national post-war problems, we cannot envisage either an individual or an organization within a country, or a country within the community of nations, which will be able in future to maintain any monopoly in production, unless it can forge ahead in new developments and products, or can lead in quality or in production cost.

It is to-day more than ever essential that every individual in industry should be as highly developed and receive as good a general education and training in his handicraft or profession as possible, and that he should be taught a deep sense of personal and collective responsibility. This means not only education in engineering, but in team-work as well; and such education must stress the fact that anybody who accepts more from the team than he contributes, who seeks to take more out of life than he gives, constitutes a liability rather than an asset; on the other hand, every man who gives more than he receives creates values and therefore leaves something of positive value to his fellow workers at the end of his career.

Coming to the part played by industrial associations, it is now generally acknowledged that there is an ever-increasing volume of interests common to all members of a particular industry, the furtherance of which can be undertaken by such associations with great advantage both to the industry itself and to the market which it serves. Properly constituted associations have made great contributions to ordered industrial progress, and proved themselves a socially beneficial instrument through such activities as the standardization of specifications and common parts, the pooling and exchange of patents and manufacturing experience, a measure of joint research, the standardization of trading conditions, the collection of statistical information, the maintenance of good relations with other industries, and negotiations with Government departments and with labour.

So far as the position of industry within the State is concerned, we may start from two premises which to-day are generally accepted. The interests of the individual, of a group, of a class must all be subject to the proved interest of the community. With this reservation, however, a community will be most successful, advance furthest, and obtain the highest degree of development, if it allows the utmost freedom of thought, action and development to the individual and to groups of individuals. The action of any central authority should be not so much to instruct people what to do as to restrain them from actions which might be prejudicial to others.

Regarding the influence of wages, if wage-rates in a country increase more than the normal cost of living, there will generally be an increase in the volume of articles produced, owing to an increase in the effective demand. Also, with increasing wages, taken by themselves, the cost of the product increases, and therefore the quantity of goods which can be sold in the export market decreases; or alternatively, there is an increase in the cost of raw materials and food bought in exchange. There is, therefore, a wage limit which, for a country such as Great Britain, cannot be exceeded so long as other countries lag far behind its standard of living. It is consequently of vital concern to us to-day that the living conditions of less advanced countries, especially those which have become industrialized, should approach our own, and so bring about an expansion of world demand and the possibility for us to advance further, or at any rate to maintain our own standard.

The essentials needed to maintain the advance of British industry, therefore, are first of all, measures that assure the maintenance of any lead we can gain by increased research, better education, and the development of the more complicated and advanced problems; secondly, the provision of increased capital assistance for each worker, whether it takes the forms of increased power supply, tool equipment, transport facilities, improved lighting, or working conditions in general; and thirdly, the enlightenment and education of management and labour, and indeed of every worker, both as regards his own contribution and that of each partner with whom he must work; finally, any measures which help to increase the volume of our export business, and especially those which create expansion of world demand by raising the standard of living in backward countries.

THE LISTER INSTITUTE OF PREVENTIVE MEDICINE

THE report for 1944 of the Governing Body of the Lister Institute of Preventive Medicine again records the wide scope of the work of members of its staff. The death of Prof. W. W. C. Topley has been a severe loss to the Council, and the Governing Body also lost the services of Sir Joseph Arkwright, who has retired after long service both in administration and research. Many of the staff remain in their war-time stations in laboratories in Cambridge, Oxford and elsewhere, and many of them are serving on committees set up by the Medical Research Council. Bacteriological and immunological researches in progress include work on the anti-proteus OX 19 serum for the treatment of louse-borne typhus, trials of which have been carried out in North Africa in co-operation with United States Army medical authorities. All the six severe cases treated with it recovered. The typing of typhoid, paratyphoid and food-poisoning bacilli with the *Vi* bacteriophage has been continued and a hitherto unknown *Vi*-phage type of the typhoid bacillus has been identified. The study of dysentery prophylaxis is making good progress and valuable work is being done on the immunology and nuclear structure of the gas gangrene organisms and on hyaluronidase. In collaboration with the Stormont Laboratory of the Ministry of Agriculture, Northern Ireland, outstanding contributions have been made to the study of trichomoniasis. Biochemical studies are in progress on specific blood-group substances, on the action of various bacterial toxins and on gramicidin, while work on low-temperature drying of biological materials and on foetal and maternal serum is making good progress. The work on the large-scale processing of human serum and plasma for transfusion has produced valuable results. Problems arising in the kaolin processing of plasma have been solved and the Serum Unit has been filtering the entire output of the London blood transfusion depots before sending it on to Cambridge for freeze-drying.

