

**Astronomical Notes.**

**OBSERVATORY OF VASSAR COLLEGE.**

The computations in the following notes are by students of Vassar College. Although merely approximate, they will enable the observer to recognize the planets. M. M.

**POSITIONS OF PLANETS FOR MAY, 1880.**

**Mercury.**

On May 1 Mercury rises at 4h. 10m. A.M. On the 31st Mercury rises at 4h. 23m. A.M.

Mercury, Venus, and Saturn rise nearly at the same time on May 1, in the hour preceding sunrise, Venus being farthest north.

Mercury and Neptune will be in close proximity on the 18th, but they rise so nearly with the sun that Mercury is not likely to be seen.

**Venus.**

On May 1 Venus rises at 4h. 18m. A.M. On May 31 Venus rises at 3h. 57m. A.M.

Although Venus rises so nearly with the sun during May its brightness will make it conspicuous.

Saturn and Venus rise nearly at the same time on May 1. Saturn is south of Venus.

**Mars.**

Mars is the only planet to be seen in the evening sky of May.

On May 1 Mars rises at 8h. 35m. A.M., and sets at 11h. 47m. P.M.

On May 31 Mars rises at 8h. 6m. A.M., and sets at 10h. 52m. P.M.

On May 1 Mars is west of the star Delta Geminorum, at a declination 2° farther north; it passes this star on May 9 at a distance of 1½° north. On the 15th Mars has the right ascension of Castor, but is nearly 9° south of that star. The crescent moon may be seen to move toward Mars on the evening of the 13th.

**Jupiter.**

Jupiter will be brilliant in the early mornings of May.

On the 1st Jupiter rises at 3h. 41m. A.M.; on the 31st at 1h. 57m. A.M.

Jupiter may be seen south of the waning moon on the morning of May 5.

**Saturn.**

Saturn, Venus, and Mercury rise nearly at the same time on May 1, Saturn being about 1° south of Venus.

On May 31 Saturn rises at 2h. 31m. A.M., following Jupiter after about half an hour, and making its diurnal path 3½° north of Jupiter. The waning moon and Saturn have nearly the same right ascension on the morning of the 7th. Saturn is nearly 8° south of the moon.

**Uranus.**

Uranus rises on May 1 at 1h. 9m. P.M., and sets at 2h. 25m. A.M. of the next day.

On the 31st Uranus rises at 11h. 12m. A.M., and sets 27m. after midnight.

Uranus is still very near the star Rho Leonis. On May 31 it is half a degree east and half a degree north of this star, when on the meridian.

**Sun Spots.**

A large group of spots, inclosing three of more than ordinary size and some ten or twelve small ones surrounded by faculae, was seen on the sun's disk on April 12. These spots passed out of sight by the motion of the sun on its axis between the 14th and 15th of April.

If this group reappears, as is probable, it will be well advanced upon the sun's disk early in May. A telescope of low power (with a colored glass) will enable an ordinary observer to watch the changes of these spots, as caused by the sun's turning, and also those variations which belong to the violent action on the sun's surface.

**A Dangerous Amusement.**

As out-door sports begin the girls are sure, this spring, to take their usual turn at rope jumping. Scarcely a season passes without several reports of girls dropping dead after some long continued effort, as in trying to skip the rope a thousand times; and even when not so carried to excess the practice is decidedly hazardous. Dr. Peck, of the Surgical Institute at Indianapolis, pronounces it a prime cause of cripples among girls. Speaking of a recent operation in which the bones of both legs of a little girl had been removed owing to necrosis caused by rope jumping, Dr. Peck says that similar cases are of frequent occurrence, though the mischief more commonly shows itself in necrosis of the spine. Not a month passes but cases are brought to the institute to be treated for injuries brought on by the continuous concussions upon the bones in this amusement. He advises parents and teachers to prohibit the "pernicious pastime" at all times and under all circumstances.

