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GEMINI UPDATE

TO: Canadian Astronomers

On November 13, 1991 NRC Council devoted almost two hours of its meeting to the issue of Canadian involvement in GEMINI, the proposed U. S., U. K., Canada consortium to build twin 8m telescopes - one in each hemisphere. At this meeting several representatives of the astronomical community made brief presentations addressing this topic. Gordon Walker as head of the Canadian Steering Committee spoke about the GEMINI project and the science it will produce, Gretchen Harris summarized the report of the Astronomy Priorities and Planning Committee, Russ Taylor described radio astronomy in Canada and internationally - both present and future, and Jean-René Roy discussed optical/infrared astronomy in the CFHT era and beyond. Vice-President for Science Clive Willis spoke first and last, outlining the current NRC proposal for involvement in GEMINI and the feasibility of a 15% Canadian share.

Also present was Nigel Lloyd, NSERC Director General for Research Grants, who summarized the current situation at NSERC. Present from HIA were Don Morton (Director General), Bryan Andrew (Radio Astronomy and Spectroscopy Section), and Jim Hesser (DAO).

Following the presentations council members were given the opportunity to ask questions of the astronomers present. During this period President Perron and Vice-President Willis were extremely valuable in clarifying NRC's commitment to the project and its feasibility.

The Council then met in camera and immediately afterward President Perron informed us that NRC was in support of Canadian involvement in GEMINI as presented and given the necessary support from both WESTAR and NSERC.

GRETCHEN HARRIS
JEAN RENÉ ROY
RUSS TAYLOR
GORDON WALKER

LE CNRC ANNONCE SON APPUI AU PROJET GEMINI

Le Conseil national de recherches (CNRC) a annoncé aujourd'hui qu'il apporterait son appui à la participation canadienne au projet Gemini. Il s'agit d'un projet majeur de collaboration internationale ayant pour objectif la construction d'observatoires astronomiques de nouvelle génération.

En approuvant la participation du CNRC au projet Gemini, le Conseil reconnaît à la fois l'excellence scientifique et le potentiel de recherche que ce projet représente pour la communauté astronomique canadienne.

"La décision prise par le Conseil reflète l'importance majeure que la communauté astronomique canadienne accorde à ce projet, et elle tient compte de cette importance d'une façon financièrement responsable", a déclaré le Dr. Perron en annonçant la nouvelle.

Le projet Gemini prévoit la construction de deux télescopes identiques de 8 mètres au sein d'observatoires astronomiques situés sur des sites de choix, à Hawaï et au Chili. Les télescopes de 8 mètres feront intervenir de nouvelles technologies qui auront une incidence révolutionnaire sur la recherche astronomique menée à partir d'observatoires terrestres; ces télescopes seront au

cœur des travaux de recherche astronomique du XXI^e siècle.

En vertu du plan approuvé par le Conseil, le CNRC, le CRSNG et Westar fourniraient le soutien financier requis pour assurer au Canada une participation de 15% à ce projet international. L'approbation définitive dépendra d'un certain nombre de conditions telles que la confirmation des fonds détenus en fiducie par le conseil de Westar pour des besoins en matière d'astronomie, l'approbation de la participation du CRSNG par son Conseil d'administration au mois de janvier 1992 et les approbations pertinentes du Conseil du Trésor.

Le plan prévoit aussi qu'une partie du budget dont dispose le CNRC dans le domaine de l'astronomie sera réaffectée au projet en question sur une période de dix ans.

La décision du Conseil est l'aboutissement d'études et de consultations étendues menées auprès de la communauté astronomique canadienne et de ses partenaires internationaux.

DONALD C. MORTON
14 nov 91

NRC ANNOUNCES SUPPORT FOR GEMINI PROJECT

The National Research Council (NRC) today announced its support for Canadian participation in the Gemini Telescope Project, a major international collaboration to construct the next generation of astronomical observatories.

In approving NRC participation, the Council recognized the Gemini Project as being an excellent scientific project which offers significant opportunities for the Canadian astronomical community.

"The Council's decision recognises the priority placed on this Project by the astronomy community", said Dr. Perron in announcing the decision, "and responds to that priority in a fiscally responsible way."

The Gemini Telescope Project is a proposal to construct twin 8-metre telescopes in astronomical observatories at prime sites in Hawaii and Chile, in collaboration with the U.S. and U.K. The 8-metre telescopes would employ new technologies that will dramatically enhance

ground-based astronomical research and will be the focus for the field in the 21st Century.

Under the plan approved by Council, NRC, NSERC and Westar would provide the funding required to allow Canada to have a 15% share in this international project. Final approval will depend on a number of conditions, including confirmation of the funds held in trust for astronomy by the Westar Board, approval of NSERC's participation by its governing Council in January 1992, and appropriate approvals by Treasury Board.

The plan also calls for NRC to reallocate a portion of its astronomy budget to the Project over the next decade.

Council's decision follows extensive studies and consultations with the Canadian astronomical community and its international partners.

DONALD C. MORTON
14 Nov 91

RADIO SCHMIDT TELESCOPE WORKSHOP PROCEEDINGS

The Dominion Radio Astrophysical Observatory has now published the Proceedings of the Workshop on the Radio Schmidt Telescope. The Workshop was held in Penticton in October 1989; it attracted seventy scientists and engineers from eight countries. The volume of Proceedings contains twenty-nine articles, many of which outline exciting new astronomical opportunities which could be available with an instrument based on this concept.

The emphasis of the meeting was to highlight some of the "big-picture" questions in current astronomy which might be answered with the Radio Schmidt Telescope, to outline the areas of science in which it would play a significant role, and to discuss the interplay between the design parameters and the scientific objectives.

The concept of the Radio Schmidt Telescope is to attack the frontier of low-brightness astronomy using a powerful new aperture synthesis telescope that can image low surface-brightness, extended structures over wide fields of sky in the centimetre and decimetre range of wavelength. Such an instrument can combine the sensitivity to surface brightness of a large, single-antenna telescope with the angular resolution available only from

a synthesis telescope. It is also a rapid imaging instrument for bright objects, capable of very high dynamic range.

Altogether, the Proceedings amount to a 300-page volume. Copies were distributed to CASCA members at the Annual General Meeting in Toronto in June 1991, and copies were sent out by mail in October.

We tried to be sure that we did not mail out a second copy to anyone who had picked up one in Toronto. However, in our zeal to avoid duplication, we may have inadvertently left somebody off the mailing list who would really like to have a copy of the Proceedings.

If this describes you, please let me know.

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SCFHT - SCIENTIFIC ADVISORY COUNCIL

The Scientific Advisory Council held its 40th meeting, on October 31 and November 1st 1991, at the Headquarters of the CFHT Corporation in Waimea, Hawaii. The SAC members present were Chantal BALKOWSKI (vice-chairman), Georges COMTE, David CRAMPTON, Paul FELENBOK, George HERBIG, Klaus HODDAPP, Christopher PRITCHET, Daniel ROUAN and Jean-René ROY (chairman). Daniel NADEAU was unable to attend this meeting. The Corporation was represented by its Executive Directors, Guy MONNET and John GLASPEY.

