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LA PLACE DES ARTS

La Place des Arts fait de nombreux efforts pour rendre plus accessible sa programmation à un plus large public.

Elle a adopté une politique culturelle en fonction de deux objectifs qui sont:

-offrir par diverses activités d'animation des spectacles à prix populaires tant pour adultes que pour enfants.

(Ces activités d'animation se présentent sous forme de conférences sur l'art avec des expositions, des concerts-midi, sons et brioches, le dimanche matin...)

-faire en sorte que ces spectacles soient pour le public une initiation à l'art.

Caractéristique originale, la Place des Arts ouvre ses portes non seulement le soir mais aussi le jour contrairement à la plupart des autres salles qui demeurent fermées durant le jour.

Un sondage effectué à l'automne 1977 auprès de la clientèle de la Place des Arts, révèle des choses intéressantes comme:

-97% des spectateurs de la Place des Arts sont satisfaits de la programmation! (Nos gouvernements ne peuvent pas se vanter de pareilles statistiques...''

-sa clientèle se situe au niveau socio-économique moyen. On constate donc une évolution dans ce domaine, car il n'y a pas si longtemps, il en était autrement, le niveau socio-économique était nettement supérieur.

-le nombre des nouveaux adhérants se développe donc sans cesse (17.5% en 1977-78).

Depuis 1963, les activités de la Place des Arts ont évolué dans le sens suivant:

(1 salle)	250 représentations
1968-1969	
(3 salles)	650 représentations
1977	1,000 représentations (avec les activités d'animation.)
	600,000 spectateurs
	636,000 spectateurs
	1,300,000 spectateurs

Lorsqu'on pénètre à l'intérieur de la Place des Arts, on est agréablement charmé par la décoration. En effet, la décoration du foyer central (7,9 m de hauteur) et des quatre foyers latéraux a permis de présenter des oeuvres d'artistes canadiens renommés. On y trouve des tapisseries dessinées et ou exécutées par Robert LaPalme, Micheline Beauchemin, des sculptures d'Anne Kahane, de Louis Archambault, du sculpteur esquimau Innukpuk; une série de vitraux du peintre Alfred Pellan. Enfin, en mai 1976, la Place des Arts ajoutait à son patrimoine deux dons importants des réputés peintres Jean-Paul Riopelle ''La Bolduc'' et Fernand Toupin ''Hochelaga''.

La construction de l'édifice des théâtres offrait un double défi aux architectes à savoir contenir deux théâtres dans un seul immeuble et en assurer la complète autonomie, le tout à ériger en 11 mois!

Le Théâtre Maisonneuve est une version moderne du théâtre à l'italienne. La décoration tout en étant d'une grande sobriété dispose tout de même de plusieurs oeuvres d'art. Quant au Port-Royal, il est muni d'une scène d'une largeur exceptionnelle. En effet, celle de la Salle Wilfrid-Pelletier est de 21 m tandis que celle du Port-Royal peut aller jusqu'à 29,2 m. La salle du Port-Royal servant surtout pour la présentation de pièces de théâtres permet aussi, grâce à son équipement et ses dimensions modernes, la réalisation audacieuse de spectacles variés.

La Place des Arts a mis à la disposition des amateurs de théâtre le petit ''Café de la Place'' qui est à la fois un théâtre, le soir, et un restaurant le midi.

Quant à sa programmation, elle est équilibrée et prestigieuse. Elle a accueilli la plupart des grands artistes du monde comme par exemple les pianistes Artur Rubinstein, Vladimir Horowitz, le chanteur Dietrich-Fischer Dieskau, le flûtiste Jean-Pierre Rampal, le violoniste Yehudi Menuhin, le cithariste Ravi Shankar, Ray Charles, etc...

Enfin la Place des Arts a reçu aussi comme mandat d'exercer une activité communautaire en accueillant des groupes, des organismes pour fin de réunion, congrs, concours international de musique etc. Ce rôle de la Place des Arts permet ainsi d'étendre le rayonnement de la métropole au monde entier.

	1963	1968-1969	1977
Musique	38%	30%	20%
Variétés	35%	21%	45%
Danse	21%	9%	12%
Théâtre	6%	40%	23%

Orgueil de Montréal, la Place des Arts célébrait en 1978-1979 son 15e anniversaire. A cette occasion, le Président de la Régie de la Place des Arts faisait état des nouvelles installations construites dans le corridor menant de la Place des Arts au Complexe Desjardins. Mais pour bien comprendre l'évolution de ce grand centre culturel, il serait utile de décrire quelques-unes des étapes de sa construction. La gestation de ce complexe architectural s'est échelonnée sur huit années entre 1955 , année durant laquelle le Maire de Montréal, Me Jean Drapeau et 23 autres personnes se réunirent pour jeter les bases du futur organisme ''Centre Sir Georges-Etienne Cartier'' (ultérieurement renommé Place des Arts) et le 21 septembre 1963 date de l'inauguration de la Grande Salle Wilfrid-Pelletier. Wilfrid Pelletier a été un des membres fondateurs et directeur de l'Orchestre Symphonique de Montréal; il en est maintenant président-honoraire.

Pour administrer efficacement ce centre d'art, on a crée, en 1964, la Régie de la Place des Arts. Cette Régie emploie environ 112 personnes permanentes et 471 temporaires et dispose d'un budget annuel de près de 3 millions.

(Suite à la page 2)

MUSIQUE A L'ASSEMBLEE GENERALE

L'Ensemble Claude Gervaise

Comment sonnait la musique au temps de Léonard da Vinci et de Galilée? A quoi ressemblaient les instruments pour la jouer? On connait bien aujourd'hui la peiture , la sculpture, la littérature, l'état des sciences de cette grande époque que fut la Renaissance. Mais la musique... on l'a quelque peu négligée.

Or l'Ensemble Claude Gervaise (nom du premier musicien de l'histoire du Québec) qui a vu le jour, il y a plus de 10 ans sur le sol québécois, s'est donné pour but de réparer cette négligence dans la mesure de ses moyens. Ce groupe de huit musiciens s'est donc spécialisé dans l'étude et l'interprétation de la musique ancienne, surtout celle de la Renaissance. Partis de l'idée de rendre pleinement justice à cette musique et de l'interpréter avec le plus d'authenticité possible, ils ont d'abord réuni une collection de plus de trois cents instruments anciens ou reconstitués dont ils se servent dans leurs concerts; flûtes à bec, cromornes, chalémies, luth, vièle, rebec, viole de gambe, saqueboute, tels sont les instruments qu'ils utilisent maintenant régulièrement. En second lieu, ils ont étudié les textes des principaux théoriciens et praticiens de l'époque (v.g.: Mersenn, Praetorius, Arbeau, Gafurius, Morley...) afin de connaitre tous les secrets de l'interprétation et de l'instrumentation de cette musique.

Ils sont même allés jusqu'à réapprendre à jouer de leurs instruments en se servant des méthodes d'apprentissage publiées au XVIe siècle, étant de plus en plus convaincus que plus on se conforme aux goûts et règles de l'époque, plus la musique en ressort vivante et intéressante, toute tentative de modernisation n'apportant que fadeur et incompréhension.

(Suite à la page 2)

EDITORIAL

ON THE FOUR WINDS

The world-lines of fundamental particles may intersect. The world-lines of astronomers may not! Instead, they form helices - a helix for the rotation of the Earth upon its axis, another for the revolution of the Earth about the Sun, yet another for the revolution of the Sun in its galactocentric orbit - and perhaps, who knows, on for the revolution of the Galaxy about the Virgo cluster. From time to time, seen from the perspective of an omniscient observer in 5-space, the spiral world-lines come together, helix entwined with helix, to form, as it were, a world-rope. If the world-rope of the nuclear family is as a hawser which could hold the Queen Elizabeth in dock.

If our omniscient observer in 5-space were also a philosopher, he might postulate patterns of forces that cause the world-threads to come together and then separate. Save for its intermittent nature, he might see no distinction between the force of gravity that forms the lower-order spirals, and the "force of attraction of an IAU General Assembly". What is this force? What is this purpose?

The Union was founded in Brussels in 1919, in the aftermath of the First World War, when the re-establishment of international co-operation was vital to the world, and not only in astronomy. The purpose of the Union was starkly stated by President Baillaud at the first General Assembly in Rome in 1922 : - "La recherche astronomique est l'objet essentiel de notre Union". Article 1 of the statutes puts it a little more precisely, as follows:

(i) to facilitate the relations between astronomers of different countries where international co-operation is necessary or useful;

(ii)to promote the study of astronomy in all its departments.

"Where **necessary** or **useful**"! As W.W.Campbell said at the second Assembly in Cambridge, England in 1925, "The words **necessary** and **useful** have been chosen with care. The article does not say international co-operation whenever **possible**, nor does it encourage a search for problems to the solution of which international co-operation could be applied... experienced astronomers recalled the fact that the great advances in the several sciences have been the results of developments and discoveries made by individuals, and that this principle will always hold true; and, further, that the Union then in process of organization should never be in a position to inerfere with individual initiative..... The purposes of the Union refer to future developpments, rathar than to a recital of the accomplishments of the past." Professor Campbell noted the success of national societies whose principal function was the reading and discussing of papers, but felt that international societies "to command attendance and success, must have other and broader aims, more general and more impelling purposes."

From time to time, our Presidents have returned to the consideration of these "more general and more impelling purposes". At the IXGeneral Assembly, Prof. O. Struve (or O'Struve as he preferred to be called in Dublin) took stock of the changes that had taken place in the thirty-six years since the foundation of the Union. In the first place, with the development of large telescopes, both radio and optical, the actual conduct of research had become more of a team effort in many places. The ever-present need for funding of large projects meant that we could not simply adopt a laissez-faire approach to the organization of our science. The rapid dissemination of information, especially observational data, was already showing signs of straining the traditional publishing facilities available; here was clearly a zone where international cooperation was both necessary and useful. But above all, the growth of the air transportation industry had made attendance at international conferences easier, quicker and (in real terms) cheaper than it had ever been before. The pressure grew to use General Assemblies for the dissemination of information through the reading of papers, and not simply to concentrate on those areas of research which demanded international cooperation. The pressure was increased by the habit of granting agencies to tie the paying of expenses to the reading of papers - a strange habit, for a grantee hopefully gets more stimulation out of hearing other people than out of hearing himself.

And so the pressure is on, as the extension of the schedule of commission meetings back into this afternoon shows. Most of us have grown up with easy and rapid air transportation. We have taken it for granted. Perhaps at this assembly, for the first time, the crisis in the distribution of the world's dwindling oil resources reminds us that we cannot always take this ease of transportation for granted. This is a situation to which the IAU may have to respond in the future, just as it has to respond to may other changes during its sixty years of existence.

But the planes are still flying, and we have come, on the Four Winds, from te Four Corners of the Earth, to garther here in Montreal. What we make of our General Assembly, and what ve get out of it, is up to us. We on the staff os this newspaper hope that our efforts will be a contribution towards making the XVII General Assembly of it, is up to us. We on the staff os this newpaper hape hat our efforts will be a contribution towards making the XVII General Assembly, of the IAU both fruitful and enjoyable.

Welcome to Montréal. What we make of our general Assembly, and what we get out of it, is up to us. We on the staff of this newspaper hope that our re efforts will be a contribution towards making the XVII General Assembly of the IAU both fruitful and enjoyable . Welcome to Montréal!

(The Four Winds are from the 1282 ui edition of Ptolemy).

L'ENSEMBLE CLAUDE GERVAISE

(Suite de la page 1)

Avec les années, l'Ensemble Claude Gervaise a su diversifier son répertoire et a porté son attention à d'autres périodes que la Renaissance: Musique du Moye Age Musique folklorique québécoise, musique française interprétée au Québec au début de la colonie.

En outre, les musiciens du groupe ont déjà enregistré deux disques et en préparent un troisième. Ils ont publié une revue de vulgarisation: "Carnet musical", et se produisent souvent en concert au Québec, aux Etats-Unis, en Belgique... toujours dans le but de bien faire connaitre la musique ancienne. Leur premier disque contenait des chansons de Gilles Vigneault, compositeur québécois contemporain après avoir arrangé ces oeuvres dans le style du XVIe siècle - Pour quelle raison? - "Tous ceux qui ont aimé notre interprétation de la musique de Vigneault sont des amateurs de musique ancienne qui s'ignorent. J'espere qu'ils vont saisir le message..."

ASTRONOMER OF THE DAY

THE FIRST TO REGISTER

Dr. Eleanore Trefftz (right) being greated at the Registration Desk by Mlle Madeleine Bergevin, Secretary of the National Organizing Committee.

The first participant to check in yesterday at the Registration Desk at the Queen Elizabeth Hotel was Dr. Eleanore Trefftz, of the Max Planck Institute fur Physik und Astrophysik. She arrived in Montreal on August 12 via Lufthansa from Munich.

She is an atomic physicist with an interest in ultraviolet observations of the solar corona. As President of Commission 14, **Fundamental Spectroscopic Data**, the collection and dissemination of fundamental physical data, and their importance to astrophysics, is of special concern to Dr. Trefftz. She is anxious for a closer connection with the USSR and Eastern countries and sees the IAU as important in encouraging such cooperation and collaboration.

This is the ninth General Assembly which she has attended.

LA PLACE DES ARTS

(Suite de la page 1)

Sur le plan strictement construction, on a procédé en trois phases. En premier lieu, on a construit la Grande Salle Wilfrid-Pelletier, avec garages et services souterrains; on peut apprécier le fait que la Place des Arts soit directement reliée avec le métro, principal moyen de transport en commun à Montréal. En second lieu et à l'occasion de l'Exposition Internationale et Universelle de Montréal, en 1967, on a entrepris la construction de l'édifice des théâtres comprenant deux salles: le Théâtre Maisonneuve et le Théâtre Port-Royal. En dernier lieu, on y ajouta les locaux dans ce corridor qui relie la Place des Arts au Complexe Desjardins. Ces derniers disposent entre autre de salles de répétition, de loges d'artistes, d'un atelier de décors réparti sur deux planchers, d'un atelier de couture, d'espaces de bureaux, etc.

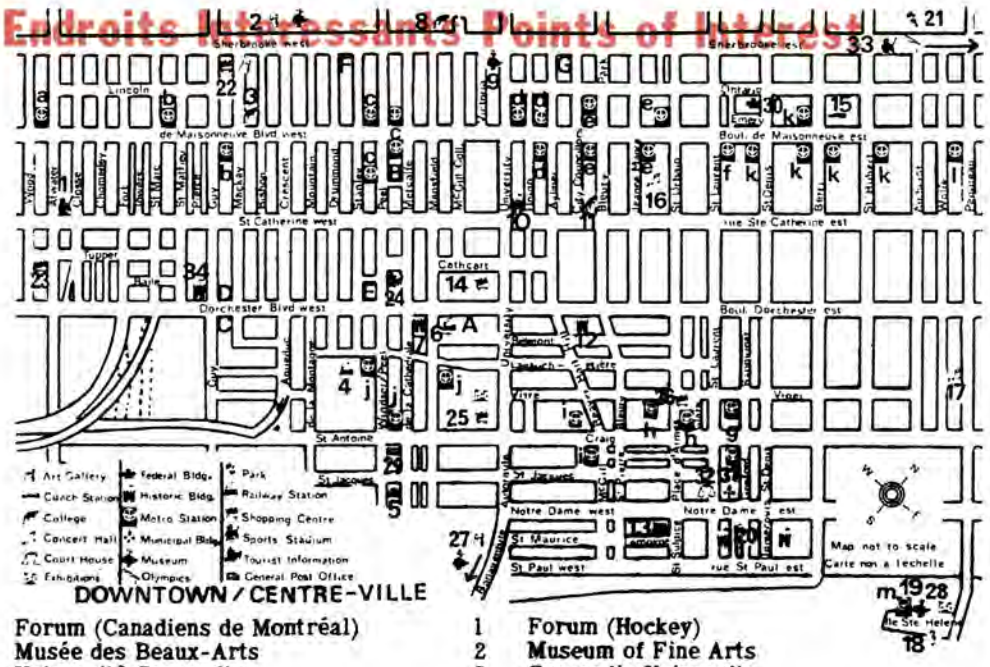
La Place des Arts est une entreprise à but non lucratif. Son déficit annuel est donc comblé par le gouvernement provincial et la Ville de Montréal. L'ensemble architectural a coûté 38 millions de dollars et constitue le pivot même d'un plan de réaménagement de ce secteur de la ville.

La disposition des 2,983 fauteuils de la Salle Wilfrid-Pelletier dans une seule et même enceinte a constitué un tour de force pour les architectes qui voulaient lui conférer quand même un caractère intime. L'acoustique de la Salle ne cesse de susciter des commentaires élogieux de la part des plus grands artistes. Evidemment, la Salle Wilfrid Pelletier est dotée d'équipements techniques des plus modernes (pour l'éclairage, le son, la projection notamment de films de 16mm et 35mm). C'est une salle polyvalente puisqu'elle peut servir à la fois comme salle d'opéra, de concerts et de spectacles. L'Orchestre Symphonique de Montréal s'est rapidement adapté à cette nouvelle salle qui crée une atmosphère propice aux épanchements créateurs des artistes...

Plusieurs grands orchestres comme le Boston Symphony, la Royal Philarmonique, le Concertgebow, l'orchestre Philarmonique de Vienne, le Cleveland Orchestra etc. s'y sont faits entendre. Le Festival mondial d'Expo 67 nous présenta plusieurs troupes d'opéra comme celles de Vienne, de Hambourg, La Scala, le Bolshoi... Le ballet a aussi sa part dans la programmation de la Place des Arts.

Pour se donner une idée du genre de spectacles et de la proportion dans laquelle ils sont présentés, la Place des Arts a compilé certaines statistiques dont en voici quelques résultats

Endroits Intéressants / Points of Interest



Forum (Canadiens de Montréal)	1	Forum (Hockey)
Musée des Beaux-Arts	2	Museum of Fine Arts
Université Concordia	3	Concordia University
Gare Windsor	4	Windsor Station
Planétarium Dow	5	Dow Planetarium
Gare Centrale	6	Central Station
Cathédrale Marie Reine du Monde	7	Mary Queen-of-the-World Cathedral
Université McGill	8	McGill University
Musée McCord	9	McCord Museum
Cathédrale de l'Eglise du Christ	10	Christ Church Cathedral
Université du Québec	11	Quebec University
Eglise de St Patrice	12	St. Patrick's Church
Eglise Notre-Dame-de-Bon-Secours	13	Our-Lady-of-Succour Church
Place Ville-Mariel	14	Place Ville Marie
Terminus d'Autobus "Le Voyageur"	15	"Le Voyageur" bus Terminal
Place des Arts	16	Place des Arts
Maison Radio-Canada	17	Radio Canada House
Aquarium de Montréal	18	Montreal Aquarium
Musée Casernes	19	Casernes Museum
Le Vieux Montréal	20	Old Montreal
Parc Lafontaine	21	Lafontaine Park
Gallerie - Antiquités	22	Gallery-Antique Area
Marché Atwater	23	Atwater Market
Carré dominion - Information touristique	24	Dominion Square- Touriste Information
Place Bonaventure	25	Place Bonaventure
Quartier Chinois	26	Chinatown
Cité du Havre	27	Museum of Contemporary Art and Habitat Housing complex
L'Exposition 'Terre des Hommes'	28	'Man and His World' Exhibition
Bureau de postes	29	General Post Office
Bibliothèque Nationale	30	National Library
Hotel de Ville de Montréal	31	Montreal City Hall
Palais de Justice	32	Court House
Le Parc Olympique	33	Olympic Stadium and Village
Maison Mère de Soeurs Grises	34	Mother Huse of the Order of Grey Sisters

A. Queen Elisabeth
B. Mount Royal
C. Ramada Inn
D. Maritime (Seaway)
E. Windsor
F. Berkeley
G. Holiday Inn Downtown

a. Atwater
b. Guy
c. Peel
d. McGill
e. Place des Arts
f. St-Laurent
g. Champs de Mars

h. Place d'Armes
i. Victoria
j. Bonaventure
k. Berri-de-Montigny
l. Beaudry
m. Ile Ste Hélène

καλῶς ἥλθατε
BEM VIRDO
BIENVENIDO WILLKOMMEN
SVERETETTEL ÜDVÖZÖLJÜK
BINE-ATI VENIT
BENVENUTO WITAJCIE
BIENVENUE
Добропожаловать
VELKOMMEN WELCOME
ברוכים הבאים
Добро дошли Добре дошли

WELCOME FORM THE GUESTS' COMMITTEE

It is with great joy and friendliness that I give a warm welcome to all the guest in the name of the members of the Committee. I am very happy that this congress is bringing us together in Montreal. Three years have already passed since Grenoble and we are very glad to see old friends and to make new ones. It is an enriching experience to have friends from all over the world.

Thanks to the work undertaken by the Local Committee, all was planned, coordinated and organized in order that your stay in Montreal is most enjoyable. Ann, Claudine and myself hope that you will have wonderful memories of our city and of our province.

Best wishes for a happy visit!

Margo V. Beaudet

MOT DE BIENVENUE DU COMITE DES ACCOMPAGNANTS

C'est dans la joie et l'amitié que je désire souhaiter la plus chaleureuse bienvenu à tous les accompagnants au nom des membres du Comité. Je suis très heureuse que ce congrès nous réunisse à Montréal. Déjà trois années se sont écoulées depuis Grenoble et nous nous réjouissons de renouer des amitiés, de revoir des connaissances, de faire de nouvelles rencontres. C'est une richesse véritable que de posséder des amis à travers le monde!

Grâce au travail soutenu de tout le personnel du Comité local, tout a été planifié, coordonné, organisé pour que votre séjour à Montréal soit des plus agréables. Ann, Claudine et moi-même espérons que vous garderez de notre ville et de notre belle province un merveilleux souvenir!

Bon Congrès!

Margo V. Beaudet

MEET OUR STAFF

There are problems in the governance of a large country, 10 million square kilometres in area, 7500 kilometres from east to west, and in which the population is far from uniformly distributed. In their own small way, your National Organizing Committee shared this problem with the Government of Canada. It arose most forcibly as the question "what shall we do with the representatives from the West?", for it is obvious that most of the day-to-day decisions have to be made by people on the spot. One of the western representatives, our Chairman Alan Batten, solved the problem by becoming a temporary resident of Montreal. The only task that could be given to the other western representative was the preparation and editing of the newspaper

Michael Ovenden came to Canada from Britain thirteen years ago, as professor of astronomy at the University of British Columbia in Vancouver. He is still there, lecturing on celestial mechanics and stellar dynamics, and also introducing science to non-science studies, where he tries (not always successfully) to withstand the criticisms of science by the aesthetes. He has been, from time to time, the editor of several scientific journals, which experience has proved of absolutely no value whatsoever as a preparation for the role of nespaper editor.

Conscious of his own limitations, your Editor persuaded the National Organizing Commitee to appoint two people to assist him - our Roving reporters, Ann Gower and Martine Normandin. Ann Gower (née Nevelle) also came from Britain, where she worked with Sir Martin Ryle on aperture synthesis. She has lectured at the University of Victoira. She now lives in Victoria with her family, dividing her time between academic pursuits and the more pastoral way of life for which Vancouver Island is famous. Martine Normandin was born in Quebec City, and tooke her first degree in Physics at the Université de Montréal. She moved to the University of Toronto to do he Ph. D. with Philip Kronberg, on Faraday rotation in astromical objects. She was active for many years in 'La société d'astronomie de Montréal', and has been involved in the preparation of a monthly astronomical programme on the CBS French Services network.

You will see our Roving Reporters, cameras and tape-recorders at the ready, on campus, at Joint Discussions, and commission meetings. Please let them know of anything that has interested you in particular, and which you think others would be interested to read about; and if one of our Roving Reporters should ask to interview you, please cooperate. METEORE (E) is your newspaper

NOTRE PERSONNEL

L'administration d'un pays d'une superficie de 10 million de kilomètres carrés, de 7500 kilomètres d'est en ouest, et dans lequel la répartition démographique est loin d'être uniforme, pose de sérieux problèmes. Sur une échelle plus petite, votre comité national d'organisation partage ce problème avec le gouvernement du Canada. Cela s'est encore fait sentir d'une manière plus aigue, lorsque s'est posée la question "Que faisons-nous avec les représentants de l'Ouest?" Il est clair que les décisions de chaque jour doivent être prises par les gens qui sont sur place. L'un des représentants de l'ouest, notre président Alan Batten, a résolu le problème en devenant un résident temporaire de Montréal. La seule tâche que l'on a pu confier aux autres représentants de l'Ouest a été la préparation et la rédaction du journal.

Il y a 15 ans, Michael

Ann Gower

Ovenden né en Grande Bretagne, venait au Canada comme professeur d'astononomie à l'Université de la Colombie Britanique à Vancouver. Il y est toujours: il donne des conférences sur la mécanique céleste et la dynamique stellaire. Il présente aussi une vulgarisation de la science à des étudiants non-scientifiques et durant ces cours il essaie (pas toujours avec succès) de défendre la science contre les critiques des esthètes. Il a été sporadiquement rédacteur de plusieurs journaux scientifiques mais cette expérience ne semble pas lui avoir été d'une grande utilité quant à la préparation de son rôle de rédacteur de journal.

Conscient de ses propres limites, votre Rédacteur a persuadé le Comité National d'Organisation de lui dési-

Michael Ovenden

gner deux autres personnes pour l'aider dans sa tâche - nos journalistes-pigistes Ann Gower et Martine Normandin. Ann Gower (née Neville) est aussi originaire de Grande Bretagne, a travaillé avec Sir Martin Ryle sur l'aperture synthésis. Elle a donné des conférences à l'Université de la Colombie Britanique et à l'Université de Victoria.

Elle réside maintenant à Victoria avec sa famille, partageant son temps entre ses intérêts académiques et son goût pour la vie champêtre qui se prête bien à l'atmosphère régnant dans l'île de Vancouver. Martine Normandin est née dans la Ville de Québec et a obtenu son baccalauréat en physiques à l'université de Montréal. Elle fit sa maitrise avec Philip Kroberg sur la rotation Faraday

Martine Normandin

dans les spectres d'objets astronomiques.

Elle a travaillé activement pendant plusieurs années au sein de "La société d'astronomie de Montréal", et a été impliquée dans la préparation d'une émission mensuelle sur l'astronomie sur le réseau français de Radio-Canada.

Vous allez voir nos journalistes à la pige avec leurs caméras, leurs enregistreuses, à l'affût, sur le campus assistant aux discussions conjointes et aux réunions des commissions. Nous aimerions que vous leur fassiez part de tout ce qui vous a particulièrement intéressé, et qui pourrait, selon vous, intéresser vos confrères: si l'un de nos journalistes vous demande une interview, s'il vous plait, acceptez! Le METEORE est votre journal.

Canadian School Teachers Meet with The I.A.U.

by D.L. DuPuy

Next on the program is a paper by Dr. R.L. Bishop (Acadia University, Canada) on the role of the Royal Astronomical Society of Canada in teaching astronomy. There are somewhat similar societies in other countries (e.g. the British Ast. Assoc.) and we expect short discussions on the role these societies play in teaching astronomy in those countries. The R.A.S.C. offers an almost unique opportunity to nadian shcool teachers to participate in amateur astronomy and we hope to inform teachers of these opportunities. The morning session will close with a paper by Dr. R. Robbins (University of Texas, U.S.A.) on audio-visual material in astronomy for school teachers.

The afternoon session will begin with a paper by Dr. W. Osborn (Central Michigan University, U.S.A.), concerned with observational activities for school teachers. There are some fairly obvious types of observations that teachers can instruct students with (e.g. observations of sunspots, seasonal path of the sun, etc.), but there are also many other types of observations that can be accomplished by high school students with simple, inexpensive equipment. Time will also be provided for short communications by teachers on observational activities they have employed. Following this paper will be a paper presented by Dr. J. Holzinger (Franklin and Marshall College, U.S.A.) on laboratory experiments in astronomy. Dr. Holzinger is a co-author of a well-known laboratory manual of experiments for teaching astronomy and his comments will likely be of special interest to teachers who are looking for appropriate experiments to conduct in the classroom.

Following an afternnon break, the meeting will divide into an English language session and a French language session. On short paper will be presented in each session. Telescopes For Teaching (Dr. D. Hube, Canada), with comments on appropriate types of telescopes for teaching astronomy in the schools, and specific examples of telescopes, will be presented in the English session. A short paper in the French session will discuss astronomy in the Quebec curriculum. Two longer discussions and workshops will the take place, based on the Piaget Workshop, with applications in teaching astronomy, as organized by Dennis Shatz (Pacific Science Center, U.S.A.) and his colleagues. The workshop will discuss student reasoning power and related problems of teaching.

Scheduled for August 22, as part of Commission 46 sessions, is an all-day meeting discussing the teaching of astronomy at the university level; several invited speakers will present papers on this subject, including Dr. G. Abell, Dr. H. Eichhorn, and Dr. D. Clarke.

During the past several meetings of the I.A.U., Commission 46 (Teaching of Astronomy) has sponsored a meeting between school teachers of the host country and interested astronomers attending the I.A.U. That tradition is being continued at the XVII General Assembly, whith an all-day meeting scheduled for August 13th. The broad purpose of the meeting is to provide a mechanism for discussion between school teachers and professional astronomers, in an effort to facilitate teaching some astronomy in the schools. Members of the I.A.U. are most welcome to attend and to contribute to the discussion.

The program planned for the Ausust 13th meeting will begin with opening remarks by Dr. Kononovich, president of Commission 46. Next a broad survey of teaching astronomy in Canadian schools will be presented by Dr. J. R. Percy (University of Toronto, Canada). Dr. Percy has probably been the astronomer in Canada who has been most active in communication with schools and teachers whit respect to teaching astronomy. Dr. Percy's paper will discuss the place of astronomy in the Canadian high school education. By means of comparison, Miss L. Gouguenheim (Observatoire de Paris, France) will then preris, France) will then present a paper on the teaching of astronomy in French schools. It is desirable that other I.A.U. astronomers from other countries will also be able to add to a short discussion on teaching astronomy in other countries.

Today's Events/ les Événements du Jour

At the special request of the General Secretary, the National Organizing Committee has arranged for the afternoon of Tuesday, August 14 to be available for Commission meetings. As this request came after many of the arrangements for the Inaugural Ceremony and Opening General Assembly had been made, we could only meet it by postponing the start of Commission meetings until 15.00 The General Assembly is scheduled to finish at 14.30. Buses will be available to take (without charge) those participants who must go to the Commission meetings at the University, and those who wish to return to the Residence. The bus raide takes about 15 minutes. We request that all participants who are not going to Commission meetings that begin at 15.00 keep their seats in the Place des Arts until those who must be at the University by 15.00 have hat time
versity by 15.00 have tad time to leave. The meetings that begin at 15.00 are: the joint meeting on Nomenclature organized by Commission 5, and meetings of Commission 4, 10, 14, 16 and 17, 19, 20, 36, 44, and 46. Commissions 12 and 49 do not begin their meetings until 17.00. In addition, the Nominating Committee will meet at 15.30 and the Finance Committee at 15.45 both at the University. Twelve buses will take participants from the Place des Arts to the University. Each bus will leave as soon as it is full. Some participants who do not need to go to the University immediately may prefer to tra - vel on the regular bus no. 65 at their leisure.

At the University, because there is only a small number of meetings extending over both sessions of Tuesday afternoon, we shall not attempt to divide today's meetings into "Early" and "Late" sessions. There will be a coffee-break at 16.30 for all Commissions meeting today. All sessions will end at 18.30. We regret this late finish but we know that astronomers are so eager to talk astronomy that they will notice the time!

Those of you who have to stay until the end of the afternoon's sessions may find it inconvenient to attend the concert scheduled for this evening in Old Montreal - unless you are prepared to wait for your evening meal until the concert is over! Montreal's restaurants will still be ready to welcome you even then, but we advise you to choose Monique Layrac's concert next Monday, if you want to come to one of the Assembly concerts.

En raison du très grand nombre de réunions de commissions prévu, le Secrétaire général et le Comité national d'organisation du congrès ont dû fixer certaines de ces réunions le mardi 14, dans l'après-midi, le jour même de la cérémonie inaugurale. Le Comité organisateur informé de façon assez tardive de cette situation, a été dans l'impossibilité de modifier certaines dispositions déjà arrêtées: l'unique solution a donc été de retarder l'heure du début des réunions à 15.00.

A la fin de l'assemblée générale, qui se terminera à 14.30 des autobus, seront disponibles à la Place des Arts, en nombre suffisant, pour le transport des participants vers l'université de Montréal. Ces mêmes autobus pourront également ramener d'autres congressistes aux Résidences universitaires. Tous ceux qui n'assistent pas aux réunions des commissions sont toutefois priés, afin de respceter l'horaire prévu pour celles-ci, de laisser la priorité d'accès aux autobus aux personnes qui doivent y être présentes.

La réunion conjointe sur.la nomenclature, organisée par la Commission 5, ainsi que les réunions des commissions suivantes débutent à 15.00 soit: commissions 4, 10, 14, 16 et 17, 19 , 20, 36, 44 et 46. Les réunions des Commissions 12 et 49 ne débuteront cependant pas avant 17.000. D'autre part, le Comité de nomination et le Comité des finances se réuniront à l'université à 15.30 et 15.45 respectivement.

A cause du nombre quand même assez restreint des réunions, elles débuteront toutes à la même heure: quant à la pause-café, elle est prévue pour 16.30. Le tout devrait se terminer vers 18.30. Nous déplorons le fait que ces réunions se prolongent jusqu'à une heure aussi tardive, mais nous sommes persuadés que l'intérêt des discussions n'en souffrira pas.

Le délai de temps disponible entre la fin des sessions scientifiques et le début du concert, à 20.30 est malheureusement limité et ne pourra permettre à ceux qui désirent assister à cette soirée de déguster un bon repas, à moins qu'ils ne décident de le reporter à la fin du concert. Nous vous suggérons donc de tenir compte de ce facteur dans le choix de vos concerts.

CONCEPT NEUF

L'Ensemble de Percussion "Concept Neuf"

La tradition musicale a longtemps réservé aux instruments de percussion un rôle de second plan. N'était-ce que de servir de support aux autres instruments de l'orchestre, les cordes et les vents, par exemple. Aujourd'hui les instruments de percussion sont appelés à jouer un rôle nouveau dans le domaine de la musique.

C'est ce qu'ont compris les musiciens de l'ensemble de Percussion Concept Neuf.

L'Ensemble a été fondé à Montréal en 1969 par Pierre Béluse. Il a donné depuis lors de nombreux concerts au Québec. Il a créé plusieurs oeuvres de compositeurs québécois et réalisé jusqu'à maintenant l'enregistrement de deux microsillons.

Ce groupe, formé de neuf percussionnistes venus d'horizons musicaux différents, entend en quelque sorte réhabiliter les sonorités particulières propres aux instruments de percussion. Leur musique est la preuve que ceux-ci peuvent être mélodieux, harmonieux, qu'ils peuvent être utilisés pour jouer tous les genres musicaux, du classique au jazz, en passant par la musique populaire et par celle dite "contemporaine".

L'Ensemble de Percussion Concept Neuf se veut une expérience musicale unique en son genre. Elle est le fruit de neuf musiciens qui tentent de nous faire redécouvrir une sonorité qui remonte aux origines de la race humaine. Pour qui sait y tendre une oreille neuve, l'aventure s'annonce des plus prometteuse.

L'Ensemble est formé des musiciens suivants:

Pierre Béluse, Directeur
Luc Boivin
François Clément
Raymond Desrosiers
Robert Lépine
Robert Leroux
Frederick Liessens
Aldo Mazza
Jean-Guy Plante

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Office:- Room No. 1265 Editor:- Michael W. Ovenden Téléphone 343-5889

ALLOCUTION DU RECTEUR DE L'UNIVERSITE

M. B.A. Gingras, CNRC
Photo: Pierre Guzzo

Left to right: M. Jean Drapeau, Montréal, Mme E. A. Muller, I.A.U. M. René J.A. Lévesque, Université de Montréal, M. Elie Fallu, Gouvernement du Québec.
Photo: Pierre Guzzo

Monsieur le Maire,
Messieurs les représentants des gouvernements du Canada et du Québec,
Messieurs les présidents,
Distingués invités et collègues,
Mesdames,
Messieurs,

C'est une fierté toute particulière qui anime l'université ces jours-ci au moment où vous nous faites l'éminent honneur de vous rassembler ici à l'occasion de votre 17e assemblée générale. Vous me permettrez sans doute, en vous exprimant les regrets du recteur, Monsieur Paul Lacoste, de ne pouvoir être avec vous ce matin, de vous dire la joie personnelle que j'éprouve à vous souhaiter la plus cordiale bienvenue à l'Université.

Si l'enseignement et la recherche en sciences à l'Université remonte à l'année 1920, c'est vers la fin des années cinquante qu'un certain nombre de professeurs du département de physique ont fait une place à l'astrophysique préparant ainsi la voie au groupe d'astrophysiciens dans lesquel se sont concentrés plus spécifiquement, à partir de 1968, les activités et l'intérêt de notre communauté.

L'observatoire astronomique du Mont Mégantic dont la création date de 1975, permet maintenant à nos professeurs et à nos chercheurs astronomes et astrophysiciens de travailler de plein pied en complémentarité avec leurs collègues du monde entier. Cette dernière réalisation, dont nous nous réjouissons, a rendu possible la participation de l'Université à la grande aventure astrophysique moderne dont les développements et les applications technologiques ne manquent pas d'être passionnants non seulement pour les experts scientifiques que vous êtes, mais également pour l'ensemble du public. La mise en marche prochaine, à Hawai, du télescope issu de la coopération bénéfique entre le Canada la France et Hawai, permettra d'accroitre le réseau d'observation et l'étude de l'univers. Si l'on ajoute à ceci, l'honneur que vous nous faites de tenir votre important congrès dans nos murs, vous comprendrez notre heureuse satisfaction de constater le dynamisme dont vous faites preuve dans votre discipline et vos activités.

L'étude de l'univers, vous le savez bien, connait depuis quelques années, tant auprès du public que des chercheurs, un regain d'intérêt. Ce changement d'attitude n'est pas étranger aux succès que nous a fait connaitre votre audace intellectuelle. Les réelles prouesses techniques et humaines dont vous avez fait preuve ces dernières années demeurent à cet égard exemplaires. Il n'est donc pas étonnant, en cette période de restrictions des ressources financières, que les critiques soient rares à l'endroit des sommes consacrées aux investissements et à la recherche en astrophysique.

Ainsi grâce à vos longues et patientes recherches, on peut aujourd'hui J éterminer avec précision certaines caractéristiques et certaines propriétés de l'univers. On commence même à avoir une idée au moins approximative de l'évolution du monde et de ses planètes. Bien sûr, les énigmes sont encore nombreuses à résoudre. Nous sommes sans doute encore loin de connaitre de facon certaine la structure de l'univers, l'origine des galaxies, de la vie elle-même ou de ses formes extra-terrestres. Il y a quelques années encore, on pou vait s'attendre à ce que certaines de ces questions soient l'objet d'un sourire devant l'ampleur de leur investigation scientifique. Aujourd'hui, beaucoup d'astronomes ont l'audace d'y faire face en s'associant avec des collègues d'autres disciplines pour y répondre.

L'aventure astrophysique moderne, internationale, est désormais largement multidisciplinaire. On fait maintenant appel non seulement à des mathématiciens et à des physiciens mais aussi à des chimistes et à des biologistes.

