ASTRONOMICAL NOTES.

BY BERLIN H. WRIGHT.

PENN YAN, N. Y., Saturday, December 7, 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	5 45 eve.	Saturn in meridian	6 43 eve.
Mars rises	5 01 mo.	Uranus rises	10 39 eve.
Jupiter sets	8 15 eve.	Neptune in meridian	9 16 eve.

FIRST MAGNITUDE STARS, ETC.

	H.M.		H.M.
Alpheratz in meridian	6 56 eve.	Procyon rises	8 07 eve.
Mira (var.) in meridian	9 06 eve.	Regulus rises	10 11 eve.
Algol (var.) in meridian	9 54 eve.	Spica rises	2 52 mo.
7 stars (Pleiades) in merid	10 33 eve.	Arcturus rises	1 54 mo.
Aldebaran in meridian	11 22 eve.	Antares	invisible.
Capella in meridian	0 04 mo.	Vega sets	10 20 eve.
Rigel in meridian	2 03 mo.	Altair sets	9 08 eve.
Betelgeuse in meridian	0 45 mo.	Deneb sets	1 29 mo.
Sirius rises	8 32 eve.	Fomalhaut sets	9 43 eve.

MOON'S PLACE AT 7 P.M.

Saturday, *Aries*	25°	Wednesday, *Gemi i.*	16°
Sunday, *Taurus*	7°	Thursday, *Gemini*	29°
Monday, *Taurus*	20°	Friday, *Cancer*	12°
Tuesday, *Gemi i.*	3°		

The moon will pass through the Pleiades or seven stars and occult several of the northern members of the cluster December 8, about 1 o'clock in the morning.

December 6–13 seems to be a well established shooting star epoch; their radiant point being *θ Geminorum*. The constellation *Gemini* is on the meridian December 10, about midnight.

The Saturnian satellite, *Titan*, may, with a small telescope, be seen east of Saturn until December 2 and after December 18, being furthest east December 26, and west of him from December 2 to 18, being furthest west December 10.

Astronomical Notes.

OBSERVATORY OF VASSAR COLLEGE.

The computations in the following notes are by students of Vassar College. Although only approximate, they will enable the ordinary observer to find the planets.

M. M.

Positions of Planets for December, 1878.

Mercury.

The planets which are visible to the naked eye are all in southern declination during the month of December. Mercury is far in the south, rises at 8h. 56m. A.M., on December 1, and sets at 5h. 31m. P.M. It may possibly be seen after sunset. On December 31 Mercury rises at 6h. 28m. A.M., and sets at 3h. 54m. P.M.

Venus.

Venus is nearly as far in the south as Mercury and less favorably situated. On December 1 Venus rises at 7h. 7m. A.M., and sets at 4h. 23m. P.M. On December 31 Venus rises at 8h. 1m. A.M., and sets at 5h. P.M.

It will be seen that Venus keeps very nearly the diurnal path of the sun, and will not be seen during the month.

Mars.

Mars is also very unfavorably situated for evening observers. It rises on December 1 at 5h. 5m. A.M., and sets at 3h. 9m. P.M. On December 31 Mars rises at 4h. 53m. A.M., and sets at 2h. 13m. P.M.

Mars may be seen in the very early morning. It is very small, but can be identified by its red light.

Jupiter.

Jupiter is still conspicuous early in the evening in the southwest. This planet rises on December 1 at 11 A.M., and sets at 8h. 30m. P.M. On December 31 Jupiter rises at 9h. 20m. A.M., and sets at 7h. 4m. P.M.

If we take the hour from 7 to 8 in the evening for observing Jupiter, it will be seen on the 1st with only three of its moons, the one nearest to the planet being behind it, and on the 10th, at the same hour, this satellite is not seen, because it is passing across the face of Jupiter.

Saturn.

On December 1 Saturn rises at 1h. 20m. P.M., and sets 53m. after midnight. On December 31 Saturn rises at 11h. 24m. A.M., and sets at 11h. P.M.

Saturn comes to the meridian between 7 and 5 P.M. all through the month, at an elevation (in this latitude) of about 45°. It is easily recognized, as no bright stars are around it. The belt around it, and the largest moon, Titan, can be seen with a small telescope. The movement of Titan around Saturn and its return to the same place, after intervals of 16 days, can be noticed. It can also be seen to pass on to the face of the planet, and to reappear after it has been hidden behind it. This satellite was seen to pass off the disk on October 24 and again on November 9.

Uranus.

