

# Patrika

Newsletter of the Indian Academy of Sciences

## Reviving Patrika...

– N. Mukunda

This semi-annual newsletter of the Academy started appearing in December 1980 during the Presidentship of S. Varadarajan. Anna Mani edited it with care and concern for fifteen years until June 1995, when, due to failing health, she could not continue to oversee its production any further. It has not appeared since then.

Now, after a break of seven years, we are reviving *Patrika*. Several Fellows have been elected since 1995, and to all of them this will be something new. Several Presidents and Councils have served their terms and have passed on their responsibilities to successors. In addition to its traditional activities, two major new ones have been added to the Academy's functioning — the various programmes overseen by the Science Education Panel, and the entry of the electronic medium in publication activities and in internal organization.

This issue marking the revival of the Newsletter is devoted to a brief review of some of these important developments since the mid-90's. Especially for Fellows elected in recent years, I hope this account will act as an invitation to contribute to Academy's activities. Further issues of *Patrika* will carry detailed reports on activities from 2002.



S. Varadarajan



Adieu to Anna Mani  
1918 – 2001

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## PUBLISHED BY

Indian Academy of Sciences  
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This newsletter is available on the  
Academy website:  
[www.ias.ac.in/patrika/](http://www.ias.ac.in/patrika/)

*To receive a regular copy of the  
Newsletter, please write to the  
Executive Secretary of the  
Academy*

## Forthcoming Events – 2002

Mid-Year Meeting  
Bangalore 5-6 July

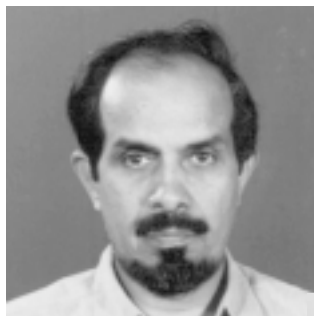
Annual Meeting  
Chandigarh 8-10 Nov.

Refresher Course Theoretical Physics  
Delhi 1-15 Oct.

Refresher Course Reproductive Biology  
Dharwar 17-31 Oct.

Refresher Course Experimental Physics  
Kalpakkam 18-31 Oct.

Refresher Course Immunology  
Pune 2-14 Dec.



*R. Narasimha*



*P. Rama Rao*

## PRESIDENTS

We have had four Presidents, and their Councils, in office during *Patrika's* silence and even slightly earlier: R. Narasimha (1992–94), P. Rama Rao (1995–97), N. Kumar (1998–2000) and currently K. Kasturirangan (2001–2003).



*N. Kumar*



*K. Kasturirangan*

## NEW ACTIVITIES

### I. Science Education Panel

In early 1994, the President and Council set up an expert panel to review the status of university science education in the country; and to make suggestions, both to outside agencies and to the Academy itself, for actions and programmes that could be taken up to help improve the situation. The Committee's report was accepted by the Council at its meeting in December 1994, and issued as "Academy Paper No. 1 – University Science Education". Over the years, this paper has reached the attention of many in the country, including teachers, scientists and policy makers, and at least a few recent initiatives might be traced to it.

An important part of this Paper was a collection of suggestions for activities to be undertaken by the Academy on its own. To coordinate these, the Science Education Panel was set up in 1996. The major initiatives taken by Academy since then are briefly listed below:

(a) *Resonance* – journal of science education was started as a new publication of the Academy. It has appeared regularly every month since



January 1996, and has gained a good reputation for quality of content, production and timeliness. The level of the articles sometimes tends to be rather high, and we need the assistance of Fellows (and

others known to them) to keep it centred around the undergraduate level. Each issue is about 100 pages in length, and covers all areas of science, mathematics and engineering.

(b) Each year the Academy organises a Mid-year Meeting around July in Bangalore and an Annual Meeting around November at other locations in the country. Since 1995, it has been the practice to invite selected teachers from colleges and universities all over the



country to attend these meetings as guests of the Academy. This provides an important meeting-point between Fellows and the teaching community, as well as an opportunity for the latter to listen to lectures and symposia on current scientific research. During 2002 it is hoped that close to 50 teachers will attend each of the two meetings; and on the occasion of the mid-year meeting a special one-day programme exclusively for teachers is being planned. It is also planned that each teacher will be invited to attend two successive Academy meetings. The database of teachers now includes nearly 1000 names from around the country.

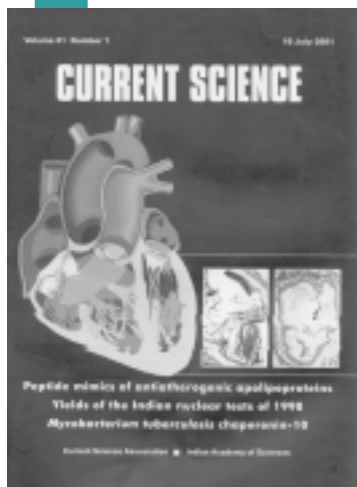
Contributions from Fellows to the newsletter are welcome – brief articles of general interest, news, views, interesting anecdotes, etc.