Other work includes the cultivation of the virus of vaccinia, work on sex and other hormones and nutritional studies. The work done with the aid of volunteers at Sheffield has indicated how large are the vitamin A reserves of the liver of healthy human adults. Studies of the nutritive value of the potato have shown that potatoes are a rich source of vitamin

A and that, weight for weight, the nitrogen in potatoes has a biological value at least equal to that of whole wheat, although only about half of it is in the form of protein. It is believed that there is a supplementary action between the protein and non-protein nitrogenous substances in the tuber which is probably attributable to the amino-acids present among the latter, although the amides and basic nitrogenous compounds probably also take part.

When the nutritional state of housewives in Oxford and of women working in factories there was studied for a year, it was found that their nutritional state deteriorated very little, although that of the workers deteriorated more. There were no clinical signs of special nutritional defects, except that 25 per cent of the workers showed enlargement of the thyroid and 36 per cent of them had dental fluorosis: the incidence of both these conditions is high in north Oxfordshire.

The Institute continues to perform that valuable service, the maintenance of the National Collection of Type Cultures, for which more accommodation has been provided. Everyone will hope that very soon the staff of this Institute will be able to re-assemble in London and at Elstree to continue, in the closer collaboration made possible by that return home, the valuable work which is here so modestly reported.

G. LAPAGE.

FORTHCOMING EVENTS

Saturday, October 22

BRITISH RHEOLOGISTS' CLUB (at the University, Reading), at 2.30 p.m.—Annual General Meeting. Discussion on "The Measurement of Tack" (Introductory Papers by Dr. N. A. de Bruyne and Dr. R. F. Bowles).

QUEKETT MICROSCOPICAL SOCIETY (at the Royal Society, Burlington House, Piccadilly, London, W.1), at 2.30 p.m.—Dr. Nellie B. Eales: "Some Aspects of the Malaria Problem".

SHEFFIELD METALLURGICAL ASSOCIATION (at 198 West Street, Sheffield, 1), at 2.30 p.m.—Mr. A. Preece: "The Oxidation of Steels in Furnace Atmospheres".

Monday, October 23

INSTITUTION OF ELECTRICAL ENGINEERS (at Savoy Place, Victoria Embankment, London, W.C.2), at 5.30 p.m.—Discussion on "The Engineer's Part in Certain Post-War Problems" (to be opened by the President).

Tuesday, October 24

BRITISH SOCIETY FOR INTERNATIONAL BIBLIOGRAPHY (at the Institution of Electrical Engineers, Savoy Place, Victoria Embankment, London, W.C.2), at 2.30 p.m.—Mr. J. E. Wright: "The Application of the Universal Decimal Classification to Telecommunication Literature—Some Suggestions for Developing the Tables to meet Modern Requirements"; Mr. L. S. Harley: "Document Classification in a Limited Field—Radiocommunication and Allied Subjects".

ROYAL PHOTOGRAPHIC SOCIETY (SCIENTIFIC AND TECHNICAL GROUP) (at 16 Princes Gate, South Kensington, London, S.W.7), at 6 p.m.—Mr. C. F. Sayers: "Quartz Crystals and some of their Applications, with Specific Reference to Telecommunications".

