

*The
Central Food
Technological
Research Institute
Mysore*

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COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH, NEW DELHI

**THE CENTRAL FOOD TECHNOLOGICAL
RESEARCH INSTITUTE
MYSORE**

Opened on Saturday, the 21st October, 1950



**COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH
NEW DELHI**



The Central Food Technological Research Institute, Mysore

I N T E R O D U C T I O N

THE importance of food technology and the value of processed foods came to be better appreciated in India during World War II. The Bengal Famine of 1943 and the threatened famine in South India in 1946 helped towards a better realisation of potentialities. Based on extensive evidence, the Industrial Research Planning Committee of Council of Scientific and Industrial Research recommended the establishment of a Central Food Technological Research Institute as one in the chain of national laboratories and accorded it a high priority. This recommendation was endorsed by the various Food Industries Panels set up by the Government of India. The different ministries of the Government 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 in February, 1948 and sanction was accorded to the working out of a detailed plan.

Various provincial governments and states were addressed as to the facilities they could offer in the matter

of buildings, land, water, power, etc. From amongst the replies received, 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 at a nominal rental, was considered the most suitable. The Hon'ble Prime Minister, as President of the Council received the Mansions formally from the Mysore Government in December, 1948. A Local Planning Committee under the Chairmanship of Hon'ble Shri K. C. Reddy, Chief Minister, Mysore, was constituted in 1949 to advise on the additions and alterations of buildings and equipment of the Institute. The first laboratory, the animal house, and the library started functioning by the end of July, 1949 and other additions followed steadily.

Early in 1950, the Ministry of Agriculture agreed to merge the Indian Institute of Fruit Technology, Delhi, with the Institute at Mysore. The staff and equipment was transferred to Mysore in May, 1950.

S C O P E A N D F U N C T I O N S

ALTHOUGH food technology is of considerable economic significance to a country like India, where political changes during the last 18 years and a growing rate of population have resulted in the conversion of a surplus state to a deficit area, systematic investigations in this subject can hardly be said to have been taken up. It is true that a fairly big organisation for scientific storage of food grains has of the late been brought into being but there is considerable scope for developing new and improved methods of storage of staple foods as well as perishable material like fruits, vegetables, meat fish, dairy products, etc. Food technology offers a vast and fertile field for investigations and amongst the many lines in which research can lead to new developments are reclamation of insect infested and partially affected food material, conservation and preservation of food stuffs and elimination of harmful constituents, refrigeration and freezing of foodstuffs, conversion of non-edible foods, production of substitute foods on a pilot plant, etc. The important subject of food engineering is awaiting investigation and development and there is considerable scope for improving the yields from staple foods, resulting in reduction of costs of processing such as milling, parboiling, millet-rice making and formation of synthetic rice and other substitute foods, for example from tapioca and other materials. The solution of some of these problems will contribute greatly to the availability as well as production of subsidiary food materials.

The Institute will deal with all these and other aspects of food technology leading to a better conservation and more

efficient utilisation of food material available in the country.

Among the subjects of study, mention may be made of the following:

- (1) Storage and preservation of different classes of food materials; prevention of spoilage; reclamation and utilisation of partially affected materials.
- (2) Processing of foodstuffs with a view to improving their keeping quality and facilitating ready usage; refrigeration, freezing, gas storage, dehydration, canning etc.
- (3) Treatment of different coarse food materials to improve their palatability, digestibility and general food value; elimination of harmful and unpalatable ingredients.
- (4) Study of new and hitherto unfamiliar sources of food materials; their processing and supplementation so as to render them more wholesome and acceptable; emergency foods.
- (5) Preparation of concentrated foods, vitamins and other food accessories, composite and multipurpose foods, ready-to-serve foods, supplementary foods, food substitutes etc.
- (6) Preservation of fruits, vegetables and other perishable articles; training of personnel into methods of preparation of squashes, jams, preserves, pickles, chutneys, etc. and general investigations into fruit technological problems including the possible use of exhaled gases, artificial colourisation and antioxidants for preservation of shape and food quality.
- (7) Dietetics, design and demonstration of improved types of food preparations to suit the economic

conditions and tastes of people in different regions; improved cooking methods.

- (8) Study of problems relating to food industries; provision of technological information; survey of existing industries, their technical problems and collection of factual data for development of new industries; pilot plant trials with different types of industrial equipment.
- (9) Food sanitation; survey and advice on hygienic conditions in food industries; treatment and utilisation of waste products from food industries.
- (10) Development of improved and rapid methods of determining quality of food products; detection of new and unfamiliar adulterants.
- (11) Food information; dissemination of general information bearing on food and dietary problems; popular presentation of important developments in food technology, issue of bulletins and charts for the preparation of home preserves, different small-scale industries; demonstration of new methods.

The work will involve laboratory studies, pilot plant trials, animal and human feeding experiments. Particular emphasis will be laid on experiments on rabbits, monkeys and other animals more akin to man, a technique not yet adopted in India. Closely related fundamental problems will also be studied. The Institute will work in close association and, wherever possible, collaboration, with the allied departments under the Ministries of Food, Agriculture, Industry and Supply, Defence, Health, Commerce, Transport, etc. and with the different national laboratories, research institutes and universities and other organisations.

The work of the Institute will be carried out through a number of divisions and sections dealing with storage and preservation; fruit technology; food engineering; processing; biochemistry and nutrition; dietetics; quality control; microbiology and sanitation; food containers; information and statistics. There will also be the central library, stores, workshops and machines, technological units, cold stores, refrigeration chambers, animal houses, etc.

Nuclei units in some of the divisions and sections, as also most of the central services, have already begun to function.

L O C A T I O N

MYSORE is eminently suited for the location of the Food Technological Research Institute. It is at the junction of regions where rice, millets and tubers respectively form the major articles of food. It is also in the centre of regions where various kinds of fruits and vegetables are extensively grown. The climate is mild all round the year and would facilitate all types of processing operations. The city is the headquarters of the University and, apart from the various educational institutions it is also the centre of the medical and health faculties whose association would be most useful. The proximity of the Indian Institute of Science and other research institutions in Bangalore, as also of the Nutrition Research Laboratories in Coonoor would be added advantages which will be of considerable assistance in co-ordination of work and avoidance of duplication.

BUILDINGS, LAYOUT AND EQUIPMENT

THE main building of the Cheluvamba Mansion, together with the rear block covers about 110,000 sq. ft. Most of the laboratories, library and offices are now concentrated in the front of the building. The rear part of the main building now houses fruit technology, workshop, machine rooms, and stores. The experimental animals are housed in a separate block (7,000 sq. ft.) which has been formed by suitably converting the former stables. Part of the same building is also equipped for human metabolism experiments.

The conversion of living rooms into modern laboratories with various types of fittings and equipment, has been achieved without, in any way, affecting the beauty of the building. Many of the research rooms, as now laid out, will stand comparison with the best in any part of the world. The seminar room and the beautiful assembly hall are ideally situated and suitably furnished. The library hall has been designed in keeping with the layout of the building and is both compact and well fitted for study.

The laboratories are well provided with chemicals, apparatus, and other accessories. A fair amount of equipment has also been installed, but a great deal more is still needed, particularly for technological research. The workshop equipment was largely obtained with the kind help of D. G. Disposals. Cold storage facilities are provided in two fairly spacious rooms maintaining different temperatures as also by a number of portable units. In addition to these, specially designed chambers have been provided for refrigeration research.

The Municipal authorities, the state electricity department, the railway authorities and other departments have collaborated enthusiastically and helped in every possible way. The Council's architects gave valuable advice in regard to the layout of the laboratories, furniture and equipment. The C. T. Institute, Mysore as also several local suppliers, furniture makers and other contractors co-operated in the effort. The Institute can today boast of possessing excellent furniture and fittings which are both sturdy and artistic.

Thanks to the co-operation of the Mysore Horticultural Department, the gardens are well laid out and efficiently maintained. The roads have been carefully kept and provide easy access to the different parts of the town. The grounds surrounding the Institute are liberally provided with street lights. There is excellent underground drainage and the surroundings are both clean and hygienic.

FUTURE EXTENSIONS AND ADDITIONS

THE laboratories, though adequate for the present, will require to be extended at a later stage, as and when funds become available. The workshop and technological equipment will have to be transferred to a compact block with the required services. Up-to-date equipment for different types of processing has still to be obtained, and installed. Arrangements will have to be made for extension of the supply of water. Extended sanitary fittings will also have to be provided, with special arrangements for the disposal of the more corrosive and objectionable types of wastes.

