

## C H A P T E R 5

## The Indian Journals : A Focus On The Present Scene

The widespread growth of science and technology in India reviewed in the previous chapter has resulted in the increase in number of scientific researchers, as also the proliferation of scientific journals in the country. The Directory of Indian Scientific Periodicals brought out by the Indian National Scientific Documentation Centre (INSDOC) in 1964 listed 725 current periodicals. The second edition brought out in 1968 listed 996 current periodicals, out of which 828 were mentioned as periodicals in the accepted sense of the term (INSDOC, 1968). By 1985 the total number had crossed two thousand mark but only about 600 can be regarded as journals in the real sense. (Sen, 1989).

The National Union Catalogue of Scientific Periodicals which is a catalogue of the "holdings" of the scientific journals in the libraries in India and brought out by INSDOC in 1988 listed nearly 2300 titles of Indian origin. This is about 12.6% of the total coverage in the catalogue of approximately 18,300 entries from all over the world! It listed 838 Physics

titles and 1,346 Mathematics & Astronomy titles indicating the approximate numbers of journals published in these fields from all over the world<sup>b</sup>. But we should take into account the fact that this list included even those journals which have ceased publication. Physics Abstracts lists 190 titles pertaining to physics published from all over the world, in the list of journals scanned for INSPEC services (Physics Abstracts, 1989). Astronomy and Astrophysics Abstracts lists 115 titles from all over the world that it covers fully. (Astronomy Astrophysics Abstracts, 1989).

The growth of Indian Scientific periodicals is shown in figure 6 and the subject-wise breakdown is given in Table 8 (Krishnan and Manorama, 1989). These numbers refer to only those publications (564) which Krishnan & Manorama considered as being of research interest. But our examination indicates that the numbers given for different subjects, (at least for Physics journals) appear to be much higher than what is prevailing. ***Physics Abstracts for 1989 covered only 69 of these Indian Journals.***

The main publishers of scientific journals in India are the Academies/Societies and agencies like the C.S.I.R., the I.C.M.R., and the I.C.A.R., besides

# Growth of Indian Scientific Periodicals

( 1964 to 1988 )

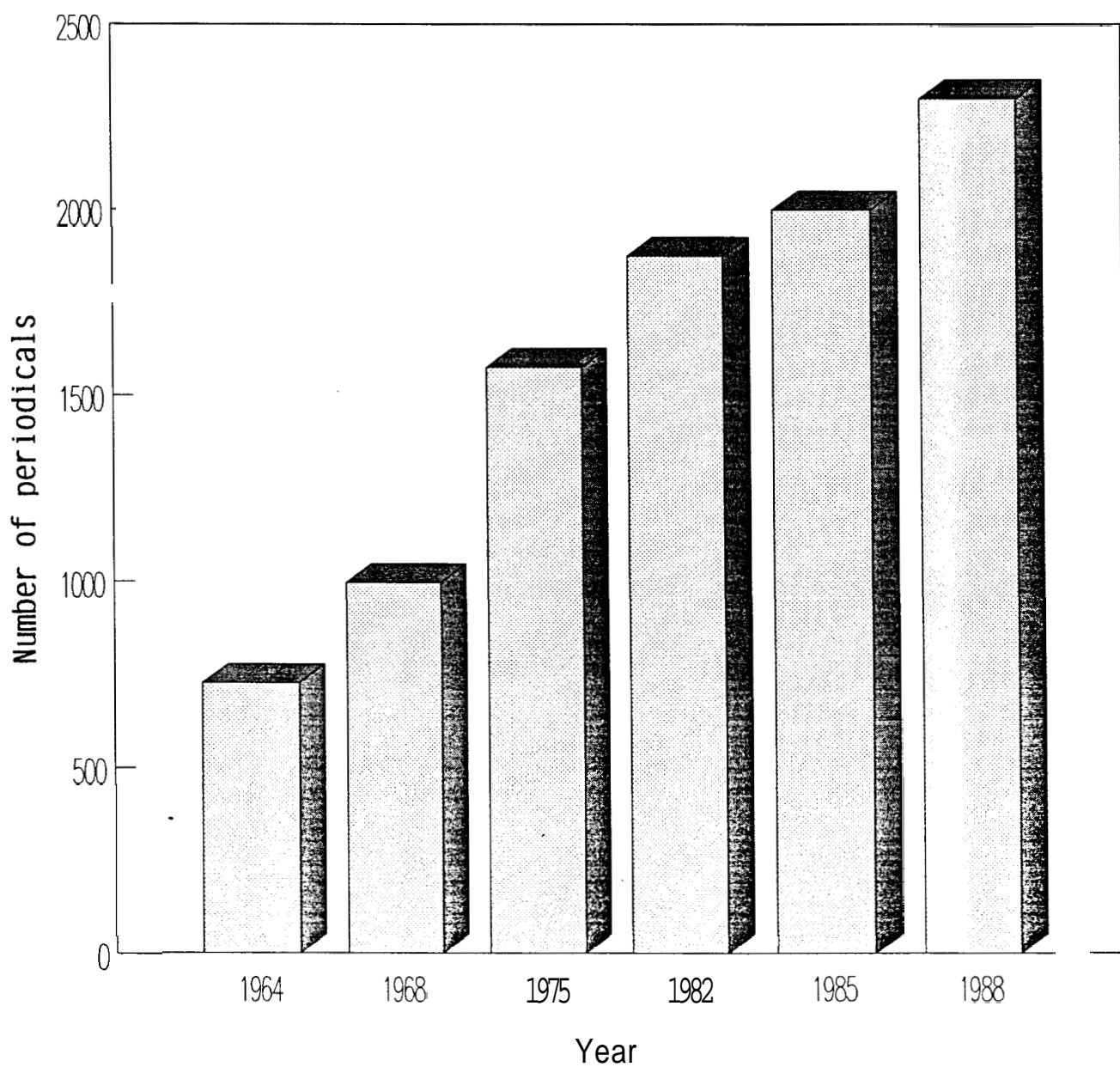


Figure 6

TABLE 8

Subjectwise Breakup of Indian Scientific and  
and Technical Journals as on 1988

1.	Medicine (including Veterinary Medicine & Pharmacology)	105
2.	General Sciences	74
3.	Engineering	61
4.	Agriculture	54
5.	Physics	37
6.	Botany	32
7.	Chemical Sciences	29
8.	Zoology	23
9.	Ecology/Environment	23
10.	Animal Sciences	18
11.	Records	18
12.	Geology/Earth Sciences	17
13.	Mathematical Sciences	13
14.	Biosciences	11
15.	Reviews	8
16.	Marine Sciences	6
17.	Genetics	6
18.	News Letters	6
19.	Social Sciences	5
20.	Minerology	4
21.	Entomology	4
22.	Anthropology	4
23.	Management	3
24.	Digests	3
T O T A L		564

(Source : From Krishnan and Manorama, 1989)

some laboratories of the C.S.I.R. Unlike in the Western countries there are no "commercial publishers" of science journals in India excepting for the recent attempt in the Medical field (National Medical Journal of India published by the All Indian Institute of Medical Sciences, Journal of Applied Medicine published by the Living Media, India Ltd.), and the reprinting of Indian editions of the Scientific American, the British Medical Journal and the English edition of the French journal La Recherche. However, there is one popular science journal in English (2001/Science) published by Bennett Coleman & Co. This situation must be due to the fact that it is not commercially viable (as of now) for a commercial publisher to venture publishing research science journals in India.