Uranus is in north declination, and therefore crosses the meridian at a good altitude, but in the morning. On December 1 Uranus rises at 11h. 2m. P.M., and sets at 20m. after midnight. On December 31 Uranus rises at 9h. 3m. P.M., and sets at 10h. 21m. of the next morning.

Uranus has passed the star Regulus toward the east, and is now very near one of the small stars of Leo.

Neptune.

Neptune rises on December 1 at 2h. 55m. P.M., and sets at 4h. 25m. A.M. On December 31 Neptune rises at 56m. after noon, and sets at 2h. 24m. of the next morning. Neptune is among the small stars of Aries.

Sun Spots.

The sun has been examined daily from September 22 to November 15. A small spot was perceived on November 4, and its changes were watched for the few following days; it will perhaps be seen again early in December.

Electrical and Telegraphic Inventions and Inventors.

That the United States is prolific of inventors and inventions the records of our Patent Office conclusively prove. In no other country in the world is there so great a number of inventions yearly produced.

In electrical and telegraphic invention there has been recently a very noticeable development. It is a fact that most of the really valuable and important improvements in telegraphic systems and apparatus have, of late years, either originated or been made practical in this country. Electricity has been adapted to public use in a manner and to an extent unknown elsewhere. The improvements in the systems and apparatus employed in commercial telegraphy have largely increased the amount of business which can be done over a single wire, and relatively decreased the cost of doing such business. This enables telegraph companies to serve their patrons at constantly decreasing rates, and thus the telegraph is popularized, and is used by and made beneficial to the public in an increased ratio. The duplex and quadruplex systems have been the most notable inventions in this line, and their practicability and usefulness have been very fully demonstrated. The automatic system, which by many was for some time regarded as a solution of the question of cheap telegraphy for the public, has not as yet justified the anticipations of those who have attempted its introduction. While it may yet be found a useful adjunct to the telegraphic system, as a system of itself it must be conceded that thus far it has been a failure. While as yet the quadruplex is sufficient for the demands of the business, and probably will be for some years to come, when, in the progress of events, a further utilization of the capacity of the conductors for telegraphic transmission shall become a necessity, it is likely that the demand will be met and satisfied. Experiments in this direction are constantly being made, and there would seem to be no reason to doubt of their ultimate success. The telephone as a practical telegraphic instrument is essentially an American invention, and is rapidly coming into general use on short lines and for private telegraphy, for which it is specially adapted.

The fire-alarm telegraph system; the system of telegraphic reports of stock and commercial quotations, on printing telegraph instruments, forwarded to subscribers at their places of business; the domestic or district telegraph system, are all American inventions, and have been exclusively developed and perfected in this country. Our bank vaults, moneyed institutions, and private residences are protected against burglarious assaults, and our buildings against the spread of conflagrations by electrical-appliances of American invention and covered by United States patents. Our places of business, public buildings, and residences are telegraphically connected by apparatus invented, patented, and introduced by Americans, and new adaptations of electrical appliances are constantly enlarging the field of usefulness and convenience of this important agency.

The active and enterprising character of the American people encourages such inventors and stimulates invention by their prompt and ready practical adoption whenever their practicability and usefulness are demonstrated. There is not to be overcome here the prejudice and inertia which exist in older communities, and among peoples who are slow to change the habits and methods of centuries.

The United States has been well characterized as the paradise of inventors. The inventions developed and introduced here slowly but surely force their way in other countries. The country is honored and its material interests advanced by its inventors and inventions, and this fact is now recognized and admitted abroad as well as at home. So long as the telegraphs continue to be owned, operated, and managed as private enterprises this will, in regard to them, continue to be the case. Should they—of which there is at present little probability—ever become an official monopoly, the decrease in the number of telegraphic inventors and of notable inventions will be no less marked with us than it has been in England and in European countries generally, where the telegraphs are owned, managed, and operated as a part of the government machinery and by government officials.—*Journal of the Telegraph.*

Heating Street Cars.

The Third Avenue Railroad Company are experimenting with a steam car heating apparatus which is the invention of Lieut. J. N. Graydon of the U. S. Navy. The invention consists of two cylindrical reservoirs, about 3 feet in length and 16 inches in diameter, placed under the seats on each side of the car. An iron pipe runs from these reservoirs around the car. The reservoirs are so surrounded with non-conducting substances that but little heat escapes from their surface, and a seat directly over a reservoir is no warmer than one in another part of the car. The reservoirs are filled with water to a depth of about two inches, and they are then charged with steam until a pressure of forty or fifty pounds is attained. The reservoirs are tested to stand a pressure of 700 pounds. The steam pressure is maintained during the time required for a round trip from the City Hall to Harlem and return. By an ingenious arrangement of valves constant pressure of steam is kept in the pipes. The reservoirs are to be supplied with steam at the terminus of the line in Harlem and at the Sixty-fifth street depot. Half a minute is required to fill the reservoirs. The cost of warming a car is said to be 2 cents a day.

