rhinum majus, making a hole at the bottom of the corolla of the flower near the stalk, and so getting at the honey from the outside. It was too late in the season to be able to observe it much, or often, but we are pleased to find others have seen it too.

In Sir John Lubbock's lecture at the London Institution he said some "humble-bees sucked the honey of the French bean and scarlet-runner in the legitimate manner, while other bees cut a hole in the tube, and so reached it surreptitiously."

This flower I speak of is one with the corolla much more marked than those the lecturer quoted. Next season we will hope to watch it again, and see if it only happens late in the year, for the injured blossoms seemed to wither very soon after the incision was made.

MARY J. FLARR

Tunbridge, Jan. 9

Iron Pyrites.—Curious Phenomenon

SOME iron pyrites exhibited in a particular case in the Maidstone Museum have crumbled into a coarse, finely-divided mass. The specimens have been exhibited for about two months, and the decomposition has been effected in that time. Some other specimens recently removed from another case are becoming soft.

Could any of your readers account for this, and has such a thing ever been observed before?

FREDERIC CASE

Maidstone, Jan. 19

OUR ASTRONOMICAL COLUMN

ANTARES AS A DOUBLE STAR.—The small bluish companion of Antares was detected by Mitchel at the Observatory of Cincinnati in July 1845. Measures taken by him in the summer of 1846 are published in No. 4 of his *Sidereal Messenger*. They gave the distance 2".52, the companion preceding on the parallel, at the epoch 1846.59, and Mitchel thought this distance was half a second greater than at the time he discovered the small star. He mentions that on the 13th of August, 1846, he saw the star distinctly at 5.30 P.M., "the sun shining, unobstructed by clouds or mist." Early in the year 1848, Antares was repeatedly measured by Bond with the great refractor of Harvard College, and by Dawes in this country. Their mean result, weighted according to the number of nights, is—

1848.24 : Position ... 273°.71. Distance ... 3".574.

The proper motion of the large star, though small, is still sufficiently sensible. Leverrier (*Annales*, tome ii.) assigns for the secular motion, — 0s.059 in Right Ascension, and — 3".36 in Declination. If the above angle and distance are brought up to the present time with these values, we find on the assumption of merely optical proximity of the companion—

1875.25 : Position ... 288°.8. Distance ... 3".54.

We would suggest that the star should be carefully re-measured, now that it is drawing away from the sun's place in the morning sky, to decide on the optical or physical connection of the components. Dawes' last measures in 1864 certainly rather favour the latter view, but they were made on a single night, and the object is one of difficult observation. It will be seen that on the assumption of optical duplicity, the distance is just now very nearly stationary, but the change of angle during the last twenty-five years amounts to 15 degrees, and will be easily confirmed or otherwise.

THE "TEMPORARY STARS" OF TYCHO BRAHE AND KEPLER.—The position of the famous star of 1572 in the constellation Cassiopea, with which Tycho's name is usually associated, has been determined with all the precision that his observations admit of, by Prof. Argelander, of Bonn. His place, reducing to the commencement of the present year, is in

Right Ascension ... oh. 17m. 52s.6
North Declination ... 63° 27' 18".

Near to this position is a star of about the eleventh

magnitude, which, by micrometrical comparison with two of its neighbours meridionally fixed, is found to have for the same epoch,

Right Ascension ... oh. 17m. 52s.1.
North Declination ... 63° 26' 24".

It is, therefore, distant less than one minute of arc from the most reliable position of Tycho's star that can now be assigned. On this account alone it would be worthy of attention, but we are able to state, further, that during the last four years this small star has exhibited slight fluctuations of brightness at irregular intervals, which increases the probability of its identity with the star of 1572. It may also be noted that in August 1874 there was a decided ruddiness in its light.

Kepler's observations of the star which suddenly assumed such extraordinary brilliancy in the constellation Ophiuchus in the autumn of 1604, are contained in his work "De Stellâ novâ in pede Serpentarii," but the best position we possess is doubtless that deduced by Prof. Schönfeld of Manheim, from the observations of David Fabricius. For the commencement of the present year we have

Right Ascension ... 17h. 23m. 8s.9
South Declination ... 21° 22' 16".

This position is probably liable to greater error than in the case of Tycho's star.

The nearest object at the present time is a star of the twelfth magnitude (or rather fainter), following the above place 6s.5 and 2½' south of it, which has not sensibly varied during the last few years, but it is a suspicious circumstance that Chacornac has entered upon his chart No. 52, a tenth magnitude about 8s. preceding Schönfeld's place, and nearly on the parallel of declination, which is not now visible, or was not last summer. The neighbourhood requires to be closely watched. The observer may set the circles of his equatoreal for Oeltzen 16872, R.A. 17h. 23m. 34s., N.P.D. 111° 23'. The observations for Chacornac's chart were made between the 31st of May and 12th of August, 1861.

THE ZODIACAL LIGHT.—On the evening of Sunday last, the 24th inst., a surprisingly bright display of this as yet problematical phenomenon was exhibited. There was a repetition on the following evening, but in a less favourable sky. The light had the usual yellowish or pale lemon tinge of the more notable exhibitions in these latitudes. The axis of the light appeared to pass λ Piscium, and the vaguely-defined apex was situate somewhere about 19 Arietis, but it was not possible to locate it with anything like precision. The light was broad and of a deeper, perhaps, ruddy tint near the horizon. The display to which we have adverted, excelled in brightness any that has been witnessed in the neighbourhood of London for many years. It appears very probable that opportunities for favourable application of the spectro-scope may be afforded in the dark evenings of the present and following months.

PLANETARY THEORIES*

THE theory of Neptune, which I have the honour of presenting to-day to the Academy, completes the *ensemble* of the fundamental theories of the planetary system, of which the first dates back to September 16, 1839, thirty-five years ago.

The numerous developments added year after year are all mentioned in the organ of the Academy. Some of them figure only by their titles, and as they are scattered through a great number of volumes, the Academy will not doubt permit me, at the moment when I have arrived at

* "New Theory of the Motion of the Planet Neptune; with Remarks on the *ensemble* of the Theories of the eight principal Planets, Mercury, Venus, the Earth, Mars, Jupiter, Saturn, Uranus, and Neptune." A paper read before the French Academy of Sciences by M. Leverrier, December 21, 1874.