

INTRA-MERCURIAL PLANETS.—Camille Flammarion, the well-known French astronomer, has been examining in *La Nature* the evidences in favor of intra-Mercurial planets, and particularly that furnished by Watson & Swift. On the latter M. Flammarion says: "While it is possible that the American observers saw an intra-Mercurial planet, or even two, we cannot, in view of the special difficulties of the situation, the confusion of the figures, and the negative observations of the other observers, concede it to be an absolute and incontestable fact that they saw even so much as one. The fact is not yet certain." After reviewing the whole testimony thus far available on this interesting point, the French writer sums up as follows: "The hypothesis of a single body comparable to Mercury gravitating in close proximity to the sun and on a plane probably inclined to the solar equator seems to us to be so open to objections as to be untenable. Still, the mathematical theory of universal attraction proves that there is a cause for the retardation observed in the motion of Mercury, and that this cause cannot be found by augmenting the mass of Venus—a quantity now determined with great exactitude—but must be sought for in some disturbing mass between Mercury and the sun. But this mass may not be a planet worthy of the name of planet; it may consist of a great number of asteroids like the minute fragments which gravitate between Mars and Jupiter—asteroids so small that oftentimes they escape the notice of observers of the sun and of eclipses, though some of them may be large enough to be seen under certain rare conditions. The latter theory is the one which we adopt."

A NEW REFRIGERATING LIQUID FROM BEETS. In Europe the principal supply of sugar is derived from beets; the annual production of beet sugar being now 700,000 tons. Besides this a large quantity of beet molasses is produced, a portion of which is distilled and a coarse sort of whisky made; the stuff remaining in the retort yields potassium salts, which are employed as fertilizers. Sugar, spirits, and potash have heretofore been the chief products manufactured from beets. But Mr. Vincent has now succeeded in realizing from the refuse that remains after the beet molasses distillation, a combustible, gaseous body, which is easily condensed into liquid form, and is called chloride of methyl. This liquid, obtained as stated from beets, is used in the preparation of some of the aniline colors; but it is now found to be especially valuable as a refrigerating agent. By its rapid evaporation a temperature of 55° C., or 67° Fahr. below zero, may be maintained, which is far below the freezing point of mercury. Prof. Huxley says that by this means mercury (which freezes at 39° Fahr. below zero) may be frozen by the pound. For the manufacture of ice this new beet root product promises to become of much importance.—*Sci. Am.*

TIN PLATE MANUFACTURE bids fair to soon become an important industry in the United States. A large establishment has recently been established in New York, and is now known as the Monitor Tin Plate Company. It occupies a building in Horatio street, where the tinning is done; but the iron is rolled at a mill in Pittsburg. The tinning house is 100 feet square, fitted with every modern appliance. The sheets are rolled in the ordinary way, then cut or sheared to size, and immersed in a pickling bath. They are then cold-rolled again, annealed and pickled, and put into baths of Russian tallow or palm oil. Then they pass through several baths of tin melted at a high temperature, and again through sawdust and bran to cleanse the surface. Finally, they are polished with lamb's wool buffers, and assorted, ready for boxing and shipping. The annual amount of tin plates imported into the United States in 1873 reached the large sum of a fraction short of \$15,000,000.

A SALT spring has been discovered in the Little Colorado; a pound of salt to the gallon of water.

CURIOUS PHENOMENA OF REFLECTION.—The *Engineer* publishes an interesting paper by Mr. Robert Mallet on some curious phenomena of reflection, which, he observes, may give a cue to the explanation of the magic mirrors of Japan. Many years ago Mr. Reeks, of the London School of Mines, noticed that the image reflected in bright sunlight from a silver coin, which by abrasion of wear had become practically flat, and from which all traces of image and superscription had vanished, was different, in the intensity of the light reflected, from what had once been the field or depressed part and from the head. A silver half crown was struck at the Royal mint showing the Queen's head on the obverse side, but without any design on the reverse face, where a flat surface of polished steel was placed in the coining press in place of the usual reverse die. When this flat and polished side was exposed obliquely to bright sunlight, the reflected image thrown upon a flat surface not only presented with much distinctness and accuracy the outline of the head, but also a portion of the "Victoria" surrounding it, the head and inscription being shown by a far more brilliant light than the rest. This suggests some interesting inquiries in regard to the flow of metals.

A NEW NEBULA AND A LOST PLANET.—Dr. Temple, of the Observatory of Arcetri, Florence, announces his discovery, on March 14th, of a new nebula, which he at first mistook for a faint comet. Its position for 1879 is R. A., 11h., 18min., 5sec., N. P. D., 86° 1'-4. Dr. Temple describes it as a double nebula with two small but distinct nuclei from 15" to 20" apart, and he adds that nebula Herschel II. 32, which is in the vicinity, is much smaller and fainter than the one just discovered. It occasionally happens that celestial bodies are lost as well as found. This has occurred several times in the case of the small planets between Mars and Jupiter, which now number nearly 200. There is one of these, however, which, according to Mr. Proctor, astronomers would regret to lose. This is the planet Hilda, which travels in a much wider orbit than any of the others, and can give more exact information respecting the mass of Jupiter than any other member of the solar system, coming much more fully at certain times under his influence. Unfortunately, Hilda has been searched for in vain at its first return to opposition, and astronomers begin to fear that the planet is, for the time being, lost.

