pitiful to see. He felt the effects of the wound for many months.

Several gentlemen interested in the subject met to witness the dissection of a laff, and their notes and my own were similar, so I give a *resume* of them.

The dorsal fin begins behind the nugue, and it is composed of a series of fleshy tubercles, twelve containing spines and eight rays embedded in the skin. The tubercles are bound together by a membrane full of numerous nervous cords. This membrane is endowed with great retractability, allowing all the spines to move at the same time. Each spine is covered by the skin as in a sort of scabbard, in which the spine disappears, and is only protruded when the fish is attacked. Each of the spines presents on both sides, for two-thirds of its length, a groove, fining off at the point. At the base of this groove, and in communication with it, is an ovoid vesicle or gland adhering to the spine and hidden by the skin. It contains a whitish liquid, which is the venom that renders the prick from a laff so formidable, and so fatal in certain cases.

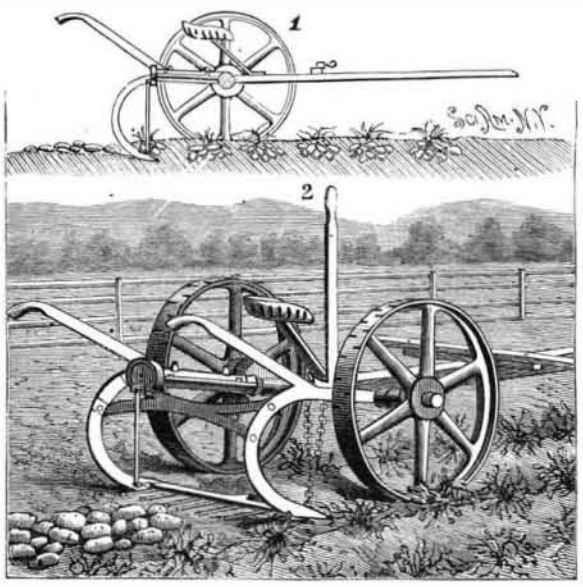
When a foot is inadvertently pressed against the body of the fish, it produces the erection of the spiny crest, enveloped in a skin rich in nervous threads, which are very extensible. The membraneous vesicle being compressed, the liquid it incloses flows along the grooves of the spines, spurts out, and penetrates rapidly and deeply into the wound. The venom of the laff, like that of the viper, has less effect when in fleshy parts covered with fatty tissue, where the venous system is little developed, than when it penetrates a vein. When a wound is at any extremity it becomes instantly painful, a circle of livid red surrounds it, with rapid swelling. Later an abscess forms, and when opened a fetid brown pus flows from it, at the same time pallor of the face, a feeling of stupor or weakness ensues, syncope, and often delirium and death.

The fishermen use the following remedy. They take a certain quantity of the leaves and stems of the *Microrhyncus sarmentosus* and mix in a handful of common salt. The whole is enveloped in a piece of banana leaf and covered with hot ashes till the leaves are reduced to a pulp. The wound is scarified, and the pulp used as a poultice, and changed every four hours. Some of the men have great faith in this remedy, but all dread the danger, as the cure, if effected, takes a long time, and the pain is terrible. I visited several of the hospitals in Mauritius, and saw some cases of laff wounds. One was especially terrible. The poor man had been out fishing on the reefs and, when quite a distance from the shore, had trodden on a laff. The puncture was on the sole of the foot. He was alone, and it was with the greatest difficulty he could drag himself to shore, the pain was so excruciating. When out of the water, he fell down, and it was some time before he was discovered. By this time the leg and foot had swelled tremendously, and he had to be carried to the hospital. In a few days the wound sloughed, leaving a large hole. It was over two months before he could use his foot, but he remained a cripple for over a year, and he could never be induced to go on the reefs again.

A singular fact attending wounds by the laff spine is that, no matter how long a time may have elapsed since the cure, at the same period of the year pains in the wounded parts occur, as they often do after snake bites.

AN IMPROVED POTATO DIGGER.

