

AMR

Cassiopeia

1572
NOVA



CASSIOPEIA

Canadian Astronomical Society /
Société Canadienne d'Astronomie



Cassiopeia

No. 41 Winter Solstice 1983

CANADIAN ASTRONOMICAL SOCIETY SOCIÉTÉ CANADIENNE D'ASTRONOMIE

Editor: Colin Scarfe, University of Victoria

With best wishes to all members for Christmas and 1984.

Colin Scarfe

Deadline for the Vernal Equinox issue will be March 16.

UNIVERSITY OF TORONTO

JUNE INSTITUTE 1984 - CEPHEIDS: OBSERVATION AND THEORY

The David Dunlap Observatory, Department of Astronomy, University of Toronto is pleased to announce that its June Institute for 1984 will be an IAU Colloquium (No. 82) on Cepheids: Observation and Theory. All interested persons are cordially invited to attend. The dates are May 29 to June 1, 1984.

The occasion is doubly significant. It marks the beginning of the 50th anniversary year of the David Dunlap Observatory. It also marks the 200th anniversary of the discovery of Cepheid variables. In the last few years, much interesting and important work on Cepheids has been done, some of it at the David Dunlap Observatory.

The Colloquium will include such topics as: Cepheids as distance indicators; extragalactic Cepheids; theory of Cepheid pulsation; fundamental parameters of Cepheids; evolution and chemical composition of Cepheids; population II Cepheids; related supergiants and variables. The program will include invited review lectures, contributed oral papers and poster presentations. In an attempt to encourage the latter, we are scheduling the poster presentations in a relaxed setting, with refreshments. The proceedings of the Colloquium will be published by D. Reidel, with Dr. Barry F. Madore as Editor. The deadline for the receipt of titles and abstracts of contributed papers is May 1, 1984, but participants who wish to give papers should contact J.D. Fernie as soon as possible, giving the approximate topic of their paper, and any strong preference for oral or poster presentation. Choices, however, cannot be guaranteed.

Available accommodation will range from rooms in the University residences (at about \$20 a night) to luxury hotels. There will be the usual formal and informal social events, including a tour of the David Dunlap Observatory. Please contact J.R. Percy as soon as possible for pre-registration information. There will be a registration fee of \$60.00.

Come and help us to celebrate this happy occasion.

Dr. J.D. Fernie,
Chairman: Scientific Organizing
Committee,

David Dunlap Observatory,
Box 360, Richmond Hill, Ont.
Canada L4C 4Y6

Dr. J.R. Percy,
Chairman: Local Organizing
Committee,

Department of Astronomy,
University of Toronto,
Toronto, Ont.,
Canada M5S 1A7

CANADIAN ASTRONOMICAL SOCIETY
ANNUAL GENERAL MEETING
HERZBERG INSTITUTE OF
ASTROPHYSICS, OTTAWA
June 5 - 8, 1984

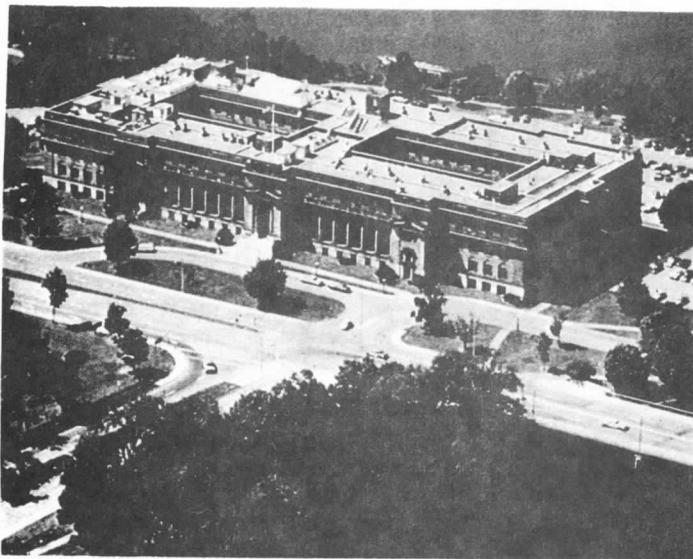
SOCIÉTÉ CANADIENNE D'ASTRONOMIE
ASSEMBLÉE GÉNÉRALE ANNUELLE
INSTITUT HERZBERG
D'ASTROPHYSIQUE, OTTAWA
5 - 8 Juin, 1984

We wish to thank those who answered our questionnaire published in the last issue of Cassiopeia. The CASCA general annual meeting will be held in Ottawa in the NRC building at 100 Sussex Drive, June 5, 6 and 7. It is assumed that most participants will arrive on the evening of Monday, June 4.

