

NATURE

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ASPECTS OF COLONIAL DEVELOPMENT

THE fifth report from the Select Committee on Estimates for the Session 1947-48 (London: H.M. Stationery Office), with its forthright comments on Colonial development, makes its appearance at an appropriate moment. It is based in part on the observations of some of its members as a result of a visit to West Africa, and it has some relevance to the report, published later, of the commission of inquiry into the disturbances and underlying causes of these disturbances in the Gold Coast during February and March of this year. The recommendations and conclusions are equally of interest in relation to the recent report on "Colonial Research 1947-48". They emphasize the value and importance of the work being done by the Colonial Research Council, which has now replaced the Colonial Research Committee, and by the Colonial Products Research Council, the Colonial Social Science Research Council and the committees responsible for medical research, insecticide research, agricultural, animal health and forestry research, as well as the urgent need for the Colonial Economic Research Committee to function effectively.

In all these reports, two factors stand out as determining the successful issue of Colonial welfare and development: the problem of education and that of scientific man-power. Once again it is made manifest that shortage of qualified workers handicaps the work of the Social Science Research Council, of the Medical Research Committee and of the Insecticides Committee, and both the latter Committees realize how closely the effective utilization of results of their work depends on securing the co-operation of the native peoples.

Colonial research cannot, in fact, be pursued without regard to the question of native education, even of literacy at the lowest level. One passage in the Gold Coast report drives this lesson emphatically home. The economy of the Gold Coast rests on its four hundred million cocoa trees. Of them, one tree in eight is now affected by the virus disease known as swollen shoot, and if the disease is unchecked it is estimated that the cocoa industry will have disappeared in twenty years. The Government has accepted the opinion of its advisers that the way to check this incurable disease is by cutting down the diseased trees. Violent popular feeling and resistance to this destruction was aroused, because it was believed to be inspired by malign political motives; and the cutting out of the diseased trees has been stopped.

That passage in the report is pregnant with meaning for the whole future of Colonial welfare and development. While misrepresentation can create this kind of distrust, no mere adjustment of constitution or administration can restore the health of the body politic. The whole economy is put in jeopardy, and it is beyond the power of science or of Government to raise the standards of living of the native peoples, or even to avert a catastrophic fall. The problem of literacy, the programme of mass

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education, and the restoration or fostering of confidence beyond the power of the agitator to disrupt, must be the first tasks; and until they are undertaken there is no hope that the man of science can make the contribution to native welfare of which he has become increasingly conscious since Lord Hailey published his "African Survey" ten years ago.

Nevertheless although the first task is to promote understanding, even at this stage the man of science has a contribution to make, as was made abundantly clear on several occasions during the recent meeting at Brighton of the British Association. This point is well brought out by Dr. E. W. Smith in the Frazer Lecture in Social Anthropology before the University of Liverpool delivered in October 1946, and recently brought up to date and published (London: Lutterworth Press, 1948. 3s. 6d. net). Events have well attested the soundness of the four factors upon which Dr. Smith suggested that the success of projects under the Colonial Development and Welfare Act depends: a sufficient supply of competent men and women to operate the plans; the goodwill and effective co-operation of the native peoples themselves; the wise planning and execution of the schemes by men and women who understand the native environment and the working of the native mind; and the co-operation of the economist, the agriculturist, the medical man, the psychologist, the nutritionist, the educationist and administrator, as well as others in the team-work required to devise and execute detailed schemes for each district. Dr. Smith is arguing above all for the anthropologist to make his vital contribution to the understanding of the native mind, and for the Government to make increasing use of such men in the task of government. His plea for social science to be used as an instrument of social engineering, and for more social scientists for the Colonial Service, is supported by the important section of the Gold Coast report already noted.

That Dr. Smith does not stand alone in his views was indicated in an address given by Sir Harold Hartley in Johannesburg in August at a conference of scientific and technical societies. Sir Harold, after urging a great extension of surveys of the material and human resources, limitations and needs of the relatively undeveloped parts of the world, reviewed the main factors likely to limit world economic advance, and the part of scientific workers in overcoming them. In spite of the huge increases in agricultural output which are potentially possible on the basis of existing knowledge, he said, man is still the limiting factor in peaceful advance. The same conclusion might well be drawn from the fifth report of the Select Committee on Estimates, although it concentrates attention rather on human limitations on the administrative side.

