delay between the images is only about one day or less, micro-lensing will produce a change in the luminosity ratios which, if detected, will be a proof of the micro-lensing effect, since variability intrinsic to the quasar would show up "simultaneously" in all images. *G. Setti*

The ESO Exhibition

The ESO booth in the cavernous exhibition hall was visited by hundreds and hundreds of conference participants, enquiring about ESO in general and – not surprisingly – about the Very Large Telescope in particular. The Milky Way Panorama also drew much attention and many visitors tried to locate their particular object of interest. Several ESO staff members took turns at the booth, answering questions and handing out information material, including copies of the most recent issues of the *Messenger*. In fact, the ESO booth soon developed into a sort of small communication centre for ESO staff where messages were passed and many discussions were held. And finally, on 10 August, four strong staff members dismantled the entire exhibition and packed it in less than three hours, most probably breaking some of the local "union rules"! *C. Madsen*

IAU Travelling Telescope Almost Ready to Go

The IAU's new travelling telescope should be ready for its first assignment later this year. Its purpose is to provide astronomers in countries where astronomy is still in the developing phase with practical training in observational astronomy. A grant from the Canadian International Commission for UNESCO and the Canadian International Development Agency has enabled the purchase of an 8-inch Celestron telescope, an OPTEC solid state photometer, Optomechanics slit spectrograph, camera, power supply and other accessories. Other instrumentation such as a microcomputer and a Reticon or CCD detector can be added.

All interested parties should contact John R. Percy, Department of Astronomy, University of Toronto, Ontario, Canada M5S 1A1. From *IAU Today*

Six More Countries Join the IAU

Six countries have requested to join the IAU since the last GA in Delhi. Following IAU tradition, representatives from Algeria, Iceland, Malaysia, Morocco, Peru and Saudi Arabia reviewed the situation of astronomy in their countries during short speeches at the second session of the General Assembly on 11 August 1988. The Assembly welcomed the new members with acclamation, bringing the number of member countries to 57.

The General Assembly also admitted more than 800 new individual members.

Resolutions

The IAU General Assembly passed 8 resolutions of which the full texts will appear in the IAU Bulletin. It is indicative that four of these are directly concerned with adverse influences on observational astronomy. The titles:

- Amateur-Professional Cooperation in Astronomy
- Adverse Environmental Impacts on Astronomy
- Improvement of Publications
- International Space Year 1992
- Cooperation to Save Hydroxyl Bands
- Sharing Hydroxyl Band With Land Mobile Satellite Services
- Revision Frequency Bands for Astrophysically Significant Lines
- Endorsement of Commission Resolutions

New IAU Executive Committee

Following the formal election procedures during the second GA session on 11 August, the new Executive Committee (1988–1991) now consists of: President Y. Kozai (Japan); President-elect A.A. Boyarchuk (USSR); Vice-presidents A. Batten (Canada), R. Kippenhahn (F.R. Germany), P.O. Lindblad (Sweden), V. Radhakrishnan (India), M. Roberts (USA), Ye Shu-hua (P.R. China); General Secretary D. McNally (UK); Assistant General Secretary J. Bergeron (France); Advisors J. Sahade (Argentina); J.-P. Swings (Belgium).

Next IAU General Assembly

The 21st General Assembly will take place in Buenos Aires, Argentina, supposedly from 23 July–2 August 1991. In response to various discussions which took place in Baltimore, partly because of the somewhat smaller number of participants than expected (the organizers had hoped for 3,000), the new Executive Committee has announced that it will study ways to make the format and content more attractive, possibly by incorporation of one or more symposia/colloquia into the next Assembly.