(c) For both students and teachers, a Summer Fellowship Programme enabling them to work for two months with Fellows has been introduced since 1995. Starting with relatively small numbers, this programme at present has reached a reasonable size – about 1100 applications each year, and about 75 and 25 fellowships for students and teachers respectively.

The programme is usually announced in *Resonance* and *Current Science* around December for the coming summer; and selections are

made by groups of Fellows based in Bangalore in each area. Both train travel and monthly fellowships for living expenses are offered.

(d) From about end of 1999, a series of two-week long Refresher Courses for teachers, and short 2-3 day lecture programmes for the benefit of M.Sc./Ph.D. students and teachers, are being organized. The initiative in each case is taken by a Fellow, while the lecturers include both Fellows and others. Both of these have evoked a very positive response. So far nine Refresher Courses (see Annexure 1) have been held in such places as Chandigarh, Kolkata, Allahabad, Hyderabad, Goa, Mavelikara, Kottayam, Dharwar and Mysore (Mathematics 3, Life Sciences 3, Theoretical Physics 2, Experimental Physics 1). A few more are already in preparation for the rest of 2002. Each course involves teacher-participants from all over the country. The number of short duration lecture programmes so far held at various colleges and university



departments in the country is 12 (Mathematics 2, Physics 1, Chemistry 4, Life Sciences 5). Several more of these are also being planned.

(e) Project Lifescape: Monitoring biodiversity to promote conservation, sustainable use, and control has emerged as a major scientific challenge in recent years. This project is an attempt to address this challenge. Its objectives include: identifying an appropriate set of species whose abundance would be assessed to study different localities in the country; generating material to aid in reliable identification and classification of these taxa and devising a standardized system of classification of ecological habitat types; designing a set of student projects appropriate to the focal set of species to advance our understanding of various topics in ecology, evolutionary biology, behaviour, and biogeography; designing a computerized biodiversity system to organize the data generated; and field-testing the programme through pilot projects in selected high schools, colleges, and universities. Wide consultations and interactions have resulted in the creation of a network of biology teachers in several states of the country to try out these new ideas. The first of the fascicles on butterflies has appeared while others on freshwater fishes, frogs, birds, medicinal plants, and trees are in various stages of preparation.

## II. Modernization & Computerization

There are two aspects of these developments, one related to journal publication and general publicity, and the other to office and accounts organization. Each of these is described briefly.

(a) Starting around September 1999, a well-planned and determined effort was undertaken to place all the eleven Academy journals (including *Current Science*) on the web. This is to increase visibility of our journals worldwide, and so to induce more of the good quality research papers by scientists in the country to be submitted to our journals. By now all our eleven journals are available on the web with full text of articles freely available for ten of them. The Academy server for this purpose was installed around March 2000. Another server located at the Supercomputer Education & Research Centre of the Indian Institute of Science also carries these publications.

Over the last few years, the Academy has made substantial investments to computerize most of its day-to-day operations. Staff involved in editorial and related work as well as in non-publication activities now extensively work on computers. Email has become the most preferred mode of communication.

Tailor-made software programs are now used to handle processing of every submitted manuscript. Using a page-composition software, the entire typesetting of *Resonance* pages and scanning of illustrations are done in-house with the full camera-ready pages handed over to press for printing. Similarly correspondence with journal subscribers, preparation of mailing lists, maintenance of accounts, bank reconciliation, work relating to fellowship, composing pages for year book, etc. have all been computerized.

An imaginatively conceived Academy website has also been set up giving information about the fellowship, publications, scientific meetings, and other activities (URL: [www.ias.ac.in](http://www.ias.ac.in)). The editorial board of *Pramana – Journal of Physics* has taken far-reaching steps to set up a fully computerized system for online processing of manuscripts through internet for use by the editors, the editorial office, the authors and referees. When complete,

this can serve as a model for other Academy journals and indeed other journals in the country. It will also make it possible for Fellows located away from Bangalore to participate to the full in editorial activities.

Based on experience gained since 1999, Academy organised

two three-day workshops on electronic publishing in science, for the benefit of editors of Indian research journals. The Workshops were held during March 2002 at Bangalore, and a more detailed account is planned for the next issue of *Patrika*.



