

piece will be limited by the circular eye-piece tube. They must be concentric, and if they are not you must move the eye-piece tube and get them so. By drawing the eye a little away from the eye-piece it is easy to see this. This being done you will have three things concentric, that is the eye-piece tube, the flat and the covered up large mirror. Now take off the cover of the mirror—the result will probably give you a shock after all your trouble. You will see a reflection of the flat and your own eye at the eye-piece, but in all probability horribly out of centre. It is the large mirror which needs attention. By putting your hand over the edge of the mouth of the tube, see what part corresponds to the place where the flat is furthest from the edge of the mirror and bring this part of the mirror inwards by means of one of the three adjusting bolts by which it is fastened to the tube. You will find this improves matters and by proceeding in this way you will soon get things central. Having gone through the process roughly you will probably have to do it again more carefully, and then on looking through the hole in the eye-piece you should see the following all exactly concentric in the field of the eye-piece; the field of the flat, the mirror, the reflection of the tube, the reflection of the flat and in the middle of all the reflection of your own eye.

If this is done, you can then wait for a star to come out. Choose one not too large and not too small. If it appears when focused as a small round object like a pearl there is no more to be done. But it will probably have a flare on one side. Put the star out of focus and you will then see the shadow of the flat on the bright disc and it will not be in the middle. Very gently move the adjusting screw of the mirror at the widest part inwards and try again till it disappears. Your telescope is then ready for work.

## Sketches of Jupiter.

BY

REV. J. MITCHELL, M.A., F.R.A.S.

THE accompanying three sketches of Jupiter illustrate the observations published in the JOURNAL for June 1913.

The block was received too late for inclusion in that JOURNAL.

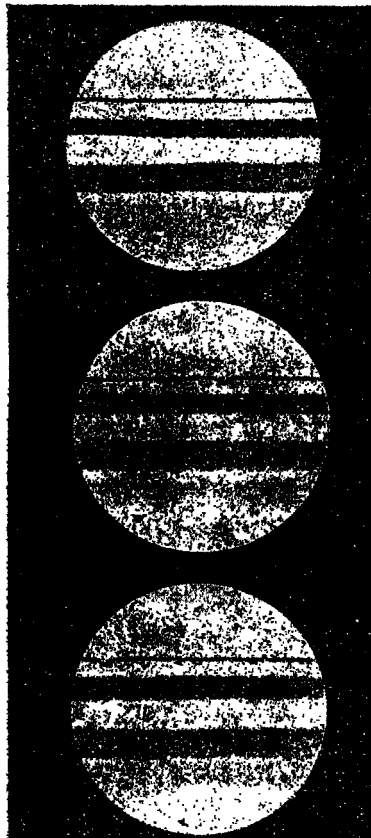


Fig. 1.

17-5-13.

10-45 P.M.

(S. T.)

Fig. 2.

17-5-13.

11-30 P.M.

Fig. 3.

18-5-13.

1-30 A.M.

5" Refractor. Power=200.

## Observations with a 5" Cooke Refractor.

BY

REV. J. MITCHELL, M.A., F.R.A.S.

I AM sending you two sketches of Jupiter as seen at an interval of two full days. The definition on the 21st was very sharp and I noticed then distinctly that the lower main belt