If there is sufficient interest, a day trip to the Algonquin Radio Observatory will be organized for participants and accompanying persons on Friday, June 8. Other shorter tours are being considered.

Further information and registration forms will be sent to CASCA members sometime in February 1984.

Local Organizing Committee for
CASCA 1984
(J. Vallée, A. Woodsworth, D. Fort,
L. Avery)
Herzberg Institute of Astrophysics
National Research Council of Canada
Ottawa, Ontario
(613) 593-6060 TELEX: 053-3715



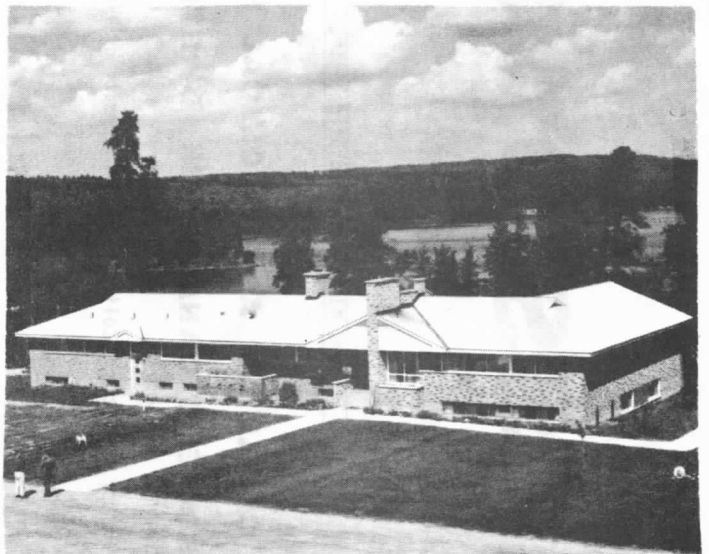
100 Sussex Dr./prom. Sussex
OTTAWA

Nous voulons d'abord remercier ceux et celles qui ont répondu à notre questionnaire publié dans le dernier numéro de CASSIOPEIA. L'assemblée générale annuelle de CASCA aura lieu à l'édifice du CNRC au 100, Promenade de Sussex, Ottawa, les 5, 6 et 7 juin 1984. La plupart des participants arriveront dans la soirée du lundi, 4 juin.

S'il y a suffisamment d'intérêt, un voyage d'une journée à l'Observatoire Algonquin de Radioastronomie pourra être organisée pour les participants et leurs compagnons/compagnes, le vendredi 8 juin. D'autres voyages (plus courts) sont en considération.

Nous vous enverrons en février '84 plus d'information ainsi que des formulaires d'enregistrement.

Comité Local d'Organisation
(J. Vallée, A. Woodsworth, D. Fort,
L. Avery)
Institut Herzberg d'Astrophysique
Conseil National de Recherches
Ottawa, Ontario
(613) 593-6060 TELEX: 053-3715



Algonquin Radio Observatory
Observatoire Algonquin de radio-
astronomie

NATIONAL RESEARCH COUNCIL
ASSOCIATE COMMITTEE ON ASTRONOMY AND THE CNC/IAU

The Associate Committee on Astronomy met on June 30, 1983 at the University of Victoria in British Columbia, with the new chairman, Dr. G. Michaud, in the chair.

Some information on the operations of the CNC Union was provided and routine CNC/IAU business was dealt with.

The ACA Meeting opened and Dr. Wehlauf reported on a change in the Canadian membership of the CFHT Scientific Advisory Council since the ACA's last meeting. Dr. T. Bolton has replaced Dr. R. McLaren, who resigned to accept the position of resident astronomer at the CFHT.