Au-delà de ses succès, de ses réalisations et des développements technologiques parfois surprenants auxquels elle a donné lieu, l'astronomie, en 1979, demeure la discipline qui, plus que toutes les autres, perpétue de façon dynamique une des plus anciennes activités humaines: celle d'interroger le ciel, de contempler les étoiles, d'observer l'univers et de poser des questions essentielles avec, plus que jamais, l'espoir de glaner maintenant des réponses qui permettent chaque fois de comprendre un peu mieux le monde que nous habitons.

J'espère que durant ces dix prochains jours, vos discussions nous amèneront, elle aussi, au terme de cette 18e assemblée générale, à une meilleure connaissance de l'univers et ce sont les voeux que je vous adresse a nom de l'Université et en mon nom.

Cabinet du recteur
le 13 août 1979

CEREMONIE INAUGURALE

L'astronomie est la plus vieille des sciences et pour la majeure partie de son existence a été confondue avec l'astrologie. A l'époque où les deux se séparerent la musique aussi changeait de forme. Les pièces de la renaissance exécutées avec un tel réalisme par le groupe Claude Gervaise ont plongé les participants aux cérémonies inaugurles dans le passé et probablement causé la confusion entre des disciplines aujourd'hui distinctes. Les sons entremêlés de la musique ancienne et des discours de bienvenue des représentants de la ville de Montréal, du gouvernement du Canada, du gouvernement du Québec, de l'université de Montréal et du Conseil national de la redu Conseil national de recherches ont captivé les auditeurs à la salle Wilfrid Pelletier de la Place des Arts. M. Adriaan Blaauw, le président de l'UAI, a remercié les conférenciers au nom de tous les participants. Le tout s'est terminé sur une note de gaiété et les astronomes se sont joints en cadence aux musiciens au son de pièces traditionnelles québécoises. Tous se sentaient un peu québécois pour déguster le délicieux déjeuner offert par monsieur le Maire aux congressistes dans le foyer Nobile de la Place des Arts.

Monsieur le maire saw a mystical significance to the presence of the IAU in Montreal. Astronomy is not only an exact science but a humanistic one. In this sense the presence of the astronomers in a cosmopolitan city like Montreal is symbolical. Everybody is looking forward to a productive assembly but as M. Fallu says "la science d'abord et le plaisir ensuite."

EDITORIAL

A TIME FOR RENEWAL

To every thing its proper season Monday was season for renewal - of old friendships old discussions, old arguments. And where better to meet old friends than at the evening reception given by the Rector of the Université de Montreal. Participants were graciously received in the great "Hall d'honneur" of Pavillon Principal by Mr. René J.A. Lévesque, Vice-Recteur à la Recherche.

Conversation flowed freely with wine, as old acquaintance was not forgotten, but remembered - pu together again. Friendships flourish in spite of - or perhaps because of- the fact that they are renewed only once every three years. With the greetings and reminiscences came the apologies for letters unanswered, wine spilt, faces misplaced and names forgotten.

The steps of the Pavillon Principal were covered with astronomers, the late-comers mixing with those seeking fresh air and space. The old hands who had been here for several days and knew (almost) all the routes on campus smiled benignly upon the baggage-laden seekers after the Student Residences. Of course there are always too many people - so that those friends you particularly wanted to see cannot be found. But if there were not so many participants, the people you want to see would not be at the meeting! And for the older members, recalling many past assemblies, a touch of melancholy in the memory of the friends that will come to no more I.A.U.'s.

A time for renewal of friendships - and renewal of enthusiasm.

L'ART DANS LE METRO

par KATHY SILVER

Un simple ticket de métro donne accès au trésor artistique enfoui sous les rues de Montréal.

Il s'agit ici d'une collection unique et incomparable de murales, sculptures, vitraux disséminée un peu partout dans le réseau de transport métropolitain de la ville.

Le métro de Montréal est bien plus qu'un moyen rapide et efficace de traverser la ville: les Montréalais sont fiers de sa sécurité, de sa beauté et de sa propreté.

Inauguré en 1966, le métro comptait alors 28 stations réparties sur 14 milles de voies Les urbanistes ayant confié chaque station à un architecte différent, la variété est remarquable et chacune à son caractère propre. Ainsi, des incrustations circulaires de carreaux de céramique aux vives couleurs signalent la station Peel.

Dans plusieurs stations, des oeuvres commanditées par l'entreprise privée illustrent l'histoire de Montréal.

D'importantes murales peuvent être admirées dans les stations Berri de Montigny, Place des Arts, Crémazie, McGill, Peel, Champ de Mars, Sherbrooke, Papineau et Square Victoria.

Station Berri-de-Montigny - carrefour du réseau - un spectaculaire vitrail illuminé à contre-jour rend hommage aux pionniers de la ville. On le voit du quai de la ligne no 1.

Dans la station Place-des-Arts, un chef-d'oeuvre, elle même, ce sont des carreaux de céramique aux doux tons de bleu et de blanc qui expriment, dans un vaste espace bien dégagé, l'oeuvre artistique.

Sur le mur est de la mezzanine, un vitrail éclairé en contre-jour relate l'évolution musicale de Montréal. On y découvre des portraits stylisés de Calixa Lavallée et de Guillaume Couture ainsi que des scènes abstraites représentatives de la musique abstraites p représentatives de la musique canadienne contemporaine. Toutefois, pour apprécier convenablement cette murale, il faut emprunter le tourniquet de sortie et, ensuite, remettre un nouveau ticket pour continuer la tournée (l'accès au métro coûte 50 cents en monnaie mais le prix d'un livret de 13 tickets est de cinq dollars.)

Station Crémaxie, un vertigineux bas-relief de blocs multicolores est rehaussé des portraits en fer forgé des poètes canadiens Crémazie, Fréchette et Nelligan.

Reliée à d'importants grands magasins du centre-ville, la station McGill est ornée d'un vitrail en cinq panneaux décrivant la vie montréalaise du 19e siècle.

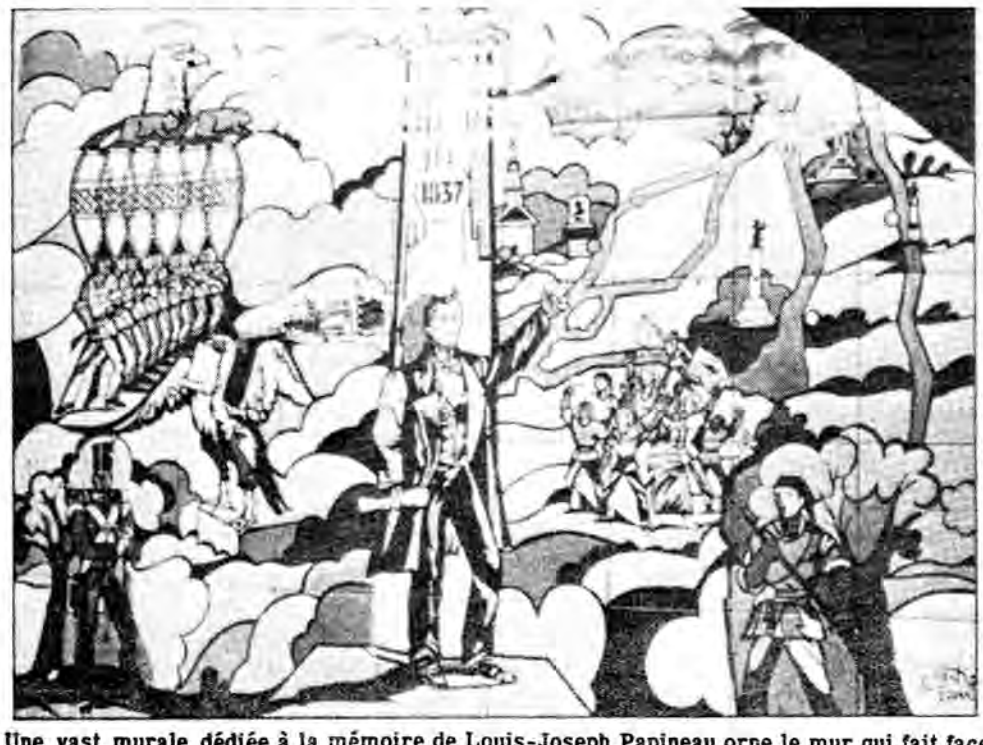
En 1976, le prolongement du métro a ajouté neuf stations à l'architecture vairée, intégrant encore davantage le concept artistique au design golbal.

Dans les nouvelles stations, l'art s'exprime plutôt de façon abstraite par rapport à la représentation figurative historique des anciennes stations. Les nouvelles oeuvres ont été commandées par l'administration municipale.

Sept des neuf nouvelles stations comportend des oeuvres d'art: Joliette, Pie IX, Viau, L'Assomption, Cadillac, Langelier et Honoré-Beaugrand.

Sauf aux heures de pointe, il est facile de s'asseoir confortablement et de reposer ses pieds pendant qu'une rame de métro vous emporte, d'une murale à l'autre, dans la galeri d'art souterraine de Montréal.

Reproduit avec la permission de PROMENADE, Avril 1978.



Une vast murale dédiée à la mémoire de Louis-Joseph Papineau orne le mur qui fait face à la passerelle de la station. Les parois de deux arches commémorent les événements patriotiques de 1837 et 1838.

ABOUT YOUR NEWSPAPER

METEOR(E) is an ad hoc publication produced especially for the General Assembly as a means of informing participants about what is and has been going on, to provide up-to-date information on changes to the programmes and timetables of commission meetings, joint discussions, evening discourse, etc. We will provide background information on the organization of the Assembly, articles on Montreal and its environs, and other features that will (we hope) add to the enjoyment of your stay in Canada.

The languages of the newspaper will be French and English. Some officials notices may be published in both languages, but generally an article or feature will be either in French or in English.

There will be a number of regular features. The **Bulletin Board** will include special announcements, both official and unofficial. Announcements from the IAU Secretariat will be identified by the logo IAU ,those of the National Organizing Commitee by ⚜ and those of the Local Organizing Committee by ⚜

Announcements by Presidents of Commissions will be identified by the Commission number. Notices for the Bulletin Board must be in the METEOR(E) Office (Room 1265) by 3.00 p.m. on the day before the issue in which the notice is to appear. Notices will be published in the language or languages in which they are submitted, so that if you wish your notice to appear in both French and English, you wish your notice to appear in both French and English, you must submit both versions. It would be impossible for the staff of the newspaper to undertake translations at a time when they would be busy making up the next issue.

The latest available details of changes in times and programmes of commission meetings will be included in the feature **Today's Events** which will appear daily on the back page of the newspaper.

There is a section for the printing of letters from participants. If you have anything to say about the Assembly, which would be of general interest, or the newspaper, please write to us, letting us know that you letter is to be considered for publication. Of course, we cannot guarantee to publish every letter submitted; publication is at the sole discretion of the Editor. A letter will be published in either French or English, in the language in which it is received.

To keep us informed of the deliberations of the various commissions, we are asking each President of Commission to appoint for us a Special Correspondent, who will send us summaries of important papers which have been discussed in his or her commission, and from which we can select items of general interest. We also have two Staff Reporters, who will be attending Joint Discussions, Commission meetings, and other functions, and interviewing some of the participants of the Assembly. In this way we hope to reflect the progress of the Assembly 'as it happens'.

METEOR(E) is printed and published on behalf of the National Organizing Committee. IT is **not** an official publicatior of the IAU. Except where the material has been provided for the newspaper by the IAU Secretariat, the IAU has no responsibility for the contents of the newspaper. Opinions expressed, especially in the Editorial and Correspondence sections, are those of the individuals concerned, and are not necessarily the opinions either of the IAU or of the National or Local Organizing Committees.

Copies of METEOR(E0 will be available each day, near the Information Desk, 3200 rue Jean-Brilliant, from approximately 8.30 a.m.

BULLETINS

CORRECTIONS TO EXHIBITS FLOORPLAN

Last minute changes to the floorplan:

The Working Group on Photographic Problems (old no. 24) will now be no. 13,

Centre des Données Stellaires (old no. 25) will now be found on the opposite side of corridor near stairs.

Gall Publications (formerly no. 12) will now be found at no. 5.

Eastman Kodak (formerly no. 13 will now be found at no. 12.

CORRECTIONS A L'AMENAGEMENT DES KIOSQUES

Changements de dernière minute à l'aménagement des kiosques:

Le Groupe de travail sur les problèmes photographies (auparavant au no. 24) est maintenant au no. 13.

Le Centre des Données Stellaires (auparavant au no. 25) se trouve maintenant près de l'escalier, de l'autre côté du corridor.

Gall Publications (auparavant au no. 12) est maintenant au no. 5.

Eastman Kodak (auparavant au no. 13) est maintenant au no. 12.

John Glaspey

Commission no. 37

Administrative Session - August 17 - Timbe b
Room B-2305

Subjects for discussion

1. Choice of Organizing Committee
2. Nomination of new members
3. Discussion of new cluster nomenclature proposal.

Due to the fact that I.A.U. Symposium No. 85 (Starel-Sters) will take place in two weeks. Our commission will have no scientific meetings other than joint sessions together with commision no. 5 (nomenclature) August 14 c,d and with Commission 24 (Space Astronomy) August 16 a,b,

Sidney Van der Bergh
President

MAN OF MONTREAL-

STEPHEN LEACOCK

"I was born at Swanmore, Hants, England, on December 30, 1869. I am not aware that there was any particular conjunction of the planets at the time, but I should thing it extremely likely." Thus wrote Stephen Leacock, Professor and Head of the Department of Eco-

"I was born at Swanmore, Hants, England, on December 30, 1869. I am not aware that there was any particular conjunction of the planets at the time, but I should think it extremely likely." Thus wrote Stephen Leacock, Professor and Head of the Department of Economics at McGill University, and one of the greatest humorists of the English-speaking world of this century. His father had been something of a 'rolling stone'. Having failed to make a success as a farmer, first in South Africa and then in Kansas, he finally brought his family to Canada in 1876, setting up home in the Lake Simcoe area of the new province of Ontario.

It was to his mother Agnes that Stephen Leacock owed his interest in learning. She had had the foresight to bring text-brooks and reading material for her children when they embarked for the 'wilderness'. He was to proceed steadily up the academic ladder. receiving his Ph.D. in economics from the University of Chicago in 1903, an event which (in a rare moment of false modesty) he was to say meant that he had been examined for the last time in his life, and pronounced completely full. After this, no new ideas can be imparted to him". After a brief spell as a teacher at Upper Canada College, he went to McGill University, where he was to remain for the term of his academic career.

As an academic, he wrote several serious books, starting with his 'Elements of Political Science' in 1906. This rapidly became a standard text-book, and he is said to have earned, over the years, more money with this book than with any single one of his best-selling works of humour. No doubt he could have reached the highest honours in the academic world, had he so chosen - but a certain puckish element in his character urged him to write down some of his humorous conceits. It was Stephen Leacock the humorist who was later to receive the Lorne Pierce medal

Stephen Leacock. By Don Anderson

Courtesy: - McGill University

of the Royal Society of Canada in recognition of his great contribution "to the growing reputation of Canadian letters."

Humour is a serious matter, though Leacock was perhaps at his least successful when talking seriously about humour. He has been criticized for not aiming his shafts more directly at social injustice. But Leacock's humour was never superficial. He had a keen eye for pretension and hypocrasy; but above all, he was ever conscious of the gulf between what life was and what it might have been. His laughter was never very far from tears.

Scientists did not fail to come under his lash. Although he only rarely touched on astronomy explicitly, in one of his posthumously-published writings there is an interesting historial sidelight. Evidently he had been to a lecture by Hubble who had cast doubt upon the expansion of the Universe. "This is good news indeed! But the relief is tempered, on reflection, by certain doubts and afterthoughts. It is not that I venture any disbelief or disrespect towards science, for that is as atrocious in our day as disbelief in the Trinity was in the days of Isaac Newton. But.... if we expand today and contract tomorrow... we begin to doubt whether science can quite keep on believing in and respecting itself."

Did his roles as economist and humorist ever get confused? He used to tell with glee how one fan read halfway through his 'Elements of Political Science' laughing uproariously - until he found that it was meant to be taken seriously. It is hardly to be expected that Stephen Leacock's enjoyment of public acclaim would have left his academic colleagues entirely unmoved. Yet in a way it was his academic life that gave him his greatest satisfaction. He would make fun of it, saying "I am able to regard myself as singularly fortunate. The emolument is so high as to place me distinctly above the policeman, the postman, stree-car conductors, and other salaried officials of the neighbourhood, while I am able to mix with the poorer of the businessmen of the city on terms of something like equality. In point of leisure, I enjoy more in the four corners of a single year than a businessman knows in his whole life. I thus have, what the businessman can never enjoy, an ability to think, and, what is better still, to stop thinking for months at a time. "For over thirty years he would spend his winters in his house here on Côte des Neiges - his summers at Old Brewery Bay in Orillia. He wrote "My permanent address (in this world) is McGill University".

After his unwilling retirement in 1936, he continued to write and lecture. During the war, he became a sort of unofficial ambassador for Canada - as he looked to the post-war future with the optimism that had inspired his work throughout. It was a future he was not to see. He died in 1944.

Skyline Montréal

(Extraits de la revue L'Interdit)

LA CONSTRUCTION DE L'UNIVERSITE DE MONTREAL

"En 1876, à la suite d'une demande de Mgr. Ignace Bourget, évêque de Montréal, pour obtenir une université dans sa ville épiscopale, la Sacrée Congrégation de la Propagande proposa à l'Université Laval d'établir à Montréal une succursale où l'on donnerait la même formation qu'à Québec. Les facultés de théologie et de droit s'ouvrirent en 1878, celle de médecine en 1879 et celle des arts en 1887. Cette succrusale devint entièrement autonome entre 1920 et 1923. Ses bâtiments étaient alors éparpillés au centre-ville. On se mit à songer à la création d'un nouveau campus. Il fallut choisir entre trois ou quatre sites. On décida finalement d'accepter une offre de la Ville qui mettait une partie du versant ouest du Mont-Royal à la disposition de l'Université. Ce choix fut justifié par le fait que la majorité de la clientèle étudiante demeurait dans les quartiers environnants."

"On confia à l'architecte Cormier la responsabilité d'établir le plan de développement de l'Université. Ce qu'il imagina était révolutionnaire à l'époque: un immeuble capable de loger 6000 étudiants et de réunir sous un même toit toutes les facultés et services ainsi qu'un hôpital universitaire. Au centre, il y aurait le hall d'honneur, la bibliothèque et l'auditorium. En arrière, à l'ouest, ce serait la chapelle et à l'est, les classes. La tour était d'inspiration byzantine; c'était le point de ralliement de toute la construction. Cormier avait choisi une brique de Canton, Ohio, jaune pâle, naturellement imperméable. L'immeuble courirait une surface de 925000 pieds carrés. Ce serait un des plus grands en Amérique du Nord. Pourquoi voulait-on l'édifier à un endroit aussi élevé? Tout simplement pour qu'il soit vu de très loin et aussi parce que l'architecte avait l'intention de faire paver une allée en pente qui irait de la cour d'honneur jusqu'au Chemin de la Côte-Ste-Catherine. De chaque côté de cette avenue on construirait des maisons qu'habiteraient les professeur de l'Université"

"L'excavation commença en 1927. A cause de la dénivellation, il fallut créer deux paliers d'assises de l'immeuble. Tout le roc excavé servit à ériger le grand plateau qui fait face à la cour d'honneur. Les ailes ABCet TUV reposent sur des caissons de 5 à 25 pieds de profondeur, alors que la partie arrière repose directement sur le roc. Cela n'alla pas sans mal. On découvrit une grande faille dans le terrain. La construction de l'immeuble commença en 1929 mais en 1931, vu la crise économique, ce fut l'arrêt complet des travaux. Tout l'immeuble dans sa forme actuelle était déjà terminé moins la tour. La coquille extérieure était bien là, mais l'intérieur était vide. Tout fut immobilisé pendant 8 ans. On ne pouvait voir sans tristesse cet immense immeuble fantôme aux vitres brisées et aux ouvertures des premiers étages fermées par des panneaux. L'entretien en coûtait fort cher et pesait lourd sur le budget de fonctionnement de l'Université du centre-ville. En 1940-41, le gouvernement dut intervenir et l'on créa la Société d'administration de l'université. On renégocia la reprise des travaux. L'entrepreneur respecta son contrat mais il fallut moderniser certaines installations. Seul le bloc est fut terminé."

"On pensait toujours installer l'hôpital universitaire dans le bloc ouest, mais il était plus urgent de déménager l'Université de la rue St-Denis au nouveau campus, ce qui fut fait en 1943. Quant à la fameuse avenue en facade, elle fut complètement abandonnée. Pendant la crise, les terrains avoisinants avaient été achetés par des particuliers et l'Université avait été impuissante à empêcher le développement du quartier. Afin de pouvoir exécuter le projet d'hôpital et de parachever le campus avec des services adéquats aux étudiants: centre social, résidence, gymnase, etc., on organisa, en 1948, une campagne de souscription qui devait rapporter 10 millions et qui eut tellement de succès qu'on recueillit 13 millions. A l'époque c'était énorme. Pour des raisons politiques, l'hôpital n'a pu

Photo: J. Recasens

Université de Montréal

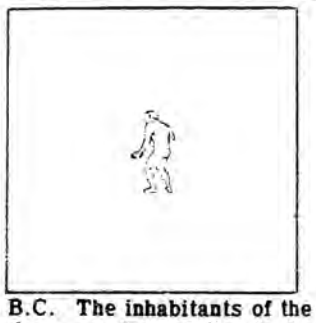
être construit. Quelques années plus tard, ce projet fut repris mais les coûts étant prohibitifs, on décida d'abandonner complètement l'idée d'un hôpital universitaire au profit d'affiliations de la Faculté de médecine avec les hôpitaux en place à Montréal".

"La grande phase d'expansion de l'université de Montréal se situe entre 1963 et 1968, alors que de nouveaux pavillons virent le jour sur le campus. Le budget de construction, pendant cette période. fut de l'ordre de $1,000,000 par mois, soit une somme totale de $56,000,000."

On trouve aujourd'hui sur le campus, outre le pavillon principal, deux grandes écoles affiliées: l'Ecole Polytechnique et l'Ecole des Hautes Etudes Commerciales le Pavillon Maximilien-Caron (droit). le Pavillon Lionel-Groulx (sciences humaines), le Pavillon 3200 rue Jean-Brillant centrale thermique et le Pavillon du Service des bâtiments et terrains, trois résidences pour étudiants, le Centre communautaire, le stade d'hiver et le Pavillon d'éducation physique et des sports. Le garage Louis-Colin, d'une capacité de 1,300 voitures, reçut en 1971 trois prix dont le prix canadien Vincent-Massey pour l'édifice le plus fonctionnel de l'année, le prix des fabriquants de béton du Canada et le prix de la revue américaine College and University Business, pour les dix meilleurs projets en Amérique du Nord. Une rampe mobile couverte permet l'accès facile du campus par les piétons.

L'Université possède également, dans les rues avoisinantes, d'autres bâtiments acquis au cours des dernières années. Hors campus sont logés, l'Ecole de médecine vétérinaire, à St-Hyacinthe, la Station de biologie, dans les Laurentides et l'Observatoire astronomique du Mont-Mégantic, dans les cantons de l'Est.

WATCH THIS SPACE (1)



20,000 B.C. The inhabitants of the paper square have no diea of the fundamental nature of the Universe in which they live.

TONIGHT'S DISCOURSE

GEHARD HERZBERG

Gerhard Herzberg was born in Germany and studied at the Darmstadt Institute of Technology. He came to North America in the early 1930's and has lived and worked there ever since. He first went to the University of Saskatchewan, in Saskatoon, then to Yerkes Observatory, whence he returned to Canada in 1948, to take up an appointment in the Ottawa laboratories of the National Research Council of Canada. He stayed there until his retirement - and beyond, since he still works there as a Distinguished Research Scientist.

Dr. Herzberg's work has been on the structure and spectra of both atoms and molecules. His book "Atomic Spectra and Atomic Structure", published in 1944, is still a useful, and much used, introduction to the topic. Altough this work lies in the borderline between physics and chemistry, it has many points of contact with astronomy and Canadian astronomers have always been proud to regard Dr. Herzberg as one of the foremost of their colleagues - a pride that was naturally much increased when he was averded the Nobel Prize for Chemistry in 1971.

Amongst his other honours, Dr. Herzberg is a Fellow of the Royal Society of London, an honorary member of several other national accademies, and was President of the Royal Society of Canada in 1966-67. He has received the highest honour that Canada can bestow, having been admitted as a Companion of the Order of Canada in 1968.

The increasing interest in, and discoveries of, molecular spectra of astronomical origin, maintly by radio observations, has naturally given the work of Herzberg and his collaborators increased importance in the eyes of astronomers. This work has both stimulated and been stimulated by the new observational results, and it is

Dr. Gerhard Herzberg

about this interaction between the two disciplines that Dr. Herzberg will talk tonight.

It would be wrong to introduce Dr. Herzberg only by reciting his distinctions and achievements. Those of us in the relatively small Canadian astronomical community who have had the privilege of knowing him can testify to a man, fortright indeed in his opinions, but modest, unassuming and warm in his personal relationships. We ar delighted that Dr. Herzberg has been chosen by the IAU Executive to represent Canadian astronomical com-IAU Executive to represent Canadian astronomy since his topic, of the many studied by Canadian astronomers, is the most timely, and we are confident that they could not have found a better representative.

Dr. Herzberg's Invited Discourse on "The Interplay of Molecular Spectroscopy and Astronomy" will be held in the Grand Salon, Queen Elizabeth Hotel.

EXHIBITS, DISPLAYS AND TRADE-SHOWS DURING THE ASSEMBLY

A variety of astronomy-related exhibits will be available for our inspection on the Université de Montréal campus during the forthcoming week. As a first example Commission 41 on the History of Astronomical Photography, to be shown from August 14 to 23 in the Galerie d'Art of the Ecole des Hautes Etudes Commerciales (on the ground level, joining Pavillon 3200 Jean-Brilliant to H.E.C.). Observatories from all over the world have contributed to this exposition, which also includes a special exhibit on loan from the Merseysi-de County Museums, Liverpool, England. Any astronomer having contact with the photographic process will find it fascinating to see the impressive efforts and accomplishments of some of the true pionners in this field.

There will also be a great deal of interest in the Einstein Centennial Exhibit, on loan from the American Institute of Physics. As described by Dr. Spencer on loan from the American Institute of Physics. As described by Dr. Spencer Weart Director, AIP, center for History of Physics, "Einstein's scientific work is naturally featured in the exhibit, but the extensive illustrations and authoritative text also give insight into his political and social work his philosophy, and his character as a human being."

A variety of major observatories, laboratories, agencies and scientific societies will have exhibit booths set up along the second floor corridors during the full periode of the meetings at the U. de M. Each is mentioned on the simgle page Exhitib Floorplan provided in your Registration Packet. We would like to remind you to stop by these booths and get reacquainted with these special friends.

Not to be overlooked either, and astronomical "Trade Show" will take place Monday, Tuesday, and Wesnesday, August 20-22, also on the second floor corridors of the Pavillon 3200 Jean Brillant. We will described these exhibits in more tetail in a later issue, but we would like to point out that D. Reide Publishers, the official publisher of the IAU, will have its booth open from August 15 to 22 to take care oa IAU related orders.

A PROPOS DU "CONCERT DES ASTRONOMES"

par Dr. J.P. Brunet

A very good idea: c'est assurément le commentaire qui revient le plus souvent dans les missives que j'ai reçues à ce jour, veille de cette SVII Assemblée générale.

Bien sûr, lorsque, en février 1978, j'ai proposé au Comité National d'organisation l'idée du "Concert des Astronomes", je me doutais de la difficulté d'une telle entreprise. J'étais persuadé depuis longtemps que parmi mes collègues français et étrangers, se trouvaient nombre de musiciens, qu'ils soient mélomanes ou instrumentistes. Pourquoi alors ne pas essayer de regrouper ces derniers pour créer un ensemble musical qui aurait plaisir à jouer devant les premiers?

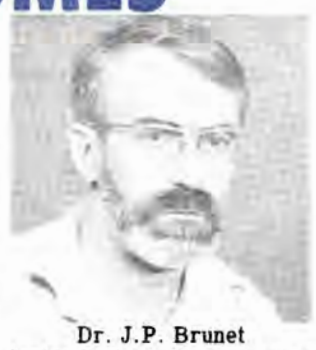
Mon but était de constituer une chorale car, dans ce cas, l'instrument est facile à transporter. Et qui n'a pas chanté dès son premier âge?

Une autre possibilité était de former un orchestre si les participants acceptaient de transporter leurs instrument avec eux.

Dans les faits, qu'en est-il? Après la parution d'une note dans le programme préliminaire, il s'est avéré que les délais seraient très courts pour échanger entre nous, quelques idées, quelques propositions, décider, organiser. Et puis, il y a eu ceux qui croyaient pouvoir aller à Montréal et qui, au dernier moment, n'ont pu réaliser leurs espoirs. Il ne faut pas oublier aussi que les astronomes sont de grands voyageurs et que le courrier a souvent du mal à les rattraper. Sans compter également sur les grèves des postes, les vacances familiales ... et la préparation intense des sessions scientifiques.

Car on ne va pas à Montréal dans le seul but de jouer de la musique mais pour rencontrer nos collègues et pour échanger. Et la musique n'est elle pas une activité idéale pour mieux se connaitre, pour "faire ensemble" pour soi et pour les autres.

Nous sommes vingt - et c'est bien peu - prêts à



Dr. J.P. Brunet

tenter le pari. Nous verrons lors d'une première prise de contact, si nous saurons résoudre les problèmes qui restent pendants: louer des instruments, définir un planning pour les répétitions sans perturber l'activité scientifique de chacun... et établir un programme.

Le concert aura lieu le 20 août à 21.00 à la chapelle de l'Eglise des Dominicains (2715 chemin de la Côte Ste-Catherine). Au nom de mes collègues musiciens, je vous invite à assister nombreux à ce premier "Concert des Astronomes". Vos réactions sauront nous faire comprendre si cette expérience peut avoir un lendemain.

Une réalisation
Les Promotions
Claude Girardin
Composé et imprimé par
Web Offset Inc.

EXPOSITION DES ASTRONOMES AMATEURS

L'exposition d'astronomie qui se déroulera sur la Place du Complexe Desjardins (Métro Place des Arts), du 16 au 18 aouût, se veut représentative de tous les groupes d'amateurs qui font de l'astronomie comme principal loisir. Projets de construction d'appareils, d'études diverses et présentation des divers organismes oeuvrant dans le domaine de l'astronomie seront les principaux éléments de cette exposition. En plus, un groupe de Francais viendra compléter en apportant quelques reflets de l'astronomie amateur en France. Entrée libre.

AMATEUR ASTRONOMERS' EXHIBITION

The astronomy exhibition which will be held in Place Desjardins (Metro Place des Arts) from 16 to 18, is meant to be representative of all the amateur groups whose main leisure activity is astronomy. Displays of apparatus construction projets, various studes, and présentation of the organizations working in the field of astronomy will be the main items of this exhibition. Moreover, a French delegation will be there to present some of the aspects of amateur astronomy in France. Admission free.

1979 IAU Montréal UAI 1979

METEORE

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RESUME DE CONFERENCE SOLENNELLE

"L'INTERACTION ENTRE LA SPECTROSCOPIE ET L'ASTRONOMIE"

par G. Herzberg, Conseil National de recherches, Canada

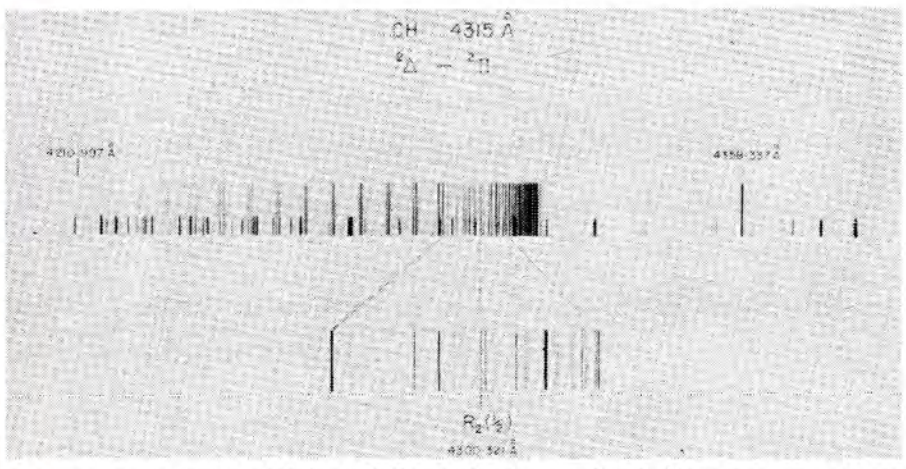
Depuis les toutes premières études en spectroscopie astronomique, une interaction des plus fructueuses s'est toujours maintenue entre les travaux expérimentaux et les observations astronomiques. Le professeur Gerhard Herzberg présentait dans sa récente conférence une splendide revue des nombreuses interactions entre la spectroscopie moléculaire et l'astronomie. Il traita tour à tour des contributions apportées dans le domaine des atmosphères des étoiles et des planètes, de la structure des comètes et de la nature du milieu interstellaire. Le conférencier concluait son exposé en indiquant les avenues futures de recherche.

ETOILES

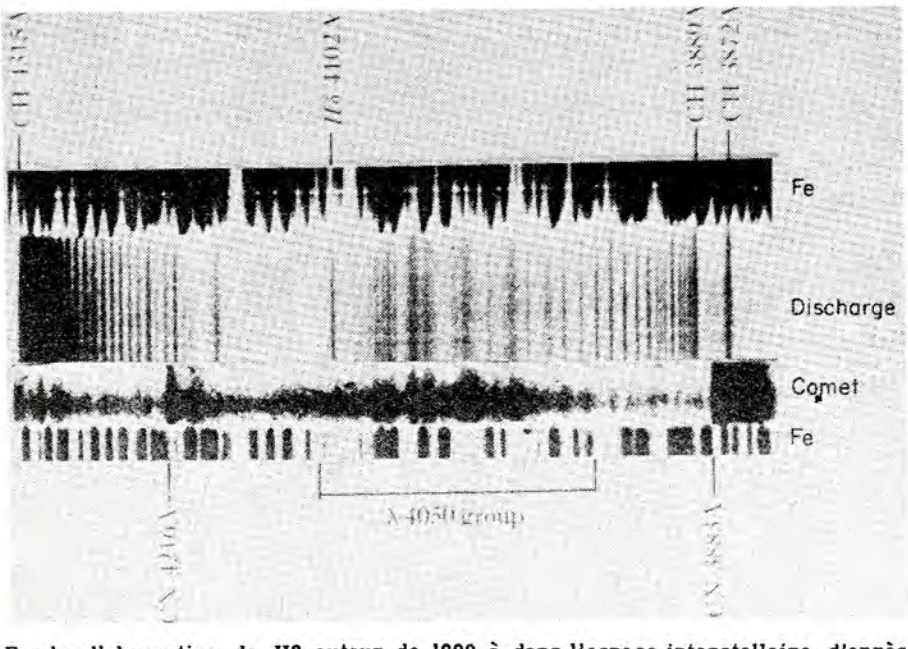
Notre compréhension de l'atmosphère complexe des étoiles les plus froides dépend, en grande partie, d'une connaissance détaillée des nombreuses molécules qui s'y trouvent et de leurs énergies de dissociations. Grâce à des recherches en laboratoire, on a graduellement réussi à accumuler les données essentielles à la solution de ce problème. Aujourd'hui, une seule énergie de dissociation importante, celle du CN, demeure encore incertaine.

Parmi les grands succès des recherches expérimentales, on compte la décou-

(Suite en page 4)

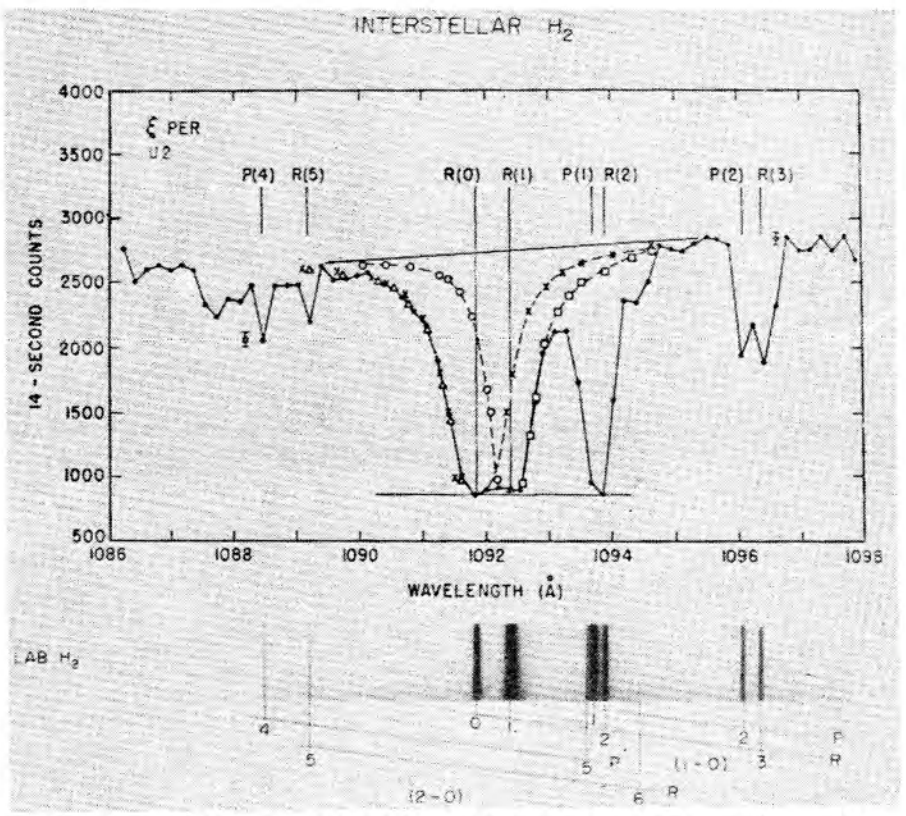


La bande du CH à 4315 A produite par la flamme d'un brûleur Bunsen ordinaire observée à haute résolution et montrant la ligne interstellaire à 4300.3A.



Bande d'absorption de H2 autour de 1090 à dans l'espace interstellaire, d'après Spitzer et al. (Ap. j. 181, L 116 (1973) , et dans le laboratoire.

Le spectre interstellaire fut obtenu par le satellite Copernicus et le spectre de laboratoire par le spectrographe à vide de 10 m du CNRC.



Le groupe 4050 dans le laboratoire et dans une comète. Le spectre cométaire est celui de la comète Cunningham 1940 obtenu par Swings (PASP 54, 123 (1942). Le spectre de laboratoire est celui d'une décharge continue dans le CH4, d'après Herzberg (Ap. J. 96, 314 (1942).

LE RAPPORT D/H

Un résultat intéressant a été mentionné à la discussion commune sur l'astronomie ultra-violette. Dans une revue présentée par M. Jura sur les observations du milieu interstellaire il fut reporté que le rapport D/H n'est pas constant, qu'il varie selon la direction d'observation dans la galaxie. Les observations furent faites par Laurent et Vidal - Major. Le rapport D/H est utilisé pour déterminer la courbure de l'univers et ces nouvelles observations remettent cette technique en question. Ces résultats furent évidemment contestés par d'autres astronomes et il s'en suivit une discussion animée.

LE TELESCOPE CANADA-FRANCE-HAWAII

Le télescope Canada-France-Hawaii est géré en commun par le Conseil National de Recherches du Canada, le Centre National de la Recherche Scientifique de France et l'Université de Hawaii, USA.

La France et le Canada ont pris en charge à égalité le coût de la construction, l'Université de Hawaii fournissant quant à elle le site et son infrastructure. Le temps d'observation disponible se répartit ainsi: Canada et France 42.5% chacun. Université de Hawaii 15%.