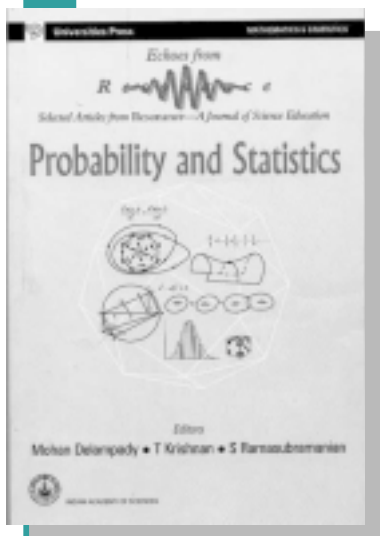


## OTHER RECENT ACTIVITIES

(a) Following up on the “1994 Academy Paper No. 1 on University Science Education”, Council has sought to take up other issues of importance to the country’s scientific community, for similar study and preparation of reports. One of them currently engaging its attention is to examine all issues concerning scientific data available in the country. To start with, geographical data was chosen for study. The consensus that emerged after detailed deliberations by a panel and discussions with the scientific community is that the Government should follow a policy of letting data acquired at public expense conveniently accessible to the public except when clearly understood security considerations demand that access be restricted. This report is now being sent to appropriate agencies in the Government.

(b) Academy has occasionally been bringing out a variety of special publications, often to commemorate specific events. To advertise and market such publications more effectively,

a memorandum of understanding was signed with M/s Universities Press Limited, an affiliate of M/s Orient Longmans (Hyderabad). Some of the volumes include special collections of *Resonance* articles tied together by a common theme. The publications so far brought out under this



arrangement appear in Annexure 2.

(c) A bust of Subrahmanyan Chandrasekhar by the famous sculptor Paul Granlund, well-known for his earlier bust of Srinivasa Ramanujan, was acquired by the Academy and unveiled in the Council Room by Lalitha Chandrasekhar. Additional copies of this bust were also ordered by the Academy and given



at cost to other institutions in India and abroad.

(d) Academy has acquired a small plot of land near the HMT campus in Bangalore, about 6 km north of the main Academy campus. A three-storey building comprising guest rooms for housing Fellows, teacher and student visitors is nearing completion and will be ready for use by around September 2002. This facility will greatly ease many summer operations, including housing teachers and students during summer fellowship visits to Bangalore, and teacher invitees to the Mid-Year Meetings. It will also supplement the existing Academy guest house facility.

## NEW FELLOWS

Since 1996, 163 new Fellows have joined the Academy. Also elected were 10 Honorary Fellows and 47 Associates. Annexure 3 lists their names. During this period, the Academy also lost a number of distinguished Fellows and Honorary Fellows. Their names appear in Annexure 4.

## DISCUSSION MEETINGS

Fellows might recall that the Academy bought a time-share from the Orange County Resorts in Coorg in Karnataka under which Academy



discussion meetings can be organized twice every year for a maximum of 25 participants.

Details can be had from the Academy Office. Proposals from Fellows to hold meetings are welcome. So far 13 discussion meetings have been held at Orange County. The list appears as Annexure 5.

## PUBLICATION ACTIVITIES

The eleven journals continued to be published. Rigorous refereeing and reasonably good production standards continue to be maintained. Except for a couple of journals which suffer from insufficient manuscript submissions, all the other journals appear with unflinching regularity. Special

issues of topical interest are frequently brought out and subscriptions have more or less been maintained; however overseas subscriptions have declined, a trend seen worldwide.

## ANNUAL MEETINGS

The Academy annual meetings have of late attained a distinctive character with a mixture of special lectures and public lectures interspersed with microsymbiosia and presentations by new Fellows and Associates. The participation of invited teachers from various parts of the country has led to greater interaction with the fellowship and has added to the importance of these meetings. The excellent hospitality by organizers has also contributed to greater participation of Fellows in the annual meetings.

Since the last *Patrika*, the annual meetings have been held in Chennai (1995, hosts: IIT/CLRI/IGCAR); Jodhpur (1996, Defence Laboratory); Hyderabad (1997, IICT/CCMB/NGRI); Kottayam (1998, Mahatma Gandhi University); Lucknow (1999, CDRI); Goa (2000, NIO/Univ. of Goa); and Tirupati (2001, S.V. University).

## MID-YEAR MEETINGS

The mid-year meetings have been held every year in July in the Indian Institute of Science, Bangalore.

## ACADEMY PUBLIC LECTURES

Several public lectures have been held in Bangalore during the last seven years. A list appears as Annexure 6.

## RAMAN PROFESSORS

Distinguished scientists who have visited India as Raman Professors since 1996 are:

**Herman Bondi** (Cambridge, Dec. 1995–Feb. 1996)

**B.I. Halperin** (Harvard, Sept.–Oct. 1996)

**Dan P. McKenzie** (Cambridge, Feb.–April 1997)

**T.N. Krishnamurti** (Florida, Dec. 1998 and Dec. 1999)

**Itamar Procaccia** (Rehovot, Israel, Feb.–Mar. 2001)

**Albert J. Libchaber** (Rockefeller, Oct.–Nov. 2001)



*Herman Bondi*

*D.P. McKenzie*



*T.N. Krishnamurti*

*Itamar Procaccia*



*Albert J. Libchaber*

## ***Resonance Internet Software Collection for Chemists***

This collection of softwares in a CD ROM was an offshoot of discussions between the authors, Prof. A G Samuelson and Prof. Uday Maitra regarding chemistry related software. They have been involved in helping chemistry departments with computer related problems and have felt the need for a local collection of software that can be accessed through a CD or via the local intranet. The vagaries of the net make a search for suitable software and subsequent downloads very frustrating. This collection would also eliminate (a) multiple downloads of the same file and (b) the hidden expense in terms of time and bandwidth. To broaden the scope many softwares used by a chemist such as browsers, html editors, pdf readers and the like have been included. Softwares have been classified into various categories and the CD has a search program and an index with keywords.

