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On Front Cover :

Dr. Ramanna, President, INSA (right) presenting Scroll to Dr. ^{T.}S.R. Odhiambo (left), Foreign Fellow, INSA and Director, International Centre of Insect Physiology and Ecology, Nairobi on the 25th of January 1978.

ANNIVERSARY ADDRESS - 1978

By

Dr. R. Ramanna, F.N.A.

President, Indian National Science Academy

(Delivered 2 January 1978)

NEARLY all my distinguished predecessors have used the occasion of the Anniversary General Meeting to express their views on the functions and organisation of Science in India. I feel that this year in particular, there is a special need for a close examination of these issues; for, while Indian science is on the threshold of great achievements, its organisation, as things stand to-day, may prove to be a source of hindrance to its early and effective application to the solution of national problems. A delay in its application may lead to wrong conclusions as to the value of science to society itself and detract from the use of the methods of science to future developments, be it in the sphere of increasing the country's industrial potential or building a national personality by a reorientation of our philosophy to suit the 21st Century.

It will be recalled that in August 1977, the Council of INSA had issued a Press Release expressing concern over the inadequate realisation of the value of scientific methods, the limitations of such an approach and why the reorganisation of existing structures based on consultation was required in order to make it a more efficient tool for national development. In the beginning, only some abstracted versions of the release appeared in a small number of dailies. However, its impact became more perceptible later.

I am glad to note that our two sister Academies, the Indian Academy of Sciences and the National Academy of Sciences, whose Presidents are both Fellows of this Academy, have also expressed views similar to ours, but perhaps in a more pointed manner as they were issued much later than the Press Release of the INSA Council and also after the decision of the Government to make major changes in the existing framework for scientific organisations. It is gratifying to note that a constructive view of these changes has emerged taking into account the importance of inter-disciplinary research activities. It is a happy augury that the various Academies have independently come to almost identical conclusions. As these conclusions taken in totality reflect the views of a large body of the science community, I take it to mean that Science Academies have an important role of an advisory nature to play in the formulation of science policy.

Consultative processes are essential in a country like ours which has a large and diverse science structure and where the implementation of science policy is beset with enormous

difficulties. It is only a truly scientific society which can effectively examine the vast potential of present day science and suggest methods by which it can be kept in the forefront of development and not allowed to take on an imitative role, incapable of providing the required level of confidence needed to achieve national self-reliance. In a democracy, no set of scientists, however carefully they may be chosen, can replace the collective wisdom of a body like INSA, which has indeed been recognised by the Government, as early as in 1945, as the premier society representing all branches of science. I would, therefore, like to make a plea for the effective utilisation of the potential of the Academy for the benefit of the country much in the same way the USSR Academy of Sciences, the National Academy of Sciences, USA and the Royal Society of UK, are given pride of place in their respective countries. It is to be noted that the USSR Academy of Sciences even implements policy. We, as a body of scientists, should not appear to be bargaining for leverage. On the contrary, we are here only to give our considered advice. If confidence is reposed in us, we will naturally rise to the occasion in a manner that would enhance the prestige of Indian Science.

The reorganised National Committee on Science and Technology has as one of its members, the President of INSA and I believe that the views of the Council of INSA will be given due weight at the deliberations of the NCST. We take pride in the fact that the new Chairman of NCST is a distinguished past President of INSA and he has already assured me that our views will be given special consideration.

Among those countries of the world which have a scientific base of some consequence, we are the one that spends the least on science. In spite of this and in spite of the fact that our per capita GNP is amongst the lowest in the world, the quality of Indian science is greatly respected abroad and scientists and students from other countries come to us in fairly large numbers to share the knowledge developed in our laboratories. At various symposia organised by learned bodies, I am amazed to see the excellent quality of work in various disciplines contributed by research workers who are working under the most difficult conditions of financial, administrative and other forms of logistic support. By any norms of national planning, the allocations for science and technology should be increased if we are to survive as a modern nation and not become merely a geographical entity. The usual reason given against any increase of financial support is that we are a very poor country and that we cannot afford more. Some even say that we must cut on science to help one more villager to survive. If we have to make such cuts on science, it is not that one more villager will survive, but it is like cutting the very arm of the nation that can help uplift the villager. In our history, whenever we allowed ourselves to neglect science, we reached the lowest levels of degradation, especially during the 18th and 19th centuries, a stage from which we have not yet truly come out. We must never let this happen again. We must continue to support science as has been the policy since independence. This support should be enhanced, and widened in scope to cover the many developments that are taking place in the world.

