ASTRONOMICAL NOTES.

BY BERLIN H. WRIGHT.

PENN YAN, N. Y., Saturday, March 23, 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	6 23 eve.	Saturn rises	5 52 mo.
Venus rises	4 12 mo.	Uranus in meridian	9 48 eve.
Mars sets	11 16 eve.	Uranus sets	4 40 mo.
Jupiter rises	3 25 mo.	Neptune sets	8 54 eve.

FIRST MAGNITUDE STARS.

	H.M.		H.M.
Antares rises	11 56 eve.	7 stars (cluster) set	11 03 eve.
Spica rises	7 50 eve.	Rigel sets	10 33 eve.
Altair rises	1 13 mo.	Capella sets	3 14 mo.
Vega rises	9 33 eve.	Betelgeuse sets	0 12 mo.
Deneb rises	10 36 eve.	Sirius in meridian	6 34 eve.
Algol (2d-4th mag. var.) sets	0 07 mo.	Regulus in meridian	9 56 eve.
Aldebaran sets	11 21 eve.	Procyon in meridian	7 27 eve.
Alpheratz sets	7 47 eve.	Arcturus in meridian	2 07 mo.

REMARKS.

Mercury sets 7m. after, and Saturn rises 7m. before the sun, hence both are invisible. Venus is brightest March 28, her phase at that time being in form that of a crescent. The moon will pass within 2½ times her apparent diameter of Jupiter March 27, in the morning. Jupiter's first satellite passes into an eclipse March 21, 4h. 46m. morning. The third issues from behind the planet March 23, 4h. 37m. morning. The first begins a transit across the planet's disk March 29, 5h. 9m. morning.

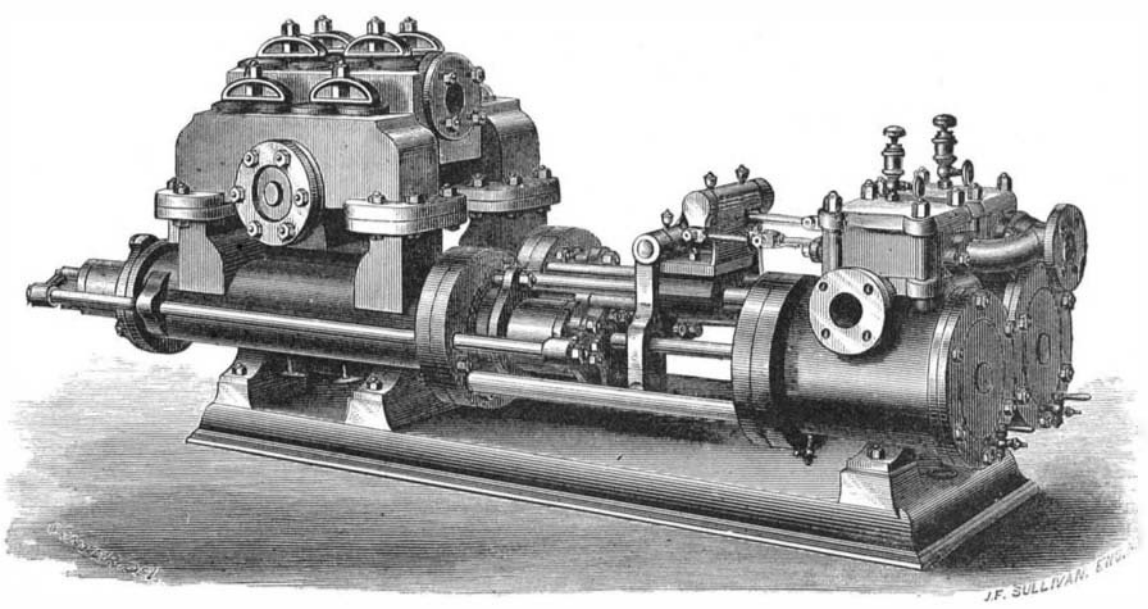
LARGE STEAM PUMPING ENGINES—A DUPLEX PRESSURE PUMP.

Among the pumps of largest capacity in this country are those constructed for water works by Henry R. Worthington, the inventor and patentee of a remarkably efficient type of pumping engines, known as Worthington's duplex steam pumps. At the Centennial Exhibition, Philadelphia, the largest and most expensive hydraulic exhibit was the pumping engine for supplying the entire Exhibition grounds with water, designed and constructed by this engineer. The capacity of this pumping engine was six million gallons daily. At Jersey City, N.J., there are two pumps, having together a capacity of sixteen million gallons; at Baltimore, Md., Toledo, Ohio, Toronto and Montreal, Canada, pumps with a capacity of ten million gallons; in Syracuse, N.Y., pumps of the same capacity were erected last year, and also in the same year were erected pumps for the Boston High Service, having a capacity of three million gallons daily. These are but a few of the many large pumps in successful operation, varying in capacity from half a million to sixteen million gallons daily.