INTRODUCTION

The CFHT is entering a period of new and exciting developments. The year of 1992 will see the coming into operation of three new instruments: MOS/SIS, coude f/4 spectrograph and the infrared 1 - 2.5 μ imaging facility. Furthermore, with the approval of funding for 3rd generation instruments, the Corporation has taken a strong leadership to provide our communities with a Mark I version of an adaptive optics system before the end of 1994. This is a major project in which several researchers will be directly involved. A Third CFHT Users' Conference will be held in Victoria next May; this will be an extraordinary opportunity for the members of the three CFHT communities to plan for the future and enter the challenging era of 4-m telescope *versus* 8-10 m class telescopes. Very crucial choices are to be made. With imagination and commitment, the users can guarantee that the coming 10 years will be a scientific "golden age" for the CFHT.

1 - REPORT ON SCIENTIFIC AND TECHNICAL ACTIVITIES

1.1 OBSERVING STATISTICS AND THE SOLAR ECLIPSE OF JULY 1991

The executive directors, Guy MONNET and John GLASPEY, presented the observing statistics for the second semester of 1991 (1991 II), and gave a review of the activities for the past six months.

During the second semester (1991 II), the CFHT telescope has been scheduled for scientific use on 146 nights out of a total of 165 nights (88.5%) and 19 engineering nights (4.5%). Sixty-two different scientific programs were scheduled, including 9 director's discretionary nights. The engineering time included a shutdown of 10 nights in July, during which multiple objectives were achieved with many parallel activities: repair of dome shutter brakes, drives and guide wheels; re-aluminizing of primary mirror; removal, refurbishing, cleaning, recabling and reinstallation of the Cassegrain environment, a

job never done since the original installation; replacement of prime focus access cage; stiffening, cleaning, repair and adjustment of the primary mirror axial support regulation system; replacement of the dome crane; painting of the interior of the central caisson and of the tops of the primary mirror covers.

Jerry SOVKA reported on the total solar eclipse experiments conducted at CFHT on July 11, 1991. Serge KOUTCHMY of the Institut d'Astrophysique, Paris, and a large team had a program on "Prominence and Coronal Fine Structure" using, at prime focus of the CFHT, a special wide-field aerial surveillance camera yielding 228 x 228 mm² photographs every 1.6 s. Philippe LAMY (Laboratoire d'Astronomie Spatiale, Marseille) and his team ran a program from the ground floor on "Wide field Infrared Intensity and Polarization Observations of the Solar Corona" using a new infrared detector. The experiments are reported to have been a success. Although the observations of the total solar eclipse with the CFHT 3.6 m presented some challenges, and despite the dust haze from the Pinatubo volcano, high altitude cirrus and nearby rolling fog, conditions turned out to be reasonably good at totality. We are now waiting for the results!

1.2 SUMMIT NETWORKING AND TELESCOPE CONTROL SYSTEM

The Mauna Kea summit fiber optic data communication network has been installed by the University of Hawaii. This is currently being used as a link from the CFHT office at Hale Pohaku, where an X-window terminal and a printer have been installed; this terminal provides network access to the computers and instruments at the summit, and to CFHT data reduction facilities in Waimea.

1.3 TELESCOPE AND INSTRUMENTS

The f/35 infrared mirror has been received and installed in its upper end. To improve safety, both for the telescope and personnel, a series of hardware and procedural changes will be implemented over the next few months. The status of CCDs available at CFHT has evolved considerably during 1991, and the Corporation is studying ways of making sure that the users have the latest information to prepare their observing proposals and observing programs.

The new generation III CCD controllers using the UCSD digital signal processor based control boards have been used successfully for engineering tests. This new system will be in regular use before the end of 1992.

The DAO HRCam continues to provide excellent imaging data. The quadrant detector unit has been replaced by an array of avalanche photodiodes; this has had the

effect of extending the sensitivity of the rapid guiding system by about two magnitudes, *i.e.* to as faint as $V \approx 19.2$.

The UBC HF cell, used on the f/8.2 coudé spectrograph, has been moved into its own well-ventilated laboratory, providing a safer environment.

The data archiving project, done in collaboration with the Canadian Astronomical Data Center at DAO, is approaching official startup on 1992 January 1st. Initially, data from only FOCAM, HRcam, the Herzberg spectrograph and the FTS will be included in the archive, although MOS/SIS and coudé f/4 data will be added as soon as these instruments are commissioned.

The MOS/SIS is rapidly approaching completion. All major components are at DAO, and the acceptance test on the MOS assembly have been carried out showing very good results. The only major setback has been the very poor optical performance of the MOS f/2.8 camera. New optics are being made in Canada, and are to be delivered before the end of 1991. Delivery of the instrument at CFHT is expected in January 1992. First tests on the sky have been scheduled in April 1992.

The coudé f/4 spectrograph is also progressing well. Acceptance tests will probably occur in December. Extensive work is under way in the coudé room in preparation for installation. The first tests on the sky are scheduled in May 1992.

1.4 THE CFHT INFRARED CAMERA

The building of the IR camera facility at CFHT is moving swiftly. Two cameras are being built to insure full reliability of this new powerful imaging facility. The only difference between the two cameras is the optics that they house - one will have 0.7:1.0 reimaging optics and the other will house 1.7:1.0 optics; this will allow a "high" and a "low" resolution mode. Summit operations will be greatly simplified by having two complete cameras available at all times and hardware redundancy will be greatly increased. The optical design is now based on using LiF/BaF₂ and will maximize performances; anti-reflection coatings will produce a throughput of $\sim 94\%$. Fabrication of two identical dewars has started. An engineering grade NICMOS 3 device from Rockwell should arrive at CFHT in November 1991 allowing tests to be run on the controller. The science grade chip should be received in the first few months of 1992. The total budget for the cameras is US\$300,000, 1/6 of this budget representing the amount for having a second camera. CFHT plans to run the first tests on the sky in June 1992. Assuming that all goes well, the release of the camera for general use, could take place in October 1992, perhaps on a share-risk basis.

2 - PROGRAM OF IMPROVED AND NEW IMAGERY AT CFHT

2.1 The CFHT Adaptive Optics Bonette

The Adaptive Optics Working Group (AOWG) met for the second time in Waimea on October 28 - 29, 1991 to investigate and define technical options best suited to achieve the scientific goals for such a system, to decide upon ways and strategies of building the Adaptive Optics Bonette (AOB) and to set a calendar for complementary studies and definition of contracts.

The working group has been able to come to an agreement on the selection of the key components of an adaptive optics system. The Corporation is proceeding carefully with the AOB project in a context of tight manpower resources and budgetary constraints. More than any project in the history of CFHT, the Adaptive Optics project involves an unusually high degree of R & D. Therefore, very close communications between the engineers and the scientists involved in this major project are a guarantee for success.

For the first-generation AO bonette, the AOWG proposes a baseline solution which provides correction of the first 15 Zernike modes, and should produce stellar images with a median Strehl angle better than 0.2, at least at red and near infrared wavelengths. To anticipate the development of new technology, some parts of the system must be oversized so that future upgrades can be easily implemented to yield a second-generation system with even better performances.

