Patrika

December 1980 Newsletter of the Indian Academy of Sciences

From the President

Dear Colleagues,

The journals and publications of the Academy for original research articles have grown very rapidly in recent years in range, variety, volume and vitality, as a result of the strong support and commitment by Fellows and the community of scientists. The bonds thus established within the community are strong and valuable. The Patrika is intended to provide the means for dissemination and exchange of information on plans, lectures, meetings, visitors and a host of other activities, all of which contribute towards the nurturing of the traditions and values of science. Patrika will, as with other new publications of the Academy, attain vigour and style from the interest of the Fellowship of the Academy. I have much pleasure in inviting suggestions and contributions from all Fellows.

S Varadarajan

Academy highlights

The Academy was founded in 1934 by Prof. Sir C V Raman, with the objective of promoting the progress and upholding the cause of science both in pure and applied branches; this was to be implemented by undertaking several activities, the chief of them being the publication of journals, books, memoirs, proceedings and transactions relating to scientific researches.

The Academy started its publication activity in the year of its founding, 1934. No.1 of Vol.1, Section 'A' of the Proceedings of the Academy was issued in July 1934.

The publication activity has grown many-fold in recent years and has responded to the needs of the scientific community and of the emerging areas of science. The Academy now publishes its Proceedings in the following areas: **chemical sciences, earth and planetary sciences, mathematical sciences, animal sciences, plant sciences and engineering sciences.** It publishes **Pramana** (a journal of physics) in collaboration with the Indian National Science Academy and the Indian Physics Association, the **Bulletin of Materials Science** in collaboration with the Indian National Science Academy, the **Journal of Biosciences** and **Journal of Astrophysics and Astronomy.**

The Academy has under its roof the office of the Current Science Association which publishes the fortnightly journal **Current Science.** There is a fruitful collaboration between the Academy and the Association.

Within ten years of its founding, the Academy founded in 1943 the Raman Research Institute. The Academy nurtured it for several years, built up its funds and properties including a large portion of land gifted to the Academy by the Government of Mysore. The Institute is now an autonomous research institution, functioning under a Public Charitable Trust created in 1971.

In 1972 the Academy established a Chair in the name of its founder Sir C V Raman with an endowment of Rs.6 lakhs granted by the Department of Science and Technology. Eminent men of science have occupied the Raman Chair.

Within the last five years the annual budget of the Academy has increased from Rs.3.63 lakhs in 1975-76 to Rs.9.90 lakhs in 1979-80. The publication activity which accounts for about 93 percent of the Academy's expenditure, is mainly supported by grants received from the Department of Science and Technology, Government of India.

Organising Academy lectures, symposia and discussion meetings are some of the other activities of the Academy.

Council for the triennium 1980-82

The outgoing Council held an election in December 1979 to constitute the Council for the next triennium 1980-82. The composition of the present Council is as follows.

Prof. T N Ananthakrishnan
Zoological Survey of India
Calcutta 700 012

Prof. B K Bachhawat
Indian Institute of Experimental Medicine
Calcutta 700 032

Prof. M K V Bappu, Vice President
Indian Institute of Astrophysics
Bangalore 560 034

Dr. P K Das
India Meteorological Department
New Delhi 110 003

Prof. S Dhawan
Indian Institute of Science
Bangalore 560 012

Prof. D Lal, F.R.S., Vice President
Physical Research Laboratory
Ahmedabad 380 009

Prof. M G K Menon, F.R.S.
Department of Science and Technology
New Delhi 110 029

Dr. B Nag
Department of Electronics
New Delhi 110 003

Prof. M S Narasimhan, Vice President
School of Mathematics
Tata Institute of Fundamental Research
Bombay 400 005

Prof. R Narasimha, Secretary
Department of Aeronautical Engineering
Indian Institute of Science
Bangalore 560 012

Dr. Nitya Nand
Central Drug Research Institute
Lucknow 226 001

Prof. V Radhakrishnan, Treasurer
Raman Research Institute
Bangalore 560 080

Prof. C N R Rao, Secretary
Solid State and Structural Chemistry Unit
Indian Institute of Science
Bangalore 560 012

Prof. S Ramaseshan
General Editor of Publications
Indian Institute of Science
Bangalore 560 012

Prof. A K Sharma
Department of Botany
University of Calcutta
Calcutta 700 019

Prof. O Siddiqi
Molecular Biology Unit
Tata Institute of Fundamental Research
Bombay 400 005

Prof. Virendra Singh
Theoretical Physics Group
Tata Institute of Fundamental Research
Bombay 400 005

Prof. C V Subramanian, Vice President
Centre for Advanced Study in Botany
University of Madras
Madras 600 005

Dr. S Varadarajan, President
Indian Petrochemicals Corporation Ltd.
Baroda 391 346

Prof. M S Valiathan
Sree Chitra Tirunal Medical Centre
Trivandrum 695 011.