Since 1844, the year when this engineer patented his first invention in steam pumps, he has taken out eleven patents in this country for inventions in this department of engineering.

The annexed engraving represents one of the smaller Worthington duplex "pressure" pumps, designed originally for driving hydraulic machinery, but also admirably adapted for mining, boiler feeding, severe and constant work generally. The form of the water end is peculiar, and intended for continuous pumping against heavy pressure, at moderate speed. Each piston drives two single-acting plungers, which have external adjustable packing.

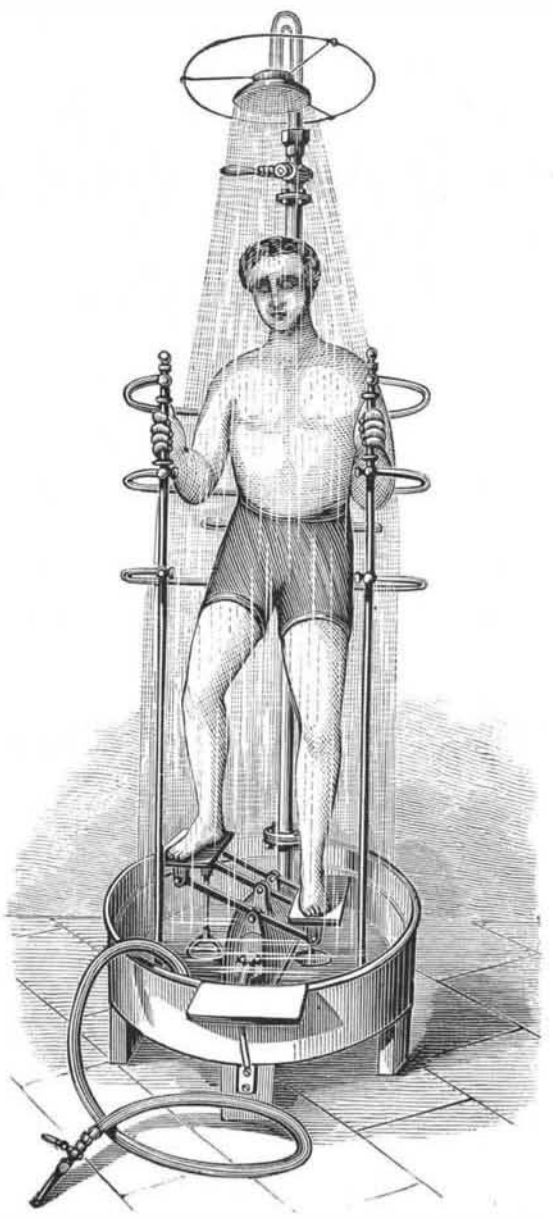
Reference being made to the engraving, it will be seen that the construction of this type of duplex pump varies materially from all others. The arrangement, which is very ingenious and gives great strength and compactness, is peculiarly the inventor's own, and original with him many years ago, is highly approved, and has been extensively copied by other pump manufacturers. All the parts are easily accessible for examination or adjustment. The moving pieces are made to gauge, and consequently can be readily renewed. Pumps of this description are constructed for special purposes and of various sizes. Special attention is called to the valve motion, which is the prominent and important peculiarity of this pump, as being that to which it owes its exemption from noise or concussive action. Two steam pumps are placed side by side, and so combined as to act reciprocally upon the steam valves of each other. The one piston acts to give steam to the other, after which it finishes its own stroke, and waits for its valve to be acted upon before it can renew its motion. This pause allows all the water valves to seat quietly, and removes everything like harshness of motion. As one or the other of the steam valves must be always open, there can be no center or dead point. The pump is therefore always ready to start when steam is admitted, and is managed by the simple opening and shutting of a valve. The office of Henry R. Worthington is at 239 Broadway, New York. The manufactory is at the Hydraulic Works, South Brooklyn, N. Y.



WORTHINGTON'S DUPLEX PRESSURE PUMP.

BOZERIAN'S NEW SHOWER BATH.