Our country is a very large one and it should have every aspect of science operating at all levels, be it basic science (sometimes called ivory tower science) or the kind of "bare foot" technology intended to help in our rural programmes. There must be a continuous flow of knowledge from the high "ivory tower" to the down to earth level pervading through the entire scientific community. No branch of knowledge is unnecessary to a nation on the move. As an example of a discipline which does not give the impression of having any immediate value to the community, I may refer to abstract mathematics. This type of mathematics does not even have the possibility of being a source of entertainment like music or painting. It is there for its own sake, but is there anybody who would suggest that we should stop support to mathematics in this country? It is not that mathematics should be supported because it does not involve much financial investment (an incorrect statement in itself). It should be supported purely because such support would be in the spirit of involving ourselves in the very foundations of thought and structure of modern science. It is this very spirit that has allowed us to survive in the past as a nation with a remarkable continuity of culture. However, such an attitude requires our accepting the established laws of science as supreme. A very distinguished scientist abroad once said to me that it must be frightfully difficult to undertake scientific research in India because of the widespread atmosphere of non-science. There is no doubt that social conditions affect not only the growth of science, but even the use of scientific methods and, ultimately the absorption of science in the processes of change and development.

Over the centuries, the need for rule by law as a sign of civilised existence has come to be generally accepted. Our lawyers clamour for this and swear by Manu, Mitakshara and Macaulay as though their pronouncements were the laws of God himself. But few have tried to critically examine their relevance to modern life. If you ask me why there is need for a large scale use of third degree methods in our police investigations, I would say that it is an outcome of the existing criminal procedure code itself. There have been great advances in the forensic sciences, but how much of this has any value in our country? The greater use of science in detection of crime can result in lesser use of third degree methods and consequently lead to a lesser misuse of authority. But this change requires an acceptance of the laws of science which have a better claim to being a creation of God. In all material matters, the laws of science are supreme and such is the humility of science that when a more correct law is discovered, the older one is discarded if there is sufficient evidence to do so by a feedback process that is natural to it. However, such ready acceptance of newer concepts requires our implicit faith in mathematics, statistics, the laws of the exact science and their projection into Biology.

Sometimes people make a difference between scientific research and industrial research. This is actually a very colonial view of industrial development. If the country really has to be industrialised in the fullest sense of the word, both must exist simultaneously. We can compare science and technology to a human body where the legs and hands represent industry, but the brain represents scientific research. If we do not have scientific research helping and controlling industry as a well assimilated part for our development, we will be merely importing not only

equipment from outside, but even ideas. This will completely place us in the hands of those who control industry elsewhere.

By its very nature, science requires nurturing of excellence which is wrongly levelled as "elitism". Good science can come only from those specially fostered in a special environment. While we can have mediocre music for use in restaurants and similar quality work of painters to be hung up on the walls of hotels, we cannot afford to have such a thing as a mediocre scientist. To keep a scientist working at his most effective and creative level, he has to be treated as something out of the ordinary. His morale has to be kept at the highest level, otherwise, the investment made on him will all go waste. It is for this reason, advanced countries give a very special position to scientists and more so if their merit is indisputable. It is in the fitness of things that a scientist must be treated with solicitude which should be made a part of national concern rather than controversy. This acceptance of the scientist's position, however, requires a proper method of assessing him.

Research workers can be classified into three different groups: one just about to start his work, one at the peak of his activity and one who helps progress and promotion of science by his overall maturity and experience. In the first category, the identification should normally be available through university gradings. Unfortunately, in India, this method of assessment is not satisfactory due to the large number of graduates being turned out in our universities. In such an over-crowded situation, the identification of a single person who shows great promise becomes very difficult. Consequently, the training of a highly gifted person requires very special attention. It is for this reason that a secondary selection process from among those coming out of universities and their subsequent training is required for the proper development of a research worker in his earlier stages. At middle levels, when the research worker is at his peak of activity, the problem of identification is different as it requires great vision to recognise the merit of a man contributing at the frontiers of science. The identification of good people at this level by means of newspaper advertisements is a futile exercise. For one thing, a scientist in this group usually does not like to migrate from the place he is already in. He is suspicious of new environment and new colleagues. It requires tremendous persuasion to get a good scientist to work in another laboratory on a different set of problems which requires his expertise. It is, therefore, hardly likely that he will respond to an advertisement. It is also difficult to believe that a UPSC type of interview is any better, specially when it takes the shape of a judicial operation. Unless the people who have to work with the scientist concerned are also emotionally involved in the selection process, a satisfactory identification will not result. The so called objective method of selecting scientists by outside committees may satisfy norms, but fail to identify the best men. The problem is made worse when confidential reports are written on the candidate with a view to avoid any comments concerning his inadequacy with respect to the solutions of particular types of problems. Whereas the objective identification of deficiencies is meant to help in locating a scientist in the environment most appropriate to his strength and weaknesses, it is often used in current selection processes as adverse remarks thus invalidating the use intended