The Council of Scientific & Industrial Research (CSIR) is one of the two organizations in the country publishing a large number of scientific journals, the other being the Indian Academy of Sciences (each of them publish nearly a dozen journals). Many of the important periodicals published in the country originate from these two organizations. C S I R is a Government sponsored body and the Indian Academy receives substantial financial aid from the Government for its publication activity.

The present study has shown a general absence in the country of certain types of journals like Review Journals or Letter Journals catering to a specific subject. The Journal of Scientific and Industrial Research (published by the Publications and Information Directorate about which more will be said shortly) is the only Review journal and Current Science (published by the Current Science Association and the Indian Academy) and National Academy of Science Letters are the only letter journals. There is one Abstracting periodical for all sciences namely the Indian Science Abstracts and a few for special subjects (such as the Medicinal and Aromatic Plants Abstracts published by the PID, the Metal Cutting Abstracts published by the Central Machine Tools Industries, Bangalore and Food Science Abstracts published by the Central Food Technological Research Institute, Mysore).

Letter Journals and Review Journals play a very important role in the dissemination of work done in a field. If one wants to follow the development of a particular sub field in a subject over a period of time, a Review Journal is very useful. If one wants to announce the results of an important piece of research

without losing much time, a Letter Journal comes in very handy. Whenever speed of publication matters, Letter Journals are used. So it is essential to have journals of different kinds to cater to the different needs of the scientists. This is presently missing in the Indian context. The reason for not having a review journal in physics could be due to the fact that Indian physicists do not write enough review articles to sustain such a journal.

#### **5.2.1 Publications of the C S I R**

The Council of Scientific and Industrial Research set up a separate **Directorate, Publications & Information Directorate (PID)** in **1951** for its publication activity by merging two of its existing units, one concerned with the "Wealth of India Project" and the other with the **Journal of Scientific & Industrial Research (JSIR)**. Though CSIR was publishing a journal from **1942** (**Journal of Scientific & Industrial Research**), with the establishment of the PID, its journal publication activity increased many-fold. It started new sections of JSIR and eventually from **1963** onwards, began publishing subject periodicals, a trend seen all over the world. We discuss this aspect shortly.

PID publishes nine primary journals (in collaboration with the Indian National Science Academy), one review journal and an abstracting periodical. It also publishes three popular science journals (one in English and two in Indian languages). All the research journals published by the PID have editorial boards and full-time editorial staff, with the majority of the editors having at least a Master's degree in a science subject. If a large number of papers are received for publication, then having a full-time editor would be helpful. Most of the important journals which can be called 'successful' and have a large quantum of publication (like the Physical Review, Physical Review Letters, Journal of Physics, Science, Nature, to name a few) have full time editors. But if the community is small and the flow of articles to the journal is not high, then scientists who can devote some part of their time regularly (as in the case of Pramana) could effectively run the journal with sound editorial assistants. The journals published by PID cover:

Physical Sciences:

Indian Journal of Pure and Applied Physics.  
Indian Journal of Radio and Space Physics.

Chemical Sciences:

Indian Journal of Chemistry (in two sections)



Biological Sciences:

Indian Journal of Experimental Biology.  
Indian Journal of Biochemistry and  
Biophysics.  
Indian Journal of Marine Sciences.

Engineering and Technology:

Indian Journal of Technology.  
Indian Journal of Textile Research.

The papers published in these journals are all refereed. These journals are covered by the relevant and major abstracting services like the Chemical Abstracts, Physics Abstracts and Biosis. Physical, Chemical and Earth Sciences edition of Current Contents **published** by the Institute of Scientific Information (ISI), USA, covers 5 of these journals. The Science Citation Index, also brought out by ISI, covers 3 of these journals in 1990.

The infra-structural facilities of this organization are quite good. There is a modern printing press (with photo composition facility), an Art & Graphic section to process art work, a well equipped library, a Sales promotion/Distribution section and adequate manpower. In 1987 there were 212 editorial/technical staff and 113 administrative staff. However., this number includes not only those who are

involved in research journals publication activity but also those working on other projects of PID, like the Wealth of India, Scientific & Technical Information Services, Popular Science Magazines and other publications. (PID, 1987). All these factors are important and go a long way in making a journal successful. But one of the lacunae is not having good communication facilities - there is no telefax or electronic mail service (however, it is learnt very recently (1990 June) that there is some change in this direction and e-mail facility is available to all the CSIR organizations through the Indian National Scientific Documentation Centre).

In 1988, the PID published 7,254 pages in its journals (PID, 1988). Its journals bring out special numbers to commemorate special events (Special issues were brought out by Indian Journal of Pure and Applied Physics to mark Raman's birth centenary and by the Indian Journal of Radio and Space Physics to honour S.K.Mitra the eminent Radio Physicist; and Indian Journal of Technology brought out a special issue in honour of K.G.S.Doss, the well-known electrochemist and special issues on fluid mechanics, catalysis and materials science. Two physics related journals, Indian Journal of Pure and Applied Physics (IJPAP) and Indian

Journal of Radio and Space Physics (IJRSP) are also published by the PID. Table 9 gives the number of articles and pages published by PID in its journals during the years 1987 and 1988.

#### 5.2.1 Indian Journal of Pure and Applied Physics

In 1963, section B of the Journal of Scientific and Industrial Research (JSIR) published by the PID was split into two journals namely Indian Journal of Pure and Applied **Physics(IJPAP)** and Indian Journal of Chemistry. IJPAP publishes articles in all areas of Physics except space physics and is brought out as a monthly.

