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The Indian Institute of Science—II.

IN the editorial published in the last number of this Journal, we endeavoured to provide our readers with a historical background of the evolution of the Indian Institute of Science, which, however meagre, was considered necessary for a proper appreciation of the principal recommendations of the Irvine Committee. We felt that, without such a perspective, the general public might place undue emphasis on the critical and exciting observations on "the circumstances of the Institute" which thickly mantle the more important and fundamental sections of the Report. Reperusing the Committee's report we are led to form the opinion that the Irvine Committee have presented a document which really embodies the results of investigation belonging to two unrelated committees, viz., The Enquiry Committee and the Reviewing Committee.

This fact gives it all the piquancy of interest which the publication of the Report has stimulated in the public mind.

The more we read this interesting document, the deeper is our conviction that the Committee did not strictly adhere to the terms of reference to them, viz.,

"To review the working of the Institute with special reference to the purposes for which it was founded and, if any changes are considered desirable in the organisation or activities of the Institute for the better achievement of these purposes, to make recommendation accordingly, but with due regard to the Institute's actual or reasonably augmentable financial resources."

If the Irvine Committee had treated the Institute from an impersonal standpoint, and had only confined their investigations to matters relating to the equipment of the laboratories, departmental researches, their general interest to pure and applied science,

their scope and direction of expansion, competence of the personnel and other academic and financial problems, their report would have been an invaluable contribution. Whether the reflections on other subjects included in the report lend additional weight and value to the scheme outlined by the Committee is doubtful.

We propose briefly to review the critical and constructive sections of the Committee's Report.

The "circumstances," whatever their nature and extent, which prevailed in the Institute immediately preceding the assembly of the Committee, and which, in our opinion, the Governing Council by virtue of their inherent powers should have controlled, without passively exposing their cumulative effect to the serious comments of an external body, must be at least partly due to efforts at introducing internal reforms and readjustments; and their very ephemeral character must render them too insecure a foundation for basing permanent and far-reaching proposals for the advancement of the academic interests of the Institute. That the "atmosphere" and "circumstance" of the Institute greatly influenced the judgment of the Committee is manifest from their remark that "in the present circumstances our recommendations become the more emphatic in order that the Institute may be saved from disintegration." If the recommendations have really such vitality as to preserve the Institute from putrefaction, then the high note of confidence expressed by the Committee is irreconcilable with the somewhat pessimistic key of the concluding sentence of the report, viz., "if our scheme fails, it can only be through the clash of personalities beyond the remedy of any powers possessed by a Reviewing Committee." This spirit of diffidence should be foreign to recommendations based absolutely on the stern academic demands of the Institute.

The report makes certain observations which, not based on facts, unfortunately tend to weaken the effectiveness of the general recommendations. We shall deal with a few of them.

In their Proposals for economising the financial resources, the Committee observe that

"The hostels would be more economically managed if the post of the Warden were abolished,

and the students took into their hands the control of messing arrangements under the general supervision of one of the senior resident members of the staff."

The Sewell Committee writing on the same subject deplored that

"The post of the Hostel Warden being left vacant was subsequently abolished."

The fact is the post has been non-existent for several years.

The main thesis of the report which is really of some importance, is that the Institute has from the beginning devoted all its resources and energies towards developing purely theoretical investigations, and has practically ignored its capacity for lending effective assistance to the advancement of industries. To readers of the Irvine Committee Report, who have no access to relevant literature, the remark that

"applied research has been handicapped from the beginning because no organised contract exists between the Institute and the world of industry."

must necessarily give an erroneous and misleading impression, for the industries in India have not developed in a measure comparable with those of the Western countries, and further, repeated references to them by the authorities of the Institute have elicited the reply that there were few scientific problems encountered by them for solution. However, few will dispute the desirability of such a contact, but all may not agree that the want of it imposes a handicap. We have to remember that so long as the primary function of the Institute is to train students in methods of research, the subjects selected should necessarily have an instructional value. It seems to us that while keeping this function in the foreground, the authorities of the Institute have also borne in mind the possible application of the results of such an enquiry to the inception of new industries and the improvement of the existing ones. In a booklet published in 1924 when the Indian Science Congress held its Eleventh Annual Session in Bangalore, Sir Martin Forster has recounted in detail the principal activities of the Institute in the field of applied science, and these achievements form an impressive record. The list is too big to be transcribed here. Within the last few years as the result of experimental work conducted at

