ASTRONOMICAL NOTES.

BY BERLIN H. WRIGHT.

PENN YAN, N. Y., Saturday, August 3, 1878.

The following calculations are adapted to the latitude of New York city, and are expressed in true or clock time, being for the date given in the caption when not otherwise stated.

PLANETS.

	H.M.		H.M.
Mercury sets	8 15 eve.	Saturn rises	9 27 eve.
Venus rises	2 32 mo.	Saturn in meridian	3 26 mo.
Jupiter in meridian	11 23 eve.	Neptune rises	10 54 eve.

FIRST MAGNITUDE STARS.

	H.M.		H.M.
Alpheratz rises	7 21 eve.	Regulus sets	7 56 eve.
Algol (var.) rises	9 01 eve.	Spica in meridian	4 30 eve.
7 stars (Pleiades) rise	11 21 eve.	Arcturus in meridian	5 21 eve.
Aldebaran rises	0 44 mo.	Antares in meridian	7 32 eve.
Capella rises	10 08 eve.	Vega in meridian	9 43 eve.
Rigel rises	2 51 mo.	Altair in meridian	10 55 eve.
Betelgeuse rises	2 35 mo.	Deneb in meridian	11 47 eve.
Procyon rises	4 26 mo.	Fomalhaut rises	10 01 eve.

REMARKS.

Mercury, though near greatest eastern elongation, cannot be seen, as he sets only 1h. 2m. after the sun, and 47m. before the ending of twilight. Venus, with Procyon and Betelgeuse, nearly forms an equilateral triangle, Venus being the most northern, and a line from Capella to Procyon will pass through her, as will also a line drawn from Rigel to Betelgeuse and produced about 21°. Mars will soon be in conjunction with the sun, and is now too near the sun to be seen. Jupiter is upon the boundary line between the constellations Sagittarius and Capricornus, and is retrograding. Algol will be at minimum August 7, 4h. 29m. A.M. There will be a partial eclipse of the moon August 12, of which we will give the particulars and illustrations next week.

Astronomical Notes.

OBSERVATORY OF VASSAR COLLEGE.

The computations in the following notes are by students of Vassar College. Although merely approximate, they are sufficiently accurate to enable the observer to find the planets.

M. M.

Positions of Planets for August, 1878.

Mercury.

On August 1 Mercury rises at 7h. 5m. A.M., and sets at 8h. 19m. P.M. On August 31 Mercury rises at 7h. 3m. A.M., and sets at 6h. 49m. P.M.

Mercury is in its best position about the middle of the month, and should be looked for after sunset almost exactly in the west.

Venus.

Venus is far off and small, but very brilliant and beautiful in the early morning hours.

On August 1 Venus rises at 2h. 26m. A.M., and sets at 5h. 18m. P.M. On August 31 Venus rises at 3h. 22m. A.M., and sets at 5h. 31m. P.M.

Mars.

Mars passes the meridian between 1h. 10m. P.M. and noon all through the month, and cannot be well seen.

On August 1 Mars rises at 6h. 17m. A.M., and sets at 8h. 2m. P.M. On the 31st, Mars rises at 5h. 58m. A.M., and sets at 6h. 50m. P.M.

Jupiter.

On August 1 Jupiter rises at 6h. 50m. P.M., and sets at 4h. 14m. A.M. of the next day. On August 31 Jupiter rises at 4h. 42m. P.M., and sets at 2 A.M. of the next day.

A small telescope will show the four moons of Jupiter, but they are sometimes invisible from their position relatively to the planet. If we take the hour between 9 and 10 P.M. as that of our observation, we shall not see the 1st satellite, or that nearest to Jupiter, on August 1, 8, and 31, that satellite being in transit across the face of Jupiter.

The same satellite is invisible at the same hour on August 16 and 23, because it is behind the planet or is occulted by Jupiter.

Taking the same hour of the evening, Jupiter is seen without the 2d or smallest satellite on August 3 and 10, because the satellite is in transit, and on the 26th because the satellite is behind the planet.

On August 23 the 3d or largest satellite is in transit when Jupiter is first seen, and it does not pass off the planet until near 11 P.M., and as the 1st satellite is hidden behind Jupiter, the planet is seen between 9 and 10 P.M. with only two moons.

On August 15 the planet is seen without its 4th or most distant satellite, as that moon is behind Jupiter early in the evening. The satellite comes out from behind Jupiter after 11 in the evening, and is seen for a few minutes, when it disappears by going into the shadow of Jupiter, and is eclipsed.

Saturn.

In August Saturn becomes conspicuous to evening observers. This planet rises on the 1st at 9h. 34m. P.M., and sets at 9h. 26m. A.M. of the next day. On August 31 Saturn rises at 7h. 33m. P.M., and sets at 7h. 20m. A.M. of the next day.

Uranus.

Uranus keeps very nearly the diurnal course of the sun, and of course is very unfavorably situated for observation.