#### 5.2.2 Indian Journal of Radio and Space Physics (IJRSP)

This journal was started by the PID in 1972 as a quarterly and is now brought out as a bi-monthly. This was done to facilitate speedier publication of the papers submitted to it. This journal publishes articles in all branches of radio and space physics, ionosphere, radio and radar astronomy and meteorology. Very recently (in August 1990) the journal announced that it has widened its scope to include all areas covered by the various commissions of the International Union

TABLE 9

Number of Articles and Pages published in Publications & Information Directorate, (CSIR, New Delhi) journals during the years 1987 and 1988

	Number of Articles published		Number of Pages published	
	1987	1988	1987	1988
1. Journal of Scientific & Industrial Research	50	61	588	770
2. Indian Journal of Chemistry "A" (Inorganic Physical, Theoretical and Analytical)	284	318	988	1150
3. Indian Journal of Chemistry "B" (Organic Chemistry including Medicinal Chemistry)	355	387	1110	1220
4. Indian Journal of Pure Applied Physics	132	163	514	736
5. Indian Journal of Technology	137	114	660	624
6. Indian Journal of Experimental Biology	209	254	804	1038
7. Indian Journal of Biochemistry & Biophysics	92	134	460	718
8. Indian Journal of Radio & Space Physics	58	49	410	314
9. Indian Journal of Marine Sciences	64	74	280	354
10. Indian Journal of Textile Research	44	45	222	320

Titles 1-6 are monthlies; 7 & 8 are bi-monthlies and 9 & 10 are quarterlies

of radio Sciences, the commissions being, Electromagnetic Metrology, Fields and Waves, Signals and Systems, Electronic and Optical Devices and Applications, Electromagnetic Noise and Interference, Wave Propagation and Remote Sensing, Ionospheric Radio Wave Propagation, Waves in Plasmas and Radio Astronomy. Table 11 gives the number of articles published by IJRSP during different years. Various other factors relating to these two journals are discussed later on in this chapter.

Apart from PID a few other organizations belonging to CSIR also publish journals. **Insdoc** publishes the only abstracting periodical in the country covering **all** science disciplines. Thus CSIR has emerged as a major publisher of science journals in the country.

### 5.3. PUBLICATIONS OF THE INDIAN ACADEMY OF SCIENCES

The Indian Academy of Sciences (herein after called **I.A.Sc.**) which had started its publications activity in **1934** continued to publish its Proceedings in two sections **till Raman's** demise. As mentioned earlier, **Raman** published most of his work after **1945** in the Proceedings of the Academy and **Current Science**. His works on Crystal Physics and Physiology of Vision were published mostly in the Proceedings. After **Raman's**

demise in 1970, the Academy took stock of its publication activity. Perhaps noticing the rapid changes in the pattern of scientific research, and emergence of more and more specialized subjects and with it also that of specialized journals devoted to a single subject, the Academy felt the need to reorganize its journals and appointed a professional as Executive Editor. The time had come when one single journal could no longer meet the requirements and demands of specialists even within a particular subject, let alone in different subjects.

Stephen P. Lock the Editor of the well-known medical journal **British Medical Journal** explains this phenomenon very aptly :

*" Disciplines tend to split every ten years or so, and the new sub disciplines do not necessarily correspond with the organizational and professional structures. These are much more rigid and slower to change than the way in which the pattern of new knowledge changes. These structures will include journals, and thus there is constantly a real need for new journals which will reflect the needs of the new sub disciplines. In this way, a specialist journal will be formed to take some of the work which has become too complex for the general journal - and the general journal may truly have been under tremendous pressure for space and unable to publish even a71 the first-rate material submitted to it" (Lock, 1989).*

Also, a specialized article published in a general

journal may be missed by other specialists in the field. Nearer home, such changes i.e., splitting have been done by the PID. The Proceedings of the Indian Academy (which had International standing in the 1930's and 1940's) faced a similar situation. As a remedial measure to the diminishing status of the Proceedings, the Academy reorganized its Journals publication in 1973 with the starting of a new journal "Pramana - a Journal of Physics" which was published in collaboration with the Indian National Science Academy and the Indian Physics Association. In 1978 it split the Proceedings into theme journals calling them :

.....

Footnote: Leading publishers elsewhere in the world had taken cognizance of this and had split single journals into different parts - Physical Review (we discuss this journal in detail in a later chapter) which was split into two parts in 1964 was further split into two more parts in 1970 resulting in 4 sections - A, B, C and D. Similarly Journal of Physics (Published by the Institute of Physics, London) was split into 5 sections A,B,C,D,and E. In 1971 one more section F was added and very recently (1988) yet another section, G was started. In 1971, the journal Nature published by Macmillan & Co., London, was split into three sections (Nature-Physical Science, Nature-New Biology and Nature) to cater to the needs of specialists as well as those readers with general interest. All the sections were brought out weekly on different days of the week, Monday , Wednesday and Friday. But this lasted for only three years and in 1974, the three sections were once again merged into a single section. Journals which were multi disciplinary or general in scope slowly receded into background - the one time favorite publications like the Proceedings of the Royal Society (London) or the Proceedings of the National Academy of Sciences (USA) no longer commanded the same attention as in the past.

Proceedings - Chemical Sciences  
Proceedings - Mathematical Sciences  
Proceedings - Animal Sciences  
Proceedings - Plant Sciences  
Proceedings - Experimental Biology  
Proceedings - Engineering Sciences  
Proceedings - Earth and Planetary Sciences

In 1979 the section of the proceedings devoted to Experimental Biology was discontinued and in its place a new journal, Journal of Biosciences was started. In the same year another new journal, Bulletin of Material Sciences was also started. During 1980, Journal of Astrophysics and Astronomy" (**JAA**) was started to cater to the needs of the astronomical community. Till JAA was started the astronomy articles were being published in Pramana. In 1981, the Academy started associating itself with the Current Science Association in publishing the journal Current Science. The Journal of Genetics founded earlier by Bateson was taken over by the Academy in 1984. Thus, the reorganisation of the Proceedings into various thematic journals and starting of new journals put the Academy in a more favourable position as one of the leading publishers of science journals in India. In addition to these journals, the Academy



brings out special publications to honour eminent scientists of the country. During its Golden Jubilee in 1984, the Academy brought out special numbers of all its journals.

All the journals of the Academy have editorial boards and three of them, Proceedings - Earth and Planetary Sciences, Journal of Astrophysics and Astronomy and Journal of Genetics have international boards of Editors. The infrastructural facilities of the Academy are not at the same level as those of the PID. Though it publishes as many journals as the PID, its man power is less when compared to that of PID (only 7 persons on the editorial staff). This is partly explained by the fact that the composition and printing is carried out by outside agencies. Table 10 gives the number of articles published by the various journals of the Academy during the years 1988 - 1989. We discuss below the starting of the journals Pramana-a Journal of Physics and the Journal of Astrophysics and Astronomy.

