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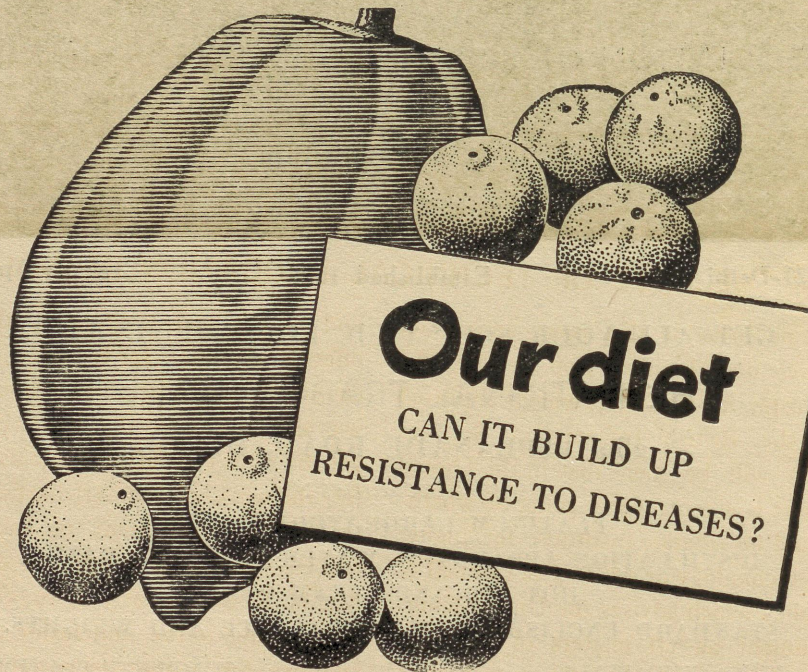
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THE FATE OF TECHNICAL EDUCATION IN INDIA

We have published in this issue an extract from an article on "Training Top-Level Scientists for Industry in Britain", which appeared in one of the British Information Services Bulletins. It will be seen that in the United Kingdom there is a controversy going on whether there should be separate institutes for higher training in technology or not. The Council of Scientific Policy which advises the United Kingdom Government on all matters of technical education has expressed a view that it was time Britain began to employ in the highest industrial posts a large proportion of scientifically and technically qualified administrators as is done in other industrial countries and the establishment of scientific technical colleges. The demand for scientists in Britain has been rapidly increasing and it is necessary to meet the demand.

We, in this country, have given attention to the problem of technical education for training technologists since 1921 when a Committee was appointed by the Government of Bombay with Sir M. Visvesvaraya as Chairman to consider the extension of technological education of all grades in the Bombay Presidency. It was only in 1932 that the University of Bombay fulfilled the recommendations of the Visvesvaraya Committee by instituting post-graduate courses in textile chemistry and chemical engineering. A brief summary of the activities of the Department of Chemical Technology of the University of Bombay is given elsewhere in this issue.

The need for technologists and their virtual absence in India was greatly felt during the war

and as the war progressed, the necessity of offering facilities for technical education in this country began to be given serious attention. It was also considered that it would be difficult to get the right type of technologists from abroad for the work of industrialization in this country. The Government of India appointed a special Committee under the chairmanship of Mr. N. R. Sarkar early in 1945 and the Committee came to the conclusion that the existing facilities for higher technical education in this country were inadequate, both in quantity and quality, to satisfy India's post-war needs for high grade technologists. The Committee recommended the establishment of not less than four Higher Technical Institutes, on the lines of the Massachusetts Institute of Technology, to satisfy the post-war requirements. Each institute of this kind is to train every year 2000 undergraduates and 1000 post-graduates. It is reported that the establishment of one of the institutes in the Eastern Region has already been taken in hand while exploratory work about another institute in the Western Region is in progress. The establishment of the remaining two institutes has been shelved for the present on account of economic reasons.

It is reported that the Scientific Man-Power Committee appointed by the Government of India have stressed the necessity of increasing the scientific man-power in different branches of science. The requirement of scientific workers runs into a few thousands per year.

It was realised that the establishment of the

Institutes of Technology would take some time before they would be in a position to function. It was, therefore, considered necessary to send scholars abroad for higher technical training to serve as a nucleus. The Ministry of Education sent a few hundred scholars to different parts of the world for such training and it is a pitiable condition that the Government has not been able to absorb this handful number and make proper use of their training obtained at considerable cost. In many cases the Overseas Scholars are out of employment. Great expectations were there about the industrialisation of the country on a planned basis and it was believed that there was good future for the scientific worker. Not only that the few

hundreds of Overseas Scholars could be properly employed but it has been reported that on account of the retrenchment policy, the Government of India has under consideration the abolition of a number of existing technical posts connected with the development of industries. It is reported that the Planning Commission is of the view that the development of industries should be left to the private enterprise. We know the fate of a technologist in the present state of many of the private industries in this country. What is, therefore, going to be the fate of those young scientific workers who will be taken to specialised technical education in their enthusiasm for being co-sharers in the material advancement of this country?

Training Top-Level Scientists for Industry in Britain

What is the best way to train scientists for industry? Should they be educated in special departments of established universities, at special technical universities, or in colleges with a lower status?

Some countries in Europe, as well as the United States, have answered this question by setting up institutes of higher technology to supplement technological education at the universities—the “Technische Hochschule” in Germany, for example, or the Massachusetts Institute of Technology in Boston, the United States. In Britain, the job of supplying industry with top level experts in applied science has hitherto been left to the appropriate departments of the universities, while technical colleges throughout the country have supplied general and specialised technical education at a lower level.

Since World War II, however the demand for scientists in Britain has been rapidly increasing—the continuous expansion of research departments in industry, the widening field of

Government Research and the consequent need for more science teachers, are some of the reasons. In 1946 the number of qualified scientists in the United Kingdom was estimated at 55,000, and it was expected that the demand would rise to 90,000 by 1955. As a result of expansion in the relevant departments of the universities this rising demand has been met, although there may for a time be a shortage of chemists and chemical engineers, and a surplus of biologists and agricultural scientists. There is still, however, a serious shortage of science teachers in the schools.

Now, however a new problem has to be faced—and it is here that Britain has been studying the experience of other countries. In the view of the Advisory Council on Scientific Policy, which has just issued its third Annual Report, it is time Britain began to employ in the highest industrial posts a larger proportion of scientifically and technically qualified administrators, as is done in other industrial countries. And for this there must be many

more facilities for higher education in applied science, upto university standard, than there are now. Is Britain to follow European and United States practice?

It is not surprising that the Council's proposal for what amounts to separate "universities" of applied science should have stirred up a strong controversy. It touched a tender spot in national susceptibilities; pride in the world-famous university system, which has been fighting a valiant rear-guard action against vocational education behind a screen of mortar-boards and gowns for over 50 years.

The debate continues, not without bias. But, at any rate, the Council on Scientific Policy, which advises the United Kingdom Government on all matters of this kind, seems to have decided that both things are needed—general universities and scientific technical colleges—as in so many other countries. And that is a compromise which will satisfy all and none, permit the controversy to continue indefinitely while action is taken and the situation put right, and is at least as British as the "tutorial" system of the older universities.

(Extracted from British Information Services)

OUR INSTITUTES

** Department of Chemical Technology, University of Bombay*

History :

The history of the Department represents the progress of advanced technological education in the Province of Bombay. In 1921 a Committee appointed by the Government, with Sir M. Visvesvaraya as Chairman, to consider the extension of technological education of all grades in the Bombay Presidency recommended that a Faculty of Technology be instituted in the University of Bombay and that a college of Technology be established in the city of Bombay. While these recommendations were endorsed by the Committee on University Reform in 1925, it was not until 1930 that further steps were taken. A Committee was appointed, again, with Sir M. Visvesvaraya as Chairman, and the report of this Committee recommended that in organising the Department special attention should be directed to Textile Chemistry, since the cotton industry was the staple industry of the Presidency. Steps were taken in 1932 for instituting two postgraduate courses in Textile Chemistry and Chemical Engineering leading

to the Degree of B.Sc. (Tech.), the minimum qualification for admission being a second class B.Sc. degree in Chemistry. On August 4, 1934, the Department was opened for the admission of students. The first Head of the Department was Dr. R. B. Forster of Leeds University, who held the post from October 1933 to October 1938, when he was succeeded by Dr. K. Venkataraman, the present Director. In June 1943 the Department was transferred from the East Wing of the Royal Institute of Science to spacious buildings of its own at Matunga, designed and equipped in accordance with modern requirements for advanced study and research in Chemical Technology.

Courses of Study :

With the aid of endowments and grants from the Government of Bombay and the Council of Scientific and Industrial Research, additional courses leading to the degree of B.Sc.

*Through the courtesy of the Director, Department of Chemical Technology, University of Bombay, Matunga, Bombay, 19.

(Tech.) were instituted in 1943 in the following subjects : (1) Pharmaceuticals and Fine Chemicals, (2) Chemistry of Foods and Drugs and (3) Technology of Intermediates and Dyes. In 1945, two more courses were organised in (1) Plastics, Paints and Varnishes and (2) Oils, Fats and Soaps. In 1949, the section of Plastics, Paints and Varnishes was bifurcated ; separate courses were instituted in "Technology of Plastics" and "Technology of Pigments, Paints and Varnishes".

Post-graduate Studies :

Besides teaching for the degree of B.Sc. (Tech.), the Department affords facilities for research leading to the degrees of M.Sc. (Tech.) and Ph.D. in the Faculty of Technology as well as the degrees of M.Sc. and Ph.D. in Chemistry in the Faculty of Science while the primary function of the Department is to impart advanced training and provide facilities for research in chemical technology to graduates in chemistry in order to equip them to occupy responsible position in industry, it also acts as a central research analytical laboratory for the benefit of the textile and chemical industries and it cooperates with mills and factories in carrying out industrial research on their behalf and investigating any technical problems that may arise in the course of their work. Routine chemical analyses of every kind are also undertaken on behalf of industry in general.

Publications :

The Annual Report, which the Department has been issuing separately since 1939-40, presents an account of the Department's work in its three phases of teaching, research and continual maintenance of contact with industry. Research of a more fundamental character has also been pursued and a series of papers of interest to science and industry have appeared in Indian and European journals. The total number of publications of the Department is over 240. Copies of the publications are made available to subscribers for an annual payment of Rs. 10/-.

The Necessity for Training :

That there was a great necessity for facilities for Chemical Technology could be seen from the number of students so far trained in different subjects.

Total number of B.Sc. (Tech.) graduates up to April 1950.

Textile Chemistry	...	182
Chemical Engineering	...	163
Pharmaceuticals and Fine Chemicals	...	58
Foods and Drugs	...	34
Technology of Intermediates and Dyes	...	60
Plastics, Paints and Varnishes	...	19
Oils, Fats and Soaps	...	26
		542

Research degrees awarded :

Ph.D. Technology	...	20
Ph.D. Chemistry	...	16
M.Sc. (Tech.)	...	46
M.Sc. Chemistry	...	14
		96

Graduates of the Department are occupying responsible positions in industry, teaching and research institutions, and Government laboratories. Many have had further training in Universities and factories in England, the United States and other countries.

Industrial Research :

Investigations subsidised by the following industrialists, industrial organisations and Government Departments, among others, have been completed or are in progress :—

The Indian Council of Agricultural Research; Council of Scientific and Industrial Research; Indian Central Cotton Committee; Provincial Industrial Research Committee; Indian Jute Mills Association Research Institute; Imperial Chemical Industries; Indian Council of Medical Research; Department of Public Health

(Malaria); Shalimar Tar Products; Khatau Makanji Mills; Pioneer Magnesia Works Ltd.

Library :

The library is housed in a spacious hall and provides reading accommodation for sixty persons. The stock of over 7000 volumes in English and German covers all branches of chemical technology. Current literature is represented by about 150 periodicals.

Scholarships and Fellowships :

(1) A scholarship of the value of Rs. 30/- per month is awarded annually to an entrant to each of the B.Sc. (Tech.) courses, tenable for one year. (2) Scholarships of the value of Rs. 30/- per month, tenable for one year, are awarded annually to the students who have obtained the highest number of marks in the respective courses at the first year Departmental examinations. (3) Twelve Singhaneer Research Fellowships are awarded every year for research work in chemical Technology, two being reserved for research in pure chemistry. Each Fellowship is of the value of Rs. 64/- per month. (4) The Amelia, wife of Dr. A. G. Viegas, Scholarship of the value of Rs. 166/- per annum is awarded to the highest at the B.Sc. (Tech.) examination in Chemical Engineering, tenable for one year. (5) The Byramji Ratanji Lentin Scholarship of the value of Rs. 388/- per annum is awarded to the highest at the B.Sc. (Tech.) examination in Textile Chemistry, awarded annually tenable for one year. (6) The Seth Rao Bahadur Poonamchand Karanchand Kotawala Gold Medal of the approximate value of Rs. 340/- awarded annually to the highest at B.Sc. (Tech.) examination in Plastics, Paints and Varnishes. (7) The Chaturbhuj Jivandas Research Fellowship of the value of Rs. 1500/- per annum to a deserving candidate who passes the M.Sc. (Tech.) examination and continues to work in the Department. (8) The Sir Ness Wadia Fellowship of the value of Rs. 100/- per month awarded to a student working for the degree of M.Sc. Tech. or Ph.D. (9) Six Research fellowships each of the value of Rs. 100/- p.m.

for research in Dyestuff Technology, offered by the C.S.I.R. (10) One senior fellowship of the value of Rs. 200/- p.m. for research in Dyestuff Technology and five Junior fellowships each of the value of Rs. 100/- p.m. for research in Chemical Engineering, food Technology, Pharmaceuticals and Drugs and Plastics, Paints and Varnishes are offered by the Ministry of Education, Government of India.

Several other Fellowships for work on specified industrial problems subsidised by Government and industry are usually available every year.