for such reports. Taking everything into account, a certain degree of rational bias in favour of excellence is an essential part of choosing the right man for scientific research. Unfortunately, it is true that there is a tendency to lay too much stress on the dangers of nepotism through relationship, caste, locality and other unpleasant factors. While nobody can deny their existence, it is, I believe, a passing phase. Its incidence can be minimised by an appropriate choice of selection committees and by proper tradition and leadership. In any case, there is always an element of risk involved in any attempt to recognise good people. Many of the difficulties one faces in selection operations are more due to shortage of posts and to the fact that salaries and posts are associated with one another. I have found from personal experience that if there is a delinking of salaries with designation, a younger man can take up more responsibilities because of inherent ability and not necessarily come in the way of the older scientist who may deserve a higher salary due to the passage of time. In the choice of scientists at the very highest levels, other constraints of a non-scientific nature will naturally play a part and it is here that the Academies and learned bodies can play an important role in the assessment procedure.

There has been considerable debate as to who is the user of any technical development that has come out of a laboratory. I am afraid, it is certainly not the Ministry concerned. To me the Ministry is a body which is meant to help the scientist to get on expeditiously with his work, to give all assistance to him in solving administrative problems and to act as a protective agency in legal and other matters that may arise in the coordination between a research laboratory and an industrial user. At least this is how, I recall, Dr. Homi Bhabha defined the role of administration in scientific research. Unless administration has clearly understood its assistance role, there will be much cause for misgivings. Due to historical reasons, many Government laboratories are classified as subordinate offices and are treated as such. This classification has come from British times and has remained unchanged if not in form, certainly in spirit. The Ministry officials are only too conscious of the fact that all the statutory powers are with them and some of them even insist that they have the last word on the subject, purely for purposes of continuing the status quo. It is possible that the Director of a laboratory can work smoothly with the Ministry, but keeping good relations becomes a major aspect of his activity involving severe compromise on several issues. Usually, the differences are not important when the concerned laboratory is involved only in routine operations. If, however, the Director wishes to make changes and do something out of the ordinary, which is the essence of scientific research and requires a constant process of delegation of powers, it is remarkable how departmental opposition comes to play, a fact noted by Lord Rutherford himself. As I see it, by its very definition, a Ministry's approach is to routinise matters as much as possible and thus, if it is in direct control of a laboratory, only routine work will emerge. On the contrary, all scientific work is based on continuous innovation, be it in scientific administration or in scientific research.

It also does not follow that the user of any results of a laboratory is necessarily the industry concerned. The main concern of the industry is to make profits and their approach to

research is that it should lead to increased efficiency leading to increased production rates, but when new processes or new items of development which may have an overall national economic value are involved, the industry in general rarely shows much interest. It is for this reason the autonomy of a laboratory has to be carefully preserved. It is not for me to describe what autonomy immediately implies, and how it can be maintained, but I think the Academy should give serious thought to this and prepare a paper taking all aspects of the problem into account and make it available for public discussion.

I would now like to deal with an approach that has been considered as a solution to some of these problems and has been implemented as such. This is the process by which scientists are given secretarial powers. To me this seems to be an admission of defeat; for, it means that it is not possible to delegate powers to scientists to get on with their work and that unless a good scientist is sucked up into a secretarial structure, which is inevitable, he will not be able to survive or protect the interests of science. I do feel that there must be a way out of this, whereby scientists holding high posts can be given appropriate powers, which would be commensurate with their stature and their level of functional responsibility. In some cases, where a scientist is of high calibre, it may be necessary to vest him with powers and a status that may be even more than that of a Secretary. The aim of the whole exercise should be to decentralise effectively decision making powers in order to truly promote as rapidly as possible the progress of science and technology.

I have brought to your attention some of the difficulties concerning organisational matters of a laboratory. But the purpose of a Presidential Address is not to merely categorise all these problems. They are being brought to your attention more by way of examples so that a unified approach can be attempted and well before the end of the century we can say that India has a mature system for the organisation of science.

If, in this context, INSA has to play an important role in the promotion of science, it has itself to undergo many changes. It has a legacy of constraints by way of very inflexible statutory regulations copied from foreign institutions from the pre-independence era. Since no changes to the statutes are possible without a three-fourth³/₄ majority, it really means that no change is possible at all. From previous experience, it seems that out of a total of 387 Fellows, only about half of them take interest in the working of the Academy. To improve participation, the Council has encouraged the functioning of Regional Chapters and I am glad to report that there is a continuous inflow of reports of activity from them, particularly those from Bombay, Calcutta, Hyderabad and Madras. I would urge that if any changes are to be made to the Academy Statutes, the desire should come from the Fellows from the various regions. Any fundamental changes on important issues should be initiated only with the full support of Regional Chapters. There is also the question of how much the Academy should recognise the excellent work being done in the country by Engineers and Medical men from the point of view of representation within the Academy. In order to get a proper assessment of the situation in these fields, I have

suggested to the Council that other learned bodies should have an affiliation status to the Academy in some form, so that there is a continuing exchange of views on the problems of medical and engineering sciences and other fields of knowledge and between the learned bodies and the Academy. Close collaboration with State Academies would help in the collection of information concerning regional and rural problems.