Past Presidents

Prof. Sir C V Raman	1934-1970
Prof. T S Sadasivan	1971-1973
Prof. M G K Menon	1974-1976
Prof. S Dhawan	1977-1979

Honorary Fellows elected in 1980

Prof. E N Lorenz, Department of Meteorology, Massachusetts Institute of Technology, Cambridge, Mass. 02139, USA

Prof. John M Thomas, Department of Physical Chemistry, University of Cambridge, Cambridge CB2 1EP, UK

Lord Alexander Todd, Christ's College, Cambridge CB2 3BU, UK

Fellows elected in 1980

Prof. G S Agarwal, School of Physics, University of Hyderabad, Hyderabad 500 134

Prof. T C Anand Kumar, Department of Anatomy, All India Institute of Medical Sciences, New Delhi 110 029

Prof. P Balaram, Molecular Biophysics Unit, Indian Institute of Science, Bangalore 560 012

Prof. D Balasubramanian, School of Chemistry, University of Hyderabad, Hyderabad 500 134

Prof. M V Bhatt, Department of Organic Chemistry, Indian Institute of Science, Bangalore 560 012

Prof. M K Bose, Department of Geology, Presidency College, Calcutta 700 073

Prof. D Chakravorty, Advanced Centre for Materials Science, Indian Institute of Technology, Kanpur 208 016

Prof. K Krishnamurty, Institute of Medical Sciences, Hyderabad 500 004

Prof. P T Manoharan, Department of Chemistry, Indian Institute of Technology, Madras 600 036

Prof. V M Meher-Homji, Department of Ecology-Bioclimatology, Institut Francais, Pondicherry 605 001

Dr. K G Nair, Honorary Cardiologist and Physician, 8, Ashley House, 167-A Colaba Road, Bombay 400 005

Prof. R Natarajan, Centre of Advanced Study in Marine Biology, Annamalai University, Portonovo 608 502

Prof. G Nath, Department of Applied Mathematics, Indian Institute of Science, Bangalore 560 012

Dr. N S Rangaswamy, Department of Botany, University of Delhi, Delhi 110 007

Dr. A Sarabhai, Director, Sarabhai Enterprises, Shahibag, Ahmedabad 380 004

Prof. D V Singh, Department of Mechanical and Industrial Engineering, University of Roorkee, Roorkee 247 672

Dr. Sushil Kumar, Division of Genetics, Indian Agricultural Research Institute, New Delhi 110 012

Prof. K Venkatesan, Department of Organic Chemistry, Indian Institute of Science, Bangalore 560 012

Prof. C S Warke, Tata Institute of Fundamental Research, Bombay 400 005

Raman Chair

The Raman Chair was instituted in 1972, to commemorate the memory of the founder of the Academy, Prof. Sir C V Raman. It is supported by an endowment of Rs.6 lakhs granted by the Department of Science and Technology, Government of India. The interest from the endowment is utilised to meet the cost of the Chair.

Appointments to the Chair are made by invitation from the Council of the Academy. Eminent scientists from any country of the world and from any scientific discipline can be invited to occupy the Chair for periods between 3-6 months. While they are nominally based at the Raman Research Institute for operational convenience, they are free to visit other institutions in the country, interact with scientists in India, participate in scientific programmes like conferences, symposia etc. and deliver lectures/seminars. Younger scientists can also be associated with the Raman Professor during the period he occupies the Chair. A number of distinguished scientists invited as Raman Professors have spent periods of the order of three months and more carrying out research, visiting institutions, giving lectures and meeting many young scientists.

Prof. Robert Hanbury Brown from the University of Sydney, New South Wales (Astronomy and Astrophysics) was the first Raman Professor. He occupied the Chair from July to October 1974, working at the Raman Research Institute. He gave a number of lectures and took part in the Bose Symposium at Bangalore and visited during his stay the observatories at Kavalur, Kodaikanal and Ooty, the Vikram Sarabhai Space Centre at Trivandrum, the Jai Singh Observatory at Jaipur, the Indian Institute of Technology, Delhi, the UP State Observatory, Nainital, the Centre of Advanced Studies in Astronomy, Hyderabad, the Centre for Advanced Study in Physics, Madras and the Indian Institute of Science, Bangalore.

Prof. Dorothy Hodgkin from the University of Oxford, UK (Crystallography) occupied the Chair during February-March 1979 and again in November 1979, working at the Indian Institute of Science. She gave the inaugural lecture at the Symposium on 'Nucleic Acids Research held at the Indian Institute of Science. She also visited and lectured at the Universities of Madurai, Kerala, Madras, Lucknow, Hyderabad, Gauhati, North Bengal and the Banaras Hindu University etc. She gave an Academy lecture on "The structure of insulin in crystals" at Bangalore, since published in the Proceedings of the Academy.