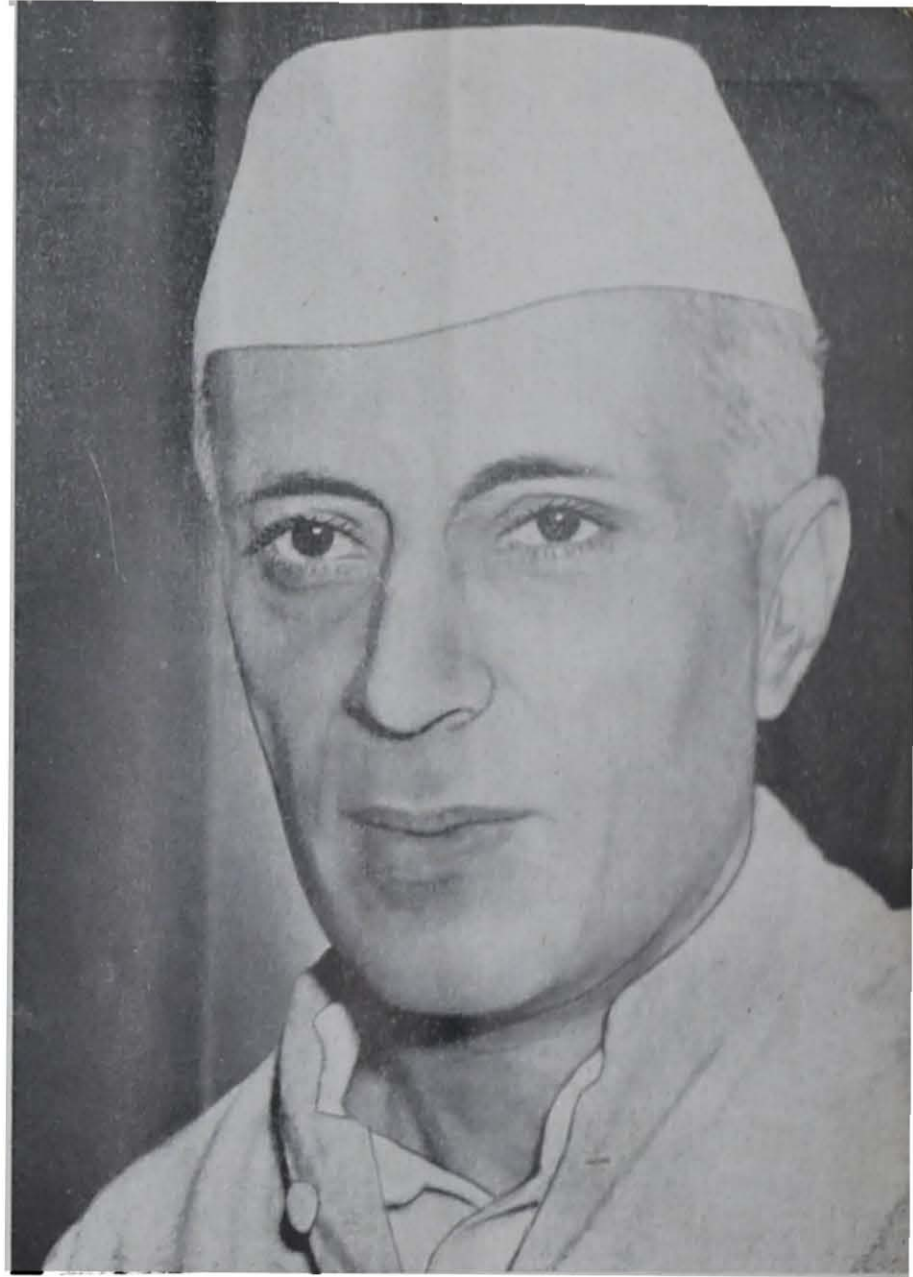
Message from

The Hon'ble Shri Jawaharlal Nehru

Prime Minister of India

I had hoped to be present on the occasion of the opening ceremony of the Central Food Technological Research Institute, Mysore. I am sorry that I am unable to attend this ceremony because of other work, but the fact that Shri C. Rajagopalachari is performing this ceremony shows the importance we attach to scientific and industrial research and to this Institute.

One of the remarkable developments in India, during the last three years, has been the opening of national laboratories and research institutes. We have put up some magnificent laboratories, not only impressive to look at, but I hope, the homes of productive effort and work. It is ultimately on the basis of work done in our 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



*The Hon'ble Shri Jawaharlal Nehru, President,
Council of Scientific and Industrial Research*

India to take advantage of the great opportunities offered to them and thus help in building up the new India.

During the last few years, we have talked about food more perhaps than anything else. We have given top priority to the production of food grains or subsidiary foods. It is obvious that food is of the first importance and its value cannot be judged merely in money terms. We cannot depend on imports for our food and, therefore, we have laid down a target for food sufficiency. This is the 1951-52 season. In spite of all difficulties and disasters, we still adhere to that target and are trying to work up to it. We hope to succeed. It must always be remembered that food production has the highest priority.

How can science help in this. This primary responsibility is of our Department of Agriculture. Science can help in agriculture greatly. It can also help in various other processes. It is more particularly with these other processes that this Institute will be concerned. I hope the work done in this Institute will bear fruit not in developments on paper and in scientific journals, but in terms of human values and in increase of suitable food for our people.

Some time ago, I had the pleasure of accepting from the Government of Mysore the fine building in which this Institute is lodged. Now it is receiving the blessings of Shri C. Rajagopalachari. I look forward to good work being done there for the benefit of the nation.



Address by

Dr. S. S. Bhatnagar

Director, Scientific and Industrial Research, Delhi

YOUR HIGHNESS, RESPECTED RAJAJI, HONOURABLE MR. CHIEF
MINISTER, LADIES AND GENTLEMEN:

Today is a red letter day in the history of science in this country. A palace, in all its grandeur and beauty is being dedicated to the service of man in his primary need for food, a most important field of science and technology. For this act of generosity the government and the peoples of India pay their grateful homage to Your Highness, to the Mysore Government and to that well known and selfless patriot Shri K. C. Reddy, who is now the Chief Minister of Mysore. In the Government of India, the prime-mover of this development is, of course, the Prime Minister himself whose unavoidable absence today is felt not only by us present here but by a much wider public outside.

Amongst the research institutes which the Industrial Research Planning Committee under the Chairmanship of Sir Shanmukham Chetty suggested should be brought into being forthwith, was the Central Food Technological Research Institute. Research in this institution was envisaged to cover the field of scientific investigations connected with foods and their relationship to man. As such it embraced a large number of scientific disciplines including several branches of applied sciences and technology. When the objectives of this Central Institute were deliberated upon by the Council of Scientific and Industrial Research and the Planning Committee which had repre-



*Dr. S. S. Bhatnagar, Director, Scientific
and Industrial Research*

representatives of Industry, Science, Food and Agriculture Ministries on it, the following facts were prominently before them. A number of industries connected with the processing of food had already been established, for example, flour-milling, rice-milling, bread and biscuit making, fruit and vegetables processing, country spirits and potable liquors, starch and vegetable oils including vanaspati, cocogem and margarine. The total value of factory production during the years 1946 and 1947 for which accurate data are available, were Rs. 112.68 crores and Rs. 131.07 crores respectively, the figures of individual items being :

	1946	1947
	(in lakhs of rupees)	
Flour milling ..	1,270	770
Rice milling ..	3,524	3,464
Biscuit making ..	192	244
Fruit & vegetable processing ..	32	21
Country spirits and potable liquors ..	214	188
Starch ..	47	26
Vegetable Oils ..	5,989	8,394
including :		
Vanaspati 2,056		1,655
Margarine 5		8
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	11,268	13,107

In addition to the processing and production in India itself, trade in food materials forms an important feature

of India's export and import trade. The volume of this trade will be apparent from the following figures which relate to the last three years 1947-48, 1948-49 and 1949-50 :-

	1947-48	1948-49	1949-50
	(in lakhs of rupees)		
Imports :			
Fish excluding			
canned fish ..	10	15	20
Fruits and vegetables ..	390	585	669
Grains, pulses and flour .	2,296	7,323	9,955
Liquors ..	210	168	108
Provision and			
Oilman's Stores ..	653	705	769
Spices ..	363	442	354
Other foods and			
drinks ..	290	204	137
	<hr/>	<hr/>	<hr/>
	4,212	9,442	12,012
	1947-48	1948-49	1949-50
	(in lakhs of rupees)		
Exports :			
Fish ..	169	147	186
Fruits ..	544	610	753
Grains & pulses ..	12	5	4
Liquors ..	4	3	1
Provision and			
Oilman's stores ..	54	86	62
Spices ..	638	546	1,818
Other foods and			
drinks ..	49	4	107
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	1,470	1,401	2,931

These figures show that the transactions at home and abroad involve an annual turn-over of rupees 225 to 240 crores.

An industry and trade catering to business of this magnitude can never hope to develop and progress without the aid of research. It must have the assistance of an up-to-date technological research institute to enable it more adequately to meet the needs of our people and boldly to face the competition of other countries. To compare the functions of such a research institute with those of agricultural research institutes which largely concern themselves with soil surveys, increasing production of crops and evolution of new varieties of resistant plants would only be evading the issue, for there is very slender connection, if any, between research for technological processing and research for increasing agricultural production. New food industries such as the manufacture of breakfast cereals and yeast are being established in the country and for their proper development, a Central Food Technological Research Institute is a real necessity.

During recent years after the separation of Burma and particularly after the division of our country, the food problem has staggered us as no other problem has, not even the refugee problem. Government has spent enormous sums of money in procuring food from abroad and in increasing food crops by utilizing all available lands. If the statistics which are available can be relied upon we have an over-all shortage of a little over 10 per cent of our total requirements of food.

Larger shortages, if any, in certain regions are due to lack of proper transport and procurement facilities. To overcome this small shortage the Government have initiated the "Grow More Food" campaigns, the purchases outside, the procurement drive inside and a system of rationing for principal food materials. I should not say that they have neglected, but they have certainly laid much less emphasis on the more prudent utilization of our raw materials of food or reducing losses during storage, in industrial processing and on the prevention of ravages by insect pests and fungus after crop collection. The possibilities of introducing processed new materials which can be used as food have had the least attention. All measures for increasing the growth of food both in the vegetable and the animal kingdom are praise-worthy. The "Grow More Food" campaign will evidently require more money and time than the aids which technology can render to food preservation and food utilization. The losses incurred in the inefficient milling of rice and flour on the large scale as well as in the making of parboiled rice and other parched, semi-parched, baked and cooked foods are pretty large and can be decreased by the aid of technical supervision and research.

We feel that by introducing substitute foods in which technological research has already shown the way, and by preventing losses of food materials during the storage by fungus, moisture, monkeys, rats and insects science and technology can help to convert our shortage of 10 per cent perhaps into a surplus. Alas! in the noise of procurement drives and purchase programmes and the fact that politicians can give advice on any matter including nutritional

values of food and what should be eaten and what should not be eaten, the thin-lean voice of science has not yet received a proper hearing.

Today's inauguration of this institute is the first big step which the Government of India have taken to solve the food problem by the technological as distinguished from the purely biological methods. I have assured Rajaji and others who have made anxious enquiries about the immediate usefulness of this institute that within a year of its inauguration today, it will make a distinct contribution towards the solution of food shortages in India by its technological research. This assurance has been given to me by Dr. Subrahmanyam, the Officer-in-Charge of this institute who has worked zealously and hard to establish as quickly as possible this new aid to food industry and by several research workers from all over India who are working in collaboration with him.