Endowments :

The University has obtained the following endowments, in addition to the scholarships mentioned above. Tulsidas Surji Endowment (Rs. 1,47,200).—For the equipment of the "Tulsidas Surji Dyehouse". Ranchhodas Tribhuvandas Mody Technology Endowment (Rs. 2,80,000).—For maintaining the Mody Chair of Chemical Technology. P. G. Singhaneer Endowment Rs. (12,83,300).—Two-thirds of the income is to be appropriated towards the payment of the salaries of the undermentioned posts, to be named after the late Mr. P. G. Singhaneer as Singhaneer Reader, Singhaneer Lecturers and Singhaneer Demonstrators: Reader in Chemical Engineering; Lecturers in Chemical Engineering, Fuel Technology, Industrial Optics, General Engineering, Pharmacy; Demonstrators in Chemical Engineering and Chemical Technology. The balance is to be used for the maintenance of 12 fellowships of Rs. 75 each (now Rs. 64)—ten for research in chemical technology and two for research in pure chemistry. Palamkote Endowment (Rs. 40,000).—For the establishment of a laboratory for Pharmaceuticals and Fine chemicals to be named after Bai Avabai Limjibai Palamkote, the mother of the donor, Miss Baimai L. Palamkote. Sir Dorabji Tata Trust Endowment (Rs. 2,00,000).—For maintaining a Readership in Pharmaceuticals Chemistry to be named after the late Sir Dorabji Tata. Rao Bahadur Poonamchand Kotwala

Trust (Rs. 1,00,000).—Rs. 85,000 to be utilised for equipping the section of Plastics Paints and Varnishes named after the donor: Rs. 5,000 for a bust of the donor to be installed in the Department; and Rs. 10,000 for a gold medal to be awarded every year to the student who stands highest in the B.Sc. (Tech.) Examination in Technology of Plastics and Technology of Pigments, Paints and Varnishes. Sir Homi Mehta Endowment (Rs. 7,00,000).—For equipping the sections of "Food Technology" and "Oils, Fats and Waxes" and for the maintenance of Readers in Plastics, Paints and Varnishes and in Oils, Fats and Waxes and a Demonstrator in Plastics, Paints and Varnishes. The posts and the laboratories have been named after Sir Homi Mehta. Topiwalla Endowment Rs. (1,25,000).—For the equipment of a Pharmacy laboratory in memory of the donor, Mr. Motiram Narayanrao Desai Topiwalla. Bombay Millowners' Association Endowment (Rs. 4,02,152-10-1).—The Endowment made "in recognition of valuable work carried out by the University in its Department of Chemical Technology," is to be utilised for the construction of a pilot plant house for the section of Dyestuff Technology and equipping it with a complete range of modern plant for the study of the processes employed in the conversion of coal tar raw materials to dyes; the construction and equipment of a laboratory devoted to advanced research in textile chemistry; the purchase of special equipment for the study of modern methods of finishing textiles; the institution and maintenance of a research assistantship in textile chemistry. Hindustan Vanaspati Manufacturing Co. Endowment (Rs. 30,000).—For the purchase of a solvent extraction unit for the Oils, Fats and Waxes Section. Sir Bomanji J. Wadia Endowment (Rs. 1,00,000).—For construction and equipping the "Sir Bomanji Wadia Food Processing Laboratory." Indian Salt Association Endowment (Rs. 12,075).—The endowment made by the Indian Salt Association, the Salt

Marketing Board and the Indian and Aden Salt Marketing Association, to commemorate the name of Mr. Kapliram H. Vakil, for awarding a prize for research in salt, allied chemicals or chemical engineering.

Grants :

The Government of Bombay give an annual grant-in-aid of Rs. 34,000. The Council of Scientific and Industrial Research has sanctioned a grant varying from Rs. 49,000 to Rs. 54,600 per annum for maintaining the section of "Technology of Intermediates and Dyes" including a Chair in Dyestuff Technology, a Readership in Colour Chemistry and six Research Fellowships. One of the conditions of the grant is that fifty per cent. of the students admitted for this course should be graduates of Universities in India other than Universities in the Province of Bombay.

Staff :

Mody Professor of Chemical Technology and Director

K. Venkataraman, M.A. (Madras) M.Sc. Tech., Ph.D., D.Sc. (Manc.) F.R.I.C., F.N.I.

Professor of Dyestuff Technology

R. D. Desai, B.A. M.Sc. (Bom.) D.Sc. (Lond.), F.R.I.C., F.N.I.

Singhane Reader in Chemical Engineering

G. P. Kane, M.Sc. (Bom.), Ph.D. (Lond.) D.I.C.

Reader in Dyeing and Printing

G. M. Nabar, B.A., M.Sc. (Bom.), M.Sc. Tech., Ph.D. (Manc.)

Sir Homi Mehta Reader in Oils, Fats and Soaps

J. G. Kane, M.Sc. (Bom.), Ph.D. (Wisconsin), A.I.I.Sc.

Sir Dorabaji Reader in Pharmaceutical Chemistry

M. L. Khorana, B.S. (Pharm.), M.S. (Mich)

Sir Homi Mehta Reader in Plastics and Paints and Varnishes

N. R. Kamath, B.Sc., B.Sc. (Tech.)

Reader in Colour Chemistry

B. D. Tilak, B.Sc. (Tech.) Ph.D. (Bom.), D.Phil. (Oxon.)

Lecturer in Foods and Drugs

A. Sreenivasan, M.A., D.Sc. (Madras).
F.R.I.C.

Singhaneer Lecturer in Fuel Technology

G. S. Tendolkar, B.Sc. (Tech.), Ph.D.
(Sheffield)

Singhaneer Lecturer in Chemical Engineering

A. M. Desai, B.Sc. B.Sc. (Tech.), M.S.E.
(Michigan). Ph.D, (Case I: st.)

Singhaneer Lecturer in General Engineering

M. V. Joshi, B.E. (Mech. & Elec.). B.Sc.
Tech. (Manc)

Singhaneer Lecturer in Industrial Optics

(Vacant)

Singhaneer Lecturer in Pharmacy

(Vacant)

Lecturer in Experimental Dyeing.

(Vacant)

LETTER TO THE EDITORS

India inherited an unbalanced economy and a growing population. The equilibrium between imports and exports, raw materials and industries and food production and population was seriously disturbed by the partition. This was added to the dislocation already caused by a global war culminating in Atom Bomb. It was a confused tormented house crying for order and relief. Our freedom followed a heroic moral upsurge and an avalanche of sacrifices. It required consolidation. Harder work and greater sacrifices were demanded. But then the chaos descended upon us and gave our moral fibre a terrific punch. Though we did not lose our foothold we staggered under it. We kept to our senses admirably well and applied the primary scientific method of trial and error to various problems challenging us. We discovered that the solution of difficulties lay in increasing the production, production of raw materials, production of finished goods and above all the production of food, the sustainer of life. Once the problem was defined we became enthusiastic over it. We planned and replanned, and imagined that our wish and enthusiasm would see us through. We also imagined that the rest of the world would rush to our help and do wonderful things for us. We were hopeful; that is no fault of ours. It is human nature minus experience. Truth is

now dawning on us. The golden dreams are fast receding. Hard facts are emerging. Slowly but surely a healthy attitude is developing and we are realizing that the country has to stand on its own legs if it has to stand at all. *And stand it must.* Mere enthusiasm and goodwill are not sufficient. They have to be backed with scientific knowledge and skill, the know-how. And it is here that the Vijnan-Karmee (Scientific Worker) makes his appearance, here at the threshold of the India of the future, a great India brimming with health and happiness. He is to be the central figure in this hopefully projected comedy. He is to be the architect of our destiny. Every citizen is responsible for the building of the nation but the greatest portion of the responsibility devolves on the Scientific Worker. Being the best equipped for struggle in an age of growing specialisation he has to shoulder the burden. The burden is a strange one. He has to give it shape before shouldering it. He must allot himself the task and then set out to accomplish the same. The responsibility happens to be greater than we imagined. What about our capacities and capabilities? We know that the horse power required for a locomotive depends upon the load. It is the task that defines the man. Difficulties elevate him. The grimmer the struggle the nobler he grows. It is the struggle that helps the man

to discover and unfold himself. Perhaps we are fortunate. We have witnessed the awakening of a great nation and are contributing our mite towards its reconstruction. But are we contributing what is the best and greatest in us? Have we been able to realise our highest? Are we equipped to grapple with the problems which are destined to fall to our lot? We talk of training and the opportunities for getting trained. We feel like a caged bird without a cage. We have lost confidence in ourselves. Let us try to answer a very pertinent question. Where did the pioneers get their training? How far can we afford to wait? Our problems are peculiar to ourselves. The fruitful training can only come by tackling them. Let us have apparatus and let us have ideas. We would be looking abroad in vain for the solution of our

problems. Let us once for all realise that what one man has done, others can do equally well and shake off the inferiority complex, if any. Let us develop our professional personality to the fullest magnitude and along with it the all important integrity and apply ourselves, wherever we are, to the accomplishment of the task before us. There is no dearth of work. One has only to create it. We have to create more and more work for ourselves; and this is the contribution that future demands of us. Work, work and more work, so that work turns into sacrifice; it turns into worship.

Humble though we scientific workers are, we represent the spear head of progress. That is a privilege. Are we qualified to hold that privilege? I very humbly invite my fellow workers to answer this question for themselves.

Group Dynamics and Workings of Committees

Many are familiar with the workings of an average committee, with its sporadic meetings and erratic attendance; its half-formed ideas and incomplete discussions; the intrusion of personalities and personal considerations; and finally, the habit of turning over all the undigested material to secretary or counsel, who prepares for the chairman's signature a report which seems primarily designed to avoid offending any of the members of the committee.

A new and exciting vista of social research has been opened during the last ten years by the development of the science of Group Dynamics. Among the pioneers in this new field of study are psychologists working at the Research Centre for Group Dynamics at the University of Michigan and the Division of Adult Education Services of the NEA (National Education Association). This science is very young and its literature is still confined to the learned quarterly magazine. Articles on Group Dyna-

mics appear from time to time in :

Human Relations. Research Centre for Group Dynamics. Cambridge, Mass. \$ 7.50

Journal of Social Issues. 347 Madison Ave, N.Y. \$ 2.50.

Sociatry—Journal of Group and Intergroup Therapy. Beacon, N.Y.—\$ 6.00

A bulletin series on group dynamics is being published by the NEA Department of Adult Education, 1201 Sixteenth Street, Washington 6, D.C.

Group dynamics is interested in the deeper questions of group life, growth, behaviour and action.

Group dynamics research has already discovered that :

1. A collection of able people does not necessarily make an able committee.

A collection of mature adults may form a very immature group. Once a group is assembled it assumes a character and existence all its

own. It may grow into maturity or may remain infantile. It may become productive or stay impotent. It may develop weaknesses. It may never build the necessary group strength to withstand the sudden shock of too much conflict or of an avalanche of new members. (The pathology of groups is one of the newer fields of study). Finally, a group may die before its time; or it may grow senile and useless, and yet continue to exist and thus block the formation of a necessary new group.

2. Research into group growth shows that we no longer need to leave to chance the group processes. Groups may be helped to grow fairly rapidly to maturity. We don't have to wait for them to grow like Topsy. Something can be done to make groups more productive, to help them channel desirable conflict toward greater production, rather than be disrupted by internal conflicts.

3. In the past when a group failed to function properly, the blame was usually placed only on the leader. "If we only had a strong leader things would get done", is still a common plaint. New research into group life shows that no group becomes really productive until all members are willing to assume mature responsibility for the way the group acts. The group must have a skilled and strong leader, but in order to get genuine group thinking group decision and group action, the leader must carry on an entirely new and different role.

The old-fashioned type of chairman or leader can be described in any of these ways:

The policeman. He looks at his function as one of keeping order. He expects discipline. He bats down those who speak too often and encourages the more timid. He parcels out assignments and expects to get action on the assignments promptly and on schedule. He is conscious of his own position and authority and answers questions with finality. He is the group boss.

The "we-must-get-results" man. This type of leader is afraid that the group will not be

able to act swiftly enough or act at all. He has little faith in the group's ability to think. He comes to meetings with carefully prepared agenda. He works out in advance not only the questions but some of the answers. He believes that every meeting has to come out with an answer even if it isn't a good one. If he fails to get quick results, he decides that the whole matter should be referred to a sub-committee—one favorite way of kidding ourselves that we have made progress. He frequently forces the committee to rubber-stamp his plans and thinking. He forces the group to accept a product that is his own and not the group's.

The good fellow. This leader believes that since two heads are better than one, 10 heads must be even better. He believes that by letting the group talk and carry on under its own momentum that somehow the task which the group had set for itself will be done and that he has acted democratically. He is a *laissez faire* leader. Actually, the *laissez faire* philosophy frequently covers up a leader who has no confidence in his ability to supervise, inspire or direct the group.

How to Organize a committee for production

Here are some helpful suggestions for group productivity which have grown out of research in group dynamics. These are addressed both to the leader of the group as well as to the members:

1. Help the group decide clearly what its purposes are and what its limitations are. Other quick decisions can be made by the group such as schedule of meeting, place of meeting, and deadline for reports. It is important in the beginning of any group's life, that it has the experience of making-successful decisions.

2. Take a pretty thorough census of the problems as the group members see them. This is usually the only way in which the group will feel that it is dealing with problems that its own members see as important. Don't be worried if this original census doesn't bring out those problems which you as a leader might wish to

see discussed. Be willing to let members get gripes and frustrations off their chests. But, as the group goes along, press continuously for statements of the real problem.

A problem census can only take place when there is an atmosphere of freedom and permissiveness in the group. This means an atmosphere in which no group member will feel that he is being judged by the leader or by other members because he has certain problems. It means an atmosphere in which no one is afraid to stick out his neck.

