

VICTOR SCROLL SAW AND LATHE ATTACHMENT.

We illustrate herewith another style of scroll saw manufacturing Co., of Seneca Falls, N.Y. The present machine is suitable either for light or heavy work, and cutting with the greatest precision from the lightest and most delicate work up to thickness of 3 inches.

The Victor (Fig. 1) has an adjustable tension in connection with the upper spindle, which may be varied to suit the requirements of the operator. It is designed to use regularly 8-inch saw blades, but can be adjusted to use 5-inch blades for fine work, if desired. The iron tilting table is 18 inches in diameter, and can be changed to any angle for sawing inlaid work; the table and all finished parts are nickel-plated. It has an adjustable upright drilling attachment, provided with an Empire drill chuck which will hold from 0.3-1.6 inch twists drills. It has a large dust blower, which keep the lines of the work free from sawdust. The driving wheel is heavy, 24 inches in diameter, and the driving belt is $\frac{1}{2}$ inch V shape, giving strong power without slipping or lost motion. It has a double foot treadle, with a walking motion, by which much greater power can be obtained with less fatigue than with other forms. The average rate of speed when sawing is about 1,000 strokes per minute. The height from the floor to the top of the table is 40 inches; this enables the operator to run the machine with both feet, sitting; or with one foot, standing. For steam power the manufacturers furnish light and loose pulleys arranged to connect to the driving wheel shaft on either side, leaving a treadle connected on the other side. Weight of machine, complete, 250 pounds; crated, ready for shipment, 325 pounds.

The Victor lathe attachment (Fig. 2), to be used in connection with this machine, is a strongly built well finished piece of mechanism, with planed ways, etc. It can be easily attached to either the Victor or the Empire machines, in the same manner as the table. The average rate of speed is about 4,000 revolutions per minute; length of bed, 26 inches; distance between centers, 15 inches; swing, 6 inches. The head has a hollow steel spindle, nicely fitted with a face plate, spur center, 4-inch solid emery wheel, for grinding and polishing tools, metals, etc. The tail shock has a steel screw spindle, with hand wheel, etc. With the lathe the company furnish a set of extra cast-steel turning tools, with 6-inch blades sand hard wood handles.—*Ex.*

BRIDGEPORT TWENTY-INCH SHAPER.

This tool, which is of novel design, has just been added to the Bridgeport list. The shaper is convenient to operate, and is made in a way likely to secure durability in service. Careful attention has been given to the arrangement of parts and distribution of metal to secure the maximum of strength and solidity. The sliding surfaces are broad and carefully fitted by scraping. The cutter bar is operated by a rack and pinion, thereby securing a uniform movement throughout the entire length of stroke, and quick return. The running gear is the same as in the Bridgeport 16-inch planer, and is driven by two belts, cross and open, one on each side of the machine. By the employment of an improved belt-shifting device, the driving belt is removed to the loose pulley before the reversing belt is started, thereby avoiding jar and friction. Rack and gears are cut in the most approved form; and the shafts are of steel with long journals of good diameter.

The cutter bar has an extreme stroke of 24 inches, and can be adjusted to any point desired while in operation. By direct connection with the main shaft a positive feed is obtained, varying from 1-100th to 1-4th of an inch.

The shaper is made by E. P. Bullard, 14 Dey Street, New York.

CANCER IN HORSES.—The *Indian Medical Gazette* says: *Melanotic cancer* is an ordinary cause of death in Bengal among gray and white horses. We can scarcely drive through Calcutta without seeing animals having the characteristic globular tumors beneath the skin.

—THERE is an elementary and a scientific knowledge of things and their is an elementary and a scientific stage of instruction. He who teaches in the elementary stage does not need that comprehensive view that another must have who shall teach successfully in the higher stage.—*G. P. Brown, in Ind. Sch. Jour.*

ENCKE'S COMET.

There is an excitement in the celestial court. Encke's comet has arrived, and star gazers are turning their telescopes to the skies in eager haste to obtain a glimpse of the distinguished visitor. Our eccentric guest is not a prince among comets. It is not a *cometa horrendae magnitudinis*, like those members of the family that in the olden times swept over the heavens and threw the beholders into an agony of superstitious terror. It does not burst upon the astonished gaze at noonday with a brilliancy akin to that of the sun; its tail is not turned like a Turkish cimeter, nor does it branch out into six tails, each 6,000,000 miles long. It does not span the celestial vault from horizon to zenith; there is no danger of its being considered the harbinger of war, pestilence, and the day of judgment; and there will be no prayers read in the churches beseeching deliverance from "the Turk, the devil, and the comet."

Encke's comet is interesting chiefly for being the first known comet of a short period, for making the shortest circuit of any member of its class, for performing its revolution within the boundaries of the solar system, and for the reason that it seems to be more amenable to physical law than some of the more imposing members of the cometary family, those vast ethereal creations that visit our domain and then rush off into fathomless space,

"On the long travel of a thousand years."

This comet has a history. It is known as Encke's comet because the distinguished German astronomer was the first to carefully investigate its motion. It was first detected in 1786, again by Miss Caroline Herschel in 1795, again in 1805, but made no estimate of the length of the period. Encke then took up the task, and studied its movements with a thoroughness before unknown. He established beyond a doubt that the comet's orbit was an ellipse, that its period was about 1,212 days, and that it had made four complete revolutions between 1805 and 1818. These facts being sure, there was no difficulty in identifying it with the comets of 1786 and 1795, and in concluding that in the intermediate returns to perihelion its position had been so unfavorable that it was not seen.

Encke predicted its return in 1822, pointed out the position it would occupy among the stars, and also announced that it would be visible only in the southern hemisphere. He had the happiness of seeing his predictions verified by the observations of an astronomer in New South Wales, who followed the comet during its whole visible course.

Since that time this eccentric visitor has not failed to return to perihelion very nearly at the computed time, although at some returns it has been visible only in the southern hemisphere, and at other returns its position has been so unfavorable that the closest scrutiny has been of no avail in picking it up. Encke's comet is a veteran among comets of a short period, reaching next January the centennial anniversary of its discovery. Why should not the event be celebrated? It deserves to be, for this eccentric member of the system is an exceptionally well behaved comet, except in the matter of yielding to the influence of a resisting medium or some other mysterious power. It has neither been turned into a new path by the disturbing form of Jupiter—sometimes its near neighbor—nor has it split in two parts like Biela's comet, nor is it disintegrating into meteors, like Tempel's comet and the second comet of 1862, that lead the long procession of meteors in the November and August meteor zones. The orbit of Encke's comet is an ellipse, inclined at an angle of 13° to the plane of the earth's orbit. At perihelion it is 31,000,000 miles, and at aphelion 377,000,000 miles from the sun. Its perihelion is between the sun and Mercury, and its aphelion is between Jupiter and the asteroids. Its motion is from west to east, and its revolution, in the days of its early history, was performed in about 1,212 days.

Encke's comet is by no means a remarkable one. It is a telescope comet, and consists of a patch of circular light, somewhat condensed toward the centre. Though usually visible only through the telescope, it has been seen by the naked eye. Such was its appearance in 1828, when it was in an exceptionally favorable position for observation, and its light was equivalent to a star of the fifth magnitude. At common times there is little trace of a tail, but, on rare occasions, a slight one has been detected, like a faint brush of light, and sometimes with a second appendage opposite the first. Its tenuity is so great that, at its return in 1878, the centre of the comet passed directly over a star of the tenth magnitude lying in its path. The star was undimmed by the transit of the densest portion