**The New York International Exhibition of 1883.**

The Senate bill (No. 1160) to provide for an International Exhibition in this city in 1883 was passed by the House of Representatives April 19. It had already been passed by the Senate, but having been slightly amended by the House it was returned to the Senate for the concurrence of that body. The chief amendment consisted in the addition of the names of the members of what is known as the Hilton committee to the original list of incorporators. The changes were concurred in by the Senate April 20. It is to be hoped that the differences between the rival committees will be promptly and amicably settled, and that nothing will occur to hinder the prosecution of the enterprise.

**THE GREAT SOUTHERN COMET.**

The event which is creating a considerable sensation in the southern hemisphere is the nightly appearance in the southwestern heavens, shortly after sunset, of a large and luminous body, supposed by those conversant with the aspects of such celestial visitants to be a comet of no ordinary kind. It is remarkable that astronomers throughout the British colonies and in England have not given the least intimation or prediction as to its coming.

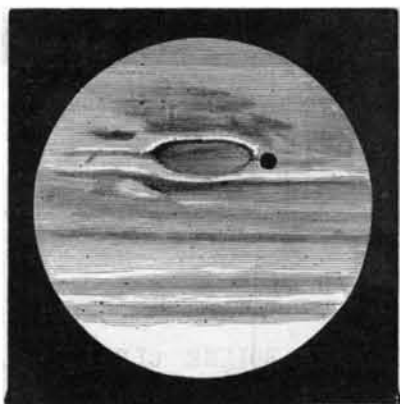


The appearance of the present comet is what astronomers designate "a beam." Its continuance is uncertain, though it may remain visible for some time, especially as it has not yet attained its perihelion and the nucleus has not been seen, though, doubtless, it will be at the Cape, France, England, and other countries. In brilliancy and grandeur it is vastly inferior to the comet which appeared in the early days of the colony.

Our illustration represents the comet as it appears nightly; that it is wonderful and awe-inspiring, we admit, but the absence of superstition from our minds, and a belief in the opinions of scientific men as to the cause of such phenomena, has banished all dread as to the baneful results which are expected to follow its appearing. The most notable comets of modern times are those of 1843, 1847, 1853, 1858, and 1861. That of 1843 is still regarded as the most marvelous of the present age, having been observed in the day-time before being visible at night—passing very near the sun—exhibiting an enormous length of tail of a fiery character, and arousing interest in the public mind as deep as it was unprecedented. Whether the comet now visible to us has anything to do with the heat of the atmosphere we cannot say, but it is a fact that for days prior to its coming the temperature was higher than usual.—*Frearson's Weekly, Adelaide, Australia.*

**WHAT IS THE TIME OF JUPITER'S ROTATION?**

The great red, elliptical spot on the visible surface of Jupiter is so long that could the earth be placed at one



Jupiter seen through a 9 in. telescope.—Power 350.—7h. 49m., Oct. 20, 1879.

end of it and rolled it would make nearly a complete revolution before arriving at the opposite end; and so wide at the widest part that the earth would overreach it on either side by but little more than half the diameter of our moon, and stands in such contrast to the surrounding disk as to be visi-

ble with large telescopes when the planet is but three hours from the sun in right ascension, and the sun on the meridian.

The authorities, Sir William Herschel, Beer, Mädler, and others, give for the time of Jupiter's rotation 9h. 55m. 26". The red spot was estimated central on the disk, October 3, 8h. 55', 1879; on January 10, 5h. 40m., 1880, it was again estimated central, having in 98d. 20h. 45m. made 239 apparent revolutions about the axis of Jupiter—approximate real time of rotation, 9h. 55m. 37" +.

It has been suggested that this spot affords an excellent opportunity for determining the time of Jupiter's rotation; and the attention of amateurs has been called to this work by a note from abroad.

It is generally believed by scientists that no considerable portion of a planet's atmosphere is likely to move much faster in the direction of the planet's rotation than the planet beneath travels; that any considerable motion must be in a direction opposite to the planet's rotation.