The wavefront sensor would use the *curvature sensing* technique (which is preferred over slope sensing because it requires much fewer detectors) with 19 avalanche photodiodes (ADP). The deformable mirror would be a 52 *actuator piezoelectric transducer (PZT) mirror*. This widely used option is preferred over that of a *bimorph mirror* because the latter technique is still in development. The number of actuators is much larger than the number of detectors (52 compared to 19) in order to anticipate new development in wavefront sensing. Since PZT mirrors cannot handle tip-tilt correction, there will be a separate tip-tilt mirror in the bench. A set of interchangeable beam splitters with different characteristics will be available to accommodate various programs. The need for a modular design at the levels of the deformable mirror, WFS, detector and control is emphasized. A preliminary optical layout based on H. Richardson's 6-mirror design folding optics, with f/35 input and f/45 output, has been selected by the AOWG. Further design study is being conducted to arrive at a more compact and versatile optical design.

The AOWG studied the possibility of having a single system delivering both an f/45 beam with a 1.5 field of view, and a f/10 beam with a 4.0 field of view. Various

difficulties indicate that this is at present an unlikely solution because of severe degradation of performance. It is difficult to see whether the planned AO bonette will be able to correct for all the static aberrations of the telescope. For this reason, the Corporation will make sure that these aberrations be measured and understood to assist in finalizing the design of the AO bonette. The optical design could be pushed further to clarify what the real performance trade-offs in going to f/8 rather than f/36 would be; the choice of focus impacts on the scientific versatility of the adaptive optics system. Should it turn out that only an f/35 (input) system is feasible, SAC has suggested that the adaptive optics output be f/20, and that a *second output* (uncorrected) at f/10 be provided to be used for direct *wide field* imaging **under poor seeing conditions**. One implication of this is that the atmospheric dispersion corrector should then be designed to accommodate at least a 5' field.

Additional studies in progress include a Fastie-Ebert optical design to make the AO bonette more compact, the control of 52 actuators with 19 wavefront sensing points (OPM, LASERDOT), and the evaluation of optomechanical tolerances for the beam-splitter unit (DAO). Final specifications are expected to be completed in the next few weeks in order to have a definition of contracts in early 1992. The overall management will be done at CFHT, with Robin ARSENAULT and Guy MONNET becoming project scientists in replacement of Jérôme Bouvier, who will be leaving CFHT very shortly.

2.2 UPGRADE OF f/8 FOCUSING UNIT

Upgrading the quality and reliability of the f/8 Cassegrain focus is a high priority for optimizing the performances of MOS/SIS and other f/8 instruments. Detailed plans for improvements were presented to SAC. The existing outer ring and spiders would be kept. However there would be a completely new internal structure. The motion along the z axis would be limited to about ± 18 mm (current is 120 mm!); this would permit the removal of the moving counterweight. Positioning accuracy, stability and alignment would be greatly improved. The focus movement structure would be designed around a single driving central shaft. The present f/8 focus uses three focus shafts to move the mirror; differential motions in these aging units have made the system unreliable and difficult to use, especially in the context of the much improved image quality delivered at the focal plane.

2.3 UPGRADE OF THE f/36 UPPER END

General plans were also presented for a complete refurbishing of the infrared upper end. The existing upper end has severe shortcomings which must be corrected in order to make the focus fully reliable for its increased use for imagery. A new Cassegrain mirror of excellent quality is now in place, but the mechanical structure must be

improved. The Corporation proposes, first, to strengthen the structural characteristics to reduce the bulk motions as a function of zenith angle, and to suppress resonances. It is also necessary to provide a capability to collimate the secondary mirror, and to improve slow motion focus procedures. Plans were also presented to explore various designs for tip-tilt capabilities which would involve a new upper end and include a chopping capability. However this must remain, for the present, a low priority because these implementations would mean major new investments of resources, and would also presume that thermal infrared imaging capabilities are within present scientific priorities. SAC suggests that this option must be discussed more fully in the communities, especially at the Third CFHT Users' Conference next year.

3 - LARGE CCDs AND MOSAICS OF CCDs

Although the Corporation owns a wide selection of CCD cameras of different sizes and characteristics, there is continuous pressure to have, on the various instruments, the best performing devices existing in the world to fully optimize the throughput of the telescope-detector system. In addition to maintaining the smallest set of the most performing devices, the Corporation must watch for two obvious trends: (1) the increasing availability of **thinned** CCDs with high blue-UV response, and (2) the development of large-size detectors constructed by assembling several CCDs together to create a mosaic of CCDs.

3.1 LARGE THINNED CCDs

The imaging quality of CFHT makes our telescope a powerful tool to explore faint objects by direct imaging or spectroscopy. However, for certain of these programs, the CFHT may not yet be performing as some other 4-m class telescopes located at poorer sites but equipped with CCDs having very efficient spectral response below 5000 Å. Therefore, the acquisition of a large 1K x 1K thinned UV coated chip remains of utmost importance to fully exploit the fine imaging capability of CFHT. Such a device would replace several of the CCDs presently used at CFHT. The expected characteristics of a thinned chip would be pixels of about 18 μ , a readout noise of $\leq 10 e_{rms}$, and $\eta \geq 50\%$ at 3500 Å. This detector could also be used for all spectroscopic work, including coude spectroscopy in the UV.

3.2 A CCD MOSAIC CAMERA

Wide field work has been a traditional approach to several astrophysical research programs, *e.g.* surveys of stars or galaxies. Up to very recently, this type of work was done with photographic plates. Nowadays large CCDs have become very efficient tools, especially if one puts several together to create a mosaic of CCDs. Although there are at present no immediate plans, nor resources, to acquire such a mosaic, the Corporation has conducted

a study of mosaics of CCDs for long-term planning purposes. Indeed there is a wide interest for such a large-field detector in the three communities; this is also certainly a unique window where 4-m class telescope will be able to compete with 8m-10m telescopes. The evaluation and the specifications of a possible CFHT mosaic of CCDs are presented in the report "A CCD Mosaic Camera for CFHT" by R. ARSENAULT, R. McGONEGAL, C. CLARK and J. KERR. This team has produced an excellent, thorough study which includes specifications for an ideal CFHT system, several possible chip configurations, manpower requirements, impact on CFHT as well as a budget; a 4K x 4K mosaic would cost US \$520,000 including a new FOCAM. It is clear that even the smaller mosaic is a complex device. It is important to note that most of the present CFHT instruments could NOT make use of such a large detector which would have a size between 60 mm to 100 mm according to pixel size. Only the new coude f/4 spectrograph could make use of a detector up to 60 mm long. A completely new FOCAM (with a capability for tilting filters) would need to be built and new sets of larger filters would need to be purchased.

SAC sees the long term future of a mosaic as the prime detector of a new wide field camera; this new camera could include some low order correction capable of ~ 0."25 resolution over a wide field and covering a broad spectral range. This wide-field camera could be similar to HRCam II proposed by R. RACINE & R. McCLURE (1991). It would be a powerful complement to the full-fledged AO system now being built at CFHT, and whose ultimate resolution will be higher but over a smaller field of view.