Please contact the Academy office for ordering the CD.

## CONCLUSION

This issue of *Patrika*, marking its revival after many years, has become somewhat long. There has been a great deal to catch up with. We fervently hope that hereafter *Patrika* will appear regularly.

As the preceding pages show, over the past few years two major new lines of activity have been added to the Academy's traditional roles: strengthening links with the science teacher and student communities in the country, and adapting its publication activity to the new electronic medium. The latter is essentially inescapable. In each of these efforts, full participation by the Fellowship is vital for doing things well and making a worthwhile contribution to the educational and research scenes in the country. Of course we will undertake, after careful consideration, only those activities in these areas where we feel confident of doing well, given our human and material resources.

Till the next issue, then...

– N. Mukunda



## ANNEXURE 1

### List of Refresher Courses held so far

- (1) Instructional school on linear algebra, Panjab University, Chandigarh, 6–18 December 1999
- (2) Refresher course in Animal Science, Karnatak University, Dharwad, 1–15 June 2000
- (3) Winter school on modern biology, IICB, Kolkata, 6–17 November 2000
- (4) Refresher course in theoretical physics, Bishop Moore College, Mavelikara, 6–18 November 2000
- (5) Refresher course in Genetics and Evolution, University of Mysore, Mysore, 10–22 September 2001
- (6) Refresher course in Experimental Physics, Goa University, Goa, Oct. 29 to Nov. 12, 2001
- (7) Refresher course in Theoretical Physics, University of Hyderabad, Hyderabad, 18–30 November 2001
- (8) Instructional school on Linear algebra, Harish-Chandra Research Institute, Allahabad, 3–15 December 2001
- (9) Refresher Course in Mathematics – Workshop on analysis, probability and statistics, C.M.S. College, Kottayam, 10–22 December 2001

## ANNEXURE 2

### Academy Publications in collaboration with Universities Press

- (1) Percolation theory and particle systems  
Editor: Rahul Roy, 2000, pp 1–238
- (2) Perspectives in structural biology  
A volume in honour of G.N. Ramachandran, September 1999, pp 1–746

- (3) Butterflies of Peninsular India  
Krushnamegh Kunte, pp. 300
- (4) Probability and statistics – Echoes from Resonance  
Editors: Mohan Delampady, T. Krishnan and S. Ramasubramanian, pp 1–201
- (5) Mathematical analysis – Echoes from Resonance  
Editors: V. Pati and A. Sitaram, pp. 1–142

## ANNEXURE 3

### Fellows/Honorary Fellows/ Associates Elected since 1996

#### Fellows

#### MATHEMATICS

Adimurthi, TIFR Centre, Bangalore  
B. Bagchi, ISI, Bangalore  
R.B. Bapat, ISI, New Delhi  
S.M. Bhatwadekar, TIFR, Mumbai  
M.K. Ghosh, IISc, Bangalore  
G. Misra, ISI, Bangalore  
R. Mukerjee, IIM, Kolkata  
K.H. Paranjape, IMSc, Chennai  
T.R. Ramadas, TIFR, Mumbai  
S. Ramasubramanian, ISI, Bangalore  
S. Thangavelu, ISI, Bangalore  
Ushadevi N. Bhosle, TIFR, Mumbai  
M. Vanninathan, TIFR Centre, Bangalore  
T.N. Venkataramana, TIFR, Mumbai  
S.L. Yadava, TIFR Centre, Bangalore

#### PHYSICS

S. Ananthakrishnan, NCRA, Pune  
H.M. Antia, TIFR, Mumbai  
S. Banerjee, TIFR, Mumbai  
S.V. Bhat, IISc, Bangalore  
S.M. Bhattacharjee, IOP, Bhubaneswar  
B.K. Chakrabarti, SINP, Kolkata  
S. Chaturvedi, University of Hyderabad  
S.R. Das, TIFR, Mumbai  
S.V. Dhurandhar, IUCAA, Pune  
A.K. Grover, TIFR, Mumbai  
A. Gurtu, TIFR, Mumbai  
Indrani Bose, Bose Institute, Kolkata  
A.M. Jayannavar, IOP, Bhubaneswar  
A.S. Joshipura, PRL, Ahmedabad  
D.G. Kanhere, University of Pune  
S. Mukhi, TIFR, Mumbai  
R. Nagarajan, TIFR, Mumbai  
N. Nitsure, TIFR, Mumbai

