

MACHINE FOR SEWING LININGS IN HAT BODIES.

The machine represented in the accompanying engraving is for sewing linings or sweat bands into hat bodies. In arranging the sweat band and the hat on the arched bed plate of the sewing machine, the bed plate extends a short distance within the hat body, which hangs upon it, with the hat rim projecting upward in the rear of the presser. The sweat band, having its outer side uppermost, rests upon the plate with the binding projecting within the body, and going under and against the lip of a guide fixed upon the arched bed. One part of the lining extends underneath the longer arm of a guide lever fulcrumed to a movable plate fastened on the bed plate by a clamp screw. Pivoted to the rear arm of this lever is a cam lever, which, when turned against the movable plate, forces the opposite arm down upon the rear part of the lining; it also serves as an additional guide for the sweat band. The hat extends over the top of a feeder working through a slot in the bed plate. The machine is of the class that forms what is termed "chain stitch," sewing by means of a single thread, the mechanism for operating the needle and presser being such as commonly used in sewing machines of this kind. After the sweat band has been stitched to the hat and the latter removed, the band or lining is folded back within the hat body. The front guide fixed to the arched bed plate extends upward, and is provided with a guide lip to project from the inner edge of the guide over the binding of the sweat band and against that part which encompasses the rattan strip. This guide may be fastened to the movable plate, which would then be extended forward to the front end of the bed plate.

This mechanism is not for sewing a sweat lining and hat band to the body of a hat by one line of stitching, but is to fasten to the body a sweat lining of peculiar description. The lining is composed of a round strip of rattan or whalebone, a binding strip of glazed cloth or leather folded along its middle and about the rattan strip, and a broad piece of leather laid on the binding strip, to which it is connected by sewing going through both and alongside of the strip of rattan.

Paper and cloth linings can be sewed in with the machine as well as stitched, reeded, and raw edge leathers, and the machine will work equally well on any grade of straw, felt, or any other kind of hat. It is claimed that from seventy-five to one hundred dozen linings can be put in in a day of ten hours, according to the skill of the operator.

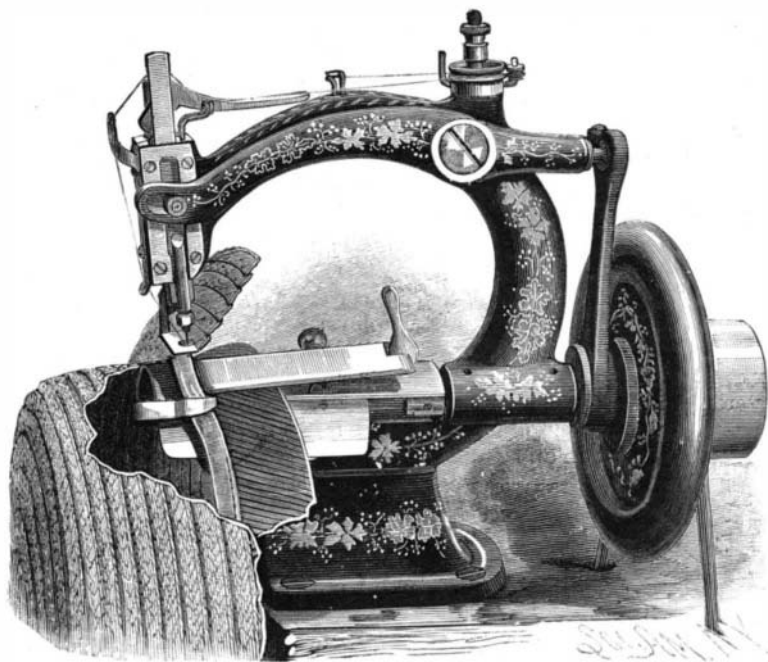
Further information regarding this machine can be obtained by addressing either the inventor, Mr. J. A. Locke, or Mr. B. H. Spaulding, both of Milford, Mass.

The Defenses of Holland.