SAC strongly encourages initiatives between the Corporation and the three CFHT communities to bring to the telescope any of the mosaics presently built as a visitor instrument. Furthermore, because of critical impact on the interface with the CFHT control and data acquisition system, any development of a mosaic by groups in Canada, France or Hawaii should be carried out in close consultation with CFHT.

4 - THIRD CFHT USERS' CONFERENCE

The Third CFHT Users' Conference will be held in Victoria, Canada, on 4, 5 and 6 May 1992. The organizing committee members are: C. PRITCHET, D. NADEAU, C. BALKOWSKI, D. ROUAN, K. HODDAPP and T. DAVIDGE.

Considering the long delays between conception of new instruments, approval and funding, and the completion of all building phases, it is time to plan for the 4th genera-

tion of instruments for CFHT. This is one of the goals of the conference. The main scientific results obtained since the previous meeting and the major engineering works performed at CFHT will also be reviewed. Then an overview of the future scientific programs of the three communities will be attempted. We will see in the coming years, especially at the end of the decade, the coming into operation of several 8m to 10m telescopes. A reflexion on the place of a 3.6m telescope has to begin in order to identify the best "créneau" for the CFHT. Similar comparisons have to be done with space capabilities. Which science will be done better with a 3.6m? Can we make CFHT more efficient with a new way of scheduling the telescope? Key programs? Service observing? Queue scheduling? Remote observing? Several discussions have already taken place during recent SAC meetings on adaptive optics, large field imaging, infrared imaging and spectroscopy. It is important that potential scientific programs be defined at the Users' meeting.

In order to limit the number of oral contributions, but to encourage the participants to show their recent results, SAC plans a poster session. Recent instruments and engineering activities will also have special presentations. A preliminary agenda for the meeting is given as an **Appendix** to this document. SAC is considering the possibility of publishing the Proceedings of the conference in some form.

5 - SAC RENEWAL

George HERBIG (University of Hawaii), Paul FELENBOK (Observatoire de Meudon), David CRAMPTON (Dominion Astrophysical Observatory) and Jean-René ROY (Université Laval) have completed their 4-year term on SAC, and Georges COMTE (Observatoire de Marseille) finishes a two-year term as replacement for Laurent VIGROUX. The departing members are being replaced by the French new members Yannick MELLIER (Observatoire de Toulouse) and Nicolas MOROND (Centre d'Etude Spatiale des Rayonnements - Toulouse), and by the Canadian new members Harvey RICHER (University of British Columbia) and Michael de ROBERTIS (York University). Chantal BALKOWSKI will be chairman for the period of 1992-1993, and Christopher PRITCHET will be vice-chairman for 1992. The new U of H member was not known at the time of this writing. TAC members for 1992 will be Chantal BALKOWSKI, Daniel ROUAN, Daniel NADEAU, Christopher PRITCHET, and Klaus HODDAPP.

JEAN RENÉ ROY

THIRD CFHT USERS' CONFERENCE
Victoria B.C., Canada; May 4, 5 and 6 1992

Preliminary Agenda

The third CFHT Users' Meeting will be held in Victoria May 4th through 6th, 1992. The primary focus of the meeting will be on the science that CFHT is expected to produce in the next decade, and on new instrumentation that is required to support this science.

Introduction by SAC; purpose of the meeting

1. RECENT SCIENTIFIC AND ENGINEERING ACTIVITIES AT CFHT
 - New scientific highlights
 - Recent major engineering activities
2. CFHT: HORIZON 2000
 - CFHT *versus* other 4m and 8m class telescopes
 - CFHT *versus* space observatories
 - Horizon 2000: specialization of the telescope
 - Panel discussion
3. ADAPTIVE OPTICS AND HIGH RESOLUTION IMAGERY AT CFHT
 - Science with adaptive optics
 - The CFHT Adaptive Optics Project
 - HRCam II
4. LARGE FIELD OBSERVATIONS AT CFHT
 - Science with large field imagery
 - Mosaics of CCDs
 - Drift scan imaging
 - Science with wide field spectroscopy
 - Wide field fiber optic spectroscopy
5. FUTURE OF INFRARED IMAGING AND SPECTROSCOPY AT CFHT
 - Science with infrared detectors
 - OSIRIS
 - Science in the thermal infrared
6. FUTURE SCHEDULING OF THE TELESCOPE
 - "Key Programs" at CFHT
 - Service observing, queue scheduling, remote observing at CFHT
 - Panel discussion
7. GENERAL DISCUSSION ON THE FUTURE OF CFHT
 - What are the scientific windows of opportunities in the next five and ten years?
 - What are the priorities for the 4th generation of instruments?

Past Users' Meetings have played an important role in defining the direction in which CFHT is evolving, and we expect this meeting to be no exception.

Further information on this meeting will be available in mid-January, at which time all CASCA members will receive a "first" announcement by e-mail. For more information please contact:

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A small amount of money will be available from HIA for partial assistance to CFHT users from Canadian institutions, who cannot cover their travel costs from an NSERC grant. Please apply to Don Morton at Internet DCM@HIARAS.HIA.NRC.CA by 1992 March 13.

CFHT Time Assignment Committee Report

STATISTICS

Statistics relating to the requested number of CFHT nights and instruments for the first semester of 1992 are given below, compared to similar numbers for the previ-

ous two semesters for Canada and France. The 66 proposals for the current competition should also be compared to the 40 received for the 90I and 43 for the 90II semesters.

Semester	Canadian No. of nights						French No. of nights **					
	92I		91II		91I		92I		91II		91I	
Instrument												
Marlin	9	30	11	41	8	30	3	12	-	-	7	22
Focam	22	71	11	30	12	40	3	6	4	16	3	14
HRCam	11	42	11	29	10	35	1	3	2	5	2	8
FTS	3	12	7	24	6	26	5	18	9	29	10	41
Herzberg	4	15	8	23	5	17	4	15	6	19	2	7
CIRCUS	-	-	3	12	-	-	5	13	11	29	11	31
MONICA	10	40										
Coudé	2	8	3	12	11	46	2	8	2	9	6	25
Palila	6	19	3	7	1	4	1	2	2	5	1	5
Tiger	-	-	-	-	1	3	5	18	7	17	6	14
C10u			-	-	-	-	7	19	5	15		
Silfid							4	9				
Other	-	-	2	9	2	6			5	23	11	32
Totals	66	237	55	185	55	207	40	123	53	167	60	200

** Number of proposals and number of nights requested (The numbers may not always add up: some proposals ask for more than one instrument.)

For the 92I semester, the Canadian share was 66 nights, so the oversubscription factor is 3.7. Another way of looking at this is that only 38 of the 144 dark nights requested could be scheduled. The 92I semester was unusual in that the demand for bright time (or as the french say, pas de contraintes) was almost equal to the demand for dark time, due to appearance of MONICA. Note that there is still a big difference between France and Canada in terms of popularity of instruments. For example, Canadians asked for 113 nights for FOCAM and HRCam; French astronomers requested only 9 for these instruments.

MEMBERSHIP

The CTAC membership for 1992 will be as follows: D. Nadeau (chairperson and TAC member), C. Pritchett (TAC member), R. McClure, H. Yee, S. Rucinski and R. Pudritz.