ROYAL INSTITUTE OF CHEMISTRY (LEEDS AREA SECTION) (joint meeting with the LEEDS UNIVERSITY CHEMICAL SOCIETY) (in the Chemistry Lecture Theatre, The University, Leeds), at 6.30 p.m.—Prof. J. W. Cook, F.R.S.: "Some Chemical Aspects of Cancer Research".

Tuesday, October 24—Wednesday, October 25

BRITISH SOCIETY OF ANIMAL PRODUCTION (at the London School of Hygiene and Tropical Medicine, Keppel Street, London, W.C.1), at 10.30 a.m.—Discussion on "The British Sheep Industry".

Tuesday, October 24

Prof. R. G. White: General Survey; Mr. D. H. Dinsdale: "Hill Sheep"; Mr. T. L. Bywater: "Sheep for Long Leys"; Mr. J. F. H. Thomas: "Arable Sheep".

Wednesday, October 25

(Joint Meeting with the INSTITUTE FOR THE STUDY OF ANIMAL BEHAVIOUR). Mr. John Hammond, Jr., Mr. L. R. Wallace and Dr. Nancy Palmer: "Current Investigations relating to Sheep"; Dr. J. E. Nichols: "The Behaviour of Sheep Browsing under Drought Conditions"; Prof. Johnstone-Wallace: "The Grazing Habits of Beef Cattle"; Dr. K. L. Blaxter: "Food Preference and Food Habits in Dairy Cows".

Wednesday, October 25

INSTITUTE OF FUEL (MIDLANDS SECTION) (at the James Watt Memorial Institute, Birmingham), at 2.30 p.m.—Mr. L. C. Southcott and Mr. D. W. Rudorff: "Superheaters for Water Tube Boilers" (Précis and Discussion).

SOCIETY OF CHEMICAL INDUSTRY (FOOD GROUP) (at the Chemical Society, Burlington House, Piccadilly, London, W.1), at 3 p.m.—Mr. W. B. Adam and Mr. D. Dickinson: "Diagnostic Methods in Problems concerned with the Corrosion of Cans".

INSTITUTION OF ELECTRICAL ENGINEERS (RADIO SECTION) (joint meeting with the PLASTICS GROUP OF THE SOCIETY OF CHEMICAL INDUSTRY) (at Savoy Place, Victoria Embankment, London, W.C.2), at 5.30 p.m.—Prof. Willis Jackson and Mr. J. S. A. Forsyth: "The Development of Polythene as a High-Frequency Dielectric".

INSTITUTE OF WELDING (at the Institution of Civil Engineers, Great George Street, Westminster, London, S.W.1), at 6 p.m.—Discussion on "Welding in British Industry after the War" (to be opened by Mr. H. I. Hodgson (Automobiles and General Engineering); Mr. C. S. Lillicrap (Shipbuilding); Mr. H. N. Pemberton (Pressure Vessels); Dr. H. Sutton (Aircraft)).

ROYAL INSTITUTE OF CHEMISTRY (DUBLIN SECTION) (at University College, Upper Merrion Street, Dublin), at 7.30 p.m.—Mr. H. G. Leonard and Mr. P. Whelan: "Spectrographic Analysis".

Friday, October 27

INSTITUTION OF CHEMICAL ENGINEERS (CHEMICAL ENGINEERING GROUP) (at the Institution of Civil Engineers, Great George Street, Westminster, London, S.W.1), at 3 p.m.—Sir Alexander Gibb, G.B.E., F.R.S.: "Hydro-Electric Development in Great Britain and its Influence on Chemical and Allied Industries" (Fifth Hinchley Memorial Lecture).

INSTITUTION OF MECHANICAL ENGINEERS (at Storey's Gate, St. James's Park, London, S.W.1), at 5.30 p.m.—Mr. Edward Reeve: "The Influence of Engineering on Social Advancement".