Although work in the laboratories was started only recently, the institute has already some useful contributions to its credit. Particular attention has been directed to the production of emergency foods to meet our urgent needs and also to utilise food materials which are now going to waste in certain seasons. The Bio-chemistry and the Processing Divisions have been concentrating on the production of suitably fortified grains prepared from different starch-bearing materials, pulses and seed-cakes. Till recently, the greatest difficulty was the improvement of the cooking quality; but, this has recently been overcome and the distinguished visitors will have an opportunity to see the products being prepared on a pilot plant scale when

they go round the laboratories. Other investigations relate to the possible application of lucerne, now used only for animal feeding, but which is a high class article of food supplying practically all the food essentials which are lacking in the ordinary cereal diets. Work on the utilization of jack fruit and the citrus fruits which are produced abundantly in the Malnad regions, all along the Western Ghats, is actively in progress and the industries are also taking very keen interest in the new developments. Work on the processing and preservation of juice and pulp from cashew fruit has also been carried out.

Other enquiries bearing on the utilization of different seed-cakes, processing of coarse grains to render them acceptable to rice eaters, preservation of raw, sliced mango for chutney and pickling, curried vegetables, production of good class vinegar from different sources as a cheap cottage industry, canning of meat products, new and improved methods of processing of pulses without affecting their nutritive value, production of an attractive edible milk from groundnut, etc. are in progress and can be seen when the visitors go round.

Production of predigested and concentrated protein foods has been standardised and is already being applied by the industry. In addition to the above, the institute has already established contacts with the various food industries to whom information, advice and assistance are being given. When we notice that the general balance of rationing in the world is pretty much the same, it is difficult to avoid the impression that we are in the presence of a very powerful auto-regulative mechanism, which,

given certain external conditions, strongly favours a certain proportion of intake from among the basic nutrient substances. This statement may create a wrong impression on those who believe in eating raw and naturally occurring foods and as such I must present the other side of this picture. Besides the physiological needs of the body the choice of foods is influenced to a great extent by custom, imitation, social, religious and other considerations. A deficit of 10 per cent is not impossible to overcome if we rise above these prejudices; but even those who claim to be rational are not free from such limitations. In 1919 after the first World War, as a student of Physical Chemistry and Colloids under the celebrated Professor F. G. Donnan, I became interested in the large-scale production of emulsions of Water-in-Oil and Oil-in-Water types, characteristic examples of which are butter and milk respectively. As a result of much research in France and England, Margarine, a substitute for butter and Solac, a substitute for milk were introduced in the European markets. The substitute for butter under the name of Margarine has come to stay and is an important food for a vast population unable to afford butter. Solac, which was a milk substitute made from soya-bean, although as good as natural milk in flavour, nutrition and behaviour, did not catch as mothers were definitely prejudiced in favour of cow's milk for the children.

Steeped in ancient culture of a highly developed character, food reforms, nay any reforms or innovations are not easily accepted in this country. The scientist must, however, persist. In every country there are men who get fits of strong belief in the foods as nature provides

without any processing. These enthusiasts are against salting, washing, boiling or baking or sugaring anything. The tongue and the stomach have rejected the proposition that wheat, rice and meat should be taken raw. No quotation from ancient literatures will stop a Punjabi from enjoying an ice-cream made on foreign recipes, a Bengali from relishing his Machhi Jhol or Rasogola, a Madrasi from delighting in the inimitable Rasam and a Parsi in doting upon his Dhan-sag. All of these products are processed. Because these prejudices exist scientific research should not desist from search for new foods, new sources of supply or the employment of new processes in the preservation and utilization of our meagre food supplies. Scientific enquiry will always result in the end in some positive achievement. I should like to mention here, two products which have recently been introduced as a result of research work by the Indian workers. A pectin-like product from tamarind seeds, so far a waste material, has been introduced by Dr. S. Krishna of the Forest Research Institute at Dehra Dun. It has been found to be a good substitute for starch and will save the consumption of a great deal of wheat, rice and potatoes for this purpose. It has been found to be good for edible purposes also. The second product has been described in a recent issue of 'News Week,' an American Weekly, as Icier Ice. This is a patented invention of Dr. Jagan Nath Sharma, an Indian-born Chemist. A tiny amount of an organic chemical, namely fluorescein, is added to water before freezing. The result is a tough, stickier ice. According to an American opinion, ice is just ice unless it is Tw-Ice, this new nicer, Icier ice. Tw-Ice melts slowly lasting on an average 37% longer than ordinary ice. Coast-to-Coast shippers of

perishable food products are enthusiastic about this new ice, because they do not have to stop en route for re-icing. This will revolutionize preservation of food-stuffs in transit and at home. The only complaint about Tw-Ice is that they have to use crow-bars to chop out the produce from the refrigerator cars; it sets so hard.

The principal object of this institute is to carry out technological research on foods and suggest methods so that food supplies could be kept longer and more usefully utilized. As every preserved or processed food is likely to change its nutritional and digestive qualities and palatability, biochemical and nutritional investigations on such products, right on the spot, will be necessary. Hence these sections have been provided in the institute. Animals have been found to retain the ability to choose a nutritionally correct diet to a much greater extent than man. By smelling or licking, animals can choose their foods. Man cannot be allowed to monkey with all sorts of available materials from which to choose his food and animals have, therefore, to be employed in nutritional studies. A very good Animal House has been provided in the institute.

To the scientific workers in this institute I should like to say a word. I wish I had the opportunities and facilities of work such as they have. The gates of discovery are always open to them if they knock at the right place and persistently. To those who are suffering from indigestion and jealousy because poor science has been able to get such a glorious habitat, I should recommend consultations with our food experts and a course in Wordsworth poetry particularly his poem on the King's College

Give all thou canst ; high Heaven rejects the lore
Of nicely calculated less or more ;
So deemed the man who fashioned for the sense
These lofty pillars, spread that branching roof,
Self poised and scooped into ten thousand cells.

I shall end by quoting an episode from Mahabharat : Dropdi had just finished her meals one day when all of a sudden the celebrated Durbasa Rishi accompanied by a troop of disciples arrived on the scene and wished to get a meal. All that was left was a little residue in the vessels used for cooking and she was frightened as Durbasa Rishi had the reputation of getting into a fit of temper and cursing anybody if his wishes were not complied with. She appealed to Lord Krishna and wanted to know what to do. "Serve whatever is left in the vessels in which you cooked your food" said Lord Krishna. "But, Sir, it is not enough even for one man", sobbed poor Dropdi. "Serve whatever there is", said Lord Krishna. That residue of the food was so wholesome and so much that Dropdi fed every one to his heart's content and yet the food was not finished. May the processes discovered in this laboratory result in our ability to extend our food supplies so that we may be able to provide the necessary nourishment and satisfaction to all who live in India and thus help in keeping alive in a realistic manner the legend of Krishna and Dropdi.

When I handed over to the Prime Minister of India the many telegrams and letters received from people here asking me to persuade him to attend this function, he told me that you and the people of Mysore should have the satisfaction to know that the Hon'ble Shri Rajagopalachari

is to perform this function and Rajaji represents the sagacity, the wisdom, the honesty of purpose and experience of the Indian Government and the Indian people as nobody else can claim to do.

We are lucky, Sir, in having you in our midst to perform this auspicious ceremony. May the opening of this great institute by your noble hands close the door against the demon of poverty and starvation in this land—our India.

Speech by

The Hon'ble Shriman K. C. Reddy

Chief Minister of Mysore

YOUR HIGHNESS, REVERED RAJAJI, DR. BHATNAGAR, LADIES AND GENTLEMEN,

Till this morning, I had my own doubts whether I should speak on this occasion. But I have been advised that it would be appropriate for me to say a few words on a historic occasion of this kind. It gives me great pleasure indeed, to extend a warm welcome to those who are gathered here for this historic function under the august presidentship of His Highness the Maharaja of Mysore. I am doing this on behalf of the Government of Mysore and in my capacity as the Chairman of the Local Planning Advisory Committee of this Institute. We are specially fortunate in having in our midst, the Honourable Sri Rajagopalachari, patriotic statesman of India, whose regard of unblemished service to the nation is so note-



*The Hon'ble Shriman K. C. Reddy, Chairman,
Local Planning Advisory Committee.*

worthy, to perform the Opening Ceremony of this Institute. I desire to extend him, in particular, a most cordial welcome. We have now heard the illuminating and interesting speech of my esteemed friend Dr. S. S. Bhatnagar giving all salient information about the genesis and the scope of work of this Institute. The Brochure that will be placed in your hands also deals with the various aspects of the work of this Institute. I, therefore, consider it superfluous on my part to dwell on them in the course of my brief remarks. I feel, however, that it will be appropriate for me to say, in brief, the circumstances that led to the location of this Institute in the City of Mysore. Some time in 1948, the Government of Mysore was addressed in the matter of the facilities that were available and which they could offer in the matter of buildings, land, water, power, etc., for this Institute. The Mysore Government considered the matter in all its bearings and eventually decided to offer the Cheluvamba Mansion together with the attached buildings, gardens and a part of the grounds to the extent of about 100 acres for the purpose of this Institute on a long lease at a nominal rental value. The Council of Scientific and Industrial Research were good enough to accept the offer as being most suitable and the Honourable Prime Minister, as President of the Council, graciously received the mansion formally from the Mysore Government, in December, 1948. Mysore offers some special attractions for the starting of national and international institutions in the State. Facilities for water and power supply and her temperate climate are among them. Added to that, the State has always been noted for its zeal for advanced economic, scientific and industrial progress of the country. The Indian Institute of Science was established

here some decades ago. The Hindusthan Aircraft Factory functions at Bangalore. In recent times, the Indian Telephone Industries were started in the State. Some international Agencies connected with Health and Labour are also working with Bangalore as Headquarters. The Mysore Government have granted several facilities to these organisations and have collaborated with them in diverse ways. It was, therefore, in pursuance of this policy that the Government with much pleasure came forward to provide the necessary available facilities for the location of this Institute which, they felt, was one of great importance and vital significance for the material progress of the nation. We are grateful indeed, to the Council of Scientific and Industrial Research and to the Government of India for their acceptance of our offer and for making it possible for the establishment of this Institute in Mysore. This Research Institute is one in the chain of National Laboratories that are being planned and started in India during recent years. During the last 3 years, several scientific laboratories and technological Institutes have seen the light of the day. The Council of Scientific and Industrial Research when recommending the establishment of a Central Food Technological Research Institute accorded it a very high priority. It was, if I may say so, in the fitness of things, that they did so; because the problem of food is the most pressing problem that is facing the nation now. We are deficit in food and are obliged to import large quantities from abroad to satisfy the immediate requirement of the people. I do not want to dilate on this occasion to the various facets of these stressing problems. To some of them a pointed reference has been made in his speech that has just now been made by

