is important that universities should obtain the services of industrial designers on a part-time basis by appointing them as extraordinary or visiting professors, readers or lecturers.

Sir John also examined the way in which the universities link up with industry to carry out research projects and to provide suitable courses in management education. The latter was discussed more fully in a sectional meeting when A. F. Earle, director of the London Business School, described the philosophy on which the School is being founded and the types of courses which it is planned to commence in the coming year. There will be a twelve-week course for men aged 28–35 in middle management positions, one of six weeks' duration for men of 35 years upwards in more senior management work, and a post-graduate course of two years' duration leading to a masters' degree designed for university graduates within one or two years of having completed their first degrees in any subject. The post-experience courses will be strenuous and will be aimed at the cultivation of analytical powers and widening the acquaintance of the students with business problems beyond their range of experience. The postgraduate course will not produce a ready-made manager—that requires extensive on-the-job experience and maturing personal qualities—but it should ensure a man with broad analytical powers and business knowledge which should enable him to travel up the manage-

ment ladder more quickly and to a greater height than would otherwise be the case.

In another sectional meeting R. Lahnager, director of the Swedish Council for Personnel Administration, provided information about the way Sweden encourages mobility of labour. Much emphasis is placed on the re-location of industry itself and the use of investment funds to stimulate this.

In a provocative paper on the role of the personnel manager in technical change, Prof. Lupton of the University of Leeds indicated that, in the attempt simultaneously to maximize welfare and technical and economic efficiency, certain administrative techniques have been developed and are widely used in large organizations with well-developed personnel functions. He suggests that this is to put the cart before the horse. Management should decide whether there are any alternatives which might, while offering high technical advantages, also minimize the adverse social and psychological consequences. Or it might well be advantageous, if there is time to work out the possible social and psychological consequences of a number of alternative ways of introducing change, to discuss these with the people who are going to be involved, and their representatives.

All this implies the presence, when decisions are being made about technical change, of someone with expert knowledge of the organization as a social system, and who is aware of the complexities and subtleties of the relationship between technology and organization structure. Such a person will be able to predict more accurately than others the effects of projected changes in technique. The final course of action will then be based not only on economic and engineering data and methods of analysis, but on social and psychological data and their analysis, and will be a choice which satisfies all three criteria. To perform this additional function adequately demands an expertise to be learned in addition to the skills already demanded from the personnel manager.

H. Clogg of Nuffield College, Oxford, discussed the significance of wage drift in relation to an incomes policy. Wage drift can undermine an incomes policy in two ways. Incomes policies invariably attempt to control wages and salaries through the settlement of wage rates and salary rates. But rates are not incomes. Earnings are incomes; and if earnings rise faster than rates through a process of 'drift', to that extent incomes policy is ineffective. Drift is also uneven in its incidence. To some workers it can build up a pressure of resentment among the less-fortunate who demand compensating adjustments of rates. To meet these demands means further departures from the policy; to refuse them may lead to an explosion which could destroy it.

But can the drift be controlled? There is talk now of putting statutory authority behind an incomes policy, but an examination of the elements which go into drift is enough to show that this would not be easy. Quite apart from the question of sanctions, the controls would have to apply to overtime, to the various systems of payment by results, to job evaluation schemes, to promotion and up-grading and so on.

To foresee whether wage drift will become a serious obstacle to the success of incomes policy in Britain, we would have to know whether the policy is going to establish its grip on rates of salaries and wages. As yet, it has not got this far, but some of the cases which have come before the Prices and Incomes Board have directed their attention to the problem of drift, and these give some indication of the way they may try to deal with drift if that stage is reached. If the Prices and Incomes Board were to encourage a view that drift is permissible wherever it is accompanied by an equivalent rate of increase in productivity, it could lead an incomes policy sadly astray.

A more discriminating approach to the problem of mobility of labour was suggested by Dr. Hilda R. Kahn,

senior lecturer in the Department of Social Administration, University of Hull. Some immobility is an entirely natural phenomenon in an affluent society. When the alternative was near-starvation, people could be expected to be almost infinitely mobile. But when a country has reached an advanced stage of socio-economic development—providing reasonable living standards, as well as a welfare state, for most—a certain reluctance to uproot oneself is a natural consequence. And it is perfectly legitimate for a society to opt for some immobility in preference to faster economic growth, provided it does not simultaneously insist on paying itself the higher income which faster growth would have made possible, but which its preference for immobility has not.

