their surrounding nebula, and that the nebula may extend out from the star very irregularly, or be very irregular in density, in such a manner as to present to our view a much thicker veil to the star on one side, as star and nebula rotate together, than on another. Again may there not be planets in other systems of greater size though of vastly less density than their primaries (Saturn, for example, is far less dense than the Sun), so that in circulating in their orbits, which may periodically vary in inclination, they may thus cut off sometimes more and sometimes less of the light of their primaries, and thereby account for the varying maxima and minima of so many of the variables. Another theory to account for temporary stars, and also variable stars of the Mira class, has been put forward by Lockyer. He supposes that such stars are in a primitive condition of close aggregates of meteoric bodies, not yet condensed or compact globes, and that each such aggregate has another smaller aggregate circulating round it in a very eccentric elliptical orbit with very small perihelion distance, such that when in perihelion, the one meteoric aggregate will graze the other, and thus set up an immense number of violent collisions between individual meteorites, without disturbing the general orbital motion as a whole. The great irregularity of the stars of this class seems, however, to be an objection although not an altogether insuperable one to such a theory. It is very probable that the more regular and punctual variables may all of them be proved to be spectroscopic binaries; the variation being due in part at least to eclipse, and also in part perhaps to certain tidal interactions, the nature of which is at present obscure. The odd and even minima occurring as they do in several instances at unequal intervals, certainly indicate very eccentric orbits. We will conclude by venturing to suggest, that the true explanation of the variations of the greater number of variables will be found to be, not in any one single hypothesis, such as we have put forward above, but in every variety of combination of these hypotheses.

Note on the Proper Motion of 61 Virginis (B.D.—17°3813).

By T. P. Bhaskar Shastri, B.A.

The star 61 Virginis (Mag. 5th) lies in the portion of the heavens allotted to the Nizamiah Observatory for the astrographic catalogue.

Plate No. 126 was exposed on the 17th March 1913 (=1913·205) the coordinates of the plate centre, reduced to the Epoch 1900·0 being approximately R. A. 13h. 16m. 00s. Decl.—17° 00′ 00″. The position of the star (for 1900·0) as given in Washington A. G. C. is—

R. A. 13h. 13m. 10·73s. Decl.—17° 45′ 13·5″ (Ep. 1894·9) or in "Standard coordinates" referred to the above plate centre.

$\xi' = 4{\cdot}9386$ $\eta' = 22{\cdot}0607$

while the measures given by the plate are

$X' = 4{\cdot}8740$ $y = 22{\cdot}1234$

The differences

$X - \xi = -{\cdot}0646$ $y - \eta' = +{\cdot}0627$

are due to the proper motion of the star in an interval of 18·3 years.

Two subsequent plates Nos. 511, 521 exposed on the 18th February 1915 (=1915·131) and 11th March 1915 (=1915·189) give differences :—

$X - \xi' = -{\cdot}0720$	$y - \eta' = +{\cdot}0710$
$X - \xi' = -{\cdot}0720$	$y - \eta' = +{\cdot}0680$
Mean $= -{\cdot}0720$	Mean $= +{\cdot}0695$

due to the proper motion in an interval of 20·3 years. Burnham in his General Catalogue of Double Stars (No. 6447) gives :—

"The change is due to the proper motion of A which is given from meridian positions :—

Auwers	1·515″ in 225·9°
Porter	1·513″ in 225·7° "

while Burnham himself derives the following Proper Motion from a discussion of a set of four measures

1·481″ in 226·6°

Converting these into R. A. and Decl. we get the following values of the annual P.M.

		ΔX	ΔY	Epoch.
	Auwers :—	—1·054″	—1·088″	
	Porter :—	—1·057″	—1·083″	
	Burnham :—	—1·018″	—1·076″	1883·04
Hyderabad	Plate 126	—1·059″	—1·028″	1913·20
	Plate 521 } Plate 511 }	—1·064″	—1·027″	1915·16

This star has a faint companion of the 10th Magnitude and is one of the pairs first discovered by Herschel.