Dr. C. Purton then gave a brief update on the status of the Canadian Long Baseline Array Project. He reported that its meeting of May 31, 1983, the NRC Council recommended that the CLBA proposal be forwarded to government for funding. He added that the Planning Committee is also trying to coordinate its actions with those of the American team planning the VLBA.

He then explained that the CAS Radio-Astronomy Subcommittee's primary recommendation dealt with the upgrading of the Algonquin Radio Observatory for millimeter wave operation for which \$4 million had already been released for the design study. This upgrading of the facility, he added, was very important for the ARO to become a world-class facility again. The ACA then tabled the recommendation that an NRC Review Committee for the NRC Radio Observatory be formed in time to prepare its report by April 1984 in order to interact constructively with the planning facility.

It was acknowledged that the millimeter wave telescope will be state-of-the-art equipment, but that if positions were not forthcoming, the telescope would not make the contributions it should. The Secretary was asked to write to NRC indicating ACA's support for this.

Dr. Hesser then reported that the Starlab group had been very active since the ACA's last meeting. The Phase A Report had been distributed to the CAS mailing list and to heads of Physics departments and included a questionnaire requesting sample observing programs for use in the Canadian Mission Profile Study. Survey results indicated that Canadian astronomers seemed more interested in imaging over spectroscopic projects by a margin of 2 or 3 to 1. Dr. Hesser reported that the JSWG met at the Goddard Space Flight Centre, in April 1983, concurrently with the new Programme Management

Committee which will carry legal and financial responsibilities for the tripartite (Australian, Canadian, American) Starlab Project. They charged the JSWG with developing minimum reference specs against which Phase B studies will be judged. Dr. Gordon Walker (UBC) is the Project Scientist for the international project, while Dr. Roy van Koughnett (CCSS) is Project Manager. Dr. John Glaspey (U. de Montréal) is Telescope Project Scientist and Dr. Tom Darlington (CCSS) is Telescope Manager. Finally, Dr. Hesser announced that the project had received excellent support from CCSS and Canadian industry. In fact, CCSS has been contributing approximately \$200,000 per year and 1.5 person/years per year.

The Director of the CFHT, Dr. René Racine, presented a short report on the general activities at the CFHT. He reported that the new headquarters at Waimea were officially inaugurated on the 8th of June 1983 and that most of the equipment of the Observatory was now operational. The construction of the mid-level facility, which is the responsibility of the University of Hawaii, is now almost complete. Of course, the usual delays have been encountered but the users expect to be moving in between August and October of this year. The original date for moving into the facility was one year ago but Dr. Racine felt it was well worth the wait. He described it as comfortable and said that the University of Hawaii deserved congratulations for the successful completion of this project. The next steps to be taken are the installing of powerlines and paving the road to the summit.

Dr. Racine announced that the winners of the first annual Mulman Prize for excellence of research with one of the telescopes at Mauna Kea were Drs. F. & M. Spite (CFHT).

Dr. Wehlauf then briefly described the professional observing service and remote observing experiment to the Committee. It seems that the experiment, which was completed as of the week of the 24th of June, had inflicted heavy pressure on the CFHT staff and that the work involved provided problems for which assistance was required. However, a survey of opinions will be undertaken by SAC regarding this service and a report will be submitted on its use. Although the service is deemed very necessary, a minimum of two highly skilled resident observers would be required. He also noted that the CFHT staff have numerous day to day chores and could not undertake main repairs and maintenance of complex and specialized equipment and it has been recommended that this be undertaken by the groups who designed and built the CFHT instrumentation.

Dr. Gaizauskas was pleased to announce to the Committee that the Canadian Astronomical Society was now legally incorporated and would now be able to apply to NSERC for a grant. He added that the next meeting of the CAS will be held at the Herzberg Institute of Astrophysics in Ottawa.