REVIEW PROCESS

As the outgoing chairperson, I would like to thank all those that took the time to respond to our urgent requests

for good, thoughtful reviews of the proposals. In order to give you some appreciation of the reviewing process which is often quite hectic, extracts of a letter to new CTAC members follows:

"CTAC members are appointed by the NRC through the office of the Director of the Herzberg Institute for Astrophysics. Committee membership is recommended by the HIA Advisory Board. In practice, we are accountable to the membership of CASCA and, traditionally, the activities of CTAC have been reported at the Annual General Meeting.

The current procedures are as follows:

1. Through consultation, each proposal is allocated to one CTAC member by the CTAC chairman. This selection is complicated by several factors: the CTAC member should not be at the same institution as the proposers, we try to assign repeat proposals to a different member each semester, and we try to distribute the load evenly among CTAC members. Although ALL proposals are

read by ALL CTAC members, the CTAC "sponsor" is expected to read his/her proposal more carefully, suggest referees for the proposal, lead the discussion on the proposal during the actual CTAC meeting, and prepare a written summary of the discussion that will be sent to the proposer along with the referee reports.

2. The CTAC chairman consults with the members (by e-mail) to generate a list of referees for each proposal. Two referees are generally used at present. The referees are drawn from the CFHT user community in so far as that is feasible. Selection of referees tends to get quite complicated - no more than two proposals per referee, different referees than last time, different institutions from proposers, etc. Note that the referees' comments are discussed at the CTAC meeting but they are not assigned a formal grade; the ranking is derived entirely from the grades assigned by CTAC members.

3. The referees' names are submitted to the HIA office and the appropriate letters and forms are mailed from there. This step is usually completed within two weeks or so of the application deadline.

4. The referees' reports are circulated to the CTAC members as they are received in the HIA office - often by E-mail and by courier. This is the most time-consuming part of the process.

5. In the meantime, CTAC members read all the proposals and assign preliminary grades. Just prior to the CTAC meeting, the grades are sent to the CTAC chairperson so that averages and dispersions can be computed. The grades are allocated as follows: 1.0 = Nobel prize category, 2: should be scheduled if at all possible, 3: should be scheduled if time available, 4: should not be scheduled. A one-decimal system is currently used by CTAC members, and corrections are applied if there are any large differences among the average grades assigned by individual members.

6. CTAC meets a few weeks prior to the CFHT SAC/TAC meeting. All the proposals are dealt with in

turn, starting with a brief discussion by the CTAC sponsor. The referees' reports are also discussed at this time as well as any technical comments by the CFHT staff. The latter deal mostly with the limitations of the telescope and instrumentation.

After discussion, each committee member assigns a final grade to each proposal and average grades are recompiled. These are reviewed and 'A' and 'B' lists are formulated for TAC.

The 'A' list consists of the top ranked proposals and accounts for 70% of the available bright and dark time. This is used by the CFHT directors to lay out a preliminary block schedule for the semester.

The 'B' list is then generated. These are proposals for which it is not so urgent that they get time and may or may not be scheduled depending on what instruments are scheduled at what time, what other proposals there are from the other two user communities, etc. The 'B' list must provide a fair degree of flexibility for the TAC negotiators.

7. Finally, the CFHT directors make up a preliminary schedule based on the 'A' lists from each country. At the CFHT TAC meeting this overall schedule is critiqued and changed and the top 'B' list programs are slotted in where possible. It is important to note that no explicit scientific evaluations are performed in the TAC meeting; it is primarily a scheduling exercise. However, it is a negotiated agreement so tradeoffs can and must occur.

The CTAC spokesman for a given proposal is responsible for summarizing the discussion in a written form which can be communicated to the proposer along with the external referee reports."

That's it! Apologies for the lengthy description. Most of it was based on advice from the previous chairperson, Greg Fahlman. Happily, any questions should be addressed not to me, but to Daniel Nadeau!

DAVID CRAMPTON
CTAC

ALBERIC BOIVIN 1919-1991

Albéric Boivin, professeur émérite de la Faculté des Sciences et Génie de l'Université Laval, est décédé à Québec, le 8 août 1991, après quelques mois de maladie. Sa disparition met fin à l'une des carrières scientifiques les plus brillantes et les plus fécondes qu'ai connues le Canada français.

Né à la Baie St-Paul le 11 février 1919, Albéric Boivin, après la fin de ses études secondaires à Chicoutimi, s'inscrivait à la Faculté des Sciences de l'Université

Laval à l'automne de 1940 pour obtenir successivement les diplômes de bachelier ès sciences appliquées en Physique, de maître ès sciences et de docteur ès sciences. Immédiatement après son baccalauréat, il commençait à participer aux tâches d'enseignement, d'abord comme assistant, avant de devenir chargé de cours, puis professeur agrégé et finalement professeur titulaire en 1955.

C'est surtout comme chercheur en optique que monsieur Boivin s'est fait connaître. Véritable visionnaire

dans un domaine qui semblait assez peu prometteur au moment où il s'y est engagé, il a été le premier instigateur et la figure de proue du développement de cette discipline dans notre milieu. Ses premiers travaux théoriques sur la diffraction des ondes lumineuses, qui remontent à la fin des années quarante, ont constitué la première étape de ce développement. Ces études furent par la suite conjuguées avec les travaux sur les micro-ondes entrepris par d'autres membres du département, formant un noyau initial qui a grossi peu à peu pour devenir, vers le milieu des années soixante, un groupe de chercheurs compétents dans tous les domaines de l'optique et capables de participer activement au développement fulgurant que cette discipline a connu à partir de cette époque. Le groupe se donna alors une organisation formelle, et le professeur Boivin devint le directeur-fondateur du Laboratoire d'optique et d'hyperfréquences (LOH), devenu par la suite le Laboratoire de recherches en Optique et Laser (LROL), et connu maintenant sous le nom de Centre d'Optique, Photonique et Laser (COPL), ces changements de noms successifs reflétant l'évolution rapide de la discipline. Le professeur Boivin a dirigé une quinzaine de thèses de doctorat et un nombre égal de mémoires de maîtrise.

Le professeur Boivin est aussi à l'origine du développement à l'Université Laval d'un autre secteur important de l'enseignement et de la recherche, celui de l'astrophysique. Passionné d'astronomie dès son adolescence, il avait consacré une bonne partie de ses loisirs, au cours de ses années de collège, à l'étude du ciel et à la construction de télescopes. Pendant une dizaine d'années, de 1950 à 1960, il donna un cours d'Astronomie élémentaire au Collège universitaire Laval. Au département de Physique, il fut le leader du groupe de professeurs qui travaillèrent pendant longtemps à pro-

mouvoir l'implantation de ce nouveau champ d'étude et de recherche. Leurs efforts finirent par être couronnés de succès lorsque l'Université Laval décida, à la fin des années soixante, de construire un observatoire à St-Elzéar de Beauce. Inauguré en octobre 1971, ce petit observatoire servit pendant quelques années à des travaux de recherche. Depuis 1975, il est ouvert au grand public durant l'été, dans le cadre d'un programme d'initiation à l'astronomie populaire. La création de l'Observatoire du Mont Mégantic en 1975, opéré conjointement par l'Université de Montréal et l'Université Laval, fut le fruit d'une entente entre ces deux universités et le CNRC, suite à des négociations auxquelles le professeur Boivin participa activement comme représentant de l'Université Laval. L'ouverture de l'Observatoire du Mont Mégantic coïncida avec l'engagement au Département de physique d'un groupe d'astrophysiciens professionnels qui comprend actuellement cinq astronomes et une douzaine d'étudiants gradués. La mise sur pied de l'Observatoire du Mont Mégantic a certainement marqué le coup d'envoi d'un vigoureux groupe de recherche en astrophysique au Québec.

