

inclination diagram ( $\pi/z$  against  $\tilde{\omega}$  for  $z = 0$ ), a box-orbit is represented by a line, a periodic orbit by a finite number of points, and a tube-orbit by a finite number of rings. A tube-orbit corresponds to a rational number, a box-orbit to an irrational number. There appears to be an infinite number of each of the three types of orbit.

*Discussion:* I. R. King remarked that it would be of great interest to extend these calculations to slightly flattened elliptical systems.

*G. Elvert:* Theory of the Tilt of the H I Layer.

Analysis shows that the gravitational attraction of the Magellanic Clouds may be responsible for the observed tilt of the neutral hydrogen layer in the outer parts of the Galaxy.

*Discussion:* It was suggested by I. R. King that if this explanation is correct, we should expect distortions of the local velocity field of the order of 5 to 10 km/sec, which could seriously affect our interpretation of 21-cm data.

*F. J. Kerr:* The 15-Meter Survey and the H I Distribution in the Galaxy.

The southern hemisphere 21-cm line data and those from various thermal sources all agree well in showing the spiral structure; the 15-meter survey shows H II regions in absorption all along the Milky Way plane.

When attempts are made to combine the 21-cm data from both hemispheres into a consistent and plausible spiral-arm pattern, however, difficulties arise. These can be removed if one assumes that the local standard of rest possesses an outward velocity, relative to the galactic center, of the order of 7 km/sec.

*Discussion:* It was remarked by several members of the Commission that this rather surprising result does not seem compatible with the observation that stars of different ages in the solar neighborhood do not show differential motions of the sort that this would appear to imply.

### 33c. SOUS-COMMISSION DES "SELECTED AREAS"

#### Report of Meeting, 19 August 1961

PRESIDENT: T. Elvius.

SECRETARY: L. Plaut.

#### *Selected Area Committee*

Under the new By-laws of the Union the Sub-Commission will continue as a Committee under Commission 33, the members being: Elvius (chairman), Kharadze, Plaut, Weaver.

The *principal function* of the Selected Area Committee has been defined by Bok, the new President of Commission 33, as:

1. to report on work done and to make suggestions for extension and co-ordination of work under way or being planned;
2. to suggest specific new projects for work relating to Selected Areas;
3. to consider ways in which Selected Area programmes may contribute to the advance of our knowledge in galactic structure.

Kharadze drew attention to the possibility of coming outside the boundaries of Kapteyn's Selected Areas. It was felt that in such cases the whole Commission 33 has to consider the matter.

Blaauw stressed the necessity of considering observational programmes as a means to obtain more and new information on the structure of the galactic system rather than as an end in themselves.

*The Draft Report*

The *Draft Report*, as presented was accepted with some small corrections. The following additions were proposed during the meeting:

Photometry: Photo-electric sequences in  $U, B, V$  are observed by Purgathofer at Lowell Observatory for many of the Selected Areas of the Basel programme; limiting magnitude  $18^m$ ; only  $U$  for areas measured by Baum for  $B$  and  $V$  (Steinlin).

Reference was made to the work on 6th magnitude stars in Areas 1-115 at the Crimean Observatory as quoted by Commission 25, ref. (7) (Rybka) (see Vol. XIA, p. 250).

Proper motions: Reference was made to the 20-in. Astrograph programme at Lick Observatory *Trans. IAU*, 9, 466, 1957 and 10, 503, 1960).

Other investigations: Luyten has searched for faint blue stars in a large number of Selected Areas using several telescopes. Proper motions of some of these have been published in the Minnesota series "A search for faint blue stars".

*Discussion of current work*

Photometry: Publication of the photo-electric sequences by Baum has been urgently requested again (*Trans. IAU*, 10, 502, 1960).

Miss Roman reported slow progress on her sequences on account of zero-point difficulties (*Trans IAU*, 10, 503-4, 1960).

Rybka spoke on his programme of two bright stars in each of the Areas 1 to 115 and suggested extension to the more southern Areas.

An accurate sequence in Area 141 near the southern galactic pole is in preparation (Bok); publication in the near future has been recommended (Luyten).

Bok and Miss Roman stressed that  $U$  magnitudes should be given preference rather than spectral types,  $U-B$  colours may give important information on population groups, etc.

Proper motions: A discussion was held (Blaauw, Deutsch, Fehrenbach, Roman, Weaver) on the desirability of a repetition of the Radcliffe proper-motion plates, a programme being initiated by Allen at London (Mill Hill) (see Vol. XIA, p. 393). No decision has been made on the preference to be given either to this programme or to a determination of proper motions of brighter stars, say to about  $12^m.5$ , on larger fields as could possibly be done by means of Carte du Ciel plates (see Helsinki, Vol. XIA, p. 393). This matter will be discussed more thoroughly by the Committee.

Maps: Maps are in preparation or are being planned by Miss Roman and by Bok. In 1957 Brun published an *Atlas des 139 Selected Areas du Mount Wilson*.