Bien qu'il y ait 5 astronomes résidents l'observatoire a été prévu pour être principalement à la disposition des astronomes des trois pays fondateurs.

La construction commencé en 1974, a duré un peu plus de 5 ans. Les pièces mécaniques ont été élaborées en France, l'optique, le système de contrôle-commande et la coupole au Canada.

L'instrumentation de base a été conçue et fabriquée par des instituts scientifiques dans les trois pays participants.

L'observaoire a été implanté au sommet de Mauna Kea, dans l'ile de Hawaii, à environ 300 km d'Oahu, l'ile principale où se trouve Honolulu, la capitale de l'Etat.

Mauna Kea et sa montagne soeur Mauna Loa sont 2 gigantesques volcants qui s'élevent à quelque 4200 m au-dessus de l'Océan Pacifique. Mauna Kea, à la différence de Mauna Loa qui est encore en activité, est un volcan dormant depuis au moins 4000 ans; son sommet, composé d'une série de petits cônes de cendre, est aride et sans aucune végétation. Bien que l'ile soit située sous les tropiques, il arrive que les conditions atmosphériques au sommet soient rudes, surtout en hiver, des tempêtes peuvent y déposer plusieurs décimètres de neige et le thermomètre descendre jusqu'à -15C. A cause du manque d'oxygène dû à l'altitude, certaines personnes s'y sentent mal à l'aise ou léthargiques, surtout la première fois, mais ces légers désagréments sont largement compensés pour les astronomes par les excellentes conditions d'observation, dues justement à la haute altitude qui place le sommet de Mauna Kea au dessus de 40% de l'atmosphère terrestre. Plus spécifiquement les principaux avantages astronomiques du site sont les suivants:

• La plupart du temps le sommet domine la couche nuageuse qui recouvre les bases de la montagne. Dans 60% des nuits l'absence complète de nuages et la très faible turbulence de l'air créent des conditions idéales pour les observations photo métriques; 12 a 15 % supplémentaires des nuits sont utilisables pour les observations spectroscopiques qui ne nécessitent pas des conditions aussi stables.

• Pour beaucoup d'observations, la caractéristique essentielle d'un site réside dans la "qualité d'image" qui se mesure dans le cas des grands télescopes, par l'élargissement du diamètre apparent des étoiles dû à la turbulence atmosphérique. La "qualité d'image" au Mauna Kea est en général d'une seconde d'arc et très souvent moins, ce qui le place au premier rang des sites de grands télescopes, comme ceux du Chili

• En raison de l'altitude, mais aussi de la faible densité de population de l'ile le ciel au-dessus du Mauna Kea est très noir, des nuages recouvrent habituellement les régions les plus peuplées de l'ile au bord de la mer; la pollution lumineuse n'est donc pas à craindre pour de nombreuses années à venir.

• Comme la vapeur d'eau est concentrée dans les basses altitudes, l'air au-dessus d'une montagne est normalement très sec. Par nuit claire au sommet du Mauna Kea la quantité d'eau dans une colonne d'air verticale est inférieure au millimètre alors qu'elle est généralement de l'ordre de 10 mm au niveau de la mer. Etant donné que la vapeur d'eau est la source principale d'absorption de l'infrarouge dans l'atmosphère, le Mauna Kea est un excellent site pour les observations dans l'infrarouge.

Le télescope après achèvement du montage (1979)

• Enfin la basse latitude du site (20o) permet d'observer jusqu'à 90% du ciel.

En raison de la raréfaction de l'air au sommet (50% de la pression atmosphérique normale), astronomes et techniciens ne restent pas en haut entre les observations ou les périodes de travail, mais descendent au "camp de base" à 12 km du sommet, à l'altitude de 2800 m où ils trouvent dortoirs, restaurant, bibliothèque et salles de repos.

Le siège de la Société du Télescope Canada-France-Hawaii se trouve à Waimea à environ 1 heure de route du camp.

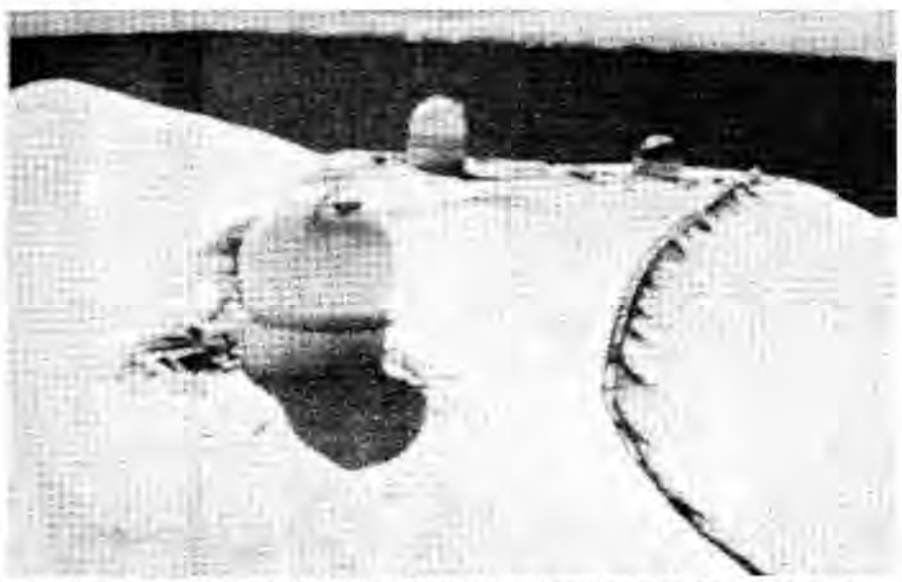
Le miroir primaire est parabolique et le miroir secondaire cassegrain est hyperbolique. Cette configuration "classique a été choisie car elle permet l'observation aux foyers primaire et cassegrain sans correcteurs qui introduisent inévitablement absorption et lumière diffusée. Comme dans la configuration classique le champ sans coma est faible. Il est nécessaire d'insérer des correcteurs pour les observations exigeant un champ important. Dans la configuration coudé, une série de miroirs dirigent la lumière vers l'une des deux salles coudé situées sous le télescope, où il est possible d'utiliser de grands spectrographes et autres instruments encombrants Les miroirs plans de la combinaison coudé sont traités pour minimiser les pertes de lumière.

Au centre, un pilier cylindrique en béton de 17 mètres de diamètre porte le télescope et contient 3 grandes pièces deux salles coudé et une salle pour l'aluminure des miroirs. Entourant le pilier se trouve le bâtiment annulaire qui supporte la coupole et le plancher d'observation. Ce bâtiment comporte quatre niveaux en-dessous du plancher d'observation dans lesquels se trouvent la salle de commande du télescope, la salle d'ordinateurs des chambres noires, un laboratoire électronique, un atelier et d'autres salles pour équipement divers. La coupole a 32 mètres de diamètre et a la forme d'une demi-sphère outrepassée. Pour réduire la turbulence la fermeture de la trappe est du type "cimier".

Plusieurs instruments d'observation sont à la disposition des astronomes, en particulier deux chambres photographiques, des photomètres pour les domaines visibles et infrarouge, trois spectographes de résolutions faible, moyenne et élevée, un polarimètre et un interféromètre utilisé en spectromètre à transformée de Fourier.

On trouve aussi plusieurs récepteurs utilisant les techniques les plus récentes, en particulier un récepteur à réticon pour la spectroscopie, des récepteurs à comptage de photons pour les très faibles niveaux de lumière et une caméra électronographique.

Enfin un ensemble d'acquisition de données et de commande de l'instrumentation à miniordinateur et interface CAMAC sont également mis à la disposition des observateurs.



Vue d'avion du site. Le télescope CFH est au premier plan. Derrière se trouvent les télescopes de l'Université de Hawaii et du Royaume uni. Le sommet de Mauna Kea est à gauche. Mauna Loa est à l'arrière plan.

We have already heard much about the C.F.H.T. at the inaugural Ceremony. Here is futher information about the telescope

FIRST LIGHT AT THE CANADA-FRANCE-HAWAII

The first photons were captured by the C.F.H.T. in the night of August 7 at 2.15 a.m. Hawaiian time. Drs. Cayrel and Odgers, the directors of the observatory were at the controls and M. Jean-Claude Fouéré, the optical engineer, in the prime focus cage. A large staff attendance was recorded. No picture was taken and the telescope was only made to guide a star. The tlescope guided and set well. At dawn Californian champagne was served at mid-level. The first picture was taken on August 12.

Historic photo of globular cluster M15, the first taken with the C.F.H.T. The picture was taken on Plus-X with a 35 mm camera fitted to the prime focus. Derick Salmon was in the prime focus cage. Drs. Cayrel and Odgers were in the control room. The 1 minute exposure was not guided and should not be taken to illustrate the performance of the telescope.

MAISON DE RADIO-CANADA

What has six sides, wears 17,000 costumes and speaks eleven languages?

What else but the Maison de Radio-Canada - the multi-million dollar broadcasting centre owned and operated by the Canadian Broadcasting Corporation. The huge complex of concrete, stone and glass sprawls over 25 acres on Dorchester Boulevard East, just west of the Jacques Cartier Bridge.

Guided tours of the Maison Radio-Canada are given mornings and afternoons seven days a week and evenings, week nights only. Tours are given in French and English and last about one hour. For reservations call a day ahead if possible at 285-2962.

Visitors are also welcome to attend the taping of certain TV and radio programs mostly in French. For réservations for French programs phone 285-2690, for English programs 285-2600.

Convenient for tourists, the Maison is a short taxi ride from downtown hotels. It is easy to get to by bus - take the 150 going east on Dorchester or take the Metro and exit at the Beaudry station.

The spectacular 23-storey hexagonal office tower dominates the skyline of east end Montreal.

TV and radio production takes place in three vast underground levels. This enormous subterranean production plant includes radio and TV studios and their control rooms; radio and TV Master Controls, ten tele-cine and twenty videotape chains; a record library with 220,000 discs a bilingual newsroom and a garage for mobile TV units.

The underground labyrinth houses a design department that conjures up everything from a medieval castle to a space ship. Its 8,000 seats and 60,000 props would fill an average-size department store.

The Maison' Costume Department stocks 17,000 costumes and 15,000 accessories and creates 8000 original costumes in a year.

With 26 radio studios and eleven color TV studios, the 73 million dollar Maison is among the world's largest and most modern broadcasting centres, and one of the most important producers of French-language programs. The largest TV studio is a four-camera auditorium seating 700.

Six stations serving the metropolis and feeding the national networks operate out of the Maison: French-language radio stations CBF and CBF-FM; their English counterparts CBM and CBM-FM; French-language television station CBFT and English language television station CBMT.

Together with the shortwave service Radio Canada international and the Northern Service, these stations broadcast a total of approximately 900 hours of programs a week 250 of which air on television. Over two thirds of these broadcast are French-language productions.

Radio Canada international broadcast around-the-clock in eleven languages to five continents. Having earned a world-wide reputation for unbiased news reporting, R.C.I. receives thousands of letters a year from appreciative listeners.

The staff of 3,400 on third of the CBC's national work force, includes headquarters staff of the French Network and the officers of the Quebec Region of the English Network.

Visitors to the Maison are first taken to the Multimedia Room for an audiovisual presentation on multiple screens. It outlines the role of the CBC and shows many of the activities which visitors cannot see.

You can't miss it - it's the only six-sided building around.

Maison Radio Canada is included in the tour of Old Montreal, No 92. Extra tickets may be purchases at $8 each. See page 15 of the Final Programme for details.

Reprinted with permission from PROMENADE, April 1978.

THE PARIS OFFICE OF THE IAU

by PATRICK WAYMAN

It's been talked about for a long time and now it's going to happen - the IAU is going to have a permanent 'seat' in Paris. From September 1979 all correspondence for the IAU Secretariat should go to "The IAU Secretariat, Observatoire de Paris, 61 rue de l'Observatoire, 75140 Paris, France."

Statue of Le Verrier in the forecourt of l'Observvwtoire de Paris, Photo: PAW

If you know the Rue de l'Observatoire entrance of L'Observatoire de Paris, you may remember passing a statue of Le Verrier. If so, you have also passed the new IAU Office. By real - estate agents it might be described as a "self-contained period bijou residence", and it was originally the former western gate lodge of l'Observatoire - hence the name Le Pavillon ouest de l'Observatoire. The eastern gate lodge still serves its original purpose.

The offer from Paris authorities of a permanent home for the IAU has been made several times, but making the offer definite and implementing its acceptance has been delayed for various reasons. The era of a peripatetic Executive Secretary seemed bound to end eventually, even for the simple reason that IAU archives become less easily moved every time. The coming to retiring age in 1979 of Arnost Jappel, the faithful servant of the Union as Executive Secretary since 1965, produced the opportunity. The decision to accept the invitation from 1979 onwards was taken in 1974, before I joined the Excutive Committee, and I have considered my work as possible General Secretary in the context of the Paris Office right from the start.

We have been fortunate, through the hard work of Edith Muller, to secure the services of Mme Brigitte Manning, a person with some years of experience at l'Observatoire and with a reputation for efficient handling of international correspondence. She commences her service with the IAU during September and I expect to be resident in Paris myself during most of October and November 1979. After that, I expect to visit Paris fairly frequently and to carry out little of my IAU work at my home institution in Ireland. For the future, proximity to Paris seems to be demanded for General Secretaries, but practically all have been so situated in the past. Many scientific unions have headquarters in Paris and the headquarters of ICSU and UNESCO are there as well. Consultation with these organizations is therefore much easier and a definite evolution in IAU organization is possible.

The actual office building has two main rooms, one above the other, a ground-floor storeroom and a cellar for storage. Storage shelves will line many of the walls for past and future archives. In spite of its prestigious position and its favourable location in a delighful Paris quartier, it does not have good views from its windows, in general, but it is a solidly-built structure with definite charm. It is not so big that it will encourage empire-building, but its individualistic setting in historic surroundings is a great attraction. The Union is greatly indebted to the authorities of the CNRS of France for their generous provision of this building and to our French colleagues for their efforts towards finally achieving this long-considered project of a permanent secretariat.

Looking south-east from the centre of Montreal, the Maison Radio-Canada is shown with the Jacques Cartier Bridge spanning the St. Lawrence River in the background

Patrick and Mavis Wayman on the embrasures of the Green Wall of China, April 1979.

X MARKS THE SPOT

Herb Gursky and admirers look at the further mysteries of X-ray sources as revealed by the spectrographs of I.U.E., in the opening paper of yesterday's Joint Discussion on Ultra-violet Astronomy. This is the first 18-inch telescope in history to provide material for an entire Joint Discussion, and all within 18 months of its first light. Photo: Pierre Guzzo

CONCENSUS?

Twenty years ago this month the first paper appeared suggesting we look at the hydrogen line wavelength for intelligent signals from space. Since then many searches of nearby stars and galaxies have been made and so far no signals have been detected, but 20 years is a brief time and these searches, as Philip Morrison said, are only a prelude. The major difference between then and now is our much higher ability to gather data.

After this paper many other such special frequencies were discovered, such as the hydroxyl), ammonia lines, etc. and there's no clear reason why the choice should rest on any one of these for communication. This would make us more pessimistic of the successful outcome of our search for life elswehere in the universe were it not for the fact that modern technology based on integrated circuitry now allows us to scan many frequencies rapidly.

The morning discussions centre on the number of technologically advaced civilizations currently present in the galaxy and on the strategy for SETI through radio waves. I. Shklovsky was asked before coming what the chance was of finding extraterrestrial intelligence. He replied that he thought it was higher than that of his coming to Montreal. He is here!

(Left to right) P. Morrison, M. Papagiannis and I. Shklovsky at the Joint Session of Commissions 16, 40 and 44 on Strategies for the Search for Life In the Universe. (Photo Pierre Guzzo)

COMMISSION 41 (HISTORY OF ASTRONOMY)

COMMISSION 41 (HISTORY OF ASTRONOMY) will hold sessions on Thursday 16 August in Room B-2305.

15:00-15:30 Gérard de Vaucouleurs: Early History of Astrophotography (60 minutes)
J.A. Eddy: Recent progress in Astroarchaeology (30 minutes)
16:00-17:30 S. McKenna-Lawlor: Astronomical Observations in Medieval Irish Chronicles (15 minutes)
O. Gingerich: The plenum universe from Aristotle to Einstein (45 minutes)
followed by short papers by Chinese astronomers.
Secretary: Dr. J.A. Eddy (USA) or Dr. Owen Gingerich (USA)

COMMISSION 31

Yesterday, August 14, a late meeting of Commission 31 organizing committee was held to prepare for the administrative session of today. Lists of organizing committee, new members and consultants were prepared to be approved at today's meeting by the members of the commission. In addition, the August 15 morning meeting heard reports of the representatives to the BIH, CCDS and CCIR.

The program of Commission 31 for tomorrow is as follows: (Room B-2305) at 10h00 together with commissions, 4, 7, 8, 19 and 24 for the presentation and discussion of the report prepared by the working group on nutation followed by progress report on the preparation of FK5.

COMMISSION 19 - ROTATION OF THE EARTH

In the meetings of August 14, Commission 19 (The Rotation of the Earth) treated topics ranging from fossils to radiointerferometry. Professor S.K.Runcorn delivered a talk on the geophysicist's point of view toward the rotation of the Earth. He related recent studies of the length of the day determined from Devonian Coral fossils and nautiloid fossils to modern astronomical results. Dr. B. Guinot discussed the improvement of the Bureau International de l'Heure system of Earth rotation parameters introduced in 1979. From a study of data obtained with classical optical methods and from the Doppler satellite technique, Dr. William Markowitz reported that since 1962 the chandler motion of the rotational pole has been constant, but that the forced annual motion has been variable. D. P.E.G. Paquet presented the results of analysis of the variations in UTZ-TAI by Dr. D. Djurovic. Dr. O. Calarme discussed the results from the EROLD (Earth Rotation from Lunar Distance) campaign to use laser ranging to the Moon to determine Earth rotation parameters. Dr. J. Fonselow described the VLBI program of the Jet Propulsion Laboratory to determine Earth orientation parameters. Together with the members of Commission 31, the meeting of August 15 was held to discuss the future of Project MERIT (Measurement of Earth Rotation by Intercomparison of Techniques).

COMMISSION 34 INTERSTELLAR MATTER AND PLANETARY NEBULAE

Schedule of Meetings

Six 90 minute meetings have been scheduled as follows:

	Session	Title	Date	Location
I	c & d	Administrative: Supernova Remnants	August 17	E-0325
II	a & b	Planetary Nebulae: Ionized Gas	August 18	E-0325
III	c & d	Atomic Hydrogen: Interstellar Dust	August 21	E-0325

SESSION I - ADMINISTRATIVE (G.B. FIELD, CAMBRIDGE, U.S.A., Chairperson August 17, 90 minutes

This time will be devoted to a business meeting. Among the matters to be discussed are the qualifications for membership in Commission 34, recent actions on the membership list, and final approval of membership for the next Triennium. If you have other items for the agenda, please leave a note in Field's box at the General Assembly.

session i - SUPERNOVA REMNANTS (L.HIGGS, OTTAWA, CANADA Chairperson August 17 90 minutes
(I) Theory of supernova remnants (L. Cowie, Princeton)
(2) HI in supernova remnants (L.Higgs, Ottawa)
(3) High-velocity HI in the galactic plane (V. Radhakrishnan, Bangalore)
(4) Acceleration of cosmic rays by supernova-driven shock waves (R. Blandford, Pasadena).
(5) Optical studies of supernova remnants (S. van den Bergh, Victoria.)
(6) X-ray observations of supernova remnants (S. Murray, Cambridge, U.S.A.)
(7) Analysis of interstellar lines in high dispersion IUE spectra of 30 Doradus (K. de Boer, Madison).

SESSION II -PLANETARY NEBULAE (Y. TERZIAN, ITHACA, U.S.A. Chairperson August 18 - 120 minutes a & 1/3 b
(l) General review of planetary nebulae (Y. Terzian, Ithaca)
(2) General review of planetary nebulae II (G.S. Khromov, Moscow)
(3) The birth rate of planetary nebulae and their total number in the galaxy (V. Weidemann, Kiel)
(4) Planetary nebulae in other galaxies (H. Ford, Los Angeles).
(5) Optical spectra of planetary nebulae (l'Aller, Los Angeles)
(6) Far ultraviolet observations of planetary nebulae (S. Pottasch, Haute Provence)
(8) Dust in planetary nebulae (S. Kwok, Ottawa)
(9) Proto-planetary nebulae (C. Purton, Toronto)

SESSION II IONIZED GAS (M. PEIMBERT MEXICO CITY Chairperson August 18 2/3 b 60 minutes
(l) Emission line survey of the Milky Way (T. Gull, Greenbelt)
(2) Faint filaments of ionized gas (R. Reynolds, Madison)
(3) ultraviolet observations of the Orion Nebula (M. Perinotto, Florence)
(4)Observations of galactic HII regions (M. Peimbert, Mexico City)
(5) Comments on extragalactic HII regions (S. Collin-Souffrin, Paris)
(6) A mechanism for variability of interstellar masers (C. Montes, Nice)
(7) Radio infrared studies of star-formation regions (E. Becklin Hawaii)

SESSION III ATOMIC HYDROGEN (H. VAN WORDEN, LEIDEN Chairperson August 21 c 90 minutes
(1) Structure of the interstellar medium near the galactic center (W.B. Burton, Minneapolis)
(2) Gas in the solar vicinity (A. Dupree, Cambridge U.S.A.)
(3) Observations and interpretation of neutral hydrogen absorption (E.E. Salpeter, Y. Terzian and J. Dickey. Cornell)
(4) Cloud structure and temperature of atomic hydrogen from brightness fluctuations in the 21 cm line (U. Mebold. Bonn)
(5) Synthesis observations of galactic HI (U.J. Schwarz, Groningen)
(6) Neutral hydrogen high velocity clouds (E.E. Salpeter and Y. Terzian Cornell)
(7) Neutral gas in elliptical galaxies (g. R. Knapp, Pasadena)

session iii - INTERSTELLAR DUST (B. DONN, GREENBELT, U.S.A. Chairperson August 21. 90 minutes
(I) Interpretation of extinction and polarization observations (J. Mathis, Madison. U.S.A.)
(2) Amorphous grains (K.L. Day, Tucson U.S.A.)
(3) Laboratory Measurements on the 12 features of interstellar silicate grains (W. Kratchmer, Heidelberg).
(4) Formation mechanism and grain properties, theory and experiment (B. Donn Greenbelt).
(5)Theory and laboratory analogue experiments on photoprocessing interstellar grain mantles, results and implications for interstellar molecule formation (J.M. Greenberg, Leiden).
(6)Oxide grains (W.W. Duley, Toronto.

BULLETINS

COMMISSIONS 29 and 42

Informal meeting on VV Cep, Friday, August 17 at 9.00 a.m. Room 2414.

COMMISSION 44 MEETING

Commission 44 has scheduled a meeting on Future Needs for Space Astronomy on Friday, August 17 Room 3325.

The meeting is made of 3 sessions
Session I: International Space Programmes. This session will be devoted to a description of present planned programmes in various organizations like NASA and ESA by Nancy Roman and E. Peytreman.
Session II: President Scientific Needs for Space Astronomy presented by L. Goldberg.
Session III: Potentialities for Space Astronomy of the new generation of Space Transportation Systems and Platforms.
The meeting will be followed by the second business meeting of the Commission.
The détailed programme of the meeting is posted on Commission 44 panel.

BOUTIQUE DU CONGRES - ROOM 2405

Customers of la "Boutique du Congrès" will have a chance to win a prize to the value of $100.00 at a draw. You will have as many chances to win as you have number of coupons. You have **one** coupon for every purchase at the "Boutique du Congrès".

Les clients de la "Boutique du Congrès" auront droit au tirage d'un prix d'une valeur de $100.00. Vous avez autant de chances de gagner que le nombre de coupons en main. Vous recevez un coupon pour chacun des achats faits à la "Boutique des Congrès".

LOST BAGGAGE - BAGAGES PERDUS

If you did not recieve your baggage on arrival at Mirabel Airport, it has been delivered to the CTCUM "Autocar" terminus at Central Station (at the junction of Lagauchetière and University) near Q.E. Hotel.

For more information, please give your name to the Information Desk at Pavillon 3200 rue Jean Brilliant. This does not apply for arrivals at Dorval.

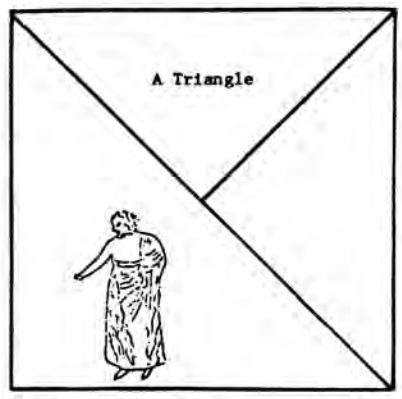
Si vous n'avez pas encore reçu vos bagages à l'arrivée à Mirabel, ceux-ci ont été livrés au terminus CTCUM "Autocar" à la Gare Centrale (coin des rues Lagauchetière et University) près du Reine Elizabeth

Pour plus de renseignements, veillez donner votre nom au bureau d'information au Pavillon 3200 rue Jean Prilliant. Ceci ne s'applique pas pour les arrivès à Dorval.

TOUTES NOS EXCUSES

Nous regrettons sincèrement l'oubli de la parution de l'auteur sur l'artide de la Place des Arts dans la publication no 1. Son nom est Mireille Gagné. Toutes nos excuses.

WATCH THIS SPACE (2)



400 B C The triangle is hypothesized to be the fundamental unit out of which the Univers is built.

(Suite de la page 1)

verte de la prédissociation inverse dans l'atmosphère des étoiles variables à longues périodes. Faite à la suite de travaux de laboratoire, cette découverte illustre particulièrement bien l'application des études expérimentales au domaine astronomique.

PLANETES

Ce que nous savons de l'atmosphère des planètes, de leurs compositions et des processus moléculaires qui s'y produisent a aussi été très largement acquis grâce à l'étude, en laboratoire, des spectres de l'oxygène, de l'hydrogène, du methane et d'autres molécules. Les travaux du professeur Herzberg et de ses collègues touchent donc tant à la chimie moléculaire qu'à l'astrophysique et à l'étude des écosystèmes planétaires.

COMETES

Mais c'est dans l'analyse spectroscopique des comètes que ces travaux de laboratoire, couplés aux observations astronomiques, ont produit certains de leurs fruits les plus importants.

Les têtes cométaires montrent des spectres caractéristiques de plusieurs radicaux libres. Pendant plus d'un siècle, un groupe de raies spectrales à 4050A est demeuré une énigme, défiant toute identification. Ce mystère aiguillonna de nombreuses études en spectroscopie expérimentale qui réussirent, enfin, à identifier le radical libre C3 comme source de ce groupe. C'est aussi grâce aux données des laboratoires que les différents mécanismes d'excitation responsables des spectres cométaires ont pu être découverts.

Le spectre des queues des comètes sont riches en lignes dues aux ions moléculaires. L'identification de nombre d'entre eux constitue un des plus remarquable chapitre des travaux du Dr. Herzberg et de ses collaborateurs. On se rappelle que la dernière identification, celle que l'ion moléculaire de l'eau H2O plus, résulte de l'analyse des observations de la fameuse comète Kohoutek.

NUAGES INTERSTELLAIRES

Enfin l'histoire du milieu interstellaire et de ses nuages de gaz et de poussières en est une de spectres particulièrement énigmatique. Le déchiffrage de ces spectres et l'identification des molécules qui les produisent constituent une des plus palpitantes énigmes de l'astrophysique du XX siècle: c'est encore grâce aux recherches spectroscopiques de laboratoire qu'on a peu à peu réussi à lever le voile sur cette énigme. Très récemment ces recherches ont permis de prédire l'existence insoupçonnée d'ions et de molécules géantes dans l'espace interstellaire, et a suggéré les moyens de les découvrir par l'observation astronomique. Ces prédictions ont été brillamment confirmées par les découvertes, grâce aux observations radio - astronomiques, de nombreuses molécules organiques dans l'espace.

Le Dr. Herzberg termina sa conférence en mentionnant plusieurs exemples d'études expérimentales qui, bien qu'elles n'aient pas encore amené de découvertes astronomiques, sont susceptibles de bientôt le faire.

1979 IAU Montréal UAI 1979

METEORE

August 17 Canada Août 17

Number 4 Numéro 4

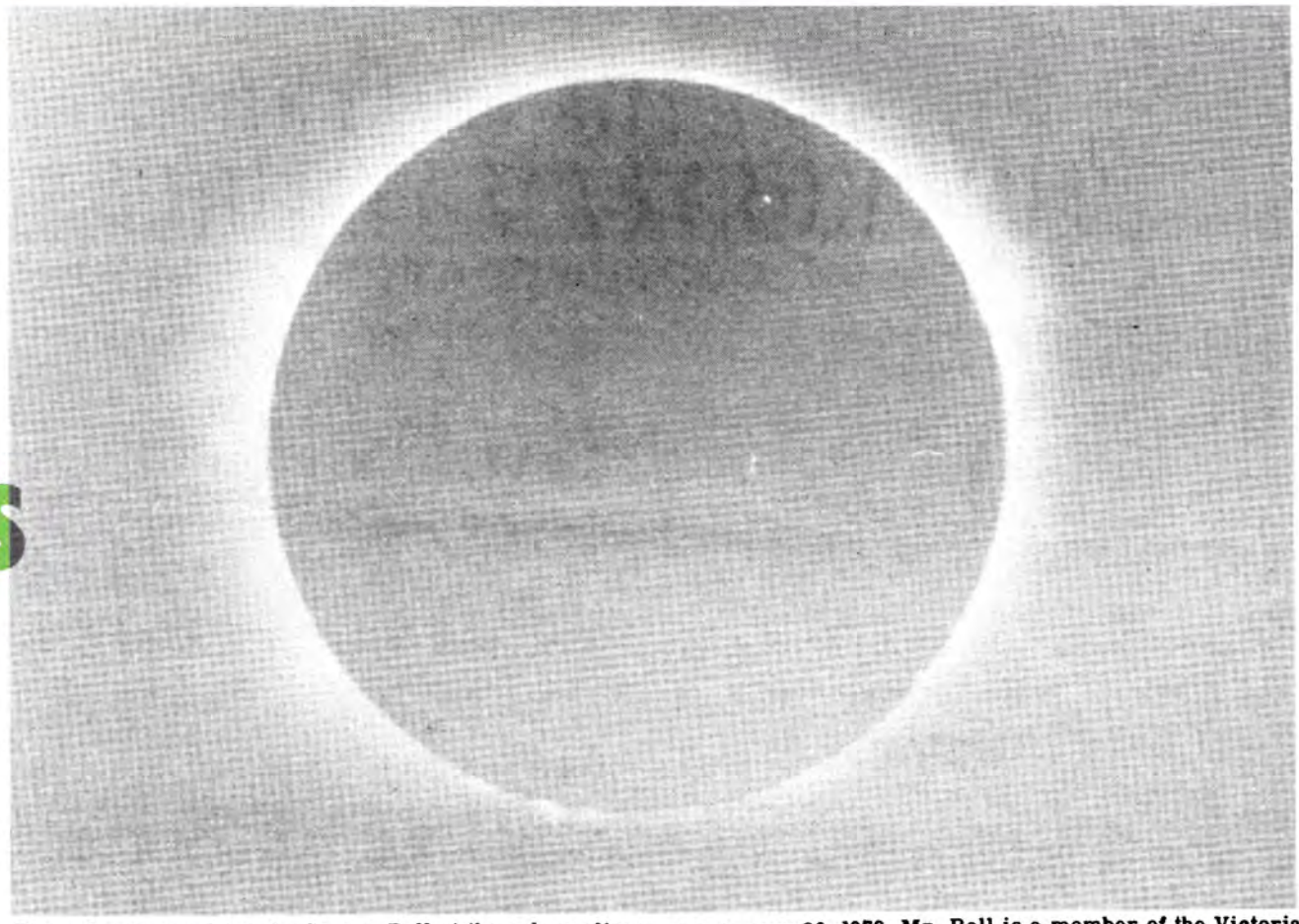
Office:- Room No. 1265 Editor:- Michael W. Ovenden Téléphone 343-5889

THE WINDS OF CHANGE

THE JOINT DISCUSSION ON STELLAR ATMOSPHERES

At first stars were discussed and the importance of X-ray observations was stressed. Dr. Kundu thinks that the other end of the spectrum will prove equally profitable. He has already looked at 20 single stars with the VLA and believes he has detected the corona of 6 of them, 3 more are probable detections. Publication of these results await confirmation of the dectections. The discussion then moved on to the sun. the only star for which we can get a really close look. Dr. Zirker presented a paper on the large scale structure of the corona. According to the recent view of the matter coronal holes which dominate during solar minimum periods appear to correlate closely with the recurrence of high speed winds which disturb the magnetic field of the earth. It is thought that the coronal hole is the birth of a high velocity wind stream along a tube of open magnetic fields lines. He concluded his address by saying that before Skylab we thought we understood the slow wind of the Sun. Now we think that we understand the high wind but are not so sure about the slow wind.

A participant suggested that one should attempt to look at X-ray hot spots in stars which rotate with the rotational velocity of the star. The rationale: if energy is not dissipated by stellar wind it should show up elsewhere. Then the discussion moved on to high resolution Views of the solar hromosphere and corona. Spikes which could be the base of loops extending far above the surface are seen in the transition region. They appear on time scales of 20 seconds and can last for hundreds of seconds. The participants were shown a movie made by assembling 20 together which illustrated well the stochastic nature of fine structure variation of the solar surface. Since the loops are not yet detected far from the surface the question on whether the accelerate or decelerate is still not resolved



The solar corona taken by George Ball at the solar eclipse of February 26, 1979. Mr. Ball is a member of the Victoria Centre of the Royal Astronomical Society of Canada

ASTROMETRY IN SPACE TO PINPOINT THE STARS

At a joint discussion of Commissions 24, 33 and several others on Thursday morning it became clear that a whole new era of surveying the stars may soon be upon us. Dr. Hog, from Copenhagen University Observatory, described the proposed European Space astrometry satellite, Hipparcos, which is expected to be approved next year for launch in 1984. The instrument will be able to measure the positions, annual proper motions and parallaxes of 100,000 stars to an accuracy of .002 arc seconds. This wealth of data will mean a new life for astrometry and also for many astronomical investigations based on astrometric data, eg. the cosmic distance scale, the luminosity calibration of stars and the study of stars in the solar neighbourhood. Dr. Jefferys described how the NASA Space Telescope, to be launched now in 1983, is also capable of astrometric measurements which will be complementary to those of Hipparcos since it will have a narrow field of view but will be able to study much fainter stars.

Dr. Hogg describes Hipparcos Photo: Pierre Guzzo

EDITORIAL

ECLIPSE BLINDNESS

This Assembly is not the first session in 1979 when Canada played host to an international gathering of astronomers. On February 26, we were favoured with that most spectacular of cosmic spectacles, a total eclipse of the Sun. Totality swept into the Pacific north west of the U.S.A. near dawn, crossed the forty-ninth parallel into Manitoba (where totality was longest, and most astronomers gathered) to lose itself in the wilds of Hudson Bay.

The weather was unpromising, but along much of the track the clouds broke up, and most observers were lucky, although one site might have been clear while another a few miles away completely clouded out. In the west, the early hours of the day were unusually crowded with coaches and cars, moving in opposite directions but all seeking those elusive patches of blue sky.

The first experience of a total solar eclipse is unforgettable. As the eclipse shadow strides across the countryside, leaving a rainbow-tinted horizon, it seems as though you are inside a small, dark and private celestial sphere, lighted only by the pearl-white corona. It is over all too soon.

The more zoologically-minded may watch for snakes or listen for the sound of cock-crow at the day's second dawning. The media reports - wherever did they get information? - and the response to them are a suitable study for a psychologist. Prior to the eclipse, the media were flooded with dire warnings of the dangers of 'eclipse blindness'. Schools were cancelled to prevent children from watching the eclipse, and parents were warned to keep their children indolrs and **watch the eclipse on television**.

No doubt there have been genuine cases of eclipse blindness in people whose optical reflexes are sluggish and any warning against gazing at the uneclipsed. Sun for any length of time is always appropriate. But the scare campaign led intelligent people to believe that during an eclipse the Sun was the source of malign radiation. The query "will my son be al right if he keeps his head in a paper bag during the eclipse?", was unfortunately, not atypical.

And have we really retreated so far from reality that we see no difference between experiencing nature, and experiencing its flickering substitute on a fluorescent screen?

SPACE ASTRONOMY COMES OF AGE

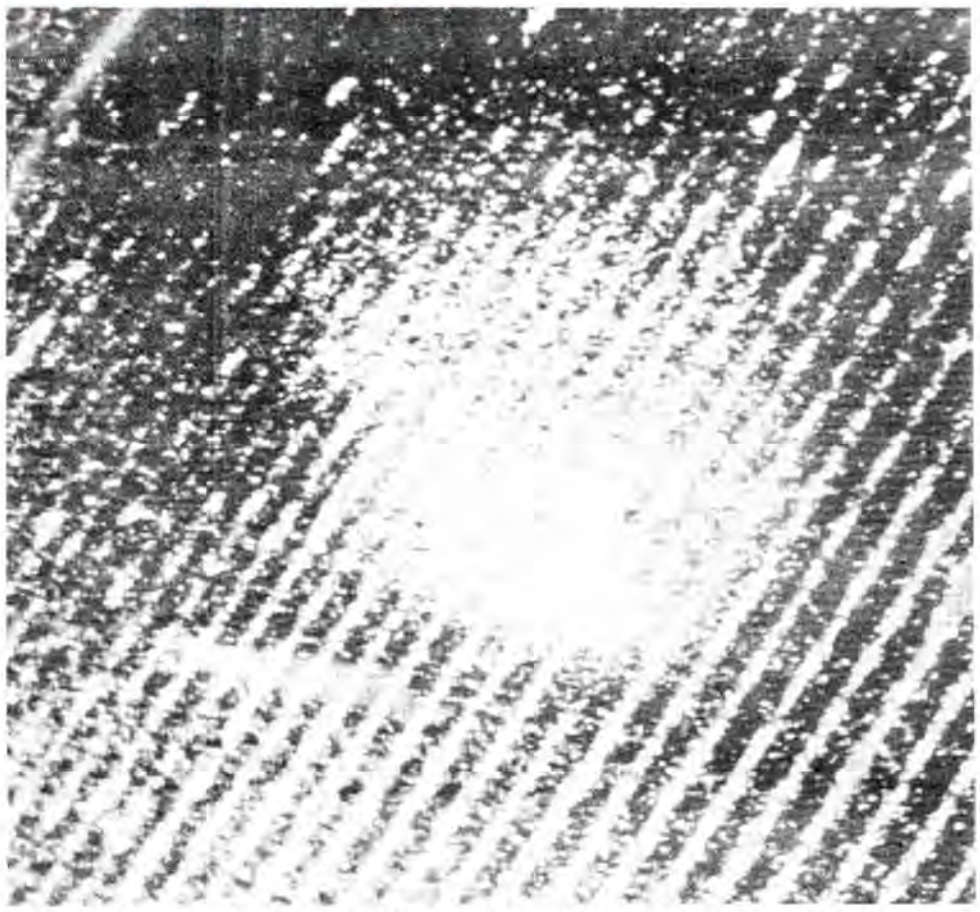
After little more than a year of regular operation. the IUE satellite provided almost all the material for Joint Discussion No. 4, held on Wednesday. This circumstance allowed the audience at least to become accustomed to the data format, even it the astronomical topics did flash by at breathtaking speed. Starting on a topic of high promise, Gursky summarized UV spectroscopy of X-ray sources. The UV data of these objects, however, do not match their high energy output in obvious information and is clear that careful work needs to be done to interpret fully the evidence for X-ray ionisation holes, UV continuum excesses and deficiencies, and hot objects in globular clusters. Planetary nebulae (Seaton) continue to be the atomic physicists' paradise at short wavelengths, with the bonus that the central stellar winds can also be seen in some. The white dwarfs and subdwarfs, summarized by Greenstein, are much as expected, which is certainly satisfying, if perhaps a little disappointing. Dupree and Lecrone produced a botanist's paradise of emission and absorption lines in late-type and peculiar stars, which should provide someone with years of solid work.

