

Two or three degrees west of Sirius (Alpha) is Beta of the third dimension in the dog's upraised forefoot. Six or seven degrees downward are Delta and Epsilon of the second magnitude, about two degrees apart. These form a right angle with Eta of the third dimension below.

Above this constellation, in the milky way, is a considerable space with no conspicuous stars, which forms the constellation *Monoceros*, the unicorn. A little higher up on the other side of the milky way is the small constellation *Canis Minor*, with two stars about three degrees apart, the larger, Procyon, being of the first magnitude. A little further up still is another pair of stars, Castor and Pollux in *Gemini*—Castor being the one further north, and a double star under the telescope.

The parallax of Sirius is given by Herschel at .15" (15 hundredths of a second), which would make its distance 1,375,000 times greater than the distance of our sun from the earth. Flammarion calculates it to be 2,600 times greater than our sun. It is slowly changing its position, and shows perturbations which can be accounted for only on the hypothesis of its having one or more large planets revolving around it. Alvan Clark of Boston, in 1862, was the first to see one of these planetary bodies. The observation was made with one of his own manufactured telescopes, and has since been more accurately repeated in European observatories. This, with numerous other examples, compel us to look upon the stars as distant suns, which may have planetary systems of greater magnitude than that of our own sun.

THE PLANETS IN MARCH.

Mercury will be in greatest western elongation March 30th, when it may be visible as a morning star just before sunrise, in the east.

Venus is still brilliant as a morning star. At the end of the month it rises about three-quarters of an hour before sunrise. Conjunction with Mercury on 27th.

Mars is morning star. It is in Virgo, and at the end of the month will be near Spica, a star of the first magnitude, nearly on the ecliptic. It will then rise before 8 P. M., and in the morning will be in the western sky.

Jupiter is morning star, rising about 11 P. M. He is in Scorpio, and will be seen southwest of the zenith in the morning.

Saturn is evening star, and is in Cancer. It is south of the zenith in the evening and sets before 3 A. M. near the end of the month.

Neptune is in Taurus, more than thirty degrees west of Saturn.

In the middle of March the sun is nine minutes slow of a true clock. In the middle of April the sun and clock agree. They agree only on four days in the year, namely, April 14th, June 13th, August 31st, and December 24th.

FERNDAL NOTES.

II.—OUR IRON.

(a) MANUFACTURED.

Nearly Pure. Wrought iron, horse-shoe nails, etc., about 7.8 times heavier than water. Is soft and malleable. Will not harden when suddenly cooled by plunging into cold water.

With about one per cent. Carbon—Steel. Varies from soft to hard as percentage of carbon varies from .3 to 1.8. Will harden when suddenly cooled in cold water; this is called tempering.

From two to five per cent. Carbon—Cast Iron. Very brittle, but melts at a lower temperature than the above.

Principal injurious Impurities in Steel. Even one tenth per cent. of sulphur makes it brittle when red hot (hot-short); and one-tenth per cent. of phosphorus makes it brittle when cold (cold-short). Difficult and expensive to keep these impurities out when they are abundant in the ores. About 10,000 tons of iron per year have been made at the Londonderry Iron Works of Nova Scotia. Blast furnaces have also been in operation near Jacksontown, N. B., and Bloomfield and Pictou, Nova Scotia.

(b) ORES.

1. *Native Iron.* Small amount. Nearly all supposed to have fallen to the earth as meteors. Meteoric iron contains generally about 90 per cent. pure iron, with nickel and smaller quantities of other elements.

2. *Magnetic Iron Ores.* Generally composed of the mineral magnetite. (Fe_3O_4). Is attracted by the magnet. Its powder is black and therefore makes a black streak on a hard, rough, white surface like unglazed porcelain or quartz. May contain nearly 70 per cent. of pure iron. Found in veins and crystals in southern counties of New Brunswick, in the Triassic Trap of Nova Scotia on the Bay of Fundy, Annapolis, Digby, Pictou and Cape Breton.

3. *Red Hematite Ores.* Principally the mineral hematite (Fe_2O_3). Not attracted by magnet. Powder or streak bright red, brown-red, or blackish-red. May contain over 60 per cent. metallic iron. Several varieties—*specular*, when made up of small glittering scales, which may be brushed off with the finger; *micaceous*, when scales are very large; *fibrous*, when showing a fibrous structure; *red ochre*, when earthy;