CURIOUS BRAIN WOUNDS.

A FEW years ago an insane seamstress in one of our asylums made a practice of running needles into various parts of her person, several hundred being removed by the attending surgeons, before and after her death. The practice had been developed, apparently, from the employment of hypodermic injections for neuralgic pains.

The St. Louis *Clinical Record* reports a still more remarkable case of a man in Kansas who had a habit of running wires, and even nails, into his brain through holes made with a brad-awl. The habit was discovered during his residence in a penitentiary; and when he died subsequently of morphia a careful autopsy was made. Three openings were found in the skull, two near the inferior posterior angle of the right parietal, the other near the superior posterior angle of the same bone. In the brain was found a wire which had been thrust in at the upper hole, and, just missing the superior longitudinal sinus, had pierced to the base of the brain, a little in front of the fissure of Silvius. Beside the wire was a nail, one and three fourths inches in length. Although wires had been removed during life from the lower apertures, no trace of their course was discovered, no disturbance of brain function appeared to result from this strange habit. The prisoner could do his work with correctness and understanding; and, excepting a suicidal tendency, gave no signs of insanity.

The trial of Landis for shooting Carruth has given prominence to the power of the brain to withstand gun-shot and other wounds; but, barring the case of the Irishman who had an iron drill shot through his head and survived, we recall no case of brain lesion so remarkable as this.

Facts and Simple Formulæ for Mechanics, Farmers, and Engineers.

Velocity of circular saws at periphery, 6,000 to 7,000 feet per minute. Rate of feed for circular saws, 15 to 60 feet per minute. Velocity of band saws, 3,500 feet per minute. Velocity of gang saws, 20 inch stroke, 120 strokes per minute. Velocity of scroll saws, 600 to 800 strokes per minute, Velocity of planing machine cutters at periphery, 4,000 to 6,000 feet per minute. Travel of work under planing machine, $\frac{1}{20}$ of an inch for each cut. Travel of molding machine cutters, 3,500 to 4,000 feet per minute. Travel of squaring up machine cutters, 7,000 to 8,000 feet per minute. Speed of wood carving drills, 5,000 revolutions per minute. Speed of machine augers, 1½ inches diameter, 900 revolutions per minute. Speed of machine augers, ¾ inch diameter, 1,200 revolutions per minute. Gang saws require, for 45 superficial feet of pine per hour, 1 horse power indicated. Circular saws, for 75 superficial feet of pine per hour, 1 horse power indicated. In oak or hard wood, ¼ of the above quantities require 1 horse power indicated.

The area of a safety valve should be ·006 times the area of the fire grate.

On railway car axles, 20 pints of oil lubricate 8 journals of cars for 5,000 miles, or 1 pint for 250 miles.

The following is the effective horse power for different water motors, theoretical power being 1: Undershot water wheels, 0·35; Poncelet's undershot water wheel, 0·60; breast wheel, 0·55; high breast, 0·60; overshot wheel, 0·68; turbine, 0·70; hydraulic ram raising water, 0·60; water pressure engine, 0·80.

The following are the ordinary dimensions of windmill sails: Length of whip, 30 feet; breadth at base, 12 inches; depth at base, 9 inches; breadth at tip, 6 inches; depth at tip, 4½ inches. The effective horse power is found by dividing the product of the total area of sails in square feet and the cube of the velocity in feet per second of the wind by 1,080,000.

Rule for speed of screws: Velocity in miles per hour = pitch of screw in feet multiplied by the number of revolutions per minute, and divided by 88.

With hydrogen gas, having a buoyancy of about 13·3 feet to 1 lb., the diameter of balloons = the cube root of 25·5 times the weight to be raised, including that of the balloon itself, or the weight = 0·0892 times the cube of the diameter.

The unit of heat is the quantity required to raise the temperature of 1 grain of water at its maximum density 1° Fah. The absolute mechanical equivalent thereof is 772 foot grains, and the thermal equivalent of the absolute unit of work = 0·000040224.

The proper proportion for the width or hoist of the American ensign is $\frac{1}{1.9}$ its length. The thirteen horizontal stripes should be of equal breadth and begin with the red. The blue field is 0·4 of the length of the striped portion, and is 7 stripes in depth. The 37 stars are ranged in equidistant horizontal and vertical lines.

The actual horse power of pumping engines = quantity of water raised per minute in cubic feet multiplied by hight elevated in feet, multiplied by 0·0023. The indicated horse power of engines is found by dividing twice the product of the area of the piston in square inches × the average pressure of steam in lbs. per square inch in cylinder × the number of revolutions per second × the length of the stroke in feet by 550.

Useful numbers for pumps: The square of the diameter multiplied by the stroke, multiplied by 0·7854, gives capacity of the pump cylinder in cubic inches; by 0·002833, in gallons; by 0·0004545 in cubic feet; by 0·02833, in lbs. fresh water.

THE SEA GULL.

A traveler, making his first voyage across the ocean, is astonished to find birds following in the ship's wake a thousand or more miles from land. That such small animals should be gifted with the endurance necessary for keeping on the wing continuously, with the exception of an occasional rest on the surface of the ocean, is certainly an extraordinary proof of the muscular power and vitality of the species of the winged tribe.

These birds are nearly all members of the gull species (*larus* of Linnæus,) of which the largest *genera* are *larus glaucus* (Brünnich,) which measures 30 inches in length, and has a wing breadth of 5 feet, and the *larus marinus* (Linnæus,) which is nearly or quite equal in size to the *l. glaucus*. The gull family has several general characteristics, among which may be mentioned the curvature at the end of the bill, the length and pointed form of the wings, and the web between the toes, the hind toe being short and elevated. The *l. marinus*, commonly called the black-backed gull, may be distinguished by the dark slate color of its back and wings, its black primary feathers tipped with white, and its yellow legs and feet. This species is found in summer on the coasts of New England, and in winter travels as far south as Florida, its favorite breeding places being on the coast of Labrador. It flies high, and has a majestic carriage in the air: it encounters the fiercest gales, and swims well but slowly. It preys on fish, young birds, and carrion, indeed on anything but vegetable food; it is tyrannical towards weaker birds, but is naturally very cowardly. Its eggs are good eating, and the young birds are killed and salted by the fishermeu of Labrador and Newfoundland; but the old ones are very tough and too fishy in taste for food.

Our illustration shows a flock of black-backed gulls surrounding a wreck, and hurrying with screams of delight after small pieces of garbage or refuse food that float away from the wrecked vessel. Mr. Wolf, the artist, shows well the great wing power of these birds, and the easy grace with which they carry themselves in gale. Their endurance in flight is aided by the lightness of their bodies, which, however, makes them the sport of a high wind; but this obstacle they overcome by a novel species of tacking, which enables them to make headway against the tempest.

Many of the high rocks and almost inaccessible cliffs of Scotland and North Wales are the homes of countless millions of sea birds; and the pursuit of them, for their eggs and plumage, is one of the most hazardous pursuits in which men ever engage.