Sparks summarized results from three novae and recurrent novae, demonstrating the power of the IUE in seeing grain formation grow the 2200A dip and in providing clear evidence on the difference between types of novae by measuring bolometric luminisities directly. The WZ Sge outburst was clearly a disk phenomenon with constant temperature through decline, while Nova Cyg 1978 was a classical thermonuclear runaway with constant luminosity and increasing temperature.

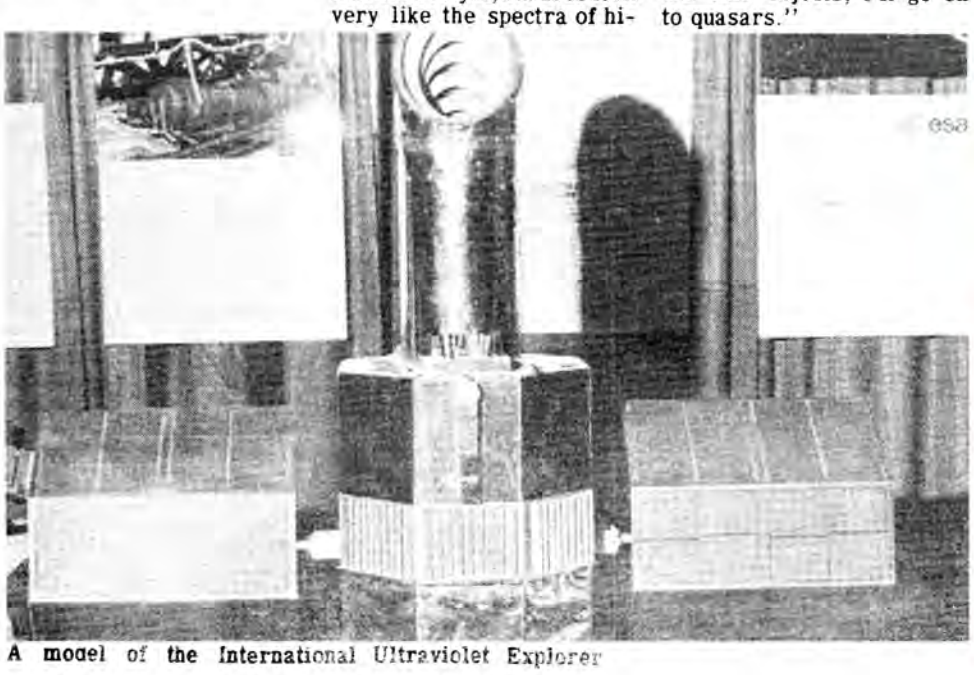
One of the quirks of interstellar extinction is that Magellanic cloud stars can be observed more easily in the UV than many nearby galactic supergiants. A highlight of Grewing's summary of the interstellar medium was the discovery of interstellar absorptions by Savage indicating the presence of hot halos round the galaxy and the LMC. The galactic lines are thought to be formed as far as 8 kpc from the plane.

The final session was perhaps the most spectacular. Here Bertola dealt with UV observations of galaxies. In these, a far UV continuum turn-up is seen at wavelengths which vary according to the relative populations of hot stars. The UV absorption lines also indicate this by corresponding to lines typical of stars of different spectral types in different galaxies. The spectrum of M87 does not throw any light on the central source yet, but does look very like the spectra of higher-redshift ellipticals from ground-based data. Ulrich discussed Seyfert Galaxies and Boksenberg dealt with OSO s and BL Lac objects. Evidence points towards the broad line emission originating in a disk, while the suprisingly low ly alpha to H beta intensity ratios may possibly be explained by a higher density of matter in this region than previously supposed. BL Lac objects remain line-free as far as IUE can see, and the absence of Ly alpha absorption seem to point to the real absence of gas in them. 3C 273 continues to provide surprises, this time in the form of unshifted absorptions again from our own galaxy and with a blue light excess over its power law spectrum which may arise from a stellar population. The galactic halo extent provides a tantalizing possible explanation of multiple Ly absorptions in high redshift QSO's by intervening galaxies. All these exciting possibilities need to be checked out on the basis of a long term observing effort on IUE, according to Longair who expertly summed up the session. The present status of the spacecraft holds out the expectation that much more fundamental research remains within its expected lifetime.

Quote of the day: "Now that we understand all about BL Lac objects, I'll go on to quasars."



Part of an IUE image showing the high dispersion long wavelength (180-320 NM) spectrum of the slow nova RR Tel. This spectrum plus companion short-wave data shows all emission lines.



A model of the International Ultraviolet Explorer

PALOMAR SKY ATLAS

PAPER EDITION

The California Institute of Technology is pleased to announce that plans are being made to produce the sixth paper edition of the National Geographic Society Palomar Observatory Sky Survey.

Production is scheduled to begin in October 1980, Estimates based on past experience and projected costs for labor and material suggest that the cost will not exceed $4,500 per set f.o.b. Pasadena. The first seven sections will be invoiced at provisional rate with the final invoice being adjusted to the actual total cost of production.

Orders will be accepted until September 30, 1980. Since only the number of copies will be produced for which orders have been received by that date, no additional orders can be accepted thereafter.

Orders should be addressed to:
J.W. Minges
Director of Business Services
California Institute of Technology.
1201 E. California Blvd
Pasadena, CA 91125
U.S.A.

ON MYLAR FILM?

There have been some inquiries concerning an edition of the National Geographic Society _ Palomar Observatory Sky Survey on mylar film. We are therefore attempting to determine the extent of such interest. As film processing and other needed equipment is quite expensive, a fair number of orders will be needed to justify this project.

It is impossible to state a fixed price in advance, but it is expected that a set might cost in the range of $12,000 - $15,000.

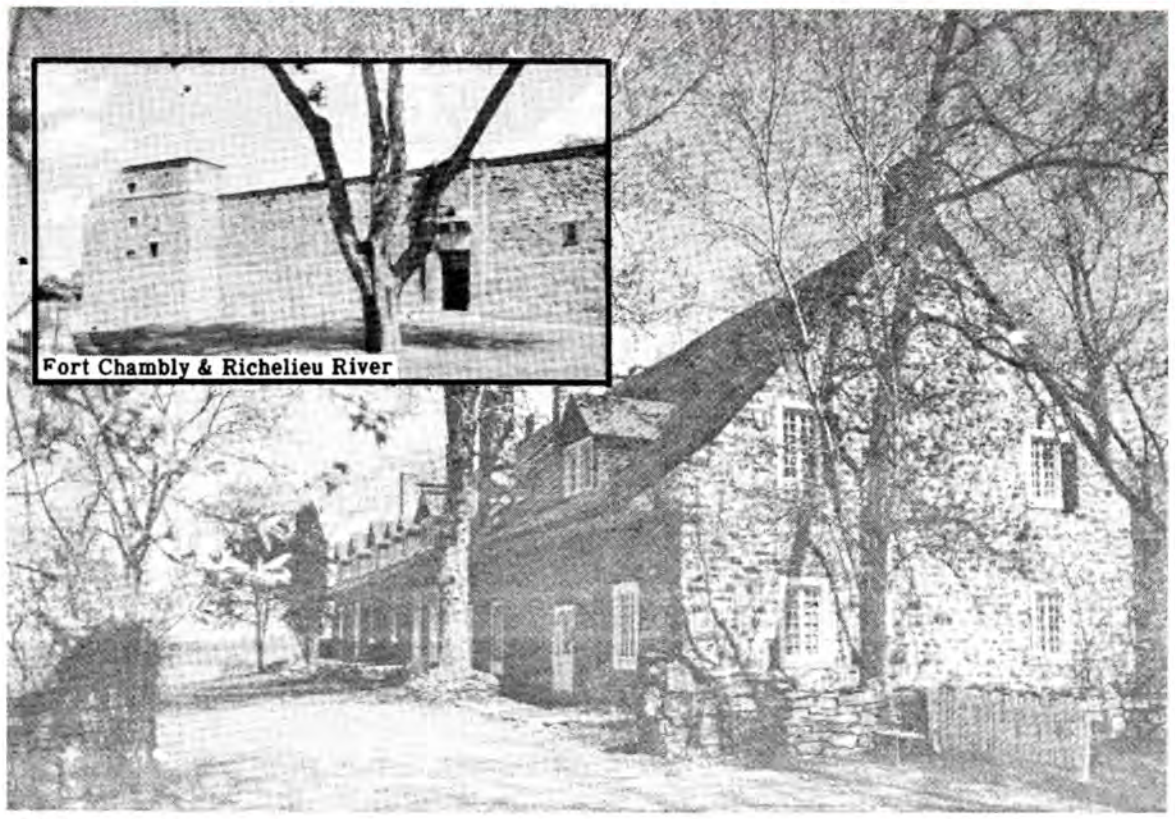
If your are interested in a mylar copy of the Sky Atlas, to be produced in late 1981, please notify:
J.W. Minges
Director of Business Services
California Institute of Technology
1201 E. California Blvd.
Pasadena, CA 91125
U.S.A.

TOMORROW'S TOURS

Descriptions and details of these five-outings are available from the Venturex desk in the Secretariat, 2nd floor of Pavillon 3200 We apologize for the unavoidable changes from the Preliminary Programme: P2 now goes to Lac des Sables in the Laurentians instead of to Mount Orford, and the Finance Committee and National Representatives on P8 now go to Sun Valley in the Laurentians.

Please note that P1 (Historical Forts) leaves earlier than the rest. The piano recital on P3 (Maison Trestler) will be played by Christian Parent, professor of music at the Université de Montréal and will include pieces of Québécois, European, classical, modern and contemporary origin.

Man and His World



Fort Chambly & Richelieu River

Maison Tressler

ASTRONOMER OF THE DAY

HELEN S. HOGG

Demandez à n'importe lequel astronome canadien qui d'entre eux est le mieux connu au Canada et l'on vous répondra sans hésiter: Helen Hogg. Madame Hogg est professeur Emeritus au département d'astronomie de l'Université de Toronto. Elle a commencé à étudier les étoiles variables dans les amas globulaires à Harvard il y a maintenant 52 ans. Elle possède des milliers de plaques photographiques représentant plus de 50 amas globulaires. La majorité des plaques plus anciennes furent exposées au foyer Newton du télescope de 74 pouces de l'observatoire David Dunlap à Richmond Hill en banlieu de Toronto. Le ciel é tant maintenant trop birllant à Toronto, des assistants de recherche prennent pour Mme Hogg des photos des amas de l'hémisphère sud avec le télescope de 24 pouces au Chili. Mme Hogg écrit aussi une rubrique hebdomadaire sur l'astronomie dans le Toronto Star depuis 28 ans. Elle a ainsi succdeé à son mari qui écrivait cette colonne depuis 10 ans. Après Montréal, Mme Hogg se rendra à Victoria où elle présentera en collaboration avec Mme Amélia Wehlau ses derniers résultats sur NGC 6934. Ces amas comportent 50 étoiles RR Lyrae et une variable irrégulière: Mme Hogg a encore du pain sur la planche.

Mme Helen S. Hogg **Photo: Pierre Guzzo**

FAR OUT?

The start of the Joint session on Radio Studies of Galaxies, Radioga laxies and Quasars.

Photo: Pierre Guzzo.

A PHOTOMETRIC ATLAS OF THE SPECTRUM OF PROCYON

by R. & R. Griffin

The authors are pleased to announce the availability at their new publication, which is generally similar to the "Arcturus Atlas". One of the authors has a copy here on display each day near the cafeteria. The Procyon Atlas is being distributed at cost price (30).

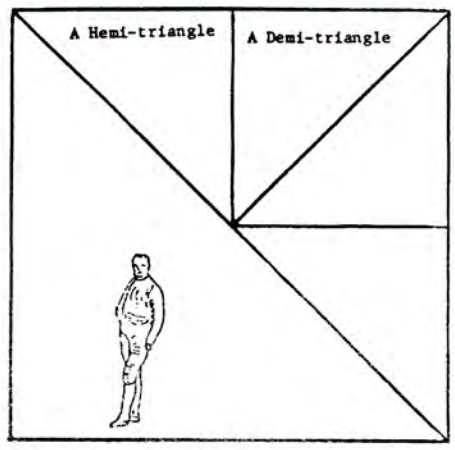
Note that the Arcturus Atlas, published in 1968 can still be ordered to (Price 12).

PLANETARIUM DOW

La Planétarium Dow de la Ville de Montréal souhaite la plus cordiale bienvenue à tous les participants à la dix-septième assemblée générale de l'Union Astronomique Internationale et les invite à assister aux représentations de son sepctacle régulier intitulé "Qui a tué les Dinosaures" et au Concert cosmique au Laser présenté par "Eye See the Light Shox Inc."

Guest (admission free,
2 persons, to "End of
the Dinosaurs"
Name of IAU Participant
Registration No. .....
Shows are on 1979
August 21, 22 and 23:
with English lecture
at 20h15 and French
lecture at 21 h 30.
Please present this
clipping to the
cashier with your name
badge. Welcome

WATCH THIS SPACE (3



1800 A.D. The demi-triangle and the hemi-triangle are discovered in the laboratory. They are thought to be indivisible

SUBRAHMANYAN CHANDRASEKHAR

Dr Chandrasekhar hardly needs any introduction to the world's astronomers since for many years everyone who ever submitted a paper to the Astrophysical Journal corresponded with him. He was Managing Editor of that Journal from 1952 to 1971. Despite this time-consuming service to astronomy, he still found time to be a prolific contributor of research papers himself. His contributions to the to the theory of radiative transfer, and of the structure of stars, are well-know and he has written books on these topics. Dr. Chandrasekhar has joined that select group of scientists who have a physical phenomenon named after them. In these days when neutron stars and black holes are all the rage, everyone has heard of the Chandrasekhar limit for the masses of white dwarves.

Dr. S. Chandrasekhar

Dr. Chandraskhar was born in India, and studied first at the Presidency College, Madras and then at Trinity College Cambridge England. Il has lived and worked. in the United States of America since 1937, spending all that time at the Yerkes Observatory and the University of Chicago. He was appointed Morton D. Hull Distinguished Service Professor in the University of Chicago in 1952. He has received many honours from his colleages and has been elected both to membership in the U.S. National Academy of Sciences and to Fellowship in the Royal Society of London. He received the Bruce Gold Medal of the Astronomical Society of the Pacific in 1952 and the Gold Medal of the Royal Astronomical Society in 1953.

Because 1979 is the hundredth anniversary of the birth of Albert Einstein, the Executive Committee of the I.A.U. has specially invited Dr. Chandrasekhar a distinguished theoretical astronomer, to give a discourse to the role of the theory of general relativity in astronomy. His sub-title "Retrospect and Prospect" promised not only an apprêciation of the past sixty four years, but offers a tantalizing glimpse of what may yet be to come, from one who is perhaps uniquely qualified to guess.

COMMISSION 31

AT 14:00 - NEW EXPERIMENTS

Clocks in relativity: a general survey (C.O. Alley). - Future Experiments with Spacelab (Starker). - Two-way time transfer via Hermes satellite between NRC/ NBS (C.C. Costain). - Two-way time transfer via Symphonie satellite between NRC/ LPTF (Rutman) - The CENSAR TDMA experiment (P. Nuspl NRC).

AT 15:00 - WORLD - WIDE CLOCK COMPARISON

The world-wide comparisons: the Far East situation. Problems and solutions (S. Iljima). - The future of the world-wide synchronization (S. Leschiutta). - High precision clock comparisons by means VLBI measurements (Klepczynski).

Time dissemintion capability of the G.P.S. (G. Windler). The LASSO experiment (ESA).

SOCIETE ASTRONOMIQUE DE MONTREAL

STARNIGHT

On the occasion of the general convention of the International Astronomical Union, la Société d'Astronomie de Montréal, is very happy to join all the amateur astronomers to wish a hearty welcome to the congressmen and women.

As we will be holding our annual Starnight on August 18, 1979, at the Botanical Garden, we are particularly pleased to invite all the congress people to attend this event.

For any further information, please phone to La Société d'Astronomie de Montréal, at 254-1224.

SOIREE POPULAIRE

A l'occasion du Congrès de l'Union Astronomique International, La Société d'Astronomie de Montréal est heureuse de se joindre à tous les astronomes amateurs pour souhaiter la bienvenue aux congressistes.

Comme nous tiendrons notre Soirée Populaire d'astronomie le 18 août 1979, au Jardin Botanique, il nous est des plus agréable d'inviter tous les congressistes qui veulent nous rendre visite à cette occasion.

Pour de plus amples informations, veuillez communiquer avec le secrétariat de la Société d'Astronomie de Montréal, téléphone: 254-1224.

JOINT MEETING COMMISSION 28 AND 33

August 15, 1979 (Morning)

Galactic Dynamics

Scientific sessions with seven talks and one brief report. Speakers were A. Kalnajs, "Bar Models of Disks" - a review of his recent work on models of flat stellar systems with a weak bar.

A. Toomre, "What Simplifies the Spirals?" - model calculations (done with T. Zang) show that even a weak disturbance in a rotating disk with a constant rotational velocity can be greatly amplified to form a strong 2-armed trailing spiral pattern. The driving mechanism is basically the galactic differential rotation.

R.H. Miller, "Numerical Simulations of Galaxies" - preliminary results from N-body models which simulate both stellar and gaseous components. These models display a "bewildering variety" of dynamical forms; apparently the final forms of real galaxies are affected by the formative conditions. G. Contopoulos, "Integrals of Stellar Motion and Their Disappearance", a discussion of the classification of stellar orbits in 2-dimensional and 3-dimensional systems and their use in building models of stellar systems. P.O. Vandervoort, "Resonance Phenomene in the Dynamics of Spiral and Barred Galaxies". Two specific points which apply to modeling of stellar systems were emphasized, (a) proper treatment of resonnant stellar orbits requires a nonlinear theory and (b) even when resonant stellar motions do not play a role, resonance regions play a dynamical role which requires special consideration.

C.C. Lin, "Progress in Density - Wave Theory" - "Density Wave Theory is in a very healthy state of development". The current theory was reviewed with consideration given to comparison with observations. The emphasis of further work should be placed towards development of non-linear spiral density-wave theory.

P. Schwarz, "Gas Flow in Galactic Bars", a brief report on related results from N-body experiments.

Gharles J. Peterson

BULLETINS

COMMISSIONS 10, 40, 42 and 44 - JOINT MEETING ON "CLOSE BINARIES AND STELLAR ACTIVITY"

August 18, 9.00 a.m. F. 2245.
D.L. Hall: Introduction
B.S.BOPP: BY Dra and RS CVn stars: the discoveries of classical photometry and spectroscopy
Y. KONDO: Recent space UV observations
J. SWANK: X-Ray observations of stellar coronae and winds .
R.J. HJELLMING: Radio astronomical aspects.
I.S. McLEAN: Emission line polarimetry as a probe of stellar winds
J.L.LINSKY: On the difference at chromospheric levels between RS CVn-type binaries, active and quiet chromosphere single stars, and active and quiet regions in the Sun.
J.L. Modisette: Transient mass ejection due to local heating at stellar surfaces
There will be time for scientific discussions in the latter part of the business meeting of Commission 42 on August 21.

COMMISSION NO.27

A meeting of the Working Group on Flare Stars will be held on Friday August 17 at 16.00 hours in Room 3290. It is planned that a number of speakers will deliver short presentations on prospects for optical and non-optical observations of flare stars. All interested are welcome

COMMISSIONS 29, 40, 42, 44

Informal meeting on SS433.

At suggestion by Prof. I.S. Shklovsky and other interested people, the proposed round table on Observations and Interpretations of SS433 will be held on Saturday morning, August 18, from 9.00 to 11.15 room 3260.

Short communications on the following topics are expected:

RADIO OBSERVATIONS (W50 SS 433)

P.A. Feldmann
(Canada 0493)
Position and intensity variation at short wave lengths (5 min.)
K.W. Weiler
(W. Germany)
Crab-like structure in W 50 (5m)
R. Shilizzi
(Netherlands
VLBI at 6 cm with Westerborck, Effelsberg and Ondala telescopes (5m).
B. Geldzahler
(Bonn & USA)
VLBI detailing structure at a few milliarcs having a so-called jet (10m).
W.M. Goss
(Netherlands)
HI absorption profile with Westerborck
YuN.Parijskij
(Crimea) Multi frequency simultaneous monitoring and the resolution of the so-called jet, with the 600 mt. telescope
OPTICAL
B. Zealey.
(U.K.)
Discovery of optical counterpart of SNR (?) W50: Two arcs 10' extent, separated by 70' and centered on SS433 (5m).
B. Margon
R. Stone
(U.S.A.)
Recent observations of the moving features (10m).
A. Mammano
(Italy)
IR Observations and multiple branches IN THE (1 & z) diagram (10m).
B. Cosmovici
F. Starfella
(Italy)
Profile changes of 01 8446 emitted in a HI region (2m).
C. Firmani
(Mexico)
Optical Spectra (3m).
D. Crampton
J.B. Hutchings
(Canada)
Periodic variations of emission and absorption H alpha and H beta lines (p 13: (10m).
J. Kemp
(U.S.A.)
Photoelectric observations regarding the 13 days period (presented by G.W' Collins II, U.S.A.) (5m)
MODELS
G.W. Collins,II
U.S.A.)
An X-ray binary model for SS 433 recently appeared in "Nature" (10m).
I.S. Shklovsky
(U.S.S.R.)
Jets produced by a very fast spinning magnetized neutron star in a postsupernova binary system (10m).
M. Milgrom
(Israel)
Thomson scattering model for the secondary branches (5m).
G. Newsom
(U.S.A.)
Observations and model (5m).
V. Icke
(.K.)
Clouds ejected by a disk black hole system (10m, movie)

GENERAL DISCUSSION

!For further scientific communication please contact Dr. A Mammano (Italy) IAU Box 2588.

M.N.R.A.S.

Anyone interested in acquiring part of W.W. Campbell's collection of Monthly Notices of the Royal Astronpmical Society, please contact K.G. Kron 4349 . Volumes 76 through 113 are available.

PHOTOS-SOUVENIRS

Anyone wishing to have a photo-souvenir of the XVIIth General Assembly are asked to go to the 2nd floor of Pavillon Jean-Brillant. They will be available starting Thursday from the photographer Pierre Guzzo, the official representative for the IAU meeting. Les personnes intéressées sont priées de se présenter au comptoir de photos-souvenirs du photographe Pierre Guzzo. Celles-ci seront disponibles jeud, le 16 août.

COMMISSIONS 4-19-31

Joint meetings of Commission 4, 19, 31 will take place on Monday at 14.00 and 16:00 at room B-2305 (instead of room 3285) the topics will be universal and dynamical time.

Do you sant a place to discuss papers with your friends?

There is a bar for your convenience open all day at the Bistro on the 1st floor from 10.00 a.m. to 6.00 p.m.

MONTREAL NIGHTLIFE TOO DULL FOR ASTRONOMERS?

The midnight bus carrie home only three dispirited astronomers the other night. Where are all the rest? In their rooms preparing papers for tomorrow?

Bus timetable: A free bus service leaves every 15 minutes between 22.00 and 24.00 from St-Denis/Dorchester, passing Queen Elizabeth and Guy and returning to the residences (Not Saturday or Sunday).

The sign "SPECIAL" wil be on the bus, St-Denis, by theway, is a piece of old Europe, full of cafés and restaurants.

IAU 1979 Montréal UAI 1979

METEORE

Canada

August 18 Août 18

Number 5 Numéro 5

Office:- Room No. 1265 Editor:- Michael W. Ovenden Téléphone 343-5889

GRAVITATIONAL LENS ?

Dr. Fred Chaffee of the Smithsonian Institution's Mount Hopkin's Observatory, on behalf of a group including Carswell, Carleton, Davis, Walsh and Weymann, presented beautiful spectra from the MMT of the two objects which from the "Twin Quasar" 0957 + 561 A, B. Cross-correlation analyses of the strikingly similar spectra showed that their absorption line redshifts are identical to a very high accuracy (7 ± 15 kms - 1).

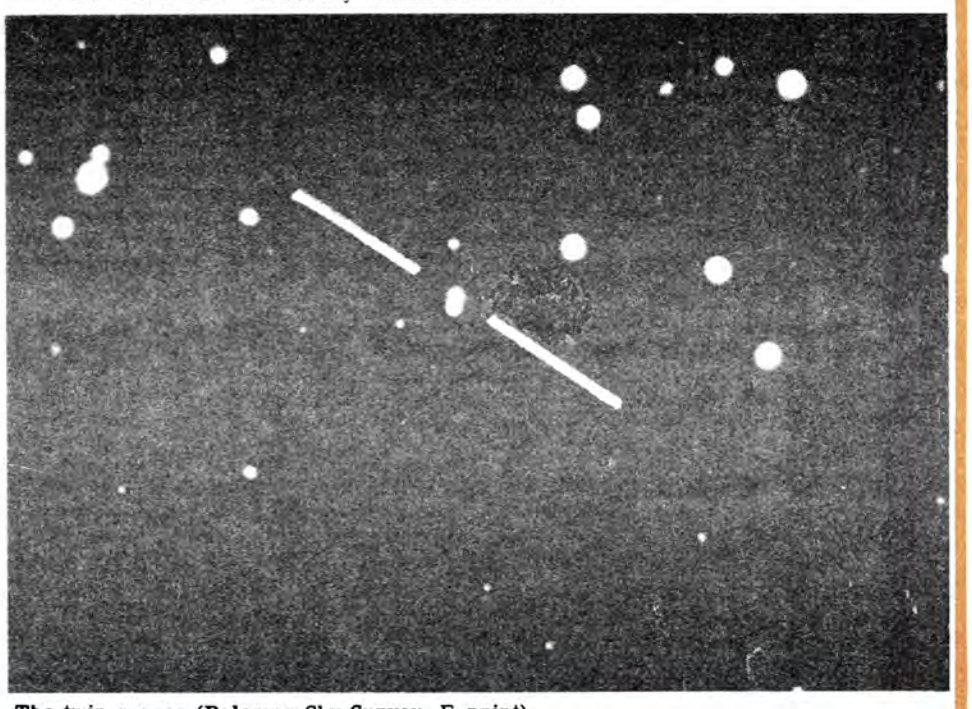
These two quasars were discovered early this year and exhibit such nerly identical caracteristics that it has been proposed that the object is actually only a single quasar whose image has been split into two by a massive object between the earth and the quasar, a so-called gravitational lens. Thus the "twins" may be our first detection of the gravitational lens effect proposed by Einstein in the 1930 s.

This theory predicts that the two objects should have the same apparent brightness and separation at all wavelegths. Subsequent observations at radio wavelengths, of which an exemple was given by Burke in the meeting, also show two point images of nearly identical brightness. Even the 67 X-ray photons caught by the Einstein Observatory are consistent with this.

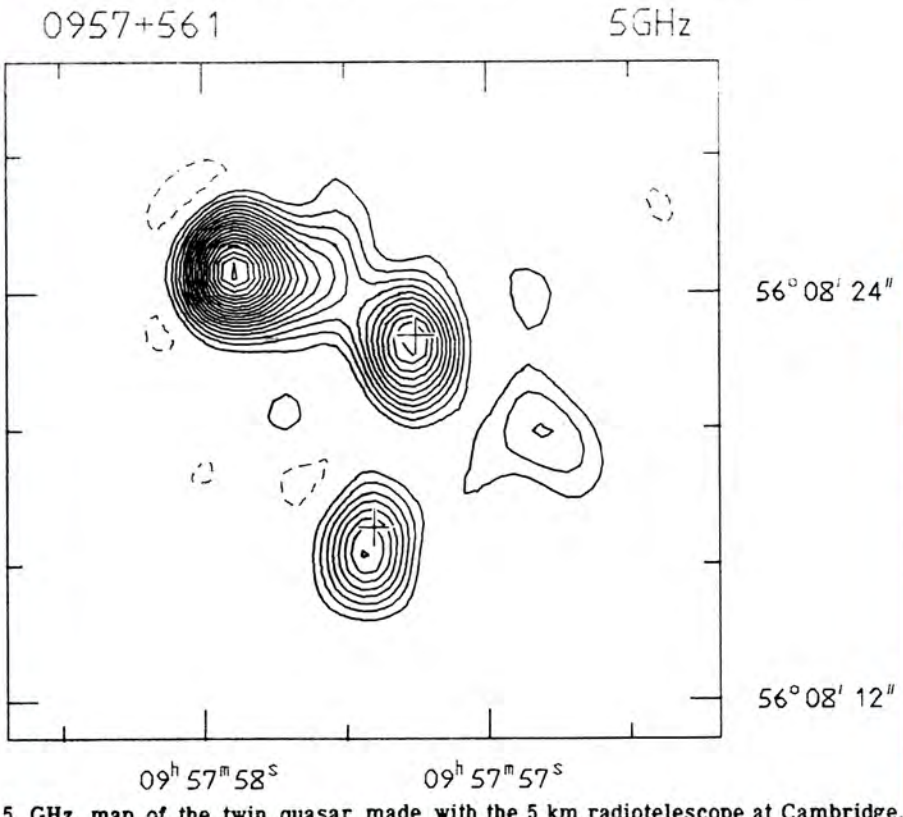
If the quasar varies in brightness (as it apparently does) the gravitational lens hypothesis predicts a phase lag of perhaps six months between the observed variation of the two objects. Everyone is eagerly awaiting the results of long term monitoring of the two objects.

Even if the object is actually two distinct quasars, their existence is very puzzling and taxes current theories of quasar formation and evolution.

More of this next Wednesday in Commission 40.



The twin quasar (Palomar Sky Survey, E-print).



5 GHz map of the twin quasar made with the 5 km radiotelescope at Cambridge. The crosses mark the positions of the optiacl QSOs.

GEE WHIZZ

Astronomers have geen given a new toy - the unique object SS 433. This amazing system has something for everyone: a superonova remnant, a variable point source in wavelengths from X-ray to radio, VLBI radio structures, relativsitc beams of matter, binary orbital motion, and a spectrum crammed with weired and unidentified lines. Bruce Morgan, the primary perpetrator of his object, reviewed its properties in commission 48 yesterday and this morning observer and theoreticians will gather to swap information and arguments.

RESUME DE CONFERENCE SOLONNELLE

LE ROLE DE LA RELATIVITE GENERALE EN ASTRONOMIE RETROSPECTIVES ET PROSPECTIVES

Cette conférence solennelle était une revue du rôle de la théorie de la relativité générale en astronomie, une rétrospective des succès d'hier et une prospective des développements à venir. Derrière nous se trouvent maintenant la première confirmation de déviations non-triviales de la théorie de Newton, telles que prédites par la théorie générale de la relativité; les modèles cosmologiques obtenus sous les hypothèses d'homogénéité et d'isotropie, et l'impact des théorêmes de singularité; ainsi que l'étude des problèmes reliés à l'effondrement gravitationnel dans le contexte spécifique des solutions de Schwarzschild et de Kerr - qui fournit une représentation exacte des trous noirs, que la nature produit, est comparable par son importance, à la découverte des particules élémentaires en physique.

Quant à l'avenir, Chandrasekhar affirme que le vrai rôle de la relativité générale sera d'offrir à notre compréhension et à nos recherches un cadre comceptuel si solide qu'on pourra l'incorporer d'égal à égal avec tous les autres phénomènes observatiles dans notre interprétation de la nature. Il cite en exemple le théorême de Friedman voulant que tout objet en rotation soit instable dans le contexte de la relativité générale en vertu même de la réaction-radiation.

COMMISIONS 29, 36, 44

X-RAYS, UV, VISIBLE, IR AND RADIO SPECTRA TOGETHER EQUAL MASS LOSS FROM STARS

by
Anne B. Underhill

Two joint discussions (Nos. 4 and 7) have been keeping members of commissions 10, 12, 29, 35, 36 and 44 very busy. Not only have there been presentations of exciting new observations of winds from stars of all types from M to O and Wolf-Rayet, but also of stimulating but conflicting observations about the presence of variable, hot, highly ionized regions in the outer atmospheres of stars. In the sun such regions are called the chromosphere, the transition layer and the corona; much information is now available about their detailed appearance and how they may be excited. Do stars provide a similar variety of physical conditions in their outer atmospheres? As a result of our observations from X-rays to radio, we believe so.

One thing is now clear and that is this. Cool luminous stars as well as cool main-sequence stars have the equivalent of chromospheres, transition layers, coronas and winds as do all hot luminous stars and some main-sequence and subdwarf hot stars. Observations obtained with the IUE satellite have convincingly demonstrated this. Consequently a great unification of outlook is enforced upon stellar physicists. All have to deal with the problems of high temperature, possibly varying, moving plasmas occuring in the outer layers of stars.

Once material is seen to be moving away from a star, the question arises as to how it got started on its outward motion. What is the propulsion force which is active? What is the source of heating? Questions such as these urgently need answers. They raise problems of how to carry out diagnostics by means of spectroscopy as well as fascinating problems in the physsics of radiation and gases. Ultimately the source of the winds which are inferred to be present must be sought in the processes which generate energy in a star and in the manner in which energy is transported outwards through a star.

Ann Underhill
Photo: Pierre Guzzo

In the course of J.D. 7 we heard what is known regarding these basic problems in physics. "Not much yet" is a fair assessment of our present state of knowledge. However, at the present rate of growth of knowledge we can hope that the picture will be clearer and even more exciting by the time of the 18th-General Assembly.

Who at the 15th and 16th General Assemblies would have thought that X-ray astronomers, observers of hot stars, observers of cool stars, the infrared and radio observers had much in common? The fact is that they have. Each is bringing to light a different aspect about mass loss from stars. The new facts hopefully will be woven soon into the fabric of the theory of the evolution of stars and soon we will have a unified theory of stars and how they work. All this, because we can now observe stars in the range of wavelengths from X-rays to cm. Truly JD's 4 and 7 present a stimulating challenge, a challenge which has directly resulted from the great advances in instrumentation and detectors which have occured in the last five years.

COMMISSION 21 "LIGHT OF THE NIGHT SKY"

The first scientific session (August 16) was mainly devoted to a presentation of the "Zodiacal Light - Background Starlight" experiment of the international solar polar mission (out-of-ecliptic) by Profs. R.H. Giese (Bochum, FRG, Principal Investigator) and J.L. Weinberg (Albany, N.Y., Co-Principal Investigator).

Richard Giese explained the fascinating geometry of the spacecraft trajectory and the viewing directions. The photopolarimeter will scan and map the sky giving zodiacal light and background starlight, - or pure background starlight when the probe is a 2 AU or more away of the ecliptic plane. Detection of the interstellar dust wind inflowing the solar system is expected to be possible, against a sufficiently low zodiacal light component in these far regions.

Jerry Weinberg presented the prospects for a detailed background starlight mapping from ISPM. He also showed, as presently available, results of the background starlight studies by space astronomy laboratory, Albany, N.Y. aboard pioneer 10 and 11, a splendid isophotal map series of transparencies fitting a few sheets of a Becvar's atlas.

COMMISSION 28 IN ACTION

A brief summary of the Activities of Commission 28 meeting, afternoon sessions, Thursday, 16 August 1979.

At the 1976 IAU, Commission 28 elected to restrict new membership to those who had been members of the IAU for at least three years. This year the membership voted to rescind this action and admit without delay to Commission 28 new members of the IAU. For other administrative matters, a motion to require authors to include the appropriate factor of h (defined as the Hubble Constant $H/100$) in published results on galaxies was rejected by the membership. James Wray discussed his work on color photography of galaxies, a technique which promises to have significant influence on color and population studies in galactic systems. Eventually it is to be hoped that this work will be published in atlas form. Commission 28 voted to lend its support to obtain NSF funding for this publication.

Dr. Yahil discussed his work with Drs. Sandage and Tammann on the use of the local structure and kinematics of the Universe ot determine the deceleration parameter. Their results indicate an open Universe and imply that most mass is in the form of galaxies. For the peculiar motion of our Galaxy, the apex of the motion agrees with that determined from the cosmic microwave background although the value of the motion is significantly different. Dr G. de Vaucouleurs summarized the differences between his analysis to obtain the rate of expansion of the Universe ($H = 100 \pm 10$ kms -1 Mpc -1) and the earlier work of Sandage and Tammann which led to a value of $H = 50 \pm 5$.

Dr. Chaffee's contribution to the meeting of Commission 28 is reported of page 1.

Mirec Plavec and friends recalling trips from Czechoslovakia to England years ago.

ASTEROIDES A VENDRE

M. Karl Kamper de l'Observatoire David Dunlap. Photo: Pierre Guzzo

A l'occasion des cérémonies du sesquicentenaire de l'Université de Toronto, le département d'astronomie alors la direction de M. MacRae décida de remettre un cadeau original à l'Université: un astéroide. M. Karl Kamper, attaché à l'Observatoire David Dunlap, entrepris alors des travaux à cet effet, qui durèrent plus de deux ans. L'astéroide Toronto fut découvert sur une plaque Schmidt de l'Observatoire Tautenberg prise par Sidney van den Bergh il y a déjà plusieurs années. Il fut ensuite retourné sur une plaque prise à ESO.

L'orbite de Toronto a une période de 5 ans et un semi-grand-axe de 3 UA. Sa seule caractéristique remarquable est l'inclinaison de l'orbite qui est de 18 degrés. De seulement 30 km de diamètre, sa magnitude moyenne est de 15. Récemment, il a été photographié avec le téléscope de 24 po. de l'Université de Toronto au Chili.

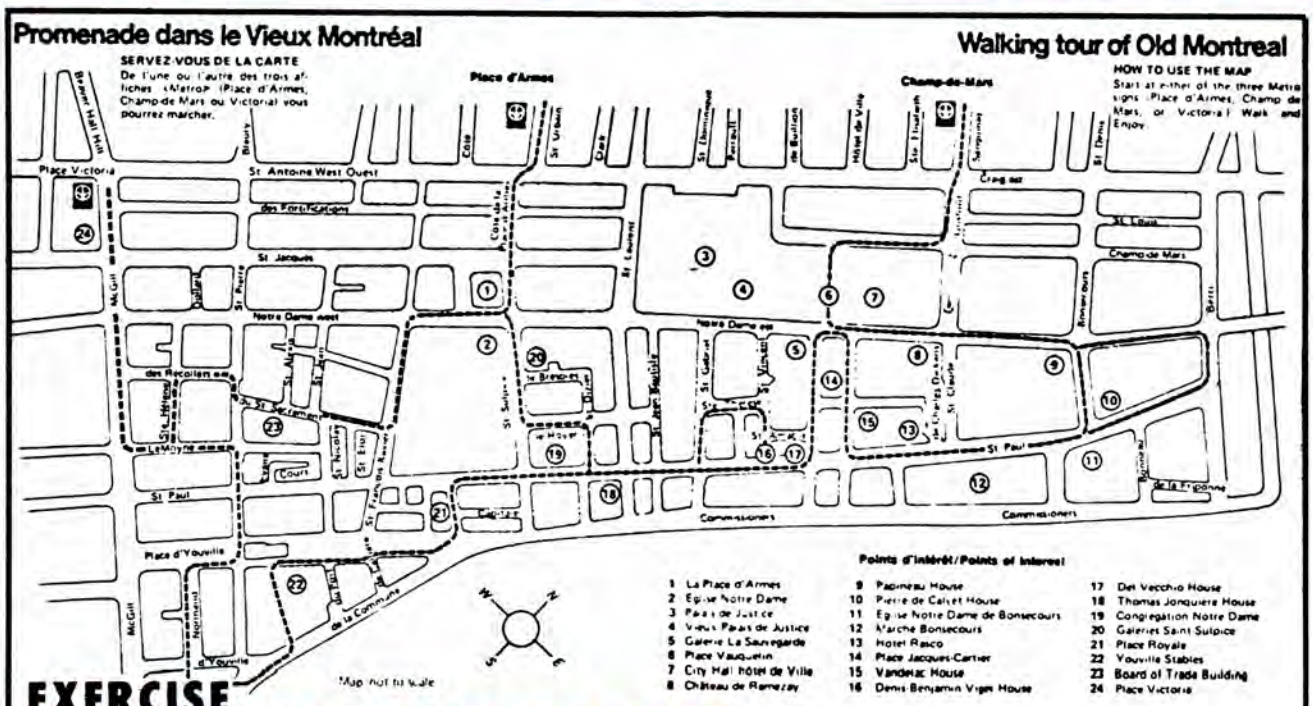
C'est un cadeau unique pour celui ou celle qui a tout. Pensez-y, Noel s'en vient!