### 5.2.1 PRAMANA - A JOURNAL OF PHYSICS

In the early 1970's the physics community in the country felt a need for a good physics journal published

TABLE 10

Number of Articles and Pages published in the Indian Academy of Sciences Journals during the years 1988 and 1989

	Number of Articles published		Number of Pages published	
	1988	1989	1988	1989
PROCEEDINGS :				
Chemical Sciences	59	67	570	560
Mathematical Sciences	17	28	223	279
Earth and Planetary Sciences	17	31	197	378
Plant Sciences	51	70	533	606
Animal Sciences	62	53	587	459
Engineering Sciences (Sadhana)	34	9	696	221
Pramana	137	140	1133	1563
Journal of <b>Biosciences</b>	49	42	438	410
Bulletin of Material Sciences	90	48	846	515
Journal of <b>Astro-</b> physics & Astronomy	26	31	248	443
Journal of Genetics	18	16	188	211
Current Science	562	598	1358	1410

from India. Since the number of people working in the field had been rapidly increasing and a number of physicists had returned to India from abroad, a need was felt for a national journal of international standards. Daniel from T.I.F.R wrote:

*" The need for a high quality research journal in physics of international standard, published from India and commanding the wide support of the specialists, has been fully recognized by the physicists in the country; this is evident when one reads through the proceedings of a conference on Physics Education and Research held at Srinagar in June 1970" (Daniel, 1970).*

There were discussions among the members of the Indian Physics Association, the Fellows of the Indian Academy of Sciences and the Indian National Science Academy which resulted in the starting of **Pramana - a Journal of Physics**" in 1973 by the Indian Academy of Sciences in cooperation with the Indian Physics Association and the Indian National Science Academy. Ramaseshan wrote in the first editorial in the journal:

*"The publication in foreign journals of the major part of the work done in India today is having a deleterious effect on Indian science. Relegating the refereeing of our best scientific work leads to loss of judgement and self-confidence. This process has sapped the inner resources of Indian scientists and, among other things, has led them to follow blindly fashions set elsewhere in choosing fields of work. All this has caused much unrest among active scientists in India and led quite recently to an united attempt to*

*find a solution. Pramana (which in Sanskrit means a source of valid knowledge, a standard etc.) is the outcome of a nationwide effort by Indian physicists to create a vehicle for their best efforts in Physics. The publication in it of good papers received from abroad can only add to its strength, and is most heartily welcomed" (Ramaseshan, 1973).*

Thus Pramana was started by a community which felt the need for it. It started with an editorial board, a panel of referees and an editor who also happened to be a leading physicist in the country. It also had a well-experienced executive editor who had research as well as editing experience. The journal did well in its early years when it received contributions from leading institutions in the country. Raja Gopal, a past editor of this journal and Rajaraman its present editor write:

*" Even the early issues contained some very significant papers. The discovery of the pressure-induced liquid crystallinity by S. Chandrasekhar, S. Ramaseshan, R. Shashidhar and others was published first in Pramana. So was the observations suggesting a breakdown of the particle-hole symmetry in fluids, as observed through a deviation of the so called rectilinear diameter behaviour in Critical Phenomena. A new topic of quaternary nuclear fission was reported by Kataria and BARC group. The first results of a large carefully planned experiment in the Kolar Gold Fields on the possibility of proton decay by M. G. K. Menon, B. V. Sreekantan, V. S. Narasimham and colleagues were discussed in a recent issue of Pramana. Whatever be the verdict of the future on some of these papers, there is no denial of the fact that they have acted as catalytic stimulants for discussions and*

*progress in physics . . . . . Since the advent of Pramana, there has been a sharp increase in the number of research papers published by the Academy in theoretical physics in general and particle and nuclear physics in particular. The seventies and early eighties have seen many papers of good quality, by the highest international standards, published in Pramana" (Raja Gopal and Rajaraman, 1984).*

Thus a new vehicle for communication was made available to the physicists in the country by the Academy. The journal was well received not only in India but also outside. Soon after its founding it was covered by current awareness services like the Current Contents and a little later by the Science Citation Index. Apart from regular research articles, it publishes research articles which require **immediate publication** as "Rapid communications". It also publishes comments on earlier papers published in the journal. In recent times (1990) it has started paying an honorarium for the authors writing Review Articles in the journal. Till the Journal of Astrophysics & Astronomy was started in 1980 it also used to publish articles in Astronomy and Astrophysics.

The usage of Pramana is discussed in detail in the next chapter but it may be mentioned here that due to the gradual decline in the number of good articles received, the journal does not receive at the moment,

the same attention it used to about a decade ago. Taking note of this, the Academy has been making serious attempts to improve the situation.

In spite of **Pramana's** present somewhat low profile, the physicists in the country continue to feel that **Pramana** is our best physics journal. This aspect has been discussed further in a later chapter which deals with the "opinions of the users".

### 5.3.2 JOURNAL OF ASTROPHYSICS AND ASTRONOMY

Consequent to the growth in astronomical research in the country during the **1970's** and the absence of a research journal in the country for this subject, the Indian Academy started the Journal of Astrophysics and Astronomy (**J A A**) in 1980. From the beginning, this journal aimed to be an international journal of a high standing. Dr. Bappu, the Chairman of the first editorial board, as well as its editor, wrote:

*"Progress in astrophysics and astronomy in the **last** few decades has been phenomenal and there is therefore little need for justification when a new international journal **makes** its debut as a rapid means of dissemination of scientific results..... **It** is our hope that the new journal **will** provide the additional facility needed for quick publication of the results of research from members of an expanding fraternity.....It is our wish to*

*aim at a high quality of scientific content and thereby contribute to the promotion of astronomical research" (Bappu, 1980).*

Journal of Astrophysics and Astronomy publishes both observational and theoretical papers in all branches of astronomy. This journal has been acclaimed as one of the good journals in the field by the astronomical community both in the country and abroad. We discuss the usage of this journal in the next chapter.

#### 5.4 THE CURRENT SCIENCE ASSOCIATION

As mentioned in an earlier chapter, the Current Science Association had started publishing the Journal Current Science in 1932 as a monthly. Since that time till today it is being published regularly. In 1947, C.V.Raman was elected the President of Current Science Association and he held this office till his demise in 1970. The journal became a fortnightly in 1964. The Indian Academy of Sciences started collaborating with the current Science Association from 1981 in publishing this journal and has now taken the managerial responsibility for this journal. Current Science which earlier had a major emphasis on life sciences, has recently been publishing occasional articles in the fields of

astronomy and physics. This journal was reorganized in 1989 and is now publishing not only research articles and communications but also articles and reports on science-related topics (example: reprinting in India Science Journals published abroad, funding by the Department of Science & Technology). It is also publishing special numbers devoted to proceedings of conferences (for example one on Waves and Symmetry) special topics (like issues on Astronomy, cholera, Science and Public Accountability) and to honour renowned scientists (for example G.N.Ramachandran, S.N.De).

