

of thought and work that the most fruitful result emerges. I am glad to state the Council of Scientific and Industrial Research has been keenly alive to this and has given as much encouragement to research of a purely academic type as to applied or utilitarian work. As instances, the Council's grant to Tata Institute of Fundamental Research, the Palit Research Laboratory of Calcutta, the Bose Research Laboratory, and the several research schemes in operation under the auspices of the Council bearing on fundamental aspects of sciences may be mentioned. The Planning Committee of the National Physical Laboratory have also stressed the importance of encouragement to both these aspects of research.

#### FUNDAMENTAL RESEARCH TO-DAY—AN

##### ORGANISED INDUSTRY

One aspect of fundamental research work which can hardly be neglected in India is that which requires specialised large-scale laboratories. During recent years, and particularly during the last world war, organisation of scientific work has undergone vast changes. Not only does some of the present type of work require large-scale specialised organisations well outside the scope of university work but also expenditure of money running into millions which could only be justified if diversified, co-ordinated and regulated application and professional continuity of work are guaranteed. This is not usually possible in the universities where teaching and research necessarily go hand in hand and are essentially preparatory. Research work there, is bound to be scrappy, discontinuous, and unco-ordinated. I may be permitted to quote here from a recent article by Dr. Lee A. Dubridge who is now President of the California Institute of Technology and who during the war was Director of the Radiation Laboratory at the Massachusetts Institute of Technology which had such a lot to do with the conduct of atomic energy development in the U.S.A. Discussing the importance of large research laboratories, Dr. Dubridge says "... it should be clear that independent laboratories will have as their major facilities only those very large installations which, as far as can be foreseen, are beyond what a single university could contemplate operating—or which, because of shortage of material or funds, not more than one or two universities in any area could have. So,

I, for one, look forward with keen interest to a great new experiment in physical research. Those who long for the old days with lone worker in the basement room with his wax and string and glass-blowing torch can have them. I believe that the essential spirit of the old days—freedom of enquiry, time for thought—can be obtained even in the pressure of great new physical and organizational techniques." In short, fundamental research is soon becoming a huge organised industry in itself.

#### LOCATION OF THE LABORATORY

The question of location of the National Physical Laboratory was thrashed out threadbare and the Committee made out an overwhelming case in favour of locating the Laboratory at the headquarters of the Central Government. In any new constitution the importance of contact between science and state will even be greater. Delhi, besides being the seat of a young and hence very virile university, is in addition the headquarters of a number of scientific departments of the Government of India like the Meteorological Department, the Agricultural Department, the Medical Department, the Royal Indian Air Force, the Scientific Section of the G.H.Q., the All-India Radio, the Railway Board and others. We are particularly fortunate in the present site as we are close neighbours of an Institution which has played no inconsiderable part in India's agricultural development—I mean the Agricultural Research Institute right opposite us. The Institute has one of the best libraries on the biological sciences, and between the National Physical Laboratory and the Institute, we shall have the most complete scientific library in India which we hope will form the nucleus of a Central Information Service for all the scientific workers in India.

These are days of decision for India and if she is to take, as she must, her rightful and honoured place among the nations of the world she must grow strong and great industrially. In this great and exacting venture the role of the national laboratories will be vital and the people of our country, whose mind and face are already turned towards science in industry and society, will, I am sure, take great interest in the work of the laboratories and extend their unflagging help in their development.

#### APPLIED ENTOMOLOGY, ITS PAST AND FUTURE IN INDIA\*

DR. BHALERAO has been recognized as one of the authorities on Indian Helminthology, and as one who has devoted himself to the subject for the past twenty years, he is in the best position to correlate all our accumulated knowledge of Helminth parasites. He has himself contributed to the elucidation of the life-histories of a number of helminths, either directly or indirectly affecting man and has, in the address, listed all the parasites that have been reported from time to time in this country. Working in one of the premier Research Institutes of India (Imperial Institute of Veterinary Research), it is natural that the parasites of domestic animals get their full attention in his address and a long and comprehensive list is presented of trematodes, cestodes and nematodes occurring in animals that

are associated with man's life in India. In a necessarily brief address such as this, it is naturally impossible to expect comprehensive accounts of the life-history of each species. In fact, in quite a number of cases, the life-history is unknown. That is where Dr. Bhale-  
rao's address is a help, in drawing attention to the vast amount of work that is still to be done, and the large number of gaps in our knowledge still to be bridged. Brief references are made in the case of each parasite, to its host, to the disease it causes, and also in such cases where the life-history is fully known, to the remedies.

\* Summary of Dr. G. D. Bhalerao's Presidential Address to the Section of Zoology and Entomology, Indian Science Congress, Delhi, 1947.