3. Get a group consensus as to which of the many problems listed is the one most crucial to most members. Many leaders make the mistake of jumping at the first problem suggested. This may be a problem of only one or two people or of the bolder ones. The other members who do not feel this as their problem are psychologically lost from the group.

4. Help the group to get conscious of its own process. Help the group to realize that it can raise its own group production to almost undreamed of levels, if, as, and when group members learn to take more group responsibility.

5. Develop an attitude of group objectivity. This means many things. It means that all ideas introduced become group ideas - that no one member clings to an idea as his own, but quickly throws it out to the group for consideration. It means that ideas only, not personalities, are judged by the group.

ties, are judged by the group. It means that the conference room is not an arena in which each person jousts with the other to see who turns out to be the best knight in armor. It means that the leader helps group members to say to other members, "Let's test that idea out, rather than, 'You're crazy?'"

6. Help the group become conscious of the talent, skills and other resources that lie within its membership. Frequently, groups have in their quiet members potential resources which are never discovered because a few members are too busy fighting among themselves.

7. Help the group to develop ways of testing its own thinking - of learning to think straight. In some situations the group can actually try out decisions made on its own members. In other situations it can, at least intellectually, explore the consequences of these decisions if carried into action. The group can learn that it is necessary to share beliefs with other group members, that it is not sufficient to say, "This is what I believe and I am not going to talk about it".

These are only some of the points leading toward improved group productivity that are gradually becoming clearer as research continues into group dynamics.

(From Educational Trend Supplement to Educator's Washington Dispatch, Washington, D.C.)

Dismissal of Prof. Joliot-Curie and the Appeal of the World Peace Congress

The Central Executive Committee of the Association of Scientific Workers of India met at Delhi on 23-9-50. Besides going through the routine official business the Committee considered the question of the dismissal of Prof. Joliot-Curie from his post as Atomic High Commissioner for France and passed the follow-

ing resolution :
 If The Association protests against the dismissal of Prof. Joliot-Curie, (President, World Federation of Scientific Workers) as High Commissioner of Atomic Energy by the French Government. Prof. Joliot-Curie has demanded a ban on atomic warfare and has made cease-

less efforts in the cause of world peace. This Association fully endorses the stand taken by Prof. Joliot-Curie and appeals to scientific workers throughout the world to mobilise public opinion in this regard."

The Committee also endorsed the following resolution received from the Naihati Branch concerning the appeal by the Committee of the World Peace Congress:

"We demand unconditional prohibition of the Atomic weapon as a weapon of aggression and mass annihilation of people and that strict international control for the implementation of this decision be established."

"We shall consider as a war criminal that Government which first employs the Atomic weapon against any country. We call upon all the people of goodwill to sign this appeal."

The following is the text of the Appeal launched at Stockholm on March 19th, 1950 by the Committee of the World Peace Congress:—

"We demand the absolute banning of atom weapon, arm of terror, and mass extermination of populations."

"We demand the establishment of strict international control to ensure the implementation of this banning measure."

"We consider that any government which would be first to use the atom weapon against any country whatsoever would be committing a crime against humanity and should be dealt with as a war criminal."

"We call on all men of goodwill throughout the world to sign this appeal."

Extracts from the address of Prof. F. Joliot-Curie to the World Peace Committee at Stockholm on 15-19 March 1950 are given below. Prof. Joliot-Curie is the President of the World Peace Committee:—

"May I recall my own words in this town on December 12th 1935, on the occasion of my

Nobel lecture."

"If we turn to the past and glance at the progress achieved by science at an ever-increasing rate, we are right in thinking that research workers constructing or splitting elements at will, would produce transmutation of an explosive character, veritable chemical chain reaction."

"If such transmutation can be carried out with matter, one can imagine the enormous liberation of utilisable energy which would ensue."

"I admit that at that time I was thinking of a distant future. But fifteen years of work sufficed for scientists to achieve this prodigious discovery."

"If I wished here to enumerate all that had been realised in this domain in less than fifteen years and the new possibilities opened before us, I would have to evoke both magnificent achievements and monstrous destruction."

"It is a solemn warning to all men, and to scientists in particular, that wonderful series of discoveries begun by Henri Becquerel, Pierre and Marie Curie at the dawn of the 20th century should culminate in humanity's being threatened with destruction by means of the hydrogen bomb."

"The hydrogen bomb, which is theoretically feasible, has not yet been produced. If it should be produced by the United States, it could be by other countries. In this case there is not the same technical advance to be made as there was for the atom bomb."

"But men of science are daily acquiring a stronger sense of their social responsibility."

"As I have so often declared, scientists must not be the accomplices of those who, because of a bad social system, are able to exploit the achievements of scientific research for selfish and evil ends."

on arrival. Scientists going via the Pacific and able to stop in places en route are welcome to write to Mr. F. Joliot-Curie, Executive

of the Board will also guide and supervise the Board of the Rajasthan Underground Water Board. Scientific publications issued by the Ministry of Agriculture, the Indian Council of Agricultural

NEWS AND VIEWS

Crippled Children Profit by Science.

Electronic Science has brought the school directly from distant class-rooms to more than one thousand American children kept from normal physical attendance because of handicaps resulting from serious illness or disabling accidents. By means of a two-way voice communication over telephone wires between electrical devices in school class rooms and in rooms of homes or hospitals, the crippled children have been able to get the full advantages of regular education as well as the psychological benefits of indirect contact with school mates. A portable two-way radio set in the class-room picks up and transmits every spoken word over a leased telephone wire to the crippled students' bed rooms. There, over a similar radio set, he answers the class roll-calls, recites his lessons and maintains voice contact with the teacher and his class mates. This method has not only successfully brought education to crippled children but has helped the chances for recovery through psychological stimulus.

(Courier, 1st June 1950).

Board of Agricultural Research.

The Ministry of Agriculture have recently opened a 12-man Board of Agricultural Research with the Minister for Agriculture as Chairman and Dr. B. Viswanath, one of the ex-Directors of the Indian Agricultural Research Institute as Secretary. This Board will secure the utilisation in the fullest measure of the existing facilities for research relating to Agriculture, Forestry, Animal Husbandry, Fisheries, etc. Apart from the overall guidance and co-ordination of the research activities of the Institutions under the control of the Ministry of Agriculture, the Board will also deal with the research activities of the Rajasthan Underground Water Board. The Board will also guide and supervise the scientific publications issued by the Ministry of Agriculture, the Indian Council of Agricultural

Research and the attached and subordinate offices of the Ministry. It is hoped that the formation of this new Board of Agricultural Research will revitalise the activities of the different Agricultural Research Institutions in this country.

How the Italian Government intends to solve Unemployment Problem.

In order to solve the unemployment problem, the Italian Government has worked out a three-year programme of extensive railway improvement including, among other things, the electrification of the main Italian lines and precisely those connecting Bologna and Venice; Milan and Padua; Ancona and Foggia; Messina and Palermo; Messina, Catania, and Syracuse; and Naples, Potenza and Brindisi.

The electrification of these lines will involve, during the fiscal years 1949-50, an expenditure of 17 billion lire, while 7 billion are to be spent for the construction of the hydro-electric power stations of Tanaro and Gavera and 1½ and ½ billion respectively for the Messina and Palermo thermo-electric stations.

In addition, the construction of new buildings for passenger stations, warehouses etc., will cost 5½ billion lire, while 12½ billion will be utilized for reinforcing the tracks as their electrification will result in an increase in the speed of the trains. Furthermore, the programme includes an order for 1,600 new passenger cars and freight wagons, 21 rail-cars and 300 electric locomotives.

Italian Trade News, October, 1950

Visits of Scientists to the Pacific Region.

The Pacific Science Council has offered the facilities of its secretariat in arranging contacts with scientists in Hawaii and elsewhere in the Pacific, making advance bookings for accommodation and receiving visiting scientists on arrival. Scientists going via the Pacific and able to stop in places en route are welcome to write to Mr. Loring G. Hudson, Executive

Secretary, Berenice P, Bishop Museum, Honolulu 17, Hawaii,

Unesco—Bulletin No. 29

Symposium on History of Science.

The National Institute of Sciences of India with the concurrence of the Department of Scientific Research of the Government of India is holding a Symposium on the History of Science with particular relevance to the countries of South Asia. The Symposium will be held in Delhi, University Buildings, from 5 to 7 November, 1950. It will be like a study group where select participants are each presenting a paper and the papers will be discussed by the group composed of both historians and scientists. The Office of the National Institute of Sciences (University Buildings, Delhi 8) may supply more information on application.

Unesco—Bulletin No. 29

The Programme of the New Indonesian Government.

On the 17th August, 1950 the Republic of Indonesia was proclaimed. On September 7, 1950, a new Indonesian Government was formed with Mr. Mohd. Natzir as Prime Minister. The new Government has in its programme the following main points :—

1. Intensification of the endeavours to establish security and peace in the State.
2. Development and strengthening of the economic powers of the people as a basis

of achieving a healthy national economy and to bring about harmony between labour and employer.

3. To give the fullest support to the implementation of the housing project of the people and the extension of the efforts to improve the peoples health and status.

Indonesian News Bulletin, September 15, 1950

Married Women and Teaching Profession.

The authorities of the Delhi University have shot up into limelight by a recent regulation by which permanent employment is debarred to lady teachers who get married. If married women are at all taken up, they would be on a 2-year contract, the contract being renewable. We do not know with what intention the University of Delhi has passed this regulation nor could we get sufficient explanation for the fixing up of a 2-year period of contract in the case of married teachers. In our last issue we welcomed the new course of Domestic Science started by the University of Delhi in the Lady Irwin College. We fear that by the new regulation now adopted by the University, the teaching of Domestic Science would have a set-back as the teaching will have to be in the hands of inexperienced and "undomesticated" teachers. We hope that this regulation has nothing to do with the recent inauguration of a 'Bachelors club' in Delhi.

ACTIVITIES OF THE BRANCHES

Abdullapur Branch.

1. Labour Commissioner, Punjab, addressed the meeting of this Branch on 5th October 1950 at 5 P.M.

He dealt with various points regarding the human psychology and points of allied nature.

2. Mr. G. Williams, representative in India

of Messrs. Porritts and Spencers Ltd. and Messrs. United Wire Works Ltd. addressed a meeting of the Branch held on Sunday the 8th October 1950. Mr. Alfred John Hinton of the Sugar and General Engineering Corporation Ltd., Abdullapur presided over the meeting. Mr. Williams gave the impressions of his tour to the U.S.A. in 1948.

Delhi Branch.

A. The Delhi Branch held a General Body meeting on 1-10-50 and the following resolutions were passed at this meeting:—

1. The A.S.W.I. notes with deep concern that the recommendations made in the Memorandum on pay scales have not received due consideration by the Government and the Industry.

The A.S.W.I., Delhi Branch reiterates the following recommendations laid down in the Memorandum on pay scales:

- (i) Rs. 160-450 (B.Sc. or equivalent diploma should be the minimum qualifications for the scale).
 - (ii) 200-600 (B.Sc. Honours or equivalent degree or diploma should be the minimum qualifications for the scale).
 - (ii-A) 250-500 (M.Sc. or B.Sc. with sufficient experience, M.B., B.E., or other Technical Degree should be the minimum qualifications for the scale).
 - (iii) 400-800 (Ph.D. or M.Sc. with sufficient experience should be the minimum qualifications).
 - (iv) 600-1000
 - (v) 800-1500
 - (vi) 1500-2500
- } For scientific workers with higher qualifications and holding posts involving greater responsibility.

It calls upon all the scientific workers to unite and ceaselessly strive for the fulfilment of the above demands and stresses that the Memorandum signifies one of the basic demands of the A.S.W.I. and thus strives for the betterment of the economic conditions of the scientific workers.

2. The A.S.W.I., Delhi Branch reiterates the following demands laid down in the Memorandum of the Indian Agricultural Research Institute:—

- (i) The grade Rs. 80-220 be abolished forthwith and converted into 160-330 with effect from 1-1-47.
- (ii) Research Assistants with more than five years of service at the Institute

as an Assistant or M.Sc., Associates or Ph.Ds. be forthwith provided with a grade 250-25-500.

- (iii) Increments for service previous to 1-1-47 be given in the new scales and not in the old ones.
- (iv) For promotion, departmental candidates with equal qualifications be given preference over outsiders.

The A.S.W.I. urges upon the Government to expedite the redress of these grievances in the interest of development of agricultural science in India.

3. The A.S.W.I., Delhi Branch notes with satisfaction the assurance given by the Hon'ble Minister for Food and Agriculture that the Central College of Agriculture will be merged with the I.A.R.I. The A.S.W.I. requests the Ministry of Agriculture to expedite matters and see that there is no retrenchment of scientific workers.

4. The A.S.W.I., Delhi Branch expresses its profound regret and concern at the dismissal of Prof. F. JOLIOT CURIE from the post of the High Commissioner of the Atomic Energy Commission by the French Government. Under the guidance of Prof. JOLIOT CURIE, the Atomic Energy Commission of France was engaged in Atomic Research for peaceful and constructive purposes and not for Military purposes thus setting an example to Atomic Commissions in other countries. Moreover, Prof. JOLIOT has been championing the cause of eliminating Atomic Warfare altogether. The dismissal of Prof. JOLIOT is regarded as an attack on the Charter for Scientific Workers which enjoins on all scientists the duty of working "against the diversion of scientific effort to war preparations." The A.S.W.I. urges upon the peace loving peoples of the world to condemn the action of the French Government and make efforts for the reinstatement of Prof. JOLIOT.

5. In the present world situation of mounting tensions, the A.S.W.I. feels that Atomic Warfare should be banned by common inter-

national agreement and that any Government which first uses Atomic weapon must be deemed as a war criminal. In this connection the Branch supports the Stockholm Appeal issued by the World Peace Committee and requests all scientific workers to affix their signatures to it.