Prof. N Bloembergen, Rumford Professor of Physics, Harvard University, USA (Raman Spectroscopy and Nonlinear Optics) visited India between September-December 1979 and worked at the Raman Research Institute. He gave six lectures at the discussion meeting on 'Nonlinear Optics' which was arranged by the Academy at the Indian Institute of Science, to coincide with his visit. He gave the Gandhi Memorial Lecture at the Raman Research Institute on "Reflections on Light" on 2 October 1979. He also visited and lectured at Kalpakkam, Trivandrum, Madurai, Bhubaneswar, Calcutta, Kanpur and Bombay.

Prof. Sir Charles Frank from H H Wills Physics Laboratory, Bristol, UK (Liquid Crystals) occupied the Chair between December 1979 and February 1980 and worked at the Raman Research Institute, Bangalore. He took part in the International Conference on Liquid Crystals held at Bangalore from 3 to 8 December 1979. He also visited and lectured at other research centres in the country like Bombay, New Delhi, Mysore, Madras and Kanpur.

Prof. K R Ramanathan (Atmospheric Physics), a founder Fellow of the Academy and a close associate of Prof. Raman was the fifth Raman Professor. He occupied the Chair for a period of three months from August to November 1980, working mainly at the Physical Research Laboratory, Ahmedabad. He visited Bangalore during August 1980 and gave a number of lectures at Bangalore, Madras, Bombay and Hyderabad.

Prof. P R Pisharoty was associated with him during his Raman Professorship.

Life Membership for Fellows

Provision now exists, by which Fellows of the Academy of at least ten years of standing, who have retired from active service after attaining the age of 60 years, can become Life Members, without being required to pay any further dues. If any Fellow has any difficulty in payment of Fellowship dues, he can also now be considered for exemption from payment on an individual basis.

Obituaries

Prof. Anil Bhusan Biswas passed away in October 1979. Born in 1917, he was one of the most liked scientists in the country, respected as a person and as a scientist with a very large circle of friends and admirers.

Dr. Biswas obtained his Ph.D. working with Prof. Sir J C Ghosh at the Indian Institute of Science, Bangalore. He later joined the laboratory of Prof. Linus Pauling at the California Institute of Technology. After his return from the USA he worked at Delhi University and later joined the National Chemical Laboratory where he headed the Physical Chemistry Division. He organised this division and worked there for several years before he joined the chemistry department of the Indian Institute of Technology, Bombay. He was a physical chemist with very broad interests, his main research interests being surface chemistry and solid state chemistry.

He was elected to the Fellowship of the Academy in 1974 and he was the President of the Chemistry Session of the Indian Science Congress in 1979. He was a member of the editorial board of the Proceedings (Chemical Sciences). He also worked actively as a member of the chemistry sectional committee of the Academy. Dr. Biswas was a genuine person who was instantly liked by every one who met him. He was always enthusiastic about new ideas and he was an ardent supporter of the younger generation. In his passing away the scientific community has lost a good friend and a worthy colleague.

He leaves behind his wife and two sons.

Dr. Hirdaya Behari Mathur passed away in January 1980. He was a chemist of distinction who contributed significantly to several areas of chemistry, in particular Mossbauer spectroscopy, radio and nuclear chemistry and general physical chemistry. He spent a number of years in the physical chemistry division of the National Chemical Laboratory, Pune, before assuming the directorship of the Defence Research Laboratory (Materials), Kanpur about three and a half years ago. In a short span of time, he organised the Kanpur laboratory and solved many problems facing the laboratory.

Dr. Mathur was born in Rajasthan in 1928 and had his early University education in Delhi. He obtained his Ph.D. at the University of California, Berkeley. He received the Bhatnagar Award in Chemical Sciences for 1973 and was elected to the Fellowship of the Academy in 1975.

