Our Astronomical Column.

OCCULTATION OF A STAR BY SATURN.—Bad weather prevailed generally in Europe on March 14, when Saturn occulted the star Leipzig I 4091, mag. 7·6. A few observations were, however, secured, some of them being published in *Astr. Nach.*, 5042. Prof. Plassmann observed the disappearance at Munster, noting that at 7h. 3·0m. G.M.T. the star was still separated from the limb, at 7h. 5·1m. it was in contact with it, while at 7h. 5·9m. the star had disappeared.

Messrs. K. Novak and V. Rolcik, observing at Smichow, long. oh. 57m. 38s. E. Gr., lat. 50° 4′ 42″ N., noted the reappearance at 8h. 39m. 40s. G.M.T.

Dr. Bernewitz, at Berlin-Babelsberg Observatory, first saw the star at 8h. 39m. 34s. G.M.T. He noted that at 8h. 39m. 51s. it appeared of full brightness, and at 8h. 40m. 5s. the centre of its disc was distinctly separated from the limb. He states that the marked red colour of the star made it easy to distinguish its light from that of the planet. He made the only observation so far to hand of the appulse of Titan to the star, which occurred some four hours after emersion from the planet. He states that Titan did not occult it, but passed 1″ or 2″ to the north of it.

The extreme accuracy of Mr. Burnet's prediction is noteworthy. He gave 7h. 5m. for the disappearance, and 8h. 40m. for the reappearance. Owing to the slowness of Saturn's motion, he thought it likely that these times would be in error by several minutes.

THE EINSTEIN DISPLACEMENT OF SPECTRAL LINES.—The *Observatory* for April contains communications on this subject by Messrs. J. Evershed and C. E. St. John. The former gives reasons for thinking that the pressure in the photosphere is extremely low, so that pressure may be eliminated as a disturbing factor. Using forty-two iron lines, selected as not subject to pole effect, he obtains a shift equivalent to a recession of 0·643 km./sec. at the sun's centre and 1·000 at the limb. But observations of Venus at various elongations support the idea that this is not an Einstein effect, but a shift of all regions of the sun away from the earth. It is remarked that it is difficult to accept this as a physical reality, but no other explanation has yet been found. He notes that some of the carbon lines give an effect similar to the iron ones, but somewhat smaller. The effect seems to vary for different substances, and even for different lines of the same substance, so that some modifying influence is at work.

Mr. St. John recapitulates his well-known investigation, in which he used certain lines of the cyanogen band; he then describes his recent work on magnesium and iron lines. He finds from their weighted mean a displacement of the same sign as the Einstein prediction, but of only one-third or one-fourth of its amount. Mr. St. John notes, however, that the displacement varies with the intensity of the lines, being greatest for lines either of very great or very small intensity. As the majority of the lines measured are of medium intensity, the weighted mean is reduced. He also notes that no lines have been used which seemed unsuitable for the purpose, owing either to their proximity to others or to their instability in the arc spectrum.

STELLAR SPECTROSCOPY AT THE DETROIT OBSERVATORY.—Vol. ii. of the Publications of this observatory, belonging to the University of Michigan, has lately been distributed, and contains a great number of interesting studies of stellar spectra. Two may be instanced in particular: the study of variable stars of Class Md, by Mr. Paul W. Merrill, traces the changes of spectra that accompany the change of light, and discusses various suggestions of the cause of variability. The one favoured by the author is somewhat analogous to the "geyser" theory, but, instead of imagining a solid or viscous crust imprisoning the gases within, he substitutes a smoke-veil composed of condensing gases (calcium is especially suggested) in the upper regions of the stellar atmosphere. This would act as a screen confining the heat of the photosphere, until the accumulation of heat sufficed to vaporise the screen. When the solid-crust theory was propounded these stars were thought to be near the end of their careers as suns, but from the smallness of their proper motions it now appears that they are mostly giants.

The other paper, by Mr. Laurence Hadley, deals with the elements of ζ′ Ursæ Majoris, the first spectroscopic binary discovered. The orbit is fully discussed from several series of observations. The period is 20·53644 days, the eccentricity is 0·518, and the masses of the components $\times \sin^3 i$ are respectively 1·83 and 1·79 in terms of the sun. It is noted that Prof. Joel Stebbins finds no evidence of light variation.

Meteorology at Hong-Kong.

MONTHLY Meteorological Bulletins for the Royal Observatory at Hong-Kong for a considerable period to August, 1919, have recently been received. They contain detailed results of observations made at the observatory and the daily weather reports from various stations in the Far East, prepared under the direction of Mr. T. F. Claxton. For Hong-Kong hourly values are given of barometric pressure, temperature of the air and evaporation, direction and velocity of wind, amount of rainfall, and duration of sunshine. All the hourly observations are measured from the self-registering records. Three-hourly observations are made of the character and direction of motion of the clouds. Daily values are also given of the several meteorological elements. The normals used for comparison with the means are for the years 1884 to 1918, a period of thirty-five years. From 1916 the daily and mean hourly values of the principal meteorological records have been published in both C.G.S. and British units, and with the January Bulletins tables are given for the conversion of the several elements to the respective units. Information is also supplied for the reduction and correction of the instrumental observations. The December Bulletins give tracks of typhoons and depressions in the Far East for the year, and the divergence in the several months is well shown. With the Daily Weather Reports, which contain observations from forty-five stations in the Far East, notices are given of the warning to coast ports, which commonly state the position of typhoons when such are in progress, and forecasts are given daily for the twenty-four hours ending at noon.

The annual report for 1917 contains a comparison of the Beckley anemograph with the Dines instrument, extending over eight years; the differences are remarkably consistent until the summer of 1917, when for some unexplained reason, although noticed, the differences vary. A Richard dry- and wet-bulb thermograph has been set up to replace the Kew photographic thermograph. In section ix. reference is made to sympiesometer observations, and hourly observations are said to have been made for upwards of a year to test the popular belief in the sympiesometer as a weather forecaster. The remarks scarcely seem to refer tc a sympiesometer, which was essentially a sailor's barometer in the first half of the nineteenth century It seems rather that the instrument tested