#### **5.5 SCIENCE JOURNALS FROM CALCUTTA AND OTHER CENTRES**

Calcutta was a leading centre for the publication of science journals till about the middle of the century. As we saw earlier, the Indian Association for the Cultivation of Science started an important journal of physics (Indian Journal of Physics); the first science journal in the country, the Journal of the Asiatic Society of Bengal was from Calcutta. Two of the good journals of the country, "Sankya" - the journal of statistics and the Journal of Indian Chemical Society are also published from Calcutta. But unfortunately one cannot see any appreciable changes for better in



these journals especially when one sees the changes taking place elsewhere in the country. There have not been any new journals which have made a mark from either the Indian Association or any other organization from this region. We find a similar situation with the journals published by Indian National Science Academy and the National Academy of Sciences, Allahabad. Proceedings of both these organizations (though published in two sections) are too general in nature and receive very little attention from researchers working in leading institutions. The University Grants Commission has sponsored four quarterly Science journals in the fields of Biology, Chemistry, Mathematics and Physics. These are meant mostly for college and university teachers and students and are not really research journals. We discuss below the "Indian Journal of Physics".

#### 5.5.1 INDIAN JOURNAL OF PHYSICS

The starting of the Indian Journal of Physics by Raman at the Indian Association for Cultivation of Science, has been discussed in an earlier chapter. Over the years, with the increase in the number of papers received for publication, this journal was split into two parts (in 1977) - Part A covering Condensed

Matter, Nuclear Physics and Particle Physics and Part B covering Atmospheric & Space Physics, Atomic & Molecular Physics, General Physics, Optics and Spectroscopy, Plasma Physics and Relativity and Cosmology. Six issues each of the two parts are published annually.

The journal publishes full-length research papers, short notes, rapid communications and review articles. The journal pays an honorarium for those writing review articles. It lists titles of articles to be published in the forthcoming issues. Later in this chapter we discuss the other aspects pertaining to this journal. The usage of this journal and opinions of some of the scientists about this journal are covered in chapters 6 and 8.

Proceedings of the Indian Association for the Cultivation of Science continued to be published at irregular intervals as a section of IJP. This section is devoted to matters pertaining to the Association including publication of endowment lectures delivered at the Association.

## 5.6 A COMPARATIVE STUDY OF FIVE JOURNALS

Presented below is a study of four physics journals and an astronomy journal with respect to their editorial policy (Editorial Boards, Editorial Staff, Refereeing system), Circulation, Coverage in Abstracting Services, Current Awareness Services and the Science Citation Index, Impact factor, Rate of Rejection of papers, time lag in publication and volume of publication. The Editors/Associate Editors of these journals were interviewed to get an insight into the various aspects of these journals. The journals that are being compared are:

Indian Journal of Physics

Indian Journal of Pure and Applied Physics

Indian Journal of Radio and Space Physics

**Pramana**

Journal of Astrophysics and Astronomy

### 5.6.1 EDITORIAL POLICY

#### i) Editorial Boards

Editorial Boards of journals normally comprise of distinguished scientists in the field who will be

able to guide the journal in the right direction and support the editors in maintaining the quality of the journal. Having scientists of **standing** from outside the country as members of the editorial board gives the journal certain advantage like getting better visibility outside the country and acceptance by the Scientific community both within and outside the country. But some journals which are well established and have international visibility and acceptance do not follow this policy. For example, members of editorial boards of **well** known journals like the Physical Review and the Astrophysical Journal published from the USA, are from that country only. However, having at least a few members from outside the country on the editorial board is important for those journals published from the developing countries, specially in the initial stages.

All the five Indian journals being examined have Editorial Boards. But only two of them, Indian Journal of Radio and Space Physics (3 foreigners out of 14) and Journal of Astrophysics and Astronomy (8 out of 15 - one each from Australia, France, Japan, the Netherlands and the United Kingdom and three from the United States of America) have foreigners on their editorial board.

While some members of the boards of Indian Journal of Radio and Space Physics (IJRSP), Pramana and Journal of Astrophysics and Astronomy (JAA) publish occasionally in their journals, those of the Indian Journal of Physics (IJP) and Indian Journal of Pure and Applied Physics (IJPAP) seldom seem to publish in their journals (Sen Gupta, 1990 ; Mahadevan 1990). However, some members of the board of IJP contribute to the journal by soliciting review articles, reviewing books and refereeing papers received for publication (Sen Gupta, 1990). There is hardly any active interaction of the members of the board of IJPAP with the **editors/editorial** staff of the journal and the board is only *ornamental* (Mahadevan, 1990). Excepting for IJP, the Members of the editorial boards of the other four journals meet normally once a year. Those editorial members of IJP residing at Calcutta meet once in 2 to 3 months and others at longer intervals.

#### ii) Editors and Editorial Staff

Editors and editorial staff play an important role in implementing policy with respect to the various features of the journal. Editors are the intermediary personnel between the authors and users of a

journal. The editor has to be alert to recent progress in the field and should be able to assess the changing needs of the scientific community. His right choice of the referees plays a crucial role in publishing good articles from among those received by the journal for publication. Timely editorials on matters pertaining to maintaining the quality of the journals like, for example, those by Goudsmit in Physical Review Letters would greatly help in **preserving/raising** the standard of a journal. An editor's job demands a lot of time and energy. **It** would be advantageous to have a full-time editor who can devote him-self exclusively to the activities of the journal. An editor who is **also** an accomplished scientist commands from the scientific community better attention than an unknown editor. Eugene Garfield wrote in one of his editorials in Current Contents:

***" Editors of scientific journals are in a different way important gate keepers. They disseminate in their journals the kinds of articles they think their particular readership desires and needs" (Garfield, 1976a).***

An important job done among others by the editorial staff is copy editing of an article. **It** involves careful reading of a finished article accepted for publication and making sure that **it** is according to the

general framework and policy of the journal with regard to style and format and making suitable corrections whenever required.

Both IJPAP and IJRSP have full-time paid editors. IJP, Pramana and JAA have honorary editors who have a doctorate degree in the subject and are practicing physicists and astronomers. Editors of these three journals (IJP, Pramana and JAA) do not spend their full-time on the journal. IJP has a full-time paid Associate Editor who is a Ph.D. Pramana and JAA have Associate Editors who have a Ph.D. They are involved with the journal work in addition to their research work. Excepting IJPAP all the other journals have just one more person on the editorial staff to carry out the various jobs related in bringing out a journal. IJPAP has four members on the staff all of them at the same level as the editor.

### iii) Refereeing and Panel of Referees

The "Refereeing System" is a well-established practice followed by most of the scientific journals for the articles received for publication. One of the main reasons for following this system is to gain the confidence of the scientific community with regard to the

quality of the articles published in the journal. To quote D.A.Kronick, professor of Medical Bibliography at the University of Texas at San Antonio :

*"Members of these and other scholarly societies sponsoring official or semi official publication began to realize that if scholars were to have confidence in the content of these journals, then material submitted for publication had to be critically evaluated before it was published"* (Kronick, 1978).

