

## Astronomical Notes.

## CONJUNCTION OF VENUS AND SATURN.

Look out for the conjunction of Venus and Saturn on July 17th. Also for the cholera, earthquakes, and other things that are to follow.

Perhaps these things won't follow. Let us hope they won't. Perhaps the sky won't be clear. Let us hope it will.

About the conjunction itself there is no perhaps. That's where astronomy has the advantage over meteorology and astrology.

A "conjunction" is defined by Newcomb as "the nearest apparent approach of two heavenly bodies which seem to pass each other in their course. They are commonly considered as in conjunction when they have the same longitude." Those who need a completer or preciser definition are usually able to make one for themselves.

A conjunction of Venus and Saturn is not a very rare phenomenon. It is only ten months since we had the last one, and we shall have the next one in fourteen months more. But they are not all equally interesting to the star-gazer. In order to see the one last year you had to stay up all night, or turn out before sunrise. The one next year won't be visible at all. This year we can look at it in the afternoon or evening. And this year it will be better worth looking at than usual. Last year the nearest approach of the two planets was over half a degree. Next year it will be about the same. But this year they will approach nearer than a tenth of a degree—this nearest approach however will happen at our mid-day.

The conjunction will take place near Regulus, the star at the end of the handle of the Sickle. So did the conjunction of September last. During the ten months between then and now, Venus has been all round the zodiac, while Saturn has advanced only three degrees beyond where he was then. This three degrees is not all the travelling Saturn has done in the meantime. For four months and a half he was engaged in that retrograding business that we have been watching Mars at lately, and which is such a puzzling thing to the young star-gazer. It takes him three months more to make up the ground which he lost while backing, and thus he has only four and a half months left out of the twelve in which to make headway on his journey among the stars. And as he is a very slow old chap at the best, he does very little in that time. We have had him near Regulus for several months past. Now he is moving off to the east, and he won't get back to Regulus again until about 1920.

Venus has had no backing to do since she passed Regulus in September last. If she had she would

not have got round so soon again. But her turn is coming in the fall. Then she will have to double and twist and turn and zigzag like the rest of them, and, instead of coming round to Regulus in less than ten months as she has done this time, it will take her more than thirteen months to do so.

No one needs to be told where to look for Venus in the evening. But it is not always necessary to wait until evening in order to see her. For more than three months back she has been bright enough to be seen at mid-day with the naked eye. During this time she has been growing brighter, and will so continue until the end of October. And so, on any clear day between now and the middle of November, there will be but little difficulty in picking her up in daylight. The little difficulty will be in finding out where to look for her. This is easiest done when she is on the meridian, that is when she is due south. Your almanac should tell you at what time of the afternoon this happens, and also, what the declination of Venus is. From the declination and your latitude you can find how high she will be when on the meridian. Then, if you know where your meridian is, go out at the given time, and look up at the proper altitude, or as near there as you can guess. Having once found her, note her position from your standpoint with respect to a chimney, or a steeple, or something. Then, next day about the same time you will find her about the same place, and so on from day to day, as long as she is visible. Seeing Venus with the naked eye in the day-time is not at all so rare a thing, and by no means so difficult a thing, as is generally supposed.

But you must not expect to be able to see Saturn in day-light with the naked eye. There may be eyes that can perform this feat, but they must be unusually sharp ones—that is, to see Saturn as he is at present. The afternoon of the day of conjunction (July 17), or of a day or two before or after, will be a good time to try him as a test, either of your eyes or your glass. He will then be near Venus (for how near, and in which direction see next paragraph) and having found her you will know just where to look for him. If you can't manage to see him in the afternoon you might find some amusement in trying how early in the evening you can pick him out.

About the time of their conjunction Venus is gaining on Saturn a little more than a degree a day. On the evening of July 12th, the distance between them is  $5^{\circ}$ , Saturn being that far to the left of Venus. Next evening the distance is about  $4^{\circ}$ , and the evening after it is less than  $3^{\circ}$ . At 8 p. m., (60° time) on the 15th, they will be  $1\frac{1}{2}^{\circ}$  apart. At the same hour on the 16th, there will only be  $42'$  between them.