the Institute, The Porcelain Factory has come into existence. It is true that spectacular results revolutionising industrial methods have not been produced by the Institute, and it is extremely doubtful whether they would have been achieved, even if an intimate contact with the world of industry had been established. If India should become a competitor with other Western countries as the producer of industrial goods, and if she is to achieve economic independence, the greatest need is to encourage and promote fundamental research and there should be one foundation entrusted with the responsibility of prosecuting and directing academic enquiries, and at the same time should be able and willing to undertake investigations of problems in applied science initiated by its professors or referred to them by industrial bodies.

Another instance of a statement not founded on facts is the allegation that, "The reduction in the allotments for the other departments has seriously curtailed their activities" and it is suggested that this state of affairs has resulted from "the Director's policy to make the Institute a centre of physical and mathematical studies." In expressing disapproval of this policy the Committee point out that these subjects offer an attractive field for speculation and experiment and have no direct contact with industry. There are three elements in this criticism. Regarding the bearing of academic researches on the development of industries, Professor M. N. Saha is reported to have said in his recent address at Hyderabad that,

"In this country the criticism is being made that the Universities were doing only academic work. If they neglected this work (Physics) for industrial research, they would be neglecting their duties, the effect of which will be seen in the falling of the standard and efficiency in the industrial work itself."

The Irvine Committee make the suggestion that

"The creation of the new department of Physics at the time when the financial resources of the Institute were diminishing, has had the inevitable effect of withdrawing from the other departments a certain proportion of the allotments that had hitherto been available for them". Thus "the reduction in the allotments for the other departments has seriously curtailed their activities."

We have examined the annual reports of

the Institute with a view to discover the truth of this serious criticism, and we are afraid that with the information we have been able to collect from these authoritative publications, we cannot agree with the observations of the Committee. In the first place, the Committee in Part III of their Report, have taken the actual expenditure for 1934-35 for comparison with the revised budget for 1935-36, and the disparity in figures should be accounted for by circumstances such as the late appointment of certain professors and the failure of others joining their posts, internal transfers, the proceeding of a few to appointments elsewhere and the general cutting down of grants owing to financial stringency. Even assuming that it is permissible to compare the actuals of one year with the revised estimates of the succeeding year, then according to the figures quoted by the Committee, the Departments of Electrical Technology and General and Organic Chemistry have suffered to the extent of Rs. 1,08,510 and the gain on the part of the department of Physics is Rs. 33,842. If this amount is distributed among the three oldest departments which have been building up their equipment and receiving increments to their staff for over twenty years, then each department would have contributed 10 per cent. of its allotment for assisting the newly created Physics department to provide itself with the necessary apparatus and staff. The spirit of mutual co-operation in times of financial depression is commendable. Further even supposing that the three departments should not have been deprived of the small percentage of their grants, has this rendering of help "seriously curtailed their activities"? We give below the number of publications issued by each department for the five years covered by the Irvine Committee Report.

	30-31	31-32	32-33	33-34	34-35
1. Electrical Technology ..	1	2	7	1	15
2. General Chemistry ..	7	2	2	7	10
3. Organic Chemistry ..	10	6	11	7	14
4. Biochemistry ..	25	11	12	33	49
5. Physics	39

The year in which the withdrawals of allotments from other departments are seriously animadverted upon by the Committee happens to be one of unprecedented activity in each department. This creditable and remarkable output of work from

the other departments must be due to the spirit of emulation created by the newly founded department of Physics.

We shall now deal with some of the more important recommendations of the Committee.

The essential part of the re-organisation proposed by the Committee is the appointment of a Registrar whose duties have been indicated in clear terms. The Pope and Sewell Committees recognised the need of the appointment of a Registrar, and made suitable recommendations, but so long as the Director was not also the head of a Department, the appointment was deferred. As the present Director is entrusted with the responsibilities of developing a new department which must necessarily absorb all his time and energy, any measure for relieving him of the routine office duties must be welcome to him. The Committee emphasise that the responsibilities of the Registrar "can be carried out only by a man of mature experience, trained in the official administration." We fail to see the importance of the stress laid on administrative experience, for the previous Directors who were carrying on administrative duties with conspicuous ability were eminent laboratory experts, and we are of opinion that a man possessing an intimate knowledge of the scientific activities in general and of the state of scientific advancement in India in particular, together with an acquaintance with research work carried on in technological and industrial Institutions, would be better qualified not only to deal intelligently with all the scientific matters pertaining to the Indian Institute, but also "to restore harmony in the administration and a feeling of confidence in the staff". We further feel that a most suitable candidate for this post could have been secured, if the Governing Council had been permitted to act in accordance with the Regulations governing the appointment of superior officers, without the Committee invoking the direct intervention of the Government of India.