A considerable sum is to be spent this year in completing the defenses of Holland. The system which has been adopted is peculiar, but is apparently well adapted to the characteristics of the country in which it is being carried out. While other nations, when invasion threatens, mobilize their armies, in Holland the order will be given for the "mobilization of the waters." When this operation is effected, a watery line from five to ten miles wide and some sixty miles long will be created, directly barring the advance of an invader coming from the east. Above the surface of inundation nothing will be visible but a few narrow roads raised on embankments, enfiladed by fortifications bristling with cannon. The water for the most part will be only a few inches deep, so that it will not be navigable by hostile gun vessels or flotillas; while deep trenches cut in the ground below will frustrate any attempt to wade through the inundation. The contingency of an invasion taking place in the winter, when the waters might be frozen over, is ingeniously provided for. The depth of the inundation will then be increased, and the waters allowed to freeze on the surface. The water below will afterward be drained off, leaving the crust of ice suspended, and ready to break in under the weight of the first troops who attempt to cross it.—*St. James's Gazette.*

A Large Photograph.

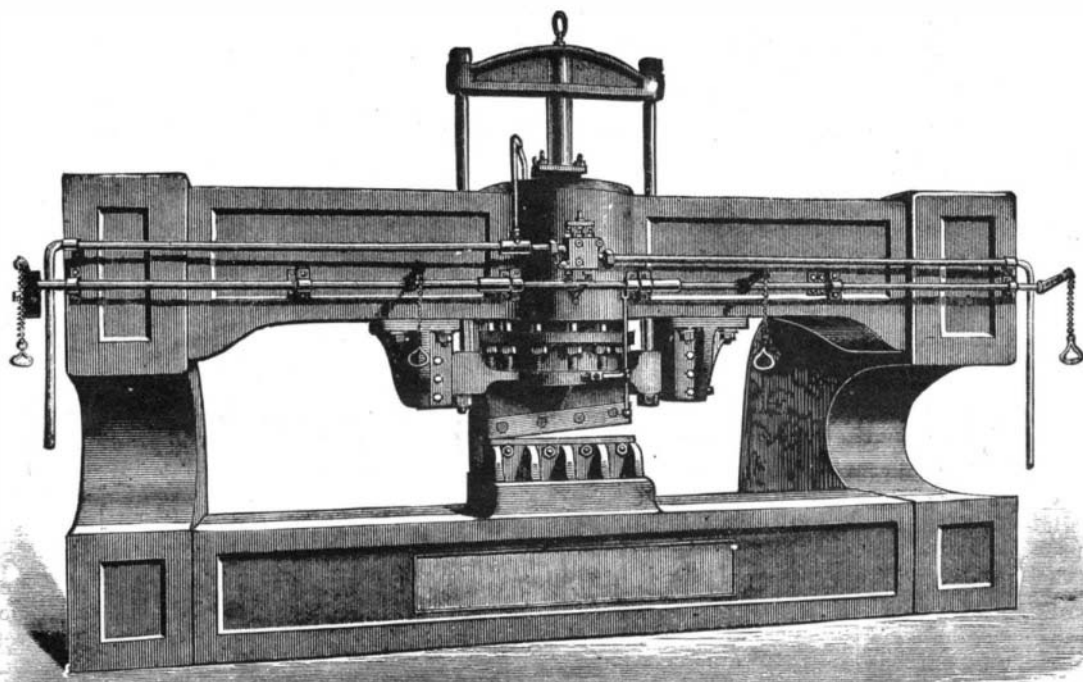
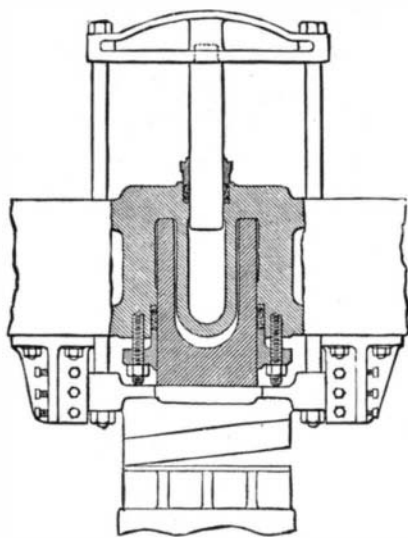
In the studio of Mr. D. J. Anderson, photographer, 785 Broadway, New York, is now on exhibition a photograph, which is 7 x 12 feet, and is a view of the interior of the 7th Regiment Armory, on the floor of which

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are grouped 800 full length figures, members of the regiment. It is a composition picture, each figure having been a separate study. It has occupied Mr. Anderson's time for the past sixteen months. Among those occupying positions as spectators are many well known in the civil and military world, including Grant, Arthur, Cleveland, Blaine, and others.

IMPROVED HYDRAULIC SHEARING MACHINE.

