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## CURRENT SCIENCE—50 YEARS AGO

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### The Indian Institute of Science.\*

IN view of the impending appointment of the second Quinquennial Reviewing Committee, a brief survey of the development and activities of the Indian Institute of Science, Bangalore, during its life of twenty-five years, may assist in creating sympathetic and enlightened public opinion. This will provide a favourable background, rendering the task of the Committee perhaps less tedious and more congenial; it may even be found indispensable to the formulation of a definite policy for promoting schemes of reform and expansion, such as the Committee may deem desirable to recommend on the conclusion of their labours. The first Quinquennial Reviewing Committee have, in more than one section of their report, drawn attention to the prevailing public ignorance of the work and resources of the Institute, and have also adversely commented on the general misconception among members of the Court regarding the economic activities of the different departments. Such ignorance and misunderstanding, if allowed to persist, would favour the growth of public prejudice affecting the character and fair reputation of the Institute, although there is ample testimony of honourable work steadily pursued in a spirit of disinterested service to the country. It is true that the Pope Committee reported in 1921 abundant evidence that there existed in many quarters "a strong feeling of disappointment and dissatisfaction" with the then existing condition of the Institute; and if such a feeling still prevails in the public mind, it must be almost entirely due to general ignorance of the steps that have since been taken to remove partially or entirely the causes which led the Committee to record the adverse comment. If, however, there is still a source of dissatisfaction either within the precincts of the Institute or outside, we think it must arise from defects inherent in its organisation as well as from lack of a sound and definite policy, understood by all concerned, in regard to both the academic and the administrative spheres of this great foundation. In a short contribution on the Indian Institute of Science published in this *Journal* (October 1932), Alchymist observes that "with this provision (resources becoming available) the future, to

which we now look for progress and expansion at least comparable with those of the last fifteen years, is hopeful". Manifestly the writer of the article is favourably impressed by the advances made by the Institute during this period in the different branches of its activity. Sometime ago it was pointed out in an article in *Nature* (April 29, 1933) that "even if such an Institute were established in Great Britain, where the distances are not of the same continental order, it may be doubted if it would attract as many science graduates taking courses of advanced study and training for research as are now at Bangalore". This is a disinterested testimony to the increasing popularity and sound reputation of the Institute.

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Sir Venkata Raman, the new Director, assumed charge of his duties almost immediately. It must be remembered that Sir Venkata Raman was a member of the Pope Committee and had sat in the Council of the Institute for over seven years. In this respect the new Director had an advantage over his predecessors, *viz.*, that he entered upon his duties with a complete knowledge of the work of the Institute such as few could claim to possess. But they were not confronted with the difficulties which Sir Venkata Raman had to encounter. He had soon to face a deficit budget. The Physics Department had to be constructed and equipped. The proposals of the Sewell Committee had to be considered. In the meantime Dr. H. E. Watson and Professor F. N. Mowdawalla proceeded to other appointments. Dr. Watson, who was the senior member of the Institute Staff, had by his energy and character elevated the Department of General Chemistry to an honourable position, and some of his researches had led to the establishment of industries. His departure from the Institute is undoubtedly a great loss. Professor Mowdawalla was a former scholar of the Institute where he had conducted several investigations in the Department of Electrical Technology, and his place is to be filled by Mr. Kenneth Aston. In the Council Report for 1934-35 the Department of Physics organised by Sir Venkata Raman is shown as having produced 39 papers, General Chemistry 9, Organic Chemistry 14, Biochemistry 49 and Electrical

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\*Published in *Curr. Sci.*, Vol. IV, September 1934, p. 131.



Technology 15, in other words the total output of research during this one year was 127 papers. We had almost a paper for every three days emanating from the Institute. This is research in full action.

The Pope Committee deplored that "the Institute has lost in efficiency by reason of the fact that its policy and lines of development have never been defined with sufficient precision," and an examination of the Council Reports since 1922 does not disclose any comprehensive and clearly defined policy directed to the promotion of the welfare and progress of the Institute and of its relation to the economic and industrial life of the country. Perhaps the most important question which the Institute will be called upon to settle is whether it will continue to provide preliminary training in scientific methods and knowledge in its departments and also to hold certificate and diploma courses in Electrical Technology, particularly in view of the fact that almost all the Indian universities have instituted research departments both in theoretical and applied branches of science, in which work of a very high order is conducted, manifest from the number of papers published in India and abroad. In most of the universities, post-graduate work involves a considerable amount of training in research methods, and the M.Sc. Degree is awarded on the submission of a thesis on an original problem. In view of the rapid strides that universities and government research departments are making in the field of research, the Indian Institute of Science has to shape its academic policy to suit the altered conditions in the country.

