

## 39. COMMISSION POUR LA CREATION D'OBSERVATOIRES INTERNATIONAUX

PRÉSIDENT · M. H. SHAPLEY

MEMBRES: MM. Abetti, Baade, Fr. Becker, Bourgeois, Bowen, Comrie†, Eckert, Gaviola, Graff, Spencer Jones, Lindblad, Lindsay, Lyot†, Oort, Paraskevopoulos†, Redman, G. A. Shajn, Struve, Waldmeier, Witkowski.

When Commission 39 was set up provisionally in 1946 and later officially established as a regular committee of the International Astronomical Union, the hope was relatively high for prompt international collaboration in scientific research, even in fields that were unrelated to and independent of military or political operations. That hope has been deferred, but by no means abandoned. In fact, the fundamental necessity of scientific and technical internationalism continues to be generally recognized by national and international bodies. It was clear from the time of the creation of the United Nations Organization, however, that the establishment of astronomical or other research centres on a world-wide basis must be arranged through or closely affiliated with United Nations agencies—with U.N.E.S.C.O. in particular.

With the increasingly difficult political situation since 1946, the programmes of U.N.E.S.C.O., F.A.O., W.H.O., W.M.O., and of some of the other agencies have been appropriately turned directly toward the maintenance of international peace. The most favoured projects, therefore, are developments in the direction of increasing food supply, enlarging the world's habitable areas, making agricultural and economic surveys, rehabilitating the war-torn countries and cultures, and not so much in the direction of the arts or basic scientific research.

Although the development of laboratories, observatories, and centres for basic research has been much delayed, the Chairman of Commission 39 has had the opportunity of participating in several special conferences, national and international, bearing on the promotion of international scientific research. The goals for all of these operations, involving sometimes many sciences, are the same as those visualized by our Commission in 1948 for the International Astronomical Centres—namely, the advance of the science, special assistance to the smaller countries, and the maintenance of close supra-national co-operation in the sciences. Two of these conferences are described below.

1. Under the auspices of the American National Research Council a small panel of American scientists was assembled in 1949 under the chairmanship of the undersigned to explore the possibilities of an international centre for computation and statistical analysis. The report resulting from the committee's considerations was transmitted to U.N.E.S.C.O. and to other appropriate bodies. Special interest in this important project of an International Computational Centre was developed in Holland, Switzerland, Denmark, Italy, and the United States; also one of the major American philanthropic foundations and some of the international statistical organizations have shown a sympathetic interest. But the project moves slowly. In May and June 1951, however, the project of the Computational Centre was officially endorsed by U.N.E.S.C.O. and steps were taken to choose a site and fix upon a programme and a budget.

Our astronomical project apparently must await the experiment with the Computational Centre, and possibly also await an equivalent venture in meteorological research. The Chairman of Commission 39 continues to follow the development of both the Computational and Meteorological plans.

The recent U.N.E.S.C.O. decisions in Paris were promoted by the following resolution adopted at the meeting of the Economic and Social Council of the United Nations in the summer of 1950:

The Economic and Social Council considers that the proposal of the Committee of Scientific Experts (see below) for the establishment of an International Computation Centre is deserving of special consideration; it invites U.N.E.S.C.O. to transmit to the next session of the Council

a detailed plan for the setting up of such an international Computation Centre, including recommendations as to location, staffing, equipping, and financing.

We have considered the possibility that one section of a Computational Centre might be astronomical in nature and include appropriate small and large calculators suitable for astronomical programmes; but the combination of *astronomical* computations with *general* computational activities is not unanimously recommended by members of Commission 39.

2. In August 1949, the Economic and Social Council of the United Nations, together with U.N.E.S.C.O., assembled an international group of eight specialists (referred to in the foregoing resolution) for a ten-day conference in Paris to examine preliminarily the whole subject of United Nations research laboratories and centres. The undersigned was one of the two American representatives. A dozen different fields were explored thoroughly from the standpoints of desirability, feasibility, and urgency of international operations. Priorities were assigned. The top priority in a first group of three projects was given to the Mathematical Computation Centre, referred to above, to be located preferably in one of the smaller countries of Western Europe, and eventually to have two or three branches elsewhere.

The astronomical project was placed in the second group of five. The panel agreed that it could not be placed higher because astronomy's contacts with the masses of the people is too small and its contribution to the immediate problems of peace too indirect to justify a higher rating. The proposed Computation Centre, it is interesting to note, was deemed to be of high and immediate importance to the social scientists, such as demographers and agricultural economists, and also to workers in the various fields of public health. Its importance to engineers, physicists, and mathematicians is of course obvious.

There has been during the past three years a growth in international astronomical co-operation that may make an Astronomical Centre less necessary than heretofore. We refer to the newly developed inter-observatory projects in South Africa and in Australia. Already some co-operative uses of astronomical equipment had become common among the observatories in America, France and elsewhere. But such localized developments do not solve for many astronomers, especially in Europe, the need for a Centre equipped with powerful instruments for observing, measuring, and computing—astronomical equipment that is beyond the resources of many of the national and university observatories.

In view of the disturbed political situation, and the difficulty of constructing soon a fully international Astronomical Centre, it might be best for our committee to discuss the creation of a central fund for astronomical equipment, to be administered by an international committee and designed especially to help those smaller active institutions that are not able to keep abreast of the power and growth that prevails in countries which are more astronomically favoured. Commission 38 of the International Astronomical Union is already looking after the important problems of travelling fellowships and the interchange of astronomers.

