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The United Academy of Sciences of India—A piece of history

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In the autumn of 1947 when I was at the Indian Institute of Science I heard that Chakravarti Rajagopalachari (Rajaji)—whom Gandhi had called 'the keeper of my conscience', had made a serious attempt to unify the quarrelling scientists of India by amalgamating our three academies. At that time I had occasion to meet K. S. Krishnan. I asked him whether this was true. He confirmed it—'but this noble attempt was brought to naught by one (or two) pig-headed individual(s)', he said. Later when I was researching on the life of C. V. Raman I asked two Presidents of INSA to allow me access to INSA's archives. They refused saying 'Reviving old controversies is not good for Indian science'. We Indians seem to be afraid of history and frightened of the truth.

On the occasion of the diamond jubilee of two of our academies, I felt that digging up some of the papers available at the Indian Academy of Sciences may shed some light on what happened then. I thank G. Madhavan of the Indian Academy of Sciences for the effort he put into this endeavour. After wading through reams of paper containing minutes of meetings, Gazette notifications, and voluminous correspondence I have reconstructed the events described below. (The asterisks () indicate, that the paragraphs/sentences have been taken from an official document or a letter. For brevity and continuity these have often been shortened using mostly the words appearing in documents or letters. All the italics and bold letters are mine.)*

Our story starts on the 3rd of January 1947. Independence was in the air. The Scientific Consultative Committee (SCC) which had been formed on 3 December 1944 had been reconstituted and moved to the Department of Industries and Supplies (DI & S). The Hon'ble member in charge of DI & S Mr C. Rajagopalachari was to be the Chairman of SCC.

A meeting was called on 9 February 1947 with Mr C. Rajagopalachari in the Chair and the members present were Sir C. V. Raman, Sir Jnan Ghosh, Prof. Meghnad Saha, Col. Sir Ramnath Chopra, Sir K. S. Krishnan, Prof. Birbal Sahni, Prof. H. J. Bhabha, Sir S. S. Bhatnagar (Vice-Chairman), Sir John Sargent, Dr W. D. West, Maj. Gen. G. Brunskill, Mr S. Basu, Lt. Gen. R. Hay, Dr K. R. Ramanathan, Mr D. Stewart, Mr A. N. Khosla, Maj. G. Williamson.*

In his opening remarks the Chairman said that 'since the functions of the Scientific Consultative Committee were not clearly defined, the main purpose of the meeting is to get the views of the members (to obtain clarity on this important question)*.

There was much discussion and members went into very intricate details about the functions of SCC and how it should operate. Clarity was however brought in

by Sir C. V. Raman who categorically said that, '*the Scientific Advisory Committee should be a high-powered and authoritative body which the Government of India could consult on research matters. The members of SCC should not be chosen by the Government, but should be representatives of the outstanding scientists of India. That is why a civilized country has a Science Academy. Such an academy must acquire the necessary authority to advise Government*'.*

Mr C. Rajagopalachari said that he was greatly impressed with the wider suggestion put forward by Sir C. V. Raman. This was tantamount to the idea of an Academy of all Sciences. In India since there are three academies, acceptance of Sir C. V. Raman's suggestion would imply combining of the existing three Academies.* Raman immediately accepted this idea.

The statements made by these men of stature are, in my opinion, historic. Advice to Government must be given through an Academy not by individuals chosen by Government as was done in the case of the Scientific Advisory Committee to the Cabinet and later the Scientific Advisory Committee to the Prime Minister. For such a choice would be tantamount to showering patronage on a few favoured scientists and this would

encourage sycophancy.

Mr C. Rajagopalachari continuing said, '*the existing scientific Academies/Organizations were doing good work in their respective spheres and to discontinue them would seem a great pity.*'*

'**But the time had come when it was imperative that all the great scientists of India should come together in one body**'.*

Sir K. S. Krishnan appealed to all those present to support the Chairman's appeal by closing their ranks and putting an end to their divided loyalties. Prof. Birbal Sahni said that though he had now re-joined the National Institute of Sciences which he had previously left for reasons which were well known, he was particularly happy that the Chairman had suggested that the existing three academies should be brought together. *The Chairman had done great service to India in putting this proposition to the meeting.**

The Chairman's idea of combining the existing Academies received the enthusiastic and *unanimous* approval of the meeting.*

The possible names for the new united body were then discussed. Sir C. V. Raman suggested the name United National Academy of Sciences of India. To another suggestion Mr C. Rajagopalachari said that use of the word Federal would be inadvisable. He also pointed out that the word United would serve as a reminder of the past troubles just as in case of the United States of America. It was decided that the best name for the body would be the *United Academy of Sciences of India*.*

It was agreed that the following decisions should be recorded:

(a) It is unanimously agreed that a combined Academy should be formed which will bring together all the three existing academies.