Dr. Bhatnagar. The shortage in food is being met on the production side by a steady pursuit of the Grow-More-Food-Campaign Scheme. It is realised, however, that there is great scope for the proper storage and preservation of different classes of food materials, processing food stuffs and study of new and hitherto unfamiliar sources of food materials; preparation of concentrates and preservation of food grains and vegetables and other perishable articles; dietetics designed to get improved types of food etc., to suit the economic conditions of people in different regions; improved cooking methods, study of problems pertaining to food industries, production of technical information and the need to pursue several other aspects of food technology. This Institute is devoted and dedicated to the handling of these problems. It is a matter for gratification that recently the Government of India have decided, in conjunction with the Ministry of Agriculture, for merging of Fruit Technological Institute with this, and I am quite confident that this addition to the Central Food Technological Research Institute is very valuable indeed. I do not want to dwell on this occasion to the progress that has been achieved during the last one year or so in building up of this Institute. Reference has again been made to this aspect of the matter by Dr. S. S. Bhatnagar in his speech. I only want to say that the inspiring genius behind the present phenomenal advancement of scientific progress in this country and the establishment of these institutions in India has been that of Dr. Bhatnagar. It has been well said in a speech by one of our distinguished scientists who is gracing this occasion, in the phrase that the "Nehru-Bhatnagar-effect" has been very tremendous indeed, and

Nehru as the Head of this Department with his zeal for scientific advancement in this country and with his undiminished faith in science and the sphere of humanity and with Dr. Bhatnagar as his able lieutenant, we are making rapid strides in the progress of science and advancement and establishment of scientific institutions. So, I do not want to lose this opportunity of paying my humble tribute to the work that is being done by Dr. Bhatnagar. Only yesterday, he was telling me that he needs no rest till the end of his life for the service of science. I also want to say a few words on the work that has been accomplished by Dr. Subrahmanyam and his colleagues who have been responsible for building of this Institute. Dr. Bhatnagar has once again stated in his speech specifically and categorically what has been accomplished so far and what he hopes to accomplish in the near future and in the distant future. Dr. Subrahmanyam is a very enthusiastic scientist and administrator. His capacity for taking pains is something immense, and I am glad to testify that he is keen about his work in the most zealous and enthusiastic manner. So, I want to say on this occasion, that we are thankful to Dr. Subrahmanyam and his colleagues and to all those who have built up this Institute so far in several ways and to them our thanks are due. Now I share in the hope expressed by Dr. Bhatnagar about the future of this Institute. I also join him in expressing the faith that this Institute will contribute greatly to the progress of our country and to the material advancement of the people of our nation. With these remarks, once again I extend most cordial and hearty welcome to all those who are gathered here for this historic function.



His Highness Maharaja Sri Jaya Chamaraja Wadiyar Bahadur Maharaja of Mysore inaugurates the function

Address by
**His Highness Maharaja Sri Jaya Chamaraja
Wadiyar Bahadur**

G.C.B., G.C.S.I., Maharaja of Mysore

HONOURABLE SRI RAJAGOPALACHARI, LADIES AND GENTLEMEN,

I feel it a privilege to preside on this historic occasion when the auspicious ceremony of formally inaugurating the Central Food Technological Research Institute will be performed by one of the makers and leaders of Independent India, the Honourable Sri C. Rajagopalachari.

I am indeed happy that this Institute is located in Mysore, and this feeling is born not from any sense of narrow provincialism, but out of a realisation of the service we owe our motherland and the opportunity that the location of this Institution here has given us to render some measure of that service in a special and more intimate manner. Our thanks are due to the Government of India and my Government for this achievement which, on merits and from the point of view of the efficiency and future development of the Institute, has received the approval of the savants concerned. We are under a special debt of gratitude to the Honourable the Prime Minister for the keen personal interest he has always taken in the advancement of science and applied sciences in our country and in this Institute in particular. We cannot forget how he did us the honour of coming over to Mysore and receiving in person the Cheluvamba Mansion for the location of this Institute.

I do not wish to dwell on the technical aspects of the work of the Institute, the tasks in which it is engaged and the problems which it will attempt to solve. The Annual Report and other papers published in this connection will give full and impressive information on these matters.

Food, clothing and housing are three of the basic necessities of life. The importance of food cannot be over-emphasised in a poor under-nourished country like India. The solution of these problems is as important as maintenance of our national security; and, in fact, security and national progress are inter-linked. They are two facets of the same reality which constitutes the fullness of our life and its uninterrupted progress to higher, and yet higher, levels.

This Institute is one amongst the many enterprises that are evidence of the innate constructive genius of our Nation. Our Government, since the advent of Swaraj, has been trying to liquidate the arrears of centuries in the matter of scientific, industrial, and material progress. Think of the many research laboratories it has organised; of the many dams and reservoirs it has planned for the conservation of waters needed in our dry and droughty land; of the many power stations that are in the stage of planning or actually under construction for the improvement of the economic condition of our people; of the encouragement it has given to ship-building; and of the many research laboratories—Pure and Applied—it is establishing all over the country and the stimulus and support it has given to research and creative activities generally in a number of University centres. History finds

few parallels for such a record of constructive power and effort.

If only the situation from the point of view of peace—internal and external—had been happier and less exposed to possible storms, we could have concentrated, as suits our racial bent, on schemes of prosperity. But alas, the skies not only over the frontiers of our own land but over the world at large, are still overcast, and we can only hope and pray that they will clear to give us a very long spell of assured peace and unassailable security.

Our people, generally speaking, are excessively conservative. Under all the circumstances of their historical background, it could hardly be otherwise. It is only recently that a new life and a new spirit, a new outlook and a new activity, have sprung up and are beginning to spread amongst the masses. So, when substitutes for rice or for milk or for any of the foods we have been accustomed to, have been discovered, the people at large are apt to be very reluctant to utilise such products, no matter how convincingly their value has been proved scientifically. There is therefore a call on the educated people and the upper strata of our society to set an example by betaking to such products themselves first and openly. Conduct spreads by conduct, and leadership in thought must 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 have thus an imperative obligation to see that their ways of life are conceived and directed by social objectives and values.

Our students are sensitive to the call of the Nation and of Patriotism. It seems to me that there could hardly be better material for the propaganda which will surely be needed by this Institute (and its branches and affiliations to be organised in due course) than that which the colleges and college hostels of our country will afford.

Considering the short time that has elapsed since the foundation of this Institute and the inevitable initial difficulties in gathering the necessary personnel and material, putting up additions and alterations to the buildings and fitting up the laboratories, we may perhaps feel satisfied with the progress so far achieved both in organisation and in functioning, but I do fervently hope that in the coming years its progress will be striking and on an ever-ascending scale.

It is indeed our good fortune that today Sri Rajagopalachari will be performing the inaugural ceremony of this Institute, and in that act will be giving it the inspiration and strength so necessary to its healthy growth. Could there be any finer example of service to the country than that set by our beloved Rajaji who, having crowned a great political career by occupying the highest position in our Nation, that of Governor-General, did not rest on his laurels, but considered it his duty to continue to strive in that service in the Cabinet of the Honourable Pandit Jawaharlal Nehru. To my mind that noble act in itself illustrates how, under Independence, function has a far higher value and attraction than position. I remember reading in the History of Greece of Epaminondas who was Commander-in-Chief of the Boeotian Army; but who,

when he had to relinquish that position, rejoined the army as a private soldier. In a similar way, Rajaji has set an example of patriotic duty that all should emulate but which, perhaps, none could excel. He has shown that, under Independence, function is more than position and service more than career.

I have now much pleasure, ladies and gentlemen, in requesting the Honourable Sri C. Rajagopalachari to inaugurate the Central Food Technological Research Institute and to launch it on its uninterrupted and unlimited course of research, discovery and invention, redounding to the material betterment of the Country and its strength.