6. Resolution on the Trade Unions and the Labour Relations Bill.

(i) The A.S.W.I., Delhi Branch views with great concern that the Trade Unions and Labour Relations Bills, pending before the Parliament, will directly affect the very existence of the A.S.W.I. which has been registered as a Trade Union Association under the Trade Unions Act of 1926 and has been in existence barely for the last three years.

(ii) Art : 33 para 2 of the Trade Unions Bill states that "A trade union of civil servants shall not be entitled to recognition if it does not consist wholly of civil servants". By virtue of the fact that the A.S.W.I. consists not only of civil servants but also of scientific workers in private industries, educational institutions etc., the A.S.W.I. can never hope for recognition by the Government, or private industries, or other employers.

(iii) Art : 33 para 3 of the Trade Unions bill puts similar restrictions on employees of hospitals and educational institutions whose trade union shall not be entitled to recognition by order of a Labour Court, if it does not consist wholly of employees of any hospital or educational institution as the case may be.

(iv) The very definition of "Employee" in article 2 para 14 of the Labour Relations Bill, specially excludes from its scope scientific workers in civil service and Defence Forces, thus denying

them even the elementary right of collective bargaining.

(v) Art : 2 para 19 of the Labour Relations Bill read in conjunction with article 46 para 1 of the same bill make it impossible for the A.S.W.I. to take up a case of retrenchment and denies the right even to make such a moderate demand as reference to a Tribunal.

(vi) The Trade Unions Bill lays down in Art . 6 (k) that members of a trade union consisting wholly or partly of civil servants cannot engage in what it calls "direct or indirect political activity." The term "indirect political activity" is so vague that even a legitimate trade union activity can be called as "indirect political activity."

(vii) In the light of all the above provision of the two Bills, the A.S.W.I strongly feels that these Bills when passed will stifle the very existence of A.S.W.I. and asks the Government to suitably modify or withdraw these Bills.

7. The A.S.W.I., Delhi Branch notes the unanimity with which the various trade union organisations have opposed the Trade Unions Bill and the Labour Relations Bill. The A.S.W.I. supports their endeavours. The General Body directs the Branch Executive Committee to extend its co-operation to the other trade union organisations and authorises the Branch Executive Committee to take necessary action in the matter.

8. The Delhi Branch of A.S.W.I. reiterates the resolutions No. 8 and 10 passed at 3rd Annual General Meeting of A.S.W.I. of India on 4th January 1950 at Poona and further urges upon the Government of India to institute an immediate enquiry into the conditions of employment of the scientific and technical personnel and to enact suitable legislation to safe-

guard adequately their interests so that they may be able to play their rightful role in the industrial development of the country.

9. The Delhi Branch of the A.S.W.I. feels deeply concerned at the colossal damage to the National economy and loss to the textile workers and strongly urges the Government of India to sympathetically consider the demand of the workers and to take such steps as are necessary to restore the deadlock immediately and thus ameliorate the sufferings of all concerned.

B. The Secretary of the Delhi Branch has received a copy of a letter from the Government of Travancore and Cochin addressed to the Ministry of Education in connection with the continuation of the Central College of Agriculture. The contents of the letter are given below. It would be remembered that the Delhi Branch had prepared a Memorandum giving reasons why it was necessary to continue the College and not to close it down.

"It is understood that the Government of India are contemplating to close down by stages the Central College of Agriculture, New Delhi. In this connection I am to place before you the following facts for kind consideration of the Government of India."

"The number of Agricultural Colleges in India is limited and States having no agricultural colleges find it difficult to secure seats for their students in the colleges outside the States. These Colleges naturally show preference to the students of their States, in the matter of admission. The Central College of Agriculture, on the other hand, caters to the needs of the whole of India, and it would, therefore, be a distinct disadvantage to States such as this without agricultural colleges if that College is closed down. The need for first rate Agricultural Colleges is all the more in the present condition, with several plans for self sufficiency in the matter of food."

"I am therefore to request that the Government of India may be pleased to re-consider

the question in the light of the facts stated above, and allow the college to continue."

Jaipur Unit

A new Unit has been formed at Jaipur through the efforts of Dr. P. D. Dalvi of the Central State Laboratory, Jaipur. The first meeting of the members of the Unit was held on 29th September 1950 and the following were elected to the Executive Committee :—

President—Professor R. Heilig.

Secretary—Dr. P. D. Dalvi.

Members—Professor N. F. Soonawala,

Mr. G. V. Bakore,

Mr. K. N. Yaznik.

Poona Branch

The following film shows were arranged :—

(i) 2nd September: This is Britain No. 14; The Proud City; The Story of D.D.T.; Origin and Synthesis of Plastic Materials; Fly about the House; Atomic Energy; Maharshi Karve.

(ii) 2nd October: This is Britain No. 38; Panorama; Approach to Science; Look and Listen; Each for All; The Winged Scourge; Charley's March of Time.

Mr. D. E. Rose, Film Section Chief of the American Consulate General is to address a meeting of the Scientific Workers of Poona under the auspices of the Branch in the last week of October. His address will be accompanied by a film show. Another address is being arranged early in November when Mr. Narsinham, M.Sc. (McGill) of the Inspectorate of Military Explosives, Kirkee, has consented to deliver a lecture on 'Cellulose'.

Patna Branch

The general election of office bearers of the Sabour Unit (Patna Branch) was held on 25th July 1950, when Sri A. B. Saran Assistant Botanist, (Rice) was elected President and Sri N. B. Syamal (Lecturer in Horticulture) was elected Secretary. The following talks

were arranged by the Sabour Unit since 25th July 1950 :—

1. 28th July, 1950—by Sri A. Ram, B.Sc. (Ag.). Assoc, IARI Lecturer in Agricultural College—"Importance of Animals in Human Life".

2. 5th August 1950 - by Sri R. S. Roy, M.Sc. (Calif) - Horticulturist, Bihar - "Organisation and Working of the Horticultural section

in the state of Bihar".

3. 19th August, 1950 - by Sri U.P. Verma, B.Sc., I.I.F.T. - Fruit Preservation Officer, Bihar - "Fruit and Vegetable Preservation Industry in Bihar".

4. 16th September, 1950 - By Dr. R.H. Richharia, M.Sc., Ph.D. (Cantab.), Economic Botanist, Bihar - "Romance with Fibres".

Association of Scientific Workers of India

The Head Office of the Association (22, Havelock Square, New Delhi) has sent the following Circular to the Branches/Units in connection with the forthcoming meeting of the Council and General Body. A portion of the Circular is reproduced below for the information of all the members of the Association.

"The next meeting of the Council of the Association will be held at Bangalore sometime during the first week of January, 1951 at the time of the Science Congress Session. Provisionally, 4th January, 1951 has been fixed for the Council meeting. This letter is being sent to the Branches/Units for information and guidance on the various points connected with the Council meeting. The Branches/Units should take the appropriate action and try to send the material in time to the General Secretary at the above address.

2. According to Rule No. 7 the Council may elect as Honorary Members, persons of distinction whose public acts have contributed to the advancement of science and the welfare of the scientific workers. Suggestions for the election of Honorary Members, if any, would be welcome.

2. According to Rule No. 45 each Branch has to elect to the Council a number of dele-

gates in the proportion of 1 to every 25 members. According to Rule No. 46 each Branch has to submit to the Head Office the list of members of the Branch and delegates elected to the Council not less than eight weeks before each Annual Council meeting. Substitute delegates may be elected and the list submitted to the Head Office.

3. According to Rule No. 52 any motion to alter the Rules of the Association cannot be placed on the agenda unless three Branches or 15 Units submit in writing not less than three weeks before the date of the Council Meeting that they support a motion for altering the rules.

4. Any motion, according to Rule No. 49, be must submitted in writing not later than eight weeks before the date of the Council Meeting. Members of the Association wishing to move resolutions at the Annual General Meeting shall ordinarily send them to the General Secretary with the opinion of the Branch concerned at least eight weeks before the Annual General Meeting (Rule No. 71). The provisional date for the General Meeting is 5th January, 1951.

5. According to Rule No. 65 all Branches shall be invited to submit to the Head Office, eight weeks prior to the Annual Council Meeting, nominations to fill the vacancies in the Central Executive Committee. Such nominations shall reach the General Secretary not less than 6 weeks before the Council Meeting. The nominations should be duly proposed and seconded with the written consent of the person proposed.
6. According to Rule No. 93, the Association is required to have a Seal. The Central Executive Committee will be glad to receive suggestions and designs for a Seal from the members and Branches/Units of the Association.
7. It has been suggested by some members that the front cover of the Vijnan-Karmee requires a better 'Make Up'. Suggestions for the improvements as well as designs for the front cover will be gratefully received by the Central Executive Committee.
8. According to Rule No. 14 every member is entitled to possess a copy of the Constitution of the Association. Copies of the Constitution as finalised are now available and are being sent to the Branches/Units for distribution among the members. In the copies of the Constitution being circulated a correction is required in the Note under Rule 20. The figures given in this Note should be 45% 15% and 40% respectively.

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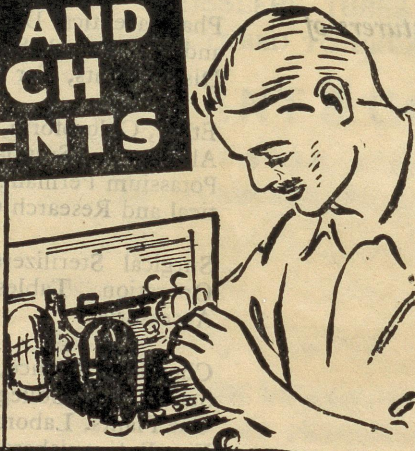
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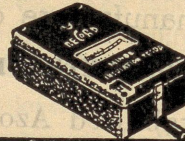
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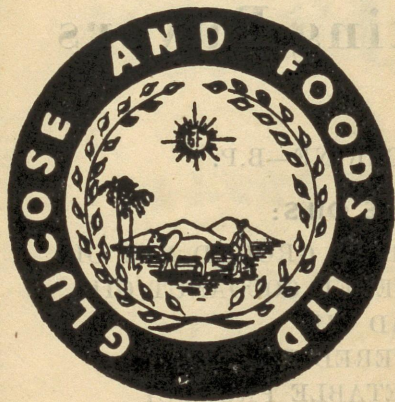
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VIJNAN-KARMEE

official organ of the
ASSOCIATION OF SCIENTIFIC WORKERS OF INDIA

Vol. II]

DECEMBER, 1950

[No. 12

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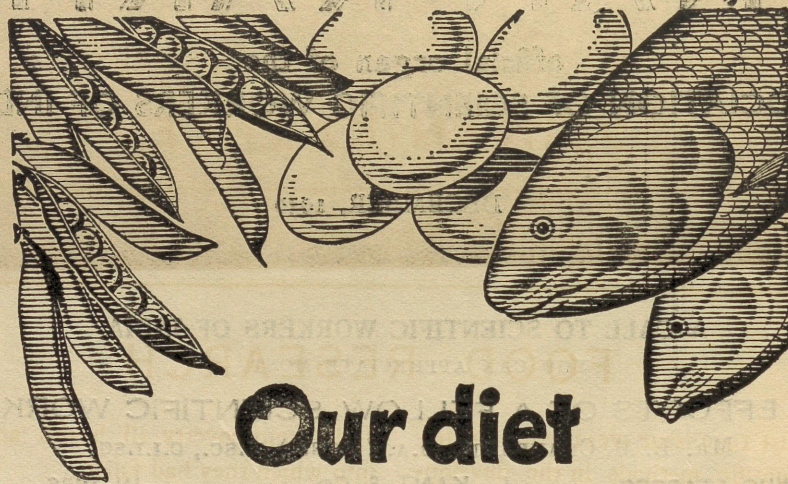
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VIJNAN-KARMEE

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FOOD RESEARCH

In our August 1949 issue we stressed the importance of scientific methods in the development of the food resources of the country if India was to become self-sufficient in food. Shri C. Rajagopalachari who was the Governor-General at that time asked the people to produce all the food we needed if famine and chaos were to be averted. It is of importance, therefore, that Shri C. Rajagopalachari, now Minister without Portfolio in the Central Cabinet, should preside over the inauguration ceremony of the Central Food Technological Research Institute opened at Mysore on 21st October, 1950 and thus show the importance which the present Government attaches to scientific research. In his message at the inauguration ceremony Shri Jawaharlal Nehru, the Prime Minister of India, stated that top priority was given to the production of food grains or subsidiary foods. The primary responsibility for the production of food was on the Ministry of Agriculture and science can help in agriculture greatly.

Dr. C. V. Raman in his address at the opening ceremony of the Central Food Technological Research Institute gave the message that science can serve the Indian population if they prefer to follow it; otherwise they would have to accept starvation and death and that the salvation of the people of India depended not only in the field of food, in the field of health but also in every field of human activity. It is the science and science that alone could lift the people of

India from poverty, ill health and degradation into which they had fallen.

In our August 1950 issue, we stressed that the production of food on a larger scale could be achieved only through an improvement in the agricultural methods. Such improvements could be brought about by resorting to scientific methods of agriculture and by making full use of the experience of the scientists working in the field of agricultural sciences. We considered that the Indian Agricultural Research Institute had a great part to play in advancing research in agricultural sciences and that it was necessary to re-vitalise the Institute and bring it back to its past glory so that it could serve as a guiding light on the agricultural front.

It is gratifying to note that the Hon'ble Mr. K. M. Munshi, Minister for Food and Agriculture, Government of India in his address to the Indian Council of Agricultural Research stated that a revolution in agriculture only could achieve India's goal of self-sufficiency of food by March, 1952. He stressed that for the above objective it was necessary to proceed along the three different directions, fundamental research, technological investigations and practical applications. The machinery of the Indian Council of Agricultural Research is to be re-organised so as to give full scope to the technical and scientific workers. Mr. Munshi also stated that the main centre of research was to be the Indian Agricultural Research Institute.