The Select Committee recognizes clearly that co-operation in development involves the association with the planning, of such organised opinion as may exist, of a carefully worked out policy of technical and vocational training related to the needs of a developing country for skilled man-power at all levels, and communal development or 'mass education' to induce the bulk of the population to take an active

interest in their own welfare. It considers that the Nigerian Development Plan suffered from the beginning in that too little attention was paid to the need for associating African opinion with the various committees established to deal with it. This has now been to some extent righted, although African representation on the Central Development Committee is still inadequate.

So far as the felling of the diseased cocoa trees was a factor in the Gold Coast riots, it has been suggested that the Government failed to secure that its reasons were fully understood by native opinion, although improper methods of execution were also alleged. To engage the active co-operation of the native people themselves is not always easy, and may indeed involve questions of constitution as well as of administrative method. Communal development is still experimental; and on the information side, as the Select Committee notes, there is need for research into the kind of film appropriate to undeveloped peoples. Support from development funds of a scheme of research for ascertaining the reactions of African audiences is recommended. Similarly, it expresses its approval of the active pursuit of a comprehensive policy for the development of broadcasting throughout the British Empire, and urges that the closest informal contact should be maintained between the Colonial Office Information Department and the British Council in foreign countries.

This question of confidence and information has a bearing also on the part which private enterprise has to play in Colonial development. It is the declared policy of the Colonial Office to encourage private enterprise; but private enterprise cannot play its proper part in development so long as the belief exists among the Colonial peoples that it is unfairly exploiting them; nor, it might be added, while private enterprise elsewhere continues to be condemned by Government spokesmen. The Select Committee refers to local feeling against the United Africa Company in particular, but there is some hope for a settlement which will remove the two main grounds for such feeling.

The matter is not entirely divorced from that of the public development corporation. It is the responsibility of Government to prevent an undue proportion of the trade and industry of any particular Colonial area from becoming dominated by any trading organisation or group, and the Select Committee points out that in spite of the formal assurances of the Overseas Resources Development Act of 1947, it will be necessary to secure that such bodies as the Colonial Development Corporation and the Overseas Food Corporation do in practice respect the interests of the local Colonial people. The obvious danger is that of well-meant authoritarianism. Experience with the Cameroons Development Corporation indicates that special attention must be given to the relationship between such corporations and the local administrative authority.

The problem is in fact essentially one of administration—of securing that justice is not merely done but also seen to be done. The Select Committee makes no specific recommendations here; but the

survey it recommends of the overall requirements of the Colonies for capital equipment for Government schemes, public corporations and private enterprise, should by eliminating some causes of friction make a distinct contribution here, as well as in the immediate objective of facilitating real planning in place of the agglomeration of departmental suggestions masquerading as the Nigerian Ten-Year Development Plan, on which the Select Committee makes the caustic comment: "This is not planning". Such a survey is the counterpart of the early investigation also recommended into the additional financial provision likely to be required to complete existing development schemes, and into the need for extending the ten-year period originally contemplated.

By and large, it may well be true that the administrative mistakes which the Select Committee criticizes are in part due to the overburdening of senior officers in the Colonial Service, and the Committee's observations on the shortage of staff should be noted. The Secretary of State for the Colonies stated in the House of Commons on July 8 that, during the last two and a half years, 3,300 men and women had been recruited for the Colonial Service, and on the administrative side the intake of the last two years was equal to that of eleven normal years. Excellent reports had been received on the quality of these recruits, and Mr. Creech Jones paid a warm tribute to the co-operation of the Universities of Oxford, Cambridge, London and elsewhere in training these recruits.

Nevertheless, the Select Committee reports that in May 1948 there were 1,185 vacancies in the Colonial Service, the greatest demand (315) being for men with engineering and architectural qualifications, while 168 administrators, 136 medical men and 110 agriculturists are still required. Apart from the strain on existing staff, it is imperative that immediate steps should be taken to overtake present shortage if Colonial development is to proceed smoothly. The shortage is equivalent to about three years ordinary intake, and has to be viewed in relation to the demand for trained man-power and woman-power as a whole, just as the Select Committee insists capital requirements of the Colonies must be reviewed.