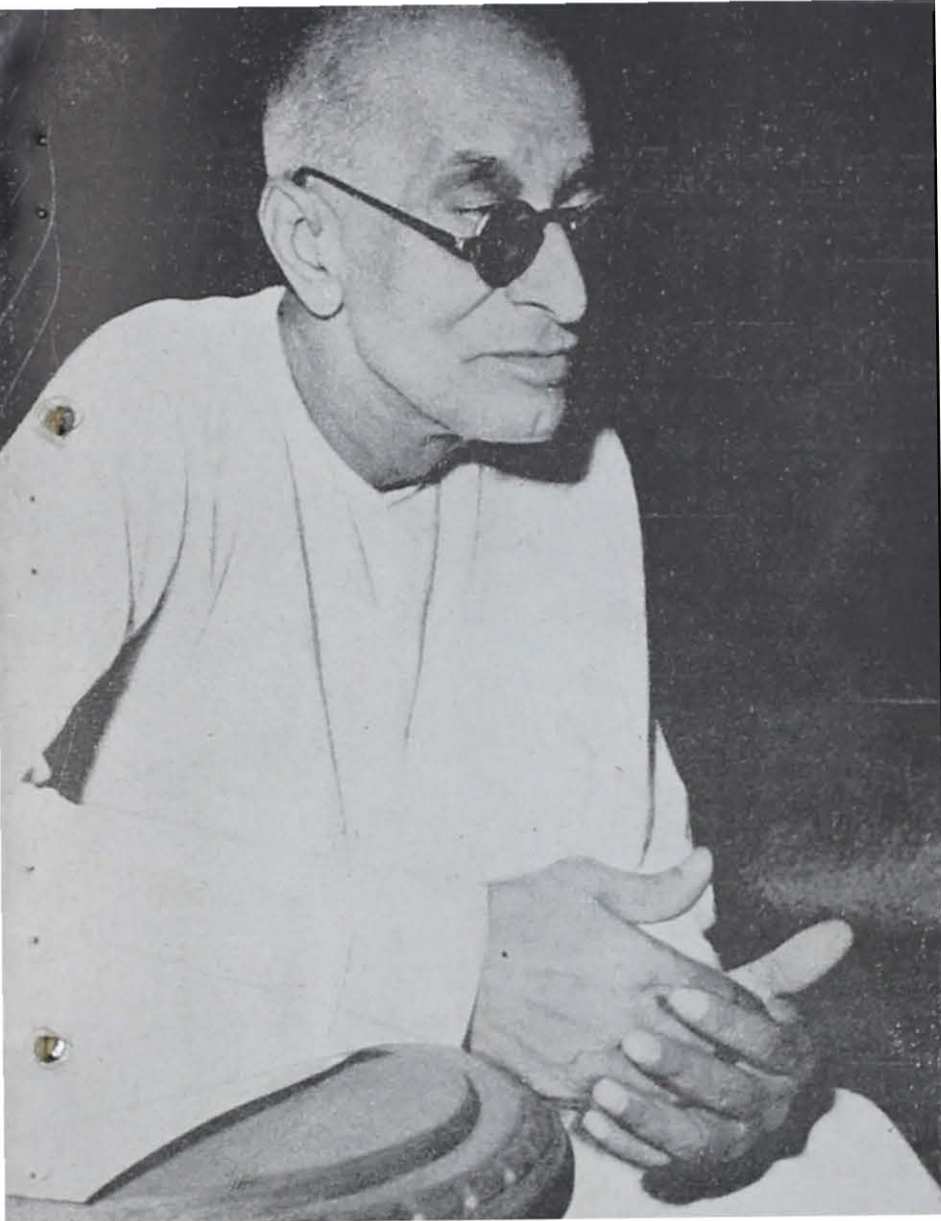
Address by

The Hon'ble Shri C. Rajagopalachari

YOUR HIGHNESS, LADIES AND GENTLEMEN,

Food is one of our major problems. If by any chance you forgot this, the rationing system would remind you of it every morning.

Now, we are importing very large quantities of food grains from foreign countries and we give a subsidy to the consumers from Central Revenues. Obviously this cannot last long. We have set before ourselves, therefore, the task of making our agriculture self-sufficient in the matter of food grains as speedily as possible and towards that end, it is the duty of everyone to put forth the very



The Hon'ble Shri Chakravarti Rajagopalachari opens the Central Food Technological Research Institute, Mysore.

best efforts to intensify cultivation. The main programme is no doubt that of growing more food by bringing under cultivation fresh areas and by increasing the yield of areas already under cultivation by improved methods and greater attention. Better manuring can easily increase the yield of the areas already under rice cultivation. The increase obtained by this would go a great way towards reducing the present deficit in food production.

Over and above these main lines of action of increased and improved cultivation there are other things which we can and should do. This technological institute is intended to cover this supplemental ground.

Many a little makes a mickle. We should preserve all food material which is liable to deteriorate with time, so that it may be available whenever we need it and wish to use it. Scientific research and application of known technological processes will help to reduce many kinds of waste and ensure the availability of locally produced valuable foods throughout the year. Dehydration is the oldest method of preservation of foodstuffs. The Mahratta soldiers in the palmy days of Maharashtra used to carry flattened rice and roasted pulses in their bags (with them) when they went out on expeditions. Simple drying of all kinds of vegetable products in sunlight has been practised by our people from ancient times. Science can help us in the matter of proper dehydration. We can also investigate and adopt the more elaborate processes of hygienic preservation employed in foreign countries specially if we can devise methods of cheapening the processes and bring them within our means.

There is an unlimited field for scientific technological work. The application of science to storage and transport can be of considerable assistance in coping with our food problem. This Institute will have a very important part to play in this respect.

Another field for investigation is the elimination of the harmful constituents of non-edible material and their conversion into healthy and attractive food. This also is a vast and very important field of investigation in the plan of supplementing our food resources. If the cow or the goat can build her own body and make and give beautiful milk out of the simple grass or leaves she eats, why should man with all the science available to him relegate grass and leaves to the realm of inedible things? We must be able one day to do through science what the stomach of the cow or the goat does.

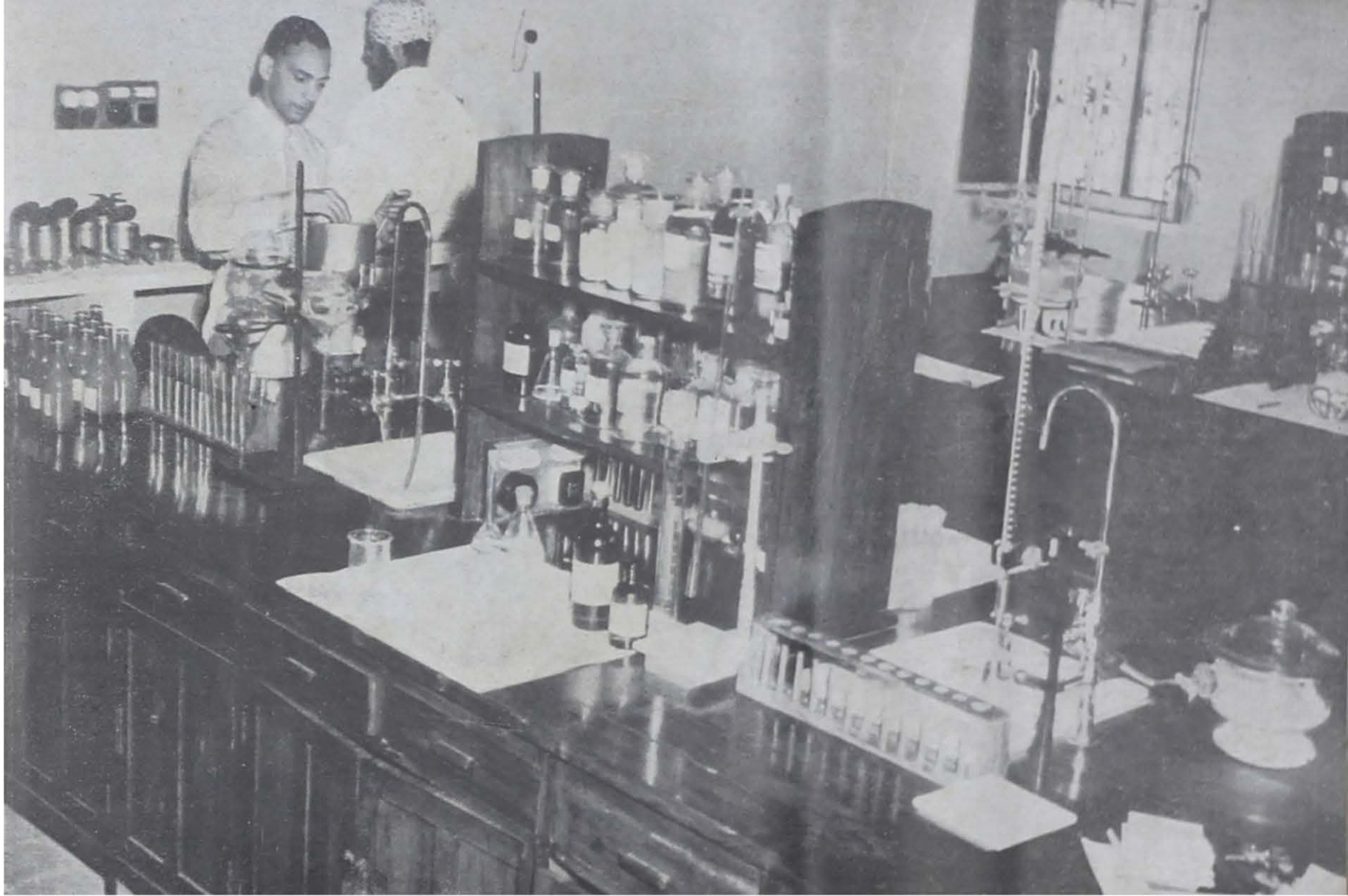
Closely linked up with this is the maintenance of nutritional standards by the use of staple subsidiary foods. Our vegetarian diet consists mostly of cereals and is deficient in the matter of proteins. We consume more starch than is necessary and do not take in an adequate quantity of nitrogenous food. Vegetarians abhor the very sight of meat and they have to be helped by science. It is practicable to discover ways and means of supplementing our staple vegetarian diet with subsidiary material so as to make good the nutritional deficiency. There are preparations of yeast and other vegetable material which can do this. There is again the problem of the manufacture of concentrated foods and accessories like vitamins on a large scale which would assist the maintenance of a proper nutritional

standard in India. This Institute will make research in evolving suitable methods for the fortification of foods and the production of supplementary foods and dietic accessories.

Another activity of this Institute will be food engineering in order to advise better ways of processing and utilizing the foodstuffs that we use, so as to take the best out of them for our aliment.

Besides all these that Dr. Bhatnagar has told me about this Institute there is a great field of research wherein the men employed in this Institute could collaborate with those working in the Agricultural Department of Government and those engaged in study and research in the institutions under that Department as well as the Nutrition Research Laboratories now working at Coonoor and other centres. For instance, I have often dreamed of a strain of the rice plant emancipated from its expensive water habit which could therefore be cultivated on a more extensive scale than now. If the noble dog, best friend and companion of man could be evolved out of the wild wolf, why cannot rice be domesticated into a less expensive plant which need not depend on gigantic reservoirs of water?