Eugene Garfield writes:

*" Soundly refereed journals do set standards in scientific publications that journals without referees should and do try to observe"* (Garfield, 1976b).

Journals normally have scientists from different sub fields as referees on their panel. The panel of referees of many journals comprise scientists from different parts of the world and it will not be confined only to those within the country. If there is a large enough scientific community in the country comprising scientists from different sub fields who can pass valid judgement on the scientific content of a paper, then international refereeing for all the papers received by the journal will not be necessary. But in some newly emerging areas where the number of people working is small and some times hardly a few, it would be definitely necessary to have specialists from outside to act as



referees. **It** is unlikely that any country, especially a developing country, can claim to have many competent persons in all the sub fields of a subject. **If** one wants to communicate the science done in the country to an international audience through a national journal, then having an international panel of referees would certainly help in this task and **it** also will help the journal establish its credibility and gain the confidence of the scientific community all over the world. **It** is well known that referees act not only as filters keeping back bad papers from being published, but also as helpful guides to the authors, and thus share the responsibility of the editor in publishing quality papers. As Peter Amiry, former editor of the Journal of Operational Research says:

***" referees are an editor's insurance policy providing a reservoir of knowledge that few editors could hope to match" (Amiry, 1980).***

A much-debated point about the refereeing system is whether **it** should be open or anonymous. For various reasons, the majority of the journals follow the anonymous refereeing system.

All the five journals examined in this study are refereed journals and follow anonymous refereeing.

These journals give the referees guidelines for assessing the articles. Editors keep a watch over the performance of the referees. All the journals provide the authors referee's comments keeping the identity of the referee confidential (unless the referee mentions that his name may be disclosed). Three of the five journals, **Pramana**, IJRSP and JAA use foreign referees, the first two to a limited extent and the other to a larger extent. Pramana has about 600 scientists on its panel of referees (mostly from India) while IJRSP has about 100. JAA has a larger number of foreigners (335) than Indians (45) on its panel of referees, 80% of whom do *critical* refereeing, 10% over *critical* refereeing and the remaining 10% *take* warm refereeing (Prabhu, 1990). IJP and IJPAP both of which have only Indians on their panel, have 100 and 300 referees, respectively. In 1985 JAA published the panel of referees who assisted the journal during 1980-1984. The journals are by and large satisfied with the performance of the referees. As is the normal practice, excepting for IJP and Pramana which use only a single referee for a paper, others use, at least as of now (1990), two referees.

**THE REJECTION RATE:** The rate of rejection of articles in a journal generally indicates how rigid the referees

are and the standards set by the editors. The rate of rejection in the five journals varies from 20 to 30%. IJRSP, JAA and **Pramana** have a rejection rate of about 30%, while IJPAP's rejection rate is 28%. The rejection rate in IJP is between 20 and 25% and its rejection rate for articles received from abroad is 30%. For comparison, the rejection rate of Physical Review (all sections taken together) during the year 1988 was 22% and in 1989, 21% and that of Physical Review Letters 66% in 1988 and 60% in 1989. It can be seen that though the rejection rate in Physical Review is lower than in the five journals under discussion, it certainly is not in any way inferior to these five journals. On the other hand, the majority of the articles that appear in the Physical Review are of above average standard. The reason for this could perhaps be due to the presence of a selection effect by the authors themselves for the articles submitted by them to Physical Review. Physicists must be generally submitting to Physical Review, their better papers and hence the rejection rate in this journal may be lower when compared to those in the five Indian journals under study. It is understood that a similar situation prevails with the Biology journals published by the Indian Academy. Though the rejection rate in the

Biology journals are 50-60%, they are considered to be inferior to **Pramana**(Srinivasan,1990). However it has been very recently (late 1990) learnt that the rejection rate in **Pramana** which was earlier 30% has gone up to nearly 50%.

**TIME LAG IN PUBLICATION:** The time lag between the date of receipt of an article at the editorial office of a journal and its publication in the journal is important, especially when the article reports a new research finding. Journals like Nature, Physical Review Letters, Physics Letters are fast in publishing (approximately 4 to 6 months on an average and sometimes as fast as one month). But there are also internationally recognised journals whose time lag in publication is much more - some times as long as a year or a year and a half (example, Physical Review and Astrophysical Journal).

The time lag in publication in the five journals during the year 1989 ranged from 8 to 12 months and these journals are generally faster compared to those published from abroad. **JAA** and **IJRSP** had a time lag of 8 months each, and **IJPAP** 9 to 12 months. However we should note that **JAA** is a quarterly and **IJRSP** is a bi-monthly and hence the time lag is not a true representa-

tion. We have to give certain margin for those articles which have just missed an issue and because of the nature of periodicity of these two journals (quarterly and bi-monthly respectively) are further delayed in getting published. Pramana has an edge over IJP. While Pramana has a time lag of 8 to 10 months that of IJP is 11 to 12 months (we understand that the time lag in Pramana has reduced in mid 1990 to six months). Presently, among the physics journals published in India, Pramana has the minimum delay in publishing.

The date of receipt of the article which is an important factor for establishing priorities in research finding, is mentioned by all the journals, though we should point out that Pramana lapsed on this count on a few occasions. In addition to this date, **IJPAP**, **IJP** and Pramana give the date of acceptance also. **IJRSP** gives only date of receipt and if there is revision, that information. **JAA** gives the date of revision (if there are major revisions) and date of acceptance in addition to the date of receipt. Though it would be advantageous if the time lag is reduced, this short-coming can be overcome sometimes by circulation of Preprints. Unfortunately the Preprint culture is more prevalent in Astronomy and certain

special fields of Physics like High Energy Physics and Condensed Matter Physics. Also, the non availability of sufficient funds in the Universities in India restricts production and mailing of preprints in large numbers to physicists in other parts of the world. In view of this, reducing the existing time lag in publication in Indian Journals is important.

**CIRCULATION:** Circulation figures and more specifically subscription figures of a journal are good indicators of its popularity and visibility. In these times of inflation and budgetary constraints, a large subscription figure of a journal reflects its wide usage and also its quality. Rightly or wrongly, majority of the scientists prefer to publish their research findings in a journal having a wide circulation, preferably abroad (in the Indian context).