The development of agriculture on right lines would provide the necessary raw material required for food and industry in the country. It was necessary to utilise the raw food material to the best advantage from the nutritional point of view so that there was no loss or un-necessary waste in the handling and processing of food-stuffs. The Central Food Technological Research Institute, which is one of the National Laboratories started by the Government of India under the auspices of the Council of Scientific and Industrial Research, is to conduct research on problems connected with different aspects of the food industry. We are glad to note that Dr. V. Subrahmanyan has been appointed as the first

Director of the Institute. We had in our March 1949 issue while welcoming the appointment of Dr. K. S. Krishnan as the Director of the National Physical Laboratory, urged that Indian scientists should be given facilities to work and direct research as heads of different institutions. Dr. C. V. Raman expressed his rejoice at the chance given to an Indian scientist to be the Director of the Institute. We feel that the present appointment would give considerable encouragement to our men of science and make them enthusiastic for more work in the interests of the nation and we hope that this example would be followed in the case of many other Laboratories and Institutions.

INAUGURATION CEREMONY

of the

Central Food Technological Research Institute

Message from Shri Jawaharlal Nehru, the 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 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 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 foodgrains 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? The 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 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."

—:O:—

AN EXTRACT FROM THE

Speech by Dr. C. V. RAMAN

NOBEL LAUREATE AND NATIONAL PROFESSOR OF PHYSICS

"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 the men of science regard creations of nature, least of all, among others, the particular creations 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; let me, for example, refer to the discovery of vitamins; let me, for example, refer to the discovery of penicillin. Year after year, we see, in the fields of science, men, devoting themselves to the pursuit of knowledge in the abstract, have made profoundly important discoveries and 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, I understand, who lived in the trees behind 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, food, that we must necessarily behave as zoological creatures. I think the scientist must either invent a bacillus which will in course of 24 hours remove half the population, or 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 in the matter.

I think we must rejoice, speaking as a man of science, I rejoice, at the creation of these institutions which give the men of science an opportunity 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 the great ideal of 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 science 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 about it before me and express my admiration for his formidable

drive and energy by creating institutions, by melting the hard heart of the Finance Department. Dr. Bhatnagar can never feel content himself with getting only finest buildings, finest equipment, but also gathers somehow the best scientists available in India and outside. Perhaps, he bribes, begs, he draws from all over the world and gets scientists 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 Indian 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 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."

OUR INSTITUTES

The Central Food Technological Institute

The Central Food Technological Research Institute is one of the eleven National Laboratories established under the auspices of the Council of Scientific and Industrial Research. It is housed in the Cheluvamba Mansion in the City of Mysore and owes its location to the generosity and vision of the statesmen of Mysore. The Institute was inaugurated by the Hon. Mr. C. Rajagopalachari on the 21st October, 1950.

Planning and Location

Although the Industrial Research Planning Committee of the Council (1945) had recommended that the highest priority should be assigned to the development of Food Technology, there were, nevertheless, certain technical difficulties and it was only in February 1948 that the Governing Body of the Council of Scientific and Industrial Research could provide funds for the preparation of detailed plans for the Institute. A Planning Officer was appointed in July and work was commenced during August

of that year. The Government of Mysore made a very generous offer, of the Cheluvamba Mansion, situated in Mysore. On the 29th of December 1948, the Prime Minister, who is also the President of the Council of Scientific and Industrial Research, formally received the building on behalf of the country. On the occasion of handing over the building, the Hon'ble Mr. K. C. Reddy stated: "In giving this beautiful building for the location of this important Institute we are only giving it to ourselves, for the good of the country." Work was immediately commenced in regard to the setting up of the laboratories and animal houses, and the purchase of various types of apparatus, chemicals and equipment. The first Laboratories started functioning towards the end of July, 1949. During the following months, other laboratories library, workshop, etc., were steadily built up. Before the end of the year, the Biochemistry

* Adapted from a Report by Dr. V. Subrahmanyam, Director of the Institute.

and Nutrition Division, as also a part of the Processing Division, were actively functioning and making positive contributions bearing on the immediate food problems of the country.

Researches and Publications.

Almost from the commencement, the work of the Institute was mainly directed towards dealing with urgent food problems of the country. An important line of work initiated several years ago by Dr. Bhatnagar on the production of synthatic rice was pursued and several compositions involving the use of different cereals or tubers or combinations of both, together with seed cakes and other sources of protein, were evolved. Attendant nutrition studies with experimental animals showed that the substitutes were actually more nutritious than rice. Another finding of considerable interest is the remarkable supplementary effect of tubers, such as tapioca and sweet potato, at low levels (25 to 30 per cent) to the cereal diets. This finding, if confirmed in the case of human subjects, would show that the tubers, which are heavy yielders, would serve not only as useful subsidiary foods, but also enhance, to some extent, the food value of the cereal diets which are consumed by the majority of people in the country.

Another enquiry related to the use of defatted groundnut flour as an article of human food. It was found that, at a level of half to one ounce per capita, groundnut flour of good quality can be used with safety and benefit along with cereal diet. Studies with different types of edible seed-cakes showed that they all require to be supplemented with calcium and that excessive heating under pressure reduces their food value.

Whole groundnut has been processed to yield a milk which is palatable and has, at the same time, a high nutritive value. Incorporation of a small percentage of soya-bean along with groundnut improves the biological value of the protein in the milk. Incorporation of calcium with groundnut milk has been standardised and it is now possible to prepare a milk which is very stable and has, at the same time,

the same calcium level as cow's milk.

Lucerne, which is now fed mostly to animals, has been found to be a high class supplement to cereal diets as it provides, even at 5 per cent levels, the calcium, the protein and the vitamins in which the latter are deficient. The cooking quality of pulses is largely influenced by the amount of magnesium present in the skin. Alkalis improve the cooking quality, but they lower the biological value of the protein because of the destruction of some essential amino acids. Steeping of the pulses in very dilute ammonia precipitates the magnesium and, at the same time, improves the cooking quality without deterioration of the nutritive value.

Comparative laboratory studies and institution feeding experiments were carried out with straight hardened and blended vanaspati of the same melting point (37°C.) and they have shown that there is no difference in regard to their nutritive values. Influence of various dietary factors on the composition and functions of the liver have been studied with a view to throwing fresh light on the incidence of hepatic cirrhosis in children.

During the year under review, the Institute published 29 papers, notes and technical articles in various scientific journals. In addition to these, several popular articles were contributed by the staff and published in a number of leading papers and magazines in the country.

The Institute of Fruit Technology

Early in 1950, the Government of India took a very important decision in regard to the merger of the Indian Institute of Fruit Technology with this Institute. The former Institute, which was started at Lyallpur (West Punjab) in 1945, was transferred to Delhi in 1947, after the partition. As the transfer to Delhi was only a temporary measure, it was eventually considered appropriate to merge the two institutions dealing with closely allied subjects, in the interest of economy and efficiency. The Fruit Technology Division was organised during July 1950 and is already doing quite useful work. In

addition to conducting researches bearing on fruit and vegetable preservation and processing (with immediate reference to those available in the region), this Division is doing valuable service by actively advising and assisting the industry throughout the country. The Division is also in charge of the All-India Post-graduate Diploma Course in Fruit Technology.

Other Divisions

Other Divisions have recently started functioning with nuclei of specialist staff, many of whom have been trained abroad—Division of (1) Storage and Preservation; (2) Processing; (3) Engineering; (4) Biochemistry and Nutrition; (5) Information and Statistics; (6) Quality Control; and (7) Microbiology and Sanitation. A Division of Dietetics and also a Section for Food Containers are being organised. A large number of scientific and other technical staff have already been recruited and are expected to join shortly.

Scope and Functions of the Institute

The Institute will deal with all aspects of Food Technology and be a place of reference on the subject. Its general scope may be outlined as follows:—

1. Development of improved methods of storage of different food materials, microbiological and biochemical changes attendant on various types of spoilage; reclamation and utilisation of heavily infested or otherwise affected food 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 from food materials which are known to contain them.
4. Study of new and hitherto unfamiliar sources of food materials and their processing to render them suitable for human consumption; emergency food; survey of potential food

resources in different regions.

5. Production of concentrated food, vitamins and other food accessories, composite multi-purpose foods, supplementary foods, substitutes, etc.

6. Dietetics, design and demonstration of improved types of food preparations to suit the economic conditions and sentiments of people in different regions; studies on cooking utensils; improved cooking methods with a view to saving in labour and minimising the consumption of fuel.

7. Study of problems relating to food industries; provision of technological information required by the industry; survey of existing industries and their technical problems and collection of factual data for development of new industries; pilot plant trials with different types of industrial equipment.

8. Food sanitation; survey and advice on hygienic conditions in food industries; treatment and utilisation of waste products in food industries.

9. Food adulteration; development of new methods of detection and quality control.

10. Food information; dissemination of general information on food and dietary problems through publication of notes, bulletins, technological reports and, eventually, a scientific journal devoted exclusively to Food and Nutrition.

Research

The different aspects of the work will involve laboratory studies, semi-large scale trials, animal experiments and human feeding studies on small as well as big scales. Findings which are of a general or purely scientific interest will be published. Those which could be commercially exploited will be patented or otherwise covered and the processes made available to the industry through the Council of Scientific and Industrial Research.

Fundamental problems bearing on different aspects will arise from time to time. It would be a part of programme of the Institute to deal

with such problems so as to strengthen the scientific reputation of the Institute which will depend, to a large extent, on the quality of fundamental work done by it. It is expected that there would be a strong nucleus of staff who would be engaged on fundamental studies relating to the subject.

Advice and Information.

This would be one of the important activities of the Institute. During recent years, there has been an increasing amount of interest in food problems in the country. What the public needs is general information and advice that would be in keeping with the requirements of religion and sentiment. The industry also requires advice and technical information which are not easily available. If the Institute has a strong Division devoted to this subject, this service can be rendered. If information requiring a good deal of reference work has to be furnished, then the Institute will have to charge a fee for such work. In some cases, it may even be necessary to engage special staff for collecting information and statistics required by industries.

Building and Equipment.

According to the present plan, the Institute will eventually cover a floor area of about 156,000 sq. ft., a substantial part of which will be made up by the additions and alterations to the main building. Additional buildings covering an area of over 70,000 sq. ft., will be steadily

built up as funds and facilities become available. In addition to these, the Institute has prepared plans for building various categories of quarters for the staff, a Club House, a Restaurant and other amenities for the staff.

Staff and Budget.

The Institute will soon have a staff of over 200, including over 70 scientific workers. As the various activities develop, additional staff will be steadily required. The Institute may have to establish centres and regional laboratories which will work in close association with the Central Laboratory.

In Europe and America, and particularly the latter, there are a number of Food Technological Laboratories, with annual budgets of some millions of dollars. Under the present conditions in India, we have to make a much more modest beginning. The Institute is now in receipt of a recurring and capital grant aggregating to about Rs. 9 lakhs, but this is expected to increase steadily with the opening up of new Divisions and other activities. Even this would be only a modest beginning, considering the very high cost of technological equipment and other accessories. It is expected, however, that as the usefulness of the Institute is increasingly felt by both the industry and the public, additional support will be generously forthcoming and that the Institute will soon take its rightful place as an important national organisation.

A Programme for Future Activities of the A. S. W. I.

A FEW SUGGESTIONS FOR DISCUSSION:

by

A. REHMAN

(Hyderabad Branch, A. S. W. I.)

The Association of Scientific Workers of India has been functioning for over three years now and has done some very useful work in creating a new consciousness of the social role of science among the scientific workers of India and has, consequently, assumed an importance and a position for itself. The main aims and objects of the Association have been popularised by various members of the Association at places where the Branches exist but there has been a feeling among some of its members that the Association has not played as active a role as it should have, especially in view of the emergencies and tasks of reconstruction. It is, therefore, necessary that we should examine in detail the programme and the methods employed to implement it.

In view of the above, I have ventured to draw out in summarised form details of the main problems of the Association that have to be worked out and that need a coordinated effort for their implementation on local and an all-India basis. Further, I hope that this will serve as a useful basis of discussion at the General Conference of the Association in January, 1951.

The main problems that face the Association, in my opinion, are

1. Increasing the membership; this includes
 - (a) trade union activities,
 - (b) broadening of the activities to include non-members.
 - (c) bringing into the Association School and University science teachers and looking into their special problems.
2. Propagation of Science
 - (a) Amongst non-scientists—through the

means of papers, radio talks and information films relating to

- (i) basic scientific knowledge
- (ii) against common superstitions
- (ii) giving the people a scientific philosophy against pseudo-religious mythologies.
- (b) amongst scientists
 - (i) social relations of science
 - (ii) history of science
 - (iii) scientific methodology as in various branches of classical nature and their extension in other branches of knowledge.

3. Utilisation of Science :—

- (a) Nature of organisation of scientific research (including financial aspects) University, Institutional and Industrial research,
 - (b) Trends of research
 - (i) for purposes of peace and construction,
 - (ii) for purposes of war.
 - (c) Review of national conditions (in relation to international development).
1. (a) This has to be based on the basis of proper data. Conditions in India vary from city to city and from centre to centre.

A general survey has to be undertaken by various Branches and Units, with special reference to private research institutes, industrial establishments, University teachers (specially private colleges). Things are not satisfactory on a general level. The Bangalore Branch has

taken up an admirable step in this direction and the Centre should take a lead now by working out a general questionnaire and issuing it not only to Branches but also to places where the Association of Scientific Workers of India does not exist. Help could also be taken from the collection of data by the Government for the National Register.

(b) Should be as under 2 (a)

(c) School science teachers are most neglected, ill paid and ill equipped with apparatus and books. The Association of Scientific Workers of India has so far paid no attention to them. For the future of science, attention has to be paid and importance given to this sector of scientific workers.