The ACA re-established its subcommittees for the new term. They are:

- A. Subcommittee on Radio Astronomy
(The Committee on Radio Astronomy of the CAS was adopted as a Sub-committee of the ACA reporting jointly to the CAS and ACA)
Chairman: Dr. C. Purton
- B. Subcommittee on Theoretical Astronomy
Chairman: Dr. J.M. Marlborough
- C. Subcommittee on Infrared Astronomy
Chairman: Dr. R. McLaren
- D. Subcommittee on Space Astronomy
Chairman: Dr. J. Hesser
- E. Subcommittee on Image Processing
Chairman: Dr. G. Fahlman
- F. Subcommittee on Optical Astronomy
Chairman: Dr. G. Harris
(Note: Responsibilities of the former Sub-committee on CPHT are to be taken over by this subcommittee)

Dr. Locke explained that a third edition of "Canadian Facilities for Research in Astronomy" had been prepared and that it contains submissions from various universities and astronomical groups. The Committee accepted the document and asked that it be distributed to the CAS membership.

Another document which has been published by the ACA is "Astronomy in Canada in the 1980's". It is now available in French and in English.

Rox-Anne D'Aoust
Recording Secretary

IAU Symposium 105
Don A. Vandenberg

On September 12, 1983, IAU Symposium No. 105 convened in Geneva, Switzerland for a week-long meeting on "Observational Tests of Stellar Evolution Theory". Attended by approximately 150 astronomers from around the world, the topics discussed ranged from subdwarfs to massive stars, from rotation and pulsation to binarity, and from stellar abundances to the chemical evolution of galaxies. Each session, which was devoted to a particular topic, began with an invited review and was followed by several contributed papers of 10-15 minutes duration. While poster papers were not given the emphasis that has become common in recent meetings, about two dozen papers were posted in the foyer of the lecture hall for perusal during off hours: these were discussed by the participants late in the week during one of the scheduled sessions.

Somewhat surprisingly, one of the most pressing problems in recent times - the solar neutrino problem - received little attention during this meeting, though what was reported about the Sun appeared to basically confirm the standard solar model. Art Cox noted, for instance, that the current model would not be able to reproduce the observed solar oscillations to the degree that it can at present if the Sun were mixed in any way. In addition, P. Demarque has had encouraging success in predicting the observed g-mode oscillations using the standard model of the Sun.

Regarding solar-type stars, A. Baglin & P. Morel and the Cayrel group independently presented new observations which showed that the number abundance of lithium in (Hyades) main-sequence stars decreases by nearly three orders of magnitude as the stellar Teff falls from ~ 6000 K to ~ 5200 K. Presently available model calculations are unable to explain this result unless, according to A. Schatzman, convective envelope overshooting and turbulent diffusion are taken into account. This conclusion may however be somewhat premature since the data has not yet been confronted by models based on the latest Los Alamos opacities, which differ considerably from previous compilations. One of the few studies to use these new opacities, that by J. Lattanzio, showed that the gap characteristics in young open clusters can be fit by standard models without resorting to significant core overshooting - and one wonders whether the lithium depletion discrepancy will be greatly reduced as well. Moreover, R. Rood warned that turbulent diffusion models must be careful not to overproduce He in the Sun; according to him, the predictions of standard models seem O.K. A final comment about opacities - it was reported that Carson is now at Los Alamos and work is in progress to determine why his opacities show a much larger bump at $T \sim 10^5$ - 10^6 K than those calculated by the Los Alamos group.

As expected, globular cluster research occupied a significant fraction of the conference time. A particularly impressive paper was that by H. Richer and G. Fahlman which presented CCD color-magnitude diagrams for M4 and M15. The tight stellar sequences obtained, extending about 4 magnitudes below the turnoff, were much more reminiscent of those published for the classical, nearby open clusters and certainly showed the power of the new electronic detectors. They may even have discovered a few white dwarfs! Clearly a revolution in the quality of globular

cluster data is at hand! In his review, R. Cannon discussed many of the problems that remain in the interpretation of C-M diagrams, such as the unexplained gap that exists at the base of some red-giant branches - notably that of NGC 6752. A. Renzini reviewed the Oosterhoff phenomenon, suggesting that enhanced oxygen in metal-poor stars may help to resolve this problem. He also re-evaluated the ages of the globulars, preferring $\sim 16 \times 10^9$ years for all clusters from an analysis of the magnitude difference between the horizontal branch and the main-sequence turnoff. Important work having a bearing on the chemical evolution of globular clusters was related by J. Hesser, who has found that even main-sequence stars in the same cluster can have a wide range in nitrogen abundances.

