

Photographs of some loose and distant clusters have been taken with the Asiago reflector and with the Lick 120-inch, by Kinman and Rosino. In particular the following clusters are now under investigation for variables as well as for distance and colour-magnitude diagram: Abell 1, 2, 4, 5, 10, 11, 12, 13, IC 1276 (Abell 7) and the Shakhbazian cluster. The last is probably not a physical association of stars, but simply an assembly of some extremely distant galaxies and some foreground stars. Clusters Nos. 2 and 10 are deeply reddened, they are scarcely seen on the blue Asiago plates, but they appear fairly rich in yellow and deep red. Nos. 4, 5 and 13 have been the object of preliminary study by Rosino; work is continued on the luminosity function, the HR diagram and the periods of variables. No variable stars have been found in Abell 11, but this search is not complete. Five were found in Abell 7, one of which has a large amplitude and a period greater than 30 days. Several suspected variables are present in Abell 12. Finally Zwicky's cluster at $16^{\text{h}} 57^{\text{m}}, -0^{\circ} 28'$ (1950) has been observed and several suspected variables identified.

27b. SOUS-COMMISSION DES ETOILES VARIABLES DANS LES AMAS

Report of Meeting, 22 August 1961

PRESIDENT: Mrs H. Sawyer Hogg.

SECRETARY: L. Rosino.

DRAFT REPORT AND BUSINESS

The meeting opened at 11^h. The *Draft Report* was approved and discussion proceeded on the proposals in Section 4 of the report.

1. Detre emphasized the importance of having photographs of globular clusters taken at different observatories made available to interested observers for the study of variable stars. It was noted that Sandage is preparing to publish a detailed study of the U, B, V light-curves of the variables in Messier 15, a cluster for which periods have been published without observations. Oosterhoff supported the request of Detre. The Sub-Commission was in favour of the proposal.

2. Detre proposed further that new plates be made in order to study the secondary changes of periods of variable stars in ω Centauri. Schwarzschild stressed the importance of such a search in this important cluster. Oosterhoff noted that, with the period already known with high accuracy, only a small number of plates is sufficient for the study of secular variations. The Sub-Commission was in favour of the proposal.

3. The President noted that, at the meeting of Commission 27, the Sub-Commission had been transformed to a Committee consisting of H. Arp, L. Rosino, A. J. Wesselink, with H. Sawyer Hogg as chairman.

4. With the business of the Sub-Commission thus concluded, the President invited scientific discussion on results of researches obtained since the *Draft Report* went to press.

SCIENTIFIC REPORTS AND DISCUSSION

Rosino spoke of the recent photographic researches made with the 120-inch telescope of the Lick Observatory by Kinman and himself, on some loose inter-galactic clusters, like Abell 1, 5, 11 and 13, the Shakhbazian cluster, and IC 1276. An RR Lyrae star and two variables with periods greater than 100 days and large amplitude have been found in IC 1276 (No. 1 by H. Sawyer Hogg, Nos. 2 and 3 by Rosino and Kinman).

Kinman reported on a study of NGC 2419. The periods of the variable stars in this cluster will be derived from material taken with the 120-inch telescope. Of two RR Lyrae variables already studied, one has a period of 0.37 and one of 0.63 days.

P. Hodge told of his search, with Miss F. W. Wright, for variable stars of the W Vir type in red globular clusters of the Large Magellanic Cloud. They have found 13 variables in, or superimposed on, 10 clusters. Periods and magnitudes are being determined to see how these stars compare with Cepheids in the general field of the Cloud.

Van Hoff announced his discovery, from Boyden Station plates, of 15 RR Lyrae variables in the globular cluster NGC 6362, 7 of sub-class *a* and 8 of sub-class *c*. He remarked that while the frequency distribution of the periods is that of the Oosterhoff group I, the ratio *a/c* is typical of the other group.

Arp mentioned his work on the position of some irregular variables in the H-R diagram of 47 Tucanae. Wesselink is following photo-electrically the RR Lyrae stars recently found in this cluster. Feast told of the spectra that he and Thackeray have obtained of the three long-period variables. Although the mean radial velocity is in agreement with the velocity of the cluster, the individual values show a considerable spread.

The President noted that since the joint meeting of Commissions 27, 37 and Sub-Commission 27 *b* had dealt very fully with variables in galactic clusters, this meeting had been concerned with variables in globular clusters. She mentioned, however, the work of F. Spite of Lille, who is trying to ascertain if any of the RR Lyrae stars tabulated by Kholopov in the regions of galactic clusters are actual members.

Hoffmeister, at the end, gave interesting data on the probability of discovery of RR Lyrae variables, taking into consideration such factors as number of pairs of plates searched and magnitude above the plate limit.