Comparison of Astronomical Journals

S. R. POTTASCH and F. PRADERIE, Editors of "Astronomy and Astrophysics"

At the request of the Board of Directors of *Astronomy and Astrophysics (AA)*, we have undertaken a comparison of the more important astronomical journals. The original reports covered the amount of material published, financial aspects, time delays in publication, aspects of refereeing and rejection of articles and the very difficult question of the overall scientific quality. Because of the general interest among astronomers in publishing and publications we have prepared this summary of the reports. Some of the information used has been supplied by Dr. H. Abt, editor of the *Astrophysical Journal (ApJ)* and Prof. R.J. Tayler, editor of the *Monthly Notices of the Royal Astron. Soc. (MNRAS)*. We have limited our comparison mainly to the three journals mentioned, plus the *Astronomical Journal (AJ)*.

1. Amount of Material Published

This comparison can most easily be made on the basis of the total number of pages published each year. This is somewhat misleading because the average number of words published per page varies significantly from journal to journal. Therefore, a better comparison can be made by using the average number of words on a printed page in each journal to convert to a common "equivalent page". There is a considerable uncertainty involved in this "conversion factor" however, because the different journals have somewhat different policies concerning the relative sizes of figures and tables. Such a comparison is shown for 1987 in Table 1. The first four columns show the actual number of pages published. In these columns, the Letters section is listed

TABLE I

Journal	Number of published pages (1987)			Factor to compare to *AA* pages	Total equiv. pages
	MJ	Lett.	Total		
ApJ	11,178	1,542	12,720	0.88	11,200
AJ	3,297	–	3,297	0.88	2,900
AA	7,457	341	7,798	1.0	7,798
MNRAS	5,920	570	6,490	0.56	3,600

TABLE II

Journal	Income ($) (1988)			Income ($) per equivalent page
	Page charges	Subscription	Total	
ApJ	8.7×10^5	6.4×10^5	1.51×10^6	135
AJ	3.3×10^5	2.0×10^5	5.3×10^5	181
AA	$2.5 \times 10^{5*}$	8.3×10^5	1.08×10^6	139
MNRAS	–	7.46×10^5	7.46×10^5	203

* Including the contribution of the participating countries.

TABLE III: *Subscription costs (1987)*

Journal	Number of subscribers		Price per year*		Cost to Subscriber**	
	Institute	Personal	Institute	Personal	Institute	Personal
ApJ	1,176	1,507	$ 375	95	3.4	0.85
AJ	850	950	$ 155	40	5.3	1.4
AA	776	576	DM 1,870	65	13.3	0.46
MNRAS	651	611	£ 500	78	24.4	3.8

* excluding postage. ** $10^{-2}$$ per equivalent page.

separately (the pink pages in *MNRAS* are listed as Letters). The comparison factor, normalized to *AA*, is given in column 5 and the total equivalent number of pages published is given in the last column. It is clear that *ApJ* publishes substantially more than the other journals although *AA* now publishes only about 30% less. Taken together, the two predominantly "European" journals, *AA* and *MNRAS*, publish about 20% less than the two "American" journals, *ApJ* and *AJ*. This may be compared to the situation 10 years ago when the "European" journals published 35% less.

A comparison of the total number of pages (Main Journal plus Letters) published over the past 10 years, is given in Figure 1, for the four journals. "Equivalent" pages are used in the comparison using the 1987 conversion factor for the whole period. This is only an approximation because the page format (or type size) of all the journals has changed in somewhat varying degrees, all of them increasing the number of words published per page. It is clear from the figure that *ApJ* has had a slower but steadier increase than the other journals. *AA* is experiencing a rather large increase in the number of pages published, which have increased by a factor of 2 in the past 5 years. The somewhat larger fluctuations of *AA* are caused to some extent by financial policies which limit the number of pages published per year. This may continue for several years whilst a back-log increases. Major changes in the editorial policy of *AA* occurred in 1984.

2. Financial Aspects

The financial considerations are dominated by the fact that about 60% of the total income of the "American" journals, *ApJ* and *AJ*, are from page charges, which are charged to virtually all authors. *AA* also has page charges for most non-European articles (with no European co-authors). Twelve sponsoring countries contribute to the expenses and the page charges amount to only slightly more than 20% of the total income. *MNRAS* has no page charges at all. A detailed comparison is given in Table 2, the last column of which lists the total income per equivalent page published. The variations appear to be substantial, *AA* appearing to produce a page for 70% of what *MNRAS* charges. But one should remember that currency conversion (1.8 DM = 1 $; 0.56 £ = 1 $) is necessary to produce this table and the conversion factors are not constant over a long time.