Again, I hope that this Institute may as a part of its legitimate field of scientific research, work out along with the Agricultural Department the economic conditions for jute-growing and seek by experiment in laboratory and field to find suitable conditions for growing jute which may free it of its dangerous competition for cultivation-space with rice. It is a pity that we have to cut down the culti-



Investigations on pectin and canned goods



Animal house.

vation of food crops to any extent in order to grow packing material.

All problems of food which require close and high level scientific research would fall within the proper ambit of this Institute. Success depends on chance, for scientific discovery is ultimately a game of chance, though based on thorough equipment and wholehearted application. It depends on the quality of the men we can get to gather together in patriotic national enterprise. That again, the men of science would say must depend on the encouragement the democracy in charge of the country will give to good men of science. If I may put it crudely, the utility and efficacy of knowledge depends on the amount of patronage Knowledge receives from ignorance! This is not so desperate a proposition as it may appear when put in this form. Ignorance is often wise though not learned. Ignorance that knows itself is wisdom. Such wise ignorance trusts and puts enterprise in the hands of those who know and are well equipped for an enterprise and then all is well. That indeed is the mechanism of successful democracy in all fields. You should deal with your 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. The secrets of nature hide themselves and it is hard work to find them. It is like finding a needle that is lost in a hay-stack. You cannot pay this labour by the piecework system. You have to be patient and kind when dealing with men of science. The work itself is hard and often depressing. We should not make it more depressing by ignorant handling of sensitive natures. They too should

not expect too great patience or understanding on the part of democracy which counts its rupees, annas and pice like an unlettered usurer. Let us not expect too much wisdom or kindness but work toughly for the land we love.

We should be grateful to Dr. Shanti Swarup Bhatnagar who has rightly earned a great name for speedy execution of work. He has been the chief instrument in the establishment of many research institutes in our land at a great pace. His powers of organisation are undoubtedly great and our Prime Minister who is also a greedy person in this respect is utilising Dr. Bhatnagar's special talent most successfully.

It has been observed by the Prime Minister in his message that one of the remarkable developments in India after the transfer of power from foreign to Indian responsibility has been the opening of national laboratories and research institutes. In order to correct any unfair interpretation that may be put on this by implication, I wish to make it clear that I am aware of most valuable work done by eminent men of science even before 1947 in our country. The conception of these great national laboratories and research institutes was not recent but dates back to a time earlier than 1947. Also there was eminent, important and successful research work done in India and recognised in the world of science with appreciation and encouragement. 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 sub-division 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 today.

I ask you all to join with me on this occasion to bless this enterprise. Your Highness, Your Government have placed a splendid palace at our disposal and Your Highness has thereby given your blessing. There is no gift greater than the gift of food. May this Institute serve the needs of the poor people of India.

Address by

The Hon'ble Shri M. Thirumala Rao

Deputy Minister for Food and Agriculture, Government of India

YOUR HIGHNESS, THE HON'BLE SRI RAJAJI, SRI K. C. REDDY,
LADIES, AND GENTLEMEN,

We have the pleasure and privilege of witnessing the inauguration of this great Institute under the distinguished auspices of H. H. the Maharaja of Mysore, the Hon'ble Sri Rajaji, and the Chief Minister of the Mysore State. It is in the fitness of things that a laboratory that is designed to

investigate the problems that affect the most primary and universal need of humanity, viz., food, and its various aspects should have received the generous benediction of the Ruler of a State, whose traditions of public service are well known in India.

Our beloved Prime Minister who presides over the Department of Scientific Research would have loved to be here. In his absence, a more appropriate choice than Shri Rajaji could not have been made to represent the Government of India and our Prime Minister. Again in the unavoidable absence of my chief Mr. K. M. Munshi, I am privileged to associate on behalf of the great Department of Food and Agriculture of the Government of India, myself with this happy occasion. While a popular Government is charged with the responsibility of seeing that the humblest of its citizens are not denied the elementary wants that satisfy hunger, it is equally imperative on a responsible government to utilise and to harmonise the experiments of science all the world over to see how best we can conserve our food resources and adopt them to fast changing circumstances in this world.

Today pure research pursued by the scientists has to be correlated and applied to the daily needs of the vast populations whose food problem is getting acute as time passes on. While governments utilise the latest discoveries of science in augmenting the agricultural resources and wealth of a country, it is also incumbent on them to see that proper preservation and storage of the foodgrains is effectively attended to. It is roughly estimated that nearly 3 million tons of food grains every year are destroyed by

pests or rats in India. The question of dealing with pests at the plant stage is being dealt with by the research section of the Agricultural science. The question of storage, fumigation and prevention from deterioration has to be tackled in the laboratories that are now being opened today.

Again the changing food habits of the vast populations have to be taken into account in organising the food research. As money in modern civilization, has acquired an artificial importance without a sense of proportion, people are induced to divert large areas of land under food crops into cash crops, in a manner ominous for the future economy of our country. The researches that you are having on here of making rice out of tapioca, of making milk out of groundnut, and of making ghee out of vanaspati, I presume, are the results of pressure on our natural resources whose capacity to production has dwindled. A harmony has to be established on the production of essential food crops on the one hand and on evolving artificial substitutes for them on the other.

Geographical disposition of a country with regard to its rain, rivers, and mountains, and the climatic conditions that obtain in the country largely influence the nature of agricultural production and the essential food habits of the population that inhabits the country. Viewed from this angle the varieties of food crops and the consequent food habits that obtain in the country demand a watchful attention. In the past it has been the aim of nutrition experts to evolve a uniform nutritious diet that would be within the easy reach of the average man and I hope that it will

be one of the concerns of this Institute. If you were to evolve a virile nation with a minimum homogeneity in standards of living in a large land of diverse climatic conditions and cultures, the nutritional, the hygienic and the artistic standards of our food have to be examined in these laboratories. I think it is the most important section of our research activities. It is said that the food habits in this country are not uniform. You may be surprised to know that there is no such a vast section in any other country in the world as in India that is religiously bound by strong ties to the cult of vegetarianism. It is an obvious fact that food has an inescapable effect on the physiology and anatomy of human body, and again the nature of food has its effect on the human mind. The mind is interwoven with the physical body. The condition of the physical body is reflected in the state of mind. The quality of food that we take, affects the humours in our body which again react on the mind. Therefore the varieties of food are also divided into three categories, the *thamasic*, the *rajasic*, and the *satvic*. Such of those who have to wield the sword and develop physical strength to utilise it for the defence of the country or for war, pursue the dietic habits that are *rajasic*. Those that want to develop the spiritual bent of mind and elevate it to higher status, naturally create a favourable atmosphere for such a growth of mind in the physical body by feeding it with only *satvic* foods. Our Ayurveda and our ancient culture have so interwoven the food habits of the nation with its physical and spiritual needs. From that point of view too, this laboratory has got unlimited fields of work, to probe and arrive on scientific basis for the conclusions reached by the sages long ago in this great land.

Ladies and Gentlemen, one need not emphasise the importance of food. As the Taitreya Upanishad says:

All life is born out of food;

All life is sustained by food;

And all life is again dissolved into food.

Food is the creation of the five elements and it is only the evolution of the five elements that is the Eternal Truth, and that would ultimately guide and influence the activities of this great Institute. That I am sure is the source of development not only in India but also in other countries of the world.

I cannot conclude without congratulating my friend Dr. Bhatnagar whose indefatigable energy has brought into existence so many laboratories in so short a period. I know his energy owes much to the food he takes. Thank you.

Address by

Sir S. V. Ramamurthy.

I welcome this opportunity to express my appreciation of the purposes for which this Institute has been founded, and the work it has already done. The disparity between food and population in this country has been growing for years, but it was the Bengal famine that has driven it home to us. During the war, emergent measures were taken to assure a universal ration, but with four years of draught,

the strain has been increasing in severity. The Prime Minister Pandit Nehru has not only recognised the need for organizing a Grow More Food campaign for improvement of production, but also started this Institute for Scientific Research to improve food processing.

Two years ago, I coined the phrase "synthetic cereals" as I felt that we needed a second line of production to cereals. The first attempt at making a synthetic cereal made up of 80% of tapioca and 20% groundnut cake powder was made by a business firm at Coimbatore, M/s. Stanes & Company. This material was tested for nutrition value by Dr. Subramanyam at this Institute. Dr. Subramanyam had already interested himself in making rice from maize. In England and Australia, rice had been made from wheat. In this country, we have neither maize nor wheat in surplus. I suggested to Dr. Subramanyam to switch over his efforts to tapioca and groundnut cake powder, as tapioca and groundnuts could be produced as much as we wished. Dr. Subramanyam accepted this suggestion, and applied his scientific acumen to the problem. Two results have been found by him and his staff, which I think are of vital value in food processing. They are as follows:—

80% of tapioca plus 20% of groundnut cake powder are twice as nutritious as rice; 75% rice plus 25% of tapioca are as nutritious as whole rice. Dr. Subramanyam has also improved the manufacture of tapioca sago by the addition of 1% of stearic acid by which the grains do not stick on cooking with rice.

It has been the accepted belief that the addition of tapioca debases rice. This Institute has shown that actually, 25% of tapioca added to rice maintains the nutritive quality of the latter, due to the presence of minerals or the interaction of vegetable proteins.

The practical value of this is immense. In this country, our production is sixty million tons of cereals per year, and our deficit is six million tons. This deficit can be made up either from 20 million acres of cereals or only 2 millions acres of synthetic cereals. The food problem can thus be reduced to a tenth of its size. The production of yeast and the raising of the value of vegetable protein to that of meat protein as is being worked out at the Weissman Institute of Palestine offer other fundamental lines of work at the Institute.

The recent addition of the fruit section to this Institute opens another vital line for progress. Mangoes and citrus as well as bananas, are produced in large quantities in this country, but become wasted. Food is wasted when it is available at the wrong time and the wrong place. Preservation makes fruit available at all times of the year and all places of consumption. It replaces waste by wealth in food.

This Institute has started on lines of Scientific Research which are a corollary to increased production. Science economises energy both in vision and in action. I congratulate Dr. Subramanyam and his staff on the work they have done, and offer my best wishes for the steady success of the Institute.

