

ANNUAL PRESIDENTIAL ADDRESS.

At the Annual General Meeting of the National Institute of Sciences of India, the President is expected to make remarks reviewing the work of the Institute during the year and not to deliver an address on a theme bearing upon his own science. My task has been made easier this afternoon, firstly because the Report of the Council has already given you a summary of the working of the Institute during the year and secondly because three major events of a very pleasant nature happened during the year which are like milestones in the progress of Science in India and which affect the Institute very intimately. Before I deal with these events, it is my first and most pleasant duty to thank the Fellows of the Institute for the great honour they did me in electing me as their President for 1951.

In inaugurating the Institute on the 7th January, 1935, His Excellency Sir John Anderson, the then Governor of Bengal, referred to the sequence of events which brought into being the National Institute. The first organised step for correcting tradition by observation of nature may be said to date in India from the foundation of the Asiatic Society in 1784. The second step dates from 1857 when the Calcutta University, followed at short intervals by a number of other Universities, was founded. The second step also comprised the establishment of a series of great scientific surveys. The third step was the meeting of the Indian Science Congress for the first time in 1914. The fourth step was the inauguration of the National Institute of Sciences of India in 1935 as a central and all-India co-ordinating body, embracing all scientific research in this great country of ours. The establishment of a number of National Laboratories for fundamental researches in various branches of science showed that accelerated evolution in the progress of science was being maintained. The fifth step has now been taken in 1951 in the establishment of a separate Ministry in the Union Government for Natural Resources and Scientific Research, with one of our past Presidents, Dr. Shanti Swarup Bhatnagar, as its first Secretary. This is an event of great importance to Indian scientists in general, and to the Institute in particular. As President of the Institute, I have already conveyed to the Union Government the deep sense of gratitude of the Indian scientists at this most auspicious event in the history of science in India, and have congratulated Dr. Bhatnagar for his wonderful achievements in developing science in India and on the distinction of his being the first Secretary of the new Ministry. In passing, it may be mentioned that the Election Manifesto of the Indian National Congress contains an assurance that adequate measures will be taken to continue unchecked the progress made in scientific researches and in the application of science to industry. The present Congress Government in the centre is rightly proud of the efforts it has made in according a high place to scientific research and development in the country. We are all greatly indebted to our Prime Minister, who is also a Fellow of the National Institute of Sciences of India, for his kind thought and care of science in India.

We are fortunate in having an erudite scholar and a person with broad sympathies as our first Minister for the Ministry of Natural Resources and Scientific Research. Under the patronage of the Hon'ble Shri Sri Prakasa, scientific knowledge and learning are bound to flourish. Through his wise guidance, we hope India will 'promote and maintain a liaison between Science and Letters', one of the objects of founding the National Institute of Sciences of India. On behalf of the Institute and myself, I have already extended to him our fullest co-operation in developing science in the country.

From the time intervals between the various events in the onward march of science, 1784, 1857, 1914, 1935 and 1951, it will be seen that the progress of science

in our country has been gradual in the past but now its pace is accelerated. Biologically speaking, this evolutionary process signifies that the progress remained slow so long as the environmental conditions were placid but became accelerated with the advent of more turbulent conditions in our national life. If we have to live and keep pace with the changes in our environment, the tempo of scientific research and development must increase many-fold. The recent appointment of a Minister for Planning in the Union Government and of a statutory Planning Commission indicate that a scientific approach is being made for the solution of the major economic and social problems of the country.

The second great event of the year is the renewal of the grant of Rs.3,36,000 by Messrs. Imperial Chemical Industries (India) Limited for the award of Research Fellowships in Physics, Chemistry and Biology for the next five years. The Institute is happy that the authorities of the Imperial Chemical Industries (India) Limited approved of the way in which the previous grant of a similar amount given in 1945 was administered by the Institute and were satisfied with the scientific researches that have been carried out under the scheme. We are grateful to Messrs. Imperial Chemical Industries (India) Limited, particularly to its Chairman, Lord McGovan, for this magnificent gesture of good-will towards India and for the encouragement they have thus given to scientific research in the country. Is it too much to hope that the industrial magnates of the country will also come forward with similar grants and thereby help the Government and the country in increasing the speed of scientific research so vital for the welfare and prosperity of the masses.

The third great event of the year is our own building in which we are meeting today. This Institute was established at Calcutta in 1935, but on its recognition as the premier scientific body in the country, its headquarters were shifted to Delhi in order that Government may be able to draw on its advice expeditiously and by personal discussions. Though we have not come of age yet, we have established a small home for ourselves. We are grateful to the Government of India for the gift of the land and for funds for the building. This is only a part of our Building Project and we hope before long to get sufficient funds to complete it.

Since the transfer of the Institute to Delhi in 1945, the University of Delhi very kindly and generously provided us with accommodation at considerable inconvenience to themselves. We offer to the authorities of the University our grateful thanks for their kindness and courtesy. We hope to maintain a very close liaison with Universities in the country, for we can be complimentary to each other in the service to the nation.

Since a Committee of the Indian Science Congress recommended the establishment of the Institute, it was befitting that the first two meetings held in the Building were those of the Finance Committee and the Executive Committee of the Indian Science Congress Association.