AMERICAN INSTITUTE FAIR.

Before this paper reaches our readers the American Institute Fair for 1878 will have closed. Taken altogether, it has been successful, although there seems to be a paucity of novelties.

Foremost among objects of interest, especially in the evening, is the electric light. Recently in the interim between the afternoon and evening performance of the machinery the large fountain in the main hall has been illuminated by light projected from an electric lamp in the gallery. Lit in this manner it is a very beautiful object. The Wallace electric lights render the capacious main hall as light as day, and in the machine department the gaslights appear of an orange hue by comparison with the Brush electric light.

A small Brush dynamo-electric machine, recently placed in Machinery Hall, exhibits the immense heating power of a quantity electrical current. A No. 9 wire, 8 or 10 inches in length, is quickly brought to redness, and a smaller wire deflagrates almost instantly.

A rotary pump exhibited by Wilbraham Brothers, of Philadelphia, although compact and not very large, is capable of raising 11 tons of water per minute. These pumps are constructed on the principle of the Baker blower, which is also exhibited by the same firm, and which was illustrated some time since in the SCIENTIFIC AMERICAN. From a careful examination of the moving parts of the pump and blower we can discover nothing subject to greater wear than any ordinary shaft under average conditions.

Among the woodworking machines there are few that differ materially from well known forms. The Concord Buzz Planer, made by John A. White, of Concord, N. H., possesses several points of novelty. In appearance it is the plainest and simplest of machines; it is nevertheless capable of doing a great variety of work. One half of the bed is movable and may be raised or lowered at pleasure. In performing this movement, it is made by an ingenious and simple contrivance to nearly follow the periphery of the planer head. The machine has a simple adjustment, by which it may be arranged to rabbet, bevel, joint, and plane diagonally. The table is supported by a single hollow iron column, so that an irregularity in the floor upon which the machine rests will not twist or spring it.

Another planer from the same manufacturer, having a constantly lubricated bed, works equally well on wet or dry lumber. A novel sandpapering machine, also made by Mr. White, sandpapers bevels, scrolls, etc. The small cylinder which carries the sandpaper for scroll work has, in addition to a rapid rotary motion, a reciprocating longitudinal motion.

The H. B. Smith Machine Company, of Smithville, N. J., exhibit several woodworking machines, among which we find a double tenoning machine having an automatic feed. The work is carried forward between guides by an endless chain carrier which discharges the finished pieces at the back of the machine. While this machine is applicable to all kinds of work, it seems especially adapted to hard wood, as the work is carried steadily up to the knives with a positive feed.

About Advertising.

My success is owing to liberality in advertising.—*Bonner.*

The road to fortune is through printer's ink.—*P. T. Barnum.*

Success depends upon a liberal patronage of printing offices.—*J. J. Astor.*

Frequent and constant advertising brought me all I own.—*A. T. Stewart.*

My son, deal with men who advertise. You will never lose by it.—*Ben Franklin.*

How can the world know a man has a good thing unless he advertises the possession of it?—*Vanderbilt.*

A good advertisement in a newspaper pays no fare on railroads; costs nothing for hotel bills; gives away no boxes of cigars to customers, or merino dresses to customers' wives; drinks no whisky under the head of traveling expenses, but goes at once and all the time about its business free of expense.

Advertising is the oil which tradesmen put in their lamps. They that are unwise put no oil in.

Where is "parts unknown?" asks a correspondent of the *Danbury News.* To which Bailey answers: "Where they don't advertise." And though Bailey does say it, this is no joke.

An advertisement is a window through which all the world may look into your shop and see just what you wish it to see—no more, no less.

People are quite apt to go where their attention is called, and, if they find things as represented, will purchase there in preference to spending their time in seeking elsewhere.—*Phil. Chemist and Druggist.*

An Astonishing Offer.

The *Independent*, of New York, probably the ablest, largest, and best religious newspaper in the world, offers in another column to give away, absolutely, a Worcester's Unabridged Quarto Pictorial Dictionary, which retails everywhere for $10, and is, of course, a household necessity. The *Independent* is now publishing the Rev. Joseph Cook's famous Boston Monday Lectures, which are creating so much discussion everywhere. It will also soon begin the publication of a series of articles on "Socialism and Communism," one of the most important questions of the day, by Ex-Pres. Theo. D. Woolsey, D.D., LL.D. See advertisement of the *Independent* in this paper.