IRON FENCING.—It is almost unnecessary to speak of the advantages which iron fencing possesses over that which did duty in the days of our fathers. These are so well known that to recapitulate them would be like telling a twice-told tale. The only question is to ascertain the best kind of iron fencing to adopt. Specially valuable is that which is made angular and continuous. Much experience has led to the conclusion that angular iron is a good deal stronger than a solid plate of the same weight, and, therefore, better adapted for continuous iron fencing than flat bars. Strength, of course, is a most important item in deciding upon fencing; but this is not the only advantage. Each bar, for instance, being solid, without joint or weld, it cannot be broken at the ground line. No holes have to be dug, for the standards are driven direct to the ground, and are there securely fixed; thus they are very easily erected. Moreover, the upright bar being broader, the fencing can be distinctly seen by horses and cattle, and thus the risk of stock running against it is considerably reduced.

ANOTHER NEW PLANET.—The Smithsonian Institution reports, under date of May 23d, the discovery of a new planet of the 12th magnitude. It was discovered, according to the announcement of the Observatory of Paris, by Palisa, at Pola.

A FAMINE is predicted in Russia by Russian journals. Cause—war, drunkenness, holidays, cattle plague, beetles, marmots and mortgages.

THE perforation of marble by a marine boring animal (the sponge known as *Oligona sulphurea*) is a novel fact observed and noted by Prof. Verrill. The facts in the case are briefly as follows: A vessel laden with Italian marble was wrecked in 1871, off Long Island, and the exposed portions of the slabs which occasionally come to light, are found to be thoroughly penetrated to the depth of an inch or two by the crooked, irregular borings of this sponge, and reduced to a complete honeycomb, readily crumbled between the fingers. Beyond these borings the stone is still perfectly sound and unaltered. Prof. Verrill notices this as the first instance recorded where this sponge has attacked limestone, since calcareous rocks do not occur along the portions of our coast inhabited by it; and he suggests that its demonstrated ability to destroy such rocks so rapidly might have an important practical bearing on the use of limestone structures for submarine works.

IS CONDENSED STEAM EXPLOSIVE?—The following appears in a Boston daily paper: To economize heat, it is common to pass the steam from the cylinder to the tender in a locomotive, to be used again and again. A similar process through the condenser is in vogue on board of steamers. For some time Mr. R. C. Blackall, Superintendent of the motive power of the Delaware and Hudson R. Co., has been experimenting with this condensed steam, and among other important discoveries, has found that it becomes highly explosive without giving any warning, under certain circumstances, which are liable to occur at any time. He thinks it probable that some of the missing ocean steamers have been blown up by condensed steam. Locomotives, he contends, are exposed to the same danger. Now if this is so, Mr. Blackall ought to make it known as extensively as possible for the safety of life and property.

NEWLY DISCOVERED FOSSIL BIRD TRACKS.—The lower Connecticut valley seems to be quite as full of giant fossil bird tracks, in stone, as the upper region about Turner falls, where Prof. Hitchcock made his discoveries. Messrs. Coe & Fowler have just uncovered, in their quarry on Powder hill, half a mile west of the Middlefield and Durham station, a layer of stone indented several inches with bird tracks. Several on a line are three and one-half feet from each other, and measure fourteen inches on the center claw, and outside claws being separated about a foot at the points. These tracks were made in the mud and ooze of a shore that was evidently washed by the tides, and each incoming tide deposited a layer of silt, or mud, which became sufficiently hardened in the sun to retain the form of the impression, and in that shape the mud was slowly turned to freestone.—*Hartford, Conn., Times.*

RAILWAY NOTES.—Since the building of the Mount Washington railway eight similar roads have been constructed in Austria and Switzerland. The engines for these roads were first built with vertical boilers; next with boilers that were level on an average grade; now they are built with horizontal boilers like ordinary locomotives. Various methods have been devised for enabling the locomotives to work by adhesion of their smooth wheels, as well as by means of their cog-wheel drivers, and by means of either at will. No one of these has been permanently successful, however, so that the proper construction of a double engine of this sort is still a matter of experimental inquiry.—*Scientific American.*

A CURIOUS ancient Mexican library has been found in the ruins of a vast palace at Xayi, near Chiapas, in southern Mexico. The writings are inscribed on terra-cotta tablets, half an inch thick, and are supposed to be sacred records, but the language in which they are written is not accurately known.—*L. A. Commercial.*