On August 1 Uranus rises at 6h. 37m. A.M., and sets at 8h. 9m. P.M. On August 31 Uranus rises at 4h. 48m. A.M., and sets at 6h. 15m. P.M.

Neptune.

Neptune can be seen only by means of a very good glass. It rises on the 1st at 11 P.M., and on the 31st at about 9h. P.M.

Natural History Notes.

Variations in Birds' Nests.—The *Science Gossip* says: This year we have noticed three curious instances of a departure from the usual habits of birds in building their nests, which seem worth recording. The song thrush lines her nest with cow dung and clay; and it is usually considered by ornithologists that, as she builds very early in the spring and frequently in exposed situations, the mud lining protects the eggs and the young brood from the fierce March winds. Early in March we found a thrush's nest in our garden, containing four eggs; but the nest had not a vestige of the usual mud lining. Unfortunately we found the nest destroyed one morning before the bird had time to hatch, so it was impossible to note whether the inclement weather had any effect on the eggs. We have at this moment a blackbird sitting upon six eggs, four of which are her own and the other two those of the song thrush. When first the nest was found it contained two of each kind, a thrush having laid in the blackbird's nest. Although sparrows will sometimes appropriate swallows' nests to build in, and though several birds will build a new nest on an old foundation, it is, I think, very unusual for one species—the cuckoo, of course, excepted—to make use of a nest built by another species. The third curiosity of nest building is the nest of a chaffinch, placed in the fork of an elder bush near our house. Usually the chaffinch assimilates the color of her nest to the situation in which she places it; if she builds in a hedge she generally covers it with green moss; but if she builds, as she often does, on the bare branch of an old apple tree, she uses the gray lichens, which are usually near at hand, and covers her nest with them so skillfully that though quite open and exposed it becomes hidden by its resemblance to a knob or excrescence of the tree itself. In this case, however, though the bird has recognized the necessity of covering her nest with something, she has rendered it most conspicuous by sticking little bits of white decayed wood all over it. The wood is so white that the nest looks almost like a snowball in the branches. Possibly this bird may be color blind, or she may be just a little bit "wanting" in her instinctive faculties, as human beings are occasionally in their reasoning powers. Why not?

Distribution of Spiders by Winds.—The Rev. H. C. McCook states that a large laterigrade spider (*Sarotes venatorius*), of the ballooning kind, occurs, according to specimens in his collection, from Santa Cruz, Virgin Isles, to Cuba, Florida and Yucatan, Central America, Mexico and California, Sandwich Islands, Loochoo Islands and Japan, and thence across Asia and Africa to Liberia, and suggests, in view of these facts and other localities on record, that the trade winds have promoted this distribution. Among the other localities are the Society Islands, Feejees, Friendly Islands, New Caledonia, Eastern Australia, Mauritius, Madagascar, and several parts of South America. He refers to a fact stated by Darwin, that at a distance of sixty miles from land, while the Beagle was sailing before a steady light breeze, the rigging was covered with vast numbers of small spiders with their webs; each, when first coming in contact with the rigging, seated upon a single filament of spider web, and so slenderly in some cases that a single breath of air was found to bear them out of sight. Mr. McCook states that the specimens examined by him show no variations which may not be accounted for by differences in age, or which may not come within those ordinary natural differences which all animals more or less exhibit.

Variations in Bulbs of Lilies.—Mr. H. J. Elwes, F.L.S., in his magnificent monograph on the lily genus, notices as a curious fact "that all the American lilies, though varying remarkably among themselves, differ entirely in their bulb structure from those of Europe and Asia, and the same peculiarity is noticeable among the American species of *Fritillaria* (crown imperials), which, as far as we know them, have bulbs of small white and granular scales, loosely attached to a solid central axis from which the stem springs. Of all the Old World lilies and fritillaries, only two (*Lilium arenaceum* and *Fritillaria kamschatkensis*) resemble their American congeners in the formation of their bulbs, and both of these are restricted in their geographical limits to the shores of north-eastern Asia, which have many affinities, both botanical and zoölogical, with the Pacific coast of North America."

Depth to which Roots Penetrate.—Mr. Foote, in Massachusetts, has traced the tap root of a common red clover plant downward to the perpendicular depth of nearly five feet. The Hon. J. Stanton Gould followed out the roots of Indian corn to the depth of seven feet, and states that onions sometimes extend their roots downward to the depth of three feet; lucerne, fifteen feet. Hon. Geo. Geddes sent to the Museum of the New York State Society a clover plant that had a root four feet two inches in length. Louis Walkhoff traced the roots of a beet plant downward four feet, where they entered a drain pipe. Professor Schubart found the roots of rye, beans, and garden peas to extend about four feet downward; of winter wheat, seven feet in a light subsoil, and forty-seven days after planting. The roots of clover one year old were three and a half feet long; those of two year old plants, four inches longer.

