

others during November, except that he makes a third planet in close conjunction with the sun in one month.

When the planets are not favorably situated, the amateur turns to the ever beautiful moon and the countless objects of interest in the sidereal heavens. During November we have several occultations of stars by the moon, and one especially noteworthy. This is an occultation of the Pleiades group on the morning of November 10th, between 4 and 5 o'clock. In this case the brightest of the cluster, Alcyone, is right in the moon's path. The moon is then past the full, so that the bright edge occults the stars; but there will be no difficulty in seeing the latter with the ordinary

two-inch telescope. These observations are always interesting, while to render them valuable it is only necessary to be accurate in noting the times of immersion and emersion. If this be done, any of the great observatories will gladly receive reports of the work. As winter comes on we welcome the ever beautiful Orion in the evening skies. The great nebula, photographed by all the skilled workers in this line, presents yet a very rich field for the artist with the pencil. An exquisite drawing of the nebula was recently shown at a meeting of the Astronomical Society, made with a hard black lead. It is by attempting such work that the amateur becomes thoroughly familiar with objects of this class.

SCHOOL WORK.

SCIENCE.

Editor—J. B. TURNER, B.A.

The following are the papers in Physics, assigned at the Midsummer Examinations of 1897:—

THE HIGH SCHOOL AND UNIVERSITY EXAMINATIONS.

FORM III.—PHYSICS.

Examiners: { J. FOWLER, M.A.
A. MCGILL, B.A.
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1. (a) Explain the terms: *magnetic field*, *line of force*, *inclination*, *declination*.

(b) Describe, with diagrams, the magnetic field produced by an electric current when the conductor is (i) a straight wire, (ii) a circular wire, (iii) a solenoid.

2. Explain the effect on the current from a battery of (a) the size of the plates, (b) the distance between the plates, (c) the number of cells in series, (d) the number of cells in multiple.

3. State the laws according to which electric currents are produced by variations in the magnetic field, and show how each law may be verified by experiment.

4. Find the *wave lengths* in air corresponding to the notes of a major chord, the vibration-number of the fundamental note being 512, and the velocity of sound being 1,100 feet per second.

5. Explain the method of studying sound-waves in air by means of manometric flames. Show clearly how the flame-picture is produced.

6. Explain the terms *node* and *loop* as used in Acoustics. How would you demonstrate the existence of