

ASTRONOMICAL NOTES.

OBSERVATORY OF VASSAR COLLEGE.

For the computations of the following notes (which are approximate only) and for most of the observations, I am indebted to students. M.M.

Positions of Planets for November, 1874.

Mercury.

Mercury rises on the 1st of November at 8h. 37m. A. M., and sets at 5h. 39m. P. M. On the 30th, Mercury rises at 5h. 23m. A. M., and sets at 3h. 33m. P. M. It cannot, therefore, be seen in the early part of the month, and in the latter part should be looked for in the morning.

Venus.

Venus is at its greatest brilliancy on the 2d of November, when it comes to meridian or souths at about half past two in the afternoon. It rises on the 1st at 10h. 22m. A. M., and sets at 6h. 36m. P. M. On the 30th, it rises at 8h. 23m. A. M., and sets at 5h. 7m. P. M.

It should be observed in the early part of the month, and can be seen, a very conspicuous object, in the southwest.

Mars.

Mars is not well situated for observation. It rises on the 1st at 3h. 11m. A. M., and sets at 3h. 21m. P. M., coming to the meridian in the daytime. On the 31st, Mars rises at 2h. 48m. A. M., and sets at 2h. 6m. P. M.

Jupiter.

Jupiter is not well situated for observation; and according to the *American Nautical Almanac*, its satellites cannot be seen before the 5th of November. It rises on the 1st at 4h. 46m. A. M., and sets at 4h. 2m. P. M. On the 30th, Jupiter rises at 3h. 21m. A. M., and sets at 2h. 22m. P. M.

Saturn.

Although Saturn is very far south in declination, it is well situated for observation, and will richly repay any one who looks at it, with the aid only of a small telescope. The ring is so situated that the base can be seen both above and below its plane, and on fine evenings the division of the ring can be traced. A telescope whose object glass is two or three inches in diameter will show the ring, and possibly the largest satellite, Titan. With a large telescope, the other satellites are seen as very minute points of light.

Saturn rises on the 1st at 1h. 10m. P. M., and sets at 10h. 46m. P. M. On the 30th, Saturn rises at 39m. before noon, and sets at 9 o'clock P. M.

Uranus.

Uranus rises at 11h. 22m. P. M., and sets at 1h. 28m. P. M. of the next day. On the 30th, Uranus rises at 9h. 28m. P. M., and sets a little before noon the next day. As it is in northern declination about 17°, it attains a good height, and can be seen on the meridian in the early morning.

Neptune.

Neptune cannot be seen without a good telescope. On 1st, it rises at 4h. 32m. P. M., and sets at 5h. 40m. A. M. On the 30th, it rises at 2h. 36m. P. M., and sets at 3h. 42m. next morning.

Sun Spots.

The record is from October 2 to October 19 inclusive; but owing to cloudy days, photographs have been taken only on the 2d, 3d, 5th, 9th, 12th, 16th, 17th, and 19th. On the 2d a group of spots, comprising three of good size and several smaller, was seen within the eastern limb and below the center. Pictures of the 3d and 5th showed the same group moving across the disk with the revolution of the sun on its axis. On the 9th, the same group appeared just within the western limb, the three largest spots elongated and the faculae very marked. Two pairs of small spots were also seen following the group, one above and the other below the sun's equator. On the 12th, all the spots seen in the last picture had disappeared except the lower pair, which had increased in size. On the 15th, appeared another pair, of about the same size as those last seen, and a single spot just within the eastern limb. On the 16th, the same spots, with another nearer the eastern limb, and on the 17th still another at the east and lower. On the 19th, no change was perceived except that caused by the sun's motion.

Barometer and Thermometer.

The meteorological journal from Sept. 20 to Oct. 17 gives the highest barometer, Oct. 15, 30.36; the lowest barometer, Sept. 29, 29.46; the highest thermometer, Sept. 25, at 2 P. M., 73°; the lowest thermometer, Oct. 15 at 7 A. M., 27.5°.

Amount of Rain.

The rain which fell during Sept. 20 amounted to 1.8 inches.

The rain which fell during the night of Sept. 28 and the day of Sept. 29 amounted to 0.42 inches.

The rain which fell during the day of Oct. 2 amounted to 0.11 inches.

The rain which fell between the night of Oct. 6 and the morning of Oct. 9 amounted to 1.5 inches.

The rain which fell during the night of Oct. 9 and the day of Oct. 10 amounted to 0.21 inches.

Effect of Gases in the Coagulation of the Blood.