An excellent review was delivered by D. Lambert on the constraints of stellar evolution from surface abundances. His survey of field stars having iron contents in the range $-2.5 \leq [\text{Fe}/\text{H}] \leq 0.0$ showed no clear trend of $[\text{C}/\text{Fe}]$ or $[\text{N}/\text{Fe}]$ but a strong anticorrelation of $[\text{O}/\text{Fe}]$, the latter being enhanced by +1 at the metal-poor end. Abundances of odd-A elements such as ^{27}Al were found to be directly correlated with $[\text{Fe}/\text{H}]$, which is consistent with the predictions of explosive nucleosynthesis, while those of even-A elements such as ^{40}Ca tended to be anticorrelated with iron. Lambert also reported that nitrogen must be a primary and not a secondary product of nucleosynthesis, presumably resulting from the injection of carbon into H-burning shells in stars on the asymptotic giant branch.

Our present understanding about massive stars was reviewed by P. Conti, A. Maeder, and R. Humphreys. Conti noted that there is a sharp cutoff in the luminosity of red supergiants at $M_{\text{bol}} \sim -9.8$ ($M \approx 50 M_{\odot}$) and that the ratio of WC/MN stars can give important clues about initial stellar compositions or initial mass functions. Maeder showed that mass loss can prevent blue supergiants from crossing over to the red side of the H-R diagram and suggested that the observed main-sequence widening of massive stars may be due to convective overshooting, a spread in ages, or to the presence of binaries that have undergone mass transfer. Humphreys reported the interesting fact that the slope of the IMF in the outer Milky Way is similar to that in the LMC and SMC but that it is significantly different in the inner Milky Way.

The forthcoming published proceedings will also be valuable as a reference to the work done by, among others, J. Tassoul on rotation (he has made impressive progress in understanding the time evolution of circulation currents), by A. Cox on pulsation, by J. Zahn on internal effects in binaries, and by I. Iben on carbon stars. In retrospect, IAU Symposium No. 105 was quite a good summing up of the progress made to this point in time. However, it was also quite evident at the meeting that dramatic gains are presently being made on both the observational and theoretical fronts and one can expect that within a couple of years a considerable revision to our understanding of stars will occur. Let us hope that we will be able to attend a second conference on the same subject that is as superbly well-organized as the one just past. Hearty congratulations to the Swiss local organizing committee for a job well done!

STRUCTURE AND EVOLUTION OF THE MAGELLANIC CLOUDS

I.A.U. Symposium 108, Astronomical Institute Tübingen, 5-8 September, 1983

For the first time since the 4-m class telescopes began operating in the southern hemisphere in the mid-1970's our nearest neighbour galaxies were the subject of an I.A.U. Symposium. This was the first I.A.U. Symposium I've attended at which all contributed papers were in poster form, while all oral presentations were 30 minute reviews (with some, as usual, being considerably more successful attempts than others to actually review the field rather than the author's own work!). Although the numerous posters were each up for only one day, generous coffee and lunch breaks provided adequate time to read them. A second experiment was also tried: each day was concluded by a panel discussion, one of which (on RI36a, the purported supermassive object in the center of the 30 Doradus nebula) I found to be extremely good. [On the whole, however, I believe I would have preferred that time to be used specifically for a group discussion (led by one or two persons) of the poster papers. At the three meetings I've attended in the past two years where such discussions have been held, they proved to be quite informative and popular. They offer each author the opportunity to respond to confusing, controversial or unclear points raised by his or her poster.] I certainly hope that more meetings will follow the excellent format of I.A.U. 108 and altogether abandon short, oral contributions.

Turning to some of the topics discussed, the first day concentrated on star clusters; the second on observations of individual classes of stars (red giants, Cepheids, RR Lyraes, etc.); the third on X-ray and radio surveys, supernova remnants and RI36a in 30 Doradus; and the fourth day on HII regions and interstellar matter in the Clouds.

