

## NATURE OF RESEARCH WORK UNDERTAKEN IN THE BOSE INSTITUTE.

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The primary aim of the Institute is the study of plant life in all its aspects, and also as much of animal organisms as is necessary for the understanding of the fundamental unity of the processes underlying the diversity of their manifestations in plants and animals. The founder of the Institute had developed a large number of very sensitive instruments for the measurement of the extremely feeble responses in plant tissues subject to different kinds of stimuli. Investigations with these instruments are being continued; in addition, new types of apparatus are constructed in the workshop based upon recent development of electronics and of other physical methods which are finding increased application in biophysical investigations. These include valve tube method of linear amplifications of feeble bioelectric potentials, the production of radioactive trace elements for the study of metabolic processes in plants and animals, the application of spectroscopy, X-rays, electrophoresis and other physical methods used for the identification, isolation and structure determination of high molecular weight compounds which occur in living tissues, and on which their property of livingness depends. These apparatus are as far as possible constructed in the Institute workshop from materials available locally.

Along with biochemistry, bio-physics is now considered to be an indispensable adjunct in all biological research laboratories. It is hoped that the training provided in this Institute will enable workers in bio-physics not only to use similar apparatus in other laboratories, but also to effect minor repairs and alterations in them when necessary. Besides investigations on the phenomena of response to stimulation, the biochemical processes underlying the nutrition, growth, movement and reproduction in plants are also investigated. For some of these large plant cells and unicellular organisms are utilised. Such single cells form the subject-matter of research in laboratories devoted to the study of General Physiology.

Besides these investigations which deal with the fundamental problem of livingness, others are also carried out whose importance lie mainly on the applications that can be made of their results. These include investigations on problems connected with the cultivation of rice, jute and cotton in Bengal. These deal with the introduction of new varieties by selection, hybridisation, production of new mutants by X-rays and other treatments, production of early ripening by vernalisation and photo treatment. The problem of the recent large scale fungus infection of rice is being investigated. Investigations are undertaken on the fungal infection of important tropical fruits, on the biochemical changes accompanying the process of fruit ripening and on different methods of fruit storage. Industrial application of different microbiological processes are also subjects for investigations.

In addition, the Institute has undertaken many useful researches in physical anthropology, entomology, theoretical physics, cosmic rays, nuclear disintegration and piezo electric effects. The specialists in physics, chemistry, botany and entomology, besides carrying on investigations in their respective subjects, also co-operate in investigations where team work is necessary.