M.M. Mathieu and Urban give the following conclusions as the results of their studies into the above subject: Blood deprived of carbonic acid by exosmosis or by any other process does not coagulate until it regains the gas thus lost. The affinity of the blood globules for carbonic acid is evident. The coloring matter of the blood fixes the gas as readily as it does oxygen. Both oxygen and carbonic acid gases are occluded in the red globules. The coagulation of the blood by supersaturation is produced in pulmonary asphyxia, after a stoppage or extreme slowing of the circulation and after inflammation. The examination of different

processes of spontaneous coagulation happening during life establishes a relation between the formation of fibrinous clots and the accumulation of carbonic acid in the blood, or the alteration of the organs charged with the elimination of the same.

Correspondence.

The Plumber's Defence.

To the Editor of the *Scientific American*:

Bearing cheerful testimony to your general fairness, candor, and good nature, it is to be regretted that they have failed you in treating this tender subject. Our unfortunate occupation seems to have achieved a painful and unenviable prominence of late, by being made the target of savagely jocose and furiously sarcastic attacks.

Just complaints of the imperfect work of plumbers may be accounted for by the amazing want of judgment the owner of a house containing modern improvements displays in the selection of a plumber. If he becomes the owner of a horse, the blacksmith who shall shoe him is chosen after a most thorough investigation into his merits, and after consultation and advice with posted friends. If he be the possessor of a fine watch, the artificer who shall regulate, clean, and repair it is selected with great care, and on no account will it be entrusted to a new or unknown party. But if the same man builds a new house, or buys an old one requiring repairs to its plumbing, straightway he rushes round to search after—the best plumber? Far from it. He has heard that all plumbers are robbers, and he is going to find a cheap man if it takes a month. Of course he succeeds, and of course he gets a botched job. Or, more fatal blunder still, purposing to save bother, he permits or requires the builder to include plumbing in his estimate, thereby making it to the strong interest of the builder to put in the cheapest plumbing that will pass inspection.

No one but an expert can tell by inspection whether plumbing is well or ill done. The incompetence of architects and building superintendents in this respect is well known and frankly confessed by the best of them, who do not feel obliged (as third rate men generally do) to know everything. The writer has known of pipes one and two grades lighter than the specifications called for being put in under the very eyes of architects, who were thoroughly honest and could not have been suborned to wink at the evasion had they known it.

The employment of the cheapest mechanics who can be made to pass muster and the too rapid pushing of the work make it impossible to thoroughly test the material and workmanship as it progresses. Solid or leaky joints are not the worst, though perhaps they are the most annoying, effects of a bad job of plumbing. They are apparent at once, and the contractor is obliged to put them in order; but a job put up with light or inferior material runs very well for a while, until constant expansion by continued pressure produces a burst. This is no sooner repaired than another appears, and another, and the jobber who has been called in (and who may be an entirely different party from the one who did the original job) gets all the blame of not being able to "fix a pipe so that it will stay fixed."

Much complaint is made of the exorbitant charges of plumbers, mainly in jobbing or small work. As honest mechanics do not make exorbitant charges any more than honest men pick pockets, it only remains to explain why honest charges are sometimes high. A customer calls to say that a faucet is out of order. Desiring to find out accurately what is to be done, you ask how it operates: "Oh, it just drips constantly; won't shut off!" "Well, does it turn to a stop, or will the handle revolve continually?" He "don't know." You suggest sending a new faucet, in case it should be needed. With a look of excessive sharpness, he exclaims: "No, you don't. Your men would soon find a way to make it necessary. A little packing is all you want." As a decent self-respect stops argument here, the workmen are sent out. Upon reaching the job (perhaps miles away), the thread is found to be stripped or the wings worn off, and the faucet worthless. The helper is dispatched for a new one and the time charged. When the bill is presented, the agony is fearful. "Your man just sat around and talked to the girls, while the boy went after something. Do you suppose I am going to stand that?" Another customer drops in and says that his wife wants a plumber sent up. "Don't know what's the matter. Reckon it's something about the cocks." A man with proper tools for soldering, packing, etc., is sent up, and finds that a water closet or drain is choked, or perhaps that the gas leaks; and the tools he has (usually a good load) are not at all that he needs. More delay and more of the running, which so exasperates the unfortunate customer. Who is to blame?

It is true that much incompetence and dishonesty do exist, and probably will until competence and honesty are better paid. The mechanic who promptly, faithfully, and carefully looks after his work is worthy of his hire, even if the price is a little higher than that of the incompetent and careless. Probably the touchstone of the whole matter is contained in your aspiration for "a plumber who will do his work well at a moderate cost." If a man thoroughly and faithfully superintends his workmen, he is no more responsible for the original cost of his work than his customers are. His materials, of lead, iron, brass, and copper manipulated to a high degree, are expensive in the nature of things, and bills including these will necessarily be large. If your wish could be modified to a desire for a plumber who will faithfully execute his work and be content with a reasonable profit, it may be confidently expected that by patient searching you will find him out.