WHAT ARE THEY? ARE WE THEY?

The pleasant summaries of Tuesday's Joint Session on Life in the Universe given by Drake and Papagiannis on Thursday night leaves us with the feeling that basically not too much has changed except our ability to design more and more refined experiments. There are three facts that were true twenty years ago and they still stand. Firstly, that we have not discovered extra-terrestrial life on earth. Secondly, that we have not discovered any intelligent radio signals coming from space. Any thirdly that we are here. We can add another now, that there seems to be no life on Mars, a rather unexpected result .

A moderate view of the number of detectable civilisations in the Galaxy leads to an estimate of between 10 3 and 10 6. If they, or even one of them, is interested in colonisation then the colonisation front would probably spread quite quickly through the Galaxy and one might expect to see signs of their presence. So where are they? Philip Morrison mentioned that the message traffic back and forth between actual spacecraft would probably be very heavy, so that interception of radio traffic would be a first sign, a further justification for carrying out searches at radio wavelengths. But we see nothing. Are we perhaps asking the wrong questions? He reminded us that we are under the spell of such philosophers as Aristotle, Mathers and Hesiod, and that their ideas still permeate our thinking, even though, for example, we know very well that the earth is not at the centre of the universe and that exponential growth is always limited somewhere and somehow. What we need is experiment, using the best one we can at the time, since there is no other procedure which will get us to an answer. Either answer would be of tremendous impact; either we would know that we are one of a Galactic family or we would realize that we are alone and in that case we would have the privilege of the treasuring of the cosmic consciousness.

WEEKEND LEISURE PAGE



EXERCISE
LE VIEUX MONTREAL

On décrit souvent Montréal comme "un petit coin d'Europe en Amérique du Nord". C'est l'un des quartiers les plus intéressant de Montréal, le Vieux Montréal, que se nourissent les racines historiques du Canada.

La colonne Nelson, sur la Place Jacques-Cartier, est le plus ancien monument de la ville. Elle fut érigée en 1809.

Un peu plus à l'est, rue Notre-Dame, se trouve l'Hôtel-de-ville construit en 1872. Presqu'en face, au sud, on peut admirer le Château de Ramezay dont la construction remonte à 1705. Celui-ci est maintenant un musée regroupant d'anciennes pièces de l'artisanat canadien et amérindien.

Le Marché Bonsecours abrita, un certain temps, l'administration municipale et des services communautaires. Les pavés de la rue Saint-Paul, où il est situé, datent de 1849.

Il y a deux églises importantes dans le secteur. Ce sont Notre-Dame-de-Bonsecours et Notre-Dame. La première fut érigée en 1657 en l'honneur de Mère Marguerite Bourgeoys, fondatrice au Canada de la Congrégation de Notre-Dame. La seconde, donnant sur la Place d'Armes, remplace depuis 1829 l'église paroissiale qui avait été construite au début de la colonie.

Face à l'église Notre-Dame, au centre du square, se dresse la statue du Paul de Chomedey, sieur de Maisonneuve. C'est lui qui, en 1642, a fondé Montréal pour servir des buts économiques, militaires et religieux.

Il n'est pas nécessaire d'être un fervent de la promenade pour apprécier le Vieux Montréal. Il renferme certaines des plus anciennes et des plus belles oeuvres d'architecture d'Amérique du Nord.

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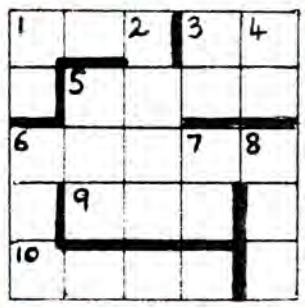
CROSSPATCH

Note: Letter I and number 1 are equivalent



ACROSS

1) The superluminous one
3) IN CYGNUS
5) In the local group
6) In your national newspaper
9) Follow the dotted line
10) Radioactive remnant

DOWN

1) Out of date catalogue
2) Quasar
3) Improved by astronomers
4) Unarmed
5) Some say it's hot
6) The little one
7) South at 1700 for a hot one
8) NAC in LMC

(Prepared anonymously during the opening General Assembly).

HUMOUR
THE MOTH AND THE STAR

by James Thurber

A young and impressionable moth once set his heart on a certain star. He told his mother about this and she counseled him to set his heart on a bridge lamp instead. "Stars aren't the thing to hang around", she said; "lamps are the thing to hand around." "You get somewhere that way", said the moth's father. "You don't get anywhere chasing stars." But the moth would not heed the words of either parent. Every evening at dusk when the star came out he would start flying toward it and every morning at dawn he would crawl back home worn out with his vain endeavor. One day his father said to him: 'You haven't burned a wing in months, boy, and it looks to me as if you were never going to. All your brothers have been badly burned flying around street lamps and all your sisters have been terribly singed flying around house lamps. Come on, now, get out of here and get yourself scorched! A big strapping moth like you without a mark on him!"

The moth left his father's house, but he would not fly around street lamps and he would not fly around house lamps. He went right on trying to reach the star, which was four and one-third light years, or twenty-five trillion miles, away. The moth thought it was just caught in the top branches of an elm. He never did reach the star, but he went right on trying, night after night, and when he was a very, very old moth he began to think that he really had reached the star and he went around saying so. This gave him a deep and lasting pleasure, and he lived to a great old age. His parents and his brothers and his sisters had all been burned to death when they were quite young.

Moral: Who flies afar from the sphere of our sorrow is here today and here tomorrow.

*Copr. c 1940 James Thurber. Copr. c 1968 Helen Thurber. From FABLES FOR OUR TIME, published by Harper & Row, New York. Originally printed in The New Yorker.

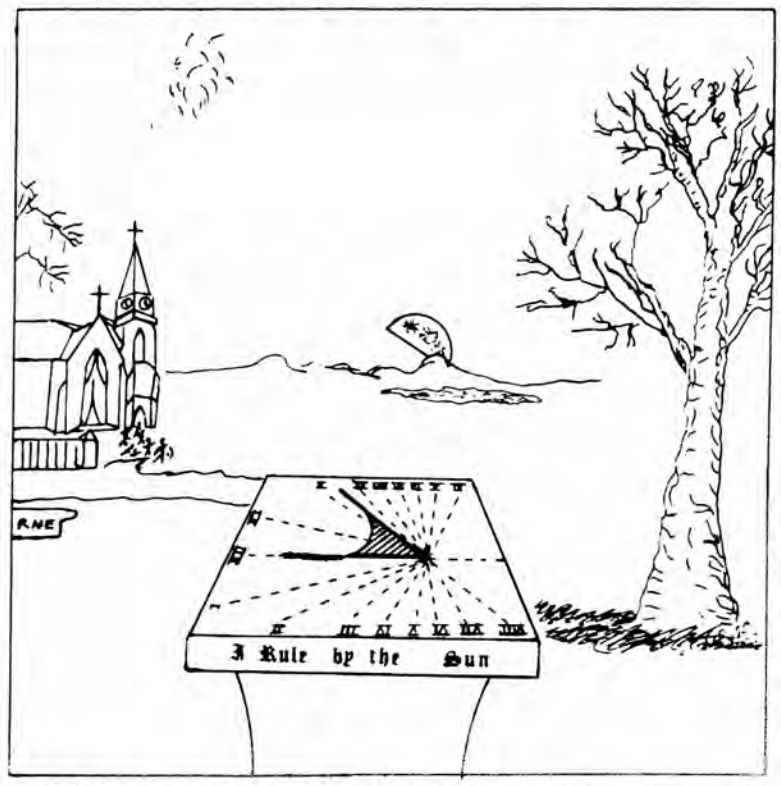
The supposed fascination of a moth for a flame has a simple scientific explanation. Moths use the light of the Sun or Moon for direction-finding in normal flight: if a moth wished to fly at a constant bearing, say 60o, to the direction of the Sun, and in its confusion, thought that the flame was the Sun, it would fly in an equi-angular spiral of pitch angle 60o around the flame, and hence spiral into it an be burned.

KNOW YOUR CONSTELLATIONS

C	A	P	R	I	C	O	R	N	L	S	U	P	E	L	START
S	P	A	V	O	H	P	S	U	E	L	U	U	Q	E	P
U	V	E	L	A	E	I	N	A	O	V	I	R	G	O	I
P	H	O	E	N	I	C	O	P	T	E	R	U	S	C	S
A	R	Y	L	T	R	T	I	U	A	R	G	O	C	E	C
E	B	S	R	L	O	O	R	S	I	V	A	N	R	T	E
A	O	E	O	I	N	R	O	A	L	I	U	Q	A	U	S
S	Ö	I	N	A	Z	I	■	R	■	D	E	E	T	S	S
N	T	R	I	M	U	S	C	☆	S	N	E	M	E	W	C
E	E	A	M	O	E	L	■	T	■	O	C	A	R	D	U
M	S	M	U	L	U	C	I	T	E	R	A	R	B	I	L
X	N	A	Q	U	I	L	A	I	C	M	S	I	X	Y	P
N	O	R	N	O	I	R	O	G	R	A	N	A	C	U	T
Y	M	S	U	D	N	I	E	A	I	E	N	O	I	R	O
L	A	C	E	R	T	A	L	S	C	T	M	A	J	O	R
A	R	D	Y	H	A	L	U	G	E	R	S	I	N	A	C

The square hides a number of names of constellations. Mos, but not all, are from the official IAU list. The others have appeared on star atlases from time to time. The puzzle is to spell out constellation names, starting with the top right hand corner, and finishing at the central star, moving only horizontally or vertically. Each word is written in a given direction, and the last box of a word shares a side with the first box of the next word.

PUZZLE PICTURE



The sketch is supposed to have been made from a photograph. The puzzle - deduce when and where the photograph was taken.

ANSWER TO OUR DIVERSIONS WILL BE PUBLISHED IN ISSUE NO 8

BULLETINS

CORRECTION - COMMISSION 34, SESSION 11, August 18

No 7 was omitted by mistake. "Recent Infrared Observations of Planetary nebulae" (Y. Andrillat, Directeur adjoint de l'Observatoire de Haute Provence).

COMMISSIONS 16 AND 17 (PLANETS AND SATELLITES)

Scientific session: Lunar Research. Saturday 18 August: 9.00 - 12:30, Room D-0305 Chairman: J.D. Mulholland

09.00 Dynamical evolution of the early Earth-moon system_ L'évolution dynamique de la jeunesse du système terre-lune H. Alfven & J. Hill.

09.45 Present-day dynamics of the Eartmoon system /La dynamique actuelle du système terre-lune R.W. King.

10.30 Free librations and the lunar dissipation parameter Q / Librations libres et le parametre Q de la dissipation lunaire O. Calame.

10.50 Break / Pause

Direct determination of the lunar Q from the forced libration / Détermination directe de Q de la lune à partir de la libration forcée.

J.G. Williams & C.F. Yoder (WITHDRAWN)

11.10 Lunar secular accelaration and the variation of gravitation/ l'accélération séculaire de la lune et la variation de la gravitation L.V. Morrison.

11.30 A catalogue of lunar transient phenomena / Un catalogue des phénomènes transitoires lunaires W.S. Cameron.

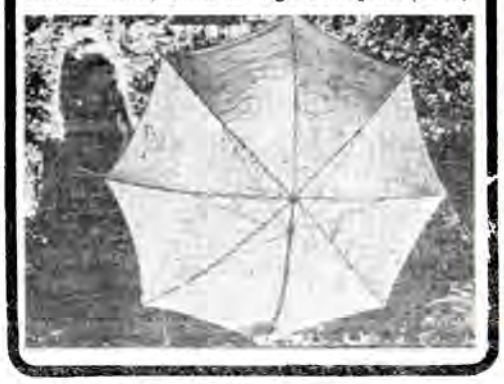
11.45 Lunar crater distribution and surface unit ages / Distribution des cartères lunaires et l'âge des régions de la surface E. Whittaker.

12.05 Lunar surface composition from thermal enimssion spectra / Composition de la surface lunaire du spectre de l'émission thermique T. H. Morgan & A. Potter.

12.25 Lunar paleomagnetism and polar wandering S.K. Runcorn.

RAIN CHECK? SWEDISH STAR UMBRELLA

A novel approach to the dissemination of astronomy to the general public in Sweden has been started in 1977 through the création of the information project - the Universe, which has already reachd hundreds of thousands of persons and will touch many more in its continuing efforts during the next few years. Amongst the items produced for the project is a star umbrella with yellow constellations printed on a blue background, which can be used as en effective map or a conventional umbrella, depending upon weather conditions. A small weak flashlight is attached to its handle. The umbrella, which costs 50 Swedish Crowns or approximately 12 U.S. dollars, is on display on the second floor of the Pavillon close to the bank and post office. If you are interested in obtaining a star umbrella write your name and address on the list posted on the nearby wall. For further information, contact Aage Sandqvist (3581).



AMATEUR EXHIBIT

Local amateur astronomers from a France- Quebec summer camp have organized an exhibit at Place Desjardins. They would appreciate your visit.

Open from 10.00 a.m. to 9.00 p.m. through Saturday, 18th.

THE PARIS OFFICE OF THE IAU

The IAU Secretariat, Observatoire de Paris, the correct address is:
IAU Secretariat
61 ave, de l'Observatoire
75014 Paris.
France.

COMMISSION 49 PROGRAMME - SCIENTIFIC MEETINGS - August 20, Monday morning

09.15 Session I

1.- Observations of the distant solar wind (Invited Rewiew) D.S. Intriligator.

2.- Properties of the nearby interstellar medium (Invited Review) J.L. Linsky

3.-Dust Within the heliosphere (invited Review) G. Morfill.

11.15 Session II

4. Plasma-gas interactions in the distant solar wind and solar wind modelling (Invited Review).
H.J. Fahr.

5. Critical velocity effects in astrophysical plasmas (Invited review).
M.A. Raadu.

6.- Contributed papers Bird et al. Faraday rotation on pulsar signals during solar occultation.

Ripken et al. A numerical model of neutral gas-solar wind interactions inside the heliosphere.

Petelski. Generalisation of Parker's heliospheric shock equations. Other papers- time permitting.

12.45 Short business meeting.

CONCERT OF ASTRONOMERS

Thomas Geball (USA) and Dominique Proust (France) have agreed to play on the 20 August evening. Thomas Geball works at Pasadena in D-R spectroscopy and plays the flute since the age of 12 with American and Holland professors. Dominique Proust works at Meudon in the Galactic Evolution Group, and plays the music as a hobby. He belongs to an organist group, the School of Notre-Dame-De-Paris.

They will give flute and organ concert on Monday, August 20, at 9:00 p.m. in the "Chapell de l'Eglise des Dominicains" 2715 Cote Ste-Catherine road. They will play music of european composers, from the Renaissance as up to date. D. Proust will also play a premiere for the XVII General Assembly entitled "COSMOLOGY I ". An improvisation, played by both, on a canadian folk song will end the concert.

PARTICIPANTS - CONGRESSISTES

Please refer to your mail box. You may have an important message. Consultez votre casier postal, il y a peut-être un message important qui vous attend.

COMMISSION 36 "THEORY OF STELLAR ATMOSPHERES"

Program of the Scientific meeting of Commission 36, on Monday morning, August 20 from 9.00 to 12.30, room G-2215.

DIFFUSION IN STELLAR ATMOSPHERES AND ENVELOPES

G. Michaud (Montreal): The Astrophysical Context of Diffusion in Stars and Open Problems - 20 min.

J. Oxenius (Bruxelles): Uncertainties in the Usual Approach to Diffusion: A Microscopic Point of View - 20 min.

S. Wolff: Confrontation between theory and observations: General.

W. Bonsack (Hawaii): Spectroscopic Survey of Stars where Diffusion Occurs - 20 min.

S. Vauclair (Obs. de Meudon): Confrontation between Theory and Observations: Competition between Diffusion and Macroscopic Motions - 20 min.

J. Landstreet (Western Ontario): The role of Magnetic Fields: Critical Evaluation of their Measurement in Stars (The sun is left aside as such). - 20 min.

E. Spiegel (Columbia Univ.): On Neglected Hydrodynamical Aspect in the Presence of Radiative Forces: Horizontal Aggregation - 20 min.

Each paper will be followed by 10 minute discussions.

ANNOUNCEMENT

There is a concert offered by a group of students from the Faculty of Music from the Université du Québec à Montréal on August 21, at 18.00 at the Centre Communautaire. The music will range from "Two Inventions" by J.S. Bach (1685-1750) to a saxophone concerto by Pierre-Max Dubois.

MICRODENSITOMETERS OF THE FUTURE

The Working Group on Astronomical Image Processing is sponsoring an informal discussion on the above topic at the time and place given below. Major manufacturers (or potential manufacturers) of microdensitometers sutable for astronomical use have been invited to discuss their future plans with interested astronomers. This is your chance to make your wishes known to them.

August 20, 14:00 at Pavillon 3200 Jean Brillant, Room 3315, Audio visual equipment will be available. For further information contact: C.T. Bolton Box 0469.

DEADLINE

All material for issue No 6 Monday, August 20, must be in the METEORE Office by 11.30 a.m. today.

POSTER

Poster for sale $1 at Information Desk. Affiche à vendre $1 au bureau d'information

There are still a few copies of past issues of METEORE available at the newstand next to the information desk, and also in the METEORE office.

BOUTIQUE DU CONGRES - ROOM 2405

This print by Davidialuk is just an example of the wide choice of Quebec handicrafts such as follows: Eskimo art, paintings and sculptures, enamelled copper, pewter, tapestry, weaving, doll collection, handbags, pottery, plexiglass, silk scarves, and silver and gold jewellery.

FROM CORNELIS DE JAGER ' PRESIDENT OF ICSU

At the opening of its General Assembly I wish the International Astronomical Union a most successful and happy meeting. The IAU is one of the most distinguished of the ICSU bodies, with a long tradition of sincere international cooperation and excellent scientific research. While being obliged to represent ISCU at the U.N. meeting in Vienna I regret with sadness that I will miss the opportunity of meeting so many good friends, and participant in a most impressive scientific programme. It will be the first IAU meeting which I miss since 1948 but be sure that my heart is with all of you.

Kees De Jager.

A NEW NEAR INFRA-RED PHOTOGRAPHIC SURVEY

The UK 1.2 metre Schmidt Telescope is engaged in a near - infrared Survey of the Southern Milky way and the Magellanic Clouds, in the R and I bands. The Survey will be published by the Royal Observatory Edinburgh, as a set of 326 photographs, 14 inches square, being I and J pairs for 163 fields. Hydrogen hygen hypersensitized IIaF emulsion and Rg 630 filters is used for the R photographs and silver-nitrate sensitized IV N emulsion with RG 715 filter is used for the I band. The limiting magnitude of the survey is estimated to be 19m.

For further information, please write to Elisabeth Sim, Royal Observatory, Blackford Hill, Edinburgh EH9 3Hj Scotland.

W. Buscombe (3916) has almost finished compiling the Fourth General Catalog of MK Spectral Classifications, and would appreciate any preprints of stellar data sent to him at Northwestern University, Evanston, IL 60201 Enquires about earlier catalogs are welcome too.

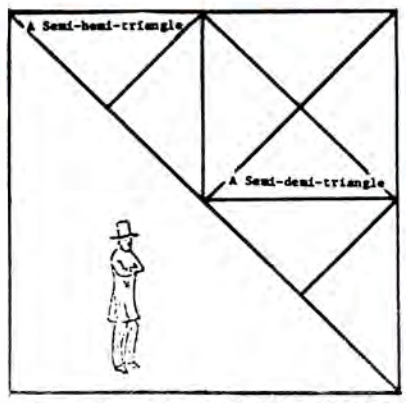
COMMISSION 8

There will be an additional meeting of Commission 8 in Room 3315 at 11:15 on Wednesday August 22.

The business will comprise:
(1) Conclusion of Scientific Papers
(2) Reports of Montreal meetings
(3) Administrative Business
R.H. Tucker (1131)
President

You should bring your camera to the Sky & Telescope display. August 20-22!

WATCH THIS SPACE (4)



1895 A.D. The demi-triangle and the hemi-triangle are split, and the semi-hemi-triangle and the semi-demi-triangle are discovered. They are thought to be the fundamental units out of which the Universe is built.

IAU 1979 Montréal UAI 1979

METEORE

Canada

August 20 Aout 20

Number 6 Numero 6

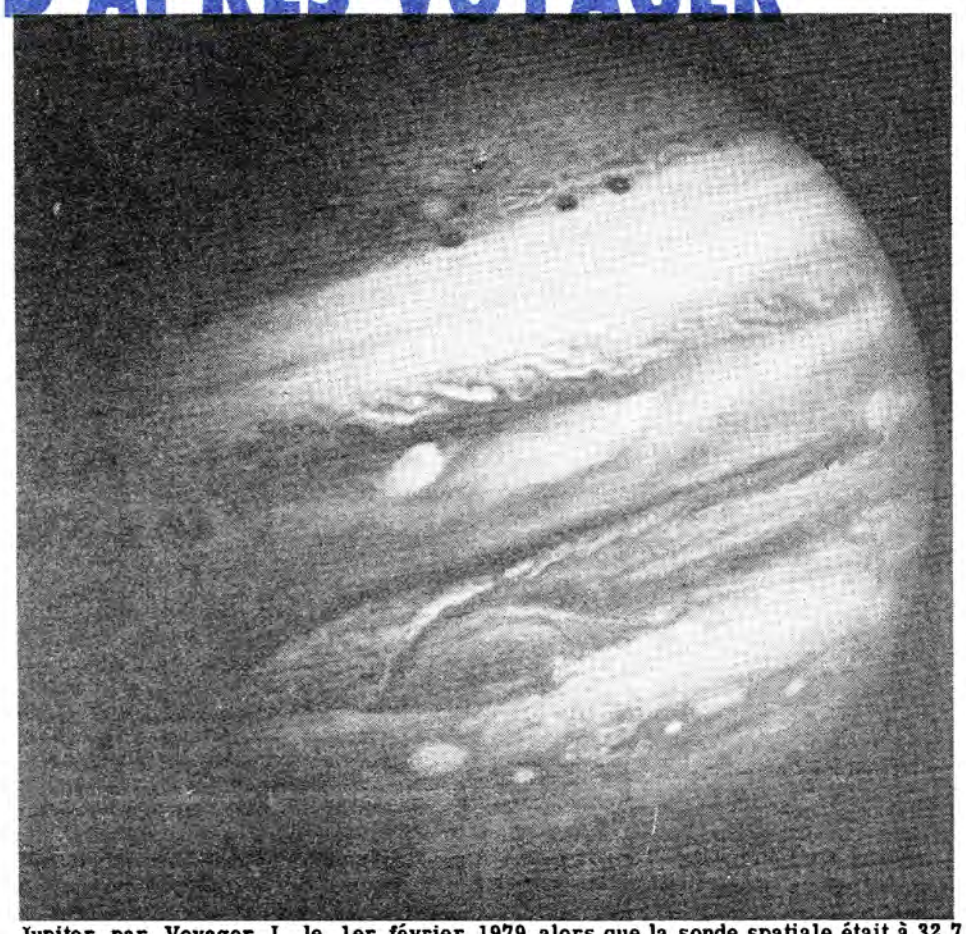
Office:- Room No. 1265 Editor:- Michael W. Ovenden Téléphone 343-5889

LE CLIMAT JOVIEN D'APRES VOYAGER

Voyager I et II ont observé Jupiter de façon quasi-continuelle depuis janvier. Bien que les deux rencontres aient été assez rapprochées, on a observé des changements importants dans l'apparence de la planète. Par contre entre les rencontres Vicking il n'y avait presque pas eu de changement. C'est autour de la tache rouge qu'il semble y avoir le plus de turbulence. A l'époque de Voyager I il y avait un petit nuage qui tournait autour de la tache. Depuis, un gros nuage est apparu. Nous avons aussi mesuré la vitesse de ces nuages et des jets entre les ceintures et zones. Les jets qui se déplacent vers l'est sont très stables et ceux qui se déplacent vers l'ouest sont instables. Nous savons maintenant que les ceintures et les zones sont dues à la petite différence de température entre les pôles et l'équateur et à la rotation rapide de Jupiter. Nous observons une cascade de la turbulence telle que prédite par la théorie.

Il existe aussi sur Jupiter des plumes équatoriales sur le côté nord de la ceinture équatoriales. A l'époque de Voyager I il y en avait 13, il y en a 11 pour Voyager II. Quelques-unes de ces plumes ont des têtes brillantes qui sont des colonnes de convection d'une échelle beaucoup plus grande que ce que nous observons sur la Terre. C'est un exemple d'interaction d'ondes. Jupiter est un laboratoire parfait pour les étudier.

Nous comprenons maintenant que les régions stables de l'atmosphère de Jupiter sont très profondes tandis que celles qui varient rapidement sont superficielles. La tache rouge est la plus grande des taches que nous voyons sur Jupiter et est essentiellement identique à toutes les autres. Ces ovales ont une rotation anticyclonique et ont de petites divergences de flux au centre. On pense habituellement qu'il s'agit là de tempêtes. C'est l'apparence qu'elles ont maintenant mais ce n'est pas nécessairement comment elles ont commencé. Les ovales blancs occupaient auparavant toute la région autour de Jupiter et sont maintenant divisés en trois fragments. La tache rouge rapetisse: elle mesurait 40,000 km il y a cent ans et n'en mesure que 9,000 aujourd'hui. C'est un indice que tous ces objets sont associés avec des ondes de déplacement et qu'ils ont une petite quantité d'énergie propre. Au plus rouge de la tache rouge, le fait que nous observons des divergences au sommet des nuages implique une convergence efficace sous les nuages. La couleur est probablement reliée au fait que la tache rouge est vieille, donc très profonde. Nous avons aussi observé des éclairs sur Jupiter, pas seulement au-dessus des nuages mais jusqu'à la surface. Les régions blanches sont probablement des cristaux d'ammoniaque au-dessus des nuages. Les régions brunes sont situées de 20 à 30 km plus bas et les régions bleues sont probablement dénudées de nuage: nous y voyons de la diffusion de Rayleigh. Toutes ces couleurs sont associées avec une chimie très active. Depuis Voyager l'image que nous avons de Jupiter a changé de façon dramatique. Jupiter n'est en somme pas très différent de la Terre. Nous y voyons des caractéristiques de l'atmosphère terrestre et des océans, mais à très grande échelle.



Jupiter par Voyager I, le 1er février 1979 alors que la sonde spatiale était à 32.7 millions de kilomètres. Des détailes de 600 km de diamètres peuvent être résolus sur cette photo prise à travers un filtre bleu. (Photo de NASA)

PALOMAR INFRARED MILKY WAY ATLAS

The California Institute of Technology is making available a near infrared atlas of the northern Milky Way from photographs from the 1.2 meter Palomar Schmidt telescope by J.G. Hoessel, J.H. Elias, R.A. Wade, and J.P. Huchra. A band of sky approximately ten degrees wide centered on the galactic plane is covered by the eighty fields as illustrated. The field centers are identicial with those chosen for the National Geographic Society-Palomar Observatory Sky Survey. Two plates of each field are taken and will be reproduced. The first plate is a sky-limited exposure through a Wratten 88 A filter on hypersensitized Eastman IV-N emulsion. This combination yields a 1300 A bandpass centered at 8200 A. The limiting steller magnitude on the plates is approximately I= 19m.0. The second plate, generally taken the same night, it is a short exposure through red Plexiglas on Eastman 098-04 emulsion. The bandpass extends from 6100 to 7000 A. These red comparison plates prove useful in distinguishing objects of unusual color from variable objects.

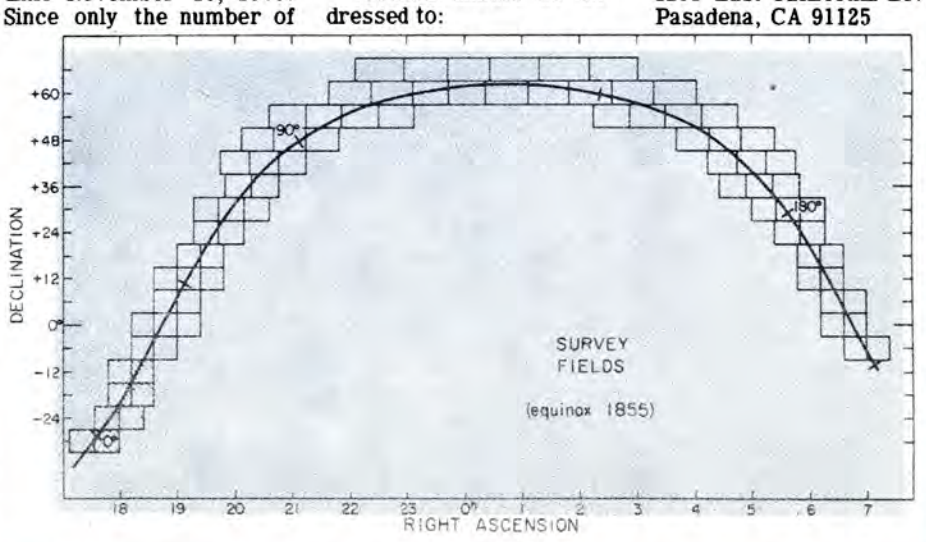
The atlas is made available in response to considerable interest expressed by the astronomical community. It should be pointed out that the plates in the atlas are not as uniform in quality as those in the Palomar Sky Survey. Eventually, the present atlas may be superseded by an infrared survey covering the entire northern hemisphere.

The atlas will consist of 160 paper prints in a format similar to the Sky Survey. Since the atlas is made available at a price that cover only the cost of production and handling of the prints, it is not possible to state a fixed price in advance. Estimates based on past experience and projected costs for labor and materials suggest that the cost will be in the range of $500 to $800 per atlas. Delivery will be in the second half of 1980.

Orders will be accepted until November 15, 1979. Since only the number of copies will be produced for which orders have been received by that date, no additional orders can be accepted thereafter.

Orders should be addressed to:

J.W.Minges
Director of Business Services
California Institute of Technology
1201 East California Blvd.
Pasadena, CA 91125



A.S.P.

The prints and slides from the Voyager mission to Jupiter are available from the Astronomical Society of the Pacific. Please see their table in the exhibits area.

V.I.P.

ALAN BATTEN

Q. Why did you take on the job of organizing this General Assembly?

That is a question I frequently ask myself! There are several answers, but I suppose the fundamental one is that if we believe that these big international meetings are worthwhile - and despite some reservations I do - then some of us must be prepared to give up some of our time to their organization. I have been lucky enough to attend several Assemblies - my first was in Moscow in 1958, and I have been at every regular General Assembly since (although I missed the Extraordinary General Assembly in Poland). I have enjoyed the hospitality of many countries, and I welcome the chance to offer some return now, on behalf of Canada, to colleagues from those countries. Since I am free of regular teaching obligations, I am able to do the job more readily than are many of my colleagues.

Q. What have you learned from organizing this General Assembly?

Chiefly that big scientific meetings are big business. Our total budget is well in excess of a quarter of a million dollars, and works out at between $100 and $150 per participant. The final figure, of course, will not be available until after the Assembly. I think most of us do not realize this cost, unless we get involved in the organization. When you add to the actual cost of the Assembly itself all the money that it spent by participants on coming here and living here, then you have several millions of dollars.

Q. How many people have come to this Assembly?

Again, the final figure will not be available until after the Assembly, but we believe we have approximately equalled the attendance in Grenoble - that is to say, between 2,100 and 2,200 people. It is interesting that the attendance is not going up in proportion to the membership which increased by about 700 or 23% between the two Assemblies. The reason may be partly geographical, of course. Crossing the Atlantic seems expensive to many Europeans. On the other hand, the largest Assembly on record is the one in Prague in 1967, which had nearly 2,500 participants, although the total membership then was still under 2,000. This seems to suggest that, regardless of the total membership of the Union, attendance at General Assemblies is stabilizing somewhere between 2,000 and 2,500 participants - a useful fact, if it is a fact, for future organizers to know.

Alan Batten
Chairman of the N.O.C.

Q. Will Assemblies of the future be similar to recent ones or not?

Your guess is as good as mine. If I am right about numbers, then there should be no great pressure to change the present format, which has been developed to fit the large assemblies of the past two decades. On the other hand, ideas of presentation change. Poster sessions are becoming very popular at some meetings, and one has been attempted at this Assembly. If they were to become a large part of future assemblies, some of the pressure might be taken off Commissions, and they could revert to their original roles of organizing international cooperation and setting fundamental standards. On the other hand, large-scale poster sessions would require much more open space than we have available here, and might be difficult to organize in some places. Many changes could be made to the organization. The cost of an Assembly could be reduced, for example, if various features that we have become used to but which are not scientifically necessary were dropped. All these, of course, are only personal suggestions. The Executive Committee is the group that, as your representatives, makes the decisions about General Assemblies.

Q. Have you any final word for participants?

I hope that they are enjoying themselves and that they are finding the meetings scientifically profitable. I hope as many of them as can will take some time to see other parts of Canada, and I hope they will take home as happy memories of Canada as I have of the various countries in which I attended IAU meetings.

CANADIAN ASTRONOMY

L'ASTRONOMIE GOUVERNEMENTALE AU CANADA

par Ian Halliday

Les premiers astronomes à être employés par le gouvernement canadien furent engagés en 1885 pour mener à bien des levés géodésiques à travers les montagnes de la Colombie-Britannique de part et d'autre de la route que suivrait le chemin de fer Canadien Pacifique. A l'époque, la complétion du chemin de fer qui relierait Montréal à Vancouver était une question politique vitale et la détermination de longitudes à travers les montagnes était un problème formidable que l'utilisation des techniques de l'astronomie résolvait au mieux. Le premier observatoire à s'occuper des levés géodésiques fût installé à Ottawa en 1887, les bâtiments de l'Observatoire fédéral étant complétés et occupés dès 1905. Cette année-là, le personnel de l'observatoire comptait onze membres pouvant être considérés comme astronomes ou géomètres experts.

Comme toute la partie ouest et, plus tard, le nord du Canada s'ouvrait au développement, des levés géodésiques précis restèrent évidemment une nécessité pratique urgente pendant de nombreuses années. Mais l'observatoire fédéral réussit néanmoins à élargir ses activités et intérêts en créant un service de l'heure (1903), un coelostat (1905), en mettant au point un télescope réfracteur de 15 pouces (1905), une lunette méridienne (1907) et, en initiant des recherches en géophisyque. Les limitations du télescope de 15 pouces quant aux mesures de vitesses radiales devinrent vite apparentes et la construction d'un plus grand télescope fut approuvée et complétée près de Victoria, C.B., en 1918. Ce télescope de 72 pouces, bien qu'extensivement modifié au cours des temps, est encore à l'heure actuelle un des instruments les plus importants de l'observatoire fédéral d'astrophysique.

A Ottawa même, l'observatoire fédéral continuait à développer son activité en géophysique et dans certains domaines de l'astronomie ne nécessitant pas l'utilisation de grands télescopes tels que le service de l'heure, l'astronomie de position, l'astronomie solaire et l'étude des météores. Un projet important visant à reconnaître à travers le Canada et à étudier d'anciens cratères formés par l'impact de météorites puis érodés permit de combiner intérêt en astronomie et expertise en géophysique. La naissance de la radioastronomie força la recherche d'un site sans interférence aux longueurs d'ondes considérées et c'est ainsi que l'observatoire fédéral de radioastrophysique fut créé au sud de la ville de Penticton à l'intérieur de la Colombie-Britannique. L'observatoire ouvrit ses portes en 1960. En 1970, une réorganisation de toute l'astronomie gouvernementale transferra la recherche astronomique de l'observatoire fédéral au Conseil national de recherches du Canada. La lunette de 15 pouces fut par la suite démontée et transportée au musée national des sciences et de la technologie à Ottawa où elle est encore utilisée à des fins pédagogiques.

Depuis plus de soixante ans, la tâche principale de l'observatoire fédéral d'astrophysique est centrée sur la spectroscopie stellaire. Les premières mesures précises de la taille et de la rotation de notre galaxie proviennent d'une étude des étoiles O et B entreprise durant la première décade de l'observatoire. En de nombreux domaines rattachés à la spectroscopie, les contributions furent aussi importantes: pensons seulement aux binaires spectroscopiques, à la spectrophotométrie, aux étoiles Wolf-Rayet et P Cygni, à la calibration et la classification de luminosité des lignes interstellaires, pour ne mentionner que celles-là. La mise sur pied d'un télescope de 48 pouces en 1962 fut une addition importante à l'observatoire. Des systèmes optiques innovatifs permettant à des télescopes relativement modestes de fournir des résultats superbes, ont aidé à créer la réputation de l'observatoire comme possédant une tradition de très bonne instrumentation. Les astronomes de Victoria, pour leur part, ont joué un rôle important dans la conception et la construction du télescope Canada-France-Hawaii qui sera inauguré le mois prochain.

Les travaux poursuivis pendant la guerre au Conseil national de recherches du Canada dans le domaine des radars et d'autres formes d'électronique s'avérèrent un apport précieux à la nouvelle science de radioastronomie. Des groupes pionniers s'attaquèrent à l'étude du bruit solaire aux longueurs d'onde radio ainsi qu'à l'observation de météores par radars. D'autres branches de la radioastronomie s'épanouirent par la suite et, en 1966, le radiotélescope de 46 mètres de diamètre entra en opération à l'observatoire radioastronomique du parc Algonquin en tant qu'instrument d'observation d'usage nationale. En 1967, une équipe de radioastronomes formée d'universitaires et d'astronomes gouvernementaux utilisèrent avec succès pour la première fois une technique appelée interférométrie à très grande base, combinant les signaux enregistrés par le réflecteur parabolique de 26 mètres à Penticton avec ceux du télescope de 46 mètres à Algonquin pour mesurer les diamètres de plusieurs quasars. Des observations à basse fréquence ont été poursuivies à Penticton puisqu'un site d'un calme aussi exceptionnel le permettait. En 1965, une longue rangée d'antennes bipolaires permettant de sonder l'espace à 22.25 MHz était mise au point, bientôt suivie par un système similaire à 10 MHz, juste à temps pour observer le ciel pendant la période de minimum solaire 1964-65. Mentionnons aussi la découverte particulièrement significative, au moyen du télescope de 46 m, des trois molécules interstellaires les plus grosses, HC5N, HC7N et HC9N.