The Academy is here to help all the sciences in India and is committed to taking only a positive and helpful attitude. Sometimes it is forced into rather unpleasant situations because among the body of scientists, a code of conduct and ethics has not yet come into organised existence. We still have the old complaints of papers being published in a hurry with unverified results, insufficient credit being given to junior workers, plagiarism in some form or other, and above all, difference of opinion between scientists arising from sources of a non-scientific nature or personal prejudices. These, I presume, are essentially problems of a transitional nature which necessarily arise during the process of achieving maturity and growth. I would not give too much importance to these unless one can show that they are indeed causing definite damage to the image of Indian science. At the same time, it should not be the intention of the Academy to shy away from problems and claim a state of sanyasa. It should be amidst all scientific controversies bringing forth effective solutions without ever losing its commitment to basic principles.

INSA is essentially a scientific body and will recognise no other solutions on scientific matters except those under the principles defined by science. There is much controversy in the country about imponderables, such as the powers of miracle-men and the effectiveness of various indigenous cures and medicines. I know from my own experience that every other village in the South has its own methods of medication and that a large number of Indian scientists retain their faith in miracle cures. While I doubt the principles on which these cures and medicines are based, I must concede that several of them may indeed provide remedies, psychosomatic or otherwise. But, as far as we are concerned, we can recognise only one science and that is medical science. Unless the claimed cures are understood with respect to biological processes based on the principles of the basic sciences, they can continue only as unverified cures and that too only as long as they are not dangerous and do not lead to toxic side effects. But they cannot be said to be part of medical science. Objective statistical verification of all successes is an essential part of science.

Another variation of the above syndrome which is very much in evidence in the international scene is the conclusion stemming from a non-scientific approach to current problems. The International Atomic Energy Agency has, in recent reports, analysed the various application areas where the peaceful uses of atomic energy are bound to play an important and beneficial role in the future. No less an authority than Academician Kapitza has recently expressed the view that for the effective exploitation of geothermal resources, peaceful nuclear explosions are necessary. In spite of all this it is surprising that a large part of the world should stress on only

the evil aspects of atomic energy. While the social obligations of a scientist, both in the national and international plane, cannot be lost sight of, it does not mean that they should succumb to new kinds of superstitions.

In conclusion, I would like to say that in the interests of science in India, scientific bodies like INSA must strongly express their views in the formulation of Science Policy, and the organisation and administration of science, otherwise the very need for their existence will only be a very minor one.

I would like to express my sincere thanks to the Members of the Council who have been with me on all important issues. There has never been any controversy, though all issues have been carefully discussed and examined. I also wish to express my thanks for the support of INSA staff, first headed by its Executive Secretary, Dr. B. V. Subbarayappa and later by Dr. S. K. Das Gupta. My special thanks are due to our past-President, Dr. B. P. Pal. It is due to him that we have been able to create several staff vacancies so that we can fill them with promising young men. This should greatly increase our effectiveness. I would also like to thank the Fellows from all over India for their voluntary assistance on many matters.

ACADEMY NEWS

Important Decisions of the Council Meeting held on 1-2 January 1978

Nominations for Election of Fellows

The Council approved the list of persons proposed on or before 15th November 1977 and subsequent to nominations received after 15th November 1976 and also the names of those persons whose nomination papers are valid in accordance with the provision of Regulation 15.

In respect of the nominations which are to be referred to more than one Sectional Committee, the Council decided that the concerned Sectional Committees should meet jointly before they meet to consider nominations under individual Committees.

It was resolved that the particulars of the nominees to be printed may not exceed the size prescribed and suitably edited* before printing, for circulation among the Fellows of the Academy.

Regrouping of Subjects under Sectional Committees

It was decided to request Dr. B.P. Pal to look into the present grouping of subjects under the ten Sectional Committees and recommend suitable regrouping, if necessary.

Voting Papers

It was decided that in future voting papers for election of officers and members of the Council would contain the names of only those vacancies determined by the Council in May and nominations invited from the Fellows for such vacancies. The list of those Officers and Members of the Council who should continue would be enclosed along with this list.

