

NATURE

No. 4038 SATURDAY, MARCH 22, 1947 Vol. 159

CONTENTS

| | Page |
|--|------|
| Development Councils in Industry | 381 |
| Pre-Natal Physiology. By Dr. F. H. A. Marshall, C.B.E., F.R.S. | 383 |
| Agricultural Botany. By Prof. W. B. Brierley | 385 |
| Philippine Birds. By N. B. Kinnear | 386 |
| A Russian Review of Bonds in Chemistry. By G. Stanley Smith | 386 |
| The Exploration of Antarctica. By Dr. Brian Roberts | 388 |
| The Mission of the Universities. By J. Mackay-Mure | 392 |
| Astrology and Astronomy in the Seventeenth Century. By Joshua C. Gregory | 393 |
| Obituaries : | |
| Dr. F. F. Blackman, F.R.S. By G. E. Briggs, F.R.S., and Prof. F. T. Brooks, C.B.E., F.R.S. | 394 |
| J. W. Sandström. By Lieut.-Col. E. Gold, C.B., O.B.E., F.R.S. | 395 |
| News and Views | 396 |
| Letters to the Editors : | |
| Phenolic Substances Concerned in Hardening the Insect Cuticle.—M. G. M. Pryor, P. B. Russell and Prof. A. R. Todd, F.R.S. | 399 |
| Permeability of Insect Cuticle.—Dr. Rajindar Pal | 400 |
| Structures of Ethylene Oxide and Cyclopropane.—Sir Robert Robinson, F.R.S. | 400 |
| Effect of the Solvent on Oxygen Overpotential.—Dr. J. O'M. Bockris | 401 |
| Spread Around the Initiating Point of the Detonation Wave in High Explosives.—Prof. Waloddi Weibull | 402 |
| Lubricating Properties of Molecular Layers of Stearic Acid and Calcium Stearate on Metal Surfaces.—J. N. Gregory and J. A. Spink | 403 |
| Hydrogen Bonding in Ice.—Dr. A. E. Martin | 403 |
| Low-Pressure Electrical Discharges.—E. W. B. Gill and A. von Engel | 404 |
| Micro-Wave Solar Noise Observations During the Partial Eclipse of November 23, 1946.—A. E. Covington | 405 |
| A High-Speed Electronic Function Generator.—D. M. MacKay | 406 |
| Latent Energy and After-glow in Flame Gases.—Prof. W. T. David | 407 |
| "Turbulent Flow in Alluvium."—Gerald Lacey | 407 |
| Submarine Tubes for Levelling.—Prof. R. B. Montgomery | 408 |
| Activation of Paludrine <i>in vitro</i> .—F. Hawking | 409 |
| An Œstrogenic Substance in Pollen-grains of the Date Palm Tree <i>Phoenix dactylifera</i> L., <i>Palmæ</i> .—Dr. Ali Hassan and M. Hassan Abou El Wafa | 409 |
| Mauthner's Cells in the Larvæ of Anuran Amphibia.—A. G. Willis | 410 |
| Ethical Aspects of the Development of Atomic Energy.—J. W. Jeffery | 410 |
| Release of Information on Atomic Energy | 411 |
| Scientific Research in the Pacific Area | 412 |
| Free-Piston Compressor-Engines | 413 |
| Trophocytes and Trophocytosis | 413 |

DEVELOPMENT COUNCILS IN INDUSTRY

THE anticipated Bill to give effect to the recommendations of the reports of the 'working parties' set up by the Board of Trade, and particularly to provide for the use of a compulsory levy to support scientific research, has now been published and received its second reading in the House of Commons on February 13. The debate on this Industrial Organisation Bill, however, scarcely touched on the issues which are disturbing to those most closely concerned with research, and it is to be hoped that its clauses will receive much more searching and constructive criticism when the Bill reaches the House of Lords. In spite of the fact that all the reports so far received from the 'working parties' have favoured a compulsory levy, it is by no means certain, as Mr. I. J. Pitman and Mr. W. Shepherd pointed out in the House of Commons, that duress will prove more effective than persuasion for the purpose in mind.

The Bill enables any of the ministers specified in the Bill, including the President of the Board of Trade, and the Ministers of Agriculture and Fisheries, Supply, Food, and Fuel and Power, after consultation with organisations of workers and employers in an industry, to establish a development council for that industry. The general objects of such councils are to increase the efficiency and productivity of the industry concerned, and to enable it to render better and more economical service to the community. For this purpose a development council may be authorized to promote or undertake scientific research or research into industrial psychology, the incidence, prevention and cure of industrial disease, the marketing of products, or the consumption or use of goods and services supplied by the industry. A council may also be empowered to promote inquiry into materials and equipment, methods of production, management and the utilization of labour, the improvement of design, the production and marketing of standard products, the training of personnel and improvement of working conditions as well as the collection and formulation of statistics. A council may also be authorized to collect a levy to finance its activities, the maximum rate of such levy being laid down in the order establishing the council. These orders must be first approved in draft by both Houses of Parliament, and the main features of the constitution of the councils are determined in the Bill, which provides for the appointment of their members by the minister concerned, and that they shall consist of persons capable of representing the interests of employers and workers in the industry, with independent persons, one of whom will be appointed chairman by the minister. There are rigid restrictions on the disclosure by members of a council, or its officials, of information relating to individual businesses, and a further clause empowers the minister concerned to collect a levy from an industry for which no development council exists, if he considers it necessary that finance should be made available for the promotion of

Editorial and Publishing Offices

MACMILLAN & CO., LTD.,

ST. MARTIN'S STREET, LONDON, W.C.2.