Discussion of the age calibration of the Searle, Wilkinson and Bagnuolo photometric classification scheme for the integrated light properties of Magellanic Cloud star clusters recurred frequently throughout the meeting (Searle, Hodge, Flower, Aaronson, Mould, Stryker, Nemec, Graham, etc.). Concern was expressed by some that systematic errors may affect presently available calibrations, and/or that some inconsistencies may exist between ages inferred from C-star and HR-diagram studies. The beneficial impact of CCD detectors (in operation at CTIO for less than a year before this meeting) on star cluster studies was very much in evidence at the meeting (Stryker and her DAO collaborators, Mould, Rich, etc.). Main-sequence turnoffs at $V \approx 22.3$ of the oldest clusters ($\sim 15 \times 10^9$ yrs) have now been measured. A strong burst of field star and cluster formation a few billion years ago emphasizes the very different star formation scenarios apparently applicable to the Clouds and the Galaxy, respectively (Stryker, Lequeux, etc.).

Surveys for Cepheids are still very incomplete in the Clouds, which may compromise comparisons between Galactic and Cloud P-L and P-L-C relations. Reddening corrections for Cloud Cepheids continue to be controversial, but I sensed a consensus developing for low values (≤ 0.05 mag); fortunately many are working on this and related Cepheid problems, so the remaining disagreements may be clarified by the time of the Toronto

Symposium (Feast, Laney, McNamara, Israel, Stiff, etc.). The Galactic and LMC luminous star populations were shown to be remarkably similar, implying that massive star evolution has been very similar in the two galaxies. A rather tight upper boundary to the luminosities of the brightest red supergiants in late-type galaxies has emerged in recent years; it covers ~ 6 mag of galaxy luminosity and is becoming a popular (and controversial!) extragalactic distance indicator (Humphreys). Blanco and McCarthy's extensive CTIO surveys for C and M stars in the Clouds continue to spawn many exciting follow-up programmes of great interest both for stellar physics and chemical evolution studies in the Clouds. IR photometry and spectroscopy of red stars in the Clouds, as well as of Cepheids, seem to be raising new questions nearly as fast as they answer old ones (Aaranson, Mould, Bessell, Wood, Lloyd Evans, Welch, Madore, etc.).

An 843 MHz continuum survey at Molonglo (Mills, Turtle) is providing a wealth of new data on Cloud supernova remnants, which seem to be expanding very rapidly. Current estimates of the supernova rate place it at 4 per century in the Galaxy and 1 per century in the Clouds. Comparisons of SNR populations suggest that $d(\text{SMC})=60$ kpc, $d(\text{LMC})=44$ kpc and $d(\text{Galactic centre})=7.2$ kpc. Much new optical and uv spectroscopic work was reviewed as well (Dopita). A Parkes survey for HI (Mathewson, Ford) in the Clouds has revealed double profiles in the SMC, thereby leading to the suggestion that the SMC is actually two galaxies (since some of us have subsequently read about this in the Victoria Times-Colonist it must be true!). R136a was extensively discussed (Walborn, Schmidt-Kaler, Feitzinger, Chu, Savage, Seggewiss, etc.). The arguments for it being a cluster of massive stars (rather than a single supermassive one) convinced me. Even if it isn't a single $\sim 2000 M_{\odot}$ star, it is most certainly a highly unusual object whose properties will brighten many an astronomical meeting in coming years.

Detailed abundance studies for several dozen Cloud HII regions show significant depletions of He, C, N, O, Ne, Mg, Si, S and Cl relative to Galactic HII regions (Dufour, Peimbert, Dottori, etc.). The experts left me with the impression that it is still not clear whether N is largely a primary or secondary element in gassy irregular galaxies. Radio and IR studies concur that the Clouds are gas-rich, dust-deficient galaxies and that they lack the giant molecular clouds common in the Galaxy (Israel, Koorneef, Rubio, Cohen, Montani, Lequeux, Clayton, etc.). CO seems to be destroyed more readily in the Clouds than in the Galaxy; and since the CO/H₂ ratio seems to be different in the Clouds, the use of CO to estimate H₂ will require careful calibration.

The above remarks represent a very personal selection of a few of the scientific results discussed at the meeting. The proceedings (edited by Sidney van den Bergh and Klaas de Boer) will appear in February and promise, as a result of the format adopted for the meeting, to have great impact on Cloud research in the coming years.