A simple form of potato digger, adapted for attachment to and use with a mowing machine when the sickle has been taken off, is illustrated herewith, and

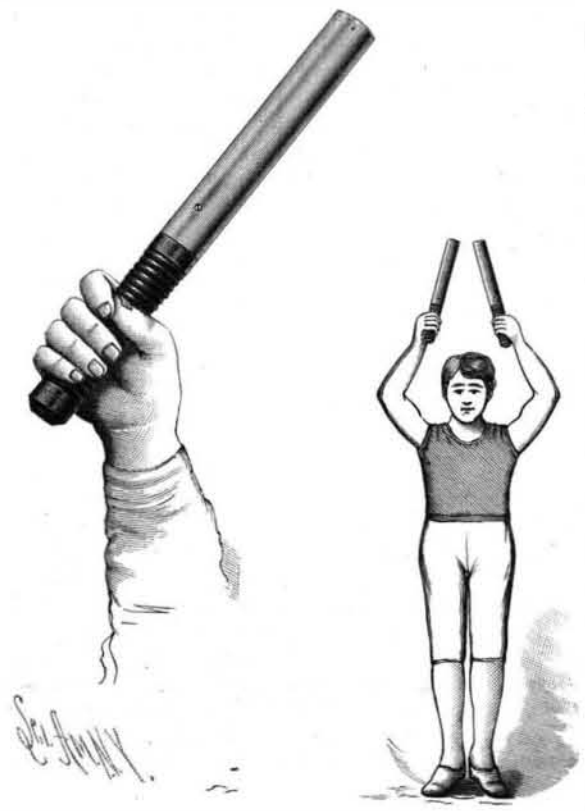


SHAW'S POTATO DIGGER.

has been patented by Dr. Hiram M. Shaw, of Genoa, N. Y. The frame of the potato-digging mechanism consists of two beams or bars held by pivotal connections to opposite ends of the axle, to be raised and lowered by handles to be grasped by the operator walking behind the machine. The digging blade or hoe, extending across at the rear, is fixed at its ends to the lower forwardly curved ends of the beams, the blade lying nearly flat, and having a central projecting point which cuts into the hills of potatoes as the machine moves forward. The potatoes and dislodged earth pass backward over the blade on to an agitator, which separates the earth from the potatoes, so that the latter may be conveniently gathered. This agitator consists of a bar pivoted at opposite ends in the beams, and ranging immediately behind the hoe blade, the bar having backwardly extending fingers or tines. Near one end of this agitator bar is a pin or arm, to which is attached the lower end of a pitman, the upper end of which connects with a wrist pin set eccentrically in a disk wheel on a shaft journaled in a laterally bent portion of one of the hoe beams and an arm connected thereto, in such way that the fork or agitator will be oscillated vertically as the machine moves forward. The machine is not liable to get out of order, and may be successfully worked by any farm hand.

THE JESSUP EXERCISING CLUB.

Mr. Benjamin A. Jessup, an amateur athlete of this city (225 Pearl Street), has designed a new exercising



THE JESSUP EXERCISING CLUB.

club, of which we herewith give an illustration. It possesses several very desirable features. It takes the place of and combines the advantages of dumb-bells and Indian clubs—articles which are more or less bulky and clumsy. The new club is 20 inches long, 1 5-16 inches diameter, and weighs 1 pound 12 ounces. It consists of a bar of hickory, 14½ inches long, of which the handle is 6¼ inches long, turned as shown. Upon the front end of the handle is secured by a screw a plain brass tube, ⅛ of an inch thick and 7½ inches long. Within the extremity of the tube is secured, by screws passing through the tube, a plug of lead weighing 12 ounces. With these particulars any one may make the articles, and a little faithful exercise with them daily will in a few weeks greatly tone up and strengthen the system of the user, whether man or woman. The author, Mr. Jessup, attributes his excellent health and almost perfectly proportioned bodily development to an extended use of these clubs. Our own experience with them, although short, is very satisfactory. All the various exercises of clubs and dumb-bells may be done with them. The loaded ends enable the user to increase or diminish at will the leverage and weight brought upon the muscles of the arms, wrists, and other parts.

The rowing motion for oars may easily be produced. Among other advantages not least is that these exercising devices may be easily transported in bag or trunk, and form, in themselves, an effective gymnasium.

The New Torpedo Boat, and Practice with High Explosives.

The new torpedo boat for the United States navy is rapidly approaching completion in the yard of the Herreshoff Co., at Bristol, R. I. With a length of 137 feet and width of 14 feet 6 inches, the new boat is to draw but 3 feet 7 inches. She will possess many of the Herreshoff peculiarities—a rudder under her hull instead of astern, a set of their twin five-cylinder compound engines, etc. She is to carry two torpedo tubes, as well as two 6-pounder machine guns. The highest anticipations of her speed are indulged in, very naturally, when the immense horse power of her engines is considered. These are calculated to develop 1,500 horse power. The boat is to have only 99 tons displacement. When completed, the hull will be nearly filled with boilers, magazines, and machinery for propulsion of the vessel and for ejection of torpedoes, leaving little room for accommodation of officers and crew.