Le Professeur Boivin était membre de la Société Canadienne d'Astronomie depuis sa fondation. Déjà lauréat à deux reprises, en 1950 et 1954, du Prix de la Province de Québec pour les Sciences, il gagnait le Prix David en 1965. Boursier Guggenheim de l'Association Canadienne des Physiciens en 1969, il était élu membre de la Société Royale du Canada en 1978. En 1988, l'Université Laval lui décernait le titre de Professeur émérite.

FERNAND BONENFANT et JEAN RENÉ ROY
Université Laval

POSSIBILITE D'EMPLOI A L'UNIVERSITE DE MONTREAL

Le Département de physique de la Faculté des arts et des sciences de l'Université de Montréal sollicite des candidatures pour un poste de professeur pour son Groupe de recherche en astronomie et astrophysique. Ce groupe comprend actuellement dix professeurs et neuf autres scientifiques. Les membres du groupe poursuivent des recherches sur les aspects théoriques et d'observation de l'astronomie stellaire et extragalactique, y compris l'instrumentation. La personne retenue, de niveau professeur adjoint ou agrégé, devra poursuivre une carrière de recherche en astronomie stellaire ou extragalactique, détenir un Ph.D. d'une université reconnue, pouvoir travailler en français d'ici deux ans, enseigner aux trois cy-

cles et encadrer des étudiants de M.Sc. et Ph.D. L'entrée en fonction devrait avoir lieu le 1er juin 1992. Les personnes intéressées doivent soumettre leur curriculum vitae, des tirés-à-part de leurs plus récentes publications et s'assurer que trois lettres de recommandation soient envoyées directement, au plus tard le 1er avril 1992 au: Dr. Jean-Robert Derome, directeur, Département de physique, Université de Montréal, C.P. 6128, succursale A, Montréal (Québec), H3C 3J7. Conformément aux exigences prescrites en matière d'immigration au Canada, cette annonce s'adresse aux citoyens canadiens et aux résidents permanents.

**CANADIAN INSTITUTE FOR THEORETICAL ASTROPHYSICS/
INSTITUT CANADIEN D'ASTROPHYSIQUE THEORIQUE**

**UNDERGRADUATE SUMMER RESEARCH
AT CITA**

CITA is a national centre for research in theoretical astrophysics, located at the University of Toronto. We support excellent undergraduate students in physics or astronomy who are interested in working during the summer on a research problem in theoretical astrophysics. Active research areas at CITA include cosmology, galaxy, star and solar system formation, the interstellar medium, galactic structure, active galactic nuclei, stellar structure and evolution, high energy astrophysics, and celestial mechanics.

Most of our summer students are supported by NSERC undergraduate student research awards. Applicants for these awards must be Canadian citizens or permanent residents of Canada. The awards are tenable for a minimum of 3 months with stipends depending on the student's present year of study. For out-of-town students, NSERC provides travel costs. From May 15 onwards, on-campus housing is available. Application forms (NSERC form 202) are available in physics and astronomy departmental offices at Canadian universities. Applicants should send the completed NSERC form 202, along with a letter describing previous employment experience, preferred areas of research, and any relevant skills such as computer programming to:

Prof. Scott Tremaine, Director,
Canadian Institute for Theoretical Astrophysics,
University of Toronto,
60 St. George St.,
Toronto, Ontario M5S 1A7

In exceptional cases we will also support students who are not eligible for an NSERC award. Applicants should send an official transcript, a letter of reference from one of their professors, and a letter describing previous employment experience, preferred areas of research, and any relevant skills such as computer programming to the address above.

Deadline for applications is February 3, 1992.

**ADVANCE NOTICE OF CITA SEMINARS
AND VISITORS**

We maintain a list of upcoming seminars, colloquia, and visitors to CITA on our computer. If you are on an electronic mail network and would like to receive an up-to-date list automatically each week, send your

electronic mail address to our Systems Manager (sys-mark@cita.utoronto.ca) and we will add your address to our mailing list.

Long-term visitors to CITA who are invited to other Canadian universities for the purpose of scientific collaboration and/or one or more lectures or colloquia are normally eligible for partial travel support by CITA. At the discretion of the Director, CITA will reimburse the institution issuing the invitation for half of the travel and subsistence costs associated with the visit, up to a maximum of \$500. For details see the booklet "Guidelines to CITA Programs", which is available from the CITA administrator (citadmin@cita.utoronto.ca).

REINHARDT FELLOWSHIPS AT CITA

The Reinhardt Fellowship program supports extended visits to CITA by astronomers located at Canadian institutions other than the University of Toronto. The program is supported by funds provided by the Department of Astronomy of the University of Toronto.

Applicants should hold a full time salaried position at a Canadian university, and have a recognized record of recent achievement in astronomy, astrophysics or a closely related discipline. Applications should be made in writing to the Director of CITA, and should specify the time period involved and the level of financial support requested. The application should include a detailed curriculum vitae.

Two categories of visits are normally supported. (i) Sabbatical Leave: In this case the visitor will be receiving partial support from his/her home institution. CITA may offer to provide the remainder of salary support to a maximum of $\frac{1}{4}$ of the applicant's current annual salary level. (ii) Release Leave: In this case, CITA may offer full or partial salary support for a period of up to one academic term or semester (maximum of four months). Normally, the support would be sufficient to release the applicant from all teaching and administrative duties for the duration of the fellowship.

Fellows are expected to spend a minimum of 50% of the supported time in residence at CITA.

Past Reinhardt Fellows include R. Carlberg, A. Coley, W. Duley, G. Fahlman, M. Fich, D. Hartwick, K. Innanen, K. Lake, R. Pudritz, W. Shuter, and D. Vandenberg.

For details see the booklet "Guidelines to CITA Programs", which is available from the CITA administrator (citadmin@cita.utoronto.ca).

CANADIAN ASTRONOMY DATA CENTRE

The CADC has been operational for about a year, offering database and astronomical catalog services to the Canadian astronomical community. This note is in part a reminder of the services currently offered, and in part a description of our plans for the near future.

HST Proposal Support: Expanded Service

We have prepared cookbooks and software to assist Canadians with exposure calculations, as well as a cookbook to help with filling out the necessary (and lengthy!) proposal forms. Some half dozen persons asked for our help in preparing proposals for Cycle 2 of the GO program. The decision on time allocation for Cycle 2 will be announced very soon, after which the much more laborious procedures of the detailed Phase 2 forms will begin for the fortunate winners. During the period January through March 1992, the CADC (particularly Liz Gibson) will be available to assist successful applicants with Phase 2 of the proposal preparation process. Phase 2 is complicated and we urge persons desiring assistance to contact us as soon as possible after learning they've been awarded time.