(b) The new central academy shall be called *The United Academy of Sciences of India*.

(c) All the academies in India devoted to science shall recognize the new central academy as the paramount scientific body for India.

(d) All Fellows of the National Institute of Sciences, Delhi, the Indian Academy of Sciences, Bangalore and the National Academy of Sciences, Allahabad, will automatically become Fellows of the United Academy of Sciences of India.

(e) It is recommended that all the existing academies should reconstitute themselves as parts or branches of the United Academy of Sciences of India. The Academies of Allahabad and Bangalore may, however, continue to hold properties and carry on their academic work as heretofore.*

In the matter of the National Institute of Sciences it was decided that it would have to be left to the National Institute of Sciences themselves to decide whether and

*to what extent they would modify their existing activities.**

(f) It is agreed that the members present will obtain the early agreement of their organizations so that the matters resolved upon may be put in train (*sic*) as soon as possible.*

*The unanimous agreement arrived at will be put in proper form by the Presidents of the three academies, under the Chairmanship of H.M. Industries and Supplies (Mr C. Rajagopalachari).**

*Sir C. V. Raman then raised the matter of journals of existing institutions. The Chairman suggested that the journals already being published by existing institutions would retain their names. This was agreed to.**

Then Rajaji wrote the following letter to Raman almost immediately:*

New Delhi

15 February 1947

Dear Sir C.V.

I enclose an extract from the minutes of the meeting of the Scientific Consultative Committee held on 9 February 1947. With reference to paragraph 8(f) of the minutes, would you kindly let me know when the agreement of the National Academy of Sciences**, Bangalore, has been obtained? When I hear from you to this effect I will arrange a meeting between you and the two Presidents and myself.

Yours sincerely,
C. Rajagopalachari

To
Sir C.V. Raman, F.R.S.,
President, National Academy of Sciences**
Bangalore

**he obviously meant Indian Academy of Sciences.

Raman acted immediately, called a meeting of the Council of the Indian Academy of Sciences and wrote letters which contained the resolution of the Scientific Consultative Committee to its Fellows.

The resolutions were enthusiastically supported by the Council and the Fellowship. Many suggestions were put forward regarding the manner in which these resolutions may be given effect to. On the 12th of March Raman sent a reply:*

Malleswaram P.O.
12 March 1947

The Hon'ble
Sri C. Rajagopalachari, B.A., B.L.,
Chairman, Scientific Consultative Committee
Government of India, 'Jaisalmer House' (Annexe)

Man Singh Road,
New Delhi

Dear Mr. Rajagopalachari,

Subject: Union of the Academies of Sciences in India.

I write to thank you for your letter No. 40(1)-SR/47 dated the 15 February 1947 and the copy of the minutes of the meeting of the Scientific Consultative Committee held on 9/2/1947 enclosed thereto.

The proposal regarding the formation of the United Academy of Sciences of India was considered by the Council of the Indian Academy of Sciences at their meeting held on 4/3/1947. The Council accorded their enthusiastic support to the proposal and decided to recommend the same to the General Body of FELLOWS of the Indian Academy of Sciences and also to invite suggestions from the FELLOWS regarding the manner in which the details of the proposal have to be worked out. We have already received a number of replies to our circular letter issued to the FELLOWS and all of them have uniformly accorded their enthusiastic support to the proposal. We have also received some detailed suggestions regarding the working out of the proposals. So far as the Indian Academy of Sciences is concerned, it may be assumed, therefore, that the proposal for the formation of the United Academy of Sciences of India is acceptable to its FELLOWS.