Some interesting experiments have recently been conducted in England which gave a practical demonstration of the possibilities of modern ordnance and high explosives in artillery practice. An old ironclad, the Resistance, was heavily plated and fitted with protective coal bunkers and casemates. Wooden dummies were placed in the latter to represent men. Thus equipped the ship was made a target for practice with gunpowder and high explosive (lyddite) shells. Eight 6 inch shells annihilated the upper works of the vessel. The powder shells did most execution, as they penetrated further before explosion and did more general, because less localized, damage.

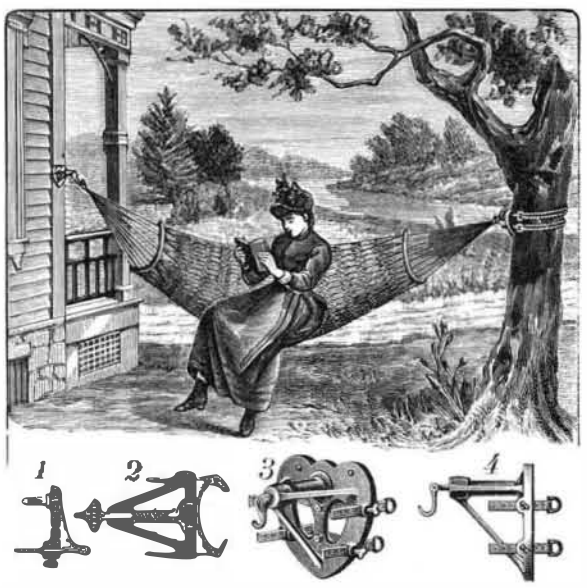
These tests are of interest in connection with aerial torpedoes, as they indicate the kind of trial so much desired. The destruction of the Silliman showed their power against the hull under water; their power against plated sides and protected work above water remains to be seen. It is to be hoped that our government will follow the example and give the torpedo boats an armored vessel to test their destructive powers.

A New Alloy.

This alloy is intended to be used in the place of steel in the manufacture of various parts of watches, such as the balance wheel and hair spring, so as to obviate the disadvantages which follow on their magnetization or oxidation. The composition of the alloy is as follows: Gold 30 to 40 parts, palladium 30 to 40 parts, rhodium $\frac{1}{10}$ to 5 parts, copper 10 to 20 parts, manganese $\frac{1}{10}$ to 5 parts, silver $\frac{1}{10}$ to 5 parts, and platinum $\frac{1}{10}$ to 5 parts. The copper and manganese are first of all to be melted, and the other metals afterward added, or the whole of the constituents may be placed in the crucible at once, with the manganese at the bottom.—*By H. Ostermann and C. Lacroix, Geneva.*

AN IMPROVED DEVICE FOR SUSPENDING HAMMOCKS.

A readily adjustable device for suspending hammocks in various situations, by which also the hammock will be to some extent automatically swung, while a limited endwise motion is allowed, is shown in the accompanying illustration. The invention has been patented by Mr. John D. Pritchard, of Topeka, Kansas. The device consists mainly of a bracket to which is hung a spring-actuated hook, while pairs of metal plates, with suitable cords or straps, constitute a clamp to hold one or both bracket-supported hooks to a tree, the bracket itself being primarily adapted for attachment to any flat surface. Figs. 3 and 4 represent the hammock hook and its supporting bracket, while Fig. 2 is a plan view. The hammock, at its upper portion, is branched to form three separate arms, which receive between them two arms of the forked end of the hook shaft, these arms being pivoted or hung together by a pin to allow free swing of the hook toward and from the bracket plate. The hook shaft at its inner end has a half-ball head fitting loosely within a cupped bearing, and to the shaft is fixed one end of a coiled spring, inclosed by a sleeve, the other end of the sleeve being fixed to a lug on the cupped bearing, these springs being adapted to assist in carrying the hammock back and forth with an easy motion, after it has been swung to either side by the person occupying it. To attach the bracket to a tree or post, clamping plates are provided, of a form to be securely held to the bracket by thumb screws, these plates having eyes in which are placed metal loops to which straps or ropes are con-



PRITCHARD'S HAMMOCK SUSPENSION DEVICE.

nected, to bind the plates, and consequently the bracket, to a round tree or post. The clamp plates are removed from the bracket when the latter is to be secured to a flat surface, while they are flexible, and so adjustable forward or backward in the main bracket plate as to allow of their ready attachment to trees or posts of any diameter.

© 1889 SCIENTIFIC AMERICAN, INC