With a building of our own, with enough encouragement and financial facilities from the Government and with the recognition of our work abroad, our duties and responsibilities have also increased, and, I think, it is time for stock-taking so that we can be fully prepared to play the rôle that may be assigned to us in the planning of future scientific development and research in the country. Having been actively associated with the working of the Institute since its inception as Treasurer, Secretary, Editor of Publications and now its President, perhaps I am in a somewhat better position to undertake such a stock-taking. We have no doubt solid achievements to our credit but at the same time there are glaring deficiencies which must be rectified before we can be above reproach. We can begin this stock-taking by reviewing our achievements in the light of the Aims and Objects for which the Institute was founded.

The Objects of the National Institute of Sciences of India are:—

- (a) The promotion of natural knowledge in India including its practical application to problems of national welfare.

- (b) To effect co-ordination between scientific academies, societies, institutions, and Government scientific departments and services.
- (c) To act as a body of scientists of eminence for the promotion and safeguarding of the interests of scientists in India; and to represent internationally the scientific work of India.
- (d) To act through properly constituted National Committees in which other learned academies and societies will be associated, as the National Research Council of India, for undertaking such scientific work of national and international importance as the Council may be called upon to perform by the public and by Government.
- (e) To publish such proceedings, journals, memoirs and transactions, and other publications, as may be found desirable.
- (f) To promote and maintain a liaison between Science and Letters.
- (g) To secure and manage funds and endowments for the promotion of Science.
- (h) To do and perform all other acts, matters, and things that may assist in, conduce to, or be necessary for the fulfilment of the above-mentioned aims and objects of the Institute.

Of all these functions, the only one that we have discharged effectively and perhaps efficiently, is regarding the publications of the Institute which have appeared more or less regularly. We have discharged our duties in this respect without favour or fear and have weathered many storms. We are specially proud of our Symposia which attract great attention abroad and give an up-to-date review of the problem discussed. We are going to make a special feature of these symposia by publishing them as Bulletins of the Institute. We have also undertaken the publication of the Progress of Science in India from 1938 to 1950 and thereafter year after year. We have suspended the publication of '*Indian Science Abstracts*' as they seemed to serve no useful purpose. Our publications and the holding of Symposia have, in my judgment, been instrumental in 'the promotion of natural knowledge in India including its practical application to problems of national welfare'.

A 'Popularisation of Science Fund' was started in 1947 with donations amounting to Rs.4,402 and a number of Nature Study paintings at a cost of Rs.4,000 were made for educational purposes but somehow the Institute has not yet been able to chalk out a definite programme. Our building is very favourably situated to cater for both New Delhi and Delhi and the Institute will give thought to organise public lectures, small exhibitions, etc. to popularise science. We hope to get considerable assistance in any such projects from the U.N.E.S.C.O. Science Co-operation Office for South Asia at Delhi.

The main object of founding the National Institute was 'to effect co-ordination between scientific academies, societies, institutions, and Government scientific departments and services', but I am afraid our achievements in this direction have been limited. The Indian Academy of Sciences at Bangalore has refused for the last several years to send their representatives on our Council, though we have shown to the Fellows of that Academy all considerations which we give to the Fellows and Members of other co-operating academies. Further, we have assisted them in getting large grants from the Central Government. Even in the case of other co-operating academies, such as the Asiatic Society, the Indian Science Congress Association and the National Academy of Sciences, we have given them representation on our Council but ourselves have no representatives on their Councils or Executive Committees. There should be a reciprocity of such representations for ensuring co-ordination.

We have received the co-operation of all learned scientific societies. The Institute has also been assisting them by awarding grants or recommending them for Government grants in aid of their respective publications. Rules have recently

been framed for the affiliation of societies of an all-India nature to the National Institute thus ensuring closer co-ordination. As regards scientific institutions, a provision is being made by the Union Government in their respective constitutions to include a representative of the National Institute of Sciences of India on their governing bodies. For example, the Institute is now represented on the Court and Council of the Indian Institute of Science, Bangalore, on the Council of the Indian Association for the Cultivation of Science, and on the General Council and Chemical Division of the Indian Standards Institution.

As regards effecting any co-ordination between the Government scientific departments and services on the one hand and non-official scientists on the other, the stage has not yet reached. There is hardly any co-ordination between Government departments and services *inter se* and it will be premature to expect any real co-ordination between the official and non-official scientists just yet. Now that there is a Ministry for Scientific Research, we hope greater co-ordination will result from its activities among official scientists working under different ministries. The National Institute is, however, providing a forum where all shades of differences can be evened out and scientists of different institutions, officials and non-officials, work together to attain common objectives. Here I must mention that the Government of India, by recognising the Institute as the premier Scientific Organisation of the country and by consulting it on all important scientific matters, added to its prestige to effect co-ordination among non-official organisations, and our efforts should first be directed to effect co-ordination among such bodies.

