

**ANNUAL REPORT OF THE REPUBLIC
OBSERVATORY**

JOHANNESBURG

1967

(Acting Director, J.Hers)

STAFF

Dr W.S.Finsen, who continued his interferometer programme as guest astronomer as in previous years, was awarded the Gill Medal for 1967 of the Astronomical Society of Southern Africa.

Mr G.C.Sherry resigned as library assistant in September and Mrs E.J.Lake was appointed in his place. Mr N.C.Roux joined the administrative staff in March.

The 13th General Assembly of the International Astronomical Union was attended by Messrs J.Hers and G.F.G.Knipe. During September and October Hers visited a number of observatories in Europe.

Messrs I.R.H.Brickett, M.D.Overbeek and J.Vollmer again rendered valuable assistance as demonstrators on public nights.

ASTRONOMICAL RESEARCH

With the 26½-in. refractor 1031 micrometer measures of double stars were obtained, the observers being Knipe (497 measures on 42 nights) and Newburg (534 measures on 72 nights). The telescope was used by Finsen on 75 nights for interferometer measures of close pairs.

With the Franklin-Adams telescope at the Hartbeespoort Annexe Bruwer obtained 154 plates on 111 nights, resulting in 155 minor planet and 14 comet positions. At the request of Dr P.Herget and various other investigators, 18 minor planets were remeasured on plates taken in previous years.

The 9-in. refractor was used by Knipe on 46 nights for photoelectric observations of eclipsing binaries. Six occultations were observed.

Observations were hampered by adverse weather conditions during a large part of the year.

TIME SERVICE

The electronic time equipment, now fully installed in the new building, was divided into two completely independent systems, one of which is controlled by the caesium standard, and the other by one of the quartz oscillators. As the output frequency of the caesium standard is permanently adjusted to correspond to Atomic Time, a motor-driven continuous phase shifter is used to obtain the offset frequency from which UTC is derived. The ZUO time signals continue to be linked to UTC, but all ZUO carrier frequencies have been transmitted without offset as from 1967 April 1.

All times and frequencies are now based primarily on the caesium standard and the VLF signals from GBR, NBA and Omega-Trinidad are used for comparison purposes only. A 'flying clock' comparison made in October indicated that during the preceding 11 months the frequency of the caesium standard had not changed by more than 1 part in 10^{12} .

The modernization of the equipment was continued, chiefly by the replacement of the older valve units by transistor units, and by the duplication of the more important sections, particularly those which had been found vulnerable to electric storms. The 100 MHz transmitter used for transmitting time signals and standard frequencies to the Post Office station at Olifantsfontein was provided with an omni directional antenna on a higher mast.

GENERAL

An order was placed for a Boller and Chivens 20-in. Cassegrain reflector.

As the atmosphere around Johannesburg continues to deteriorate, a start was made to find a more suitable site elsewhere. As a result of a study made of existing weather records, Hers and Newburg made a preliminary investigation by visiting one of the more promising regions, the south-western Orange Free State. It is hoped to make more specific tests in this area in the near future.

PUBLICATIONS

Republic Observatory Circular No.126 was issued during the year. The following papers appeared elsewhere:

Finsen, W.S., 1967. The Airy-Simms eyepiece for neutralizing atmospheric dispersion,

The Observatory, **87**, 41.

Hers, J., 1967. Night cloud in South Africa, *Mon. Notes astr. Soc. sth Afr.*, **26**, 94.

Hers, J., 1967. From the rotation of the Earth to Atomic Time, *S. Afr. Sury. J.*, **11**, No.66-2, 3.

Newburg, J.L., 1967. The orbit of β 208AB, ADS 6914, HD73752, with some notes on the system, *Mon. Notes astr. Soc. sth Afr.*, **26**, 110.