The Hyderabad Science Association has done a useful work in calling a science teachers' conference which was represented by 80 per cent of science teachers, all non-members. The Association has collected some basic information and has drafted a general questionnaire to collect more detailed information. The same can be taken up by the Centre of the Association of Scientific Workers of India and its Branches.

2 a) The local Branches and Units should organise small groups to write to daily newspapers, weeklies and others with i), ii) and iii) in view, with emphasis on item iii). They should also undertake to write replies to anti-scientific articles published in such papers.

A definite attempt should be made to utilise radio and well defined scientific programmes with ii) and iii) should be initiated.

Special exhibitions should be organised by the Association of Scientific Workers of India Branches to propagate science and facts of science. Useful information can be had from UNESCO and its help could also be utilised.

Series of popular lectures should be arranged specially for University and College students.

A scheme of juvenile lectures for school students should be undertaken.

2. (b) This item is very important. Most of our scientists are specialists and possess a

narrow outlook, without having any idea of the over-all development and the nature of science.

The best way of achieving the aims of this item is through

- (i) Vijnan-Karmee
- (ii) Local Bulletins
- (iii) Series of lectures
- (iv) Summer camp schools.

This could be done branchwise as well as centrally,

The help of the British Council and UNESCO will be valuable in obtaining scientists from abroad.

3. (a) Most of the research done in India is institutional research, University research is little but there is almost no industrial research. The Association of Scientific Workers of India should appoint a committee to go into the details of this question. It will be very useful to collect information and publish a document with its recommendations and this will go a long way to establish the Association of Scientific Workers of India.

(b) The Association of Scientific Workers of India has to assess the various trends of research. It has to come out against militarisation and secrecy of research. As the Association of Scientific Workers of India is pledged for peace and constructive programmes it has to be unequivocal and uncompromising about it.

The work of the French and the British Associations can be a good guide in this direction.

- (c) This specially refers to
 - (i) Planning Commissions
 - (ii) Research Programmes
 - (iii) Neglect of a particular type of research.
 - (iv) Suppression of research or its distortion
 - (v) Government's industrial policies.

This has to be critical and positive.

This is very important if the Association wants to play a positive and vital role in the national life.

PLANNING COMMISSION

The following Press Release, issued by the Secretary of the Planning Commission, summarises the present activities of the Commission. The Press Release has been reproduced in full for the information of the members of the Association of Scientific Workers of India.

Draft five-year plans for the Central and the States Governments are expected to be ready by the end of November, and it is hoped to complete the various steps which are required in time to enable the Governments concerned to present their plans to Parliament and the States legislatures during the next Budget Session.

The States Governments, according to a review by the Planning Commission of its work during the first half year of its existence, have already been requested to prepare their detailed five-year plans in two stages, the first of two years beginning with 1951-52, and the second of three years.

The Commission's request to States Governments to formulate their plans follows three months of study of development schemes of the Central and the States Governments and an examination of the principal problems facing the economy. While States Governments have to draw up plans suited to their own conditions, it is felt that the national economy will derive the greatest advantage from investment on development if the States and the Central Government have a more or less common approach to the problem of planning.

The Commission examined the problem of resources when, in consultation with the Central Ministries, it prepared the six-year development plan for consideration at the recent Commonwealth Conference in London. At its suggestion, States Governments are already engaged in reviewing their resources and preparing their forecasts for the next five years. Similar studies are being undertaken in the

Central Government. It is recognised that the budget at the Centre in the States has to be balanced if inflationary forces are to be held in check, and that at the present time the outlook for resources for development is not encouraging.

In the view of the Commission, these very factors emphasise the need for careful husbanding of resources, for augmenting them as far as may be possible, and for careful selection of projects to be undertaken by Government. Equally, it is essential to bring down the price level through gradual and coordinated reductions in different sectors. This action has to be backed by a disinflationary fiscal and monetary policy by positive steps to increase production and reduce unit costs.

In the first five-year plan, therefore, apart from existing commitments of an essential or inescapable character, the Commission commends schemes which will develop material and technical resources and increase the production of food and raw materials over a relatively short period. Such schemes should have priority over others which, though valuable in themselves, require a much longer period to bear fruit. Since only limited finance is available, each scheme has to be judged by its value in terms of production or productive capacity in relation to other competing schemes. Even in respect of social services, an important test is whether the existing level in any particular field or area is so low that it entails an appreciable loss of productive efficiency which may be avoided through provision of better facilities on the part of Government.

In addition to careful selection of schemes, the review continues, it is necessary to concentrate the available financial, administrative and technical resources on a limited number of essential schemes and to attempt only so much

as it is reasonably possible to achieve. In this manner the gain to the economy is likely to be greater than if a wide range of problems are attacked simultaneously without deploying sufficient resources at each point. Indeed, without a marked increase in resources, in a number of directions, it may not be practicable to do more than maintain the existing activity, in some even this may not be found possible.

In the prevailing conditions of India, the Commission considers, there is a large field in which much greater value can be obtained from the existing resources. Through improvements in administrative organisation and methods, and greater cooperation from the public, and by invoking financial and other contributions from non-official sources, it should be possible to get substantial results. It is the aim of the plan to achieve these results equally with others which depend on greater investment of capital.

The plan will comprise both the public and the private sectors. The public sector includes the Central Government, States Governments and Local Authorities. Definite plans are being obtained in the first instance only from the Central and States Government, but the Commission recognises that Local Authorities have a vital role to play in any scheme of planned development and is considering the conditions under which their plans can eventually be co-ordinated so as to fit in with the plans of States Governments.

The bulk of organised industry falls in the private sector. Planning in this field, though scarcely less important than in the public sector, presents obvious difficulties. It has to be more flexible and is to be undertaken largely through indirect means such as capital issues control, licensing, foreign exchange allocations and import and export control, and controls on prices, production and distribution, including physical allocations. The two sectors have to be guided by a common purpose and their plans have to be in harmony with one another. The Commission has in hand a series of studies bearing

especially upon short-term problems of individual industries. In co-operation with the Ministry of Industry and Supply, proposals in respect of each industry will be discussed in the coming months with the interests concerned, and working plans evolved.

Although agriculture falls in the private sector, Government has a special responsibility in this sphere. The study of several basic issues such as means of increasing production, co-operative cultivation, fixation of ceilings on individual holdings, restrictions on subletting, economic holdings, provision of finance to the cultivator and the establishment of a suitable extension organisation including village multi-purpose cooperative societies has been in progress, and it is hoped shortly to formulate the Commission's views on these subjects. The Commission's work on the preparation of a five-year plan for increasing agricultural production and on the problems of agricultural prices has stressed the need for long-term planning in agriculture.

In no field is the significance of long-term planning greater than in the development of irrigation and power resources of the country. Less than six percent of the water which flows annually through the rivers of India is at present being utilised for irrigation. Less than two percent of the hydro-electric potential of the country has so far been developed. Many of the major irrigation works of the past utilised the normal perennial flow of rivers. New projects have to be based largely on storage rather than on diversion and are, therefore, more costly. At present 135 projects estimated to cost Rs. 590 crores are in hand in different parts of the country. These are expected to bring 13 millions acres of land under irrigation and to provide two million K. W. of power. The Commission has suggested to States Governments to consider developments necessary and likely over a period of fifteen years. This would facilitate investigations, preparation of

estimates, construction as well as full development. It has also been suggested that each State might consider creating a non-lapsable 'Irrigation Development Ways and Means Fund' to which contributions might be made from year to year on a planned basis. These contributions would draw upon general revenues, betterment levy, etc.

Closely linked with the problems of agriculture are those of cottage and small-scale industries. Without these there can be no solution for rural under-employment and unemployment. The development of cottage industries presents many difficult questions of policy and organisation. Much preliminary ground has been covered and the various issues are to be discussed shortly with the Commission's Panel of Cottage Industries.

A considerable amount of urgency has been

attached in the work of the Commission, the review concludes, to the problem of industrial housing. In recent years the housing situation in industrial areas has deteriorated and at present working class housing conditions are an important reason for low productivity and industrial unrest. The problem is beyond the scope of private effort and requires both long-term planning and cooperative contribution from employers and workers as well as from Government. The Commission has, therefore, recently evolved proposals for the consideration of Government in consultations with the Ministry of Labour and its own Panel on Housing. The problem of industrial housing is, however, only one important aspect of the general shortage of housing, especially in urban areas, which is engaging the attention of the Commission.

Earthquakes - Seismology

S. C. MAJUMDAR

If we think of the great advancement in science, it seems to us as if an alliance or pact has been made between man and nature so as to enable man to unfurl the mysteries of nature and derive benefits out of it. But at times nature proves unruly, its arrogant whims tell upon human society very badly and indeed in a dangerous manner. Such a catastrophe in the form of the earthquake which overtook Assam on the 15th August naturally leads us to enquire—Why Earthquake? How Seismology can help us? Should we set up more seismographical stations or think it waste of national money which India can ill afford at this juncture of her economic stringency?

In this article an attempt is made to explain

the cause of earthquakes—their nature and man's limit to use his present day knowledge for the benefit of society and finally it is discussed how far seismology can help to minimise our distress and build our national economy.

Why Earthquakes?

There have been fractures of the earth's crust along narrow lines or linear zones known as faults. Slipping along fault plane causes earthquakes.

Henry Fielding's Elastic Rebound theory clearly explains how this slipping occurs. The theory states that when a rock is subjected to elastic strain greater than it can endure, rupture will eventually take place. Sudden explosions

may be the cause of the strain but generally they are due to slow displacements of earth's crust. This displacement sets up stresses between adjacent portions of the crust that grow slowly until the point of rupture is reached. The strained rock rebounds under its own elastic stresses until the strain is wholly or partially relieved.

The theory is quite satisfactory so far as the immediate cause of the earthquake is concerned but if we try to go deep into the matter and look for the ultimate cause which is responsible for producing these stress differences, we are left in the midst of a good number of theories, none of which is clearly conclusive and fully convincing.

Seismic activity has been noticed to be marked along the steeper flexure in the earth's crust in localities where there is secular movement and in the mountains which are geologically new and where we cannot with any good reason believe that a state of equilibrium has been reached by rocks.

The fact that earthquake occurs in these regions leads us to the theory that there are spasmodic movements between the adjacent masses of rocks.

Unfortunately we do not fully know how the mountains are built-up but we have reasons to believe that the ultimate cause of the earthquake is to be found in the formation of mountains. Many observations related to the formation of mountains and the effect of their weight upon the earth's crust have been made and the most important of these theories is the theory of Isostasy.

To account for the gravity anomaly in different parts of the world which shows that the intensity of gravity connected to sea level is unduly low in the mountainous region and high in the oceanic region, it has been observed that the average density of the earth's crust is low where there is extra weight of the mountain to be supported and high where the loading is diminished. This balance between the outer

part of the earth's crust and the density of the subadjacent material is known as Isostasy. This equilibrium when disturbed by erosion which lessens the weight or by accumulation of sediments which increases the weight can reasonably account for the setting up of stress difference and hence earthquakes. Chemical changes also produce local alteration of volume and disturb the equilibrium.

Although it is generally conceded that the primary causes of earthquake are mostly displacement of earth's crust some scientists hold the view that the attraction of heavenly bodies or meteorological conditions acts as a bigger force on the rocks which are already strained nearly to the elastic limit and causes earthquakes.

Besides there are earthquakes of volcanic origin but it cannot be greatly upheld as most of the earthquakes except in the Mediterranean are not of volcanic origin.

In the case of Assam earthquakes it is quite natural that the Himalaya continually growing in height has disturbed Isostasy and brought about this calamity.

The effect of an earthquake is too well known to be discussed e.g., houses collapse, landslides take place, rivers dry up or change their courses flooding towns and villages. These are closely followed by epidemics and this way immense damage is done to man.

Is Earthquake Prediction Possible?

Seismologists from the very beginning have been studying ways and means so that the occurrence of an earthquake can be foretold. But without any means which gives an insight into the geological changes going inside the earth it is not possible to predict earthquake—a prediction which might be of any value.

Prediction of any value should give well in advance precisely the date, time and place of occurrence. However, certain earthquakes can be foretold from the observed tilt of the ground which may take place before the actual occurrence of the earthquake.

As far back as 1793 the inhabitants of a coastal village in Japan noticed sudden changes in sea shore and anticipated a tidal wave. Nothing happened for four hours but later came a great earthquake. Similar indications have also been noticed in other earthquakes. This naturally helped the seismologists to assume that the surface of the ground tilted just before the earthquake and it has been subsequently confirmed by instrumental observations in Japan and America. This raised hope that the occurrence of an earthquake can be foretold and a short advance warning is possible.

But the absence of ground tilt in the Idu earthquake of 1930 and some other earthquakes proved that the tilt theory was untenable.

In a major shock, the strain over the whole region may not be released at the time of original dislocation. The sudden disturbance at the focus upsets the equilibrium in the surrounding and other shocks occur at intervals until the whole region has settled down to a stable condition.

The probability of these after shocks can be estimated to some degree of correctness and a general information to the public may some times help them to keep their nerves strong in already horrified surroundings.

How Seismology is helpful ?

The question that naturally comes up in one's mind is this; "If earthquake prediction is not possible, then how it has helped us so long and how it is going to help us in future".

Where direct help is not possible we may certainly take lessons indirectly from the findings of seismology and safeguard our interest as best as we can.

Seismology makes use of instruments known as seismographs for recording earthquake shock. The time delay between the arrival of longitudinal and transverse waves enables the seismologist to locate the epicentre and consequently the depth of the focus of the earthquake can be found out. Previously it was believed that deep focus or 'plutonic' earthquakes were not

possible. But seismology has revealed that focus is sometimes seated as deep as 500 miles from the surface.