Yours sincerely
C. V. Raman

Following the letter from Mr C. Rajagopalachari a meeting of the three Presidents was held on 5 August 1947. The members present were The Hon'ble Rajagopalachari, Sir C. V. Raman, Sir Shanti Swarup Bhatnagar, Dr A. C. Banerjee.*

The Resolutions a.b.c were agreed to unanimously. A minor modification was made to Resolution (d):

All Fellows of the National Institute of Sciences, Delhi, the National Academy of Sciences, Allahabad and the Indian Academy of Sciences, Bangalore, admitted to the Fellowship before 1 January 1947 will automatically become Fellows of United Academy of Sciences of India. This is agreed to unanimously.

Discussing the question of complete merger of the legal titles to properties held by various Academies, it was found that the National Institute of Sciences have in their council meeting held it as an essential condition of merger that all the three bodies must give up their legal title to the properties in favour of the United Academy of Sciences of India, although use and management may be left to the separate institutions. On the other hand both the Presidents of the National Academy of Sciences, Allahabad and the Indian Academy of

Sciences, Bangalore, on behalf of their respective institutions desire to stick to the arrangements proposed at the meeting of the 9 February, viz. that the Bangalore and Allahabad Academies should continue to hold properties as heretofore. Raman said that legal merger of properties is impracticable.*

Allahabad Academy suggested through its President that in the election of the executive as well as of the Fellows of the United Academy there should be reservation of quotas for each body. Both Sir C. V. Raman and Sir Shanti Swarup Bhatnagar opposed this proposal as unsuitable for a scientific body.*

Before the end of the meeting Mr C. Rajagopalachari made the following observation:

I find that as things stand nothing further can be done. *I do not believe it is at all practicable to get a merger of properties in a legal sense.* Unfortunately this is stated to be an essential condition for the National Institute of Science to come in. I would strongly suggest that Bhatnagar and Banerjee persuade their respective bodies to withdraw the conditions as to merger of property and quota of Fellows respectively, so that the United Academy of Sciences of India could be formed, a unity amongst scientists is established and Government can get the best advice in matters relating to science.*

Obviously Bhatnagar was not able to persuade the National Institute of Sciences to withdraw the condition they had put down (which Rajaji described as not at all practical). This was the closest India came to uniting Indian scientists and it is unfortunate that this golden opportunity was missed.

It is worth recalling the history of the founding of two academies. On 24 April 1934 the Indian Academy of Sciences was started. The National Institute of Sciences was formed in January 1935. Raman was a member of the founding council of National Institute of Sciences. However he asked the question.

How can Indian science prosper under the tutelage of an Academy whose first President is a foreigner and which has on its council about 40% members who were Britishers—of whom only a few were distinguished enough to be elected as Fellows of any academy?

Raman's detractors said that he started his Academy to pre-empt the formation of another Academy which was in the offing. Even if this were true, Raman completely redeemed himself in 1947 by being a willing party to the unification of Indian science. In fact the name United Academy of Sciences of India was proposed by Raman himself.

All the actors in the drama that we have described are dead. The younger fellows of any one of these

academies are very likely unaware of or indifferent to the conflicts of the past and indeed many of them belong to more than one academy and participate freely in their activities. A full merger would still appear to be impractical given that each academy has evolved its own role and pattern of functioning.

It still does seem worthwhile to reopen the question of an apex body with representatives from all the academies which will increase coordination and cooperation in Indian science, advise Government, and serve as a unified voice of scientists on issues of national importance.

In 1933 Raman wrote an essay entitled 'An Indian Academy of Science' (Current Science, May 1933). A wag said that the essay was so effective and logical that any and everyone who read it wanted to start an academy of sciences! We reproduce it below as we feel it is worthwhile for all Indian scientists (especially the younger ones) to read it and remind themselves of what an Academy of Sciences should be and what its duties and responsibilities are. On these younger scientists rests the responsibility of raising the status and effectiveness of the academies to the level of their counterparts elsewhere in the world.

