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THE CENTRAL FOOD TECHNOLOGICAL RESEARCH INSTITUTE

FIFTH in India's chain of eleven National Laboratories, planned by the Council of Scientific and Industrial Research, the Central Food Technological Research Institute was formally declared open on October 21st last by the Hon'ble Mr. C. Rajagopalachari. This Institute would deal with "all problems which require close and high-level scientific research" in the food field. It owes its genesis to the recommendation in 1945 of the Industrial Research Planning Committee of the Council of Scientific and Industrial Research that the highest priority should be given to the development of food technology. This recommendation was endorsed by the various food industries' panels set up by the Government of India and it was agreed that the Institute should be started under the auspices of the Council of Scientific and Industrial Research. The proposal was accepted in principle by the Governing Body of the Council in February 1948 and a beginning was made possible to put into effect the detailed plans that were soon worked out by the offer of the Mysore Government to place the Cheluvamba Mansions, Mysore, together with the attached buildings, gardens, parks and grounds, covering an area of 150 acres, at the disposal of the Council for the location of the Institute. The Hon'ble the Prime Minister, as President of the Council, received the Mansions formally from the Mysore Government in December 1948 and the first laboratories started functioning by the end of July 1949 with other additions following steadily. Early in 1950, the Government of India rightly decided to merge the Institute of Fruit Technology with this Institute.

The various Divisions of activity of the Institute include: storage and preservation, processing, engineering, biochemistry and nutrition, information and statistics, quality control, and microbiology and sanitation; a Division of dietetics and a Section for food containers are also being organised. It would seem best to have a few of the more important Divisions working in full strength right from the commencement and expand the activities of the Institute as progress is made and as exigencies may demand.

There is undoubtedly great scope for development and research in food technology by way of improvement in methods of storage, study of microbiological and biochemical changes attendant on various types of spoilage, reclamation and utilisation of infested or otherwise affected food materials, processing of foodstuffs with a view to improving their keeping and nutritional qualities; refrigeration, freezing, gas storage, dehydration, canning, and so forth. Much of the more elaborate procedures of preservation employed in foreign countries needs to be simplified to suit the needs of the country and especially during the current evolutionary phase of our economy. There is also much that could be accomplished by way of collaboration with Agricultural Departments and Nutrition Research Centres in the country. Indeed, the establishment of regional laboratories working in close association with the central laboratories and dealing in particular with local problems should soon be envisaged. In addition, the pursuit of knowledge for its own sake would, it is hoped, form a substantial part of the activities of the Institute; its scientific reputation will, in fact, be determined by the quality and output of the fundamental work done by it. Mr. Rajagopalachari stressed on this fact that much of the future of the Institute will admittedly depend on the quality of the men that will hold charge of its various activities and on their keenness in applying themselves as a team to the problems they will handle. "You should deal with trained men as you deal with other tools of work. There should be no favouritism in selecting a chisel or a razor. You should respect quality and aptitude and get along without favour or compromise."

In referring to some of the findings of the Institute like the so-called "synthetic rices" and "substitute milks", the Rajpramukh, the Maharaja of Mysore, who presided on the occasion, rightly observed that when substitutes for rice or for milk or for any other food are found, people at large are apt to be averse in utilising such products and that therefore it was incumbant on educated people "to expel such reluctance by betaking to such products themselves first and that openly. Conduct spreads by conduct and leadership in thought should be sustained by leadership in action, for social conduct flows like the purifying and fertilising Ganges from the heights to the plains below. The educated classes had thus an imperative obligation to see that their ways of life were conceived and directed by social objectives and values".

In a message for the occasion, Prime Minister Jawaharlal Nehru said that the National Laboratories in the country would be "the homes of productive effort and work. It is ultimately on the basis of the work done in the research institutes and laboratories that we can progress in most directions. Thus far, we have depended on other countries and have merely copied them or taken advantage of something that they have done. We cannot go far with this dependence. We have at least laid good and true foundations for scientific progress. It is for the young scientists of India to take advantage of the great opportunities offered to them and thus help in building up the New India" He expressed the hope that "the work done in this Institute will bear fruit not *in developments on paper and in scientific journals alone, but in terms of human values and in increase of suitable food for our people*". Dr. Shanti Swarup Bhatnagar who has rightly earned a great name for his formidable drive and organising capacity and who has been the chief instrument in the rapid establishment of the different National Laboratories, expressed his confidence that *within a year's time* the Institute will make a "distinct contribution towards the solution of food shortage in India by its technological research". These hopes and assurances that have been voiced at this inauguration auger well for the future of this important Institution.