We have yet to take any adequate steps for the promotion and maintenance of a liaison between Science and Letters, except that the Asiatic Society is one of our co-operating academies. By holding the Symposium on the 'History of Science in South Asia', in collaboration with the U.N.E.S.C.O. Science Co-operation Office for South Asia at Delhi, we have shown our desire to promote and maintain such liaison. This Symposium, held in November last year, was attended by eminent historians and scientists and both sides seemed to have gained much by contacts. Organisations of similar Symposia will be of special value for broadening the outlook of scientists and of men of letters.

The proposal to recognise the National Institute as the Adhering Body for the International Council of Scientific Unions is still under the consideration of the Ministry of Natural Resources and Scientific Research. National Committees for collaboration with the Unions have not yet been formed though the Council of the Institute has urged on Government the necessity of doing so. It is, however, hoped that some tangible steps will be taken during the course of the next year. In view of the above position, we have not yet been able to fulfil the aims of our Object (d) of the Constitution.

I do not think that the Council has ever given thought to the fact that as a body of scientists of eminence, it is one of our objects to promote and safeguard the interests of scientists in India. So long as planning of research in India continues to be tactical rather than strategic, there is great need to safeguard the interests of true scientists in this country. Already, since the war, demand for scientists in high positions has upset the balance of scientific teaching and research in the country. Some of our eminent teachers and research workers are now administrators, with the result that standards have gone down in a number of universities and scientific institutions. We are now on paper producing a large number of scientists but I doubt if quality has been maintained. With the creation of new jobs, production of overnight specialists is now a common-place thing. In fact, in spite of a large number of scientific institutions in the country, I feel the scientific atmosphere is lacking. After all it is not so much the administrative organisation of science, but the atmosphere in which scientific work is carried out, which really matters and so long as the scientist is in control of the conditions under which he and his staff work we may be quite sure that the maintenance of the right atmosphere will be

assured' (Sir Edward Appleton at the British Commonwealth Scientific Conference held in London in 1946). As a biologist, it seems to me odd that we seek a rapid progress of science along certain lines without first creating the atmosphere in which real science can flourish. It has been overlooked that the most essential object in any scheme of scientific development must be the 'Scientist' himself and if he is deficient in certain essential qualities or lacks necessary facilities, the entire superstructure becomes fruitless. Under these circumstances, in the interest of science and of our country, it seems that we should regard 'the promotion and safeguarding of the interests of scientists of India' as one of our most important functions. In collaboration with the Ministry of Scientific Research, we can undertake this task most effectively, but I wish to avail myself of this opportunity to explore what needs be done.

One can sometimes read future events by a close study of those that happened in the past. I cannot say when the next step in the onward march of science will be taken, but it would seem that such a step will be the formation of a National Research Council under the new Ministry to co-ordinate all fundamental scientific research in the country and to ensure balanced development of all sciences. At present there is an undue emphasis on theoretical physics and problems of chemical kinetics or structures and a great neglect of biological sciences, which can play a very great part in national welfare. There is also a great need for the realisation that an indigenous technology making use of the principles of science against the background of local, social and economic structure can be far more effective in solving India's problems than the transplantation of the technology of the West. My personal experience of fishery problems has convinced me that future development can only be based on indigenous knowledge and practices and then expanding the same through scientific understanding. The possibilities of such an expansion are unlimited, provided the foundation is sound and well laid. We have much to learn from the eastern countries, particularly from China and Japan, and have, in my judgment, already wasted much time, energy and funds in copying the West.

The creation of a number of high salaried administrative jobs in Governmental services and depletion of Universities and scientific institutions has raised a problem of great national importance, and need is now felt among scientific workers for having a unified State Scientific Civil Service so that the scientists can carry on their researches uninterruptedly. Sooner or later the nation will have to consider whether the existing conditions of service for scientific workers are commensurate or even adequate for the initial training they have to undergo as compared with the administrative services. Unless the best scientific men, while carrying out scientific researches, have equal prospects of pay and promotion, it will be difficult to secure men of more than usual ability for purely scientific jobs. Further, there is a necessity for providing rapid advancement for outstanding men, and the Finance Ministry must recognise the necessity of creating additional posts for outstanding men. There is also need for the provision for the promotion of individual research workers of exceptional abilities, without necessarily expecting them to carry administrative responsibility. The appointment of Dr. C. V. Raman as National Professor and of Professor K. N. Bahl as Research Professor by the University of Lucknow are steps in the right direction. As President of the Institute, it has pained me to learn of the exodus of some of our young brilliant scientists to the U.S.A. or U.K. for lack of adequate facilities to work in India. Any national plan that leaves the man of science in a position inferior to that of his administrative or executive colleague is not going to be helpful in the least in creating a proper scientific atmosphere in the country.

From the above review of current and future events, I hope I have made it clear where our deficiencies lie and how best we can fulfil our objects. We are very favourably placed to advise the nation on planning for scientific research and development. Let us do our task fearlessly and boldly according to the best of our judgment.

Before I conclude, it is my very pleasant duty to record the thanks of the Institute and my personal thanks to the office bearers of the Institute, particularly the Secretaries, for the selfless service they have rendered during the year. I have received co-operation of the Council and of the general body of Fellows in the discharge of my duties and for this I am much obliged to each Fellow of the Institute.

S. L. HORA.

*New Delhi,
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