ON THE VARIATION OF THE ORBITAL PERIOD AND THE 67-MIN OSCILLATION IN EX HYDRAE *

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We report the first results of an observational campaign consisting of coordinated photoelectric photometry of Ex Hya from four observatories at different geographical longitudes for a total of 146 hours in April 1979.
Ex Hya was monitored differentially for a total of 109 hours, partly simultaneously at different telescopes. The largest time-interval of uninterrupted observation is of nearly 18 hours. 68 times of eclipse, and 89 times of maxima in the 67-minute cycle have been obtained. Figure 1 is an O-C diagram representing all residuals listed by Vogt et al. (1980), and those as obtained during this run. It is clear that the trend of a decreasing orbital period as present till 1976 does not

* Based on observations obtained at the European Southern Observatory, La Silla, Chile and at the South African Astronomical Observatory, Sutherland, South Africa.

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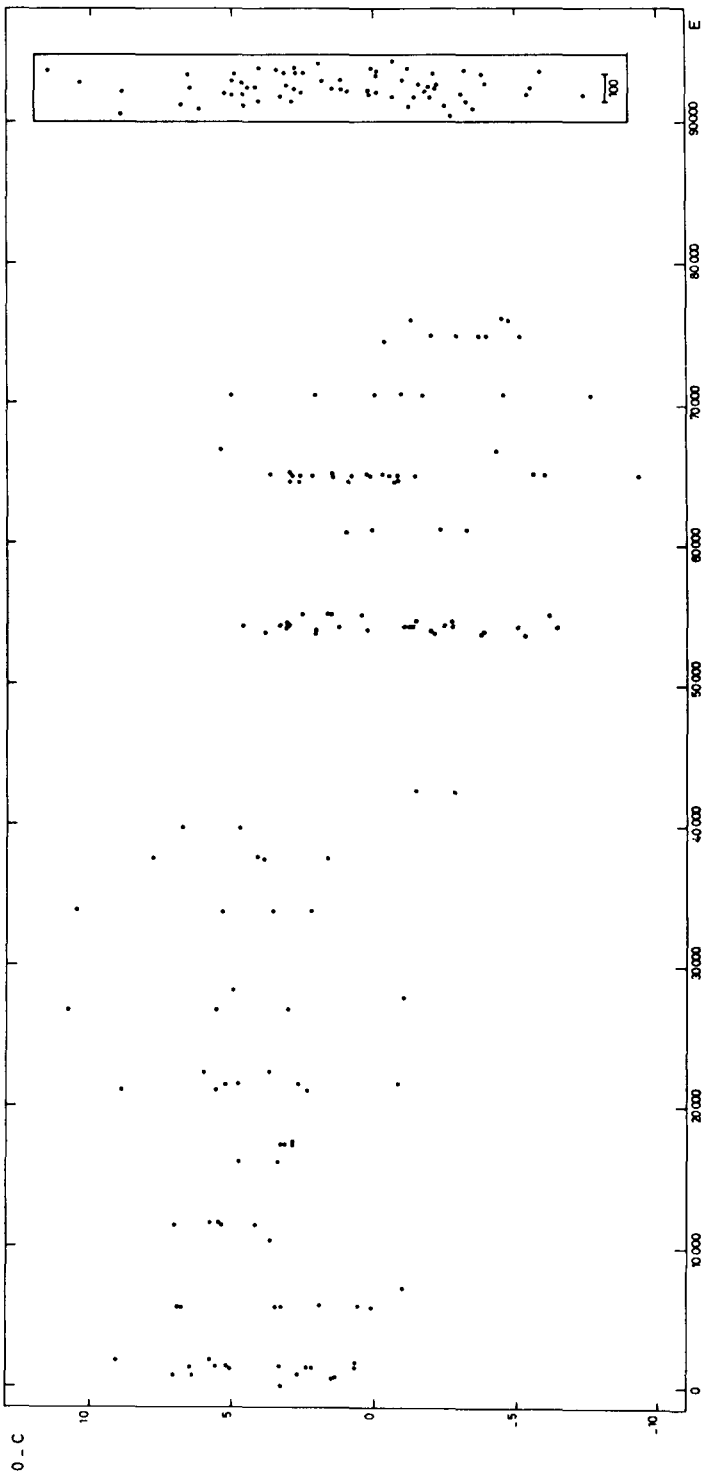

Fig.1. O-C residuals (in units of 0.0001 day) based on the elements of Mumford (1967), vs cycle number E for 206 eclipse minima of Ex Hydrae. The cycle number scale of the insert is a 20-fold (length of 100-cycle fragment is indicated; the center of the rectangle is correctly positioned).