3. Subscriptions

The number of subscribers to each of the journals is shown in columns 2 and 3 of Table 3. The number of institute and personal subscribers are listed separately. The "American" journals have substantially more subscribers than the "European" journals. The reason for this is not so clear. Probably many more (American?) university physics departments subscribe to American journals. The large number of personal subscribers to the "American" journals may be a remnant from the time when all members of the American Astronomical Society were required to subscribe to at least one of the journals.

The number of subscribers to *AA*, both institute and personal, has remained constant over the past ten years. This number had decreased substantially for the other journals. For example, there were 1,450 institute subscribers and 1,742 personal subscriptions to *ApJ* in 1979, which is 20% higher than at present. The same decrease is shown for *MNRAS* which had 776 institute and 802 personal subscribers in 1979. This decrease may partly be explained by the very unfavourable dollar exchange rate several years ago and the general cuts in university funding almost everywhere. *AA* has managed to resist these factors.

The cost per equivalent page to the subscriber is shown in the last two columns of Table 3. The "American" journals are clearly the "best buy" for institutes, mainly because the page charges account for a large fraction of the income for these journals. The substantial factor in cost for institutes between *ApJ* and *AA* may be decisive for some smaller physics institutes to sub-

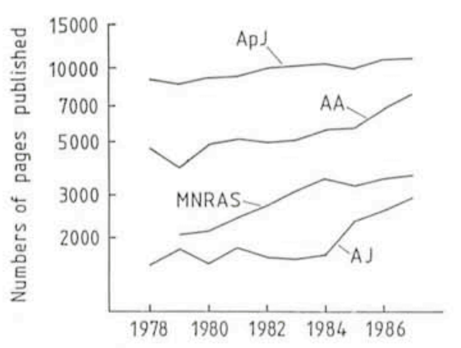

Figure 1: *The number of pages published per year for the four leading astronomical journals is shown for the past 10 years. Equivalent pages are used which contain the same number of words as an AA page.*

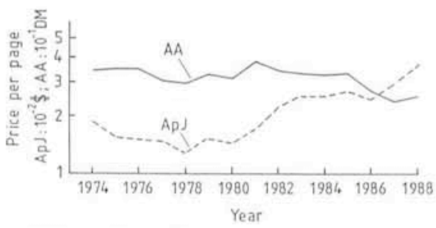

Figure 2: *The prices per page of* ApJ *and* AA *are shown for the past 15 years. Note that the units on the ordinate are different for the two journals. The actual number of pages (and not equivalent pages) was used.*

scribe to *ApJ* instead of *AA* when funds are limited.

The cost to personal subscribers is different. Here *AA* is the cheapest per page due to the policy of the journal to supply the journal at approximately the cost of the paper and binding. The low cost is not reflected in the number of personal subscribers, however.

MNRAS is the most expensive journal both to institutes and to personal subscribers.

Finally, a comparison has been made of the changes in the price per page for institutes for *ApJ* and *AA* over the past 15 years. The results are shown in Figure 2. No attempt has been made to put the price in a common unit because of the large exchange fluctuations in the course of the past 15 years. The general trends are clear. *AA* has remained roughly constant for most of this period and has decreased in the past 3 years. *ApJ* remained roughly constant until 1981 and has increased substantially since then. It should be recalled, however, that the absolute cost per page of *AA* to institute subscribers is still four times higher than *ApJ*.

4. Time Delays in Publication

A more detailed analysis will be given for *AA* because we know it better. Furthermore, the Main Journal and the Letters are discussed separately.

The time delay can be divided into two periods. The time between receipt and acceptance will be called "processing time at the Editors" and the time between acceptance and publication will be called "processing time at the publisher".

