

for the abundance of bloom and the richness of coloring that met my eyes. And how perfect was the picture that I first saw to tempt me further! Underneath a clump of evergreens was a little moss covered mound not a foot high, and peeping out all over it through the moss was *Epigaea*, from white to every shade of pink that it delights in. No wonder that poets sing its praises over and over again.

The other afternoon a pretty large parcel was handed to me through the post office window. I knew it at once and where it came from—the annual offering of Mayflowers from an old friend with whom I have enjoyed many a delightful botanical ramble. And he had put them up just as nature would have them put up—not in bouquets clipped of every leaf—but with their trailing, leafy stems, buried in moss, half concealing but adding a richness to their bloom.

The last week in April the leaves of the Adder's Tongue were just peeping above ground, and a strawberry blossom or two occupied a sunny spot on the sheltered side of a bank.

For the REVIEW.]

#### Astronomical Notes.

##### VENUS.

"Never above the horizon for much more than three hours after sunset," say the text-books about Venus, and some of them leave out the "much."

Some of the pupils in one of our schools challenged this statement about a fortnight ago. They were told to settle the matter for themselves by making careful observations of both sun and Venus on the first clear evening. They did so, and reported that Venus was in sight for a little more than four hours after the sun had disappeared. Faith in the infallibility of text-books has suffered a sad shock in the minds of these pupils—the younger ones especially, for the others had little faith of this sort to shake.

The same subject of Venus's long continuance above the horizon at night has been engaging the attention of others lately. Here comes a post-card asking the following questions about it:

1. What are the conditions under which Venus sets at the latest possible hour?
2. What is that hour in this latitude?
3. How near to the maximum time does Venus approach at its greatest eastern elongation at this time.

Venus sets latest at night when (a) she passes the meridian at the latest possible hour in the afternoon, and when (b) she takes the longest possible time to drop down from her meridian altitude to the western horizon.

Condition (a) occurs at or very near the time of her greatest eastern elongation from the sun, and the hour of meridian passage is then always close upon 3 p. m. mean time at any place whatever on the face of the earth. The very greatest value of greatest elongation cannot, in the present state of the orbits of Venus and the earth, occur at a time consistent

with condition (b), and the latest hour of meridian passage that is consistent with that condition cannot very well be much later than 3.10 p. m.

Condition (b) occurs, in the northern hemisphere, when Venus is at her greatest possible northern declination. The greatest value of this that is consistent with condition (a) is about  $27^\circ$ , and this, in latitude  $45^\circ$  N., allows her eight hours and six minutes between the time of passing the meridian and the time of setting.

Any one who can put two and two together can find from this an answer to question two. But let it be distinctly understood that the values given above pretend to be nothing but what an astronomer would call rough approximations. To give anything like an exact answer to the second question would involve a tangled mass of mathematical work, requiring more time than a Nova Scotian teacher has to spare at the end of April.

Just at present Venus stays up to about as late an hour as she is ever allowed, later than at any time since May, 1884, and even a few minutes later than then. Her greatest elongation occurred at one this morning (April 30). The elongation is not the greatest possible—indeed it lacks nearly a degree of its mean value—but the high northern declination that accompanies it throws the time of meridian passage nearly as late in the afternoon as it can fall. For the week beginning May 6th, it happens at nine minutes past three, mean time. On the 6th the declination is  $26^\circ 54'$  N., and in N. Lat.  $45^\circ$ . This gives Venus a few minutes more than eight hours to climb down from the meridian to the horizon. So, for about a week at this time, Venus does not set in the latitude of St. John until 11.15 M. T. In latitude  $44^\circ$  she goes down five minutes earlier, in  $46^\circ$  five minutes later. In Scotland she is still above the horizon at midnight. A hundred and fifty miles north of St. Petersburg she does not set at all.

She will not be out so late at night again until we give up using one and eight as often as we now do. Some people would say that this means until next century, but it does not.

At greatest elongation Venus looks like a half-moon in the telescope. How small a telescope will show the phase I don't know, perhaps some of the readers of the REVIEW can tell me. A magnifying power of forty on a rather poor two-inch object-glass shows it easily, and sometimes a power of twenty will do it. As the half-moon phase wanes down to a quarter and then thins off to a still slimmer and prettier crescent, the planet is coming nearer and showing up larger, and the opportunity of getting a sight of the phase is growing better and better. Whatever glasses you may have, try them on it, and if you succeed, be good enough to send me a note of the date, the size of your object-glass and your magnifying power. If you don't succeed one week you may console yourselves with the thought that you stand a better chance next week; and if you don't succeed at all, you will at least have learned what kind of a glass will *not* show Venus's phases. The best time to make these observations is *before* sunset.

Another kind of observation can only be made after sunset, and is best made as late at night as possible, but not so late that Venus has got too low down. The moon should