Nor is the British population nearly as immobile as has often been assumed. Thus, major changes have occurred during the post-war period in the size of important industries such as agriculture, mining, textiles and distribution; there are between two and three million job-changes each year in manufacturing industry alone; and a considerable amount of inter-regional migration has likewise taken place in recent years. Much of the two-way traffic between regions, however, has merely the effect of cancelling itself out, while some of it is actually harmful in that it has produced excessive congestion in certain parts of the country—costly in both social and economic terms. Similarly, an uncritical emphasis on mobility may accelerate mere labour turnover, and the crucial problem remains of reconciling the twin desiderata of good work-place relations and mobility. All this suggests that it is 'purposive mobility', rather than mobility as such, which policy must seek to encourage.

The aim of a mobility policy should be to seek to achieve the optimum distribution of the country's manpower through the guidance of school-leavers and the voluntary mobility of adults to the greatest possible extent. Apart from the many measures in kind which this entails—in the sphere of housing and re-training, for example—it may pay us to evolve, in addition, a system of substantial cash bonuses, to accrue to workers prepared to move where they are wanted. In view of the insistence on the maintenance of traditional relativities which has become so prominent a feature of post-war collective bargaining, it is doubtful whether we shall ever get a wage structure sufficiently flexible to further the cause of 'purposive mobility'. The proposed payments would therefore have to be operated by the Ministry of Labour via a drastic extension of its present Resettlement Transfer and analogous schemes. Such 'mobility bonuses' might be used to aid all forms of desirable re-deployment, and would be alike more acceptable, more effective and quite possibly also less costly than redundancy. Such a system could also claim to be wholly fair, since it would specifically accrue to those serving the national interest.

Finally, Prof. T. Malm, of the Schools of Business Administration, University of California, showed very clearly the need for a new type of personnel administration to serve the needs of rapidly changing industry. In Britain and the United States as well as elsewhere, enterprises have been affected by varying degrees and forms of mechanization, automation and computerization. While most are still far from 'full automation', executives and workers at all levels have been seriously affected—for better or worse—by new products and processes, and by reorganization of the enterprise, the work group, or the individual job, resulting from technological change. All too often, the personnel officer has not participated fully in planning for the implementation of automation or electronic data processing, only to be called on later to 'put out fires' when human and organizational stresses and strains make clear the need for improved manpower programmes and policies. While personnel and industrial relations specialists have been leaders in 'human relations', in general they have lagged in their appreciation and application of operations research and management

science. Much needs to be done to improve the analysis of personnel policies and practices; the personnel officer needs fuller understanding of and participation in operational research and management studies to solve his own

problems more effectively, and to contribute more positively to planning and decision-making, to administration and management in the enterprise as a whole.

T. H. HAWKINS

PREPARATION AND STANDARDIZATION OF ISOTOPIC TARGETS AND FOILS

STABLE and radioactive isotopic films and foils of precise composition and dimensions are needed as targets for a variety of particle accelerators for nuclear data measurements; accurately defined films of α -active actinides are also needed as fission standards for reactors. Such standard targets are made in a number of laboratories in different countries and there was a clear need for closer co-ordination with the users in order to relate the limits of chemical purity and dimensional tolerance desirable to those practically attainable. To meet this need and also to promote an interchange of ideas and techniques a seminar was held at Harwell, Didcot, during October 20-21, 1965. The hosts were the Electromagnetic Separation Group of the Atomic Energy Research Establishment (A.E.R.E.) and the Special Techniques Section of the Nuclear Physics Division of the Atomic Weapons Research Establishment (A.W.R.E.).

The seminar, of about seventy scientists, was strongly supported by the Central Bureau of Nuclear Measurements of Euratom, Geel, Belgium, and the isotopic Target Preparation Centre of Oak Ridge National Laboratory (O.R.N.L.), Tennessee. Participants from laboratories in eight other countries also contributed to the 30 papers and the discussions.