Telephone Number : Whitehall 8831

Telegrams : Phusis Lesquare London

All rights reserved. Registered as a Newspaper at the General Post Office

scientific research, the development of exports or the improvement of design in that industry. The Board of Trade is also empowered to make grants to the Council of Industrial Design or to any other non-profit-making body the objects of which include the improvement of design in industry.

In moving the second reading, the President of the Board of Trade stressed the importance of flexibility in applying any pattern of organisation, and did not suggest that it would be desirable to deal with every industry under the Bill. But while he was careful to avoid any suggestion that the work of the joint industrial councils should be disturbed, and insisted that production and development matters should be kept separate from negotiations as to wages and conditions of work, the first criticism that will be made, apart from the question of the validity of compulsion, by the scientific worker at least, is that the activities of the development councils may overlap seriously within their own ranks and with one another. That criticism was indeed advanced in the debate by Mr. Mikardo and by Mr. Mallalieu. Admittedly, many of the functions scheduled in the Bill are appropriate for co-operative effort and even demand it. The question is rather whether that effort should not be made on an even wider basis than the limits of a single industry.

That very clearly may be true of such matters as industrial psychology, where it might be thought that to develop the work of the National Institute of Industrial Psychology is the appropriate means to adopt. Again, as regards industrial health and disease, it might equally be argued that further support should be first extended to the Industrial Health Research Board, while as regards management and training there is much to be said for encouraging the work of the Institute of Industrial Administration or the new British Institute of Management, rather than fostering new and unrelated sectional activities in the same field. Mr. Mallalieu and Wing-Commander Shackleton in particular were concerned with the danger of dissipating effort here, and the former also observed that the improvement of working conditions, even the 'spring-cleaning programme' advocated by the Chief Inspector of Factories in his last report, is essentially a matter for Government assistance with priorities in materials and labour. On the question of research, the Bill encourages no more confidence than the reports of the 'working parties' themselves, several of which have shown a most inadequate appreciation of the nature of research and the conditions for its effective prosecution.

That point indeed did not entirely escape notice in the debate. Mr. Rhodes asked specifically how the Bill was related to the grants from the Department of Scientific and Industrial Research and also to the grants from the Council of Industrial Design. Mr. Belcher, replying for the Government, stated that development councils would work through, and would not supersede, research associations and design centres. Contributions to these bodies from a development council's research levies would count as industrial contributions and would be eligible for the appro-

priate Government grants from the Department of Scientific and Industrial Research in regard to research and from the Board of Trade in regard to design. Sir Stafford Cripps had also earlier disclaimed any idea of compulsion in regard to research. Here a development council could help and advise; but its compulsory powers, when granted, were to be limited to the collection of statistics, the registration of persons in industry and the collection of a levy.

Sir Stafford Cripps was more concerned with the danger that the councils might be liable to try to adopt and encourage restrictive practices, which would be inimical to the consumer and to the general national welfare. That danger may be inherent in bodies the members of which are representative of an industry, rather than chosen with a view to the fitness of the individual member for the job to be done. Although Sir Stafford indicated the Government's intention to take active steps to stop the encouragement of restrictive practices by a development council, that is not an easy task in practice, nor is there any certainty that other Governments would be equally concerned to try. Moreover, there is an equally serious danger to which Mr. Pitman referred in the able speech already noted, namely, that of industry tending to shuffle the responsibility for dealing with its problems on to the development councils.

Such a tendency can be seen in the trend of some of the reports from the 'working parties', and it is well illustrated by the coal industry at the moment. Something of the acuteness of the fuel crisis might well have been mitigated had, for example, more note been taken of such reports as that on "Coal Utilisation Research and the National Economy" which the Parliamentary and Scientific Committee forwarded to the Lord President of the Council in May 1943. It was left to Lord Marley to direct attention to this factor in the debate on the coal situation in the House of Lords on February 13. Referring to the inefficient utilization of coal and the waste of coal resources by industry, Lord Marley cited not only the work of the British Coal Utilisation Research Association, the British Colliery Owners' Research Association, the Gas Research Board, the Fuel Research Station and other stations of the Department of Scientific and Industrial Research, but also an important report in 1943 from the Select Committee on National Expenditure; from all these sources many recommendations had been made for the saving of coal in the production of power and heating of buildings and plant, but industry had neglected them. This picture of twenty years of neglect of available knowledge and wasted national assets should give pause to any elaborate proposals for development from outside. The results of research will only be utilized when management, particularly in the smaller firms, becomes research-minded, and that change of outlook will often of itself induce the undertaking of research by such firms.