En 1975, toute les activités astronomiques du CNRC furent concentrées à l'intérieur de l'Institut Herzberg d'astrophysique, ainsi nommé en l'honneur de Gerhard Herzberg, l'un des conférenciers invités à cette 17ième Assemblée générale. L'institut comprend plusieurs groupes de recherche, couvrant les domaines de la spectroscopie appliquée à l'astrophysique, de la physique spatiale, de la radioastronomie, des aurores et de la magnétosphère, des études solaires optiques, de l'astronomie des météores et inclut de plus les observatoires d'Algonquin et de Colombie-Britannique. Nous sommes impatients de partager avec d'autres astronomes canadiens et avec nos collègues internationaux l'utilisation du télescope Canada-France-Hawaii de 3.6 mètres ainsi que de nous lancer dans de nouveaux et fascinants projets de recherches.

PULSARS

COSMIC CLOCKS

Radio pulsars continue to surprise and delight astronomers. In a review paper on the observational work on pulsars, (Commission 35, 40 and 48 on Friday), J. Taylor said that one can find amplitude variations on any scale from a billionth of a second to a million years, a remarkable range which allows plenty of scope for anyone who chooses to work in the field. Pulsars as clocks are as good as the best we have on earth; if one allows for the steadily decreasing periods many are accurate to at least 1 part in one thousand billion.

A.G. Lyne, observing the proper motion and parallax of 21 pulsars found that 17 of them were racing away from the galactic plane. Assuming they were created in the plane of the Galaxy and using their space velocities to extrapolate back to the time of their formation gives a mean lifetime of about 4 million years. This agrees well with the mean lifetime estimated by looking at the slowing-down rate of short period pulsars, but long-period pulsars must somehow have adjusted their periods so that they give a false impression of their age. The distribution of period changes in pulsars also points to a finite lifetime and, amazingly enough, some close to this have been observed to have wildly unstable periods as if they are about to stop ticking.

BINARY PULSAR TESTS RELATIVITY

Several years of monitoring of the binary pulsar by Taylor has resulted in the most stringent tests yet on general relativity. In principle, seven effects can be

ASTRONOMY FACING IDENTITY CRISIS

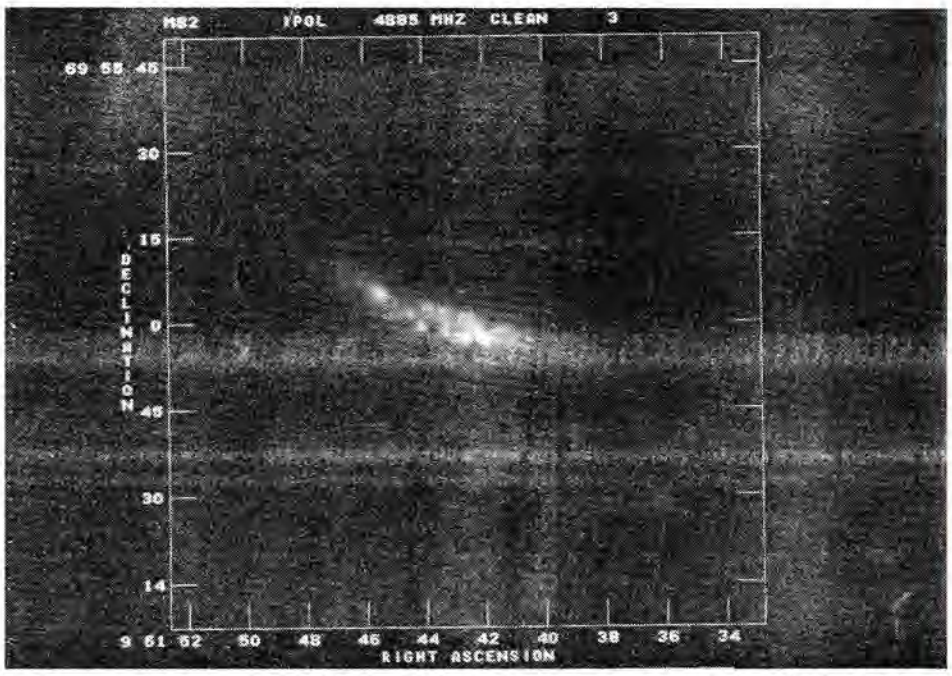
An identity crisis of chaotic proportions has resulted from the rapid rate of discovery of new types of astronomical objects, a crisis which is testing systems of astronomical nomenclature to the limit. Fed by a new generation of large telescopes and ultrasensitive detectors, the frontiers of research and discovery now lie far beyond the limits of a few years ago. Many astronomers, perhaps even a majority, routinely work on objects too faint to appear in the standard catalogues such as the HD, NGC or IC. Furthermore, access to many new regions of the electromagnetic spectrum have unveiled a complex of radioline, radio continuum, IR, UV, X-and gamma-ray sources, many interrelated, which relations emerge only with time. These developments have mushroomed to the present crisis in nomenclature: the problem of how to specify an object of study in a manner useful and recognizable to the researcher of today and tomorrow.

Commission 5 of the International Astronomical Union, the commission concerned with documentation, has been wrestling with these problems for some time. Its meeting on Tuesday, August 14 under the chairmanship of C. Jaschek (France) saw considerable discussion of this issue as the Commission's working group on nomenclature. headed by W.P. Bidelman (U.S.A.) reported its recommendations. Briefly the working group recommended as follows firstly that authors use at least two designations for principal objects in their studies. One of these should be a designation containing at least rough positional information, as for example does the HD catalogue (which is ordered by 1900 right ascension); alternately the coordinates of the object should be given. Editors of all astronomical media would be asked to be particularly careful about the designation of astronomical objects. Secondly, the working group recommended that the IAU put together a brief publication giving all the standard catalogue abbreviations. Thirdly, it would include a guide on the nomenclature of particular types of objects to become a standard reference work; Dr. Jaylee Mead of the NASA stellar data center offered to coordinate such a guide. Fourthly, designation hierarchies were recommended: for stellar objects this hierarchy would be star name (e.g. Sirius, Vega) for the few brightest stars, then Bayer letter, Flamsteed number, HR BSC, HD' BD or CoD or CPD, and finally some catalogue designation with **accurate** positions and possibly finder charts. The SAO catalogue, recently popular among observers of double stars by occultation techniques, is not considered satisfactory because of the varying limits of completeness of the catalogue (particularly near zero hours right ascension). For non-stellar objects, the NGC or IC number should be given, then a designation on the Parkes system using right ascension and declination (1950), or for objects of a pronounced Galactic distribution within our own galaxy, using galactic latitude and longitude.

These recommendations now go before the other commissions for their consideration. Their intent is to preserve ease of recognition with precision. The usefulness of existing cross-identification catalogues available to astronomers from the five stellar data centers, namely the Centre de Données Stellaires (Strasbourg), NASA stellar data center and the Soviet, Japanese and East German (Potsdam) data centers, was emphasized.

In the discussion, some participants saw resolution of the faint star designations as a vital step to solving nomenclature problems for other types of sources. The complication with extended sources however is that yesterday's radio source (for example) resolves into a dozen source components today with higher resolution study, and several times that number, with some perhaps having infrared and/or radio line components in some future, still higher resolution study, and future, still higher resolution study. The Parkes system provides at least for some continuity in these designations, but becomes unwieldy when components a few seconds of AFC or less apart are resolved.

Are you puzzled that no one has cited your fundamental, definitive paper on that fabulous but obscure object XYZ 987? Perhaps no one knew what you were talking about! As one participant in Tuesday's discussion noted, it's only common sense and good salesmanship to use as many designations as may be useful to connect your object of study to the previous (and subsequent) literature.



Radio map of the nucleus of Arp 337. That's the irregular galaxy 3C231. All the NGC fans will have of course recognized 3034 or 0954 69. Still puzzled? How about plain old M82.

(Map of Kronberg, Biermann and Schwab)

observed by pulse timing of this close binary: the periastron advance, second-order doppler effect, gravitational redshift, gravitational propagation delay, v/c**3 orbit correction, geodetic precession and gravitational radiation. Some of these are not yet possible because of our incomplete understanding of pulsar emission and the inclination of the orbit. However, with the basic orbital parameters known to some 12 significant figures, the precession is measured to be 4.225±.001o/year, gamma as 0.0050±.0004 seconds, the pulsar mass as 1.28 solar masses and the companion 1.55 solar masses (both ± 0.11). The binary period is changing by gravitational radiation. Limitations ont the companion size indicate that it too is a compact object (or at most a helium star). Further work will continue to refine the already amazing conclusions drawn from listening to the ticking of this particular cosmic clock.

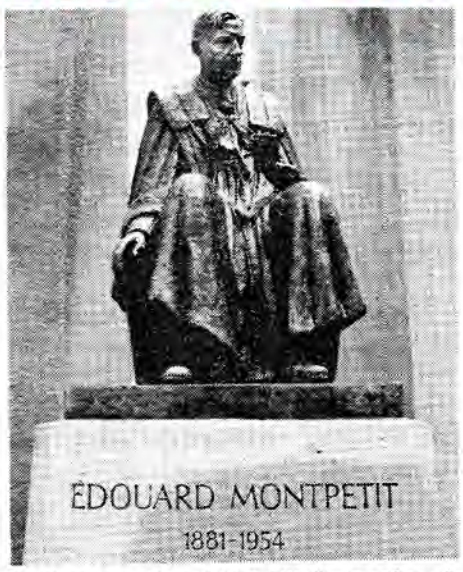
Joe Taylor

Photo: **Pierre Guzzo**

EDOUARD MONTPETIT

Edouard Montpetit est né à Montmagny le 26 septembre 1881. Il était le fils d'André-Napoléon Montpetit, avocat et homme de lettres et d'Adèle Labelle. Il obtient son baccalauréat ès arts en 1901 et complète ses études de droit à l'Université Laval de Montréal en 1904. Edouard Montpetit sera le premier boursier officiellement délégué par la province de Québec à Paris en 1907 d'où il reviendra en 1909 avec un diplôme de l'Ecole libre des sciences politiques et un autre du Collège des sciences sociales de Paris.

Admis au barreau en 1904, Edouard Montpetit exerce la profession d'avocat en plus d'être chargé de cours d'économie politique à la faculté de droit de l'Université Laval de Montréal jusqu'en 1907, date de son départ pour la France. A son retour, il est nommé professeur d'économie politique à l'Ecole des hautes études commerciales de Montréal et à la faculté de droit de l'Université Laval de Montréal. Il accède au poste de professeur titutlaire de la chaire Forget sur la législation financière, commerciale et industrielle (1913-1920). En 1915, il assure l'enseignement du droit romain à la faculté de droit. Il abandonne ces deux chaires en 1920 alors qu'il est nommé secrétaire général de l'Université de Montréal. En cette même année 1920, il fonde l'Ecole des sciences sociales, économiques et politiques dont il prend lui-même la direction. Cette école deviendra plus tard la faculté des sciences sociales de l'Université, l'une des facultés qui, intégrées les unes aux autres, ont donné naissance à l'actuelle faculté des arts et des sciences, créée en 1972. Edouard Montpetit fut le délégué du gouvernement fédéral canadien aux conférences internationales de Gênes et de La Haye en 1922. En 1931, il devient directeur des relations extérieures de l'Université de Montréal. Durant sa longue carrière, il occupa les fonctions suivantes à l'Université de Montréal: secrétaire général (1920-1950), doyen de la faculté des sciences sociales (1920-1950), membre du Sénat académique (1920-1950), membre de la Commission



d'administration (1920-1950), membre du Comité exécutif (1920-1939), membre de la Commission des études (1920-1950), membre de la Commission d'étude sur le problème financier de l'Université de Montréal (1937-1940), professeur à l'Ecole des hautes études commerciales (1910-1939) et professeur à la faculté de droit (1910-1954). Il fut nommé doyen honoraire de la faculté des sciences sociales, professeur émérite de l'Ecole polytechnique, professeur titulaire de l'Ecole des hautes études commerciales et secrétaire général honoraire de l'Université de Montréal.

Edouard Montpetit milita dans diverses organisations pour lesquelles il eut à remplir des fonctions de premier ordre: président de l'Association canadienne française pour l'avancement des sciences (ACFAS, 1925-1926); président du Cercle universitaire (1927-1928); président canadien de l'Institut scientifique franco-canadien (1948); secrétaire général puis vice-président du Comité France-Amérique (1911); membre de la Commission des écoles catholiques de Montréal (1928-1937); rédacteur en chef de la **Revue Trimestrielle Canadienne**; président de la Commission des assurances sociales de Québec (1930-1933); président du Comité de revision des taxes de la province de Québec (1937-1940); membre du Conseil municipal de Montréal (1940-du Comité fédéral de reconstruction d'après-guerre (1940); membre du Conseil municipal de Montréal (1940-1942); direc-municipal de Montréal (1940-1942); membre de la Chambre de commerce du district de Montréal (1940); directeur général de l'enseignement technique de la province de Québec et président d'honneur de l'Association générale des diplômés de l'Université de Montréal (AGDUM, 1946-1947). Il était membre de l'Académie royale de langue et de littérature françaises de Belgique depuis 1924, membre de la Société royale du Canada depuis 1914 dont il fut président de la section française (1931) et membre de l'Académie coloniale de France depuis 1936.

En 1925, Edouard Montpetit donna, en Sorbonne, à titre de professeur agréé de l'Université de Paris, dix leçons sur le Canada. Il donna également ces dix leçons à l'Université de Bruxelles en 1928. Il fut trois fois conférencier de la Clarence Webster Foundation à l'Université Mount Allison en 1928.

M. Montpetit était détenteur de deux doctorats réguliers: docteur en droit de l'Université Laval de Montréal (1917) et docteur ès sciences politiques, économiques et sociales (1940); et de cinq doctorats honorifiques: docteur ès lettres (Ottawa, 1927); docteur ès lettres (Poitiers, 1935); docteur ès sciences commerciales (Montréal, 1935); docteur en droit (Lyon, 1935) et docteur en droit (McGill, 1944). Il fut fait Conseiller du roi (1918), Chevalier de la Légion d'honneur (France, 1928), Chevalier de l'Ordre de Léopold de Belgique, Commandeur de l'Ordre de l'Etoile noire (France, 1934), Officier de l'Ordre de la fidélité française (1950) et Chevalier de l'Ordre souverain et militaire de Malte (1953). Il fut bénéficiaire de la médaille de l'Ecole libre des sciences politiques de Paris (1925), de celle de la Société royale du Canada (1935) et de celle de l'Académie coloniale de France (1936).

BULLETINS

CONCERT MONIQUE LEYRAC

Ce soir à la Place des Arts au Théâtre Maisonneuve aura lieu le spectacle de Monique Leyrac à 20.30. Le prix Calixa-Lavallée de la Société St-Jean Baptiste lui a été décerné récemment.

"Comédienne à 14 ans et chanteuse à 18 ans, Monique Leyrac a toujours mené depuis les deux carrières alternativement. Elle a joué de nombreux rôles au théâtre, ainsi qu'à la télévision et au cinéma.

Dans les années soixante, elle rencontre Gilles Vigneault qui écrit mais ne chante pas encore elle fait un 33 tours de ses chansons.

Elle participait à deux festivals à Sopot et Ostende, où 35 pays sont représentés; elle rafle tous les prix avec les chansons de Vigneault.

En 1966, elle chante en vedette à l'Olympia et l'année suivante à Bobino dans le programme de Béart, puis une autre année dans celui de Brassens.

Monique Leyrac fait une tournée en Russie, change à New York dans d'importantes émissions télévisées, donne un récital à Town Hall et un autre à Carnegie Hall.

Monique Leyrac

En 1976, elle imagine un spectacle dans le même style que le précédent mais complètement différent, sur le poète Félix Leclerc. On redécouvre Félix et la critique est unanime: "C'est le plus beau spectacle de l'année.

COMMISSION 25 – CHANGE IN SCHEDULE, August 20

"New Techniques in Photometry and Polarimetry"

Part I: "Photometry" will be held as **scheduled:** 9.00 a.m.
Part II: "Polarimetry" will be presented **not** at 11.00 but at 14.00 in room E-0325

COMMISSION 22 – METEORS AND INTERPLANETARY DUST

Monday, August 20, Room 3295
09.00 **Administrative**
11.00 **Scientific Session**

Present and Future Observational Techniques: Chairman - W.G. Elford
1. Interplanetary Dust
   - J.A.M. McDonnell
2. T.V. - Optical Devices
   - J. Jones, R.L. Hawkes
3. Camera Networks
   - I. Halliday
4. Radar
   - O.I. Belkovich
   - C.S.L. Keay

COMMISSION 28

The Working Group on the Magellanic Clouds will now meet in Room B2305 today, at 9.15 a.m.

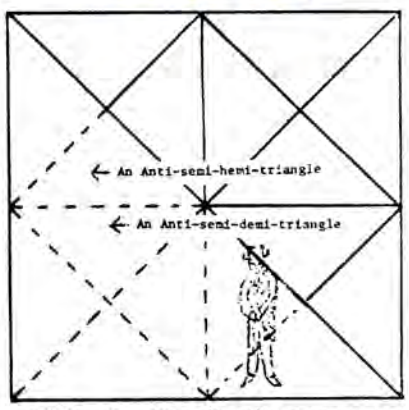
CONCERT DES ASTRONOMES

Thomas Geballe (USA) et Dominique Proust (France) ont accepté d'assurer la soirée du 20 août. Thomas Geballe travaille à Pasadena (Californie) en spectroscopie infra-rouge et joue de la flûte depuis l'âge de 12 ans avec des professeurs américains et hollandais. Dominique Proust travaille à Meudon dans le groupe Evolution Galactique et consacre ses loisirs à la musique. Il fait partie du groupe d'organistes de l'Ecole de Notre-Dame-de-Paris.

Ils donneront un Récital Orgue et Flûte, lundi 20 août à 21:00 précises, dans la chapelle de l'Eglise des Dominicains (2715, chemin de la Côte Ste-Catherine).

Au programme sont prévues des oeuvres de compositeurs européens, de la Renaissance à nos jours, ainsi qu'une création immédiate de D. Proust, à l'occasion de la XVII Assemblée générale de l'UAI: COSMOLOGIE I. Ils improviseront tous les deux sur un chant populaire canadien pour clore le concert.

WATCH THIS SPACE (5)



1932 A.D. The situation becomes more complicated when the anti-semi-demi-triangle and the anti-semi-hemi-triangle are discovered.

CORRECTION

Note an error in August 17 METEOR LAST PAGE (p.4) in regard to Joint Meeting Commission 28 and 33.

W.W. Roberts, "Gas Flow in Galactic Bars"..... is missing from the article. This should have been the last of the invited talks.

P. Schwarz gave only a 4-minute brief report at the **end of the session after W.W. Roberts' talk.**

COMMISSION 27 – VARIABLE STARS

Additional meeting

August 21 at 11.15 a.m. in room D0305
- General science, J. Smak

COMMISSION 31

At the August 17 meeting of Commission 31 (Time), C.O. Alley presented a review of the relativistic effects in timekeeping and emphasized their importance in the synchronization of precise clocks. New experiments in time transfer using the Hermes satellite were described in papers by C. Costain and P. Nuspl. Results from time transfer experiments with the Symphonie satellite were discussed in a paper by J. Rutman, and a proposed experiment using the Space Shuttle was treated in a paper by S. Starker.

In the second session the future needs for clock synchronization were described by S. Leschiutta, and some possibilities for future methods were treated in papers by W. Klepczynski and G. Winkler. The former reviewed some results from recent VLBI experiments while the latter described the possible use of the GPS satellites for timing. S. Iijima pointed out in his paper that the formation of the TAI time scale might be improved if the present methods of comparing clocks in the Far East with those in Europe and North America could be improved.

COMMISSION 28 – WORKING GROUP FOR EXTRAGALACTIC SURVEYS FROM SPACE

Meeting on: Wednesday, August 22 at 9:15 a.m. in room 3290
A. ADMINISTRATIVE
B. SCIENTIFIC

1. The spacelab wide angle telescope (SWAT) - H.J. Smith
2. The ESA space Schmidt - R. West
3. The U.K.-Schmidt Surveys and possible implications for SWAT-R.D. Cannon
4. Prospects for low dispersion spectroscopy with a space Schmidt - M. McCarthy

Other contribution can be added if time allows. Contact R. Barbon, Italy, 2509. Deadline Tuesday, 21st.

COMMISSION 31

At the first administrative session, the President presented for consideration the possibility of merging Commission 31 with another commission, or making changes in the areas of its concern. After a spirited discussion period, the subject was postponed to the next administrative meeting on August 18.

The table of contents for the **Source Book in Astronomy and Astrophysics 1900-1975** is on display on the bulletin board of Commission 41. The authors, Kenneth R. Lang and Owen Gingerich, have provided historical discussions of 132 classical articles which are reproduced in edited form and often for the first time in English translation. The book is now available from the Harvard University Press at the list price of $60.00.

AN ASTRONOMICAL TRADE-SHOW

I would like to remind you that starting today, August 20 and continuing through Wednesday, August 22, several companies with astronomical interests will have display booths open on the second floor of Pavillon 3200 Jean-Brilliant.

As was mentioned last week in the METEOR, D. Reidel Publishers, the official IAU publisher, are exhibiting a variety of their books, especially the material related to the IAU. Sky Publishing Corp. will likewise have a display of their various publications, including their instructional materials for astronomy. In the same vein Gall Publications, plus those of several other major publishing houses well-known for their contribution to astronomical texts and reference books.

Those of you especially interested in astronomical instrumentation should be well-satisfied.

Eastman Kodak will be ready to discuss pertinent, or hyper-sensitive, issues, if you like. A combined exhibit by Roger Tuthill, Celestron International, and Efstonscience Inc. of Toronto will reprensent a variety of small telescopes, instruments and accessories of particular interest of small telescopes, instruments and accessories of particular interest to the astronomical educator.

Observatory and laboratory instrumentation will be broadly covered by the exhibits of following major manufacturers: Carl Zeiss Canada, Grubb-Parsons division of NEI-Parsons; Applied Optics Division of Perkin-Elmer Corp.; and R.E.O.Sc. of France. Even if you think that you are familiar with each company's products, I'm sure that each has prepared a surprise or two for all of us.

These exhibits should prove to be a very informative and entertaining way to pass any uncommitteed time you may have. And remember, this sort of interaction profits everyone in the long run.

John Glaspey

IMPORTANT NOTICE/

CHANGE IN LOCATION OF GENERAL ASSEMBLY

The location for the closing General Assembly on Thursday, August 23 has been changed from A-2285 in Pavillon 3200 to the large auditorium in the Pavillon Principal (where the evening session on "Life in the Universe" was held). The time of the Assembly remains unchanged (10.00 a.m.)

AVIS IMPORTANT

CHANGEMENT DU LIEU DE L'ASSEMBLEE GENERALE

L'assemblée générale se réunira jeudi, le 23 août à l'auditorium du pavillon principal (où a eu lieu la session "Life in the Universe" jeudi soir) plutôt qu'au A-2285 du pavillon 3200. L'heure sera la même (10.00 a.m.)

NUCLEI OF NORMAL GALAXIES

Montreal, August 21, 1979

Joint Discussion Co-Sponsored by Commissions 28, 33, 34, and 40 of the International Astronomical Union

Session I. (W.B. Burton, chairman)

J.H. Lacy (University of California): Infrared results on kinematics of ionized gas in nuclear region of our galaxy. Comparison of infrared continuum results from the nucleus of our galaxy with those from M31.
30 minutes

G. Wynn-Williams (Cambridge): Infrared emission from the nuclei of spiral galaxies.
5 minutes

H.S. Liszt (National Radio Astronomy Observatory): Molecular studies of the gas distribution and kinematics in the inner region of our galaxy. Review of the recent molecular investigations of other galactic nuclei.
30 minutes

Y. Fukui (Tokyo): An anisotropic gas jet from the nucleus fo the galaxy.
5 minutes

Session II. (H. van der Laan, chairman)

R.D. Ekers (Mount Stromlo and Widing Spring Observatories): Structure and variability of normal galactic nuclei. Detailed structure of Sgr A. VLBI results.
30 minutes

R.H. Sanders (University of Groningen): Theoretical considerations on the dynamics of normal galactic nuclei.
30 minutes

T.M. Heckman (Sterrewacht Leiden): Optical and radio observations of activity in normal galactic nuclei.
15 minutes

Session III. (K.C. Freeman, chairman)

M. Schwarzschild (Princeton University): Triaxial dynamics in the nuclei and nuclear bulges of normal galaxies.
15 minutes

S.M. Faber (Lick Observatory): Distribution of mass and light in galactic nuclei.
30 minutes

J. M. van der Hulst (University of Minnesota): Continuum mapping of the nuclei of normal galaxies. Results of initial LVA surveys.
30 minutes

Session IV (F.J. Kerr, chairman)

D. Crampton (Dominion Astrophysical Observatory): Spectroscopic survey of the nuclei of normal galaxies.
5 minutes

W.A. Sherwood (Max Planck Institute Bonn): Spectra of nuclei of early type galaxies.
5 minutes

V.I. Pronik (Crimean Astrophysical Observatory): Centers of star formation in the nuclei of galaxies.

P.L. Biermann (Max Planck Institute for Radio Astronomy): Star formation in the nucleus of our galaxy and in the nuclei of normal galaxies.
30 minutes

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Office:- Room No. 1265 — Editor:- Michael W. Ovenden — Téléphone 343-5889

EINSTEIN PROBES X-RAY UNIVERSE

The introduction of focussing-optics techniques in the X-ray telescope of the Einstein Observatory has led to a leap forward in our ability to map the X-ray sky. Whereas previously only the brightest X-ray sources could be detected (unusual stars or galaxies), the Einstein Observatory allows us to observe all objects of astrophysical interest from the weakest stars to distant quasars with a sensitivity 1,000 times greater than before and with a resolution of a few seconds of arc.

Riccardo Giacconi, the director of the Observatory, summarized some of the observations made by the Einstein Observatory since its launch in December 1978 in a short introductory talk given in commission 48 on Friday, prior to Monday's Joint Discussion on Extragalactic High Energy Astrophysics.

The long-standing question of whether the X-ray background is truly diffuse or the sum of many individual sources is close to being answered. Taking deep exposures of "empty" areas of sky shows point sources coming out of the background, many of which turn out to be quasars. Already at least one third of the background can be explained in this way and quite probably all of it. The hot gas suggested from earlier observations to contain enough mass to close the universe is simply not there and the Einstein observations add further evidence to the presently-favoured view of an open universe.

The most distant cosmological objects known can now be conveniently detected in X-ray in times that are not too long. The ability of the new telescope to detect quasars is phenomenal. 90% of those to which the telescope has been pointed have been detected. Already some new quasars have been detected and a new class of low-redshift, radio-quiet quasars is emerging. The sensitivity of the instrument is such that it should be able to detect quasars up to a redshift of about 5, if only we knew where to look. The Einstein observers are hopeful too of measuring a redshift directly, but so far no lines have been found in any quasar spectra at X-ray wavelengths.

X-ray observations of radio galaxies show great promise. At last there is direct evidence for a massive, dark halo round M87 which must contain more than 10 times the mass of the galaxy to provide the gravitational potential to hold the hot X-ray-emitting gas observed. X-ray emission from Cygnus A is found to come from the entire cluster rather than the central Cd galaxy and radio source. In Centaurus A Einstein has resolved an X-ray jet coincident with the recently discovered optical jet.

Closer to home, the Einstein Observatory has found some 80 point sources in M31 and others in the LMC, which astronomers are eager to identify. On our doorstep, the unexpected discovery of X-ray emission from O-stars and M-stars and even WUMa stars has excited stellar astronomers to rethink their theories of stellar coronae and evolution. We all wish the Einstein Observatory a long life and continued success in mapping the energetic universe.

Central region of Andromeda Galaxy shows numerous X-ray sources. Four have been identified with globular clusters and one is probably the galactic nucleus

Riccardo Giacconi finds a few more quasars.

Photo: Pierre Guzzo

DINER DE CLOTURE

Gymnase Sir Arthur Currie à l'Université McGill.

Transport: Les autobus partiront des résidences: à 18.15, et du Reine Elizabeth: à 19.00.

"VENEZ VOUS AMUSER AVEC NOUS!

Mercredi, 19.00, bar ouvert, buffet gastronomique: pièces montées et mets chauds et froids.

Danse: Musique internationale. Spectacle: Danseurs et chanteurs, folklore du Québec. Cadeaux-souvenirs. Prix: $25.00 par personne (tout inclus). Billets en vente à l'information.

Votre Comité Local.

CLOSING DINNER

Sir Arthur Currie Gymnasium at McGill University.

Transportation: Busses will leave from the residences: at 18.15, and from the Queen Elizabeth: at 19.00.

"COME AND HAVE FUN WITH THE LOCAL ORGANIZERS."

Wednesday, 19.00, open bar, fancy hot and cold buffet.

Dancing: International Music, Entertainment: Quebec folk dancers and singers. Gifts.

Price: $25.00 per person (all included).

Tickets available at the Information Desk.

V.I.P.

MME EDITH MUELLER
SECRETAIRE GENERAL DE L'UAI

Q.-Parlez- nous de votre expérience comme secrétaire général de l'UAI.

D'abord je peux dire que c'est beaucoup de travail. C'est aussi très intéressant. On rencontre beaucoup de monde, on fait beaucoup de voyages, on a une immense correspondance. Malheureusement on n'arrive plus à faire la recherche. Heureusement que j'avais des collaborateurs, nous avons quand même pu faire quelques publications. Je dois dire que jeudi soir prochain je serai très heureuse de reprendre mon souffle et de m'éclipser pour plusieurs semaines de vacances.

Edith A. Muller, Secrétaire général de l UAI.

Photo Pierre Guzzo

Q.-Comment devient-on secrétaire de l'UAI?

J'ai été élue, et je dois dire que cela m'a tout à fait étonnée. Je ne m'y attendais pas du tout: il y a un comité special de nomination qui consite de 7 personnes y compris le président et l'ancien président. Ces 7 personnes proposent des noms pour le prochain président et secrétaire général adjoint. Le présent secrétaire adjoint est automatiquement promu secrétaire général.

Q.- Etiez-vous active dans l'organisation de l'UAI auparavant?

J'ai été présidente de la commission 46 de l'enseignement de l'astronomie pendant six ans et vice-présidente trois ans auparavant.

Q.- Est-il important de connaitre les mécanismes de l'UAI avant d'accepter un poste dans l'organisation?

Les mécanismes de l'UAI sont très simples. On a les statuts: tous les membres de l'UAI devraient les connaitre. Quant au reste, c'est du bon sens.

Q.-Où avez-vous fait vos études?

Je suis née en Espagne où j'ai fait toutes mes études jusqu'au Bac. Ensuite je suis allée à Zurich comme suissesse, où j'ai fait des mathématiques, de la chimie, de la physique et de l'astronomie et où j'ai obtenu mon doctorat. Ensuite j'ai travaillé à l'observatoire fédéral de Zurich et j'ai enseigné les mathématiques au collège de jeunes filles à Zurich pendant trois ans. J'ai passé un an à Cambridge en Angleterre et presque dix ans à Ann Harbour (Michigan).

J'ai passé un an à l'université de Bâle pour des histoires de visa. Je suis retournée après les Etats-Unis à l'université de Genève et j'y suis depuis.

Q.-Que comptez-vous faire en retournant à la recherche?

Je voudrais continuer à étudier les problèmes des atmosphères stellaires. Il y a beaucoup de problèmes à régler et de modèles à faire. Il y a maintenant des nouvelles techniques pour observer dans l'UV lointain et l'infrarouge et il faut utiliser ces données pour étudier les atmosphères des étoiles. Je voudrais regarder les atmosphères stellaires dans tout le spectre électromagnétique.

Premièrement je voudrais lire beaucoup car ces dernières années j'ai eu très peu de temps pour étudier la littérature. Il faut que je me rattrappe.

WELCOME BACK!

On the first day of the IAU, John Glaspey decided to go into the hospital. We diagnosed it was "overwork", while the experts decided it was "diabetes". John and Marie Giard are in charge of the exhibits. Marie is the person limping around on crutches you encounter in the halls; she broke her toe. (Hosting an IAU may be hazardous to your health).

We were all relieved to see John back in action today after he escaped from St. Mary's hospital to participate in the IAU. John says that he will be staying at the hospital overnight, allowing the local committee to reduce its operating budget.

From all of us, John, we wish you the best, and we're glad to see you won't miss all of your IAU after all.

By R. Racine referred by P. Hemenway.

HEUREUX DE TE REVOIR!

Dès la première journée de l'Assemblée générale, John Glaspey décida, sagement (?) d'entrer à l'hôpital. "Surmenage" pensions-nous; mais les experts décideront plutôt qu'il s'agissait de diabète. John et Marie Giard sont les membres du comité local en charge des exhibits. Marie est celle que vous voyez déambuler dans les halls avec ses béquilles et son plâtre - orteil cassé (recevoir l'UAI est dangereux!).

C'est avec plaisir que nous avons vu John de retour à son poste aujourd'hui, s'étant échappé de l'Hôpital St-Mary's pour participer à l'UAI. John a décidé de continuer à passer les nuits à l'hopital - une autre façon de réduire le budget d'hébergement du Comité local.

Nous souhaitons tous à John et à Marie un prompt rétablissement et nous sommes heureux qu'après tout vous ne manquiez pas tout le plaisir de notre UAI 1979.

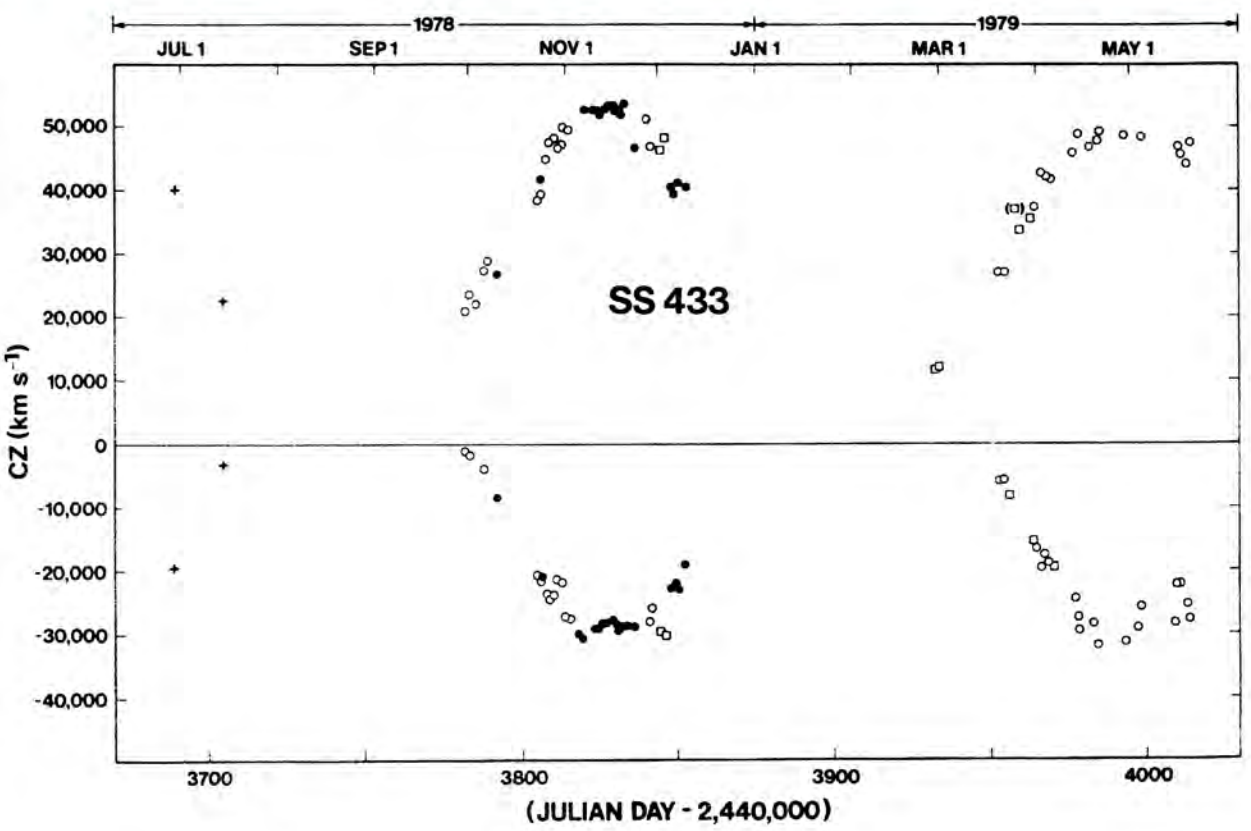
SS 433 - THE 164 DAY WONDER-ON TRIAL

Saturday morning's round table-discussion rapidly moved into the joint discussion room to accommodate all the speakers and curious onlookers, as a rapid-fire succession of new data was presented on SS 433. But for one strange circumstance this object could be just another ordinary (!) X-ray binary (remember the joint discussion from the last IAU general assembly?) However this one has two sets of moving Balmer emission lines (see diagram) whose extraordinary properties indicate the presence of two collimated jets of matter travelling at about one third of the velocity of light. Their detailed behaviour now points very convincingly to a double beam precessing in 164 days some 20o about a pole inclined at 78o to our line of sight and nutating (or nodding) through some 5° , probably in the same period. VLBI radio data have revealed a 3 milliarc- second point source and two jets 1 milliarc-second wide aligned East-West on May 12, 1979. These results also indicate the 78° line of sight inclination. Distance estimates for the optical and radio sources and the surrounding SNR W50 suggest a distance of 3.5 kpc and thus reinforce the position coincidence with W 50. Optical studies of the "stationary" emission and P Cygni absorption lines have revealed a 13.1 day period and probably binary orbit for which likely masses of the component bodies are both near 1.6 solar masses. Optical, infrared and radio variability also suggest correlation with this period.

The puzzle, then, is to discover why an apparently normal weak X-ray binary has such extraordinary properties. The clues may lie in the coincidence with a supernova remnant which make this the youngest known binary source. Models have been proposed which depend on a very rapidly spinning pulsar on a super critically accreting one. Further observational constraints will almost certainly be discovered in the near future which may tie down or eliminate these possibilities. In any case we are assured of a great deal of activity and excitement over this presently unique phenomenon.