For the *AA* Main Journal the average processing time at the Editors was 3.1 months in 1987, slightly higher than the average over the past 6 years (2.7 months). A mean value is given because there is a long tail to the distribution, primarily due to the time it takes for authors to revise their articles before acceptance. The processing time at the publisher was 5.6 months in 1987, somewhat higher than the 4.8 months average of the last 6 years. Due to the fact that the total amount to be published in a given year in *AA* is fixed several months before the year begins, a "backlog" can occur if the number has been too low for several years in a row. This is the case at present. In a more "normal" situation the processing time at the Publisher should be 2 months shorter.

For comparison – the processing time at the Publisher in *ApJ* was about 6.5 months in 1987, and 5.5 months for *MNRAS*. Thus it appears that there are no large differences in publication time in the various journals.

In contrast to the approximate 8½ months median delay for the Main Journal, the *AA* Letters are published considerably faster. Here the mean processing time at the Editor is 3 weeks and the mean time at the publisher is 5 weeks. The total time is higher than the sum of these two times because preparation of the camera-ready manuscript takes the average author a few weeks and time spent in the mail becomes important. Thus a median time of almost 3 months is required. This time is faster than the 4½ to 5 months required for the *ApJ* Letters. The *MNRAS* pink pages are usually published within 4 months of receipt.

5. Refereeing

All major journals have a refereeing system, the purpose of which is twofold. Firstly, it allows the rejection of papers which are either wrong or do not contain sufficient new material to warrant publication. Secondly, it points out the weak arguments in the paper and permits publication only after these weaknesses are removed or more strongly defended. This latter sometimes requires additional observations to be made.

In *AA* Main Journal, 65 % of the articles received are accepted by the referee on the first reading with only minor revisions required. About 23 %, while foreseeing eventual publication, have much more serious criticism, and a major revision is recommended. Further refereeing then takes place before the paper is accepted. About 12 % of the papers received are recommended for rejection. Of these 12 % not all are finally rejected, for many reasons. Sometimes very considerable revision can save the paper. The final rejection rate is about 9 %.

This rejection rate is very similar to that of *ApJ* and *AJ*. Abt (1988, *Pub. Astron. Soc. Pac.* **100,** 506) reports a combined rejection rate for these two journals of 9.4 %. In investigating the further fate of the rejected papers, he reports that ⅔ are never published and ⅓ is published elsewhere. No information is available concerning the fate of the rejected articles in the other journals. The rejection rate in *MNRAS* is not available directly. By comparing the number of papers submitted and published, a 13 % rejection rate is found.