The prosecution and utilization of research by industry depend fundamentally, as we have so often

PRE-NATAL PHYSIOLOGY

Researches on Pre-Natal Life

By Sir Joseph Barcroft. Vol. 1. Pp. xiii + 292. (Oxford: Blackwell Scientific Publications, Ltd., 1946.) 37s. 6d. net.

urged, upon having men with the scientific outlook and training on the boards of management and directors, and there is no short cut which can wisely be taken to avoid the slow task of education and persuasion. It is not easy at first sight to see what more the development councils could contribute here that existing organisations could not already supply. It is true that they may do good in different directions; on the other hand, they may do little to justify their cost and may still discourage private initiative. Any element of compulsion in relation to research is to be distrusted on *a priori* grounds, and only used as a last resort. Where persuasion by other means is possible it should be tried, and such opportunities of indirect stimulus to research as we once had under the Import Duties Advisory Committee should not again be missed.

Everything, in fact, will depend on the membership and staff of any development councils, and the extent to which the idea, not of sectional representation of one side of an industry or another, or of one set of private interests rather than another, but of the welfare of the industry as a whole and of the service of the community, sets the standard for their policy and administration. It is a question of men rather than of organisation, and in setting up such councils the Government will do well to press forward by every means in its power those developments such as the British Institute of Management which promise to increase the supply of trained administrators and managers, qualified to appreciate and assess advances in science and to apply them to the purposes of the industry in which they are engaged. None the less, it is important that the organisation which the Bill proposes to establish should be subjected to a most careful scrutiny, such as Mr. Pitman also suggested, to determine how far it is in keeping with the cardinal principles of organisation on which any such scheme must be based. Mr. Pitman indeed, from his experience as director of the Organisation and Methods Division of the Treasury, believes that departure from the voluntary principle is a fatal defect in a body in which the co-operation of employers, management and workers is involved; and the danger of an overlap of functions and responsibility which was stressed from both sides of the House in the debate indicates the need for a close examination of such relations, for clearer definition of functions as between the industries and various national functional bodies. What is certain is that failure to serve sound administrative principles in the organisation of the councils and in defining their functions will be a fatal obstacle in attracting to their service the first-class men who are indispensable to the success of the whole scheme. Whether or not the development councils can do anything that the joint industrial councils could not equally well foster, it appears essential that their compulsory powers should be used both with restraint and discretion. It is equally important that care should be taken to see that they involve no further dissipation or waste of our precious resources of trained manpower, either in the scientific or in the technical field.

THIS book is the first of its kind; it may be described as a work on physiological ontogeny: that is to say, it deals with the development of function in the progress of foetal life. Moreover, it keeps in view throughout, not only the intra-uterine conditions under which the foetus lives and grows, but the fact that the foetus will eventually pass out into the world and in such a state that it can respond successfully to its new environment. The book deals mainly with investigations by the author himself and his colleagues and pupils in the Schools of Physiology and Agriculture in Cambridge. It does not claim to be a text-book on the subject, and so does not include such work as has been done in other centres like that on the initiation of the heart beat carried out at the Johns Hopkins University. Nevertheless, it covers very considerable ground, and the relevant papers by other investigators are duly quoted. The researches were mostly upon the foetal sheep, and it is impossible to refrain from an expression of admiration for the ingenuity of the investigator and for the results which he obtained, especially when one bears in mind the great difficulty that must have been experienced in dissecting foetal lambs so as to preserve any considerable degree of normality. Wherever possible the author has correlated his observations and those of others so as to give a connected story of the physiological events studied. But he very wisely does not always attempt this, and at the beginning of the chapter on the oxygen capacity, he says frankly that he decided to record a series of unconnected observations rather than to arrange them under some hypothetical scheme. For here, as in other parts of the book, the facts are not only interesting but also beautiful in themselves, and need no scientific hypothesis to make them more so.

The first two chapters are on the disposition of vessels in the placenta and the crossing of the placental barrier, and the author begins with a comparison between placental and foetal growth in the sheep; and it is shown that whereas the foetus puts on weight every week, the cotyledons of the uterus, after reaching a maximum at about ninety-five days, proceed to decline. It is not clear how much the maternal growth during pregnancy depends upon the foetus, and it is known that some uterine development (at least in certain species) occurs after ovulation in the absence of a foetus. With regard to the matter of permeability the author finds that, contrary to the views of Flexner, the greater the number of layers in the foetal barrier, the more perfect is the foetus at birth, and he instances the horse with a six-layer placenta, quoting an experience of Hammond, who found that a newly born foal was so perfect at birth that it ran away promptly and could not at first be caught. The author emphasizes that though the several types of placenta differ much, they all serve their purpose in their own way, but that the great surface which among other varying devices promotes the passage of material across the foetal membrane is present in all forms of placenta. The passage of oxygen from the mother to the foetus is simply one of diffusion, as Huggett and others have