

moving slowly by the action of cilia. The action of cilia seems to be that each individual hair is capable of extension and retraction as well as of lateral bending, and that in the extended state the extremities are all moving in the same direction, thus causing a flow of fluid over, or giving motion

to, the ciliated surface when in contact with a fixed body, an action which is not unlike that of the fire-bars in an automatic grate.

I know of no explanation of the mechanism by which the cilia are actuated or of the conditions which determine their periodicity.

Nova Pictoris as a Double Star.

A RECENT note in our astronomical column stated that observations in January at La Plata and Johannesburg showed that Nova Pictoris was surrounded by a nebulous ring. About Mar. 26 the La Plata observers noted that the appearance of this ring had altered; they telegraphed to Johannesburg, asking for an examination to be made with the 26-inch refractor; this was done, and revealed the fact that the star appeared double.

A Reuter telegram on Mar. 28 added that the position angle was 70° , the components were about equal in magnitude, that each was nebulous, and that the distance between their centres was half a second. It was added that separation of two stellar points at this distance would have been easy, and that under the actual conditions a darker band could be detected between the nebulous discs. On the other hand, Dr. Spencer Jones, His Majesty's Astronomer at the Cape, in a statement quoted in the *Times* for Mar. 29, gives the distance between the stars as one-fifth of a second. The Johannesburg estimate is probably to be preferred, the telescope there being larger, and the observers having much practice in measuring difficult binaries.

Dr. Spencer Jones adopts the view that the outburst was due to an actual collision of two stars, which have now drawn apart sufficiently to enable them to be seen separately; this is the theory that Mr. Bickerton has advocated for the last forty years, but most astronomers have decided that there are far too many Novæ for this explanation to be tenable in general. It would be expected to happen only once in many million years. Nova Pictoris, however, differed in several respects from the average Nova, so the possibility of a collision need not be immediately dismissed; an opportunity will be afforded to test the suggestion when measures of the pair have been taken for some

months. The rate of angular separation would not be uniform; it would slow down owing to the mutual gravitation of the stars, which would pass each other on hyperbolic paths.

There is, in any case, one important difference from Bickerton's theory; he postulated the formation of a third body between the stars, which would be for some time more luminous than them; but the Johannesburg telegram mentions a darker region in the middle.

Harvard College Bulletin 852, published in November last, quotes Mr. Davidovich's spectroscopic parallax $0.006''$ (giving a distance of 540 light-years) and derives a proper motion of $-0.042''$ in R.A. (great circle) and $-0.018''$ in declination. This is from comparison of old plates with recent ones, both taken with the 24-inch Bruce refractor, the time-interval being 24.2 years. The original magnitude of the star was 13 (absolute magnitude 7); if there were two stars on the old plates, their images would probably be blended. The above motions give position angle 247° , which is very nearly in line with the angle 70° now reported.

The outburst occurred on May 25, 1925, so that the interval up to the detection of duplicity is 2 years 10 months; assuming that the stars were then together, this gives $0.18''$ as the average annual rate of separation; but it would have been much more rapid at first, and would now have sunk to perhaps a third of this, so that a trustworthy measure of the rate cannot be expected for several months.

The occurrence is unprecedented in the history of Novæ, and is of great interest; the similarity of the two stars in magnitude and appearance leaves little doubt that they are at the same distance from us, and that the phenomenon is not to be explained by the motion of the Nova revealing an independent star that previously was hidden in its rays.

Obituary.

MR. E. W. MAUNDER.

THE death of Mr. Edward Walter Maunder on Mar. 21, at seventy-six years of age, will be regretted by astronomers in many parts of the world. Mr. Maunder was for many years a member of the staff of the Royal Observatory, Greenwich, and his appointment indicated the beginning of the change in the character of that establishment that has occurred in the last half-century. In his report, read on June 1, 1872, the Astronomer Royal, Airy, put to the Board of Visitors the proposition that a continued series of observations of the solar

spots, and perhaps some solar spectroscopic work, of which he spoke with less certainty, might fitly be undertaken at Greenwich, though the Observatory would then become *pro tanto* a physical observatory, and hinted that its operations might be extended in that direction in the future. This resulted in the appointment of Maunder as photographic and spectroscopic assistant on Nov. 6, 1873, and in the first half of the following year a spectroscope by Browning was attached to the $12\frac{1}{4}$ -inch equatorially mounted telescope, then known as the Great Equatorial, and a photo-