The rejection rate for *AA* Letters is

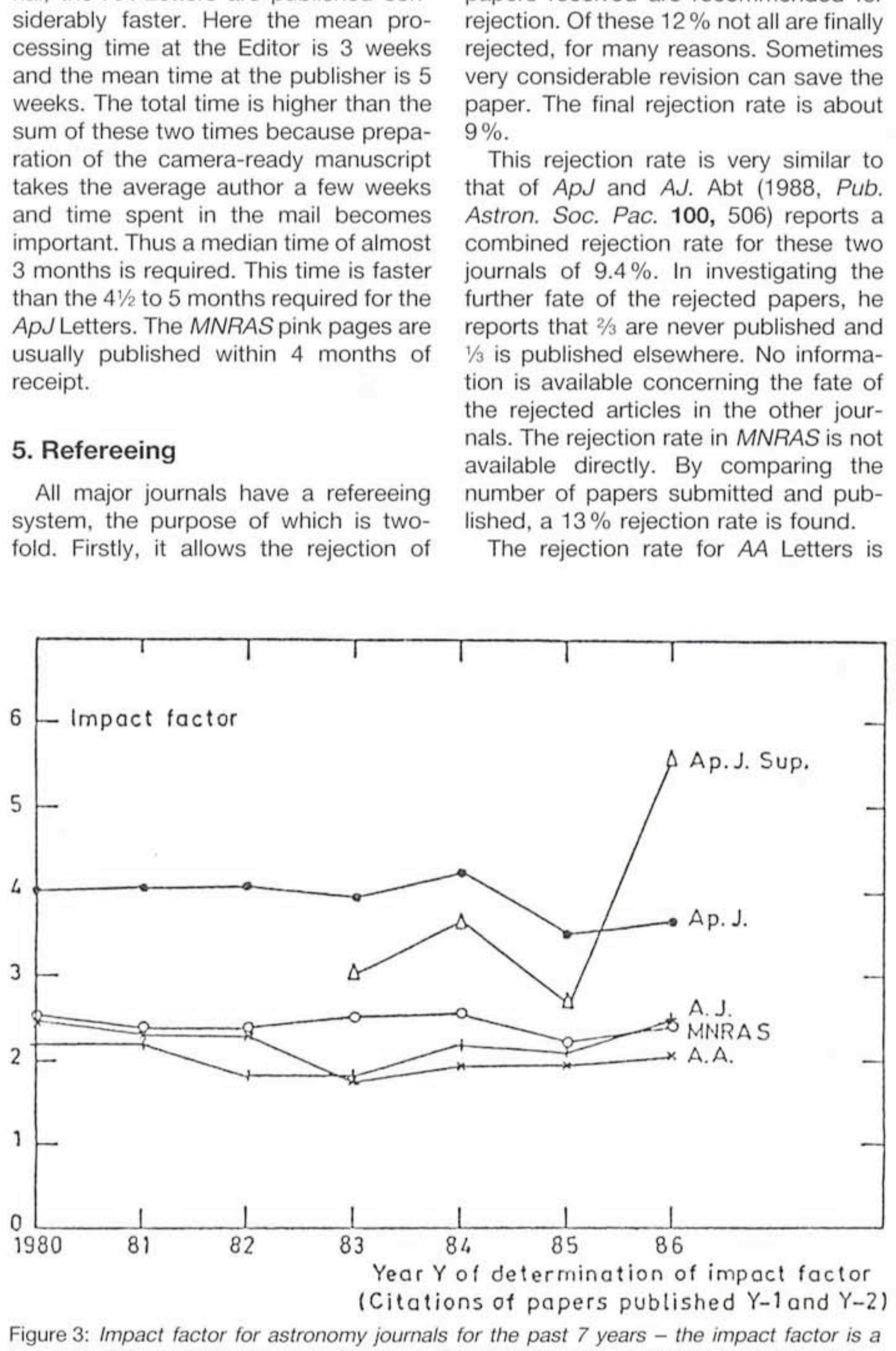

Figure 3: *Impact factor for astronomy journals for the past 7 years – the impact factor is a measure of the average frequency of citation of an average paper published in the journal (see text). Figures are taken from the* Science Citation Index.

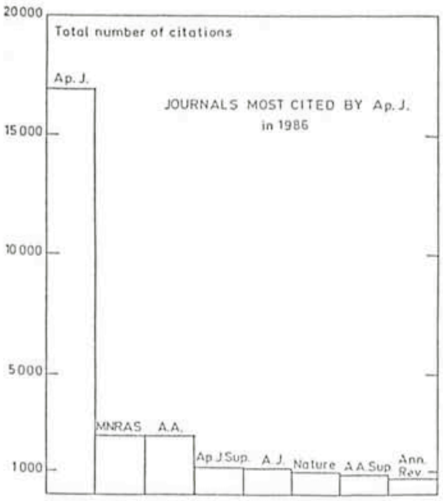

Figure 4: *Total number of citations by* ApJ. *of papers from different astronomy journals.*

much higher. In 1987 36% were rejected. This is somewhat less than 5–10 years ago when about 50% of the articles were rejected. Some of the rejected "Letters" are eventually published as normal articles in the Main Journal. In 1987 this number was about 10%.

It appears that, with the exception of *AA* Letters, astronomy journals have a higher acceptance rate than physics journals. Although recent figures are not available, Batchelor (1981, *J. Fluid. Mech.* **106,** p. 1) finds a rejection rate of between 14% and 33% for ⅔ of 44 leading physics journals. It is not clear why the rejection rate is lower in astronomy.