Appointments

The Council appointed the following on the Standing Committees for the year 1978 :

1. *Building Committee*—Dr. A. Ramachandran may send his nominee.
2. *Establishment Committee*—Dr. V.G. Bhide
3. *Finance Committee*—Dr. M.L. Dhar

Note : Since the manuscripts of the Book of Nominations pertaining to various Sectional Committees had already been sent to the Press, the decision is applicable for the '*List of candidates valid for Election to Fellowship 1979*'.

Fellow-in-Charge of the INSA Library

It was decided to appoint Prof. K.R. Parthasarathy as Fellow-in-Charge of the Library for the year 1978.

Secretary and Convener Sectional Committee-X

Dr. H.K. Jain was appointed Secretary & Convener of Sectional Committee-X for the year 1978 in place of Dr. A.B. Joshi.

Sub-Committee for Changes in the Rules and Regulations of the Academy

A Committee consisting of Professors V. Puri, R.R. Daniel and M.G. Deo was constituted to look into the changes in the Rules and Regulations of the Academy.

Affiliation Status of Scientific Societies with INSA

The matter was considered in great detail and the Council generally approved of some association being worked out. The President was authorised to work out the details.

Cooperation between INSA and Scientific Academies of Neighbouring Countries

There was a general feeling that there should be closer cooperation between INSA and Scientific Academies of neighbouring countries especially Malaysia. It was also suggested that INSA should invite participants to Symposia/Seminars and also send representatives to Symposia/Seminars organised by Scientific Academies of neighbouring countries.

Science Policy Resolution 1958

The Council felt that the Science Policy Resolution 1958 was a complete document and as such should not be changed. However, methods of implementation by which the Agricultural & Rural Sector can benefit should be spelt out as a separate document.

Nomination of INSA Representatives

1. Dr. S.K. Chakrabarty to represent INSA on the Council of the Indian Statistical Institute, Calcutta.
2. Dr. Jagdish Shankar and Dr. M. Santappa on the Editorial Board of Section 'A' and Dr. Nitya Nand and Dr. S.C. Bhattacharyya — to represent INSA on the Editorial Board of Section 'B' of the '*Indian Journal of Chemistry*' for a period of three years from 1st January 1978.

Outgoing Members

The President thanked the outgoing members of the Council (Prof. B.K. Bachhawat, Dr. V.G. Bhide, Prof. P.C. Dutta and Dr. A. Sreenivasan) for their cooperation.

Anniversary General Meeting — January 2, 1978

Admission of Fellows under Rule 13

The following Fellows were formally admitted to the Fellowship of INSA :—

<i>Name of the Fellow</i>	<i>Introduced by</i>
Dr. T.N. Ananthkrishnan	Prof. P.N. Srivastava
Prof. V.L.S. Bhimasankaram	Dr. B. Ramachandra Rao
Dr. R. Chidambaram	Dr. N.A. Narasimham
Prof. Ashok Ghosh	Prof. A.K. Sharma
Prof. H.Y. Mohan Ram	Prof. A.K. Sharma
Prof. H.L. Nigam	Prof. C.N.R. Rao
Dr. N.K. Notani	Dr. K. Sundaram
Prof. C.C. Patel	Prof. R.C. Mehrotra
Prof. P.R. Pisharoty	Dr. K.R. Ramanathan
Dr. Prem Narain	Dr. N. Parthasarathy
Prof. V.S. Rama Das	Prof. A.K. Sharma
Dr. B.V. Sreekantan	Dr. D. Lal
Dr. E.C. Subbarao	Prof. C.N.R. Rao
Dr. J.P. Thapliyal	Dr. B.K. Bachhawat
Prof. B.V. Thosar	Prof. B.V. Sreekantan
Prof. Yash Pal	Dr. B. Peters

The President presented scrolls to the Fellows certifying their election to the Academy.

Professor T.R. Odhiambo, Director, International Centre for Insect Physiology and Ecology, Nairobi, Kenya and Foreign Fellow of the Academy was formally admitted to Fellowship at a special function held in the Academy on 27th January 1978. Professor Odhiambo signed the Fellowship Register and the President, Dr. R. Ramanna presented the Scroll regarding his Fellowship (*see front cover*).

Anniversary Address by Dr. R. Ramanna

Dr. R. Ramanna, President, INSA, delivered the Anniversary Address as given on pp. 1 to 8.

General Medals—Announcement

Aryabhata Medal—1977

The Award of 'Aryabhata Medal' for the year 1977 to Prof. K.R. Ramanathan was announced.

Meghnad Saha Medal—1978

The Award of '*Meghnad Saha Medal*' for the year 1978 to Prof. D. S. Kothari was announced.