— Editor

An Indian Academy of Science

Generally speaking the progress of scientific investigation is regulated by the generous enthusiasm of scientific workers and the financial support received from Government or the discerning public. In India it has attained a stage at which further advancement can best be secured by organizing and co-ordinating the laboratory operations of official and non-official research departments. Although Indian science should command practically unlimited resources and actually has enlisted a band of competent and highly qualified investigators, it suffers from inadequate financial support and from the lack of an authoritative exposition of its achievements by a central responsible body which can speak on behalf of her scientific men for India as a whole. The conviction that research is civilization, and determines the economic, social and political development of a nation has not yet been unreservedly accepted as part of the administrative policy of India, and we are disposed to ascribe the tardy and perhaps unwilling recognition of this fundamental fact to the absence of an all-India scientific organization whose function would be to concentrate enlightened public opinion on the doctrine that science is material and spiritual wealth. Neither India nor the outside world has at present the means of receiving a complete picture of the total annual output of scientific work conducted under the auspices of Government, the universities and other semi-official centres. Some of the results are found in journals and magazines published by governmental scientific institutions, all-India societies and the universities; but papers of outstanding merit frequently gravitate to foreign periodicals. It seems to us that the early establishment of a National Academy of Science should secure closer and better organized co-operation of activities among all research institutes

in India, and exercise through its official journal a wider influence for the consolidation and promotion of the best interests of science.

It is true that individual scientific workers in India have by their indefatigable industry achieved great distinction for themselves, but the prestige of both official and non-official research is still slow in attaining that status of international importance reached by most European countries. This unsatisfactory position is in our opinion partly due to the tendency of many scientific men to export their more important contributions for publication in foreign journals, with a proportionate impoverishment of Indian archives. Perhaps if the resources of an all India journal such as we contemplate in connection with the Academy of Science, had been available for giving Indian scientific work suitable international publicity, the outflow of memoirs from this country would have been more restrained and less voluminous. Continuance of this practice will retard the process of building up a scientific tradition for India and keep her in a position of semi-dependence in the world of science. While the foundation of the scientific reputation of a country is established by the quality of work produced in its institutions, the superstructure is reared by the national journals which proclaim their best achievements to the rest of the world. Manifestly the edifice of science in India is incomplete. If scientific contributions from countries which possess national journals are also sent abroad, let it be remembered that they represent a surplus, broadcasting the embellishments of their own national organizations. It is true that the spirit of science and its service are international, but is it not also true that every nation has its own Academies, learned societies, magazines and journals? India will

have to organize and develop her national scientific institutions before she can enter into the comity of international scientists. The achievements of Indian science are national assets, and an Academy which treasures and displays them collectively is assured of providing the necessary guidance and inspiration for the younger generation to put forth greater exertions in order to enrich and widen the usefulness of this great estate.

We believe that there will be a general concurrence of opinion supporting the speedy establishment of an Indian Academy of Science with an Indian Journal of Science as its official organ for the publication of papers having outstanding merit. Our proposals need not excite any apprehension as to the fate and fortune of the numerous scientific institutions and journals conducted under the auspices of Government, the universities and other unofficial bodies. According to our scheme these will continue to function as before, and the Academy which in some respects may be regarded as their apex will assist rather than assume an attitude of unfriendliness towards them. Government is maintaining six scientific surveys besides ten or more research departments publishing their own journals and bulletins. Nearly all the eighteen universities provide facilities for research and some of them conduct journals. The UP Academy of Sciences is the official expositor of research work conducted in the regional universities of the Gangetic valley. The *Indian Journal of Physics*, issued by the Indian Association for the Cultivation of Science, is intended to reflect the scientific results obtained in all the universities. Nearly all the learned societies publish important papers in their journals and some of them have wide circulation. It seems to us that the ground has been thoroughly prepared and the foundation has been laid by these institutions and their organs for the establishment of a central body whose functions will not be permitted to overlap, but will aim at co-ordinating them by establishing cultural contacts. Most of the universities are interested in problems of pure science and through the influence of the Imperial Council of Agricultural Research, their active sympathies are enlisted by a system of special research grants, for the investigation of agricultural topics. The Academy of Science will be an authoritative body of scientists dealing with the more important papers, which they will discuss in their sectional meetings and publish in their proceedings or transactions for which the widest possible publicity will be secured. The scope and purpose of the functions of the Academy are therefore different from those of the Indian Science Congress which offers principally the advantage of human contacts while giving opportunities to discuss the preliminary stages of work still in progress. Thus the aims of the two institutions will be distinct, but complimentary.