The subscription figures of the five journals for 1989 are rather on the low side. JAA has the highest figure of 245 foreign subscriptions and next comes IJP with 158 foreign subscriptions. IJPAP and *Pramana* have 100 and 90 foreign subscriptions respectively. IJRSP has a meagre 12 foreign subscriptions. This number does not correlate with its Impact factor (we will be discussing Impact factor a little later) which is near

about that of Pramana and JAA. Pramana has 280 Indian subscriptions as compared to 172 of IJP and 112 of IJRSP. JAA has 165 Indian subscriptions. (the exact numbers for Indian subscriptions to IJPAP was not available). We may mention here (just to give a feel for the subscription figures for an internationally well known physics journal) that during 1988 the non member subscriptions for one section of Physical Review- Section "A" was 2,137 and the total subscriptions for all the four sections was 11,634 and in 1989 11,675; and that of Physical Review Letters for 1989 was 2,728. The number of subscriptions to Indian journals, especially foreign subscriptions, indicate the poor visibility of Indian Physics journals abroad. One of the important points we should consider is the marketing of Indian journals. Even if a journal is good, unless there is an aggressive marketing strategy, the journals from developing countries will not catch the attention, specially that of the international scientific community. Excepting IJPAP and IJRSP, the publishers of other journals do not have a separate marketing division in their set up.

**COVERAGE IN SECONDARY SOURCES:** Secondary sources or secondary periodicals are those which give information

about what is published in the primary periodicals. Abstracting periodicals, Indexing Periodicals, Current Awareness periodicals are all examples of this category of publication. Coverage of a journal in an abstracting/indexing periodical or a current-awareness periodical will help the journal to achieve better visibility. Articles published in a journal covered by an abstracting periodical will come to the notice of a scientist even if he is not aware of the existence of that journal itself or if that journal is not available in that geographical area. It is particularly so when someone is searching for an article on a particular sub subject.

"Physics Abstracts': Physics Abstracts published fortnightly by the Institute of Physics (United Kingdom) is a leading abstracting journal. It includes not only Physics journals but also selected Astronomy journals. All the five journals examined here are covered by the Physics Abstracts.

"Astronomy and Astrophysics Abstracts": This Abstract published twice a year by the Springer Verlag is the only comprehensive abstracting journal covering the field of Astronomy. IJPAP, IJRSP and JAA are covered by this abstract.



**"Current Contents":**Current Contents is published weekly by the Institute for Scientific Information, Philadelphia, and this gives the contents pages of journals and covers in 7 different sections, all branches of science and technology and Social Science. Excepting for IJP, the other four periodicals are covered by Current Contents in its Physical, Chemical & Earth Sciences edition. It may be pointed out here that this edition covers only 12 Indian Journals which is rather a low number compared to the very large number of journals published in the country. This is due to the fact that most of the Indian journals that are not covered do not confirm to the standards laid down by the Current Contents.

**"Science Citation Index (SCI)":**This is an indexing system in which all the papers that cite a particular paper, say paper A, during a particular period of time, are listed under paper A. The merits and demerits of this system of indexing will not be discussed here. However, it is pertinent to mention that inclusion of journals in this publication is considered by the publishers of scientific journals as an important factor. It is found that the coverage of Indian journals in this publication is very limited. Presently (1990)

only 11 Indian Journals are covered in **it**. Of these, six are published by the Indian Academy of Sciences, one by the Current Science Association in collaboration with the Indian Academy, three by the Publications and Information Directorate and one by the Indian Council of Medical Research. Among the five journals examined here, only **JAA** and **Pramana** are presently covered by this publication.

"The Impact Factor": This is a concept increasingly coming into vogue in recent years. As defined in the Journal Citation Reports, a section of Science Citation Index (**SCI**), the Impact Factor of a journal is a measure of how often articles published in the journal get quoted on an average in a given time span. This concept is very much debated, as getting cited or not depends on various factors and **it** is only indicative and not definitive about the **quality** of any research work. However, in the absence of any other acceptable measure, we cannot totally discard this concept but have to take **it** with a certain caution.

According to the Journal Citation Reports of ISI, among the five journals under study, in 1988 **JAA** had the highest impact factor of 0.58 (incidentally this is the highest for any Indian Journal ) with **Pramana** following

it closely with 0.51. Till JAA came into the picture Pramana had the highest impact factor among all the Indian journals. In 1983 Arunachalam wrote:

*" Pramana, the physics journal of the Indian Academy of Sciences, Bangalore has the highest impact factor among Indian Journals. Also since 1975, it has been recording the highest impact factor among Indian journals every year" (Arunachalam, 1983).*

IJRSP and IJPAP had 0.47 and 0.11 respectively. Indian Journal of Physics was not included in the data base. To give a feel for these numbers, during the same period Nature had an impact factor of 15.75, Physical Review Letters 8.31, Astrophysical Journal 3.544 and Astronomy and Astrophysics 1.96. It was also found that the impact factor of JAA has come down from 1.31 in 1986 but that of Pramana has gone up from 0.428 in 1986 to the present 0.51. Neither IJPAP nor IJRSP were covered in SCI during 1986. The reason for the fall in the impact factor of JAA could be due to the fact that the special number brought out during the Golden Jubilee of the Indian Academy (in 1984) contained a number of invited articles from well-known astronomers from both within and outside the country and these articles must have drawn the attention of astronomers all over the world and hence the higher figure during 1986 as compared to the 1988 figure of 0.58. The rise

in the impact factor of **Pramana** during **1988** could be due to the better articles received by the journal during that **period, specially** those on High  $T_c$  superconductivity

The Volume of **Publication:It** is found that there is only a marginal difference between the Indian Journal of Physics and Pramana (both **monthlies**) with regard to the number of articles and number of pages published. The number of articles published in both these journals during the last few years has been quite steady. The number of articles published in IJPAP which is also a monthly is less than the number published in IJP and **Pramana**. This could be due to the fact that IJPAP is a specialist journal. Even after taking into consideration that IJRSP is a bi-monthly publication, the number of articles published by **it** during the year is on the lower side. Table 11 gives the quantum of publication in the five journals over the last few years and Tables 12 and 13 give other statistics pertaining to these journals.

Special Numbers: IJP, IJPAP, IJRSP and Pramana **publish** special numbers from time to time. These are brought out either to honour an eminent scientist or to highlight a particular theme or sometimes to publish **pro-**

TABLE 11

Number of Articles and Pages published by IJPAP, IJRSP, IJP, Pramana &amp; JAA during 1985-1989

Journal	1985		1986		1987		1988		1989	
	Articles	Pages	Articles	Pages	Articles	Pages	Articles	Pages	Articles	Pages
Indian Journal of Pune & Applied Sciences (IJPAP)	166	638	162	614	132	514	163	736	140	736
Indian Journal of Radio & Space Physics (IJRSP)	40	174	48	432	58	410	49	314	59	314
Indian Journal of Physics (IJP)	115	1084	121	1076	142	1130	172	1574	154	1375
Pramana	173	1670	136	1400	148	1344	137	1133	140	1563
Journal of Astro- physics & Astronomy (JAA)	26	277	28	316	38	395	26	248	31	443