D. Pandey, BHU, Varanasi  
R. Pandit, IISc, Bangalore  
Ram Sagar, Nainital Observatory  
S. Ramakrishnan, TIFR, Mumbai  
S. Ramaswamy, IISc, Bangalore  
A.P. Rao, IUCAA, Pune  
E.V. Sampathkumaran, TIFR, Mumbai  
M.K. Sanyal, SINP, Kolkata  
Diptiman Sen, IISc, Bangalore  
K.P. Singh, TIFR, Mumbai

#### CHEMISTRY

Anil Kumar, NCL, Pune  
D. Basavaiah, University of Hyderabad  
P.K. Bharadwaj, IIT, Kanpur  
S. Bhattacharya, IISc, Bangalore  
K. Bhattacharyya, IACS, Kolkata  
T.K. Chandrashekar, IIT, Kanpur  
P.K. Chattaraj, IIT, Kharagpur  
S. Ghosh, IACS, Kolkata  
M.K. Gurjar, NCL, Pune  
M.S. Hegde, IISc, Bangalore  
K.C. Kumaraswamy, Univ. of Hyderabad  
U. Maitra, IISc, Bangalore  
B.G. Maiya, University of Hyderabad  
P. Mathur, IIT, Mumbai  
M.K. Mishra, IIT, Mumbai  
R.N. Mukherjee, IIT, Kanpur  
G.V. Nair, RRL, Trivandrum  
S. Pal, NCL, Pune  
R. Ramaraj, MKU, Madurai  
S. Sarkar, IIT, Kanpur  
Murali Sastry, NCL, Pune  
Y.D. Vankar, IIT, Kanpur  
A.K. Singh, IIT, Mumbai  
M. Vairamani, IICT, Hyderabad  
S. Vasudevan, IISc, Bangalore  
S. Yashonath, IISc, Bangalore

#### ENGINEERING

G.V. Anand, IISc, Bangalore  
Baldev Raj, IGCAR, Kalpakkam  
P.P. Chakrabarti, IIT, Kharagpur  
A. Ghosh, IIT, Kanpur  
S.K. Ghosh, TIFR, Mumbai  
A. Kakodkar, AEC, Mumbai  
D.V. Khakhar, IIT, Mumbai  
M.G. Kulkarni, NCL, Pune  
V. Kumaran, IISc, Bangalore  
A.K. Mallik, IIT, Kanpur  
T.G.K. Murty, ISRO, Bangalore  
R. Narasimhan, IISc, Bangalore  
S.K. Pal, ISI, Kolkata  
Surendra Prasad, IIT, New Delhi  
Anurag Sharma, IIT, New Delhi  
Ashutosh Sharma, IIT, Kanpur  
C.S. Sundar, IGCAR, Kalpakkam  
Vijay Chandru, IISc, Bangalore

## MEDICINE

S.K. Acharya, AIIMS, New Delhi  
K.A. Balasubramanian, CMC Hospital, Vellore  
Rajani A. Bhisey, Mumbai  
Chitra Sarkar, AIIMS, New Delhi  
B.C. Das, Institute of Cytology & Preventive Oncology, New Delhi  
S.V. Gangal, CBT, New Delhi  
N.R. Jagannathan, AIIMS, New Delhi  
A. Jayakrishnan, SCTIMST, Trivandrum  
Madhu Dikshit, CDRI, Lucknow  
I. Mittra, Tata Memorial Hospital, Mumbai  
Y.D. Sharma, AIIMS, New Delhi  
Vijayalakshmi Ravindranath, National Brain Research Centre, New Delhi

## EARTH & PLANETARY SCIENCES

S. Dasgupta, Jadavpur University, Kolkata  
M. Dileep Kumar, NIO, Goa  
B.N. Goswami, IISc, Bangalore  
A.K. Kamra, IITM, Pune  
K.S. Krishna, NIO, Goa  
Shyam Lal, PRL, Ahmedabad  
Anand Mohan, BHU, Varanasi  
S.V.S. Murty, PRL, Ahmedabad  
P.C. Pandey, National Centre for Antarctic & Ocean Research, Goa  
T. Radhakrishna, CESS, Trivandrum  
S.S. Rai, NGRI, Hyderabad  
R. Ramesh, PRL, Ahmedabad  
P.B. Rao, National MST Radar Facility, Tirupati  
M.M. Sarin, PRL, Ahmedabad  
A.K. Singhvi, PRL, Ahmedabad  
D.C. Srivastava, University of Roorkee

## ANIMAL SCIENCES

S. Bhattacharya, IICB, Kolkata  
A.P. Gore, University of Pune  
Amitabh Joshi, JNCASR, Bangalore  
P.P. Majumder, ISI, Kolkata  
G. Marimuthu, MKU, Madurai  
K. Muralidhar, University of Delhi  
T.C. Narendran, University of Calicut  
R. Raman, BHU, Varanasi  
R. Sukumar, IISc, Bangalore  
M.G. Watve, Garware College, Pune