That view presumably will be taken to some extent by the Advisory Council on Scientific Policy as suggested in its first annual report; but in the meantime the Select Committee makes several suggestions to secure the fullest use of available technical and scientific staff without lowering standards of qualifications. The limited number of fully qualified technicians available should concentrate on training staff for technical positions, and schemes should be adopted for recruiting into the forestry, agricultural and veterinary services men without academic qualifications but of good personal qualities and natural aptitude, and which would provide for academic training at a later stage when the pressure on the schools of forestry should have decreased. The requirement of university training as a qualification for recruitment might also be waived, and the temporary seconding of staff from Home to Colonial Service should be exploited to the utmost. Attractive

schemes for seconding should be made for all technical services, providing appropriate guarantees in regard to promotion on return to Great Britain, and short-term contracts should be used to the fullest extent to obtain for the Colonies the services of scientific men and technicians with the highest qualifications, and development funds should be used for this purpose.

The Select Committee's recommendations here as well as in regard to salary scales and the provision of refresher courses are in line with those of the Barlow Committee for scientific staff generally. Clearly, to secure the most effective and best balanced distribution of scientific and other trained man-power between Britain and the Colonies involves encouraging mobility to the greatest possible extent, quite apart from the very favourable reactions such interchange has on scientific work itself. In all this the fullest possible encouragement must be given, and the greatest possible use made, of Colonial men and women themselves. Such association at all levels in the Colonial Service must prove a powerful factor in securing the understanding and co-operation of the Colonial peoples in development of their territories, nor should the influence of greater attention to the needs of Colonial students in Great Britain, both in regard to amenities or information, be overlooked.

Mr. Creech Jones' speech in the House of Commons on July 8 shows that the trend of the Select Committee's observations is fully appreciated. He stressed three points in regard to economic policy: the essential requirement of understanding and co-operation from the Colonial peoples themselves, to whom it must be made clear that the development plans are primarily concerned with the improvement of their trade and economic status and with the strengthening of the economies of their territories; the necessity for a sound economic basis for Colonial welfare; and growth of regional co-operation in this field with the French, Belgian and Portuguese Governments. During the past year a series of technical conferences has already taken place and more are planned on problems of technical development, communications, health, etc. The Government has also entered into discussions with the French and other associated Governments on the possibilities of further co-operation in regard to development schemes.

In spite of all this promise of genuine international co-operation in tackling problems of Colonial development in such areas as West and Central Africa, there is one seriously disturbing factor. That is the failure of the Trusteeship Council to reach the standard of constructive criticism set by its predecessor, the Mandates Commission of the League of Nations. The Select Committee's report demonstrates the weaknesses of British planning of Colonial development, and is a challenge to more constructive thinking and realistic planning in the light of inherent limitations of resources of materials and men and women. It is equally a rebuke to the irresponsible criticism and political polemics, with their disregard of the facts and conditions in the

trusteeship of Colonial territories which has marred the proceedings of the Trusteeship Council, and is making it a disturbing factor rather than one which promotes the goodwill and understanding upon which Colonial development and welfare depend. Great Britain is faithfully meeting its obligations under the charter of the United Nations Organisation in regard to the provision of statistical and other technical information on economic, social and educational conditions, and the Colonial Office has done well to make the position plain in its recent Memorandum on Information on Non-Self-Governing Territories (London: H.M. Stationery Office, 1948. Colonial No. 228. 1s. net).

International co-operation could do something to diminish the present difficulties in Colonial development, particularly in the attack on technical problems, and in such matters as transport. No doubt the help of independent international men of science would be valuable in overcoming prejudices such as those which hamper the eradication of the swollen shoot disease of the cocoa tree. But such collaboration is only possible in an atmosphere of goodwill, and where there is manifest the willingness to make impartial investigation and the comparative study of different Colonial systems which characterized the work of the permanent Mandates Commission of the League of Nations.