TABLE 12  
Some Statistical information pertaining to the five Indian journals, IJP, IJPAP, IJRSP, Pramana & JAA

Journal	Periodicity	Editorial Board Members		Panel of Referees		Editorial staff*	Number of subscriptions	
		Ind.	For.	Ind.	For.		Ind.	For.
Indian Journal of Physics (IJP)	Monthly	30	-	100	-	3	172	158
Indian Journal of Pure & Applied Physics (IJPAP)	Monthly	11	-	300	-	5		100
Indian Journal of Radio & Space Physics (IJRSP)	Bimonthly	14	3	100	-	3	112	12
Pramana	Monthly	14	-	600	5	3	280	90
Journal of Astrophysics & Astronomy (JAA)	Quarterly	7	8	45	5	3	165	245

\* includes Editor and Associate Editor

TABLE 13

Information regarding rate of rejection, time lag and coverage in secondary periodicals of the five Indian journals, IJP, IJPAP, IJRSP, Pramana and JAA

Journal	Rate of rejection (%)	Time lag (in months)	Coverage			
			Physics Abstracts	Astronomy & Astrophysics Abstracts	Currents Contents	Science Citation Index
Indian Journal of Physics (IJP)	20 - 25	11 - 12	Yes	No	No	No
Indian Journal of Pure & Applied Physics (IJPAP)	28	8 - 12	Yes	Yes	Yes	Yes
Indian Journal of Radio & Space Physics (IJRSP)	30	8	Yes	Yes	Yes	Yes
Pramana	30	8 - 10*	Yes	Yes	Yes	Yes
Journal of Astrophysics & Astronomy (JAA)	30	9	Yes	Yes	Yes	Yes

\* Time lag is between date of receipt and publication of the articles

‡ It is understood that the time lag in Pramana has been reduced to 4 - 6 months in the recent months (end of 1990).

ceedings of a conference. Some of the special issues brought out by these journals are: IJP brought out a special issue dedicated to the Memory of Prof.K.R.K.Asundi and a special issue in honour of Prof.S.N.Biswas. It also published as special issues, about half a dozen Proceedings of National Seminars ( on Scattering theory and application, Crystal Growth, Physics & Technology of Particle accelerators, Physics and Applications of New Materials). **Pramana** published theme issues on Nuclear structure and Nuclear Fission and to mark the Diamond Jubilee of Bose Statistics, it published the Proceedings of an International Symposium on Theoretical Physics. It also brought out a felicitation volume in honour of Dr.Raja Ramanna. IJPAP published a special number to mark the Raman Effect Diamond Jubilee and brought out a special number covering the selected papers presented at the Fourth National Workshop on Atomic & Molecular Physics. IJRSP published special numbers on the Indian Middle Atmosphere Programme, selected papers presented at the National Science Symposium and symposium on Current status and future perspectives in solar terrestrial physics research. JAA does not bring out any special number (excepting for the special number published during the Golden Jubilee of the Indian Academy). It is understood that the Council of the Indian Academy has recent-



ly (1990) resolved that special issues of the journals will not be brought out in honour of scientists as a matter of routine (Srinivasan, 1990).

**Infra-structural Facilities:** We have earlier discussed this point with respect to PID (publishers of IJPAP and IJRSP) and the Indian Academy of Sciences (publishers of Pramana, JAA and in collaboration with the Current Science Association, Current Science). With regard to IJP, the editorial offices of this journal has telephone and telex facilities but does not have its own printing facility. It does not have E-Mail facility either.

#### 5.7 OTHER PHYSICS AND ASTRONOMY PUBLICATIONS:

In addition to the journals discussed above, there are a few other publications in the country which deal with physics and astronomy but which are not research journals in the true sense. Physics News published by the Indian Physics Association and Physics Education (sponsored by the U.G.C) are two such journals. Physics News is an official organ of the Indian Physics Association. This is a quarterly publication and carries news items of interest to the physics community and a few general articles in the field of phys-

ics. Though not at the same level, it is rather like Physics Today published by the American Institute of Physics. Physics Education is oriented towards a younger audience in schools, colleges and universities.

In astronomy there is "Bulletin of the Astronomical Society of India" which is the official organ of the Astronomical Society of India. Started by the Astronomical Society in 1973, this publication which is a quarterly, publishes research articles, reports from Observatories, Society news, and book reviews. Though it includes research articles it is not in the same genre as JAA. However, this publication is covered by both Physics Abstracts and Astronomy and Astrophysics Abstracts. Bulletin of the Kodaikanal Observatory which was discussed in an earlier chapter, is being brought out by the Indian Institute of Astrophysics at irregular intervals. Earlier each issue of the Bulletin was individually numbered and starting from 1976 onwards volume numbers were given to the issues. So far 10 volumes have been brought out in the new series. It published the proceedings of the colloquium held in 1984 (On Magnetic field - Plasma interaction) in commemoration of the 75th anniversary of the discovery of the Evershed Effect. It has also brought out special issues covering the proceedings of the Second National

Workshop on Solar Physics held at Kodaikanal in 1987 and the National Workshop on Supernova 1987A held at Bangalore in 1988. But it no longer enjoys the same status that it did during the first half of this century.

#### 5.8 FUNDING FOR THE PUBLICATION OF JOURNALS

Science Journals publication activity in India has been largely supported by the Government. As has been mentioned earlier, the Council of Scientific and Industrial Research is a major publisher of journals and it gets its funds from the Government. The Department of Science and Technology has been increasingly funding the journals publication activity in the country and during 1988-89 it funded thirty nine organisations including the Indian Academy of Sciences for publishing journals (Department of Science and Technology, 1989). Councils like I C M R and I C A R also fund the publication of journals in their respective fields, once again drawing funds primarily from the Government. Thus we see a major thrust from the various funding agencies in supporting the publication of scientific journals in the country; however, one way or the other all funds are derived from the Government.

As the motivation for publishing these journals is not earning revenue, the monetary returns from these journals should not be questioned. Commercial publishing houses abroad like North Holland and Gordon & Breach, for example, attach importance to financial returns. (In the last two years there has been severe competition among publishers abroad and unfortunately things have gone to such lengths as one publisher taking the other to court for alleged unethical practices. Ratnakar, 1990). However, one should examine the usefulness of these journals to the scientific community in the country and whether they are effectively used. Our present focus is on physics and astronomy, and we should keep in mind the fact that there is now a sizeable number of physicists and astronomers in the country (there are at least 400 practising research physicists among the 3,000 and odd members of the Indian Physics Association and there are 188 astronomers from India as members of the International Astronomical Union). One should also examine **if Indian journals devoted to these areas reflect the research work done (in these areas) in the country.** We discuss in the next chapter these issues and the usage of Indian journals especially the Physics and Astronomy journals discussed in this chapter.

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