Speech by

Sir C. V. Raman
National Professor of Physics

YOUR HIGHNESS, RAJAGOPALACHARI, LADIES AND GENTLEMEN,

Allow me to say in the first instance, that I consider it a very great privilege to have been asked to be present on this occasion.

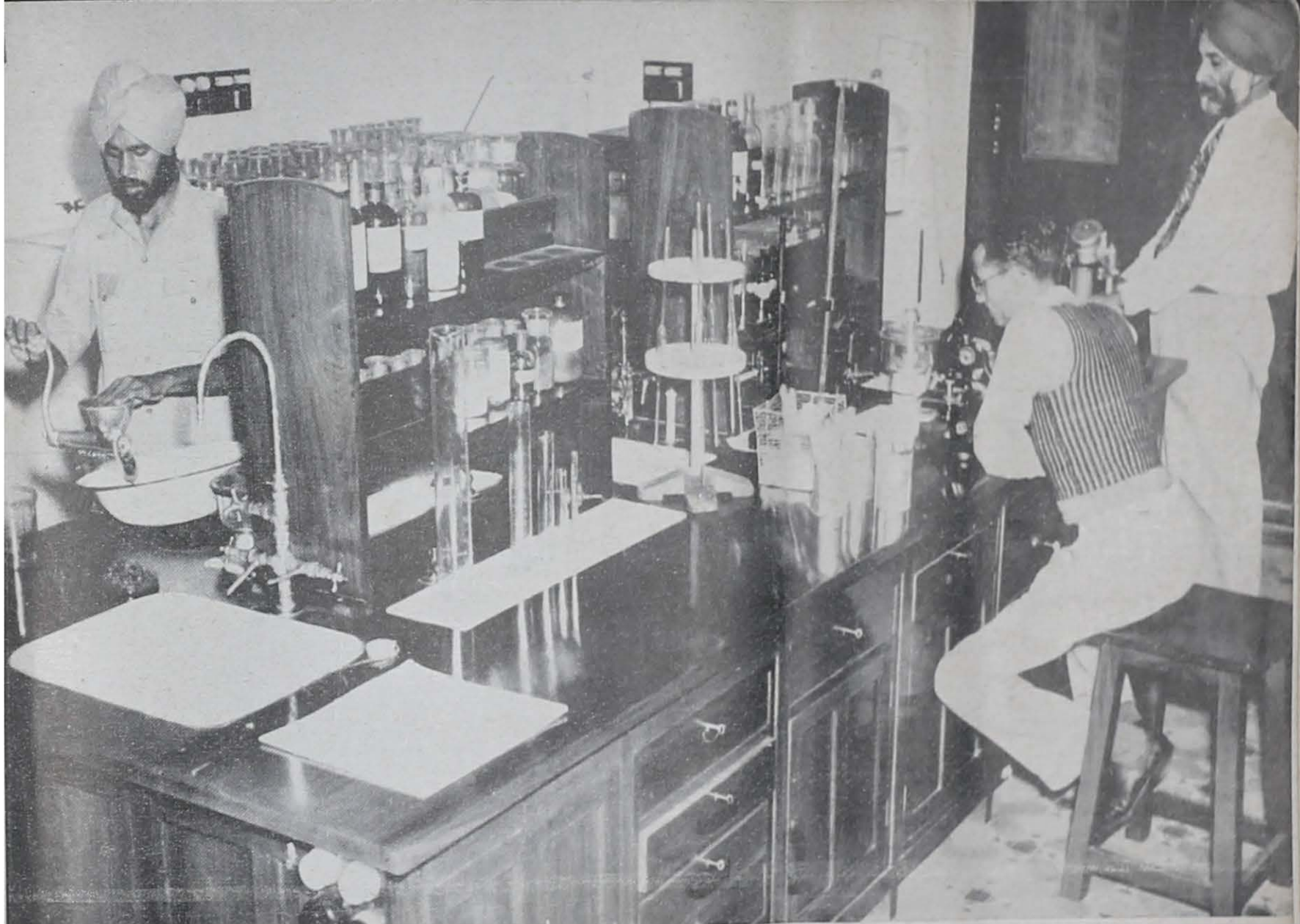
I have listened to Mr. S. V. Ramamurthy, who is an expert in food, and others, so as to benefit from them. I confess I am a vegetarian myself. I have heard vegetarianism referred to with slightly derisive terms. The necessity for a *rajasic* food for those who fight has been pointed out by Mr. Thirumala Rao; this does not appeal to me so as I am known to be a great fighter in spite of my being a vegetarian. I have had the privilege of hearing particularly the two speeches which stand out prominently and I should remember them for a long time. One is the brilliant address of Dr. Bhatnagar. I have heard him several times and every time I hear him speaking of a new institute, every time he excels himself and again, on this occasion, he has excelled himself most, by his remarkable speech not only as a man of science but also as a Persian poet who can effectively quote from Hindu scripture! There is one more remark which I should like to make with reference to the comments which Dr. Bhatnagar made about those who want to go back to a state of nature with regard to food. I sit here as a man of science. We, men of science, have

a very great respect for nature. We always study her. Not a life time of devotion to science, can diminish the respect with which men of science regard creations of nature, least of all, among others, the particular creation we are seeing before us, namely, the human beings. But, at the same time, I think we all have learnt by the pursuit of science that great and vast discoveries have been made and continue to be made. These are things which we have come to regard almost as a matter of course. Let me, for example, refer to the work of Pasteur, to the discovery of vitamins, to the discovery of penicillin. Year after year, we see in the fields of science men, who by devoting themselves to the pursuit of knowledge in the abstract, have made profoundly important discoveries. I think I should say this because though we are necessarily creatures of nature, I do not think it is rational to assume that we must all go back and behave as the progenitors of men who, I understand, lived in the trees a hundred million years ago. I think it is impossible for the human race to hold to the proposition that in every respect the human being, be it the way of living, clothing or food, that we must necessarily behave as zoological creatures. I think it is impossible for the humanity to go back on its ways of life and it is compelled to alter them to suit new conditions. We have a vast population in this country living on land, a very ancient land, in which agriculture has been the pursuit from a very ancient time. I think the scientist must, however, invent a bacillus which will in course of 24 hours remove half the population; alternatively, we must allow science to do something for feeding and nourishing the great population, and I think it is foolishness to imagine that we must stick to our primitive ways. I have, however, moved with

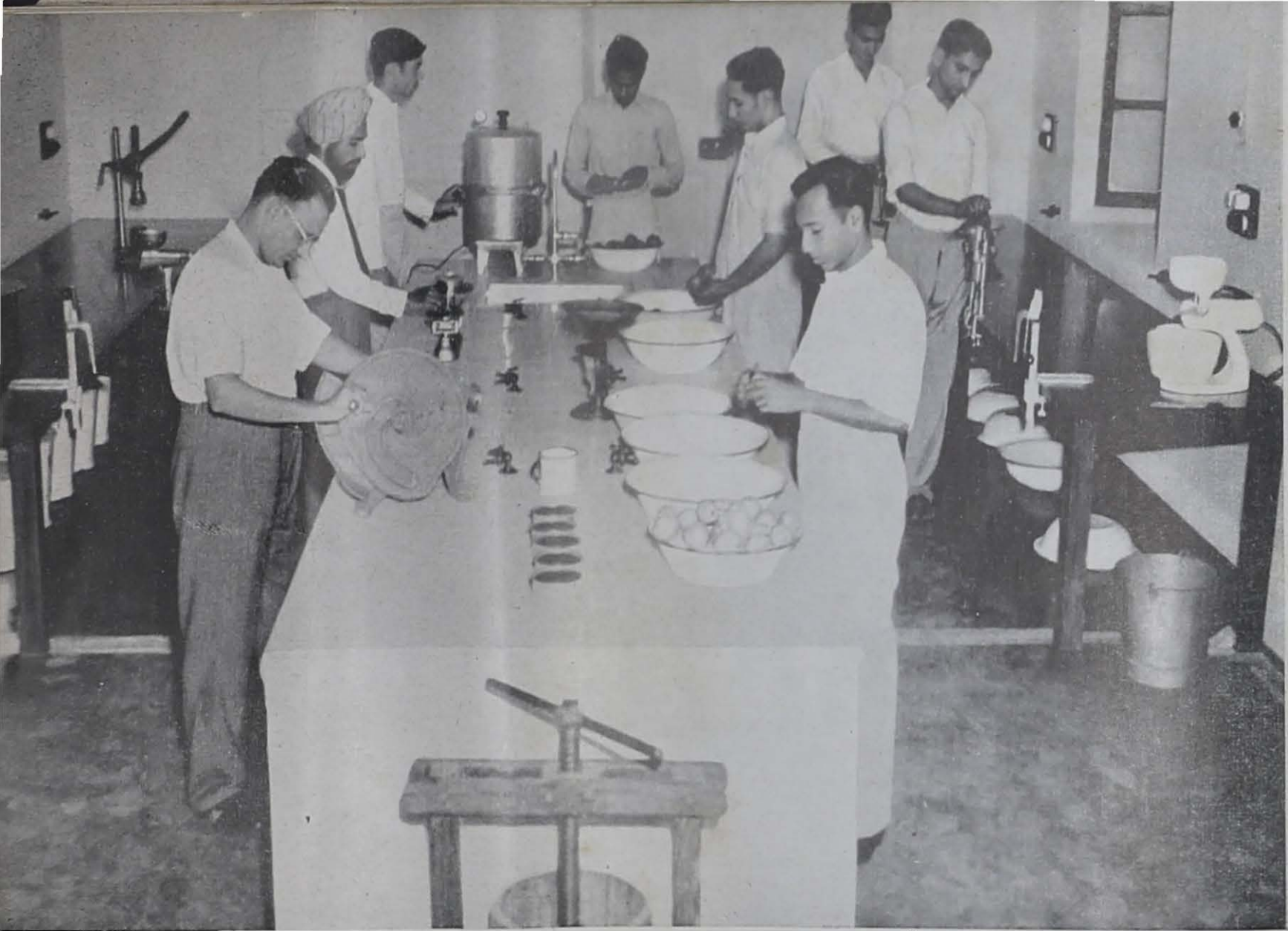
people when I went on tour recently in Coimbatore District. I do not want to say anything which would get me into trouble with the ministers of Madras Province, but I actually witnessed in some of the villages people cut the heart of slender trees which are used for fibre and boil it in tamarind for 24 hours to keep themselves from starvation. It is a kind of food technology which has to be acknowledged and accepted.

