

activities of the engineer and the reaction of present-day conditions on his outlook. "As engineers concerned with applied science," said Mr. Haldane, "we occupy a position intermediate between that of pure science and that of the branches of knowledge concerned with human affairs. We are very definitely concerned both with the advancement of scientific knowledge and with the problem of how this knowledge can best be applied to meet human needs. The latter function makes it particularly important that the general educational background of engineering training should be as wide as possible and should not exclude those branches of knowledge generally known as the humanities.

"The present difficulties due to the huge content of knowledge and consequent tendency towards excessive specialization have led to the disappearance at an early stage in education of any general study of religion or philosophy, so that at the age when young people are becoming able to think on such subjects the great majority proceed to concentrate on mastering the means of life and remain indifferent to, and almost oblivious of, its ends.

"Future generations may well be amazed at our acceptance of such a state of affairs, the existence of which I feel to be one of the strongest arguments in favour of the higher education of engineers being centred in the universities rather than in mono-technic colleges. Although even in the best of our universities there may be too much concentration on means and too little thought about ends, the engineering undergraduate does at least get and give the immense advantage of mixing with those who are studying totally different branches of knowledge. The whole atmosphere of a university engineering education can be influenced by contacts with the other faculties, including the humanities, and consequently study can be on a much broader basis than is possible in colleges or institutions dealing with one subject or group of subjects."

In summing up, Mr. Haldane remarked, "In providing the conditions in which the things of the spirit can come to full fruition we undertake a vital as well as a noble task in which we can have the utmost pride. But let us fully understand the nature of our task, and let us spend more time than we now do in considering the ends to which our work is directed."

specific operations. The latter, which includes the adoption of mechanization, improved processes with new tools and new treatments, forms the basis of the article.

In using the term 'rationalization' the author means it to be applied to the administration of staff, the training of subordinate workers, housing and amenities, the execution and close inspection of all work, and the provision of tools; on this last point of tools one might add that, until recently in ordinary forest work, they were few, simple and no different from those in existence during what may be called the pre-mechanized times. In the modern study of these methods Sweden has given the lead and has been in the position, during the past ten years, when so many were otherwise engaged, to make considerable progress; and mention must be made of Swedish reorganisation of piece-work rates, which require to be both flexible and easily understood. Both in North America and in Germany forestry experts have been making similar studies. One form of 'rationalization' has been the suggested centralization of forest nurseries, since it is held, and rightly so, that the efficient raising of large stocks requires highly skilled and experienced supervision. Whether, however, the small nursery on the private estate should be regarded as obsolete is a matter which is open to considerable argument. The big battalions are by no means the safest in a matter of this kind, for many reasons.

On the side of technical mechanical developments, North America takes the lead. In agriculture, the application of labour-saving devices has gone a long way, and a few have been adapted for forestry purposes. But it is felt that special investigations, which are indeed being carried out by those conversant with forest nursery and other wider forestry problems, will have a greater chance of giving the forester new mechanical implements suitable to his particular type of work. The article also deals with the transfer of planting stock (storage and packing), preparation of sites, stump removal, plough and cultivators (the Forestry Commission has had a considerable success based on experiments with heavy ploughs), sowing and planting, planting methods and machines.

LABORATORY GLASSWARE PRODUCTION

MODERN DEVELOPMENTS IN FORESTRY

IN *Forestry Abstracts* (Commonwealth Forestry Bureau, vol. 10, No. 1 Abstracts (1)—(849), September 1948, Commonwealth Forestry Bureau, Oxford), Mr. J. J. MacGregor, of the Imperial Forestry Institute, Oxford, has an interesting paper on "Some Improved Techniques in Nurseries and on Planting Sites". There are many influences, he says, compelling foresters all over the world to revise time-worn practices. These influences are part of the general economic environment in which rising wages and relative shortages of labour are, perhaps, most significant. They have directly stimulated the search for more economic methods, machines and techniques. In a general way, current and recent developments have proceeded along the two main lines of 'rationalization' and the application of new techniques to

THE expression 'E-MIL' may not be quite so well known as some others which have become quite commonplace; but it is likely to become a mark of quality standard in future. Messrs. H. J. Elliott, Ltd., Treforest Trading Estate, Nr. Pontypridd, Glam., whose trade mark it is, already enjoy a reputation for high-quality glassware for quantitative work; but they laudably seek to enhance that reputation by aiming at still higher standards and by offering unconditional guarantees concerning their products, as well as improvements in the character and packaging of the articles.

In the first place, their volumetric glassware will be designated 'E-Mil Green Line' in the case of that which complies with National Physical Laboratory grade A specifications, and 'E-Mil Gold Line' for that of the grade B standard, the graduations of these varieties being filled respectively with insoluble green and yellow enamels. The pigments appear to be

somewhat fluorescent, for they are easily visible in poor lighting, even with coloured solutions. Furthermore, the markings, which are fused into the glass, seem to be irremovable except by such chemicals as those which corrode the glass itself.