One of the outstanding academic reforms suggested by the Committee which, in their opinion, would come nearest to fulfilling the intentions of the Founder of the Institute is the creation of "a strong representative school of Chemistry capable of

playing a significant part in pure and applied researches" with Chairs in five divisions of the department. The head of this new department of Pure and Applied Chemistry—the synthesised product of the existing General and Organic Chemistry departments,—is to be an Organic Chemist "of recognised eminence, acquainted with and interested in the technical applications of Chemistry", directing researches in organic chemistry, physical chemistry, inorganic and mineral chemistry, technical chemistry and pharmacological and medicinal chemistry, and receiving a maximum salary of Rs. 2,000 from the commencement of his service. A proposal of this magnitude and impracticability has been accepted with its financial obligations by the Governing Council, and approved by the Government of India. In order to provide for the appointment of the head of the new department and for five assistant professors, each on a salary of Rs. 800, the Irvine Committee have proposed a revised draft budget based on their proposals of effecting economies. Any one perusing the figures of this budget, on the basis of which the future budgets of the Institute are likely to be prepared, would be tempted to quote the very sentence of the Committee with very slight alteration, "the creation of the new department of Pure and Applied Chemistry at a time when the financial resources of the Institute were diminishing has the inevitable effect of withdrawing from the other departments a large proportion of the allotment that had hitherto been available for them". In making proposals for the re-organisation of the Chemistry Department, the Committee could not have remembered their criticism of the Physics Department to which they have unwittingly exposed themselves. We feel diffident about the practicability of the new scheme, and we would prefer the existing departments to retain their individual existence with professors at the head of each department. In order to defray the cost of their proposals of administrative re-organisation and academic reform, the Committee have formulated certain measures of economies which seem to us singularly unfortunate. These measures include suspensions, abolitions and replacement of posts and reductions of emoluments under eight categories. Out of the savings thus effected the appointment of a Registrar, a Professor of Organic

Chemistry and five Assistant Professors is to be financed. The Committee may have succeeded in framing a balanced budget, but are the authorities of the Institute also sure that the means suggested towards that end will secure contentment, harmony and cheerful co-operation among the members of staff affected by retrenchment? A casual perusal of the annual reports of the Institute will convince any reader that the contributions made by the senior assistants are quite as voluminous and valuable as those made by the Professors. They occupy positions of trust and responsibility in the department. The sudden change of their official designation and the drastic reduction in their remuneration by more than forty-four per cent. must tell adversely on the efficiency of the departments, and after all, the harder part of the departmental activities must ultimately devolve on the senior assistants, all of whom are entrusted with the duty of instructing the students and training them in the methods of research. The suggestion of reducing the provision for travelling expenses will undoubtedly diminish the opportunities of the Director establishing contact with the industrial research centres, and prevent the Professors and other members from attending scientific conferences. The Pope and Sewell Committees have emphasised the importance and necessity of the Director touring in India for the purpose of securing co-ordination of the work of the Institute with that of the official and semi-official research institutions and of disseminating information concerning the activities of the Institute, and the Professors and their assistants would, by attending the periodic scientific gatherings and industrial conferences, expound, as part of their legitimate duty, their own researches and receive information regarding the lines along which co-operation could be established. The proposal of reduction in expenses under printing and stationery must unfavourably react on the size and number of instalments of the Journal, which is at present the only organ announcing to the world of science the important results obtained in the scientific departments of the Institute, but the Committee is apparently not disturbed even if there is a fall in the number of publications, for they observe "few publications are likely to result from such (industrial) research work, but this need not be deplored".

We have pursued a line of thought not quite in conformity with that of the Irvine Committee in framing their scheme, but that does not diminish our warm and sincere appreciation of the candour and forcefulness with which they have urged their recommendations. It must be remembered that the situation which confronted them rendered their task both delicate and difficult, and none could have achieved the work more thoroughly or more enthusiastically.