The Jury

Photo : Pierre Guzzo



The fingerprint of SS 433

COMMISSION 44 - FUTURE NEEDS FOR SPACE ASTRONOMY

by R.M. Bonnet

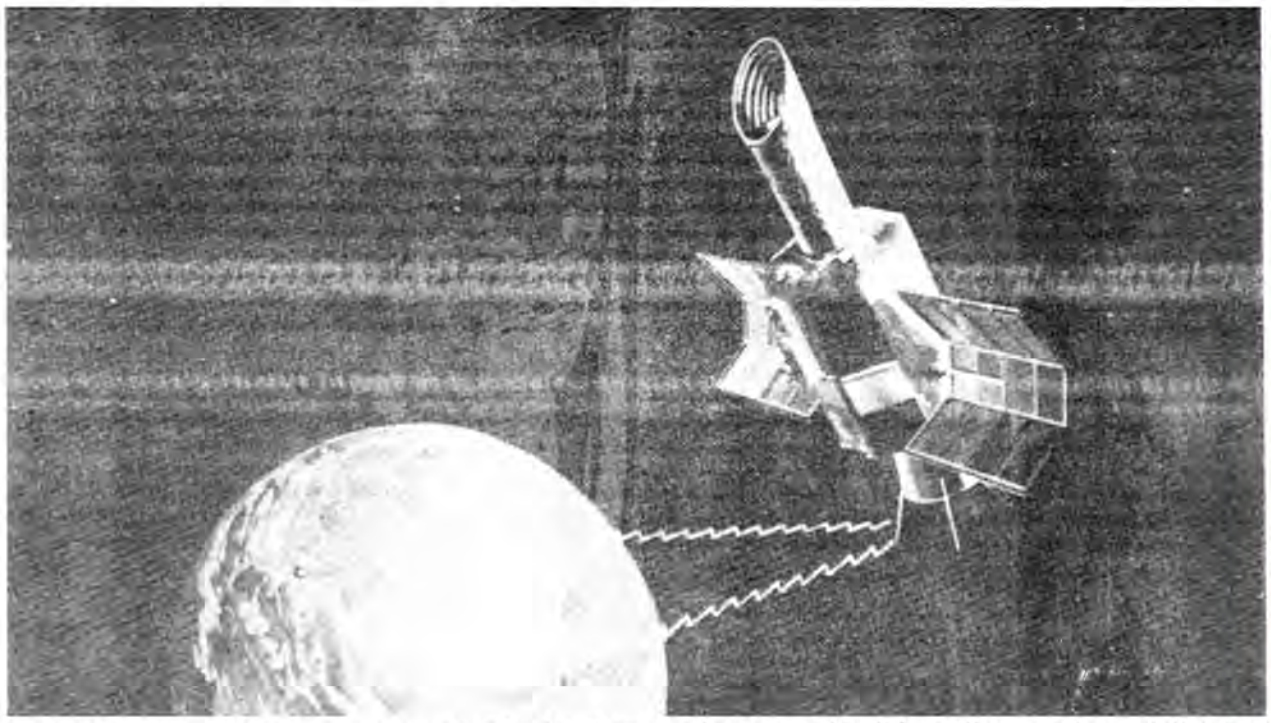
Already Planned Programmes

Planned International Space Programmes were presented in the morning session by Eric Preytreman from ESA and N. Roman from NASA. The European Space Agency (to which, in fact, Canada belongs) is international per definition, and not only has a programme of its own, including COS-B and EXOSAT, to be launched in 1981, but is also engaged in very important Joint Ventures with NASA like the ISEE programme, the Space Telescope, the International Solar Polar Mission (Ex. Out of Ecliptic Probe) and the SPACELAB-1 Programme. NASA, as is well-known, has offered and will continue to offer flight opportunities on board its space vehicles to many countries all around the world. Dr. Roman rewiewed the various components of the Space Astronomy programme of NASA. Copernicus, the HEAO series whose last number will be launched next October, the Solar Maximum Mission (SMM) which will be the major segment of the coordinated studies of the next Solar Maximum, the spacelab-2 mission which will carry various types of instruments among which a small infrared telescope which will look for sources of a few degres and various US and non-US solar instruments. She also described in detail the various instuments of the space telescope and their capabilities and offered a perspective view on the space telescope and their capabilities programme, e.g. a 80 cm Cryogenically Cooled Telescope, the Gamma-Ray Observatory (GRO) and the Solar Optical Telescope (SOT).

Dr. R. Wilson presented the International Ultra-Violet Explorer, a joint project between NASA, ESA and the UK and R. Van Duinen presented the infrared Astronomical Satellite built promptly by the Netherlands, the USA and the U.K. IRAS will be launched in 1981 and will make an all sky survey in the far infra-red between 8 and 120 mirrors. With a sensitivity several orders of magnitude large than the present systems IRAS will be the first hypogenically cooled telescope to be phased into orbit and is expected to operate for 18 months.

FUTURE SPACE ASTRONOMICAL PROGRAMME

Professor Leo Goldberg offered an exciting perspective view of what should be the major components of the future astronomical observations to be made from space. The first showed that the sapce Astronomy programme follows a sequence of three phases: Phase I which ended shortly after the lauch of the first Sputnik during which observations were maintly conducted from space, Phase II which is just ending now during which relatively small instruments in earth orbiting satellites were used, and Phase III which is about to begin and during which full advantage of the low sky noise and high spatial resolution possibilities of space observations will be exploited. Professor Goldberg regretted that the most convincing practical arguments which characterize space astronomy were surprisingly not sufficient to get a project approved and that the best way, in that respect, is to show that the project is relevant to solving the fondamental problem, of the origin and evolution of either



Artist' conception of the IUE as it transmits data from synchronous orbit (Illustration courtesy of N.A.S.A.).

the Sun, the Moon, the Solar System, the Galaxy or the Entire Universe. The most popular working model is that of the hot expanding Universe which has surprisingly managed to withstand the shock of the fantastic discoveries which have been made over the past 25 years. He then showed how, for the first time in history thanks to the observations which will soon be possible from space, cosmology will be put on a reasonably firm observational basis, by testing the Big Bang Model from the first few minutes to 15 billion years later including the formation of D and He, the observations of the relict radiation, the formation and evolution of galaxies, of stars and stellar systems, the formation of heavy elements in stellar interiors and how to enrich the interstellar medium through supernovae, novae and stellar winds and the final stages of stellar evolution. For that we will have telescopes giving spatial resolution below 0.1 arc sec and operating in the X-ray, UV, optical and infra-red background. Gamma-ray astronomy will provide a unique test of the evidence that matter and antimatter are symmetric anywhere in the Universe.

One of the most exciting prospects for space astronomy is the development of spatial interferometers for the visible and the infra-red bands with a spatial resolution of 0.01 arc sec. They could in principle observe the earliest stages of star formation and reveal the presence of other stellar systems. Accurate distances and therefore absolute luminisities can be obtained from parallaxes and proper motions with high spatial resolution. Very high spatial resolution will greatly expand our knowledge of binary star of X-ray and gamma ray astronomy was pointed out very clearly, since it offers the possibility observing the last stages of stellar evolution: supernovae, neutron stars and black holes.

Prof. Goldberg concluded in showing that progress in astronomy does not follow alone from the testing of theories and that surveys of the sky with new observational techniques have been and still will be of extreme importance. Space Astronomy also provides unique opportunities to test theories of gravitation and relativity.

Are the presently planned space vehicles and transportation systems sufficient to carry out this programme?

To this question, Professor K. Pinkau brought an affirmative answer: provided they are made cheaper than they are today. The space shuttle, spacelab and the European ARIANE Rocket seem to present the capabilities which are necessary to carry most of the experiments and satellites envisioned in the next decade or so. However two major concerns were expressed. One is the tendency to launch only large facilities with obviously a much lower event rate than in the past, leading to a gradual loss of expertise of the space laboratories involved in hardware development and thereby to a stagnation of the capabilities of future experiments. The second is that in reality the cost of space experiments and launchers does not go down as hoped and the future may well see a gap or even a stop in space astronomy if this tendency is not reversed rapidly. This concern was transmitted to the whole community of astronomers who more and more frequently make use of space astronomy data to test their models and theories, so that they be avare of the difficulties to which are faced the so-called space astronomers and physicists.

Field Work Photo: Pierre Guzzo

CLASSROOM PROBLEMS

COMMISSION 46 - MMEETING WITH CANADIAN...

by D. McNally

As foreshadowed in METEOR no 1, Commission 46 began early with a meeting with Canadian Teachers of Science in the Schools on August 13. This is the third meeting between Commission 46 and schoolteachers - the first two taking place at the time of the General Assemblies at Sydney (Australia) and Grenoble (France). One would think that a variety of cultural traditions would provide a variety of teaching problems. It does not. Teachers in New South Wales, France and Canada all want the same thing - good classroom displays, activities and information as to where to get it for less.

There is a need to provide basic information, give guidance on buying telescopes, indicate what can be made in the school workshop, what NASA can provide in the way of classroom display for free and so on. This session satisfied all - or more modestly some - of this demand. There was sustained interest from the teachers in all these areas.

We ended the days with some fun à la Piaget on presenting concepts. This was very instructive for it highlighted pitfalls that occur when one does not recognize jargon for jargon. It is all too easy to assume children see things with the same eyes as their teachers. The heartiest laughs of the day came here - a good thing at the end of a long day.

Well is it worth it? Yes, it still is - there are all too few opportunities for the professional astronomer to meet his teacher counterpart and vice-versa; there are especially few opportunities for teachers with astronomical interests to meet each other. The day fulfilled its purpose - hopefully the astronomer left a little wiser and the teacher better informed - a good time was had by all.

DISCUSSION CONJOINTE SUR LES INSTABILITES STELLAIRES

La première session de l'avant-midi a été consacrée surtout à des généralités. La conférence de M. Paczynski a fait mention de méthodes relativement simples de déceler les instabilités seculaires dans les étoiles Certaines de ces instabilités séculaires sont intéressantes pour les observations.

Mme Sackmann a parlé des instabilités qui se manifestent dans des couches dans lesquelles une production d'énergie appréciable est due à la combustion de l'hydrogène et de l'hélium et où il y a des explosions internes qui se manifestent à la surface, ce qui est la source de phénomènes comme les nova et les nova récurrentes.

M. Iben a fait un très bel exposé sur les différentes phases de l'évolution stellaire auxquelles les instabilités se manifestent.

COMMISSION 29 - WORKING GROUP ON BE STARS

A meeting of the WG will be held on August 21, Tuesday 16th (4 p.m.) Room 3335. Agenda: (1) Election of the Organizing Committee; (2) Scientific Communications (4 or 5), M. Jaschek (Chairman).

EXTRA SESSION ON SS 433

Tuesday afternoon, Room F-2242.

GUESTS

Come to Room 2405 at 3.00 p.m. and we will visit the Boutique du Congrès together.

INFORMATION PANEL DISCUSSION ON Ap STARS

Tuesday, 21 August, 14.30, Room 3325.

Panelists Adelman, Bidelman, Cowley, Khobhlova, Michaud, Reeves.

Audience participation is encouraged.

NOTE: The Organizing Committee for the working group (WG) on Ap stars will be elected at this time. Names are posted on Commission 29 bulletin board.

C. Cowley.

FREE- GRATUIT

Concert Classique: piano, saxophone, mardi le 21 août à 18h30 au grand salon du Centre Communautaire près des résidences. Ce concert est donné par des étudiants du module de musique de l'U. Q.A.M.

A concert will be given on Tuesday, August 21 at 18.00 in the Grand Salon of the Centre communautaire. The students from the Université du Québec will play piano and saxophone.

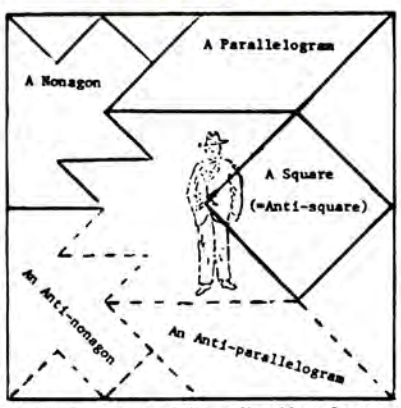
ERRATUM

Une erreur s'est glissée dans le numéro de samedi du METEORE. Dans l'article sur Jupiter il faut lire PIONEER naturellement, au lieu de VICKING.

BOUTIQUE DU CONGRES - ROOM 2406

The participants wishing to bring take souvenirs home are welcome to the Boutique du Congrès. We will be very happy to make some suggestions according to your budget.

WATCH THIS SPACE (6)



1937-1965. A.D. The situation becomes confused as the square, the parallelogram, the nonagon and other n-gons, and their anti-shapes, are discovered.

Bohdan Paczynski

BOHDAN PACZYNSKI

Bohdan Paczynski is the youngest of three invited speakers at this Assembly, but he is well-known of both sides of the Atlantic for his theoretical work on stellar structure and evolution, and especially for his contributions to the study of the evolution of members of close binary systems. He was amongst the first to demonstrate by computation that mass tansfer between the components of binary systems might indeed account for the existence of types of systems that would otherwise be hard to explain.

Dr. Paczynski was born and educated in Poland and is on the staff of the Institude of Astronomy in Warsaw. He is one of the most prominent of the unusually productive group of astronomers that has grown up in that country since the Second World War. He has made several visits to other countries, including the United States of America, and the many friends he has made on these visits are pleased to welcome him once again to North America, this time to Montreal.

The study of binary stars has been a tradition of Canadian astronomy, ever since the days of J.S. Plaskett. Although the thrust of Canadian work has largely been observational, the ideas pionnered by Paczynski, among others, have stimulated and directed much of our more recent work. We particularly welcome a discourse on binary stars and stellar evolution at this Montreal General Assembly.

A few years ago Dr. Paczynski wrote a still-quoted review article on this same subject for the series "Annual Reviews of Astronomy and Astrophysics". In this he demonstrated fully his ability not only to persue hiw own work, but to stand back and take a broader view, summarizing thw whole field for the rest of us. We look forward tonight to hearing an updated version of that article - for the subject has developed at an astonishing pace since the article was written - and are confident that the published version of the talk will also be much quited through the years.

There will be several 16mm films shown on Wednesday, August 22 at 14.00 - 17.00 in G-2215 about: "The Herzberg Institute" and "Canada".

You didn't make it as "Astronomer of the Day" in METEOR. Take your picture under the giant cover of "Sky and Telescope" and be astronomer of the year instead. Bring your own camera.

METEORE ne vous a pas choisi comme "Astronome du Jour". Devenez astronome de l'année en vous faisant photographier sous la couverture géante de "Sky and Telescope". Apportez votre propre caméra.

BULLETINS

VISITING BRITAIN IN 1979-80?

Dr. M. Dworetsky of University College London wishes to hear from those astronomers planning short, greater than 1 day, or sabbatical visits to Britain in 1979-80. Staff and students in our large and very active Department are always keen to hear about the latest work being done elsewhere, in every field. Whenever possible, we try to arrange informal seminars by guest speakers - especially those from other countries.

If you are interested in visiting us, please leave a note in Dr. Dworetsky's mail box (922) giving your name, dates of your visit to the UK, and the institution (s) where you will be located.

Some current activities at UCL:
Ultraviolet Astronomy
Stellar Spectroscopy
Stellar Atmospheres
Solar Physics
Infrared Astronomy
Planetary Atmospheres
Interstellar Medium
Star Formation (Theory & Observation)
Quasars & BL Lac's
Galaxies: Dynamics, Structure
Peculiar A Stars
Atomic Physics (Theory)
Planetary Nebulae, Novae
Upper Atmosphere
Electronography, Photometry
Instrumentation (IPCS, Ballons for IR)
X-Ray Astronomy (Mullard Space Science Lab.)

COMMSISION 46 - ALL DAY MEETING,

August 22, Room B-2305

"The Teaching of astronomy at the University Level"

9.00 - 10.00 **Invited Speaker:** G. Abell. "An Overview of Astronomy Education."

10.00 - 10.45 D. McNally, "How Much Mathematics?"; D. Pierce, "Community College Astronomy"; P. Osorio, "Astronomy as an Optional Subject?"

11.00 - 11.45. Invited Speaker: H. Eichhorn "Teacgubg Astrometric Concepts".

11.45 - 12.15. D. McNally, "Teaching Computational Methods"; S. Ferraz Mello, "Undergradute Teaching of Astronomy"; C. Iwaniszewska, "Astronomical Basis for Geography Students".

2.00 - 2.45. **Invited Speaker:** J. Chamberlain "The Planetarium in Astronomy Teaching".

2.45 - 3.30. A. Sandqvist, "A Portable Planetarium"; A. Fraknoi, "Interdisplinary Approaches"; D. McNally, "Planetarium Teaching".

3.45 - 4.45. C. Iwaniszewska, "Teaching Astrophysical Concepts"; **Invited Speaker:** D. Clarke "Teaching Observational Studies".

4.45 - 5.15. M. Gerbaldi, "Laboratory Exercises". H. Zimmerman, Training Teachers of Astronomy"

VISTAS IN ASTRONOMY

Many participants in the General Assembly will already be aware that the series VISTAS IN ASTRONOMY, founded over 20 years ago by Arthur Beer of the Cambridge Observatories, now continues as a quarterly review journal covering all the principal fields of astronomy. It is edited jointly by Arthur and Peter Beer, who welcome suggestions for possible contributions. Delegates may like to know that one of the Editors, Peter Beer, (No. 1261) is attending the Montreal Assembly, and anyone interested in meeting him to discuss the Journal is requested to drop him a note in his mailbox in the U.K. section. He will endeavor to fit in with any suggested time and place of meeting.

COMMISSION 44 RENAMED

At their second business meeting on August 17 the members of Commission 44 agreed to change the name of the Commission from "Astronomical Observations from Outside the Terrestrial Atmosphere" into "Astronomy from Space". This proposal has now to be accepted by the Executive Committee.

ASTRONOMICAL DIRECTORY

The Astronomical Directory is available free at the Gall Publication booth. There are several hundreds but they are going fast. After they're gone you can obtain them by sending $1.00 to James Gall to cover mailing charges.

Le kiosque de Gall Publications offre gracieusement son "Astronomical Directory". Lorsque le stock sera épuisé, on peut l'obtenir en envoyant $1.00 à James Gall pour couvrir les frais d'envoi

Several South American observatories (Bogota, Colombia; Mérida, Venezuela; Montevideo, Uruguay) are interested in donations of astronomical equipment in working condition but no longer in use, e.g. measuring engines, spot sensitometers, single-channel photometers, etc. Packing and shipping charges can be paid. Please contact either J. Stock (Box 6197) or D.J. MacConnell (Box 6197) or write to them at the Venezuelan National Observatory: C.I.D.A., Apartado 264, Mérida, Venezuela.

DATA BANKS

Commission 27 (Variable Stars) maintains two data banks for unpublished photoelectric observations of variable stars. Astronomers can receive copies of these observations by requesting certain files (stars). At the moment, the two data banks are at the Royal Astronomical Society in Great Britain and at Odessa, USSR (Dr. Makarenko) respectively. Full details on previous files and addresses for copies are given periodically in the Information Bulletin of Variable Stars and the Publications of the Astronomical Society of the Pacific (e.g. June 1979 P.A.S.P.).

We encourage submissions of more unpublished data. New data should be sent to:

Dr. Michel Breger
Dept. of Astronomy
University of Texas
Austin, Tx 78712, USA

Authors of papers on variable stars can save publication costs by sending lengthy tables of observations to the data bank. On request we can supply a file number which can be quoted in type papers

MICHIGAN SPECTRAL CATALOGUE

A few copies of Volume 1 and Volume 2 of the Michigan Spectral Catalogue are available here at a cost of $18.00 (U.S.) or $20.50 (Canadian) each. These catalogues have been brought mainly for astronomers from countries where ordering by mail is difficult due to currency or other problems. If you want one, leave a note for Nancy Houk, U. S.A. in box 4244, proposing a meeting time and place. The catalogues contain MK types for 36,000 HD stars from declination -90o to -53o (Vol. 1) and 30,000 HD stars from - 53o to -40o. (Vol. 2).

A PHOTOMETRIC ATLAS OF THE SPECTRUM OF PROCYON

by R. & R. Griffin

The authors are pleased to announce the availability at their new publication, which is generally similar to the "Arcturus Atlas". One of the authors has a copy here on display each day near the cafeteria. The Procyon Atlas is being distributed at cost price (30 pounds)

Note that the Arcturus Atlas, published in 1968, can still be ordered too (Price 12 pounds).

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Office:- Room No. 1265 Editor:- Michael W. Ovenden Téléphone 343-5889

L'ANORMLITE EST NORMALE

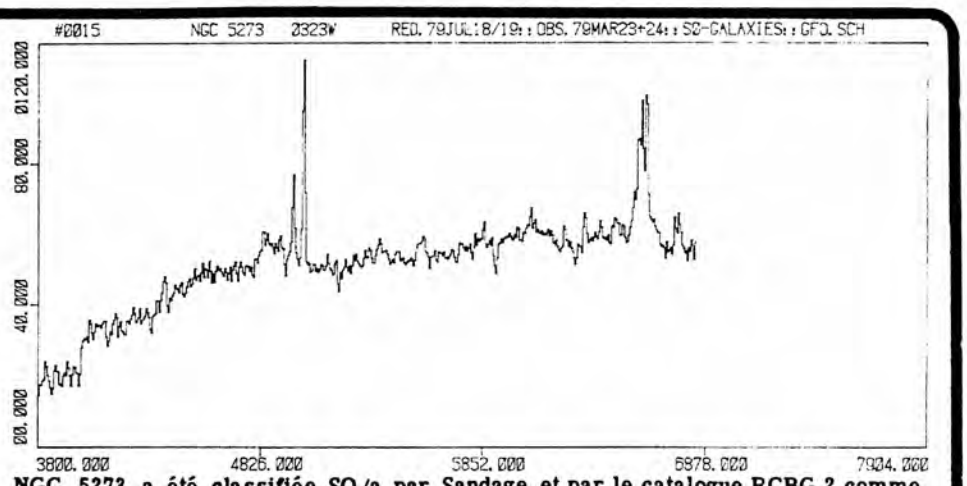
Les participants à la discussion conjointe sur les noyaux des galaxies normales ont essentiellement passé la journée à se prouver l'un à l'autre qu'aucune galaxie n'est parfaitement normale. Notre Voie Lactée a été scrutée à toutes les longueurs d'onde pour observer le noyau il est préférable évidemment d'utiliser l'infrarouge et la plupart des discussions ont réfleté cette tendance. La distribution de CO dans le noyau de notre galaxie est clairement anormale puisqu'elle suit la forme d'un anneau, à moins que la concentration centrale de CO observée dans les autres galaxies sont un effet de la piètre résolution des télescopes millémétriques. Les noyaux galactiques contiennent en général des poussières qui émettent de l'infra-rouge. A 2 micro-

M. Peter Biermann.
Photo Pierre Guzzo.

metres la radiation est principalement due aux étoiles de type spectral avancé et il a été suggéré que le rapport des luminosités à 10 et à 2 micromètres peut être utilisé pour déterminer l'émission IR. La question est "quelle est la source d'énergie qui chauffe les poussières?" M. Heckman a entretenu l'audience sur un nouveau type de galaxie les LINER (Low Ionization Nuclear Emission - line Region). Après toute une journée de discussion M. Biermann conclua qu'il reste encore énormément de problèmes dont les plus urgents sont les suivants:

LES QUESTIONS QUI NE SONT PAS RESOLUES

1.- Y-a-t-il formation d'étoiles dans les galaxies de type E et SO qui contiennent de l'hydrogène neutre?
2.-Le type SO existe-t-il vraiment comme transition entre les types E et Sa. Y-a-t-il vraiment une trace d'anneau dans le gax.
3.-Les galaxies de SO qui contiennent de l'Hydrogene neutre sont-elles apparemment confinés aux régions nucléaires de galaxies Sc dépouillées?
4.-Une elliptique qui accrète beaucoup de matériel prendra-t-elle l'allure de M82 dans certains cas et de NGC5128 dans d' autres?
5.-Les irrégulières qui perdent leur gaz prennent-elles l'apparence d'elliptiques?
6.- L'activité dans les galaxies est-el le due à l'accrétion de matériel intergalactique comme c'est apparemment le cas dans N2146?
7-Combien de galaxies ont un halo de gaz? Quelle est l'étendue de ce halo?
8.-Quelles est la fonction de masse initiale dans les augmentations de formations d'étoiles.
9.- L'accrétion de gaz extra galactique ou circum galactique conduit elle toujours à la formation d'étoiles et à un noyau compact?



NGC 5273 a été classifiée SO/a par Sandage et par le catalogue RCBG 2 comme T 2. MM. Schuur et Sherwood ont obtenu ce spectre de la région centrale à ESO. Cette galaxie est tout à fait normale et pourrait donc être classifiée comme Seyfert 1 d'après son spectre. Les Seyfert peu lumineuses se cachent peut-être parmi les galaxies "normales".

EVOLUTION STELLAIRE ET ETOILES BINAIRES SERRES

par M. B. Paczynski

L'évolution des étoiles binaires serrées était, il y a plus d'une dizaine d'années, un des plus excitants problèmes de l'astrophysique. Au cours des dernières années, ce sujet a vue un regain de vitalité surtout à cause de la découverte, par le satellite UHURU, de plusieurs sources intenses de rayons-X parmi les binaires serrées. Cet intérêt est soutenu aujourd'hui par un flot continu de nouvelle découvertes menant des satellites SAS-3, UK-5, ANS, IUE et, tout récemment du satellite EINSTEIN' Professeur Paczynski croit que les observations de ces sources chez les étoiles binaires sont largement en avance sur les théories qui essaient, avec un succès mitigé, d'expliquer les nouvelles découvertes qui s'accumulent à un taux sans précédent.

Quelques unes des caractéristiques des binaires serrées sont assez bien comprises. Parmi celles-ci on pense à l'interaction mutuelle des deux composantes, à la perte ou au gain de masse, au rôle de la limite de Roche ou des marées dans les phénomènes d'échange de matières et à la formation de disques gazeuz autour de la composante qui accumule la masse. Un grand nombre de binaires observées peuvent s'expliquer du moins de façon quantitative, en termes de diverses phases évolutives avec transfert de masse d'une étoile à l'autre et perte de masse par le système. Ainsi en est-il de systèmes tels que ceux appelés RSCV WUMa, Woolf-Rayet, Algol, Beta Lyrae, étoiles symbiotiques, variables cataclysmiques et binaires à rayons-X. Cependant plusieurs de processus physiques ne sont pas bien compris. Parmi ceux-ci il faut inclure les phénomènes de perte de masse et de moment angulaire, le rôle de la visrosité dans les disques d'accrétion, les phénomènes de surface et atmosphériques chez les composantes qui accumulent la matière, ainsi que la structure et l'évolution de l'enveloppe commune des systèmes binaires. Enfin, l'origine des binaires, soit par ou par capture ou par tout autre mécanisme est très mal mcomprise.

Un avenir très excitant attend clairement les travaux théoriques et les observations des binaires serrées. Ces systèmes offrent entre autres, la meilleure opportunité de découvrir et d'étudier les étoiles à neutrons et les trous noirs, les disques d'accrétion et les phénomènes d'accrétion en générale, ainsi que la confirmation, par observations directes, de l'existence de rayonnement gravitationnel.

CLOSING DINNER

Sir Arthur Currie Gymnasium at McGill University 475 Ave des Pins.

Transportation: Busses will leave from the residences at 18.15 and from the Queen Elizabeth à 19.00

"COMME AND HAVE FUN WITH THE LOCAL ORGANIZERS".

Wednesday 19.00 open bar, fancy hot and cold buffet.

Dancing International Music, Entertainment; Quebec folk dancers and singers. Gifts.

Price: $25.00 per person (all included).

Ticket available at the Information Desk.

DINER DE CLOTURE

Gymnase Sir Arthur Currie à l'Université McGill 475 Pine AVe.

Transport: Les autobus partiront des résidences à 18.15 et du Reine Elizabeth à 19.00.

"VENEZ VOUS AMUSER AVEC NOUS

Mercredi 19.00 bar ouvert, buffet, gastronomique : pièces montées et mets chauds et froids.

Danse: Musique internationale. Spectacle. Danseurs et chanteurs, folklore du Québec. Cadeaux-souvenirs, Prix $25.00 par personne (tout inclus). Billets en vente à l'information.

Votre comité local.

IMPORTANT NOTICE

CHANGE IN LOCATION OF GENERAL ASSEMBLY

The location for the closing General Assembly on Thursday, August 23 has been changed from A-2285 in Pavillon 3200 to the large auditorium in the Pavillon Principal (where the evening session on "Life in the Universe" was held). The time of the Assembly remains unchanged (10.00 a.m.)

AVIS IMPORTANT

CHANGEMENT DU LIEU DE L'ASSEMBLEE GENERALE

L'assemblée générale se réunira jeudi le 23 août à l'auditorium du pavillon principal (où a eu lieu la session "Life in the Universe" jdudi soir) plutôt qu'au A-22285 du pavillon 3200. L'heure sera la même (10.00 a.m.)

EDITORIAL

A MATTER OF RESPONSIBILITY

Many astronomers think of the planetarium as just a device for producing a poor substitute of the real sky, as it can be seen from the Andes or Hawaii. They have the comfort of research grants to pay expenses. The sky of a remote mountain-top is, for most people, an unattainable luxury. We should not grudge them the vicarious pleasure of clean air and a star-studded sky, even if the sky is artificial.

But there is much more to a planetarium than this. Its potentialities are at last being realized, at least on the north american continent. First, of course, there is the educational value of the planetarium. For teaching spherical astronomy it is ideal! Dr. J. Chamberlain and others will discuss the use of the planetarium in education at the meeting of Commission 46 today. It is very surprising how little professional astronomers seem to appreciate the value of this pratical aid to teaching positional astronomy. I have sat through two one-hour lectures by an historian of astronomy, who laboriously (and ineffectually) described the equator, the ecliptic, the motions of the Sun, Moon and planets with chalk and board-without realizing that he could have done it all far more efficiently and effectively in a quater of the time at the local planetarium down the road.

The schools seem to have a better appreciation of the use of a planetarium. For example, every year many thousands of Vancouver children visit the special schools shows at the H.R. McMillan Planetarium (whose Director, David Rodger, contributes another article to this issue). The success of these shows depends heavily upon the personality of the planetarium lecturer. It is a joy to sit discreetly at the back of the auditorium, and listen to a skilled teacher who knows children as well as the planetarium, to watch their wonder as every new surprise gives them new understanding. And the teaching in a planetarium is not confined to astronomy. Geography is only one of many other subjects that can be treated with profit in the environment of the planetarium dome.

Environment - that is the key word. The planetarium is effective in a way that no television programme can be. Television encourages a passive response to the flickering screen. Inside a planetarium dome, participation is inevitable - provided of course that something interesting is shown.

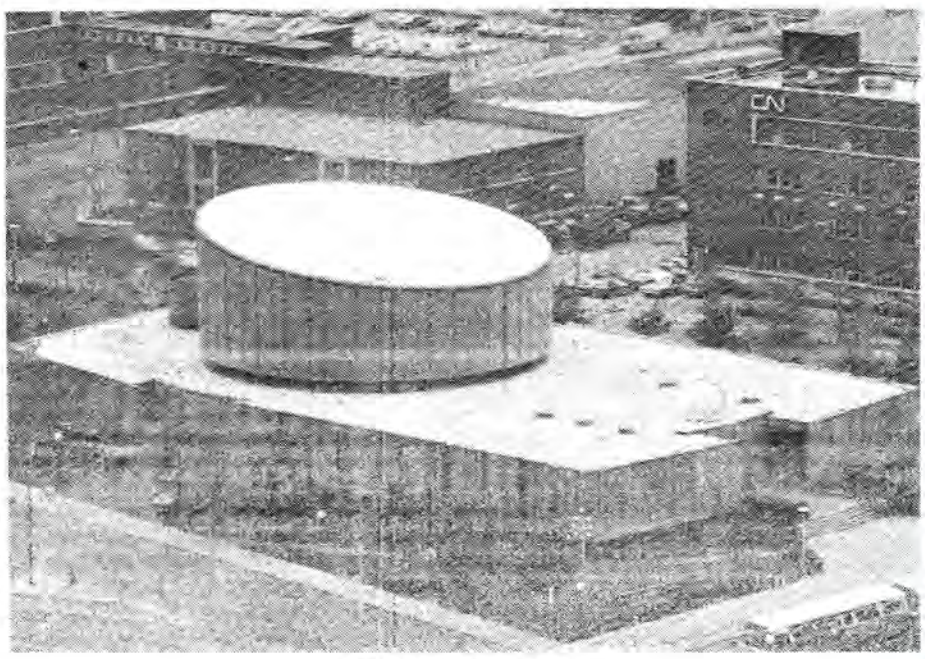
And here we come to the matter of responsibility. A planetarium is first and foremost a theatre - a theatre in which many different kinds of production may be undertaken, from music concerts to light shows. Even when more directly educational shows are being produced, they are failures if people do not come! The empty planetarium is as sad a sight as an empty theatre - or an empty park. To produce educational shows on astronomy that are effective with the general public requires a combination of the talents of the professional producer with those of the professional astronomer. Only when this cooperation is complete, with mutual respect on each side for the talents of the other, can the results be both educational and exciting.

For the fact is that not all professional astronomers are good at communicating with the general public. Yet the support of the general public for the endeavours of a 'useless' subject like astronomy is increasingly vital at a time when the pressures are on again for 'mission-oriented' research. It is, in the end, a matter of responsibility to the public who pay the salaries of astronomers. There are many ways of fulfilling these responsibilities. There is, first and foremost, to do valuable and interesting research, and teach ones students how to criticize it. Books may be written, and lectures given for departments of university extension. But as professional astronomers, we would be very unwise to fail to enlist the talents of professional communicators in our cause. At its best, the planetarium can be a true public relations arm of astronomy.

LE PLANETARIUM DOW DE LA VILLE DE MONTREAL

Inauguré officiellement le premier avril 1966, s'inscrit dans la grande chaîne internationale des planétariums majeurs publics avec son planétaire Zeiss Mark V, son dôme-écran de 20 mètres et sa salle de 400 sièges. Premier planétarium majeur canadien à ouvrir ses portes au public, il demeure le seul planétarium au Québec, implanté au coeur de la francophonie canadienne et américaine du nord-est. Sa caractéristique essentielle: présenter ses spectacles réguliers et scolaires par des représentation d'environ une heure commentées en alternance soit en français, soit en anglais, par des conférenciers sur place (seuls les extraits musicaux sont enregistrés sur bande magnétique).

LE PLANETARIUM DOW DE LA VILLE DE MONTREAL, entièrement dévoué à la population de l'astronomie (éducation populaire et collaboration à l'enseignement), a reçu à date plus de 2,500,000 de spectateurs (60% de francophones) dont 1,350,000 étaient âgés de 17 ans et moins.



Le Planetarium Dow

THE CANADIAN PLANETARIUM TODAY

by David A. Rodger*, Curator
H.R. MacMillan Planetarium
Vancouver, B.C.

It started out as an engineering achievement! The Deutches Museum in Munich wanted a new astronomical exhibit for their science section, so they challenged the famous optical firm of Carl Zeiss Jena to design and build a model universe. Zeiss took up the challenge and a team of opticians and engineers under the direction of Dr. Walter Bauersfeld (1879-1959) worked on the project for over ten years. Finally, in August, 1923, in a make-shift dome erected on the roof of one of the factory buildings in Jena, Bauersfeld and his associates unveiled the Zeiss Projection Planetarium. The new machine was the legitimate successor to a long historical line of clockwork planetary devices and celestial globes, many of which may be seen today in museums and private collections. But the major breakthrough came in the imaginative use of optical projection techniques. The audience sat beneath an artificial sky and watched as stars blinked into their accustomed places, the moon moved through its phases, and the planets moved along the ecliptic, pausing as they do in nature to describe their peculiar retrograde loops. It was the ability to reproduce planetary motions that prompted them to call the machine a planetarium.

Before long, planetaria had been installed in dozens of cities around the world. Although small planetaria were established for short periods of time in several Canadian cities, the first major public planetarium wasn't opened until 1960. It was the Queen Elizabeth Planetarium in Edmonton, Alberta. However, within eight years of that opening, planetaria were in operation in Montreal, Calgary, Winnipeg, Toronto and Vancouver.

By this time, the word "planetarium" had acquired a new and wider meaning. No longer is it restricted to the definition of a machine. The word "planetarium" has come to stand for a cultural and educational institution where astronomical information is communicated for the enjoyment of both students and the general public. Moreover, few planetaria are content to deal only with the visible phenomena of the night time sky, which they would have to if they were restricted to the capabilities of the Zeiss machine or its counterparts. This is the age of quasars, pulsars, and black holes, of questions about life in the universe and the evolution of stars and galaxies. It is an age when men have landed on the moon and when unmanned probes have touched other planets. And it is an age of mass communication when fads and fallacies about astronomy arise almost daily to titillate the fancy of the public and test the patience of the scientific community. People have come to expect clarification of these matters from the planetaria, and the planetaria have responded with enthusiasm! The title of some of the recent shows presented in Canadian planetaria attest to the importance of this role: A Journey Through the Galaxy, Unidentified Flying Objects, When Worlds Align, Cosmic Mysteries, Astrology, the Wheel of Fortunes, and New Worlds are Coming!

Since the central machine is limited to the simulation of visible sky phenomena, the planetaria have had to develop other means of projection for their theatres. These include slide and motion picture projectors, special effects devices, theatrical lighting, and elaborate sound systems. Music and effects have become and integral part of typical planetarium shows and, in several institutions, automated control systems are employed to synchronize the operation of it all.

People today are accustomed to wide-screen multi-million dollar motion picture epics, colour television, and other forms of multi-media presentation. Whether they like it or not, planetaria, with their limited budgets, find themselves in competition with the other media of communication. Wisely, they have decided to concentrate on those topics and methods of communication that make them unique. The planetarium is a marvellous environmental simulator. No motion picture has ever created the effect of being out beneath a starry mighttime sky, for instance. The planetarium remains the only place where people can look above, behind, in front of, and around themselves and feel that they are truly on another planet, inside an observatory, and travelling through space.

For a variety of reasons, exchanges of shows amongst planetaria have been slow to develop. Technical facilities differ sufficiently to present a major obstacle. Another factor is the natural tendency to relate a particular topic to the local situation in the planetarium's own locale. Nonetheless, exchanges of ideas and information take place constantly. The Planetarium Association of Canada was founded in Montreal in 1966 to enable such exchanges to take place, and since that time, through regular conferences and North Star, the journal of the Association, close contact between Canadians in the planetarium field and their associates in other countries has been maintained. Most planetarium staff belong to a variety of astronomical organizations, such as the Royal Astronomical Society of Canada, and they regard their contacts with professional astronomers as an invaluable source of material and ideas for show production.

In the years ahead, planetaria in Canada will continue to broaden their horizons in an effort to reach even wider audiences. Astronomy is unique among the sciences in having this outlet for the explanation of its concepts in terms that can be understood and enjoyed by large numbers of people. Through the medium of the Planetarium the astronomer and the general public come into contact with one another. Thus the Planetarium is more than just a showcase for astronomical knowledge. It is a vital link between the people who conduct fundamental research and those who pay for it. It is a link that the people who work in planetaria will continue to nurture and protect in the years to come.

*David Rodger is President-elect of the International Planetarium Society.

V.I.P.'S

PEOPLE ON THE MOVE

Gilles Beaudet
Chairman
Local Organizing Committee and Vice-Chairman, National Organizing Committee

Madeleine Bergevin
Vice-Chairman
Local Organizing Committee and Secretary National Organizing Committee

Huguette Guilbault
Executive Secretary of the Local Organizing Committee.

You'r lucky I'm still alive! But it's really not too bad. One of the worst things is that I've missed the meeting - I haven't been able to go to a single scientific session. One of these days, I'll learn what's been going on in Montreal; in fact METEOR has been my best suource of information.

The biggest problem has been to predict how many people will come to a meeting in any one place. For example, there have been more people at the invited discourses that in previous assemblies, probably because there are less guest and more members than in previous assemblies. Still, it does mean functions are well-attended.

An early problem was with the long lines at the cafeteria. But it was easily solved by putting extra personnel to direct the traffic. Another problem arose with the buses for the "Life in the Universe" evening We took the late-night busses and used them, though I'm afraid people waiting for the late-night shuttle that night must have waited a long time! But better to have 25 people complain than 400. I suppose you could say that even if we make a mistake we have to make it with a smile!

It's five years since Gilles asked me to organize this meeting with him and I accepted. I don't regret it at all, it's the best experience I've had so far. The pressure of the last few months has been hard but many interesting things have happened. I have met all sorts of people during that time from broom-makers to Nobel Prize winners.

As administrative assistant in the department of physics here I had had some experience organizing seminars in the physics department but they were smaller groups - there's a lot of difference between 600 and 2,500 people - it's the difference between 600 and 2,500 problems. But I think it would be very hard for some one who has never done anything like that to help organize, as a first experience, a meeting like this because you think of details when you've done it before that no one else can think of.

The first three days were the worst, I was scared stiff, but after that it seemed fine. One of the most tiring things was having to deal with services, to Bell Canada to get the IAU telephones lines onto the emergency list.