Stoppers in graduated flasks and cylinders have always tended to be troublesome owing to a propensity for 'seizing'. The new 'E-MIL' stopper is a valuable accessory. Accurately moulded from an almost inert plastic, it provides a gas-tight and liquid-tight closure to an orifice of British Standards Institution specification taper (although it is not of B.S.I. specification dimensions), but does not bind or seize up irremovably. It is understood that patent protection is being sought for this attractive article.

Nor is this all, for the firm has introduced another innovation. It feels that the old style of crating a number of items amid masses of wood-wool, straw, sawdust and the like is not good enough for precision equipment; the packing material might be dusty and soil the articles, even if paper wrappings are used in addition, and by no means does it ensure safe transport unless an expert is employed to pack and another to unpack. Even with this system, overhead costs can easily be inflated by 'on-the-floor' losses in transferring the goods to storage bins, then to shelves and counters and finally with, or sometimes without, further packing, to the possession of the ultimate user. The firm feels that it can reduce these losses by sealing each article into its own specially fitting carton, which will be unreturnable and will doubtless be retained by many a technician as it provides a convenient pigeon-hole for the safe storage of the article in his locker. It is obvious that the extra expenses of this carton packing will be offset by dispensing with crates, etc., and with the trouble of their recovery as returned empties, not forgetting the overhead expenses and office work associated with the latter.

This programme could not be so courageously planned by the management had it not the whole-hearted loyalty of its employees, to whom it gives very strong incentives to produce not only quantity but also quality in whatever they are making. The result is not a mere 'master and man' condition but the development of what may be described as a happy family, some members of which are miners who can no longer follow their former employment because of the dreaded silicosis, some are ex-Service men whose injuries limit their capabilities in the way of earning a living, and others are women and young people with a flair for delicate manipulation. It is good to see them working with a will, and everywhere there is evidence—sometimes resonant—of happy and contented folk.

R. SUTCLIFFE

EDUCATION IN HAITI

THE U.S. Office of Education has undertaken the preparation of a series of basic studies in education in a number of Central and South American countries. This series of studies is part of a programme to promote understanding of educational conditions in the American countries and to encourage co-operation in the field of inter-American education. The project, part of a government-wide programme of cultural co-operation under the auspices of the

U.S. Department of State, was begun in the autumn of 1943. It involves travel by Office of Education specialists in the various countries in order to gather information at first hand on their educational systems and to prepare reports for publication.

"Education in Haiti" (Washington, D.C.: Gov. Printing Office. 25 cents) is based on data collected by Prof. Mercer Cook during a twenty-two months stay in which, as supervisor of an English-teaching project which was initially sponsored by the U.S. Office of Education, he was able to make use of authoritative sources of information.

The total area of the Republic of Haiti is about 10,700 square miles, more than two-thirds of which is covered by highlands. This complicates the construction of roads and renders many villages practically inaccessible to commerce and to education. The high rate of illiteracy—estimated at about 92 per cent by some observers—should thus be attributed in some part to topography. No scientific attempt has ever been made to count the total number of Haitians, but an estimate made in 1937 puts the total population at about three millions. Of these, nine-tenths live in rural areas and, as in other Latin-American countries, the fundamental educational problem is that of the rural school. Already, in the words of a contemporary Haitian novelist, erosion has "bled the earth to the bone", and the problem of this agricultural country is to try to intensify its agricultural effort by educating the peasant in modern methods of cultivation and soil conservation. Until this problem of rural education is satisfactorily solved, Haiti seems destined to remain a desperately poor country. The converse is equally true. Progress has been made in recent years; but the deplorable facts remain that four out of five peasant children never attend school; that teachers' salaries are inadequate; that many school buildings are hopelessly unsatisfactory; that equipment and textbooks are often unobtainable; that malaria, yaws, syphilis, tuberculosis and hookworm have undermined the health of the Haitian; that, as one Haitian physician states, "the diet of the Haitian peasant has not changed since slavery days"; and that education has been tied up too closely with politics.

The language problem is also a considerable source of difficulty to Haitian educationists. The official language of the republic is French, while "not one peasant out of a 100 can even guess what is being said in that language"; all Haitians understand Creole and most of them speak it. From Prof. Cook's observations it is apparent that poverty, ill-health, politics and linguistics are the basic ills that beset the Haitian school teacher, and the greatest of these is poverty. "On less than the average income of a first-class American university, the Haitians must provide and maintain elementary, secondary, professional, rural and vocational schools for a population of approximately three millions."

Despite these and other obstacles, however, the Haitians, through their own efforts and with some aid from foreigners, principally French and North American, have, during the last twenty years, progressed along the road to enlightenment. Their schools are no longer entirely literary or classical, teachers are better trained and somewhat better paid; printed regulations are less frequently disregarded. Yet, as Prof. Cook has shown, much remains to be done, and his report will prove invaluable in concentrating attention on the state of education in Haiti.

T. H. HAWKINS