The phrase "the benefit of India" occurring in the Scheme for the Administration of the Institute connotes a deeper significance to us than merely material welfare of India. The greatest benefit that the Indian Institute of Science can confer on India is, in the first instance, to preserve peace, harmony and trustful co-operation among the members of staff and students, which according to the Irvine Committee Report were almost on the verge of extinction, and in the second place the members of staff should be an inspiring example to the students of those qualities which distinguished Michael Faraday and Louis Pasteur. If Science is synonymous with Truth, then the Indian Institute of Science should be the greatest and most responsible official expositor of Truth. In a recent address which Sir Venkata Raman gave at the Prize Distribution Ceremony of a local educational institution, he is reported to have observed that

"the true wealth of the Nation was in the rising generation. Their character, their cheerfulness and the courage with which they assayed the task of life depended very much on the kind of training they received and, surely, producing this human wealth was a great industry."

Sir Venkata Raman's stewardship of the Institute will be finally judged by the care and assiduity with which he fosters this "industry" and by the zeal and sincerity with which he inculcates the sanctity of "character" in the minds of the young men who pass through his hands.

The Irvine Committee have produced a report embodying the results of patient investigation, some of whose recommendations are bound to be puzzling, while a few others must necessarily be in conflict with those of their predecessors, obviously because the Committees did not pursue a continuous policy, and did not develop a co-ordinated unitary scheme.

The Institute is now favoured with a large number of authoritative reports, each defining its aims and objects and each proposing recommendations for its improvement independently of the other. We have read these reports and all the available relevant literature, and we cannot resist the conclusion that all these documents should be carefully studied by a special section of the Governing Council which, working in a peaceful atmosphere, could evolve a more practical scheme for the academic administration of this great foundation, inaugurating a ten-year plan of development, as far as possible in conformity with the spirit of the recommendations of the previous committees.

Our proposal to subject all the reports for a general and comprehensive review by a Sub-Committee of the Council is to enable the authorities to discover the greatest common measure of agreement underlying the recommendations of the reviewing and special committees, which should form the basis of the scientific policy of the Institute for the next ten years. In close collaboration with the heads of different departments, and in consultation with the external bodies suggested by the Irvine Committee, this Sub-Committee ought to be able to draw up a programme of laboratory work for the same period, without in any way curtailing the freedom of the professors to initiate new lines of research or to prosecute and direct those now in progress. If the intention of the Government of India in appointing a reviewing committee is not to permit the recommendations of this body to rescind those of the previous committees, then it is obvious that a harmonious synthesis of the best and the most acceptable sections of all the reports may prove a fruitful field on which the Institute may profitably expend its money and labour. The divergence in the view-point as well the strongly-held antithetical recommendations of the different committees must be a sufficient justification for the proposal we have made, and the opinions expressed

by them regarding the economies to be practised by the Institute, the reorganisation of the chemistry departments, the establishment of competent professorial chairs and the allocation of duties to the Registrar, differ so fundamentally, that further and more comprehensive examination of all the various schemes may be necessary and desirable before practical steps are taken to implement any set of recommendations. The important problem of augmenting the financial resources of the Institute has not been seriously discussed in any Report, and the equally important question whether the Universities, which enjoy the privilege of returning a representative to the Council, are not to be invited to contribute an annual grant to the Institute, and whether in recognition of such contribution these academic institutions are not also to enjoy the privilege of selecting their best scholars for further work in the different departments, must engage the consideration of the Sub-Committee. The feasibility of this scheme, which in our opinion will tend to establish a more sympathetic and closer co-operation between the Institute and the Universities, so desirable in the general interest of the progress of science in India, depends almost entirely upon the confidence which the Universities have that "the Institute would do what no other Institution can do". Such confidence and co-operation entail "that the chairs in the Institute should be filled by men of the highest eminence, irrespective of nationality" and for this purpose the Sewell Committee recommended that the terms of appointment to the Directorate and Professoriate be made sufficiently favourable to attract such men.

We have not the least hesitation in thinking that the essence of the Irvine Committee Report is that the Institute must be ethically pure and scientifically great, and we emphasise that the need and responsibility of upholding the moral purity of this great foundation are even greater than promoting its academic achievements.
