

S. Dunlop M. Gerbaldi (Eds.)

# Stargazers

The Contribution  
of Amateurs to Astronomy



Springer-Verlag

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The Contribution of Amateurs to Astronomy

Proceedings of Colloquium 98 of the IAU,  
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With 43 Figures

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## Editors' Preface

IAU Colloquium No. 98 "The Contribution of Amateurs to Astronomy" was held in Paris, at the "Chaillot-Galliera" Conference Centre, on 20–24 June, 1987. A total of 250 participants – professional and amateur astronomers – came from 27 different countries. It was the first time that such a meeting had been organized under the auspices of the International Astronomical Union, and the arrangements in Paris were made by the Société Astronomique de France, which was founded one hundred years previously by Camille Flammarion, so the 100th anniversary of the SAF was also celebrated. Nine commissions of the IAU co-sponsored the meeting; it also received support from the following associations:

AAVSO (American Association of Variable Star Observers), BAA (British Astronomical Association), IOTA (International Occultation Timing Association), SRBA (Société Royale Belge d'Astronomie).

The Chairman of the Scientific Organizing Committee was Prof. J.-C. Pecker, and the names of other members who shared in the work of organizing the Colloquium are:

Dr P. Couteau (France), Cmdr H.D. Howse (U.K.), Dr M. Gerbaldi (France), Prof. J. Kleczek (Czechoslovakia), Dr I. Kozai (Japan), Dr J. Mattei (U.S.A.), Dr S. Nakano (Japan), Dr G. Taylor (U.K.), Dr V. Trimble (U.S.A.)

The Chairman of the Local Organizing Committee was Dr P. Simon, the then President of the SAF, who organized all the events in Paris, helped by P. de la Cotardière and A. Chenevez.

The proceedings were conducted in French and English and the 12 sessions were chaired by:

A.C. Levasseur-Regourd (Session 11), A. Koeckelenbergh (12), S. Debarbat (21), J. Kleczek (22), J. Mattei (23), J.-C. Merlin (24), P. Maley (25), F. Wood (26), I. Garcia de la Rosa (27), J. Rösch (31), Y. Dargery (32), A. Acker (33).

A total of 128 invited and contributed communications were given, and these *Proceedings* "espèrent refléter ces débats".

This Colloquium highlighted the fact that in several domains (most especially those of comets, variable stars, novae, etc.) the amateur contribution is becoming "irremplaçable". A second fact that became very clear is the important role played by amateurs in popularizing astronomy. In addition, this Colloquium emphasized how strong and efficient the links between professional and amateur astronomers can be.

It can justifiably be said that “Ce colloque est une grande première, couronnée de succès.”

This Colloquium's *Proceedings* differ from those of its predecessors in several ways. As editors we were faced with the usual dilemma of whether to publish an incomplete volume or to delay publication by waiting for late papers and chasing them. We adopted the second method (for various reasons) and apologize to those authors who supplied their papers “at the right time”. Not the least of our problems was the impossibility of publishing all 128 contributions in full, in English. As approximately half the contributions were in French, such a step would have involved a great deal of time and labour in translation, as well as resulting in a large book that would be far too expensive for most of the intended readers to afford. We have therefore ensured that most coverage has been given to those papers that detail new methods of observation, significant results of amateur work or amateur/professional cooperation, or that make suggestions for future research projects. A few papers have been withdrawn by their authors, for various reasons, such as a similar item having been previously published elsewhere. All other contributions are, however, included in at least abstract form and, where possible, appropriate references have been given. The majority of the abstracts are new, being rewritten to reflect the material that was actually presented at the Colloquium.

In compiling this record of the proceedings of the Colloquium we have not followed the chronological sequence in detail. For reasons of space, no posters are included. All the contributions are being published in full, in French, in special issues of the ‘Observations et Travaux’ of the Société Astronomique de France. Even where we have had to include shorter versions or abstracts in this volume, the full text submitted by many contributors has greatly helped us in editing the material or writing new abstracts. In those instances where no material was submitted by the author, the abstracts published in the original programme have been used as a basis for the reports. In a few cases where an author's mother tongue was neither French nor English, we have taken the liberty of editing the material to ensure that it is readily comprehensible. In those contributions that make reference to specific books we have, where possible, given details of English-language editions.

The translation of the contributions into English has been undertaken by one of us (S.D.), who would like to thank Mr Peter Hingley, Librarian of the Royal Astronomical Society, for his assistance in checking and locating specific references and publications in various languages.

Regrettably, it did not prove possible to use much of the material that was submitted in nominally ‘camera-ready’ form. We are therefore particularly grateful to Mme C. Boillet of the Institut d’Astrophysique de Paris for retyping many contributions. We should also like to record our thanks to André Chenevez, Philippe de la Cotardière, Derek McNally, Jean-Claude Pecker and Paul Simon for their helpful discussion of various matters relating to the publication of these *Proceedings*.

Finally, it remains for us to thank the sponsoring organisations and the various individuals involved with the Colloquium. First, we acknowledge the help of the IAU in the form of a grant to the SAF to support the Colloquium. The SAF itself financed the organization of the Colloquium.

We thank Prof. Maurice Lévy, Président of the Cité des Sciences et de l'Industrie for his welcome, as well as for the free planetarium show and visit to the Cité that he arranged for participants.

We thank all the astronomers of the Observatoire de Meudon, who organized the visit by Colloquium participants to the observatory, and who acted as guides to the equipment and facilities. We are also grateful to the Observatory for arranging for the closing dinner to be held there.

