On the possibility of determining the parallax of certain eclipsing variables and spectroscopic binaries, by *Ejnar Hertzsprung*.

The mean error of a modern photographic determination of stellar parallax is about ± .″016. In this way we therefore get reliable results, the mean error being allowed to be not more than a fraction of the parallax itself, for the nearer stars only. Somewhat farther we reach in a case like the Hyades where the secular change in the apparent scale in connection with the radial velocity enables us to calculate the parallax with a mean error of only ± .″002, while its value is .″027. The double stars like ε Hydrae and a few others, where it is at present possible to determine both the visual and the spectroscopic orbit, do not bring us considerably beyond the limit mentioned above. The farther away a double star is, the greater must the absolute distance between the two components be, in order to show them separated. But generally orbital range in radial velocity will diminish with the absolute distance between the components and soon become immeasurable.

But if one of the components of a double star is an eclipsing variable, we will observe a periodic change in the apparent period of the variable star according to the orbital motion as projected on the line of sight, as first discussed by CHANDLER in the case of Algol about 30 years ago (*A. J.* 255, **11**, 113; 1892). In this way we observe the difference in light time between the remotest and the nearest points of the orbit of the variable round the centre of gravity of the system or in other words the extension of the orbit in *km* as projected on the line of sight. The essential point is, that the difference in light time mentioned will increase with the dimension of the orbit (ceteris paribus). If now the angular size of the orbit is large enough, we will be able to measure it photographically by connecting the eclipsing variable with neighbouring stars in the same way as used in the determination of stellar parallax. The drawback is of course, that the greater the orbit is, the longer will the period be. But in special cases we may within a reasonable time be able in this way to reach stellar distances considerably greater than those first mentioned above.

An example will give an idea of the prospect of this method.

Suppose an eclipsing variable with the mass $M_1 + M_2 = 2\odot$ moving in a circle round a third dark body with the mass $M_3 = \odot$ in a period of 100 years. Then the radius of the orbit of the eclipsing variable round the centre of gravity will be about 10 astronomical units. The angular size of this apparent orbit may therefore be measured with a mean error ten times less than that of the parallax as determined directly.

If the orbit is seen edgewise, the difference in light time between its nearest and its remotest part will be nearly 3 hours, an amount, which ordinarily may be easily accurately measured in the case of eclipsing variable stars.

It is evident, that the same method may be applied to spectroscopic binary stars of short period.

Hence it seems very desirable to take photographs for the determination of the position relative to faint stars in the field of eclipsing variable stars and of spectroscopic binaries of short period especially of such systems, which, like Algol and others, show secular changes of period. Photographs of this kind may in such cases prove to be of great value in the future.

In fact, considering eclipsing variable stars, the change in period in the extraordinary case of β Lyrae is as yet the only one exceeding what we might reasonably expect as the effect of orbital motion round a third body.

Remarks on some double stars in the Hyades, by *Ejnar Hertzsprung*.

The two double stars Lal. 9091 = *Bu G C* 2381, and Lal. 9109 = *Bu G C* 2383, which I mentioned in *A. N.* 5000, **209**, 113, 1919 as probably belonging to the system of the Hyades, have on my request very kindly been observed by Dr. W. GYLLENBERG at the meridian circle in Lund, in view of a new determination of their proper motions. The new positions are:

	Epoch.	(1925) h m s	(1925) ° ′ ″	
Lal. 9091	1918.13	4 47 3.07	10 56 27.7	3*n*.
Lal. 9109	1918.17	4 47 35.97	13 31 46.3	5*n*.

Combining these observations with all others found (*Lal.*, Par_2, *AG Lpz* and Par_3 for both stars, and Tou_2 for Lal. 9091) a least square solution according to