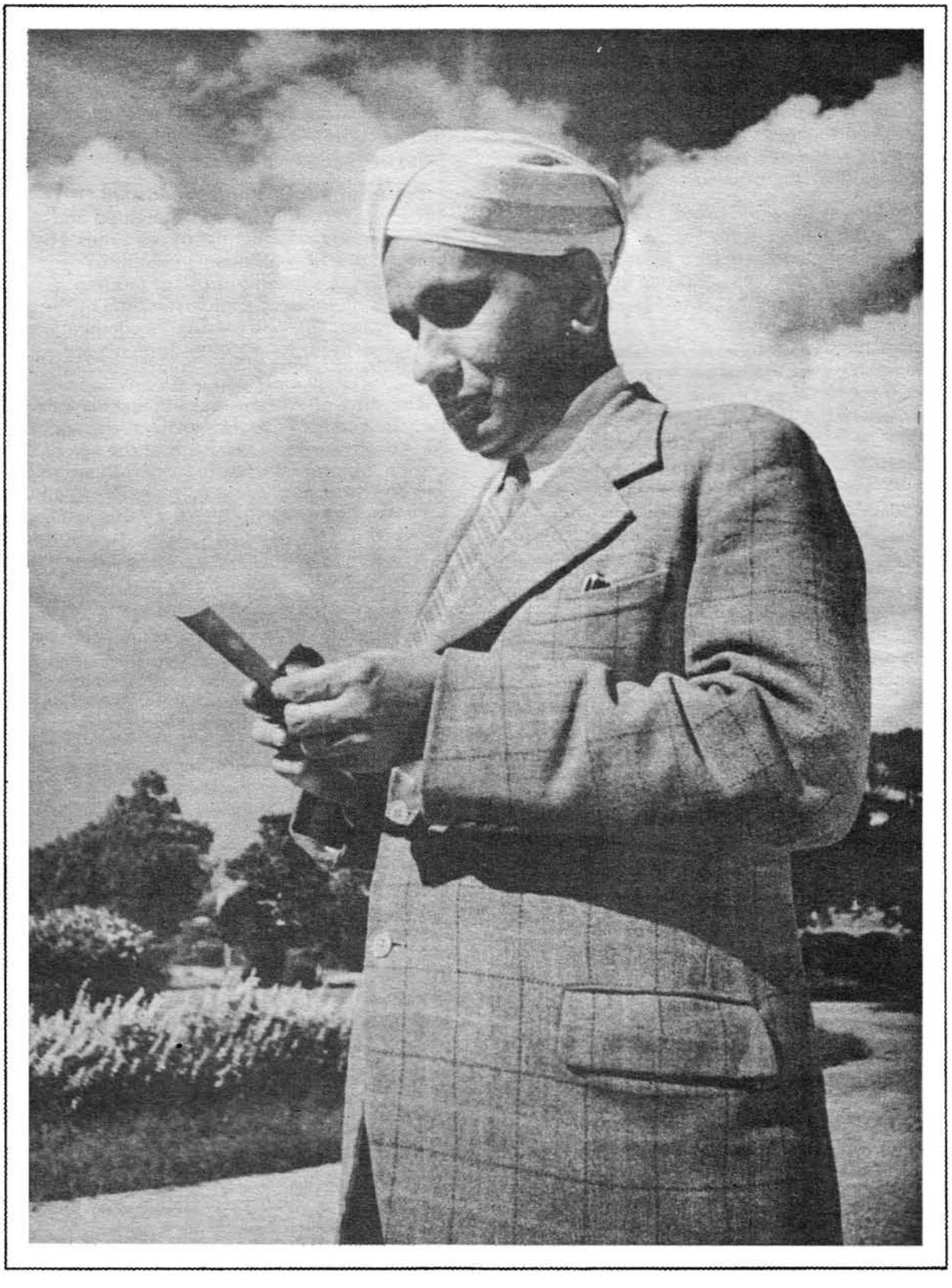
Dr. Mathur was a friendly person and will always be remembered by his colleagues for his warm friendship and dedication to chemistry. In his passing away the scientific community has lost one of its leading members. The Academy will miss his valuable help, particularly in the publication activities.

Professor Robert Burns Woodward (1917-1979) was probably the most talented and respected organic chemist of our times. His unique style of synthesising complex molecules, his ingenious use of modern physical methods, his understanding of the way organic chemistry works, his dedication to the subject and his accomplishments are unparalleled.

The story of Woodward's life is remarkable. He received his Ph.D. from MIT at the age of 20, a professorship at Harvard at the age of 33 and an honorary doctorate from Harvard at the age of 40. He was honoured by most chemical societies and Academies of the world and received the Nobel prize in 1965. An institute of research named after him was established in Switzerland in 1963.

It is not only in organic synthesis that Woodward excelled. His insight in organic chemistry manifested itself in many other fundamental contributions to chemistry starting from Woodward's rules relating to electronic spectra of organic molecules to the Woodward-Hoffman rules relating to the conservation of orbital symmetry. Woodward was a great showman and the brilliance of his lectures made an indelible mark on the minds of all who attended them.

He had many students and post-doctoral fellows from India and many more admirers in this country. He was elected as an Honorary Fellow of this Academy in 1965, the first formal recognition from this country of this outstanding scientist. It is difficult to imitate Woodward. In his passing away, we have lost a leading light in the field of organic chemistry.



Professor Sir C V Raman

1888-1970

Founder-President

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 organising 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 civilisation, 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 organisation 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 organised 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 organisations. 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 organise 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 are 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 complemental.

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 reorganised 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 recognised 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 organisation 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 civilisation. Their professional spirit must be service, rendered 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.

Reprinted from Current Science, May 1933, an article published before the Academy was founded by Prof. Sir C V Raman

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