Let us leave aside this academical discussion and take stock of what seismology has done to benefit mankind with respect to earthquake. We find seismologists locate the epicentre and indulge in academical discussion rather than hint at any practical solutions. Yes, the hint is there in the so-called academic discussion and if the Government and the people only intend to take lessons from the results obtained by the seismologists it would save humanity from undergoing even half of the distress.

What is the necessity of the post mortem analysis of seismograms? The medical science owes its perfection to a great extent to post mortem analysis of human body and likewise seismology is on its way to perfection by postmortem analysis of the seismogram.

Determination of epicentre has enabled seismologists to locate all earthquake epicentres distributed along two belts over the globe and they are known as "Seismic belts". One belt runs across the Mediterranean Alps and extends up to Caucasus and Himalayas to the East and the other runs across the Australian Islands passing through the North and South American mountains.

A careful study of the Seismic belt over the earth with particular reference to seismicity of the zones can very well guide us for the future. Omen in Japan studied damage to buildings and building design to resist earthquakes and in this connection measured vibration periods of buildings. Earthquakes cause less damage to buildings built on hard rocks than on soft ground. The building should be built in such a way that during an earthquake it would move as a solid block with its foundations. Steel brick buildings stand earthquakes in a satisfactory way. In advanced countries susceptible to frequent earthquakes there is legislation regarding the design and construction of buildings.

Business interests suffer greatly due to earthquakes and Insurance Companies are likely to be hit hard by such mishappenings. After one major earthquake it actually happened in Japan that an Insurance Company found it well nigh impossible to meet the demands which arose due to deaths of policy holders. So the practice is now to rate the premium taking into consideration the seismicity of the region.

We have learnt from the study of the records of earthquakes that the earth is built up of three main portions. There is a central fluid core about 3400 km in radius surrounded by a rocky shell called the mantle which extends to some 30 km of the surface and an outer crust.

Study of the distant earthquakes revealed the discontinuity at the boundary of the core and likewise the study of the near earthquakes gave evidence of the discontinuity at the bottom of the crust.

Seismology teaches us something about the properties of materials inside the earth but from the seismological results alone we can not decide what kind of materials there are at different depths.

Seismology in this connection considers all results obtained from all other cognate studies and examines which of these results fits in well with the results obtained by seismological study.

Taking into consideration well-known geological processes it is easy to conceive that the lower rocks in the crust must have been sorted out while it was solidifying from lava, the more acid granatic rocks being lighter would rise and heavier basaltic rocks would sink.

Doubt arises as to the composition of the lower parts of the crust and the reasonable suggestion seems to be that they are composed of vitreous basalt known as Tachylite.

As we come to the mantle, the density and rigidity increases and the identification of materials becomes more difficult.

The velocities of the waves just beneath the crust are nearly the same as those obtained from laboratory tests of Olivine and this mineral in

some form or another seems to be the chief constituent of deep rocks.

Seismology discovered that the core has no rigidity and found out its size. It has been inferred that the core is made of heavy metal or mixture of metals. It is believed that the core is composed of Nickel and Cobalt probably in a plastic form.

Seismological studies show that the average rigidity for mantle is much greater than that of steel and to bring the value in line with the average for core, mantle and crust together, it is found that the rigidity of the core must be negligible.

In constructing dams also for hydroelectric purposes, seismicity of the region is taken into consideration.

Study of Seismology

Except the Southern portion of India, the rest may be taken as seismic zone. Some portions are susceptible to major earthquakes and some to less.

In India we do not find as yet great enthusiasm in this field except the existence of a few recording stations which as a routine measure help to locate the epicentre. Considering the geology of India and the seismicity this subject should invoke no less interest than any other subject and students of science will do well if they devote themselves to this branch of science.

It may interest the reader to know that with specially developed seismographs it has been possible to locate the centre of a storm and follow its movements from the study of micro-seisms and the meteorologist is relieved much of his worries.

In geology seismic prospecting has been a very helpful method to find out hidden minerals. In U.S.A. the number of seismograph parties have steadily risen for this purpose over the past eight years. The number of seismograph parties in 1948 was about 525 as against 430 in 1947. Most of the seismic methods are employed in oil industry and the total turnover and cost are highly satisfactory as compared to other

methods. We, in India, can reasonably employ in these methods for our geophysical explorations.

It is a pity that the Assam earthquake has not till now received voluntry attention of the scientists who can, we reasonably believe, explore many interesting and valuable information as to the cause of this misfortune and enrich

seismology. We do maintain that a seismological party consisting of experts not only from all the appropriate scientific departments and Universities but also from private concerns should study the matter in detail and an expert committee be formed to advise the Government and the people in case of such eventualities in future.

Letter to the Editors

Provident Fund Scheme for Industrial Workers.

We are glad to learn that the Standing Labour Committee has recommended the legislation for introduction of a scheme of provident fund for all industrial workers. When such legislation is enacted, all the scientific and technical workers employed in industry will be benefited. It is good, though late, that the country has realised that unless the interests of the technical workers are safe-guarded we cannot get adequate production. In our country, there has been a continuous complaint that the industrial workers are not getting fair deal either from the Government or from the employers, as is supposed to be obtained by the Government employees. At the present critical moment of our national history, we should see that the industrial output is increased in geometric progression and it is our moral responsibility to see that the workers do not get ill-treatment and their interest is being served. We share the views of the Chairman of the Committee that as voluntary efforts on the part of the employers to provide for labour welfare schemes had not been successful, legislation should be undertaken compelling constitution of welfare funds in all industrial undertakings. We hope, that suitable

legislation would also be enacted to regulate retrenchments in industry. In fact the Association of Scientific Workers of India at its 3rd Annual General Body Meeting held at Poona in 1950 adopted a resolution (Vijnan-Karmee No. 10 February, 1950, page 16) to the effect that scientific and technical workers in industry should not be allowed to be retrenched by the employers whenever they like and in case retrenchment is necessary, ad hoc committee be formed consisting of employers, employees, Government and Association of Scientific Workers of India to study the matter in detail and determine the number of technical posts required, the qualifications, and remuneration of technical workers.

Foreign Mania.

The Journal of the Royal Institute of Chemistry published on page 98, Vol. 74, 1950 the following statement: "Although the Indian Chemical Society has recently celebrated its Jubilee, most of the leading Indian Chemists appear still to prefer the Journal of the Chemical Society to the Journal of the Indian Chemical Society as a medium for publication". On page 372 of the same volume of the Journal the Honorary Secretary of the Indian Chemical Society has given some reasons for such a preference.

Apart from these reasons there is an important factor which alone could have explained the real position. Probably it was very much embarrassing and inconvenient for the Honorary Secretary of the Indian Chemical Society to mention this factor. It is the mania for foreign things which we have still in our minds. Though our big men get annoyed when people, suffering and groaning under the present misfortunes all round the country, utter a word about their better conditions under a foreign rule (and style the latter to be suffering from a slave mentality), they themselves seem to be obliged by foreign recognition only. From the purchase of the ordinary laboratory materials to the selection of staff for a research centre, this mentality is evident everywhere.

We are, no doubt, a backward people. But

the backwardness is in every sphere of our life. It is for the men at the top to show initiative to develop things. A scientific worker gets less recognition for his work when it is published in an Indian Journal. An Indian Degree holder with equal academic qualifications but considerably greater experience is always held back to give preference to an inexperienced foreign Degree holder.

It is therefore, not only for the sake of convenience of publication that a scientific worker, wherever he may be, tries to publish his work in a foreign journal but it is mainly for recognition and for improving his prospects of obtaining a position for himself. And it is only because even our learned people in authority have still got a mania for anything foreign.

A Scientific Worker

NEWS AND VIEWS

Agricultural Statistics.

The subject of agricultural statistics has come into lime light at the 4th Annual Meeting of the Indian Society of Agricultural Statistics, which was inaugurated by Dr. Rajendra Prasad, the President of India. This Society was inaugurated by Dr. Rajendra Prasad when he was the Hon'ble Minister for Food and Agriculture and it is gratifying to note that he has still maintained his interest in the subject. In his inaugural speech Dr. Rajendra Prasad referred to the divergent views held on different subjects of agricultural science and stated that it should be the work of the Society to go into the various questions from the scientific point of view and evolve statistical methods by which reliable information could be collected. He considered

that accurate statistics was vital for assessing the food problems in this country. Dr. P. V. Sukhatme, Honorary Secretary of the Society, in his report dealt with the attempts made by the Society in furtherance of their objects and stated that the Journal started by the society had, in its short life, established a name for itself and was in demand in other countries.

Reorganisation of the Indian Council of Agricultural Research.

The Hon'ble Mr. K. M. Munshi, Minister for Food and Agriculture, Government of India addressed the Indian Council of Agricultural Research on 1st November, 1950. Mr. Munshi in his address stated that a revolution in agriculture had to be achieved in a brief span of years. India's existence depended on agriculture

and yet it was at present the weakest sector in the economy of the country. It was necessary to proceed along the three different stages (1) fundamental research (2) technological investigations and (3) introduction into practice. It was necessary to re-organise the machinery of the Indian Council of Agricultural Research in the interest of speedy work, satisfactory research and effective co-ordination. Mr. Munshi stated that the Indian Agricultural Research Institute was to be, under the new programme, the main centre of research and he considered that the Indian Council of Agricultural Research should have its home next door. The Indian Council of Agricultural Research should assist by technical advice and financial grants, but control in respect of technical and scientific matters should be exercised by the scientific workers themselves as far as possible.

A Symposium on History of Sciences in South Asia.

Under the joint auspices of the National Institute of Sciences of India and the UNESCO a symposium on the 'History of Sciences in South Asia, was held on the 5th, 6th and 7th November 1950 in the Delhi University premises. A large number of celebrated Indian scientists, historians and foreign delegates attended the symposium.

The discussions threw light on the glorious past of India and the South Asian countries, scientific developments that took place in the remote past and the spread of the scientific practices to other countries where the people knew little of science. Viewed in the light of modern complicated scientific industries, the achievement in the fields of chemical and medical science will certainly appear to be surprising. The developments of natural, physical and mathematical sciences were no less remarkable. During the discussions importance was attached to the chronological order of the developments of these sciences as there was some confusion about the same.

If the history of India and the western countries in the past is studied, a remarkable difference will be noted in the process of development of sciences. Up to the time of Nagaryuna India's science was on a steady rise and after him the decline started. The people of the western countries had little or no science during all the early years but it started growing in time and by the time the decline in India's scientific activities was evident, science in western countries was developing at an appreciable rate. The steady rise is maintained even up to this day and probably it is now very much accelerated. Science in India declined and declined and modern science introduced by the British education during the recent times is only slowly progressing.

It will be profitable if the causes and conditions which induced India's fall in scientific progress after Nagaryuna's time are studied in more detail. It may then be possible to avoid such conditions and take proper precautions so that the modern progress may again not be hampered. The Indian scientists should find out if the present day conditions in the scientific field are conducive for a useful and steady progress. The ways of History are inexorable and seriously mathematical and if we do not take proper precautions in time, the country may fall into the oriental way; history may repeat itself.

Visit of Dr. R. R. Williams to India.

Dr. Williams, Chairman of the Williams-Waterman Fund for the Combat of Dietary Diseases, U.S.A. arrived in this country in the middle of November, 1950. Dr. Williams is the chemist who in collaboration with Mr. R. E. Waterman isolated vitamin B₁ and later synthesized it, opening the way to large scale commercial manufacture of thiamine. It is interesting to note that Dr. Williams has been utilising the income obtained from royalties of commercial synthesis of vitamin B₁ for the furtherance of attempts to utilise our scientific knowledge in relieving human sufferings. He has established

the Williams-Waterman Fund for the Combat of Dietary Diseases which is concerned with the field of nutritional problems. We are proud to know that Dr. Williams was born in India at Nellore in the Madras State and probably owes his inclinations towards social service to his being born in this country where according to a recent speech of the U.S.A. Ambassador, the spirit for self sacrifice and social service is conspicuous. Dr. Williams would be in this country up to the middle of December, 1950. He has come to India to see if he could be of any service to the country of his birth.

Physics Noble Laureate to Visit India.

Professor Cecil Powell, Professor of Physics at the University of Bristol, U.K. has been awarded Nobel prize of Physics this year for his work in Nuclear Physics. It is learnt that Professor Powell would be in this country during this month and would address Scientific Conferences on his own subject—nuclear fission.

World Power Conference and International Engineering Exhibition in Delhi.

The second post-war sectional meeting of the World Power Conference is to be held in Delhi from January 10 to 15, 1951. At about the same time the International Commission on Large Dams will also hold its Fourth Congress at Delhi.

The first meeting of the World Power Conference was held in London in 1924 and in the 26 years of its existence, the World Power Conference has established itself as a valuable international institution. Next year's Conference will have as its theme the "Utilisation of Power in its Various Aspects" and it is hoped that it will produce much valuable information on the development and use of power for the production of food and essential industries throughout the world. Some of the subjects on the agenda deal with such aspects of this theme as "Utilisation of Electricity in Agriculture and Agricultural Processing, "Electri-

city and Fertilisers", and "Power and Mines".

India has one of the most comprehensive irrigation systems in the world—the acreage under irrigation in India actually exceeds the combined total acreage irrigated in the U.S.A., the U.S.S.R., Japan, Egypt and Italy. Representatives from 32 nations have been invited to the Conference and various non-member countries. Asia will be sending unofficial delegates.

A special feature of the Conference will be an International Exhibition arranged by the National Committee to demonstrate engineering activities relating to the utilisation and conservation of water, power and allied research. The exhibition will include working and still models of river valleys and power works and will last for at least one month.

Nuffield Fellowships for India.

The Nuffield Foundation has offered five travelling fellowships to India for 1951-52—one each for engineering, natural sciences and social sciences and two for medical sciences.

An Advisory Committee has been appointed in India by the Foundation to advise on the administration of the fellowship schemes, Mr. G. L. Mehta, Member, Planning Commission is its Chairman, Dr. C. V. Raman and Messrs S. Varadachariar and J. J. Ghandy are the members.