INSTITUTE OF FUEL (SCOTTISH SECTION) (at the Royal Technical College, Glasgow), at 5.45 p.m.—Mr. W. J. Skilling and Dr. M. McGregor: "Scottish Coal Resources".

Sunday, October 29

ASSOCIATION OF AUSTRIAN ENGINEERS, CHEMISTS AND SCIENTIFIC WORKERS IN GREAT BRITAIN (joint meeting with the ASSOCIATION OF AUSTRIAN DOCTORS) (at the Austrian Centre, 69 Eton Avenue, Hampstead, London, N.W.3), at 11.30 a.m.—Dr. F. Bergel: "Life Saving and Life Preserving Plant Products".

APPOINTMENTS VACANT

APPLICATIONS are invited for the following appointments on or before the dates mentioned:

YOUNG CHEMIST AND METALLURGIST for Heavy Engineering Works in North-West Region—The Ministry of Labour and National Service, Room 432, Alexandra House, Kingsway, London, W.C.2 (quoting Reference No. F.2955.XA) (October 25).

LECTURER (full-time) IN MECHANICAL ENGINEERING, and a LECTURER (full-time) IN STRUCTURAL ENGINEERING—The Clerk to the Governors, Technical College, Chesterfield, Derbyshire (October 27).

CHIEF ELECTRICAL ENGINEER AND MANAGER—The Clerk to the Ashford Urban District Council, The Cedars, Church Road, Ashford, Kent (October 30).

TEACHER (full-time, Graduate) OF ENGINEERING up to Higher National Certificate standard in the Crewe Technical College—The Director of Education, County Education Offices, City Road, Chester (October 31).

THREE PROFESSORSHIPS at the Indian Institute of Science, Bangalore, India, to organize Departments of (a) AERONAUTICAL ENGINEERING, (b) METALLURGY, and (c) APPLIED MECHANICS with special reference to I.C. Engines—The Ministry of Labour and National Service, Room 432, Alexandra House, Kingsway, London, W.C.2 (quoting Reference No. C.2310.A) (October 31).

LECTURER (full-time) IN ENGINEERING SUBJECTS in the Ashington Mining School—The Director of Education, County Hall, Newcastle-upon-Tyne (October 31).

DEPUTY BOROUGH ELECTRICAL ENGINEER—The Town Clerk, Town Hall, Huddersfield (endorsed "Deputy Borough Electrical Engineer") (November 8).

LECTURER (full-time) IN THE MECHANICAL ENGINEERING DEPARTMENT of the Municipal Technical College—The Director of Education, Education Office, St. Helens.

DIRECTOR OF RESEARCH—The President, Paper Makers' Association of Great Britain and Ireland, Melbourne House, Aldwych, London, W.C.2.

SPEECH THERAPIST—The Director of Education, Education Offices, Becket Street, Derby.

MECHANICAL ENGINEERS for Colombo, Ceylon—The Ministry of Labour and National Service, Appointments Department, Sardinia Street, Kingsway, London, W.C.2 (quoting Reference No. O.8.192).

ASSISTANT LECTURER IN AGRICULTURAL BOTANY, and a SENIOR SCIENTIFIC ASSISTANT IN THE DEPARTMENT OF ECONOMICS—The Principal, Harper Adams Agricultural College, Newport, Shropshire.

ASSISTANT MASTER to teach PHYSICS up to Lower Sixth Standard, with subsidiary MATHEMATICS and/or CHEMISTRY, in the Varndean School for Boys—The Education Officer, 54 Old Steine, Brighton, 1.

GRADUATE TEACHER OF ENGINEERING SUBJECTS up to and including Graduateship Examination of the Institution of Mechanical Engineers—The Principal, Wolverton Technical School, Wolverton, Bucks.

LECTURER IN AGRICULTURE, and a WARDEN AND ASSISTANT to the Lecturer in Agriculture—The Principal, Kent Farm Institute, Sittingbourne.