We similarly thank the Président of the Observatoire de Paris, Dr P. Charvin for the welcome to the observatory and the cocktail party given to Colloquium participants, and to astronomers of the Observatoire de Paris who guided the visitors round the "Carte du Ciel" exhibition organized by the observatory. Our thanks are also due to Madame Aurillac, Conseiller de Paris, for her welcome at the reception held at the Hôtel de Paris.

Together with the Société de la Tour Eiffel, the SAF organized the first international exhibition for amateur astronomers, and our thanks also go to M Arrivetz and the Société Imprimerie Spéciale de Banque, Paris for their sponsorship in the form of the printing of various items for the Colloquium.

We are grateful to all the persons who participated in the secretarial work involved with the Colloquium, mailed material to the participants, ran the registration desk, projected the occasional slide, etc.: Mmes Blomme, Bousquet, Caillat, Duval, Hedreul, Meriot, Naddeo, Pierron, and Regnault; Mlles Lericque and Marigny; MM Fournon, Louis-Tisserand, Pezzana, Valls-Gabaud, and Zimmermann. We are grateful to Mme Delmas who has helped us in many respects.

But, in fact, all these efforts were orchestrated by the Société Astronomique de France, without whom nothing could have been realized.

*Michèle Gerbaldi, I.A.P., Paris*  
*Storm Dunlop, Chichester*

# Introductory Address

*Prof. J.-C. Pecker*

Chairman of the Scientific Organizing Committee

Ladies and Gentlemen, Colleagues,

Astronomy only became a profession late in history. The existence of the profession of astronomer can be dated from the 17th century and the creation of the observatories at Greenwich, at Paris, and elsewhere. According to its statute of 1699, the Académie de Sciences (in Paris) had an astronomical section consisting of three members. We should note that it had decided, at the time of its foundation by Colbert in 1666, to debar astrology, which was still respected in the previous century, from being considered among the true sciences.

Until then, the great names in astronomy had lived on their own private incomes, or even on the taxes that they raised, like Tycho Brahe; or on the sale of horoscopes, like Kepler; or from their ecclesiastical income, like Copernicus. If they found a rich protector, it was he who financed everything and who gained the glory, even to the point of giving his name to catalogues: we may recall the 13th-century Alphonsine Tables in Spain, or Kepler's Rudolphine Tables.

But even after there were functioning observatories, their incumbents remained "amateurs", and only rarely dipped into the royal purse in order to carry out their astronomical duties.

And – in an essentially continuous fashion – running parallel to the research carried out by the professionals in their observatories, numerous amateur astronomers carried out observations and calculations at a comparable level of sophistication.

This parallel development naturally ceased with the appearance of very large instruments: how could amateurs rival Palomar or even Saint-Michel? But observing time on large instruments is expensive and is only given parsimoniously; so much so that for professionals the advent of giant telescopes meant that certain types of research had to be abandoned. Long-period variable stars? Finished. Systematic research about comets or asteroids? You don't get enough publications out of that, etc. In short, a new niche became obvious, twenty or thirty years ago, for amateur astronomers again to contribute to the progress of scientific knowledge, on the same terms as professionals. Having thus become, once again, "honorary astronomers" – a term that perhaps describes their activity better than any other – they are very numerous and found all over the world. Their relations with professionals, often even in the heart of the International Astronomical Union itself, have become more

regular and more confident. It is now a question of working relationships, and many honorary astronomers are now contributing to the development of our science and work in the major observatories and university laboratories.

It therefore seemed that the time had come for a major conference, a major colloquium, to be devoted to this new symbiosis. In France, the Société Astronomique de France plays a primary role in this symbiosis – does not its Council include among the amateur astronomers a considerable number of professionals? Founded in 1887 by Camille Flammarion, it is celebrating its centenary this year. It was an ideal occasion; and the Scientific Committee would like to express its best wishes to this youthful “old lady” for a wonderful second century. The following associations joined with the SAF in acting as god-parents for this colloquium: the American Association of Variable Star Observers, the British Astronomical Association, the International Occultation Timing Association, and the Société Royale Belge d’Astronomie.

For the benefit of English-speaking participants, I shall first comment on this obviously French word, “amateur”, which unites us today. I have mentioned that in French, as in English, the word has a bad connotation, but a wrong one: amateur astronomers are of course not amateurish, indeed they do *love* astronomy, as the French word also has this meaning (to love: *aimer*, in French). That is certainly what we all have in common, our love for the things of the sky, our enthusiasm for celestial spectacles, from eclipses to supernovae, from comets to occultations, our great happiness in understanding these marvels, our passion for the Sun, the stars, the Galaxy. Love indeed.

Many people, guided by this love for astronomy, are here today, coming from all parts of the world. I ask them to be indulgent to us. Not only because this meeting was difficult to organize; you may find flaws; I hope you will pardon us for them. Often also, we shall speak French, as much as English. It is of course easier to express oneself in one’s own language. It would be better still if all of us were able to speak the twenty languages spoken in this room... English and French are the statutory working languages of the IAU – hence we have limited the linguistic scope to these two – with apologies to the others!

The International Astronomical Union has agreed to this meeting being an IAU Colloquium, number 98. I am grateful to the Executive Committees that gave such a warm welcome to our proposal, just as I thank the Presidents of ten IAU Commissions that agreed to support this project. Their suggestions resulted in the formation of the Scientific Organizing Committee, to the members of which I express my grateful thanks for their invaluable help and advice.

But I must not delay the scientific talks and discussions, which I also await with great impatience. Thank you all for coming and for your participation. I am certain that this meeting will result in many new relationships, and fertile and promising friendships.

Bienvenue et bon travail!

Welcome!

X

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