I think we must rejoice, speaking as a man of science, I rejoice, at the creation of these institutions which give men of science opportunities for demonstrating what, of course we knew before, that science can be of service to humanity. I am always an admirer of science and, as a man of science, I have pursued knowledge for its own sake. For a single moment, I cannot forget that science can only justify itself to the people at large by its capacity for real service in the chain of laboratories to which my friend Dr. Bhatnagar has kindly drawn attention. I join with every one of those who have spoken before me and express my admiration for his formidable drive and energy in creating institutions, by melting the hard heart of the Finance Department. Dr. Bhatnagar can never content himself, with getting the finest buildings, finest equipment; but he also gathers somehow the best scientists available in India and outside. Perhaps, he bribes, perhaps begs but he draws from all over the world, from all provinces of India, people to come and work in his laboratories.

Speaking as a man of science, I can only rejoice at this chance given to the men of science in India. I see an



Bacteriology and Sanitation Laboratory.



Training in processed fruits and vegetables.

Indian is to be the Director of this Institute. I rejoice at this opportunity given to the younger generation, to bring home to the people of India a message which they have close at heart, the message that science can serve more if they prefer it, and nothing if they reject it, knowing that they have otherwise to accept starvation and death, that the salvation of people of India depends not only in the field of food, in the field of health but also in every field of human activity. It is science and science alone that can lift the people of India from poverty, ill-health and degradation into which they have fallen.

Address by

Dr. B. L. Manjunath

Vice-Chancellor, Mysore University, Mysore

MAY IT PLEASE YOUR HIGHNESS, LADIES AND GENTLEMEN,

It is my pleasant duty to welcome on behalf of the University of Mysore, the Hon'ble Sri C. Rajagopalachari, one of the most distinguished of our alumni, for the opening ceremony of the Central Food Technological Research Institute. This new Institute greatly enhances the position of our State in the scientific map of India. Its location amidst us is due to the generous offer of the Cheluvamba Mansion in 1948 by our Chief Minister to the Prime Minister, who has an abiding interest in scientific and industrial research.

I take this opportunity to pay my personal tribute to Dr. S. S. Bhatnagar, our Scientific Netaji, for his untiring

energy and zeal in the cause of Science. These National Scientific Institutes in India will serve as ever living and growing monuments, even more enduring than the Pillars of Asoka, to his achievements in the development of Science in India. In this Institute he has been ably assisted by my friend, Dr. Subrahmanyam, who has succeeded in converting a Palace into an active centre of research in a very short term. India looks forward with great expectations to the results of investigations in this institute and to their practical applications.

The location of the institute in Mysore is a happy augury of future scientific and technological developments in our city. Food technology and food production go hand in hand. Just as the Fruit Research Station was transferred to Mysore, I trust that it will also be possible to locate in the vicinity of the institute our College of Agriculture and Agricultural Research Institute. Among other points of direct contact with the University, I may mention our Medical Faculty and the proposed College of Home Science. I also hope that the Nutrition Research Institute will also gravitate to Mysore soon. The inter-action of these scientific organisations in our city will greatly increase their usefulness and lead to a harmonious and co-ordinated effort all along the food front.

There is one aspect of Food Technology to which I may be permitted to invite the attention of the authorities of the institute and that is the simplification of the processes of Indian cookery, especially South Indian cookery. Any development in this field will lead directly to the release of enormous woman-power for nation-building activities.

Once again, on behalf of the University of Mysore, I offer my warmest good wishes for the rapid growth of this National Institute to enable it to serve the cause of the country and of Science.

JAI HIND.

Address by

Dr. V. Subrahmanyan

Assistant Director (Planning), the Central Food Technological Research Institute, Mysore

YOUR HIGHNESS, REVERED RAJAJI, LADIES AND GENTLEMEN,

I have the privilege of performing a pleasant duty on this important occasion. This Institute, which today makes its bow to the World, owes its origin to the vision and generosity of Your Highness's Government and I take this opportunity to convey our heart-felt thanks not only for this magnificent gift to the Nation, but also to the unfailing courtesy and help that we have received from all the Departments of Your Highness's Government. Your late revered aunt Princess Cheluvajammanni Avaru whose name will always be associated with this Institute was a great philanthropist and it is only fitting that her residence, which was built so solidly and maintained so beautifully, should be utilised for such a noble purpose.

It has been said that one of the major achievements of the late Sir K. Seshadri Iyer was the establishment of the

Indian Institute of Science in Bangalore. In a like manner, the history of this Institute will, for all time, be linked with the name of the Honourable Sri K. C. Reddy, our beloved and much respected Chief Minister, to whose keen interest, enthusiasm and vision, we owe the location of this Institute in Mysore. There are two others, both very patriotic, modest and unostentatious, who foresaw the possibilities of such an institution both to Mysore and to the country and have given us their most valuable support. I take this opportunity to express our gratitude to Mr. S. Channah and Dr. V. R. Naidu for their unfailing friendship, sympathy and support.

It may not be generally known that we had hardly fifteen months to convert this huge building, which had practically no fittings, into a modern scientific laboratory. For months together there were only two of us, Mr. Bhima Rao and myself, and till about April of this year, we had only two scientific assistants and two engineers for the whole Institute. It was quite a nightmare going through a vast programme, and many a night I have gone to bed wishing for the Alladin's lamp that will help to produce a laboratory at least in the course of a few months, if not overnight. We had to face countless numbers of difficulties which are not usually encountered elsewhere, even in India. Looking back on it, it now appears a miracle that we were able to do what we achieved. In this effort, we had the whole-hearted support of a large number of friends and all our staff, scientific and ministerial, many of whom had to work from an early hour of the morning till a late hour of the night, almost without any holiday, for several months together. As you go round Sirs, in a few minutes,

you will see what has been actually achieved by our team.

Whatever might be our interest and enthusiasm, there would not have been much headway, but for the warm encouragement and generous support which we received from Dr. Bhatnagar. He has been variously described as being a 'live-wire', 'dynamic', 'atomic' and so forth. I have known him for the best part of 25 years, and it is my humble opinion that the secret of his great success is due, only to a small extent, to these qualities. Those who have known him well will at once bear me out when I say that he is a most loveable personality and that he is as deeply interested in the welfare and success of his associates and assistants as in those of the Institutions which he has helped to found. It is this quality of mutual loyalty and confidence which he has built up in his staff, some of them working more than 1,500 miles from the centre, as happens in our case, that has helped to raise so many National Laboratories in almost record time that has been the envy of all people not only in this country, but also in other parts of the World, where conditions are naturally very much more favourable. While mentioning this phenomenon, which Sir C. V. Raman has aptly described as a Nehru-Bhatnagar Effect, I will be failing in my duty if I do not also record our warm appreciation of the most valuable help given by our Secretary, Mr. R. P. Bahadur, Mr. Gurdev Saran, our Deputy Secretary, and other members of the Office of the Council of Scientific and Industrial Research. Mr. Bahadur and his team have a full and proper appreciation of not only the requirements, but also the vagaries of scientific men and they are experts in handling the 'red tape' in such a way that one does not feel it!

We have, in this Institute, a band of Technologists, Engineers, Chemists and Microbiologists, many of whom have already made their mark in their respective fields and I am speaking for all of us when I say that we are all extremely keen on applying ourselves as a team to the problems that face us. We may not achieve miracles overnight, but we are nevertheless, confident that in the course of less than a year, this Institute will produce results of practical value to the country. We have already got some promising results, and I am hoping that all of you will be interested to see them when you go round our laboratories.

The Scientist is like an Artisan who requires his tools to do his work. He requires a well-fitted laboratory and various items of equipment with which he can carry out his trials. We can already boast of reasonably well-equipped laboratories, but we require a great deal more of equipment. These cost a lot of money and they also take a great deal of time to collect. With the generous support of the Council, and we trust, in course of time, with help from both the Industry and the public, we will soon have such equipment as will be needed for the proper study of our subject and application of our findings.

We are very highly thankful to our beloved Prime Minister for his very keen interest in our efforts and the most valuable support that he has already given us. We feel inspired by the Message that he has sent us on this occasion and we feel as a team that we should live up to his expectations. We are grateful to you, Rajaji, for your inspiring address and kind and sagacious advice. We will all bear them in mind and we wish to solemnly assure you

that we will endeavour to be worthy of the big start that you have given us today. We are also very highly thankful to the Honourable Shri Thirumala Rao, Shri S. V. Ramamurthy, Dr. H. J. Bhabha and Dr. B. L. Manjunath for their kind greetings, words of advice and encouragement and good wishes. We are also very thankful to our several distinguished visitors, many of whom have come from long distances, to participate in our function. We are grateful to the citizens of Mysore who have taken very keen interest in the progress of this Institute and who have given us every possible support. We wish to assure them, through our friends who are in our midst today, that we are extremely happy in our association, and it is not, perhaps, too much to hope that Mysore will also be happy with us

and proud of being the home of this important National Institution. I thank you all very very much for having helped to make this function a success.

Before we disperse, I would make one important request. We are first arranging for the principal guests to go round and see the laboratories. I will, therefore, first ask the staff of the Institute to proceed quickly to their places. While the principal guests are going round, we would request all other guests to be kindly seated in their places. We have arranged to provide musical entertainment which we trust you will appreciate.

Thank you very much.



The Central Food Technological Research Institute, Mysore

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Dr. V. Subrahmanyam

ASSISTANT DIRECTOR

Dr. Girdhari Lal

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Shri Y. K. Raghunath Rao

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