Among other functions which the Academy will exercise should be included the protection and advancement

of the professional interests of its members. It should acquire the necessary authority to advise Government, the universities and other institutions on all scientific matters and other problems referred to it for consideration and to negotiate on behalf of Indian scientific workers with similar institutions abroad. The weight and influence of the Academy may be also most usefully executed in connection with securing an adequate statutory provision of grants for all the scientific departments depending on them. Financial stringency is often pleaded as an excuse for diminishing subsidies already insufficient, and although laboratory equipment is expensive, administrative authorities require to be convinced that the price of industrial prosperity is continuous and intensive research. The psychological moment for increasing the research grants appears to be the period when 'depressions' overtake the country, for the history of industrial progress testifies that these depressions are due not only to political causes but to a lack of scientific imagination on the part of the industrialists and statesmen. Financial depression is a Handwriting on the Wall, and the only correct interpretation of this message is that scientific research has to be reorganized to cope with the wasteful industrial competition due to over-production. The nation which can foresee and make anticipatory provision is destined to tide over all depressions. It is in such situations that the services of the proposed Academy will be most appreciated, and the knowledge of the scientists will find opportunity for application in the economic, social and political regeneration.

The absence of a central consultative library which imposes a handicap on the progress of research is a subject for consideration by the Academy. At present reference works from the universities are procurable through personal influence, but stringent rules enforced by other libraries reserve the usefulness of the books and magazines to the members of those libraries. The Indian Scientific Surveys lend books and journals to all recognized institutions and scientific workers but the inadequate funds at their disposal must necessarily limit the number of works they can subscribe for or purchase. The organization of a central reference library under the auspices of the Academy and its administration will necessarily entail a heavy outlay including provision of a suitable building for housing the books and journals. Through its library the Academy will act as a bureau of information to be disseminated among its members. This is the principal direction in which the Academy will supplement the efforts of the existing institutions to further the progress of scientific investigations in the pure and applied branches of knowledge.

The Academy will be a company of thinkers, workers and expounders comprising members of the New Estate upon whose achievements the world must in future depend for the preservation and advancement of civilization. Their professional spirit must be service, rendered

C. V. Raman and Meghnad Saha

The controversy that raged when the two academies were formed makes sordid reading. One wonders why all this happened. Some say it is because of clash of will between the two giants in Indian science—Raman and Meghnad Saha, both brilliant, both visionaries and both reputed to be nationalists.

Raman was a phenomenon. His character is best summarized by the statements of Max Born in his letters to Rutherford written in the middle thirties:

I like Raman very much in spite of his all too human drawbacks, his conceit, his naivete and his way of bringing himself to the limelight. . . Raman, far too conscious of his superiority made people small in his presence. . . . There is no physicist of the rank of Raman in India. No man can compare with him in vigour and intensity. This European intensity that Raman exhibited seems to make many Indians suspicious of him.

Meghnad Saha's character was completely different. It is reported that in his childhood he had been greatly hurt by society and by individuals. This left a deep scar on him which he carried all his life. *In spite of this he made it as a scientist.* His famous *Saha Ionization formula* literally changed the face of Astrophysics. He wrote in *Science and Culture* many essays which demonstrate the vision he had for the growth of Science, Technology and Industry in India.

To spot and encourage talent and originality in the young was in Raman's blood. A large number of Raman's students did world class of science *after they left him*. It is not clear whether Saha, who was personally outstanding in science and man of infinite dreams in his essays, was a good judge of men and of students. Unlike Raman he was an introvert. It was very difficult to move with him or even to talk to him. It is from the scientists outside India that one knew of Saha's relationship with his peers in India. He was a man who could hold on to his 'dislikes' for a long time. He stopped talking to Satyen Bose in the mid twenties and to K. S. Krishnan in the mid thirties. It was difficult to assess whom he disliked more—Homi Bhabha or Jawaharlal Nehru.

In the beginning Raman and Saha seemed to get on well. Raman wrote the introduction to Saha and Shrivastava's famous *Textbook on Heat* praising it.

The following letter Saha wrote in September 1929 to S. Chandrasekhar, Raman's nephew who was later to become famous, indicates that all seemed to be well between Saha and Raman.

Dear Mr Chandrasekhar,

I thank you very much for your kindly sending me a copy of your paper in The R.S. (Royal Society) on dispersion of light by free electrons on the basis of Fermi statistics. It is a very creditable performance, and I hope you will continue to follow in the footsteps of your great uncle, bringing honour to yourself and to your Motherland in the Service of Science.

