

# NATURE

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## ASPECTS OF INDUSTRIAL PRODUCTIVITY

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ELSEWHERE in this issue (p. 789), a summary is given of the first report of the Committee on Industrial Productivity, under the chairmanship of Sir Henry Tudor. This report shows clearly the way in which the work of the Committee falls into the general pattern of the scientific effort of Great Britain. Its early work, largely continued and expanded the work of the Research and Productivity Committee of the Advisory Council on Scientific Policy, and although now an independent body, the Committee is still closely linked with that Council and also with the Defence Research Policy Committee. Other links through its membership with the Federation of British Industries, the British Employers' Confederation and the Trades Union Congress indicate that in approaching a wide range of complex problems the Committee should be competent to advise on the ordering of the country's scientific and industrial effort where that is not already adequately secured. It is clear, too, that the Committee is alive to the importance of securing reasonable economy of manpower in the membership of new panels or *ad hoc* study groups, and that it is of set policy attempting to use the appropriate existing organisation, whether a Government department, a research institute or association, a professional institution or a university department, wherever possible, and is only creating new ones when absolutely essential.

In a general review, the term 'productivity' itself is discussed; it is used in the report in the sense of volume of output of a worker in a year in terms of goods or services. Emphasis is again placed on the urgent need for taking all possible steps to improve human co-operation and managerial efficiency if an immediate steep rise in productivity is to be achieved. The Committee's task, however, is essentially to supplement the efforts of other bodies, and possibly this has been responsible for a marked tendency in the report to suggest that problems of increased productivity, and in particular of the relations between research and development, can be solved by studies and admonitions by Government bodies or trade associations, rather than by action which provides the incentives which would make development worth while. Broadly, it is true that, as the report states, an immediate increase in the productivity of industry as a whole depends far more on understanding the implications of scientific advance and on the application of existing knowledge and known scientific methods than on the results of fresh research. Nevertheless, the Committee tends to overlook or under-estimate the importance of the economic factor, especially in its incentive aspect, and to ignore the vital point that what is required in many fields is primarily decision—and decision in matters where the scientific factors cannot be isolated from the economic or social factors.

Despite the *prima facie* evidence of the value of the Committee as a co-ordinating body, it is not possible to judge from this first report how far its work is going to be effective. The programme of

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work is set forth in some detail, particularly in regard to the panels on technology and operational research and on human factors; but time will be required to show that the lines projected are really sound, and perhaps more especially in regard to the studies of human factors which affect productivity. Despite, however, many observations on the scientific factors affecting productivity, on the encouragement of scientific research and on the gap between discovery or invention and technical development, there are certain weaknesses; and only the panels concerned with the human factor and information services really show a scientific approach to their problems. The Panel on Technology and Operational Research appears to be unduly influenced by the belief that the problem of development can be solved by the establishment of a new development council, or by studies and admonitions of Government bodies or trade associations. There does not seem to be any lively sense that a real need is the provision of the appropriate incentive to make development worth while, and it is to be hoped that as the investigations of the Committee and its panels begin to mature, either the Committee itself or some of the numerous external organisations with which it is linked will stimulate some more fundamental and critical thinking and ask the vital questions.

It is, indeed, on the economic side that, despite its links with, and guidance from, the Economic Planning Board, the Committee appears to be weakest. This is most apparent in the inquiries of the curiously named Imports Substitution Panel, of which Prof. S. Zuckerman, professor of anatomy in the University of Birmingham, is chairman. The development of home resources of raw materials and the investigation of problems involved in reducing the dependence of Great Britain on imported raw materials, particularly from dollar sources, is a field in which economic and not scientific factors are and must be paramount. For this reason, it would have seemed more appropriate that this Panel should be headed by an economist. Indeed, despite the caution in the Panel's paragraph on economic considerations, the impression is left that where the Panel has entered the agricultural field and considered the question of grasslands expansion, nitrogenous fertilizers or pest control, for example, it has found itself out of its depth.

In these respects, this first report of the Committee on Industrial Productivity is disappointing; but it is too early to conclude that as its work proceeds it will not provide the imaginative and constructive criticism and recommendations required to point the way to a higher standard of industrial productivity. It is true that the whole burden of its terms of reference is for short term rather than long-term results, but the short-term increase of productivity is a matter already of decisions—and of economic and political rather than scientific decisions. We need not on this present showing, however, abandon the hope that the next report of the Committee will give a bolder and more incisive lead, and show more of the clear thinking and decisive action that one is accustomed to expect from its present chairman.

## FORM AND FUNCTION OF BIRD DISPLAY

1946

### Bird Display and Behaviour

An Introduction to the Study of Bird Psychology. By Edward A. Armstrong. Revised and enlarged edition of "Bird Display". Pp. 431+33 plates. (London: Lindsay Drummond, Ltd., 1947.) 21s. net.

SINCE the beginning of this century, the study of birds in the field has become increasingly popular, not only among amateurs but also among professional biologists. Though it started with detecting and distinguishing the different species, students gradually became more interested in the way of life of birds; they began to watch their behaviour, encouraged by the pioneer work of Howard, Selous, Heinroth and others. Attention was especially directed towards the often conspicuous preliminaries of pairing. Now, half a century later, a huge amount of data on bird behaviour is piled up in literature. In his book "Bird Display and Behaviour", which is a second edition, Mr. E. A. Armstrong has made an attempt, in many ways successful, to bring together the extensive literature dealing with bird display, and he provides a bibliography of nearly forty pages.

There are two ways, I think, of surveying the descriptions of courtship and other kinds of display in many different bird species. One is to break down in every case the sequence of display activities into its single components, to find out how these components are linked together and what is the function of the single elements as well as their linkage.

It is likely that in this way one will be able to find and understand different types of pairing, and this method can become the skeleton of the survey. However, this kind of survey is only possible when the authors of the original papers, when writing down their observations, also have analytical purposes in mind. It is a pity that this is very often not the case, and that is probably the reason why Mr. Armstrong chose the other way of discussion. He takes together, and considers in separate chapters, those elements in the behaviour of different bird species that have a similar appearance, for example, courtship feeding, ceremonial gaping, greeting ceremonies, mutual ceremonies, social ceremonies, dances, arena displays and song. Sometimes interesting comparisons are made with behaviour in other animals and men; comparison of the dances of birds and man, especially, leads to some very striking facts.

That Mr. Armstrong himself feels that one cannot stop at classifying the descriptions but that one wants to understand the meaning, the way of functioning and the origin of the display activities, follows from the chapters on the significance of display, on the relationship between the physiological and psychological aspects of display and on displacement reactions. The possible origin of the display activities is also considered in the chapters on disablement reactions and distraction display. In separate chapters Mr. Armstrong deals with problems of social hierarchy, dominance and territory. As is illustrated by the chapter on the function of emotion in behaviour, Mr. Armstrong does not fully agree with the school of objectivistic behaviour study (Lorenz, Tinbergen). But in contrast to many other students who approach the problems of animal behaviour from the psycho-

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