The fellowships are tenable normally for one year. Men and women who have shown unusual capacity in advanced knowledge and teaching in the specified subjects will be considered for grant of the fellowships. They should be between 25 and 45 years of age, should hold preferably a Master's or Doctor's degree with a year or more of teaching or research experience on the staff of a University or comparable institution.

Scientific Outlook in Architecture.

Dr. Tara Chand, Secretary, Education Ministry, Government of India, inaugurated the exhibition of Soviet Architecture on Saturday the 4th November 1950 at New Delhi. We

welcome this noble move of foreign embassies so that all the countries can be benefitted by exchange of cultural ideas. The development of architectural design and pattern depended upon the growth of civilisation. In the U.S.S.R., there has been a revolution in the architectural development since 1928 and a new emphasis has been laid on functionalism in Soviet architecture. Now in the present competitive days of world-progress, unlike the period of old era, time is passing very fast and each nation has to clearly observe scientific outlook for each and every step of national life. The engineer, while planning and designing a building, has to keep in mind the need of the people, the availability of materials which again lead to the study of the scientific development in the subject and the buildings. In one word, the architect must have a scientific outlook and it is for this reason that there is a competition of architectural developments, as in scientific developments all over the world. The Cultural Secretary to the U.S.S.R. Embassy pointed out the Soviet achievements during a short period of time. She considered that in the present planning, more scientific outlook was necessary at the time of planning so as to meet the needs of the masses.

New Laboratory Plane to Detect Radioactive Substances in Atmosphere.

A unique laboratory air-plane has been built by the light aviation service of the French Air-Ministry. Hubert Garrigue, director of the famed observatory on top of the 4,800 ft. Puy-de-Dome in the mountains of Central France, will use this flying laboratory to study the composition of the atmosphere. The plane contains apparatus designed to detect traces of atomic explosions. M. Garrigue was in charge of the observation flights made in France in 1946 and

1948 to investigate traces of radioactivity after the Bikini and Eniwetok explosions.

(News from France).

Supply of Surplus Scientific Stores at Low Prices.

It is gratifying to note that the Ministry of Industry and Supply of the Government of India have now decided that the surplus stores of scientific value should be made available to Educational and Research Institutions at 5 per cent of the market price. Some time back a concession of 10 per cent of the market price was allowed. There has, therefore, been a further concession and it is hoped that full benefit would be taken of the concession by all concerned.

Finger-Prints and Medical Diagnosis.

Research carried out at New Scotland Yard, the centre of Britain's Criminal Investigation Department, suggests that finger-prints, the patterns of which have long been recognised as unique for every human being, may in future have considerable value in diagnosing disease. The study of this completely new field of research was prompted by an all-too-common part of routine police work—the examination of dead bodies. Experience over many years led to the observation that, as a general rule, after death the left hand, no doubt because it is in life less hardened by use, shows more rapid signs of decomposition than the right. This suggested that careful examination of the left hand might disclose early evidence of the onset of diseases of certain types and experiments have gone far towards confirming this supposition. It has so far been possible to reveal the diseases such as leprosy, Darier's disease, polio-myelitis, tuberculosis and fluorine poisoning.

(British Information Services).

ACTIVITIES OF THE BRANCHES

Abdullapur Branch.

A general body meeting of the Branch was held on Wednesday the 1st November 1950. Dr. J. C. Aggarwal, President of the Branch, was in the chair. Besides a few announcements regarding the design of the Association of Scientific Workers of India Seal, improvement of the front page of the Vijnan-Karmee and the election of delegates to the Council meeting, the following two resolutions, moved from the chair, were passed. Also a few films were shown to the members.

Resolution No. 1.

"While we the members of the Association of Scientific Workers of India, Abdullapur Branch, can understand the necessity of importing some foreign technicians for Indian Industries, we simply fail to appreciate the desirability of recruiting apprentices from foreign countries to be trained in India for taking up responsible technical positions in Indian Industry. One such specific case is an advertisement appearing in the World Paper - Trade Review, London dated 3.11.49 which is reproduced hereunder :—

'Trainee required for British managed Paper Mill in India. Must be single, between 21-25 years. Good education and aptitude for mechanical and chemical processes an advantage. Two years' primary agreement during which time applicant will be given practical training in paper making and if successful will be offered a further two years' agreement leading to permanent post. Salary for first two years equal to £500 per annum plus cost of living allowance, free quarters, servants and medical attention, free-passage out and home. Increased terms for second two years. Apply Box 12857.

We view such practices with great concern as they are decidedly against the interests of the

Indian Scientific Workers.

We hereby recommend to the Central Executive Committee of the Association of Scientific Workers of India to take up the matter in all seriousness with the appropriate authorities of Government of India and with Indian Paper Mills Association to restrict such whimsical actions on the part of some British Managed industrial concerns in India. It is also resolved that the Central Executive Committee be requested to send copies of this resolution to the Ministry of I & S., Ministry of E.A., Ministry of Scientific and Industrial Research, Government of India, and also to Indian Paper Mills Association and to Indian Paper Workers Association.

Resolution No. 2.

The members of the Association of Scientific Workers of India, Abdullapur Branch have noticed with great concern that some Industrial firms in India are recruiting foreign technicians who do not possess any special experience or qualifications to fill up jobs for which suitably qualified Indians are available in hundreds. An advertisement appearing in the Trade Review dated 20.7.50 is quoted below as an example of such a case :—

'Chemists wanted by British managed Paper Mill in India; a qualified chemist preferably with some engineering experience. A man between ages 25-40 with personality and capable of handling labour and staff preferred. Previous experience of paper and pulp manufacture not absolutely essential. Salary from Rs. 1800 monthly according to qualification and experience, partially furnished quarters. Full details stating age, experience etc. to Box. T.Z.K. c/o 95, Bishopgate E.C. 2.'

We should welcome that foreign technicians with specialised experience and exceptional qualifications be brought to India to help the

Indian Industry to stand on its own legs but the employment of foreigners without such qualifications and knowledge is against the interests of the Indian Scientific Workers as well as Indian industry.

Therefore we recommend to our Central Executive to take up this matter with Government of India requesting them to improvise some Governmental machinery by which the recruitment of aliens in Indian industry may be controlled in accordance with the Government's declared policies.

It is further resolved to send copies of this resolution to the Ministry of I & S., Ministry of External Affairs, Ministry of Scientific and Industrial Research, Government of India and also to Indian Paper Mills Association and to Indian Paper Makers Association, Calcutta.

A meeting of the Branch was held under the chairmanship of Shree D. D. Puri on Tuesday the 24th October, 1950 in order to welcome two of the Patrons of the Branch, namely Lala Karam Chand Thapar, Managing Director of Messrs. Karam Chand Thapar and Bros. Ltd. and Shree D. D. Puri, Managing Director of Messrs. Saraswati Sugar Syndicate Ltd. The welcome was extended by Dr. J. C. Aggarwal, President of the Branch. Both the Patrons, in their respective speeches, laid stress on our present national demand namely production. They explained how imperative it was for all of us to work ceaselessly hard and in a very cordial and co-operative spirit. Not only that we should work, but should also create the enthusiasm for work in others. It was only by putting together the efforts by people of all classes that the country can prosper and the ambitions of a common man can be fulfilled.

Shree O. P. Verma, General Manager of Shree Gopal Paper Mills Ltd., thanked both the patrons, on behalf of the Branch.

Delhi Branch.

A film show was held at Delhi Polytechnic

Institution on 30.10.50 by courtesy of B.I.S. and Delhi Polytechnic Institute authorities. Mr. A. C. De, Branch Secretary in a short introductory speech described the aims and objects of the Association with particular reference to the duty of scientific workers towards the society. He said that the necessity of such an organisation exists specially in India so that the common man can know and derive benefits of scientific developments and research. Mr. De hoped that a unit of the Association of Scientific Workers of India would soon be formed at the institution so that the scientific workers of the institution can discuss scientific and technical matters themselves and exchange views with their colleagues outside the institution.

Indian Meteorological Department Unit.

Mr. V. Satakopan addressed the I. Met. D. Unit members on 28.10.50 on "Hydrometeorological Organisation for Water Power Projects in India". Most of the members of the unit were present. The speaker suggested that in order to achieve our objectives efficiently in water power projects the amount of water available as annual rain/snow fall in the area should be properly assessed and as such we should have (i) sufficient number of rain-gauge stations in the area (ii) evaporimeters which give most accurate results, and (iii) accurate estimation of snow and (iv) personnel of high calibre to be employed for hydrometeorological observations. He referred to a paper on the subject written by Mr. V. V. Sohoni, the present D.G.O. Mr. A. C. De read out an appropriate portion of a paper on the subject written by an eminent Russian scientist where he gave an account of the development work done on hydrology. In 1944 according to the writer, there were more than 6000 hydrometeorological stations in U.S.S.R. the number of stations increasing each year by an appreciable number. The members felt that in our country due and proper attention to the subject has not been paid by the people as well as by the Government.

I.A.R.I. Unit.

Through the courtesy of the British Information Service a film show was arranged by the unit at Indian Agricultural Research Institute on 15th November, 1950. The following films were exhibited :—

- Trial by Weather
- Jet Power
- Playing with Fire
- How Plant Breeding helps the Farmer.

It was largely attended.

Hyderabad Branch.

The membership of the Association in Hyderabad having increased beyond 50, a Branch has been formed by a resolution at a General Body Meeting held on the 13th October 1950. The following were elected as office bearers till the next year.

- | | |
|---------------------|--------------------------|
| 1. President ; | Dr. M. S. Iyengar. |
| 2. Vice-Presidents: | Dr. K. S. Chari. |
| 3. „ | Prof. N. V. Subbarao. |
| 4. Secretary: | Dr. M. G. Krishna. |
| 5. Jt. Secretary: | Mr. K. N. Ayer. |
| 6. Treasurer : | Mr. Abde Ali. |
| Members . | |
| 7. | Mr. A. Shankar. |
| 8. | Mr. A. R. Kidwai. |
| 9. | Dr. S. H. Zaheer. |
| 10. | Mr. Manmohan Ravi. |
| 11. | Mr. Anwarur Rahman. |
| 12. | Capt. K. M. Nambi Mirza. |
| 13. | Dr. S. Z. Ali. |
| 14. | Mr. L. M. Srivastava. |

Lucknow Branch.

A meeting of the Association of Scientific Workers of India, Lucknow Branch was held on the 21st of September, 1950 to discuss the working conditions of scientific workers in Educational Institutions. Acharya Narendra Deva addressed the meeting. More than 50 persons were present representing local colleges and the University.

The President welcomed Acharyaji and explained the aims and objects of the Association.

The Secretary then opened the discussion bringing to light the mal-administration, lack of apparatus, chemicals and microscopes in various institutions. Referring to salaries, it was found that they are not uniform and the D.A. also was not uniform. Some of the institutions were irregular in payment of the salaries. The teaching as well as minimum apparatus should also be standardized.

Shri N. N. Srivastava, Shri S. C. Roy and Dr. S. K. Pandey took part in the discussion.

Acharyji, while addressing, acknowledged the growing need of the development of science. He was fully aware of the conditions prevailing in private educational institutions, where the salaries of the summer vacations were not given in some cases. He appealed for more grants to such institutions. In Degree colleges, he informed that the University has taken in its own hand the appointment of staff through a selection committee. It was also intended to completely separate the Intermediate teaching from B.Sc. teaching.

In the end the President thanked the Vice-Chancellor and advised the young men to raise their standard of teaching and to have some spirit of self-sacrifice.

Poona Branch.

The General Secretary of the Association, Dr. D. V. Karmakar, paid a visit to the Branch Office on 25th October, 1950 and had a talk with the office bearers on the subject of the organisational activities of the Association in general and the Poona Branch in particular. He expressed satisfaction at the systematic way in which the Branch work is being carried on.

The lecture by Mr. D. E. Rose, Film Section, Chief of the American Consulate General in India on his recent impressions of the United States followed by the film show 'This is Louisiana' held on 27th October 1950 was a great success. About 400 persons attended of which about 200 were school students and teachers. The public of Poona have started

taking interest in the activities of the Association. As compared to the initial meagre attendance at the functions held in the beginning of the year, the recent well-packed attendance at

the functions of the Branch is a pointer to the interest shown by the public. The local press also is giving due publicity.

VIJNAN-KARMEE

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THE OBJECTS OF THE ASSOCIATION

A R E

To improve and safe guard the economic interests, the conditions of life and the professional and social status of all scientific Workers in India

A N D

To work for the most effective use of science and the scientific method for the uplift and welfare of the society as a whole.

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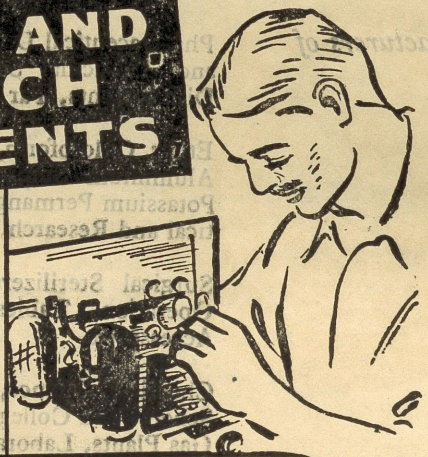
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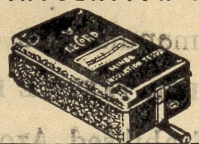
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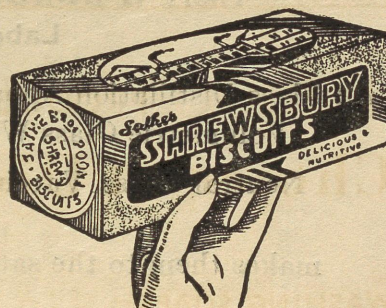
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