Wishing you a happy life and prosperous career,

Yours sincerely,

M. N. Saha

Even from the beginning Saha did not admire Raman's science. He could not believe that Raman's 'toying' with sunlight, lenses and liquids could result in the discovery of such an important quantum mechanical effect in physics. So much so he even tried to disprove the experimental validity of the Raman effect. Raman on the other hand had much respect for the science Satyen Bose and Meghnad Saha had done and had expressed it openly. His serious complaint against them was that both of them had '*dried up*' so soon and had stopped doing real science by their early thirties. His relationship with Satyen Bose was cordial whereas that with Saha for some reasons began to deteriorate.

K. S. Krishnan was preferred to Saha (by Raman) in filling up the Mahendra Lal Sircar Chair at the Indian Association for the Cultivation of Science and this could not have improved relations between Saha and Raman. Perhaps if Saha had been able to suppress his extreme personal dislikes it may have prevented the division of Indian science into two academies. It is even possible that Raman need not have had to suffer the ignominy of being 'dismissed' from the Directorship of the Indian Institute of Science (see G. Venkataraman's *Journey into Light*).

S.R.

with absolutely no thought of personal advantage. The amount of knowledge they place at the disposal of their country will determine its economic, social and political progress. An Academy of Science is not an ornament, but an indispensable institution for directing the destinies

of the nation. We have no hesitation in thinking that its establishment ought to be the natural and legitimate ambition of a progressive government and an enlightened public who should unstintingly provide the institution with sufficient funds for its service in their cause.

Indian Academy of Sciences, Bangalore

Secretary's report for 1934-35

The Academy was founded on the 24 April 1934, and was formally inaugurated on the 31 July 1934 by Amin-ul-Mulk Sir Mirza M. Ismail, KT, C.I.E., O.B.E., Dewan of Mysore. The Academy commenced its activities with 65 Fellows and, at the first General Meeting held in the afternoon of the 31 July 1934, the draft constitution was considered and, after a few verbal alterations, finally accepted. The following office-bearers were elected at the meeting:

President

Chandrasekhara Venkata Raman

Vice Presidents

E. P. Metcalfe
Birbal Sahni
B. K. Singh
T. S. Wheeler

Secretaries

C. R. Narayan Rao
B. Venkatesachar

Treasurer

V. Subrahmanyam

Members of Council

S. K. Banerji
S. L. Bhatia
S. S. Bhatnagar
S. Chowla
T. Ekambaram
P. N. Ghosh
S. S. Joshi
A. L. Narayan
B. K. Narayan Rao
M. Owen
H. Parameswaran
M. O. Parthasarathi Iyengar
L. Rama Rao
S. Subba Rao
R. Vaidyanathaswami

In accordance with Rule No. 6, the Members of the Council were elected for one year and the results of the recent election will be duly announced by the President at this meeting.

The Council obtained permission from the General Body of Fellows to elect fresh Fellows up to a maximum of 200 and also Honorary Fellows up to a maximum of thirty, from amongst the most distinguished scientists. The following **Honorary Fellows** have accepted the invitation of the Council:

S. Belfanti, Milan
Niels Bohr, Copenhagen
N. L. Bowen, Washington
William H. Bragg, London
A. H. Compton, Chicago
A. Cotton, Paris
Harvey Cushing, Connecticut
P. A. M. Dirac, Cambridge
Enrico Fermi, Rome
Hans Fischer, München
G. H. Hardy, Cambridge
Werner Heisenberg, Leipzig
A. V. Hill, London
F. Gowland Hopkins, Cambridge
Madame Irene Curie-Joliot, Paris
G. N. Lewis, Berkeley
R. A. Millikan, Pasadena
Friedrich Paschen, Berlin
I. P. Pavlov, Leningrad
O. W. Richardson, London
Robert Robinson, Oxford
John Russell, Harpenden
Rutherford, Cambridge
A. C. Seward, Cambridge
Karl Manne Georg Siegbahn, Uppsala
D. D. Van Slyke, New York
Arnold Sommerfeld, München
Theodor Svedberg, Uppsala
H. Weiland, München
P. Zeeman, Amsterdam

These Fellows were formally elected at the Emergency Meeting held on the 17th November 1934. . . .

