

Mechanic (referred to above) sees practically all I can see in a 3". I fear I am a little sceptical.

I enclose a rough sketch of the planet, but I find it very difficult to put on paper exactly what is seen.

J. MITCHELL.

Bankura,

29-12-12.

Observations with the 5" Cooke Refractor.

ϵ^1 ϵ^2 *Lyræ*.—Colours striking in contrast. On good nights both *debelissimæ* seen though they are very difficult. Occasionally I could hold them steady. They lie one on each side the line joining the two pairs. Occasionally other excessively faint stars are glimpsed.

I notice that very minute stars can often be seen as well before it is quite dark as when absolutely dark.

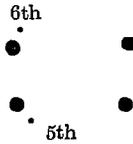
Vega.—A fairly easy test as a double star. The Companion 11th magnitude requires a good night to see it well. It is some distance from *Vega* (—43"—) to the right ●

Ring Nebula.—This is a striking object and stands magnification well. It lies between β and γ *Lyræ*.

Recently in *Knowledge* (Nov.) a beautiful photograph of this Nebula appeared and several small stars are seen inside the ring. I did not notice any in the telescope. These stars are probably beyond the range of any telescope.

Great Nebula in Orion.—A most striking object with low power. The black gap known as "the fish's mouth" has an intensely inky hue. Words cannot describe this nebula. In the famous Trapezium I see the 5th star fairly easily on good nights and on exceptionally good nights I can glimpse the

6th. It lies a little to the right of the brightest star. The whole group appears thus :



A 3" telescope may possibly glimpse the 5th, but I am sure the 6th will be quite beyond its reach.

Rigel.—An exquisite double and a good 3" should divide it. The Companion is 9" from the larger star and is exceedingly sharp. *Rigel* proper has a glorious purple or bluish tinge about it.

ζ *Orionis* is a triple star, and is the lowest of the three bright stars forming the belt. To divide the bright star requires a perfect night even for this telescope, though Captain Noble gives this as a test—true, a very difficult test—for a 3". The star appears thus :



(All possessors of a 3" telescope should get Noble's "Hours with a 3" Telescope." Unfortunately I fear it is now out of print though second-hand copies may be picked up. There is no book like it. At present I am working through his "Objects," and I hope to give my results later.

λ *Orionis*.—A beautiful pair, fairly easy. Colours : one pale yellow and the other purplish. A very faint *Comes 28"* from the pair just visible. Noble does not mention this, for it is evidently beyond even his remarkable eye and telescope.



σ *Orionis* is described as a triple, but I see four stars in the immediate neighbourhood of σ thus :



The one to the left of the larger star is excessively faint. Noble does not see this.

ϵ *Orionis* is a triple star and easy in the 5":



ρ' *Orionis* is a fairly easy double. Noble calls it difficult :



52 *Orionis*.—I find this a much more easy double than ζ *Orionis*. 300 divides it easily and 200 just separates the pair, yet Noble calls it a severe test for a 3". Perhaps ζ *Orionis* is closing :



Aldebaran is a strikingly coloured star, varying from yellow to red. It is a wide double and the Companion though faint is easy.

118 *Tauri* is a beautiful pair and quite easy : ••

14 *Aurigæ* lies just above a line joining β *Tauri* and ι *Aurigæ*. It is a triple star though Noble sees only two. I see the third faint Companion and this is a good test, I should say, for even a 5" telescope. The faint star is to the right of the bright one :



Below *Orion* comes the Constellation *Lepus*, and in this small group we find several beautiful objects.

γ In a 3" this star appears as a wide double, but I see a third very faint star in a line joining the other two and about the same distance away as divides the pair, thus :



ζ' is a wide double but the Companion is excessively faint :



I wonder if a 3" will reveal the faint *Comes*.

κ Noble calls this a "somewhat difficult pair," and it must be indeed to a 3". I could scarcely divide it with 200, 3", but it was fairly easy with 300. What an eagle eye and a splendid telescope he had! It would be interesting to know the maker of the instrument.

M 79 is a fine circular nebula with a faint star just below. It is a bright object in the 5".

Turning now to *Canis*. I wonder if 22 is decreasing in magnitude or is a variable. Proctor makes it brighter than 0^s, but I find it much fainter than that star. It is well worth watching.



Sun Spot 17.12.1912

3-0 pm

18/12/1912

3-30 pm

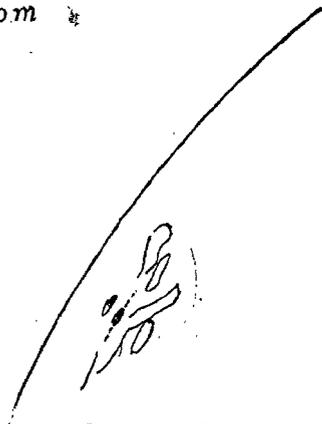


19/12/12

3-30 pm

21.12.12

3-0 pm



Group almost disappeared
Spot surrounded by faulæ

23 Dec 1912

Venus.—The planet has been under observation for the last month. She is a difficult object, but she is improving rapidly. At present she resembles the moon 8 or 9 days old as seen by the naked eye. Occasionally hazy markings are visible on the planet. She is a brilliant evening star and can be easily seen by the naked eye an hour before sunset. Probably a keen eye could see her at noon providing her exact position was known.

Sun.—17th December 1912.—Two groups of spots visible. Note in the drawing that the penumbra in the case of one spot is all on one side though the spot was in the middle of the sun's disc. How is this? Thus :



In the case of the other large spot the penumbra is equal all round the umbra, thus :



18th December 1912.—The small group is rapidly diminishing and the larger group has changed considerably.

19th December.—The smaller group has practically disappeared and its place has been taken by a group of faculæ. This I find is an invariable rule. When a spot disappears, faculæ take its place and on the other limit the faculæ appear first and then a spot. Note the development in the spots.

21st December.—The large spot has still further developed.

23rd December.—The spot has almost disappeared. Only a faint streak remains and it is surrounded by a large group of faculæ.

J. MITCHELL.

Bankura.

A Query.

ONE thing I should like to know now is, what is the best and most suitable method of putting up a light building to hold an equatorial telescope (3½ inch) : the method of putting on the roof and the material of the same : size and dimensions : how to adjust such a telescope accurately, and the best way to make use of it.

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Jan. 3rd, 1913.