Subject-wise Medals—Announcement**P. C. Mahalanobis Medal—1978**

The Award of the '*P. C. Mahalanobis Medal*' for the year 1978 to Dr. C. Ambasankaran, Director, Electronics and Instrumentation, Bhabha Atomic Research Centre, Trombay, Bombay was announced.

Shanti Swarup Bhatnagar Medal—1979

The Academy decided to award the '*Shanti Swarup Bhatnagar Medal*' for the year 1979 to Dr. Brahm Prakash for his outstanding contributions in the field of Metallurgy.

Silver Jubilee Commemoration Medal—1979

The Academy decided to award the '*Silver Jubilee Commemoration Medal*' for the year 1979 to Dr. M.S. Randhawa in recognition of his outstanding contributions in the field of Agricultural Sciences.

Srinivasa Ramanujan Medal—1979

The Academy decided to award the '*Srinivasa Ramanujan Medal*' for the year 1979 to Prof. R. P. Bambah, F.N.A. for his outstanding contributions to the theory of geometry and numbers.

Subject-wise Medals Presentation**J. C. Bose Medal—1977**

The President, Dr. Raja Ramanna, presented the '*J. C. Bose Medal*' for the year 1977 to Prof. V. Ramalingaswami, FNA, Director, All India Institute of Medical Sciences, New Delhi. Prof. Ramalingaswami delivered the medal lecture on '*Interphase between malnutrition and immunological reactivity*' at 5.00 p.m. on 1st January 1978 at the PRL, Ahmedabad.

Homi J. Bhabha Medal—1978

The President presented the '*Homi J. Bhabha Medal*' for the year 1978 to Prof. B. V. Sreekantan, FNA, and Director, Tata Institute of Fundamental Research, Bombay. Prof. Sreekantan delivered the medal lecture on '*Cosmic Ray Physics and Astrophysics*' on 1st January 1978 at Physical Research Laboratory.

Endowment Medals—Announcement

Professor T. R. Seshadri Seventieth Birthday Commemoration Medal — 1979

The Academy decided to award the '*Prof. T. R. Seshadri Seventieth Birthday Commemoration Medal*' for the year 1979 to Dr. S.C. Bhattacharyya in recognition of his outstanding contributions in the field of Natural Products chemistry.

Award of the Vishwakarma Medal 1979

The Academy decided to award the '*Vishwakarma Medal*' for the year 1979 to Dr. Sukh Dev in recognition of his outstanding contributions in the field of Natural Products.

Bashambar Nath Chopra Lectureship — 1977

The President presented the honorarium of Rs. 1,500/- for the Bashambar Nath Chopra Lectureship to Prof. B. K. Bachhawat, Director, Indian Institute of Experimental Medicine, Calcutta. Prof. Bachhawat delivered the Bashambar Nath Chopra Lecture on '*Glyco Conjugates Cell Biology*' on 2nd January 1978 at the Physical Research Laboratory.

Amendment of Rule 69

As a result of the scrutiny of voting papers for the amendment of Rule 69 of the '*Rules and Regulations of INSA*' pertaining to the signing of cheques and the ceiling on the amount of cheques to be signed by the Accounts Officer, Executive Secretary and the Treasurer, the proposed amendment of the rule was declared carried. The amended rule will read as follows:

"The Council shall be competent to decide the limit of amounts in respect of cheques to be signed by the Accounts Officer and the Executive Secretary and by the Executive Secretary and the Treasurer. In the absence from the Headquarters of either the Accounts Officer or the Executive Secretary or both, the President shall designate any one or two of the other paid Officers of the Academy, as the case may be, to sign the cheques. This action shall be reported to the Council at the first opportunity."

Obituary

At the Anniversary General Meeting held on 2nd January 1978 at the Physical Research Laboratory, Ahmedabad, the President reported the passing away of Dr. Bibhutibhusan Sen and Prof. A.G. Jhingran, Fellows of the Academy and expressed the sense of deep loss suffered by INSA. A minute's silence was observed, all present standing, as a mark of respect to the deceased.

INSA Guest Rooms

The rules for INSA Guest Rooms effective from the 1st of February 1978 are given in Appendix-I.

Indo-Soviet Collaborative Programme

The desire to initiate the scientific exchange and cooperation between the Academy of Science, USSR and the Department of Science & Technology, Govt. of India commenced through an agreement signed by the respective representatives on the 18th of February 1975. It was accelerated through the visit of a delegation of the Indian National Science Academy led by its then President Dr. B. P. Pal to the Soviet Union between the 14 and 23 July 1976 at the invitation of the Academy of Sciences, USSR.

During the meeting with the President of the USSR Academy of Sciences, Academician A.P. Alexandro and the delegation of the Academy of Sciences led by Academician Yu. A. Ovchinnikov 17 Projects were identified to be initiated with mutual collaboration. Recently there are suggestions to include a few more.