## PLANT SCIENCES

D. Pental, UDSC, New Delhi  
A.S. Raghavendra, University of Hyderabad  
R.R. Rao, NBRI, Lucknow  
M. Snajappa, BSI, Kolkata  
H.S. Shetty, University of Mysore  
R. Tuli, NBRI, Lucknow  
K. Veluthambi, MKU, Madurai

## GENERAL BIOLOGY

S. Adhya, IICB, Kolkata  
Manju Bansal, IISc, Bangalore  
M.K. Basu, IICB, Kolkata  
Sudha Bhattacharya, JNU, New Delhi  
P. Chakrabarti, Bose Institute, Kolkata  
A. Chattopadhyay, CCMB, Hyderabad  
V.S. Chauhan, ICGB, New Delhi  
C.K. Das Gupta, University of Calcutta  
A.K. Datta, IICB, Kolkata  
Katuri Datta, JNU, New Delhi  
A. Ghosh, IMTECH, Chandigarh  
S.K. Gupta, NII, New Delhi  
S. Jameel, ICGB, New Delhi  
G. Krishnamoorthy, TIFR, Mumbai  
S. Mayor, NCBS, Bangalore  
Ch. Mohan Rao, CCMB, Hyderabad  
V. Nagaraja, IISc, Bangalore  
Rajendra Prasad, JNU, New Delhi  
Pratima Sinha, Bose Institute, Kolkata  
Somdatta Sinha, CCMB, Hyderabad  
S. Roy, Bose Institute, Kolkata  
G. Sahni, IMTECH, Chandigarh  
D.M. Salunke, NII, New Delhi  
K. Sankara Rao, IISc, Bangalore  
V.P. Sharma, Malaria Research Centre New Delhi  
Namita Surolia, JNCASR, Bangalore  
J.B. Udgaonkar, NCBS, Bangalore  
U. Varshney, IISc, Bangalore  
K. VijayRaghavan, NCBS, Bangalore  
Sraswati Vishveshwara, IISc, Bangalore  
R. Varadarajan, IISc, Bangalore

## Honorary Fellows

P.W. Anderson, Princeton University, New Jersey  
Abhay Ashtekar, Pennsylvania State University  
Hermann Bondi, Churchill College, Cambridge  
Anthony K. Cheetham, University of California at Santa Barbara, California  
C. Cohen-Tanoudji, College de France, Paris  
Michael E. Fisher, University of Maryland  
Olivier Kahn, University of Bordeaux, Pessac \*  
David A. King, University of Cambridge  
Robert K. O'Nions, University of Oxford  
Jacob Palis, The Institute for Pure & Applied Mathematics, Rio de Janeiro  
H.W. Roesky, University of Göttingen  
Bill Sutherland, University of Utah  
E.P.J. van den Heuvel, University of Amsterdam  
Ahmed H. Zewail, California Institute of Technology

\* Since deceased

## Associates

### MATHEMATICS

A.G. Bhatt, ISI, New Delhi  
B.V.R. Bhat, ISI, Bangalore  
C.B. Khare, TIFR, Mumbai  
E.K. Narayanan, ISI, Bangalore  
Arvind N. Nair, TIFR, Mumbai  
Arupkumar Pal, ISI, New Delhi  
R. Sridharan, TIFR, Mumbai  
V. Suresh, TIFR, Mumbai

### PHYSICS

V.K. Aswal, BARC, Mumbai  
Abhishek Dhar, RRI, Bangalore  
M. Krishnamurthy, TIFR, Mumbai  
G.I. Menon, TIFR, Mumbai  
P.K. Mukherjee, SINP, Kolkata  
A.K. Pati, BARC, Mumbai  
P.S. Ramkumar, RRI, Bangalore  
R. Rangarajan, PRL, Ahmedabad  
R. Srianand, IUCAA, Pune  
Sucheta Koshti, TIFR, Mumbai  
U.V. Waghmare, JNCASR, Bangalore

### CHEMISTRY

Charusita Chakravarty, JNU, New Delhi  
F.A. Khan, IIT, Kanpur  
Ram Seshadri, IISc, Bangalore  
Srabani Taraphder, IIT, Kharagpur

### ENGINEERING

M. Agrawal, IIT, Kanpur  
P. Dasgupta, IIT, Kharagpur  
A. Ghosh, ISI, Kolkata  
S.K. Gupta, IISc, Bangalore  
R. Hariharan, IISc, Bangalore  
V. Kumaran, IISc, Bangalore  
A.K. Lele, NCL, Pune  
V.V. Patel, CAIR, Bangalore  
V.B. Shenoy, IIT, Kanpur  
K.N. Sivarajan, IISc, Bangalore