HST Catalog and Data

The various HST problems have certainly been disappointing to everyone. However, we have now completed almost all the work necessary to handle HST data, and we will build the archive as planned, with financial support from the Canadian Space Agency. We all hope that the scheduled repair mission will be successful, and that HST will eventually deliver data of the promised quality.

Our catalog of HST observations is updated daily, so one can check what HST has observed at any time. Regular production of our copy of the archive will begin shortly – the Space Telescope Science Institute is about to start reprocessing the data headers and we want to wait for the reprocessed data.

Guide Star Catalog

The HST Guide Star Catalog is mounted on two CD-ROM drives, which can be "exported" to other sites who wish access to these catalogs but do not wish to buy the drives. This has already been done for the Universities of Victoria and Laval.

CFHT Archive

We are now developing the CFHT archive system. The archiving of data from some CFHT instruments will commence in the new year, although the data will remain proprietary for a two-year period. This system will be based on the hardware and software system put in place

for the HST archive, so it won't cost us a lot more to operate the CFHT archive as well.

Data visualization within catalogs

One problem faced by scientists browsing through catalogs of images and spectra is that they can't tell whether a given observation is going to meet their needs until after it has been retrieved from the archive and sent to them. Thus they may need to retrieve a lot of data to be sure of getting what they need.

We are developing a method of storing highly compressed forms of the images and spectra on-line, which can be examined during the catalog browsing process. This is a bit like the catalogs in an art gallery, which contain small representations of the actual images. They aren't as good as the real thing, but they are good enough for you to decide whether or not you want to look at the real thing. We expect to make this available with both the CFHT and the HST archives.

Astrophysics Data System

NASA is developing a major distributed database system which will provide remote access to archival data from all the major US space missions as well as selected ground-based data. It will be some time before the system is ready in its final form, but it should eventually provide a highly useful service available over CA*net (the Internet). NASA has informed us that Canadians will be allowed to use it, but they would like Canada to contribute data to the system in return.

We are closely tracking its development, keeping JSSA informed, and exploring opportunities for Canada.

Other services

Just a reminder – we provide free access to SIMBAD (the huge bibliographic stellar database) as well as on-line access to many popular astronomical catalogs, such as the IRAS point-source catalog, the SAO and HD catalogs, etc. These can be searched according to any number of criteria, as well as just for looking up individual objects. We also have the IUE Uniform Low Dispersion Archive, which has proven very popular in Europe (we have also ported this to Unix).

Please make sure that new graduate students are aware of our services, all of which are free. They have been listed in other issues of Cassiopeia, and we have an extensive set of printed and electronic documentation.

We're just a phone call (or e-mail) away.

ANDY WOODSWORTH
(604)363-0024
wdswrth@dao.nrc.ca

ÉCOLE D'ÉTÉ ET ATELIER D'ASTRONOMIE DU MILIEU INTERSTELLAIRE

Du 23 au 28 août 1992

Centre des congrès de Naramata (*Naramata Conference Center*)

Naramata (Colombie britannique)

Une fraction importante de la recherche astronomique au Canada est consacrée à l'étude d'un des nombreux aspects du milieu interstellaire (MIS). La diversité des activités est impressionnante : travail en laboratoire, conceptualisation et modélisation de la naissance ou de la mort des étoiles, observations de la bande centimétrique jusqu'aux rayons X, études du gaz de notre galaxie ou des galaxies externes.

Nous voulons réunir tous ces spécialistes du MIS, ainsi que les étudiants des cycles supérieurs intéressés par ce domaine ou y poursuivant déjà des recherches. Les participants pourront initier les autres à l'astrophysique fondamentale de leur spécialités, aux techniques d'observation ou au contexte de leur recherche en astronomie galactique ou extragalactique. Les discussions seront au niveau du *thésard* ou du spécialiste qui se veut aussi généraliste.

La forme de cette rencontre n'est pas encore fixée, mais nous voulons éviter un horaire trop chargé. Les séminaires ou conférences seront donné par un grand nombre de spécialistes mais nous voulons nous garder le plus de temps possible pour des périodes de discussion libre sur des thèmes variés, à des ateliers ouverts sur des sujets précis, ou pour permettre aux participants d'entreprendre ou de continuer des collaborations.

Les organisateurs de cette rencontre sont membres de l'Observatoire fédéral de radioastrophysique à Penticton

ou du Groupe du télescope James-Clerk-Maxwell à Ottawa ou travaillent dans une université. L'École d'été est commanditée par l'Institut Herzberg d'astrophysique du Conseil national de recherche du Canada et par d'autres organismes.

Le Centre des congrès de Naramata est situé au bord du lac Okanagan, près de Penticton et de l'Observatoire fédéral de radioastrophysique. En plus de rencontres formelles, les participants pourront interagir professionnellement en nageant, navigant à voile, marchant, roulant à bicyclette dans la nature environnante. Les installations d'accueil sont simples mais agréables, la nourriture excellente et le forfait journalier abordable (50-60 \$/jour). Le séjour de nos collègues plus jeunes sera subventionné. Votre famille ou vos amis seront les bienvenus ; ils seront logés et nourris à coût réduit. Le Centre des congrès, offre en plus des chambres d'hôtel, des chambres plus simples (du genre résidence universitaire) ainsi que des hôtels ou des chalets pour les familles.

Notre prochain envoi sera le cinq mars, lorsque nous serons plus avancés dans la planification. Si vous désirez être contacté en vue d'une possible participation, veuillez écrire à Chris Rogers ; Case postale 248 ; Penticton (Colombie britannique) ; V2A 6K3 ; ou à CROGERS@DRAO.NRC.CA par courrier électronique.

YORK UNIVERSITY NOTES

1991 was a very busy year for astronomy at York University. On June 10-12, York and the Space Astrophysics Laboratory (SAL) of the Institute for Space and Terrestrial Science co-hosted the annual meeting of the Canadian Astronomical Society. This meeting drew the largest number of registrants of any CASCA meeting in history.

The department was officially renamed the Department of Physics and Astronomy on 1 July. At the same time, an *Astronomy Stream* was introduced in both the undergraduate and graduate programmes. There are a number of new courses in each programme, including laboratory courses dealing with modern instrumentation.

Professor K. Innanen's appointment as Dean of the Faculty of Pure and Applied Science was extended for three more years. Professors J. Caldwell and M. McCall

are on sabbatical leave during 1991-92.

Dr. M. Valtonen (Turku) visited the department for an extended period earlier in the year, while W. Lu (PRC, DAO) and J. Vinko (Hungary) came to SAL as long-term and short-term research associates respectively.

Dr. Charlene Heisler joined the department as an NSERC Postdoctoral Fellow from Yale University. Dr. Heisler's PhD thesis was a comprehensive study of 60 μm Peakers - phenomena possibly related to an early phase of active galaxies.