Isotopic targets, which may be required on backings or self-supported, generally range in thickness from a few $\mu\text{g}/\text{cm}^2$ to several mg/cm^2 . A wide variety of chemical techniques such as vacuum evaporation, electrodeposition and electro-spraying, and metallurgical methods are used, but problems arise owing to the small amounts of expensive isotopic material available, the risks of isotopic contamination and the need for high chemical purity and exactly known thicknesses. Chemical conversions and purifications on the sub-gram scale may have to precede the target-making process.

During the first day the meeting considered the problems involved in these methods, means of improving process efficiencies and the effects of impurities. G. H. Debus of the Geel Laboratory emphasized the difficulties involved in obtaining exact and realistic specifications from users, in preparing and transporting samples, and obtaining from users adequate comments on the behaviour of the targets which would help future preparations. Other contributions from the Geel Laboratory discussed non-uniformity of deposits and isotopic fractionation during evaporation. G. T. Arnison of A.W.R.E. analysed the experience gained using electron bombardment techniques instead of resistance heating for vacuum evaporation. The description by W. Parker of the Chalmers University of Technology, Gothenburg, of the novel method of 'molecular plating' from organic solutions, which appears especially useful for making actinide targets, excited much interest. Experience with established methods for making α -active

sources was reviewed by Mrs. Glover of A.E.R.E. and J. Champion of the French Atomic Energy Commission.

For many applications unbacked targets are desired, and several laboratories use metallurgical techniques to make isotopic metallic foils of thickness down to below $1 \text{ mg}/\text{cm}^2$. The end-product of electromagnetic isotope separation is normally the oxide, and methods of efficiently converting small quantities of the valuable isotopes to the metal were described. A range of foils of the isotopes of the rare earth metals, reactive alkaline earth metals and some of the actinides has been prepared by simultaneous reduction-distillation followed by rolling or evaporation at O.R.N.L. Some of these were shown by E. H. Kobisk, who also considered the merits of ultra-high vacuum techniques as a means of obtaining high purities. The techniques used at the Argonne National Laboratory for rolling films down to thicknesses of a few microns and at Geel for high-frequency levitation melting and evaporation were described. This latter method avoids contamination by crucible material and can be used for metallic samples of 3-100 mg. J. B. Reynolds of A.E.R.E. listed the thin stable isotope metallic foils now made at Harwell by rolling techniques and showed how the deformities and thickness contours in a rolled foil had been measured by attenuation of 5-MeV α -particles. The problems of preparing targets by very small-scale electroplating were discussed by several speakers.

The second half of the meeting was concerned with measurement and standardization. F. A. Howe, A.W.R.E., introduced the topic with a critical survey of the non-destructive methods for determination of film thickness which were applicable to nuclear targets. Methods used at Geel for precise standardization of the chemical and physical properties of targets were reviewed by H. Moret and K. F. Lauer and some specific procedures were described by other speakers. This aspect of thin-film preparation will undoubtedly receive increased attention in the future, and the first seminar on the subject was particularly useful in making the participants aware of the many causes of errors which can exist in the determination of purity, uniformity and thickness of isotopic targets. Both makers and users will undoubtedly be more cautious in the future and will understand each other's problems better. More efforts will be made to introduce monitors to follow the continuous build-up of targets and to control and measure the chemical and physical characteristics of the films and foils.

Copies of the seminar programme and abstracts and, later, the record of the proceedings can be obtained from the following address: Electromagnetic Separation Group, Atomic Energy Research Establishment, Harwell, Didcot, Berkshire.

M. L. SMITH

THE NATIONAL INSTITUTE OF OCEANOGRAPHY

THE National Oceanographic Council met for the last time on October 20, 1965, and decided to petition the Queen to withdraw the Royal Charter granted in 1950. This was the final stage of the change-over of the responsibility for the National Institute of Oceanography from the

National Oceanographic Council to the recently formed National Environment Research Council. Mr. J. P. W. Mallalieu, Parliamentary Under-Secretary of State for the Royal Navy and chairman of the National Oceanographic Council, while thanking the Council for their work over