The projects cover various aspects of Physics, Geology, Chemistry, Mathematics, Agriculture, Taphonomy etc., and are making considerable progress. It clearly shows that mutual cooperation between the two sides has taken really firm grip. This has been further strengthened by regular visits of Soviet and Indian experts to help each other in understanding in depth the Project work for systematic progress. An added feature to strengthen the effective cooperation is the organisation of bilateral symposia under different disciplines of Science both in India and the Soviet Union. To illustrate a few we may mention that a symposium on '*Embryology of Crop Plants*' held at Leningrad between the 23rd and 26th August 1977 was attended by an Indian delegation sent by the Academy. Two symposia are to be held this year one at Eraven, Armenia (USSR) and the other at Bangalore (India) in May and November 1978 respectively. These are the '*V Indo-Soviet Symposium on Chemistry of Natural Products*' and '*3rd Indo-Soviet Symposium on Earth Sciences*.'

Taking the material aspect we have a generous cooperation from the Soviet side in getting sophisticated equipments which are needed in carrying out different stages of work in different projects. To mention only the recent supports the Soviet side has kindly agreed to supply two equipments needed in carrying out a Low temperature Physics work to the participating Institution.

The visit of Prof. V. Elyutin, Minister of Higher and Secondary Specialised Education, Govt. of USSR to the Academy on February 2, 1978 is indicative of the interest evinced by the USSR and the importance given to this collaborative venture.

As a token of our goodwill, Prof. R.C. Mehrotra, Vice-President, INSA presented a set of the following publications of the Academy (*see back cover inside*) :

1. *A Concise History of Science in India*
2. *Aryabhata—3 Volumes*
3. *Caraka Samhita*
4. *Jahangir the Naturalist*
5. *The Year Book 1978*

INSA-Royal Society Exchange Programme

The INSA and the Royal Society of London entered into an Agreement on the 27th March 1978 on exchange of visits mutually between each other which comes into force the 1st of April 1978. The main features of the Agreement cover Types of visits, Selection and nomination of visitors, Programme Arrangements, Travel, Boarding and Lodging, Medical Treatment, Work Permits and Visas, etc. The Agreement was signed by Dr. M. G. P. Stoker, Foreign Secretary and Vice-President for the Royal Society of London and by Dr. A. R. Verma, Foreign Secretary for the Indian National Science Academy (*see back cover*),

MISCELLANEOUS NEWS

Announcements

I. The World Phosphate Rock Institute has created the IMPHOS AWARD

In order to extend the impact of the First International Congress on Phosphorus Compounds and to foster research on their non-fertilizer uses.

The first award will be granted in 1979.

Purpose : To reward research carried out over the last five years and to encourage the continuation of this research, according to the general aims of IMPHOS

Nature : The award is in two parts :

1) \$ 5,000 and a Certificate made out to the Recipient with the reasons for his or her having been granted the Award

2) \$ 10,000 to be devoted to the Recipient's continuing his or her research

Criteria of Eligibility :

Any individual researcher, or research group, whose work contributes to the development of uses for phosphorus compounds, may apply for the award.

Particular attention will be given to concerns involving the passage from Pure to Applied Chemistry.

The prospects for new developments in the continuation of research will be considered as an element of no less importance.

Frequency : Every two years

All those wishing to apply for the award are requested to contact IMPHOS, even before the publication of the detailed rules scheduled for the end of the first Semester, 1978.

II. Fellowships in Environmental Research

The Monitoring and Assessment Research Centre at Chelsea College, University of London is carrying out a research programme on pollution assessment.

The broad objectives of the programme are to improve understanding of the movement and effects of pollutants in the environment so that harm to man and his resources from pollution can be estimated and assessed.

The work is sponsored by the United Nations Environment Programme and The Rockefeller Foundation and has the support of the Scientific Committee on Problems of the Environment.

Applications are invited for senior visiting research fellowships from scientists who could make contributions in one of the following work areas :

1. The development and use of environmental transport models, along various critical pathways, which will enable the prediction of total exposure of man and other important targets to certain pollutants.
2. The evaluation of the effects of environmental pollution in particular to
 - * review current approaches to determine dose-response relationships for humans and other biota and the toxicological and epidemiological information required;
 - * use dose-reponse relationships to define exposure limits;
 - * develop methods of assessing the harm to intact ecosystems resulting from environmental stress.

In the first instance, appointments will be made for a period of one to six months. These fellowships are particularly suited to applicants wishing to come on sabbatical leave or on a similar basis. Financial support will be considered by M.A.R.C. on a case by case basis but may include contributions towards travel expenses as well as a *per diem* allowance during the term of the appointment.