Jonathan Jiang graduated with an M.Sc. this autumn. Benoit Turgeon (York, McGill) was accepted as a new graduate student in the programme, along with Jun Shi (PRC).

M. DE ROBERTIS

SUMMER SCHOOL/WORKSHOP ON THE INTERSTELLAR MEDIUM

August 23-28, 1992

Naramata Conference Center

Naramata, B.C.

A large number of the Canadian astronomical community have research interests that are related to some facet of the interstellar medium. The diversity of their activity is impressive: they work in laboratories, contemplate and model the formation and end of stars, observe with every kind of facility – from X-ray satellites to cm-wave arrays – and study the universe of galaxies as well as the internal workings of our own galaxy.

The purpose of this meeting is to bring together these ISM researchers and graduate students, who are either pursuing or considering research in the ISM. The participants will introduce each other to the basic physics of their specialities, to the observational techniques, and to the context of their research in galactic and extragalactic astronomy. The level of discussion will be aimed at graduate students and specialists who aspire to be generalists!

The format of the meeting is still evolving at this point, but there will probably be a relatively light schedule of lectures/tutorials given by as many as the participants as possible. There will be plenty of time then for “bull sessions” on various themes, open meetings of special interest groups, and opportunities to start or pursue collaborations with researchers and students.

The idea for this meeting was the initiative of the staff at Dominion Radio Astrophysical Observatory and the James Clerk Maxwell Telescope Group in Ottawa. They have since been joined by their university colleagues in planning the meeting. Sponsorship is being provided by the Herzberg Institute of Astrophysics of the NRC and support from other sources is being sought.

The setting of the conference center is on the shore of beautiful Okanagan Lake not far from Penticton and DRAO. Participants can continue their “professional interaction” while swimming or sailing off the beach, hiking, riding, or mountain biking in the surrounding countryside. The accommodation is simple and pleasant, the food very good, and the all-inclusive price reasonable (\$50-60/day). Subsidies will be available to students and others. Family and friends are welcome, at reduced cost. Cottages and houses are available at the conference center as well as motel- and dormitory-style rooms.

To put yourself on the mailing list for our March 5 mailing please contact Chris Rogers: e-mail to crogers@drao.nrc.ca, or write to him at Box 248, Penticton, B.C. V2A 6K3.

GUS BAKOS

A Canadian colleague and friend of long standing, and one of the earliest Ph.D. graduates in Astronomy at Toronto, Gustav Alfonz Bakos died suddenly on October 1, 1991 in Waterloo.

Gus was born in Trnava in what is now the south-eastern part of Czechoslovakia. He graduated from the University of Bratislava in 1943 and taught for a time, then spent two productive years at the University of Leiden and Leiden Observatory. The political changes kept him from returning to his native land and he emigrated to Canada in 1951, at first to Ottawa, then to Richmond Hill.

Gus formally began his graduate work at the University of Toronto in 1952. At the Dunlap Observatory he made use of the Hilger Spectrograph on the 74-inch and a newly constructed photoelectric photometer on the 19-inch. This was our first graduate research involving photoelectric photometry at the DDO. It was a study of the luminosities and magnitude/colour differences of 75 visual binary pairs. Bev Oke, before he left for Caltech,

was his initial supervisor. Gus was one of the first to capitalize on the fact that visual binaries can be used for stellar evolutionary purposes by fixing coeval points in a colour-luminosity array.

In early 1959, not long after Sputnik and upon the completion of the work for his degree, Gus went to the revitalized Smithsonian Astrophysical Observatory to help start up Project Moonwatch, the initial American effort to track earth satellites. Later he moved to Evanston, Ill. as Assistant Professor at Northwestern University. Principally he was in charge of the recording and tracking of faint moving celestial objects, a program begun in 1961 at the Organ Mountain Station of the Dearborn Observatory near Las Cruces, New Mexico, making use of the new image orthicon tube.

Gus became the University of Waterloo's first astronomer in 1965. He was Professor from 1969 and latterly Adjunct Professor. He did his fair share of undergraduate teaching and continued to publish a steady stream of research papers, forty in all. Most were the re-

sults of photometric and spectroscopic studies of variable stars and multiple systems. A goodly fraction were published in Czechoslovakia. He was a frequent contributor of articles and reviews to the Journal of the RASC.

Gus was a member of Commission 27 of the IAU and

a charter member of CASCA. He leaves his wife, Anna, whom he married in 1962, and two daughters.

DONALD MACRAE
with help from PIM FITZGERALD

LETTER FROM THE CASCA SECRETARY

To: CASCA MEMBERS WHO DO NOT HAVE E-MAIL

Dear CASCA Member,

Please check your directory listing and notify me of any changes you wish made. Please note that I must receive this before January 20, 1992.

Regards,
Norman
N. W. Broten, Secretary
48 Pineglen Cresc.,
Nepean, ON, K2E 6X9

CANADIAN ASTRONOMY PUBLICATIONS

September 11 to December 3, 1991

If you have a preprint or other Canadian publication, we would like to include it in this list. Please send a copy (or a photocopy of the title page) to:

Canadian Astronomy Publications List
Astronomy Library
University of Toronto
Room 1306
60 St. George Street
Toronto, Ontario
M5S 1A7

A. PREPRINTS OF RESEARCH PAPERS

The following is a list of preprints written by Canadian astronomers and received at the Astronomy library within the dates given above. The preprints are arranged in alphabetical order according to the surname of the first listed author. Originating institution and date of receipt at the library are given.

Annual report of the Dominion Astrophysical Observatory for the period 1 April 1990 - 31 March 1991. Dominion Astrophysical Observatory 22-Nov-1991

Beauchemin, M., Borra, E.F., *An automated search for widely spaced gravitational lenses performed on 25 greyn plates.* Université Laval, 8-Oct-1991.

Belley, J., Roy, J.-R., *The abundance gradients across the spiral galaxies NGC 628 and NGC 6946.* Obs. Mont Megantic, 23-Sep-1991.

Carignan, C., Demers, S., Cote, S., *The HI content of the Local Group dwarf (spheroidal or irregular?) galaxy Phoenix.* Obs. Mont Megantic, 23-Sep-1991.

Carlberg, R.G., Charlot, S., *Faint galaxy evolution.* David Dunlap Observatory, University of Toronto, 21-Oct-1991.

Carlberg, R.G., *Mergers in a CDM cosmology.* David Dunlap Observatory, University of Toronto, 21-Oct-1991.

Corbally, C.J., Garrison, R.F., *Spectral characteristics of early G-dwarf stars towards the galactic poles.* David Dunlap Observatory, University of Toronto, 2-Oct-1991.

Drinkwater, M.J., Webster, R.L., Thomas, P.A., *Associations between galaxies and bright quasars.* Obs. Mont Megantic, 23-Sep-1991.

- Eales, S., *Direct construction of the galaxy luminosity function at $z < 0.4$* . David Dunlap Observatory, University of Toronto, 24-Oct-1991.
- Evans, N.R., *New calibrators for the cepheid period-luminosity relation*. Institute for Space and Terrestrial Sciences, York University, York University, 12-Sep-1991.
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