When it becomes the practice to bestow upon honesty, ability, and industry the premium which they earn and deserve parties who can "fill the bill" will abound.

I feel that the spirit of the foregoing remarks has a wider range and larger application than the immediate subject of discussion. C. C. DEWSTOE.
Cleveland, Ohio.

The Machinery at the Fair.

To the Editor of the *Scientific American*:

Your correspondent "Esor," writing in your issue of October 17, concluded his remarks, in regard to an axle lathe of our manufacture, as follows:

"On the tool post, however, is a taper washer, by means of which to regulate the height of the turning tool. With such a washer, it is impossible to put this lathe to the full duty it will perform, because, the face of the washer not being parallel or level with the face of the holding screw, the tool is not so firmly clamped as a heavy duty will require. The centers are not yet turned up, indicating that it is not intended to put any work on the lathe, an omission to be regretted."

We take no offense at just criticism; but we beg to demur to the statement that "it is impossible to put this lathe to the full duty," etc. Very nearly two hundred and fifty of these lathes, built by us in the past thirteen years, all with substantially the same arrangement for adjusting and holding the tool, have been put into operation in the United States, Canada, Cuba, and South America. No complaint has ever reached us as to difficulty in holding the tool.

Twenty complete and well fitted axles have in a number of shops been turned on one lathe in ten hours; even this has been exceeded in some instances; in one case, twelve were turned in five hours. This we consider tolerably "heavy duty," and think the tool must have been "firmly clamped" at pretty short intervals, without much delay or difficulty.

As regards the omission to put work into the lathe during the exhibition, it would plainly be impracticable, in such a place, to supply it with material, even for a small proportion of the time: a circumstance which we regret as much as any one. WM. B. BEMENT & SON.

Philadelphia, Pa.

Rapid Railway Traveling.

To the Editor of the *Scientific American*:

A train consisting of three cars, drawn by engine 97, driven by Joseph Losey, ran from Easton, Pa., to Jersey City, a distance of 74 miles, in 79 minutes running time, an average of 56½ miles per hour. This does not show full speed, as three stops were made; and although I have deducted the actual time that was lost at the stations, there has been no allowance made for slowing down and getting under headway again. The distance from White House to North Branch, 4¼ miles, was run in exactly 4 minutes. The road between the last named points is comparatively straight and level; the time was taken accurately at both stations, and by stop watches on the train.

The engine, an anthracite coal burner, was originally of the Grant pattern, with 16 inch cylinders. She has been rebuilt, and her cylinders now are 17 by 22 inches, and her drivers are 5 feet 10 inches over the tyres.

Hampton Junction, N. J.

CHARLES WARD.

The Eucalyptus and the Phylloxera.

To the Editor of the *Scientific American*:

I have been informed that the Tasmanian blue gum tree (*eucalyptus globulus*) is acclimated in the southern portion of France. In that territory, possibly in the immediate vicinity of trees of that species, there are large numbers of cultivated grapevines. Perhaps it would be well to examine the grapevines so located and ascertain if they are exempt from the ravages of the phylloxera. The blue gum trees appear to be suitable for the vineyard: they grow rapidly, straight, and firm, and would afford an admirable support for the wire; they cast no injurious amount of shade, and are known to be an antidote for that vapor of parasites called miasma.

New York city.

ROBERT BRUCE STUART.

Cable Telegraphy.

To the Editor of the *Scientific American*:

In your last issue you print a paper read before the British Association by W. K. Winter on an improvement in cable telegraphy.

Allow me to state that the principle shown was invented by myself and patented both in England and this country some three years ago. It is used by the Automatic Telegraph Company of New York. THOMAS A. EDISON.

Newark, N. J.

The surgeons of the Hotel Dieu at Montpellier, France, have had for some time past a queer case on their hands, of a young man who swallowed a fork. The fork still remains somewhere in the body, and, strange to say, occasions no particular inconvenience to the patient, although over a month has elapsed since the accident took place. At the same hospital an individual, while in a state of delirium, lately ate a thermometer, glass and all. The doctors are sorely perplexed for a way to extract the intruding objects.

A RECENT patent for a map consists in having those portions intended to represent the rivers, lakes, and oceans filled with actual water. This is done by attaching the map to a back of wood of sufficient thickness. The rivers, etc., are dug out, filled with water, and glazed. Such maps may be hung upon the wall in the usual manner.