If this red spot represents the time of Jupiter's diurnal rotation that planet presents to us the remarkable phenomenon of the whole equatorial atmosphere moving in the direction of the planet's rotation 6,500 miles farther in 24 hours than the surface of Jupiter beneath it travels in the same time.

Most of the cloud forms in the equatorial belt are far from permanent, either in location or outline; some of them change so much in a few days as to be unrecognizable; but a well defined light spot was observed about central on the disk of Jupiter, September 27, 1879, at 8h. 5m., which, after making nearly 356 revolutions about the planet's axis, was last seen, unchanged to any great extent, just coming on the disk, February 20, 1880, at 4h. 55m.—approximate real mean rate, 9h. 50m. +.

On September 28, 1879, it was noticed that the red spot and the markings on the equatorial belt were separating at a rate which would bring them again together in about 43 days. Since then it has been observed that when the red spot has made 105 to 109 revolutions about Jupiter's axis the equatorial belt will have made one more.

When Jupiter rises on the morning of May 22, 1880, the red spot will probably be on the disk, and that portion of the equatorial belt above mentioned north of the spot. At 4h. 10m., Washington mean time, it is estimated that the red spot will have passed the center of the disk, and the planet will be high enough for observation in the eastern part of the United States.

Accepting 9h. 50m. as the time of Jupiter's rotation, the spot is traveling rapidly westward. Suppose it to have an independent rotary movement, in the direction taken by the hands of a watch, which on the circumference is not less than 250 miles an hour, sometimes much more, and it will account for about all the observable phenomena in the region of the spot.

H. G. FRTZ.

Peconic, N. Y., April 7, 1880.

**The Geodetic Union of Europe and Africa.**

The important work of connecting the systems of triangulation covering Western Europe and Northern Africa was consummated in the latter part of October last. Preparations for it had been going on for several years under the direction of General Ibañez and M. Perrier, acting respectively for the governments of Spain and France.

Four mountain heights were selected for signaling operations, namely, Mulbacen and Tetica, in Spain (the former being the highest in that country), and Filhaoussen and M'Sabiha, between Oran and the frontier of Morocco. It was decided not to trust alone to solar signals, but also to employ the electric light at night, and the event fully justified this resolve, for the solar signals totally failed, being seen neither in Spain nor Algeria. The difficulties of the enterprise, then, will be obvious on consideration, for to produce the electric light with sufficient intensity it was necessary to have recourse to electro-magnetic apparatus driven by steam engines, and the problem was that of hauling up Gramme machines, engines of six horse power, and various instruments, to summits of 1,000 to 3,550 meters height, making roads on these desert mountains, organizing supplies of water and fuel, and finally providing accommodation and sustenance at each station for twenty to one hundred men and fifteen or twenty beasts. There was a military guard attached to each station (in Algeria especially this was necessary), and the soldiers worked in roadmaking, etc. The time open for operations was short between the intense heat and the early snows. On August 20 all were at their posts—Colonel Barraquer on Mulbacen, Major Lopez on Tetica, Captain Bassot on Filhaoussen, and M. Perrier on M'Sabiha. But in vain were solar signals sent by day and electric by night; the vapors from the Mediterranean proved impervious to the beams. At length, however, on September 9, after twenty days' feverish expectation, M. Perrier perceived the electric light of Tetica, visible sometimes to the naked eye, like a round reddish disk, as bright as Alpha in Arcturus, which appeared near the horizon. On the 10th he perceived the electric light of Mulbacen. The Spaniards also perceived the French signals, and a period of definite observation was entered upon, extending from September 9 to October 18. The geodetic junction of the two continents was at length realized. The numerical results arrived at with regard to those four immense triangles of some seventy leagues length of side are given in a communication by M. Perrier to the French Academy, and are shown to have satisfactory accuracy.

By this work the geodetic operations in the British