It's been a great experience. If I were asked again at this stage to organize the next IAU meeting, I'd agree with hesitation - it would be much easier a second time.

I used to be administrative secretary for the Medical Board at Notre-Dame Hospital until I saw a notice in the newpaper advertising this job and although I didn't know exactly what is was, I was delighted when I got it. It has been very different experience, no two days have been the same, there have been so many different things to do: reservations, supervision of correspondence, registration, contacts with artists to set us and so on.

The first two days were the most important: we felt that if the first week went well everything would be alright and the troubles that we might have had would be past.

For a first meeting, this one was large! I had never worked at the University of Montreal and there are so many services and different departments here that it takes quite a long time to get to know each job, each person, - to be able to reach the one you need at a particular time. Gilles, Madeleine and I worked very closely together to cover everything that needed to be done.

One thing I'd like to say is that the participants are really kind, they have been very patient and understanding. It's really been fantastic, I like the job very much. When it ends I've decided to try to find another job with an association that has a meeting to organize, preferbly a large one.

ABSENT FRIEND

Did you wonder what Halton Arp Would have said at Joint Discussion no . 8 on Monday afternoon?

"We see several groups of quasars, any number from 5 to 10, grouped together in one region of sky, usually around a bright galaxy. They look as if they are associated and when one measures the redshifts one finds they have similarities, thus reinforcing the idea that they are associated.

There are the published groups. such as the 6 quasars across NGC3384 and the 3 right in the disc of the spiral galaxy NGC1073. One of the new observations is a group of 10 quasars around a companion to NGC 2639. They have redshifts which resemble each other and pair across the galaxy for example, .303 on one side of the companion and .305 ont the other side at about the same distance. This is just one example, there are many others.

Halton Arp Adressing J.D.8

One is led to the conclusion that they have been ejected from the parent galaxy. The only other conventional interpretation is that they are aggregates of matter at huge distances in the universe, much larger than super. lusters. But in that case you have to explain the apparent association with nearby galaxies as accidental. I feel there is still strong evidence that quasars are quite close by".

McGILL - HIER ET AUJOURD'HUI

En 1813, l'honorable James McGill léguait une somme de 10,000 livres et les 46 acres de son domaine de Burnside, à condition qu'on y élevât un collège. Ce fut l'initiative qui poussa le roi Georges IV à fonder McGill College par la charte de 1821. Mais l'ouverture officielle de McGill ne se fit qu'en 1829, lorsque fut créée la faculté de médecine. Le premier diplômé de McGill fut un médecin, William Logie qui reçut son diplôme en 1833, puis partir pour la Louisiane; on peut encore voir sa tombe à Geneva, dans l'Etat de New York.

A ses débuts, McGill College connaît de graves difficultés financières. Quoique l'enseignement y eût déjà commencé, la faculté des arts ne fut établie officiellement qu'en 1845. En 1855, on dut vendre une grande partie du domaine pour faire face à des embarras financiers. C'est cette année-là cependant que le sort de McGill s'améliora grâce au nouveau recteur, William Dawson. Réaliste et énergique aussi bien qu'humaniste, tel était "l'homme qui a fait McGill". Il sub obtenir l'aide de nombreux bienfaiteurs; il fut l'instigateur de l'activité éducative florissante de McGill. De grands noms jalonnent les étapes du développement de McGill: Osler, Rutherford, Leacock, Penfield, Scott. Hebb, McLennan...

La bibliothèque McLennan de l'Université McGill.

Photo: Pierre Guzzo.

McGill se consacre au progrès des connaissances humaines autant qu'à l'enseignement. C'est à ses chercheurs que l'Université doit une bonne part de sa réputation mondiale; les recherches portent sur tous les domaines: médecine, sciences, humanités ou sciences sociales. L'administration de la recherche a été confiée à la faculté des études avancées et de la recherche, fondée en 1922.

McGill est située en plein coeur de Montréal.

Dynamisme, diversité, tolérance, la ville offre aux étudiants l'illustration de ce qu'ils apprennent dans les salle de cours de McGill.

(Bureau de l'Information de l'Université McGill).

PIERRETTE LEMIEUX-PILON "LA DAME DE LA BOUTIQUE"

Madame Lemieux-Pilon est propriétaire d'un magasin d'art et de décoration, elle s'occupe du côté galerie. elle a spécialement sélectionné pour les membres du congrès des pièces uniquement québécoises en pensant aux étrangers qui doivent tout rapporter dans leurs bagages. Les pièces s'échelonnent entre $2.00 et $2,500. Cette dernière est une magnifique sculpture exquimaude qu'elle a choisi malgré sa gorsseur car elle la trouve extraordinaire. La boutique tient des émaux sur cuivre de la céramique, des catalognes, des courtes pointes, le tout dans la plus pure tradition québécoise. Quelques pièces ont été tissées par Mme Lemieux-Pilon qui possède un atelier de tissage.

BULLETINS

DON,T FORGET TONIGHT'S CLOSING DINNER (See page 1)

N'OUBLIEZ PAS! CE SOIR LE DINER DE CLOTURE (Voir page 1)

COMMISSION 40 - MEETING ON WEDNESDAY'AUGUST 22, Room 2245

a) 9.00 - 10.30. Business meeting, H. van der Laan in the chair.

b) 11.00 - 12.45. Status and prospects of radio observatories, G. Swarup in the chair.

B. Anderson: Multi-telescope radio-linked interferometer at Jodvell Bank.

K. Turner: New Arecibo Interferometer.

D. Hogg: The Very Large Array.

N.S. Kardashev: Cosmic Space Radio Telescope (New 10 m antenna in space).

R. Strom: The Westerbork Synthesis Radio Telescope.

T. Hewish: The Cambridge 150 MHz radio telescope.

B. Mills: From Lolongolo Cross to M.O.S.T.

G. Swarup: Ooty Synthesis Radio Telescope.

R. Wiebelenski: Effelsberg 100 m.

Yu. Parijskij: The present and future of Ratton 600.

J. Baars: French-German mm-wave facilities - IRAM.

M. Morimoto: Japanese Radio Telescope.

G. Westerhout: U.S. Naval Observatory: the 35 km interferometer at Green Bank as an astronometry instrument.

G. Nicholson: Hartebeesthoek Radio Observatory.

D. McLean Culgoora Synthesis telescope.

G. Smolkov: Siberia Solar Radio Telescope.

Galt: Penticton Observatory.

(c) and (d).

14.00 - 15.00: Short communications, K.I. Kellermann in the chair.

16.00 - 17.30.

M. Kundu: Solar Observations with the WSRT and the VLA.

I. de Pater: Jovian Polarimetry with the WSRT at 21 cm.

D. Downes: Observations with the Bonn 100 m Telescope at 7 mm.

E. E. Baart: Sensitive Large Area Surveys at 2.3 GHz.

T. Wilson: Recombination Line Survey made with the Bonn 100 m Telescope.

M. Walmsley: The New 1720 MHz OH outburst in V 1057 Cyg.

G. Nicholson: Radio Flares in Cir X-1.

R. Roger: Broad HI Shells on the Periphery of Extented HII Regions.

R.D. Davis: Possible HI Detection of Nearly Protogalaxies.

I.M. Gioia: Radio Observations at 408 MHz of a Sample of Spiral Galaxies.

L. Dressel: The Arecibo Survey of E and SO Galaxies.

D. Walsh: The Double Quasar - A Gravitational Lens.

W. van Breugel: Multiwavelength Polarimetry of 3C 310 and 3C 465.

P. Wilkinson: VLBI of 3C 380.

T. Kiang: Quasars with Resolved Radio Components.

T.K. Menon: Correlation of Central Components to Control Structure.

R. Ekers: Radio Jet in Cen A and the Precessing Beam Model of Radio Sources.

J. Colvin: Plasma Turbulence Model of QSO's

H. Greybear: Theoretical Model for Cosmic Radio Sources.

There will several 16 mm films shown on Wednesday, August 22 at 14.00 - 17.00 in G-2215 about: "The Herzberg Institute" and "Canada".

Welcome to everybody.

Films sur le Canada, mercredi, 22 août 14h30 - 17h00 Salle G-2215. Bienvenue à tous.

The Latin American astronomers are invited to meet on Wednesday, 22 August, at 16.00 (4 p.m.) in room 3290 to discuss the possibility of the creation of a Latin American astronomical journal.

WHAT IS EXCHANGE OF ASTRONOMERS?

"Exchange of Astronomers" is an IAU project administered by Commission 38.

Funds are available to assist astronomers to visit institutions in another country.

The principal criterion is the anticipated benefit to astronomy as a result of the stay abroad.

Simply write to the President of Commission 39 at the address below. Give full information about your proposed visit and arrange for supporting letters from the home and host institutions.

Commission 38, International Astronomical Union
Observatoire de Paris
61, av. de l'Observatoire
PARIS 75014 FRANCE

Bureau International d'information sur les ephémérides astronomiques (B.I.I.E.A.).

(International Information Bureau on Astronomical Ephemerides)

This Bureau created at the Brighton General Assembly of IAU sends, free of charge, information cards on where and how to obtain ephemerides of the bodies of the solar system (excluding Comets) and astrometric star catalogues in machine readable form or otherwise.

Write to the director at the follo2ing address:
B. Morando
B.I.I.E.A.
77 Avenue Denfert-Rochereau
75014 Paris
FRANCE

THE GENERAL CATALOGUE OF VARIABLE STARS

With the death of Professor B.V. Kukarkin, work on the fourth edition of the Catalogue is being continued under the direction of Dr. P.N. Kholopoy.

Dr. Kholopov reports that the new catalogue of suspected variables is now nearing completion. Containing 14811 objects it is due to be published next year and its magnetic tape version sent to the Data Centre at Strasbourg.

Changes in the Fourth General Catalogue will include the use of 1950.0 coordinates the abolition of the RRs class of variables (most of which will now be designated as delta Scuti stars), and the listing of rotating variables such as alpha-2 Canis Venaticorum and BY Draconis stars as well as optical pulsars.

Dr. Kholopov invites comments as to whether the older classification of eclipsing variables Algols, beta Lyraes, and W Ursa Majoris stars should be replaced by or appear with their more recent classification as detached, semi-detached, and contact binaries.

J.D. Fernie

"The Atlas of Ultraviolet Stellar Spectra" (Publication of the Astronomy and Astrophysics department of Liège and the Observatoire de Strasbourg) is now available on "Microfiche".

This atlas contains the spectra (absolute flux) of 52 normal and non-normal stars and illustrates a two dimensional spectral classification system established for the ultraviolet 1350-2740A region. It is based upon the material provided by the 32/68 experiment on board the TD1A experiment. For more information, please contact: A. Cucchiaro No. 321 or C. Jascheck No. 1506.

408 MHz - ALLSKY SURVEY

The survey is available both pictorially and on computer tape. The software to select areas from the tape and transform them to convenient coordinate systems comes from the NOD 2 programming system which is finding application at a number observatories and used for most spectral ranges. Enquiries should be addressed to G. Haslam, Max-Planck - Institut fur Radioastronomie - Bonn.

Des photos du dîner de clôture seront disponibles jeudi avant-midi au Pavillon Principal.

Pictures taken at the closing dinner will be available on Thursday morning in the Pavillon Principal.

In order to accomodate the Report of the Resolutions Committee, the answers to the weekend diversion have been postponed to Issue #9.

THE WORK OF THE RESOLUTIONS COMMITTEE

The Commissions have given birth prolifically to Resolutions in great variey. The Resolutions Committee has decided to select those that for special reasons require full coordination and approval by the IAU, and to present separately those that are the concern of individual commissions or groups of commissions.

METEOR has kindly agreed to print a special supplement sheet to Thursday's edition, which will contain the second category of commission resolutions. The following resolutions are proposed for adoption by the IAU:

1. The General Assembly, noting the support of Commissions 4, 7, 8, 19, 20, 25, 26, 33, 36, 37 and 45 is asked to adopt the following resolution by Commission 24:

The IAU strongly supports the independent and complementary astrometric programmes proposed for the ESA Astronometry Satellite and the NASA Space Telescope.

2. The General Assembly is asked to adopt the following resolutions by Commission 40:

The International Astronomical Union considering:

a. The value to mankind of the scientific results achieved by radio astronomy through the exploration of the universe;

b. the increasing use of the radio spectrum especially by space and air-borne transmitters;

c. that the CCIR had specified the levels of harmful radio interference in CCIR Report 224-4;

d. that the CCIR and IUCAF have summarized the needs of the radio astronomy service in their various reports and documents;

e. that the 1979 World Administrative Radio Conference (WARC) will allocate radio frequencies which can be expected to remain in force for about 20 years;

Recommends that administrations adhering to the IAU, present at the WARC, recognize the following needs of the radio astronomy service:

1. The acquisition and/or maintenance of frequency bands with bandwidths of a least 1-2 per cent at approximately octave intervals throughout the radio spectrum.

2. The acquisition and/or maintenance of narrower bands at frequencies of the astrophysically most important spectral lines having bandwidths appropriate to the scientific investigation.

3. The preservation of these frequency bands free of harmful interference from in-band, band-edge, and out-of-band transmissions.

The International Astronomical Union considering:

a. The imaginative proposal by several developing countries to construct and operate, in collaboration, a Giant Equatorial Radio Telescope (GERT) in Africa, near the equator;

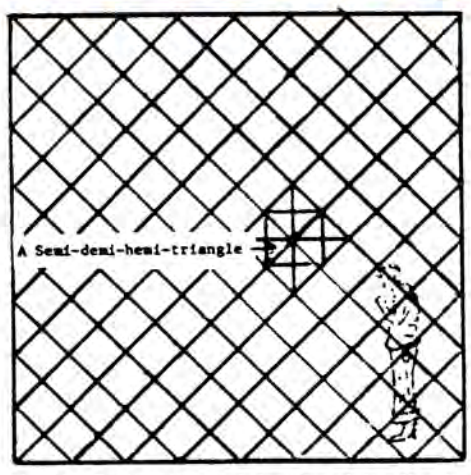
b. the ability of GERT, operated at meter wavelengths, to provide high quality data as essential complement to data obtained elsewhere at cm wavelengths;

c. the noteworthy utilization of an equatorial location for obtaining high resolution and sensitivity;

d. the educational, technological and social benefits expected for the collaborating nations involved in participation at the research front of astronomy and space science;

Recommends that the ICSU take steps to secure UNESCO support for the realization of the Giant Equatorial Radio Telescope.

WATCH THIS SPACE (7)



1968 A. D. Order is re-introduced by the hypothesis of the Semi-demi-hemi-triangle as the fundamental unit out of which the Universe is built. Ten years later, it was discovered, and thought to be indivisible. Three years later it was split.

IAU 1979 Montréal UAI 1979

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Office:- Room No. 1265 Editor:- Michael W. Ovenden Téléphone 343-5889

SPECIAL RESOLUTION SUPPLEMENT

Veuillez noter: Le texte des propositions a été imprimé à la demande du Président du Comité des Propositions, mais la version qui apparaît n'a pas été vérifiée par le Secrétariat de l'UAI.

LE COMITE DES PROPOSITIONS PRESENTE LES PROPOSITIONS SUIVANTES:

1. Considérant l'appui des Commissions 4, 7,8, 19,20, 25,26, 33, 36, 37 et 45, on demande à l'Assemblée générale d'adopter la proposition suivante proposée par la Commission 24:

a. L'UAI appuie fermement les programmes indépendants et complémentaires d'astrométrie proposés pour le "ESA Astrometry Satellite" et le "Space Telescope de la NASA".

2. On demande à l'Assemblée générale d'adopter les propositions suivantes de la Commission 40:

• (I) L'Union Astronomique Internationale, considérant:

a. La valeur inestimable pour l'humanité des résultats scientifiques obtenus grâce à l'exploration de l'Univers par la radio-astronomie;

b. l'augmentation de l'utilisation du spectre radio tout particulièrement par des transmetteurs dans l'espace et dans les airs;

c. que le CCIR a spécifié les niveaux nuisibles des interférences radio dans le rapport CCIR 224-4;

d. que le CCIR et le IUCAF ont résumé les besoins de la radio astronomie dans divers documents et rapports;

e. que le World Administrative Radio Conference (WARC) 1979 allouera des fréquences qui resteront en vigueur pour environ 20 ans;

propose que les organismes adhérant à l'UAI et assistant au WARC reconnaissent les besoins suivants de la radio astronomie:

1) L'acquisition et/ou le maintien des bandes de fréquence ayant une largeur de bande d'au moins 1-2 pour cent et situés approximativement à des invervalles d'un octave à travers le spectre radio.

2) L'acquisition et/ou le maintien de bandes plus étroites à des fréquences qui correspondent aux raies les plus importantes du point de vue de l'astrophysique. La largeur de ces bandes conviendra à la recherche scientifique.

3) La conservation de ces bandes de fréquence libre d'interférence nuisibles provenant de trois missions dans la bande, du bord de la bande et d'en dehors de la bande.

• (II) L'Union Astronomique Internationale considérant:

a. La proposition imaginative présentée par plusieurs pays en voie de développement, de construire et de gérer, en collaboration, un radio télescope équatorial géant (GERT) en Afrique près de l'équateur;

b. l'habileté de GERT fonctionnant aux longueurs d'onde métrique, de produire des données de haute qualité comme complément essentiel aux données centimétriques obtenues ailleurs;

c. la remarquable utilisation d'un site près de l'équateur pour obtenir une grande résolution et sensibilité;

d. les bénéfices, éducationnels, technologiques et sociaux qui résulteront de la collaboration entre les pays participant à des recherches de pointe en astronomie et en science spatiale;

recommande que le ICSV entreprenne des démarches pour obtenir de l'UNESCO un appui pour réaliser le Giant Equatorial Radio Telescope.

LE COMITE DES PROPOSITIONS DEMANDE A L'ASSEMBLEE GENERALE D'APPROUVER LES CHANGEMENTS SUIVANTS DES NOMS DE COMMISSIONS:

Commission 5 de "Documentation" à "Documentation et données astronomiques".
Commission 14 de "Données Spectroscopiques Fondamentales" à "Données Atomiques et Moléculaires"
Commission 30 de "Vitesses Radiales" à "Vitesses Radiales Stellaires".
Commission 44 de "Observations Astronomiques au-dehors de l'Atmosphère Terrestre" à "Astronomie à partir de l'Espace".
Commission 45 de "Classifications Spectrales et Indices de Couleur à Plusieurs bandes" à "Classification Stellaire".

Le Comité des propositions présente la proposition suivante venant des commissions 16 et 17:

Please note: The texts of resolutions are printed for your convenience at the request of the Chairman of the Resolutions Committee, but the printed version has not been checked by the IAU secretariat.

THE RESOLUTION COMMITTEE PRESENTS THE FOLLOWING PROPOSALS:

1. The General Assembly, noting the support of Commission 4, 7, 8, 19, 20, 25, 26, 33, 36, 37 and 45, is asked to adopt the following resolution by Commission 24:

The IAU strongly supports the independent and complementary astrometric programmes proposed for the ESA Astronometry Satellite and the NASA Space Telescope.

2. The General Assembly is asked to adopt the following resolutions by Commission 40:

• (I) The International Astronomical Union

Considering

a) The value to mankind of the scientific results achieved by radio astronomy through the exploration of the universe;

b) the increasing use of the radio spectrum, especially by space and air-borne transmitters;

c) that the CCIR has specified the levels of harmful radio interference in CCIR Report 224-4;

d) that the CCIR and IUCAF have summarized the needs of the radio astronomy service in their various reports and documents;

e) that the 1979 World Administrative Radio Conference (WARC) will allocate radio frequencies which can be expected to remain in force for about 20 years;

Recommends that administrations adhering to the IAU, present at the WARC, recognize the following needs of the radio astronomy service:

1) The acquisition and/or maintenance of frequency bands with bandwidhs of at least 1-2 per cent at approximately octave intervals throughout the radio spectrum.

2) The acquisition and/or maintenance of narrower bands at frequencies of the astrophysically most important spectral lines having bandwidths appropriate to the scientific investigation.

3) The preservation of these frequency bands free of harmful interference from in-band, band-edge, and out-of-band transmissions.

• (II) The International Astronomical Union

Considering

a) The imaginative proposal by several developing countries to construct and operate, in collaboration, a Giant Equatorial Radio Telescope (GERT) in Africa, near the equator;

b) the ability of GERT, operated at meter wavelengths, to provide high quality data as essential complement to data obtained elsewhere at cm wavelengths;

c) the noteworthy utilisation of an equatorial location for obtaining high resolution and sensitivity;

d) the educational, technological and social benefits expected for the collaborating nations involved in participation at the research front of astronomy and space science;

Recommends that the ISCU take steps to secure UNESCO support for the realisation of the Giant Equatorial Radio Telescope.

THE RESOLUTION COMMITTEE INVITES THE GENERAL ASSEMBLY TO APPROVE THE FOLLOWING PROPOSALS FOR CHANGES IN THE NAMES OF COMMISSIONS:

Comm. 5 from Documentation to Documentation and Astronomical Data
Comm. 14 from Fundamental Spectroscopic Data to Atomic and Molecular Data
Comm. 30 from Radial Velocities to Stellar Radial Velocities
Comm. 44 from Astronomical Observations from Outside the Terrestrial Atmosphere to Astronomy from Space.
Comm. 45 from Spectral Classification and Multiband to Stellar Classification.

The Resolution Commitee presents the following proposal from Commissions 16 and 17:

Les commissions 16 et 17 recommandent que la commission 16 (Etude Physique des Planètes et Satellites) et Commission 17 (La Lune) devraient être fusionnées pour former une nouvelle Commission gardant le nom et le numéro de la Commission 16.

LE COMITE DES PROPOSITIONS DEMANDE A L'ASSEMBLEE GENERALE DE PRENDRE NOTE DES PROPOSITIONS DES COMMISSIONS:

COMMISSION 4

Reconnaissant

a) Que le chronomètrage des occultations d'étoiles par la lune continuera d'être utile pour les études du mouvement et de la forme de la lune, de la rotation de la terre, et pour le système de référence stellaire, et

b) Qu'il est préférable que les observations soient collectees et analysées par un organisme

Considérant

Qu'à partir de janvier 1981 le HM Nautical Almanac Office, Royal Greenwich Observatory, ne sera plus capable d'agir comme centre international pour recueillir et analyser les chronométrages d'occultations.

Recommande:

Qu'un organisme ayant l'expérience appropriée et engagé dans un programme d'occultations soit prié de prendre charge de ce travail important.

La Commission 4 appuie énergiquement la proposition du Centre de recherche spatiale de l'académie des sciences de Pologne et du Smithsonian Astrophysical Observatory de convoquer le "Second International Colloquium on Reference Systems for Earth Dynamics".

COMMISSION 4

La Commission 4 appuie les recommandations présentées dans le rapport du Groupe de Travail sur la Nutation, décrites ci-dessous, et recommande qu'elles soient utilisées dans les éphémérides nationaux et internationaux à partir de 1984 et dans tous les autres travaux astronomiques pertinents.

Recommandations du Groupe de Travail sur la Nutation

Considérant que la théorie complète du mouvement général de nutation de la terre par rapport à son centre de masse peut être décrit par la somme de deux composantes; la nutation astronomique, généralement appelée nutation, qui est un mouvement par rapport à un système de coordonnées fixe dans l'espace, et le mouvement du pôle qui est un mouvement par rapport à un système de coordonnées fixe par rapport au corps, il est recommandé que:

a) la nutation astronomique soit calculée pour le "Celestial Reference Pole" en utilisant un modèle non rigide de la terre de telles sorte qu'il n'y ait pas de mouvements diurnes quasi-périodiques du pole céleste par rapport aux systèmes de coordonnées fixe dans l'espace et fixe par rapport au corps. Ce modèle peut-être calculé à partir des torques externes à la terre et son atmosphère;

b) les valeurs numériques données dans le tableau I du rapport complet soient utilisées pour calculer la nutation astronomique du "Celestial Reference Pole".

Les Commissions 15, 20, 21, et 22

reconnaissant la grande importance des comètes dans l'étude de l'origine et de l'évolution du système solaire en général, et des particules solides de matière interplanétaire en particulier,

remarquant la diversité extrême des comètes individuelles quant à leur composition, leur structure et leur comportement physique, etc

admettant que les observations à partir de la suface terrestre sont généralement inadéquates pour établir sans ambiguité les relations entre les comètes et les autres objets du système solaire

recommandant qu'un rigoureux programme d'exploration spatiale des comètes soit mis sur pied. Afin d'assurer le maximum de retombées scientifiques, le programme devrait viser plus d'une comète, et devrait comprendre des missions de passage, de rendez-vous et, éventuellement, d'échantillonnage et de retour du matériel. La mission de rendez-vous avec P/Temple 2 en 1988, avec un passage, en route, près de P/Halley en 1985, que la NASA contemple actuellement, est considérée comme un premier pas idéal dans ce programme.

COMMISSION 10

La Commission 10, reconnaissant que la mesure de flux solaire à 2800 MHz fournit un indice standard et quantitatif de l'activité solaire, indice utile aux études du soleil et des relations terre-soleil

recommande que les institutions qui font ces mesures continuent leur travail en ce sens.

COMMISSION 10

attendu que le "Quaterly Bulletin of Solar Activity" a, depuis plusieurs années, fourni un important service de compte-rendu à la communauté scientifique internationale.

Que ce service est toujours important pour les travaux des Commissions 10, 12, 40, 44 et 49 de l'UAI.

Que le maintien de ce service sera particulièrement important au cours de l'Année du maximum solaire qui vient

La Commission 10 recommande

Que l'UAI supporte le "Quarterly Bulletin of Solar Activity" pour assurer que ce service demeure disponible à l'avenir.

Commissions 16 and 17 recommend that Commission 16 (Physical Study of Planets and Satellites) and Commission 17 (The Moon) should be merged to form a new Commission, retaining the title and number of Commission 16.

THE RESOLUTIONS COMMITTEE INVITES THE GENERAL ASSEMBLY TO TAKE NOTE OF THE FOLLOWING RESOLUTIONS OF COMMISSIONS:

COMMISSION 4

Recognizing

(a) that timings of occulations of stars by the Moon will continue to be of value in studies of the lunar motion and figure, the rotation of the Earth, and the stellar reference frame, and

(b) that it is desirable that the observations should continue to be collected and processed by one organization.

Considering

that beginning with January 1981, HM Nautical Almanac Office, Royal Greenwich Observatory, will no longer be able to act as the international centre for the receipt and processing of timings of occulations,

Recommends

that an organization with the appropriate experience and commitment to the occultation programme be requested to take over this important work.

Commission 4 expresses its full support in favour of the proposal of the Space Research Center of the Polish Academy of Sciences, and the Smithsonian Astrophysical Observatory to convene the Second International Colloquium on Reference Systems for Earth Dynamics.

COMMISSION 4

Commission 4 endorses the recommendations given in the Report of the Working Group on Nutation, as set out below, and recommends that they shall be used in the national and international ephemerides for the years 1984 onwards, and in all other relevant astronomical work.

Recommendations of the Working Group on Nutation

Whereas, the complete theory of the general nutational motion of the Earth about its center of mass may be described by the sum of two components, astronomical nutation, commonly referred to as nutation, which is motion with respect to a space-fixed coordinate system, and polar motion, which is motion with respect to a body-fixed coordinate system, it is recommended that:

a) astronomical nutation be computed for the "Celestial Reference Pole" using a non-rigid model of the Earth such that there are no quasi-periodic diurnal motions of this celestial pole with respect to either space-fixed or body-fixed coordinates, which can be calculated from torques external to the Earth and its atmosphere.

b) the numerical values given in Table 1 of the complete report be used for computing astronomical nutation of the "Celestial Reference Pole".

COMMISSIONS 15, 20, 21 and 22

Recognizing

the major singificance of comets for the study of the origin and evolution of the solar system in general and the inter-planetary solid material in particular,

Noting

the extreme diversity among individual comets in terms of composition, structure, and physical behavior, and

Conceding

that ground-based observations are largely inadequate for establishing unequivocally the nature of the relationship between comets and other objects in the solar system,

Recommend

that a vigorous program of space exploration of comets be initiated. To insure the maximum science return, the program should include more than one comet and should include flyby, rendez-vous and, ultimately, sample-return missions. A rendezvous mission to P/Temple 2 in 1988 with an en route flyby of P/Halley in 1985, currencly considered by NASA, is regarded as an ideal first step in the program.

COMMISSION 10

Commission 10, recognizing that the 2800 MHz solar flux provides a standard quantitative index of solar activity for use in solar and solar-terrestrial studies.

Recommends that those institutions making such measurements should continue to do so.

COMMISSION 10

recognizing:

- That the Quarterly Bulletin of Solar Activity has for many years provided a valuable reporting service to the international scientific community;
- That this service continues to be relevant to the activities of Commission 10, 12, 40, 44 and 49 of the IAU;
- That the continuation of this service will be of particular value during the coming Solar Maximum Year;

Recommends that the IAU support the Quarterly bulletin of Solar Activity to assure that this service continues into the future.

COMMISSION 10

La Commission 10, reconnaissant que la longue série de comptes relatifs de taches solaires a été un indice unique à l'activité solaire dans le passé,

recommande que toutes les institutions qui ont démontré leur intérêt et leur compétence dans l'obtention des comptes des taches solaires, continuent la série de mesures.

COMMISSION 10

La Commission 10, reconnaissant l'importante contribution que les observations radio-astronomiques à très haute fréquence (plus haute que 9 GHz) a apporté à la physique solaire,

recommande que de telles observations soient fortement supportées au cours du prochain maximum solaire.

COMMISSIONS 10, 12 et 44

désirent attirer l'attention sur la revue du prochain maximum solaire, et recommandent un effort soutenu et coordonné pour son étude au cours des trois prochaines années.

COMMISSION 10

attentu que l'International and World Days Services (IUWDS) a rendu de grands services à la communauté scientifique pendant la coordination de programmes internationaux tels que l'AGI, l'AISQ, et l'EMI;

Que les services fournis par IUWDS ne sont fournis par aucun autre organisme et sont importants pour les travaux de plusieurs commissions de l'UAI;

Que ces services seront particulièrement importants pour des programmes tel l'Année du Maximum solaire; et

Que le IUWDS fournit les comptes-rendus d'événements géophysiques et solaires qui se produiront avec une fréquence accrue au cours des quelques prochaines années;

La Commission 10 recommande:

Que l'UAI continue à supporter les travaux de l'IUWDS pour assurer le maintien de cet important service.

COMMISSION 26

Note avec grande inquiétude que l'Observatoire Sproul est menacé de fermeture par le Collège Swarthmore. La clôture du programme astrométrique marquerait la fin d'une source très féconde et de très longue date de données sur les étoiles doubles. Les archives photographiques du réfracteur Sproul et leur croissance continue sont uniques et donnent encore des résultats de grande valeur.

COMMISSION 5

Vu le nombre toujours croissant de publications dans les disciplines de l'Astronomie et de l'Astrophysique, la Commission 5 (Documentation et données astronomiques''

recommande l'introduction et l'usage étendu de mots-clés par les auteurs et les éditeurs des principaux journaux et des autres publications de façon à faciliter le travail de classification et de l'extraction de l'information;

apprend avec plaisir l'initiative qu'a pris ''Astronomical and Astrophysical Abstracts'' (AA) de préparer un lexique de base et invite AAA ainsi que les autres services de résumés astronomiques à collaborer dans la préparation d'un lexique commun.

LES COMMISSIONS 25 et 45

Remarquant le fort support de l'UAI pour les programmes d'astrométrie spatiale

recommande d'encourager les facilités complémentaires au sol en astrométrie, photométrie, spectroscopie, etc.

COMMISSIONS 4, 19, 31

Considérant que l'on prévoit adopter l'UAI (1976) System of Astronomical Constants, the 1979 IAU theory of Nutative et l'équinoxe du FK5 le 1er janvier 1984, les commissions 4, 19 et 31 recommandent que:

a) La relation entre l'heure sidérale moyenne et l'UT1 soit modifiée de telle façon qu'il n'y ait pas de changement dans la valeur et la vitesse du UT1 à cause de la correction du point zéro des ascensions droite du FK4 et une correction du mouvement du point zéro qui sera introduit dans le FK5;

b) la nouvelle expression (provisoire) pour l'heure sidérale moyenne de Greenwich à Oh UT soit GMST de 0hUTI 6h38m45s.832+8640184s.628Tu+Os.0929 Tu2, où Tu est le nombre de siècles Julien de 365.25 jours de Temps Universel écoulé depuis janvier 0 1900, 12h UT1 (JD2415020.0). Cette expression est rigoureusement équivalente à la suivante:

GMST de 0h UT1 6h41m50s. 5529+8640184s.8138 Tu+0s.0929 Tu2, où Tu est mesuré de janvier 1, 2000 à 12h UT1 (JD 2451545.0).

LES COMMISSIONS 4, 19 et 31

Appuient la proposition du groupe de travail conjoint sur la détermination de la rotation de la terre pour l'établissement d'une période spéciale de collaboration internationale pour ''The monitoring of Earth-rotation and in the inter-comparison of the techniques of observations and analysis.

Reconnaissent que la responsabilité de l'organisation de ce projet MERIT soit partagée avec l'union internationale de géodésie et géophysique.

Demandent que les organismes nationaux et internationaux concernés donnent leur appui technique et financier pour permettre le développement et l'exécution de ce projet.

COMMISSION 10

Commission 10, recognizing that the long series of relative sunspot numbers is a unique link with the course of solar activity in the past.

Recommends that all institutions that have demonstrated interest and competence in the work of obtaining suspot numbers should continue the series.

COMMISSION 10

Commission 10, recognizing the important contribution made to solar physics by very high frequency (greater than 9 GHz) radio flux observations of the sun,

Recommends that such observations should continue to be strongly supported during the coming solar maximum.

COMMISSIONS 10, 12 and 44

draw attention to the coming of Solar Maximum and recommend a sustained and coordinated effort in its study during the next three years.

COMMISSION 10

recognizing

- That the International Ursigram and World Days Service (IUWDS) has rendered valuable service to the scientific community during the coordination of such international programs as the IGY, the IQSY and the IMS;
- That the services provided by the IUWDS are not provided by any other agency and are relevant to the work of several commissions of the IAU;
- That these services will be particularly important for such programs as the Solar Maximum Year; and
- That the IUWDS included the prompt reporting of geophysical and solar events which will be occuring with increased frequency in the next few years;

Recommends that the IAU continue to support the activities of the IUWDS to assure the continuance of this valuable service.

COMMISSION 26

notes with deep concern that the Sproul Observatory is in danger of being closed by Swarthmore College. The termination of the astrometric program would cut off a highly productive source of double star data built up over a long period of time. The photographic plate collection with its continuing growth from the Sproul refractor is unique and continues to yield valuable results.

COMMISSION 5

In considering the steadily increasing number of publications in the field of Astronomy and Astrophysics, Commission 5 (Documentation and Astronomical Data), recommends:

- the introduction and extensive use of proper key words by authors and publishers of primary journals and other publications in order to facilitate indexing and retrieval work
- Welcomes the initative of Astronomical and Astrophysical Abstracts (AAA) in preparing a draft vocabulary and invites AAA and other astronomical abstracting services to cooperate in the preparation of an agreed vocabulary.

COMMISSIONS 25 and 45

Noting the strong support of the IAU for space astrometric programmes.

Recommends that complementary ground-based support in astrometry, photometry, spectroscopy, etc. should be encouraged.

COMMISSIONS 4, 19, 31

considering that it is planned to introduce the IAU (1976) System of Astronomical Constants, the 1979 IAU Theory of Nutation, and the equinox of the FK5 on 1984, January 1, recommend that:

(a) the relationship between mean sidereal time and UTI be modified so that there is no change in either value or rate of UTI, due to a correction to the zero point of right ascensions of the FK4 and a correction for the motion of the zero point, to be introduced in FK5;

(b) the new (provisional) expression for Greenwich mean sideral time of Oh UT be GMST of Oh UTI 6h38m45s.832 + 8640184s.628 Tu+Os.0929 Tu2, where Tu is the number of Julian centuries of 365.25 days of Universal Time elapsed since 1900 January 0, 12h UTI (JD 2415020.0). This expression is rigorously equivalent to the following GMST of 0h UTI 6h41m50s.5529 + 8640184s.8138 Tu + Os.0929 Tu2, where Tu is measured from 2000 January 1, 12h UTI (JD 2451545.0).

COMMISSIONS 4, 19 and 31

Endorse

The proposal of the joint working group on the determination of the rotation of the Earth for a special period of international collaboration in the monitoring of Earth-rotation and in the intercomparison of the techniques of observation and analysis,

Recognize

that the responsibility for the organization of this project MERIT should be shared with the International Union of Geodesy and Geophysics, and

Request

that the national and international organizations concerned give full technical and financial support to the development of the proposal and to the implementation of the project.

COMMISSIONS 4 et 16

Appuient le rapport du groupe de travail conjoint sur les coordonnées cartographiques et les éléments de rotation des planètes et des satellites.

Recommandent:

Que les calculs d'éphémérides physiques des planètes et des satellites dans les éphémérides nationaux et internationaux se basent sur ce rapport et

demandent

qu'un petit groupe de travail continue ses activités dans le but d'obtenir de meilleurs éléments de rotation.

COMMISSION 5

Considérant que l'identification d'objets astronomiques dans les publications astronomiques est dans une situation très peu satisfaisante, la commission 5 appuyée par les représentants des commissions 8, 24, 25, 26, 27, 28, 29, 30, 34, 37, 40, 42, et 45 demande énergiquement que:

a) les éditeurs de revues scientifiques et d'autres publications imposent des standards stricts auprès des auteurs, concernant l'identification d'astres, en fournissant des instructions appropriées aux orbitres

b) les abbréviations de catalogues soient explicitées dans une note au bas de la page ou dans les tableaux bibliographiques

c) deux identifications soient données pour chaque objet afin de faciliter la vérification des erreurs, principalement pour les astres peu lumineux

COMMISSION 5

Considérant la confusion qui existe présentement dans la littérature concernant abréviations de catalogues. La commission 5 appuyée par les représentants des commissions 8, 24, 25, 26, 27, 28, 29, 30, 34, 37, 40, 42 et 45 désire que:

Une liste d'abréviations de catalogue soit publiée sous les auspices de l'IAU.

Cette liste serait une nouvelle version de la publication de Fernandez, Lortet et Spite révisée par les représentants des commissions de l'UAI et éditée par C. Jaschek.

COMMISSIONS 4 and 16

Endorse the Report of the Joint Working Group on Cartographic Coordinates and Rotational Elements of the Planets and Satellites.

Recommend

That the Report be used as the basis for computing the physical ephemerides of planets and satellites in the international and national ephemerides,

And Request

that a small working group continues its activity in order to provide improved rotational elements.

COMMISSION 5

Considering the present unsatisfactory situation of the identification of astronomical objects in astronomical publications, Commission 5, supported by representatives of Commissions 8, 24, 25, 26, 27, 28, 29, 30, 34, 37, 40, 42 and 45, requests strongly that:

a) editors of scientific journals and other publications impose stricter stan-
under IAU auspices, a list of catalog abbreviations be published.
to the referees,

b) catalog abbreviations be made explicit either in footnotes or in the bibliography tables,

c) two identifications be quoted for each object, in order to provide a check against errors and misprints, especially for faint objects.

COMMISSION 5

Considering the confusion existing at the present time in the literature concerning the abbreviations of catalogs, Commission 5, supported by representatives of Commissions 8, 24, 25, 26, 27, 28, 29, 30, 34, 35, 37, 40, 42 and 45 desires that,

under IAU auspices, a list of catalog abbreviations be published.

This list should be a new version of the work of Fernandez, Lortet and Spite, revised by the IAU Commission representatives and edited by C. Jaschek.