At the next general meeting of the Union the members of Commission 39 could profitably discuss the following issues:

1. The progress, and possible use by astronomers, of the International Computation Centre.
2. Would the creation of a Central Fund for small grants in aid of travel, research equipment, and publication be advisable, and if so, would it be possible?
3. Progress with inter-observatory projects and co-operation.
4. The sponsorship or the planning and directing of a world-wide campaign for the study of astronomical seeing and other conditions relevant to the establishment of new observing stations.

Additional topics for our consideration should be reported to the President of the Commission in time for inclusion in the Agenda of the next meeting.

HARLOW SHAPLEY  
*President of the Commission*

PRÉSIDENT: Prof. H. SHAPLEY.

SECRÉTAIRE: Dr P BOURGEOIS.

Le Président commente son rapport préliminaire, puis fait part à la Commission, d'une manière assez détaillée, des points de vue de l'U.N.E.S.C.O. concernant les laboratoires internationaux et en particulier la réalisation de centres astronomiques internationaux. L'U.N.E.S.C.O. s'est vue dans l'obligation de placer l'astronomie au 2e rang des priorités mais espère que les astronomes voudront bien s'intéresser à l'organisation du centre international de calcul qui doit être créé à Rome cette année sous ses auspices.

Le Président attire ensuite l'attention sur la collaboration qui s'établit entre observatoires, citant en exemple les observatoires A, D, H (Armagh, Dunsink, Harvard), McDonald, Mont Wilson, St Michel, Mont Stromlo, Canberra ainsi que la collaboration Yale-Columbia; le Président y voit une formule d'avenir. M. Chalonge, à ce sujet, signale le caractère vraiment international de l'Observatoire du Sphinx (3570 m. d'altitude). Partie intégrante de la station internationale du Jungfrauoch (Suisse), cet observatoire dispose d'un équipement dû à la collaboration de la Suisse, de l'Allemagne, de la Belgique et de la France. M. Chalonge décrit cet équipement et parle des travaux astronomiques en cours à la station.

Une longue discussion s'engage ensuite concernant le centre international de calcul récemment créé à l'initiative de l'U.N.E.S.C.O. et qui développera ses activités en Italie. Une partie de ces activités sera réservée aux calculs astronomiques. Toutefois, il faudra un certain temps avant que ce centre soit en service. L'Union Astronomique Internationale sera appelée à donner son avis et son comité spécial serait heureux dès à présent d'avoir des suggestions quant aux calculs astronomiques à envisager. Le travail astronomique accompli par le Watson Laboratory (U.S.A.) qui, en dehors de travaux de moindre envergure, a assuré le calcul des positions des cinq planètes principales de 1653 à 2060, a recalculé les tables de la Lune de Brown, a déterminé des coordonnées d'étoiles et calculé des orbites de météorites et de comètes, montre le rôle important de pareil centre de calcul. Il ressort de la discussion que le centre international de calcul pourrait utilement s'intéresser au calcul de positions apparentes d'étoiles, à la réduction de clichés de la carte du ciel, au calcul de systèmes optiques ainsi qu'au calcul de modèles d'étoiles.

Le Président introduit alors la discussion au sujet de l'étude des conditions d'observation indispensables à l'établissement de nouvelles stations d'observation: nous n'avons actuellement que des renseignements fragmentaires, nos instruments sont souvent mal situés, ou situés sans tenir compte de l'avenir. Le débat s'engage ensuite sur les méthodes les meilleures pour étudier les conditions d'observation et en particulier sur la difficulté qu'il y a de juger au moyen de petits instruments des conditions d'observation pour les instruments puissants. La question est soulevée du danger de la turbulence des masses d'air dans les salles d'observation. Il y a en tout état de cause à envisager l'étude des conditions d'observation sous trois aspects:

1. Etude visuelle des figures de diffraction sous fort grossissement en vue des observations visuelles.
2. Photographie de trainées stellaires au moyen d'un astrographe fixe en vue des travaux photographiques et spectroscopiques.
3. Observations photoélectriques, les observations pouvant être gênées par des phénomènes d'absorption indécélables autrement que par des mesures photométriques.

En conclusion:

1. La Commission adopte la recommandation suivante concernant le centre international de calcul:

That the ad hoc Committee on the International Computing Centre be urged to proceed promptly and ambitiously to outline the important astronomical problems suitable for such a computational centre in order that the equipment of the centre can be planned with our astronomical needs in mind and also that our work will be given a high priority.

2. La Commission a discuté la question de l'utilisation et de l'importance d'un fonds 'grants-in-aid' contrôlé par l'U.A.I., fonds qui pourrait allouer de petites subventions pour de l'équipement, du matériel ou des voyages. En Amérique, de tels fonds au nombre de cinq ont fortement aidé de petits Observatoires et des astronomes indépendants. Quelques pays européens ont des possibilités analogues, mais ils ne sont pas nombreux. Si un essai pouvait être tenté dans ce sens pendant deux ou trois ans, disons avec \$10.000 par an, on pourrait se rendre compte de la valeur d'une telle initiative.

3. La Commission recommande instamment que des études sur les conditions d'observations astronomiques soient entreprises par tous les intéressés à l'installation de nouveaux observatoires qu'ils soient temporaires ou permanents.

Le Président de la Commission, en collaboration avec MM. Bowen et Aldrich, envisage d'entreprendre l'étude des conditions d'observations nocturnes à Montezuma (Chili du Nord) et éventuellement aussi à Bloemfontein (Afrique du Sud).

Une étude s'assurant des conditions d'observations tant à l'intérieur qu'à l'extérieur des coupoles des Observatoires existants, est recommandée en vue d'arriver à une meilleure compréhension de cet important facteur dans les observations astronomiques.

La Commission attire encore l'attention sur le fait que de bonnes conditions d'observations seules ne suffisent pas et que de bonnes conditions de vie sont indispensables à la création d'installations permanentes.