M. Gaston Bozerian, whose improved foot power engine we recently illustrated, has combined his apparatus with a pump, so as to produce a convenient shower bath, operated by the bather himself. In the tub shown in the annexed engraving, which we take from *La Nature*, is a cast iron air chamber, which also serves as a support for the pedal levers. Each lever operates a pump, which forces the water in the basin into the air chamber, so that the operator has only to move the weight of his body alternately first on one pedal and then on the other to work the pumps. The water is thus driven up a pipe connecting with this air chamber, and escapes in a shower from the perforated receptacle above. The same water is used over and over again, and the shower is maintained as long as the operator chooses. The apparatus is in successful use in water-cure establishments in Paris.



BOZERIAN'S SHOWER BATH.

Down in the Lower Levels.

Not many men who see the miners of the Savage lifted out at the top of the shaft at change of shift have the courage to descend into the lower regions of that mine. Very few even of the old residents of the Comstock would care to descend into the steaming regions below, and not one Eastern man in a thousand could be induced to make the trip after seeing the men popped out at the top of the shaft, steaming as though just lifted from out of a caldron of boiling water. Though they are shirtless—naked as at birth from the waist up—and wear only cotton overalls, they are dripping as if but a moment out of a pond of water; yet this is all from steam and perspiration. In all this great heat men must work. The wonder is that they are able to do anything but gasp and pant. It is a place better fitted for salamanders than for men. At the head of the main incline, where they have so long been engaged in putting in the V-bob, it is as hot as in the hottest vapor baths at Steamboat Springs.

One would think that men much in such a place would be quite secure against the rheumatism. On making inquiries in this regard of an underground foreman, he said that he never knew of any of the men working below to have the rheumatism. Some of our sufferers from the disease might try this cure—might have themselves lowered into the depths of the mine, there to sit and steam through one shift per day. But for the immense quantities of ice water they drink, the men could not endure the great heat in which they are placed or the floods of perspiration pumped from their pores. They swallow gallons on gallons of it, and it never hurts them in the least.—*Virginia Enterprise.*

Curious Habits of the Japanese.

The Japanese habit of reversing everything, if we may regard our own way of doing as the proper way, is very curious, and in some of its details very interesting. Mr. Griffiths, in his work on Japan, discusses it thus: "Another man is planing. He pulls the plane towards him. I notice a blacksmith at work. He pulls the bellows with his feet, while he is holding and hammering with both hands. He has several irons in the fire, and keeps his dinner pot boiling with the waste flame. His whole family, like the generations before them, seem to get their living in the hardware line. The cooper holds his tubs with his toes. All of them sit down while they work. Perhaps that is an important difference between a European and an Asiatic. One sits down to his work, the other stands up to it. Why is it that we do things contrariwise to the Japanese? Are we upside down, or they? The Japanese say that we are reversed. They call our penmanship 'crab writing,' because, say they, 'it goes backward.' The lines in our books cross the page like a crawfish, instead of going downward properly. In a Japanese stable we find the horse's flank where we look for his head. Japanese screws screw the other way. Their locks thrust to the left, our to the right. The baby toys of the Aryan race squeak when they are squeezed; the Turnonian gimcracks emit noise when pulled apart. A Caucasian, to injure his enemy, kills him; a Japanese kills himself to spite his foe. Which race is left-handed? Which has the negative, which the positive of truth? What is truth? What is down? What is up?"

Mr. Bennett's Polar Expedition.

A petition has been presented in the Senate by Mr. Conkling, from Mr. James Gordon Bennett, asking that an American register be granted to the Pandora, an English steamer which he proposes to man and equip at his own expense for a voyage of discovery toward the North Pole, taking the Spitzbergen or European route, simultaneously with the Howgate expedition *via* Greenland. It is thought that probably there will be more or less opposition on the part of the advocates of American shipbuilding; but if an American register be given to a foreign vessel for the Woodruff scheme, it is hard to see why one should not be given to another one for Mr. Bennett's expedition.

It is not known who is to be at the head of the expedition, but it is supposed that the adventurous Stanley, just returned from the burning sands of Africa, wishes to try his luck and endurance against the rigors of the Arctic winter which has conquered so many adventurous spirits.

Captain Howgate expresses much gratification at the proposed expedition of Mr. Bennett, because, when taken in connection with the proposed government expedition from the United States this year, it will test the practicability of the two most prominent routes to the North Pole. The Smith's Sound route, which Captain Howgate proposes to follow, is the favorite American route; while the Spitzbergen one is and has been advocated by foreign geographers, in the face of the many failures in that direction hitherto made. The two expeditions will probably differ widely in other respects, as the Howgate plan proposes an exhaustive study of the various scientific subjects upon which light can only be thrown by steady researches made within the polar area, and is not limited in its object to the mere discovery of the North Pole, that being only one of the items of the Howgate scheme.