Potential applicants may obtain further information from the Director, Monitoring and Assessment Research Centre, The Octagon Building, 459A Fulham Road, London SW100QX to whom applications together with *curriculum vitae* and the names of two referees should be sent.

III. Fellowships for Attendance at the 11th International Congress of Biochemistry Toronto 8-14 July 1979

IUB and the Executive Committee for the 11th Congress will make awards to assist younger biochemists who wish to attend the Congress. Preference will be given to those residents of countries where the practice of the science of Biochemistry is in the early stages of development.

The Fellowships will support part of the cost of travel (normally up to a maximum of half the listed economy air fare) and subsistence during the Congress. The Executive Committee of the Congress will waive the registration fee for Fellowship holders.

Applications should include the following information :

1. Name and date of birth.
2. Nationality.
3. Place of work, including full postal address.
4. Nature of work.

5. List of publications.
6. Support available or expected to be available to the applicant.
7. Names of three referees, one of whom should, if possible, not live in the applicant's country of residence.

This notice should be shown to the referees, and applicants must ask them to write to Professor Datta, at the address below, to reach him by 1 October 1978.

Applications must be made *in Triplicate* and as early as possible, arriving no later than 1 October 1978, to : Professor S.P. Datta, Biochemistry, University College, London WC 1E 6BT, England.

The decisions of the Selection Committee will be made known by 1 December 1978.

**INDIAN NATIONAL SCIENCE ACADEMY
BAHADUR SHAH ZAFAR MARG, NEW DELHI-110002**

Rules for INSA Guest Rooms effective from 1st February, 1978

INSA GUEST ROOMS

1. Allotment

The INSA Guest Room shall be allotted on first come first basis in the following order of preference :

- (a) Fellows attending meetings of INSA.
- (b) Fellows coming to attend meetings of other organisations.
- (c) Non-Fellows, if requested by other organisations such as U.G.C., C.S.I.R. etc., subject to availability of accommodation.

Request for reservations, indicating date and time of arrival, departure and purpose of visit may be sent sufficiently in advance so that the intimation regarding reservation could be communicated in time.

2. Rent

- (a) Room with attached bath : Rs. 10.00 per day (24 hrs. from the time of arrival) or a part thereof for single bed.
- (b) Dormitory : Rs. 7.00 per day (24 hrs. from the time of arrival) or a part thereof for single bed.

The rent includes bed tea and light breakfast.

3. Period of Stay

The guests may stay for a period of three days in the first instance which may be extended subject to availability of accommodation.

4. Bed Tea

The Bed Tea (one cup of tea) shall be served in the rooms between 6.00 a.m. to 6.30 a.m.

5. Breakfast

The Break-fast shall be served between 8.00 a.m. to 8.30 a.m. in the rooms.

The menu of the breakfast is as follows :

Non-Vegetarian

Milk—One cup with cornflex
 Toast—Two slices with butter
 Coffee/Tea—One cup
 One Egg (Full boiled or half-boiled)

Vegetarian

Milk—One cup with cornflex
 Toast—2 slices with butter
 Coffee/Tea—One cup
 One seasonal fruit.

Extra charges in addition to Rs. 10/- or 7/- respectively for :

1. Omlette (One Egg)	Rs. 0.30	} Instead of one full boiled or half-boiled egg.
(Two Eggs)	Rs. 1.10	
2. Poach (One Egg)	Rs. 0.10	
(Two Eggs)	Rs. 0.70	

A. N. MITRA

M. G. DEO

Secretaries

Dated : 31st January, 1978

ANNOUNCEMENT

Last Date for Receipt of Nominations for the following Awards due for the year 1980 is 15th May 1978 :

I. Subject-wise Medals

- Physical Sciences* (Physics, Chemistry and Mathematics)
Satyendranath Bose Medal
- Life Sciences* (Botany, Zoology, Anthropology, Medical and Veterinary Sciences, Physiology and Biochemistry)
Jagadish Chandra Bose Medal
- Earth Sciences* (Geology, Geophysics, Geography and Geochemistry)
Darashaw Noshawan Wadia Medal
- Engineering and Technology*
S. H. Zaheer Medal

II. Chandrakala Hora Medal

III. Bashambar Nath Chopra Lectureship



Prof. R.C. Mehrotra (left), Vice-President, INSA, presenting Academy's publications to Prof. Elyutin (right), Minister for Higher & Secondary Specialised Education, Government of U.S.S.R. (*vide* Report on pp. 13-14).



An agreement regarding exchange of visits between the INSA and the Royal Society of London was signed, Dr. M.G.P. Stoker (left), Foreign Secretary & Vice-President for the Royal Society of London and by Dr. A.R. Verma (right), Foreign Secretary for the INSA (*vide* Report on p. 15).

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