The Council regret to report the death of Rai Bahadur

Dr. Shiv Ram Kashyap, one of the distinguished Fellows of the Academy. His great scientific achievements are well known to scientific workers and his excellent personal qualities endeared him to all those who came in contact with him. The loss is as great to Science as it is to the Academy.

The scientific activities of the Academy comprehend (1) meetings for the discussion of papers submitted for publication, (2) symposia on special subjects, and (3) publication of the *Proceedings*.

During the year under report there were eight scientific meetings at which 223 papers were presented. The usual practice followed by the Royal Society of London in dealing with such papers is adopted by the Academy. These meetings have been very largely attended not only by the local resident Fellows but also by Fellows from outside, and the discussions which have followed the reading of papers have always been constructive and illuminating.

In August 1934, a Symposium on 'Molecular Spectra' was organized by the Academy and was attended by 50 Fellows from all over India. Of the accepted papers, the longer ones have been published and the others are in the press. The delay in the publication of the Volume was unavoidable.

The first volume of the *Proceedings*, comprising of Sections A and B, devoted to the Physical and Biological sciences respectively, contains 12 numbers, and all the numbers have been published punctually on the scheduled date. The total number of papers in Section A is 118 and in Section B 72, covering in all 1,914 pages of quarto size.

The cost of printing, especially the Biological Section, has been steadily increasing on account of the inclusion of a very large number of drawings and photographs. Fortunately, however, the authors have always complied with the request of the Secretary to minimize their number. If further reduction becomes possible, then the cost of reproduction of plates for this Section will not be disproportionately large. At present, the cost of producing a single number consisting of two Sections of about 100 pages each is Rs. 1,500 on an average.

Efforts were made to secure donations for the Academy. The Council have great pleasure in announcing that the Government of His Highness the Maharajah of Mysore have been pleased to grant ten acres of land for the construction of a building, and the President, in consultation with the Dewan of Mysore, has selected an excellently situated plot of ground commanding a noble prospect. Further, the Government of Mysore have sanctioned an annual grant of Rs. 3,000 for five years. The Council take this opportunity of placing on record their respectful sense of gratitude to His Highness the Maharajah of Mysore and his Dewan, whose solicitude for the encouragement of science and learning is a con-

spicuous feature of their enlightened administrative policy.

The Council have also received grants from the Government of His Highness the Ruler of Bhopal, who, in appreciation of the great services rendered by the President of the Academy to the cause of scientific progress in India, was pleased to sanction an annual recurring grant of Rs. 500, and similarly the Government of Cochin have sanctioned an annual recurring grant of Rs. 250. The Indian Institute of Science have sanctioned Rs. 2,000, the Imperial Council of Agricultural Research Rs. 500 per annum for three years, and the University of Nagpur Rs. 100 for 1935. The Council desire to place on record their sense of deep gratitude to all the Rulers of the Indian States and the authorities of the several institutions for the financial assistance received. The Academy has also received a personal contribution of Rs. 50 from Capt. T. W. Barnard of the Institute of Radiology, Madras, to whom our grateful thanks are due. The Council had hoped that in presenting their Annual Report to the Academy, they would have had the pleasure of reciting a longer list of donors and larger amounts of contributions. The fashionable economic formula of financial depression has become a favourite and stereotyped reply to all applications. Few realize that the removal of depression and the return of economic prosperity are possible only by encouraging scientific research and progress.

We have entered into exchange relations with a large number of learned scientific societies in Europe, America, Japan, Australia and Africa. Our subscription list is steadily increasing but it is bound to take some time before subscriptions could be recognized as a permanent source of revenue to the Academy.

The Council have pleasure in recording their sense of thankfulness to all the Fellows who have acted as referees, who, in spite of their numerous duties, have cheerfully complied with their demands. Mr. T. Subramania Aiyar, Superintendent, Bangalore Press, deserves special praise for the diligent care, courtesy and promptitude with which he has been supervising the publication of the *Proceedings* and his co-operation has contributed to the success that the Academy has achieved so far.

It now remains for the Council to express the hope that the All-India character of the Academy, and the position that it has secured in the scientific world by its work, will receive fuller recognition and greater financial support from the Government of India and all Provincial Governments, the Universities and from financial magnates in all parts of India. Such recognition and support are essential for enabling the Academy to enhance its usefulness and develop its activities in various directions so as to promote the moral and material progress of the Indian people.