The Coloring Matter of Birds' Eggs.—The brilliant and remarkably permanent color of the eggs of many birds has led Liebermann to investigate its cause. He finds that however widely different these colors are from each other, they are due essentially to but two coloring matters, one a blue or green substance, probably a biliary coloring matter, the other characterized by a remarkable absorption spectrum. These coloring matters are contained in the superficial layer of the shell, often in several thicknesses. When the shell is treated with hydrochloric acid the coloring separates in flocks, and by treatment with alcohol a strong solution may be obtained. With the eggs of gulls and plovers an unsuccessful attempt was made to obtain the coloring matter pure.

The Seed Crop of Some Weeds.—Professor Prentiss, of Cornell University, has estimated the annual crop of seed produced by single plants of some of our common weeds. He finds that the dandelion produces 2,000; the ox-eye daisy, 13,000; dock, 13,000; burdock, 24,000; mayweed, 40,000; red poppy, 50,000.

Some time ago, according to the *Journal of Pharmacy*, Mr. Theo. G. Davis chose a plant of thorn apple (*Datura*) with the intention of collecting its leaves and seeds. The plant, however, was destroyed by a storm in September, at which time it had produced 125 flowers and capsules; and as each capsule contained between 700 and 735 seeds, the total yield of the plant was over 90,000 seeds.

Upon reading such figures the only wonder is that weeds can be kept down at all. The fact is, however, that great numbers of the seed fail to plant themselves, and many remain in the ground several years, only to spring up as weeds when the ground is stirred. In evidence of the latter fact Professor Prentiss refers to a tobacco field where the seed had been allowed one year to ripen and fall. For ten years afterward tobacco plants appeared in that field from this seedling.

An Electric Manometer.

La Chronique Industrielle describes a new manometer of a sensitiveness which is said to be almost absolute. This instrument is the result of a combination of two apparatus already known—Bell's telephone and the batoreometer of Professor Giordano of Naples.

The latter instrument is designed for measuring thicknesses, or the minutest variations of thickness. Thus, after having measured the thickness of a pane of glass at an ordinary temperature, the batoreometer will show the increase of thickness which results from expansion due to the warmth of the hand which holds the pane.

A vertical tripod is traversed by a very fine micrometer screw, and surmounted by a dial, the border of which is marked off into divisions according to a certain scale.

The object is laid upon the table, and the micrometer screw caused to approach it. As soon as contact takes place an electric current, shown by a galvanometer, passes between the point of the screw and the table. If the object to be measured is a poor conductor, it is coated with gold-leaf.

Let us now suppose that a current of air, whose intensity we wish to measure, is exercising a pressure on the flexible membrane of a Bell's telephone; the membrane will bend under the influence of an extremely small quantity, but this quantity can never be so minute as to be inappreciable by the electric current of a batoreometer.

The new instrument is extremely sensitive to movements of the air, and detects and records even the waves produced by ordinary noises. It is both a manometer and anemometer of great accuracy.

Color Blindness.

Prosecuting their researches on color blindness, Professors Cohn and Magnus, of Breslau, have recently examined more than 5,000 children. Of 2,761 boys there were 76 who suffered from this blindness, or 2·7 per cent. Of 2,318 young girls, there was only 1 incapable of distinguishing colors. Further, a curious fact was established. Among 1,947 Christian boys, 42 were unable to make this distinction, or 2·1 per cent; among 814 Jewish boys, 34, or 4·1 per cent; and among 836 Jewish girls, not one. These results seem to prove that in the case of girls color blindness hardly exists at all, and that among Jewish boys it is about twice as common as among Christian boys (though local influences might possibly affect the results). In this connection we note that M. Favre has lately been studying Daltonism in France, and he finds there are in that country more than 3,000,000 persons thus affected. The number of females affected is to that of males as 1 : 10. He says that nine cases of Daltonism out of ten may be easily cured in young subjects, the best mode of treatment being methodical exercise upon colored objects. Mothers should be careful to develop the chromatic sense in their children. Examinations and exercises in colors should be conducted in all schools, etc.

A New Stimulant.

The *British Medical Journal* gives a long account of a new stimulant, which has lately been described by the papers of Australia. It is called pitcherine by the natives, and is used by them as we use tobacco, both for smoking and chewing. Its effect is that of a pleasant exhilaration; when long continued, intense and continuous excitement follows. It is used, when on long foot journeys, to invigorate and keep up the strength or excite them to courage in battle; large doses are said to infuriate all the passions. Some of the natives make a plaster of the plant and place it back of the ears, believing they are influenced by it.

A WRITER in the London *Times*, remarking upon the slipping of horses on the London pavements, recommends that horses go unshod, and says that for twenty-five years he has employed many (often 200 at a time) on all kinds of roads and in all kinds of work, without having one of them shod and without injury to their feet, being careful only not to put a newly unshod horse at once upon a bad road. Has there been any such experience here? Why do we shoe our horses?