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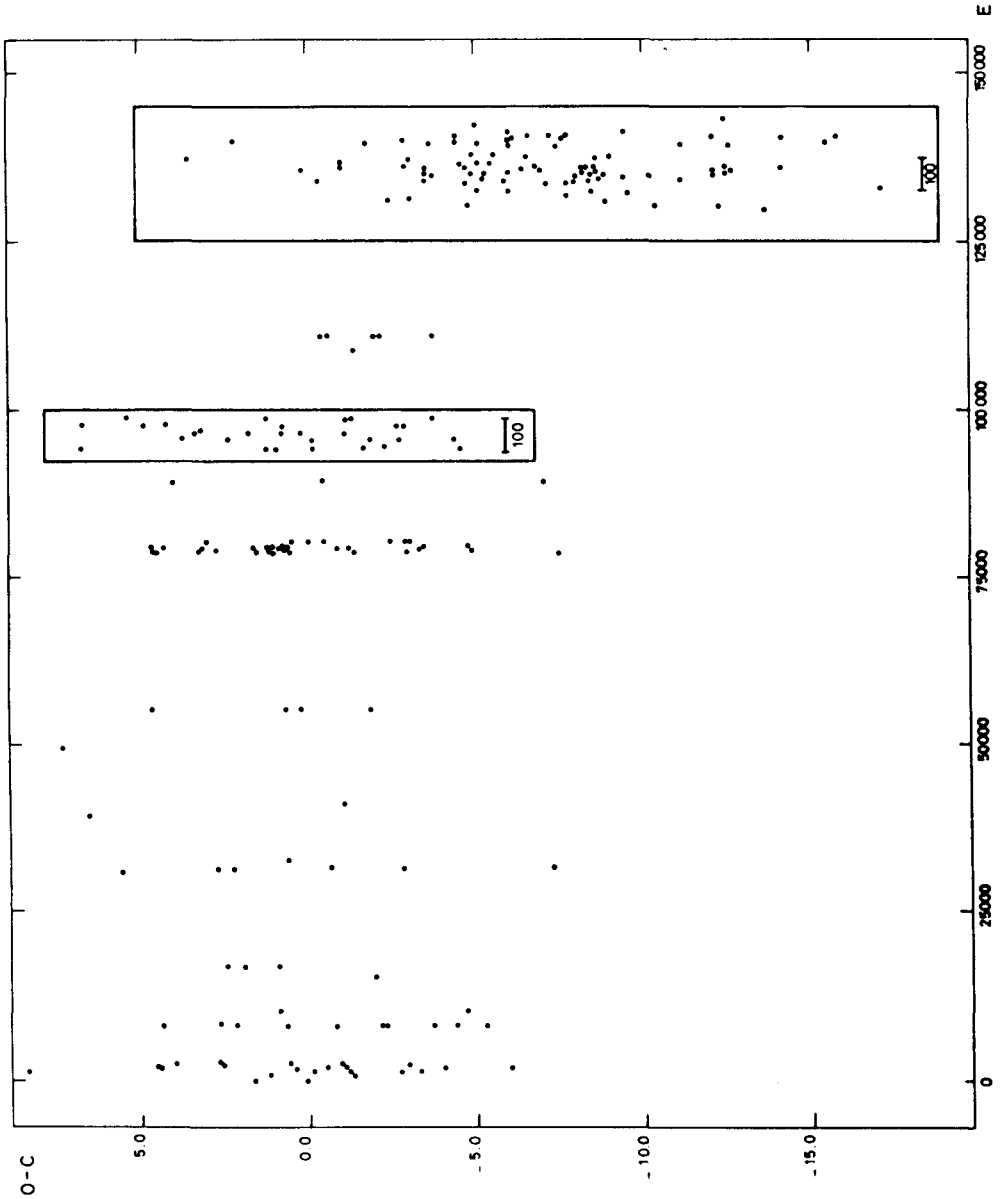

Fig.2. O-C residuals (in units of 0.001 day) based on the ephemeris of Vogt et al. (1980), vs cycle number E for 213 maxima in the 67-min cycle for Ex Hya. The scale of the insert is a 50-fold (length of 100 cycle fragments are indicated; the center of the rectangle is correctly positioned).

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continue, and that instead of a secular period decrease, more erratic changes of the period are present.
Figure 2 shows O-C deviations based on the elements given by Vogt et al. (1980) for all times of maxima listed by their paper, and for the 89 times as obtained during the present campaign. It is clear that Ex Hya exhibits a significant decrease of the 67-min period with a time scale of 10^6 years. The best fit of all moments of maxima is :

$$\underset{}{\text{HJD(max)}} = \underset{\pm 6}{2437699.8895} + \underset{\pm 2}{.04654656E} - \underset{\pm 1}{1.2\ 10^{-12}E^2}$$

with a standard deviation of .0036 day.
Our ephemeris agrees with those derived by Gilliland (1982) and by Kruszewski et al. (1982), both based on independent new data, combined with the earlier moments of maxima from Vogt et al. (1980).
A more extensive account of our results will be published separately.

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DISCUSSION FOLLOWING C. STERKEN'S TALK

ROBINSON: What fraction of the 67 min cycle has the O-C diagram displaced itself from the linear Ephemeris, is it only out of synchronization by a tenth of a cycle of something like that?
GILLILAND: About two tenths of a cycle.

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