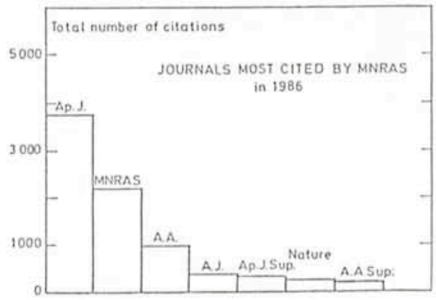

Figure 5: *Idem for* MNRAS.

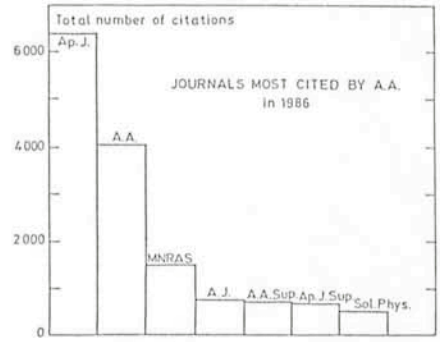

Figure 6: *Idem for* AA.

6. Influence of the Journal

The scientific quality of the journals is difficult to define and compare. The one factor which can be compared is the number of citations which is compiled and published, by the Science Citation Index. Complete figures are now available for 1986. In particular we compare the "impact factor", which is defined as the ratio of the total citations (to a particular journal) to the total number of citable items in that journal.

Figure 3 gives the impact factor for the various journals since 1980. As can be seen, the *ApJ* has a higher impact factor than the other journals, which are closely ranked. This may be interpreted as a higher scientific quality of the *ApJ* but a careful examination indicates that another interpretation is possible. This can be seen in Figures 4 to 6 which show the total number of citations to *ApJ, MNRAS* and *AA* separately. It is obvious from these figures that there is a tendency in all the journals to cite themselves more often than might be expected from the total number of articles published, a kind of "astronomical provincialism". This appears to be especially bad in the *ApJ.* Some of this may be understood because different fields (or sub-fields) are more prominent in one journal or the other. This cannot be the complete answer, however, because then the various diagrams, after correction for the total number of articles published in each journal, should be symmetric.

It seems clear that *ApJ* authors are influenced much more by what is published in *ApJ* than in the other journals. Especially *AA* and *AJ* have comparatively little influence. It is impossible to determine how much of this is due to a lower scientific quality of the latter journals and how much is due to "provincialism" in the former.

On the Nature of the Bars of SB0 Galaxies: First Results

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R. BACON, Observatoire de Lyon, France

1. Introduction

Bars are a common feature of disk galaxies: approximately 60 to 70 per cent of all galaxies between Hubble types S0 to Sc, including the SAB's, are barred. Their structure and evolution represents one of the most puzzling problems in galactic dynamics. Much attention has been focused during recent years on the theoretical aspects of the dynamics of barred galaxies. Essentially four kinds of problems have been considered: (a) orbital behaviour of stars in non-axisymmetric potentials, (b) the global response of a gaseous or stellar disk- to bar-like perturbations, (c) the construction of SB self-gravitating equilibrium models using the kinds of orbits which were found with the Schwarzschild-Pfenniger technique (direct, retrograde and stochastic orbits) and (d) N-body simulations of disk evolution involving studies of large-scale stability.

These different approaches are able to give some global and qualitative predictions on the structure of various components in SB galaxies. However, in spite of some progress in our theoretical understanding, the structure and evolution of the bars remain largely unexplained. This problem is important since the bars could be linked to the engine which governs the global evolution of barred galaxies. Some of the most important questions concern the size and axis ratios of the bars, their dynamical interaction with the bulge and halo, the 3-D structure of bars and ovals and their secular evolution, and finally their real frequencies and life-times.

Advances in this field are presently limited by the lack of quantitative photometric and kinematic data. Clearly, SB galaxies have received less attention observationally than SA galaxies probably because of their added complexity. In fact, extensive statistics on the shapes of bars do not presently exist. In order to succeed in constructing a coherent scenario of bar formation and