### EARTH AND PLANETARY SCIENCES

A. Manglik, NGRI, Hyderabad  
J.S. Ray, PRL, Ahmedabad  
S.K. Satheesh, IISc, Bangalore

## LIFE SCIENCES

R. Banerjee, SINP, Kolkata  
L. Geetha, JNCASR, Bangalore  
P. Guptasarma, IMTECH, Chandigarh  
Inderjit, University of Delhi, Delhi  
Saman Habib, CDRI, Lucknow  
M.S. Inamdar, JNCASR, Bangalore  
Amitabh Joshi, JNCASR, Bangalore  
V.K. Sharma, JNCASR, Bangalore  
Shubha Tole, TIFR, Mumbai  
N. Tandon, AIIMS, New Delhi  
Vidita A. Vaidya, TIFR, Mumbai  
N. Tandon, AIIMS, New Delhi  
Vidita A. Vaidya, TIFR, Mumbai

## ANNEXURE 4

### Fellows Deceased since 1996

V. Agnihothrudu, Bangalore  
F. Ahmad, Lucknow  
V.C. Anguli, Chennai  
R. Ananthakrishnan, Pune  
K.R. Anantharamaiah, Bangalore  
B.K. Bachhawat, New Delhi  
R.R. Bahadur, Delhi  
D.V. Bal, Pune  
V. Baliyah, Chennai  
W.V. Bhagavat, Ujjain  
P.K. Bhattacharyya, Kolkata  
C. Chandrasekaran, Bangalore  
S. Chandrasekhar, Illinois, USA  
V.R. Chariar, Bangalore  
P.N. Chhuttani, Chandigarh  
I.C. Chopra, New Delhi  
J. Das, Kolkata  
Bhaskar Datta, Bangalore  
M.L. Dhar, New Delhi  
S. Dhawan, Bangalore  
R.D. Ganatra, Mumbai  
T.R. Govindachari, Chennai  
N.S. Govinda Rao, Bangalore  
S. Jones, Thiruvananthapuram  
D.J. Jussawalla, Mumbai  
V.K. Kapahi, Pune  
K. Kishore, Bangalore  
P. Koteswaram, Visakhapatnam  
K. Krishna Murty, Prasanthinilayam  
R.S. Krishnan, Bangalore  
D.N. Kundu, Kolkata  
B.B. Lal, Dehradun  
B.C. Mahendra, Agra  
C.K. Majumdar, ISI, Kolkata  
Anna Mani, Thiruvananthapuram  
K.S. Mani, Bangalore  
K.K.G. Menon, Mumbai  
T.R. Menon, Thiruvananthapuram  
R.S. Mishra, Lucknow  
K. Naha, Kharagpur  
Biswajit Nag, Mumbai

Subhashis Nag, Chennai  
N.A. Narasimham, Mumbai  
S. Narayanaswamy, Chennai  
K.A.V. Pandalai, Chennai  
D.D. Pant, Allahabad  
R.C. Paul, Chandigarh  
G.N. Ramachandran, Chennai  
V. Ramalingaswami, New Delhi  
G.S. Ramaswamy, Chennai  
Darshan Ranganathan, Hyderabad  
S. Rangaswami, Chennai  
B.N.B. Rao, Bangalore  
T.S. Sadasivan, Chennai  
A.K. Saha, Kolkata  
V.H. Salaskar, Mumbai  
C.J. Saldanha, Bangalore  
I.G. Sarma, Bangalore  
S.M. Shah, Ohio, USA  
M.R. Siddiqi, Islamabad, Pakistan  
Surjit Singh, Chennai  
S.K. Sinha, New Delhi  
A. Sreenivasan, Bangalore  
P.V. Sukhatme, Pune  
R.N. Tandon, Delhi  
H.J. Taylor, Edinburgh, Scotland  
B.V. Thosar, Mumbai  
B.D. Tilak, Pune  
C.S. Vaidyanathan, Bangalore  
G.S. Venkataraman, Chennai  
P. Venkateswarlu, Alabama, USA  
M.A. Viswamitra, Bangalore

## ANNEXURE 5

### Discussion Meetings at Orange County

- (1) Scattering studies in condensed matter physics  
28 November to 3 December 1999
- (2) Computational electromagnetics  
4–7 December 1999
- (3) High energy astrophysics  
1–4 February 2000
- (4) Statistical methodology in decision sciences  
21–26 February 2000
- (5) Origin and evolution of life  
28 November–1 December 2000
- (6) Computational fluid dynamics with hyperbolic conservation laws  
1–3 December 2000
- (7) Function and plasticity of adult brain  
25–28 February 2001

- (8) Contemporary issues in olfaction  
28 November–2 December 1998
- (9) Stochastic differential equations and their applications  
2–7 December 1998
- (10) Monsoons: Past, present and future  
20–22 November 1997
- (11) Instability and transition in fluid flows  
22–25 November 1996
- (12) High redshift universe  
23–27 February 1997
- (13) Comparative planetology  
1–4 March 1997