It may perhaps be contended that the inception and functional activities, under Government ægis, of the various National Laboratories would have a weaning effect on the other established research centres and University Laboratories, especially as recruitment to the senior posts of these national institutions has been mostly from these latter sources. Together with the necessary preparatory period before the National Laboratories can blossom into full activity, this circumstance, it may be viewed, might result in a temporary decrease in the scientific output of the country. Such an interpretation is probably baseless and, provided sufficient encouragement and funds are forthcoming, Universities should be able to hold their own in their different fields of research. Paying a tribute to the valuable work done by men of science in the country before the National Laboratories were conceived, Mr. Rajagopalachari observed: "This work was done under great difficulties and without the assistance of big laboratories such as we have now installed. In the Universities as well as in Scientific Academies outside Universities, very eminent sons of India have brought credit to our Motherland by their work. In modern days, however, scientific research has become highly organised, The individual becomes a member of a team and his sphere of work is intensive though possibly restricted to a small subdivision of a section of the science in which he works. It is in this respect that we should congratulate ourselves on the opening of the National Laboratories and Research Institutes during the last three years such as the one we have assembled to bless to-day".

NOBEL AWARD FOR PHYSICS

THE Nobel Prize for Physics for the year 1950 has been awarded to the British Nuclear Physicist, Prof. Cecil Frank Powell, for his distinguished work in developing the photographic technique of detecting nuclear particles. Powell is at present Professor of Physics at the University of Bristol, England. Last year, he was the recipient of the Hughes Medal of the Royal Society of London.

Powell's early researches were concerned with the properties of ion, which led him to an investigation of fundamental particles and atomic nuclei using photographic plates. In this method the particles are detected by the tracks which they leave in the photographic emulsion, which can be observed through a microscope after the plate is developed. Powell played a large part in bringing about a marked improvement in the quality of sensitive materials and also in the development of methods whereby the energy, mass and other characteristics of the particles can be actually measured. Using these improved plates, Powell discovered a new elementary particle, the π-meson, whose mass is 280 times that of the electron and of which both positively and negatively charged varieties exist.

Powell was instrumental in establishing the photographic method as a standard technique in nuclear research Together with G P. S. Occhialini, he has published a book entitled *Nuclear Physics in Photographs*, which contains a description of the technique, and also a large number of photographs illustrating various types of nuclear reactions.

RADIOACTIVE CALENDARS

NUCLEAR physicists have found a new and accurate method of dating history by using radioactive materials to supplement the archæologist's pick and shovel.

The pioneer is Prof W F. Libby of the University of Chicago, who has been experimenting with his colleagues in this field for several years. In 1947, he announced that C^{14}, up to then known only as the product of nuclear bombardment in atom smashing machines such as cyclotrons or atomic piles, is found in every living thing. In fact, there is more radioactive carbon to be found in human beings, animals and plants than physicists are ever likely to make by transmutation in the laboratory.

The atoms in the air are bombarded continuously by cosmic rays, and the nitrogen atoms in the air are transformed by the impact of cosmic radiation into radio-carbon (C^{14}). Now this radio-carbon has a "half-life" of 5,000 years. It is known that living plants absorb all forms of carbon through their intake of carbon dioxide. Animals eat these plants and in this way return the carbon dioxide to the air. The C^{14} absorbed by organisms during their lives is not renewed, but decays slowly after death.

As the radio-activity of a given weight of carbon derived from organic matter 5,000 years old is half that derived from carbon in living material, it is possible to determine the age of an object merely by measuring its radioactivity. Thus, a wooden object 2,500 years old will have lost a fixed proportion of its radioactivity, while another object, only 1,000 years old, will have lost less and will produce more radiations.

In other words, *all* carbon of biological origin is in a slight degree radioactive. Because the earth is at least 2·5 thousand million years old, it is assumed its atmosphere must have reached a stage of radioactive equilibrium centuries ago. That is, C^{14} atoms are produced at a rate equal to their rate of decay. This decay is the result of a loss of a β-particle, and they can be detected by a sensitive Geiger counter.

This radio-carbon method of dating can be used to supplement dating by the tree-ring method. With trees dated by the direct method the radio-carbon method has shown good agreement. In other cases, the discrepancy has been great, and it has been suggested that it would be an interesting experiment to treat Prof. Libby's method as established and use it to check dates calculated from incomplete tree-ring data.—(*UNESCO.*)