Bart Bok's lamentable passing only a few weeks before I.A.U. 108 cast an inevitable pall on the meeting, and deprived us of the wisdom and humour of the strongest advocate of Magellanic Cloud research. It is entirely

appropriate that the Symposium volume will be dedicated to him. For me it was also sad that recently retired Ben Gascoigne, the earliest practitioner of precise faint-star photometry in Cloud clusters, was unable to attend and witness how the field he pioneered is flourishing.

The local and scientific organizers of the Symposium did a highly commendable job, and we all hope that the follow-on meeting will occur in much less time than the 13 years that separated this meeting from the last one on the Clouds. (The LOC of the next meeting should consider asking Manuel Peimbert and Mike Dopita to repeat their excellent impromptu renditions of Mexican and Irish songs at their banquet, too!) It was certainly evident at I.A.U. 108 that the half dozen or so years since the 4-m class telescopes became fully operational in the South have produced enormous advances in our understanding of the Clouds. The impact of smaller space borne instruments (IUE, Einstein, etc.) on Cloud research was equally in evidence, with the expectation that the IRAS results soon to emerge would mark another major advance. The community's eagerness to turn the Space Telescope towards the Clouds was palpable, as was a growing awareness of the fundamental role that Starlab could play in the decoding of these extragalactic Rosetta Stones.

James E. Hesser
Dominion Astrophysical Observatory

POSTDOCTORAL POSITION ASTRONOMY

The Astrophysics Laboratory of Laval University invites application for a postdoctoral position open immediately. There will be an annual contract normally renewable for a second year. Salary is \$20,000.00. Our home facility is a modern 1.60-meter telescope located at Mt-Megantic, 100 miles from Québec City. As member of the Canadian Astronomical Community we have access to the 3.6 m CFH telescope located on Mauna Kea, Hawaii. There is no restriction to the area of interest and theoreticians as well as radio astronomers are invited to apply. Please send a letter of application, statement of research interest, curriculum vitae and three letters of reference to: Dr. E.F. Borra, Département de physique, Faculté des sciences et de génie, Université Laval, Québec G1K 7P4, Canada. Tel. (418) 656-7405.

VAINU BAPPU MEMORIAL AWARD

At its eighth meeting in Gorakhpur, the Astronomical Society of India resolved to institute an award in the memory of Professor M.K. Vainu Bappu. The award will consist of a BAPPU MEMORIAL GOLD MEDAL to be given to an outstanding and internationally reputed astronomer or astrophysicist. The recipient of the award will be invited to attend a meeting of the Astronomical Society of India and to deliver a BAPPU MEMORIAL LECTURE on the subject of his research.

VAINU BAPPU MEMORIAL ENDOWMENT FUND

To meet the expenses of the Vainu Bappu Memorial Award the Astronomical Society of India has instituted a fund called the VAINU BAPPU MEMORIAL ENDOWMENT FUND and has constituted a fund raising committee as under :

J. V. Narlikar (Chairman)
 A. Bhatnagar (Secretary)
 J. C. Bhattacharyya
 R. R. Daniel
 S. P. Pandya

Professor M.G.K. Menon, Member, Planning Commission of the Government of India has agreed to be the Patron of the Fund.

Friends, students, admirers and colleagues of Professor Vainu Bappu as well as institutions and organizations interested in the promotion of astronomy and astrophysics who may wish to donate to this fund are requested to send their contributions to

The Treasurer
 Astronomical Society of India
 Astronomy Department
 Osmania University
 Hyderabad 500 007 India

Cheques etc. may be drawn in favour of the **Astronomical Society of India's Vainu Bappu Memorial Endowment Fund**. Efforts are being made to obtain tax exemption, under the Indian Income-tax rules, for contributions made to this Fund.

TABLE OF CONTENTS

Cepheid Colloquium	2
CAS Ottawa AGM	3
ACA Meeting Report	R. D'Avoust 4
IAU Symposium 105	D.A. Vandenberg 7
IAU Symposium 108	J.E. Hesser 9
PDF Position at Laval	11
Vainu Bappu Memorial Award	12