## ANNEXURE 6

### Public Lectures at Bangalore

- (1) Crystallization of membrane proteins: Routes and achievements  
Hartmut Michel, Max-Planck Institute for Biophysics, Frankfurt-am-Main, Germany  
22 April 2002
- (2) J.D. Bernal: His legacy to science and to society  
Allan L. Mackay, Birkbeck College, London, UK  
3 April 2002
- (3) Does the everyday world really obey quantum mechanics?  
Anthony J. Leggett, University of Illinois, Urbana, USA  
25 February 2002
- (4) Quantum information  
Charles H. Bennett, IBM Thomas J Watson Res. Centre, New York, USA  
26 February 2002
- (5) The quantum-mechanical world view: A remarkably successful but still incomplete theory  
Elliott H. Lieb, Princeton University, Princeton, USA  
24 January 2002
- (6) Current trends in the conservation of biodiversity  
Ghilleen T. Prance, University of Reading, Reading, UK  
10 January 2002

- (7) Some extensions of the binomial theorem and applications  
Richard A. Askey, University of Wisconsin-Madison, Wisconsin, USA  
8 January 2002
- (8) Stellar mass black holes  
E.P.J. van den Heuvel, University of Amsterdam, The Netherlands  
4 January 2002
- (9) The search for intelligent life  
Arnold W. Wolfendale, University of Durham, Durham, USA  
3 January 2002
- (10) Unexpected connections in mathematics  
Gerald B. Folland, University of Washington, Seattle, USA  
29 October 2001
- (11) The Hubble space telescope: Its impact on our understanding of the universe  
Steven V.W. Beckwith, Space Telescope Sci. Inst., Baltimore, MD, USA  
31 August 2001
- (12) Somnatha: Representations of an event  
Romilla Thapar, Jawaharlal Nehru University, New Delhi  
23 July 2001
- (13) Turbulence: A 19<sup>th</sup> century problem with challenges for the 21<sup>st</sup> century  
Itamar Procaccia (*Raman Professor*) Weizmann Inst. of Sci., Rehovot, Israel  
22 February 2001
- (14) Quest for unification  
Edward Witten, Institute of Advanced Study, Princeton, New Jersey, USA,  
11 January 2001
- (15) Towards a theory of everything  
David J. Gross, University of California at Santa Barbara, USA  
3 January 2001
- (16) Molecular biology of the human embryo and its clinical significance  
R.G. Edwards, Churchill College, Cambridge, UK  
4 December 2000
- (17) How solids bend and break  
James S. Langer, University of California at Santa Barbara, USA  
20 October 2000
- (18) Electronic publishing and telecommunications: Impacts on the global science enterprise  
Irving A. Lerch, The American Physical Society, USA  
19 October 2000
- (19) Open archives and search engines  
Alan Gilchrist/Steven Harnad, UK  
20 September 2000
- (20) The strong interactions  
Henrich Leutwyler, University of Bern, Switzerland  
30 August 2000
- (21) The influence of Indian mathematics and astronomy in Iran  
Mohammad Bagheri, Encyclopedia Islamic Foundation Teheran, Iran  
20 January 2000
- (22) String theory – an attempt towards unification of all fundamental forces and matter  
K.S. Narain, Abdus Salam Centre for Theoretical Physics, Trieste, Italy  
4 January 2000
- (23) William of Occam and modern physics  
Pier A. Mello, Instituto de Fisica, UNAM, Mexico  
17 December 1999
- (24) Leaves from an unwritten diary – S. Chandrasekhar: Reminiscences and reflections  
C.V. Vishveshwara, Indian Institute of Astrophysics, Bangalore  
13 December 1999
- (25) When have we managed to copy nature's mechanical devices?  
Steven Vogel, Duke University, Durham, NC, USA  
6 December 1999
- (26) A universe of colour  
David Malin, Anglo-Australian Observatory, Sydney, Australia  
23 February 1999
- (27) Manipulating atoms by light  
C. Cohen-Tanoudji, College de France, Paris, France  
6 January 1999
- (28) Tropical cyclone forecasting  
T.N. Krishnamurti (*Raman Professor*), Florida State University, USA  
15 December 1998
- (29) Exactly solved quantum many-body systems: Why can we solve them, and are they still interesting?  
Bill Sutherland, University of Utah, Utah, USA  
14 September 1998
- (30) Science and the mind  
Roger Penrose, Oxford University, England  
10 December 1997
- (31) Harish-Chandra and his mathematical legacy: Some personal recollections  
S. Helgason, Massachusetts Institute of Technology, Cambridge, USA  
16 January 1998
- (32) Quantum mechanics and electrons in a magnetic field  
B.I. Halperin (*Raman Professor*), Harvard University, Cambridge, MA, USA  
26 September 1996
- (33) Magellan looks at Venus  
Dan P. McKenzie (*Raman Professor*), University of Cambridge, UK  
6 March 1997
- (34) Science: Its philosophy and spirit  
Hermann Bondi (*Raman Professor*), Churchill College, Cambridge, UK  
2 February 1996
- (35) The Galileo Mission  
William H. Pickering, Lignetics Inc., California, USA  
8 February 1996