The essence of this policy, as we conceive it, is that the Institute must find facts, while the public and government must find out how to use them. One of the main articles of such a policy would be to launch a campaign to convince the new legislatures and other bodies who control finance, that research is wealth, and that the greatest tributaries to it are chemistry and physics, through their contributions to agriculture, medicine, metallurgy and the entire range of manufacturing occupations. The second factor in this policy is to insist upon public recognition of the fact that the prosperity of a country in a competitive civilisation depends not so much upon the control of natural resources as upon the control of scientific processes. The work of the Institute in the field of fundamental research and industrial research should no longer be permitted to remain an inscrutable mystery to statesmen and administrators whose position in public life and whose influence in the legislative councils would be a material agent in establishing new research

laboratories. The Institute is essentially a single organism, whose health and functional efficiency depend upon the harmonious cooperation of its different members, and in order to secure such co-ordinated effort and infuse a sense of collective responsibility, the different departments must develop mutual interests and remove the spirit of exclusiveness. This is best done by the establishment of borderland branches of science, which would bind the several units into a single corporate body with common aims and purpose.

The question of the status of the Institute is discussed by the Sewell Committee. They have stated "that the Institute ought always to be in a position to provide such opportunities as cannot be obtained anywhere else in India; that it should do what no other institution can do; that it should maintain a position of pre-eminence; that it should acquire even a world reputation and that it should become a place of reference." The path to attaining this ideal is also indicated in the report, *viz.*, the personnel of the directorate, professoriate and staff, to which we would add finance. These admirable sentiments, however, are not in consonance with the theory elaborated by the Committee regarding the sources of revenue to be explored by the Institute. It seems to us that the preservation of the All-India or international character of the Institute depends upon the regional origin of its finances, its staff and students; and any suggestion of contribution by the provinces in proportion to the benefits received by their scholars must militate against the All-Indian status of the institution. On the other hand, contributions based on the financial capacity of each province irrespective of other considerations will invest the policy and outlook of the Institute with a national character. Each British Province and each major Indian State might endow a chair and support the laboratory attached. The late Mr. J. N. Tata never contemplated personal or communal benefit from the Institute which his munificence founded. The Institute is the cultural rallying point of the Indian Nation, and its structure is an indivisible unit. If the provinces, the Indian States and the industrial magnates consider it their patriotic duty, rendered in a spirit of pure altruism, to create and support associate professorships, readerships and lectureships in appropriate branches of science, then it may be possible to release the funds of the Institute more freely for developing its international reputation, by inviting scientists of outstanding eminence such as the Sewell Committee contemplate, to associate themselves with the life and work of the

institution. If it were only possible to induce such men to come to India—and it may not be difficult provided we have the resources—the universities, the government scientific departments and the industries would be glad to secure their co-operation and only then would the Institute be in “a position to do what no other Institution could do”. It is gratifying that, with

the limited funds at his disposal, Sir Venkata Raman has already taken the first step in this direction by inducing the Council to invite Professor G. Hevesy and Dr. Max Born to stimulate the work of the Institute; further development of this great institution must depend upon the financial support of provincial governments and of the Indian States.

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## NEWS

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### THE SECOND INDUSTRIAL REVOLUTION

... “Never in history [has] technology made such spectacular advances as [in] microelectronics, computers or robotics: the so-called technological revolution or second industrial Revolution. The first Industrial Revolution brought profound changes to every aspect of human life (the individual, the family, the society, the economy, ideas, etc.). In the same [way], the impact of this new revolution will be equally comprehensive. The Industrial Revolution was characterized by the amplification of the power of the muscles and this new revolution, by the amplification of the power of the brain. [The new] revolution is said to have begun only in the 1960’s (for some only in 1975 when the first primitive microprocessors came to the

market). Its first era was largely concerned with gadgetry when an immense commercial market was discovered. But in the second phase (until around the end of the century), we will witness important social effects. In the third and final phase we will move into a radically different world . . . . It is safe to say that most people alive today will witness the changes brought by this revolution.”

[(Ricardo Israel Zipper (U. Chile) in *Política* 2(4): 9–29, 1983 (Author abstract). (Reproduced with permission from Press Digest, *Current Contents*®, No. 20, May 20, 1985, p. 14. Published by the Institute for Scientific Information®, Philadelphia, PA, USA.)]

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### SENSITIVE SCIENCE FOR US CITIZENS ONLY?

... “Several [scientific and engineering] societies have banned foreigners from attending conferences and sessions concerning developments in materials science during the past year. Some of the organizations have gone so far as to require proof of US citizenship from participants and place security guards at the entrances of conference rooms to enforce the rules. . . . The organizers of those conferences contend that their actions are necessary to comply with government rules regarding the release of ‘sensitive’ technical information and to allow greater freedom to speakers. But many researchers complain that the rules are

destructive of the scientific enterprise. Such restrictions, said Robert L. Park [U. Maryland, College Park] are ‘a sign that our tradition of free scientific and technical information is being eroded, not only by government censorship, but also by self-censorship resulting from past intimidation by federal authorities.’”

[(Kim McDonald in *Chronicle of Higher Education* 6 Mar 85, p. 5, 7) (Reproduced with permission from Press Digest, *Current Contents*®, No. 23, June 10, 1985, p. 12. Published by the Institute for Scientific Information®, Philadelphia, PA, USA.)]

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