CHEMICAL STIMULI AND INSECT BEHAVIOUR

Chemical Insect Attractants and Repellents

By Prof. Vincent G. Dethier. Pp. xv + 289. (London: H. K. Lewis and Co., Ltd., 1947.) 25s. net.

INSECTS live in a world of tastes and odours. To understand their reactions to the varied chemical factors in their environment would be a long step towards comprehending their ecology and would provide a firm basis on which to build certain methods of control. It is around these theoretical and practical considerations that Prof. Dethier has written his book on the action of chemical attractants and repellents in the life of insects. Unfortunately, exact knowledge in this field is very limited, and the contributions of the applied entomologist are copious but wholly empirical. None the less, this book should serve a useful purpose in bringing together in one volume what is known of the role of chemical attractants in the feeding, sexual and egg-laying behaviour of insects.

The botany and chemistry of the essential oils of plants and the relation of these substances to the choice of food-plants is reviewed—from the classic work of Verschaffelt on the predilection of Pierid larvae for plants containing mustard oils to the recent detailed work of the author himself on the feeding habits of *Papilio* species in relation to the essential oils of Umbelliferæ and other plants. The chemistry of fermentation and the products of decomposition of protein and fat are considered alongside the extensive empirical literature on the production of attractants for the codling moth, fruit flies, blowflies and other insects. It is no fault of the author that this subject consists chiefly of lists of facts with few

guiding principles. There is a valuable chapter in which the varied types of olfactometers and venturi type flow-meters are described, together with the methods of controlling the molecular concentration of odorous substances and determining the thresholds of response. On the practical side, the use of attractants in devising traps—for sampling populations and timing the application of insecticides or for actually reducing populations—is described in detail; and the whole subject of insect repellents is reviewed.

At the beginning of the Second World War the standard mosquito repellent was still oil of citronella; but commercial firms in the United States had evolved three synthetic repellents: dimethyl phthalate, 2-ethyl-hexane-diol 1,3 (Rutgers 612) and α -dimethyl- α -carbobotoxydihydro- γ -pyrone (indalone). At great expense, large teams of American workers during the War tested thousands of additional substances; but the only practical outcome was the recommendation to use a mixture of the three named chemicals in the proportion of 6:2:2. No advances were made in the general knowledge of repellents. Indeed, the most valuable contribution in this field during the war years was the paper by Christophers¹, working almost single-handed; a paper which appeared too late for inclusion in Prof. Dethier's book.

The writing of this book was completed while the author was serving with the Armed Forces overseas. It has not been possible, therefore, for him to include certain recent ideas which go far to clarify thought on some of the fundamental questions involved. It has been pointed out by J. S. Kennedy that repellency is not a reaction but a change in distribution; and this altered distribution may be brought about in a variety of ways. For example, the author states categorically that D.D.T. possesses "no repellent qualities whatsoever". But slight D.D.T. poisoning causes excitation, and this in turn leads to such a change in distribution that insects are, in fact, strikingly repelled from buildings treated with D.D.T. Similarly the author ascribes the change of host plant by aphides at different seasons to physiological changes in the insect resulting in altered taste preferences. But it is becoming increasingly clear that the nutritional value of the host plant, as determined by the physiological condition of its foliage, may play a part at least as great as do specific flavours in inducing feeding and multiplication and so the building up of aphid populations.

V. B. WIGGLESWORTH

¹ *J. Hyg.*, 45, 176 (1947).

PROCESS CHEMISTRY FOR THE CHEMIST

Chemical Process Principles

By Prof. Olaf A. Hougen and Prof. Kenneth M. Watson. Part 2: Thermodynamics. Pp. xv + 437-804 + xvii-xlviii. 30s. net. Part 3: Kinetics and Catalysis. Pp. xv + 805-1107 + xvii-xlviii. 27s. net. (New York: John Wiley and Sons, Inc.; London: Chapman and Hall, Ltd., 1947.)

THESE volumes consider process problems of a physico-chemical nature and they do not contain any detailed discussion of equipment, of selection of materials for construction or of mechanical design. As the majority of chemical engineers in Great Britain