The illustrations represent a new form of hydraulic shearing machine, designed and constructed by Anderson & Gallwey, of Cremorne Works, Chelsea, for the

**IMPROVED HYDRAULIC SHEARING MACHINE.**

rolling mills of Josse Goffin & Co., of Clabecq, Belgium. The machine is designed, says *Engineering*, to cut plates of $1\frac{1}{2}$ inches thick, and by the arrangement of the framework, plates of great width and of unlimited length can be operated upon. For this purpose the frame is formed of two horizontal cast iron girders let into two end castings, between which a distance of 11 feet 16 inches has been allowed. The main cylinder, which is shown in action in the detail view, is cast in one with the top girder, and is bored out to receive the ram, which is secured to a crosshead carrying a shear blade and sliding in guides.

The ram is U-shaped in longitudinal section, in order to allow a second cylinder to enter the hollow thus formed. This latter cylinder receives the "drawback" ram, the upper end of which is fixed in a small crosshead rigidly connected with the crosshead carrying the blade, by means of two tie rods. The smaller ram is always in direct communication with the pressure water, and is therefore continually tending to draw the upper shearing blade away from the lower fixed blade. The pressure water is admitted to the larger ram, and exhausted therefrom, through two miter valves, the spindles of which pass right through the valve box. These valves are forced down on their seat by the combined action of the pressure of the water and of two spiral springs. The lower ends of the spindles bear on two eccentrics on a shaft running the whole length of the machine, and to this shaft levers for operating the valves are attached at intervals. The levers are connected by means of chains with hand rings in the way shown, and as they can be shifted to any position on the longitudinal rod, the machine can be worked from any point in its length. Upon pulling one of the chains, the eccentrics on the shaft open the pressure valve and close the exhaust.

When the ram has completed its stroke, a counterweight on the shaft brings the eccentrics into their former position, closing the pressure valve and opening the exhaust, when the pressure on the smaller ram draws the crosshead and the upper blade back. The machine is also provided with automatic tappet gear, by means of which the stroke of the ram can be adjusted to any length between $\frac{1}{8}$ inch and 6 inches; the consumption of water being in direct proportion to the length of stroke.

Although the shears have to cut very wide plates, the length of the blades is only 2 feet 6 inches; this gives greater facility in straight cutting and also allows a curved line to be followed.

Fiber in Nails.

Unless cut nails are made from better material than is used generally now, their place in the market will be usurped by nails made from fibrous material. Wire nails are very favorably regarded, and are used in preference to cut nails on account of their superior tenacity, notwithstanding superior cost. The iron for cut nails, after being rolled, is slitted or cut lengthwise to a width adapted to the length of the nail to be cut. The length of the nails so cut is directly across the fiber which the iron has acquired by rolling, and, of course, shows its weakest where it should be the strongest. The ordinary cut nails will not drive into seasoned hard wood without "crippling," even under direct blows, and when the blow of the hammer is slightly on one side, they snap like clay pipe stems—they have no tenacity. The weakness of these nails is shown by the fact that it is almost impossible to straighten one that has been drawn from the wood, and then drive it again; in many or most instances, the nail will break in drawing.

On the contrary, the wire nails may be crooked into corkscrews, and then be straightened and be re-driven. They are not only tough, but they are stiff, and will penetrate hard wood where the cut nail would break sharply off or hopelessly crook beyond restraighening. In every respect the fibrous nail is better than the crosscut nail. If it could be afforded at the same or an approximate price, it would take the place of the ordinary cut nail.

Thought and Labor.

Ruskin says: It is a no less fatal error to despise labor, when regulated by intellect, than to value it for its own sake. We are always in these days trying to separate the two; we want one man to be always thinking and another to be always working, and we call one a gentleman and the other an operative; whereas the workman ought often to be thinking and the thinker often to be working, and both should be gentlemen in the best sense. As it is, we make both ungentle, the one envying, the other despising his brother, and the mass of society is made up of morbid thinkers and miserable workers. Now, it is only by labor that thought can be made happy; and the professions should be liberal, and there should be less pride felt in peculiarity of employment and more in excellence of achievement.

MIGRATION OF BLOWING VIPERS.

BY C. FEW SEISS.

A few seasons ago, a narrow sandy island on the coast of New Jersey was overrun with countless numbers of the common toad (*Bufo lentiginos Americanus*). The toad is generally of crepuscular habits, except during cloudy and rainy weather, but here they were met with, out in search of food, at all hours of the day, even beneath the hot glare of the noon-day sun. It may be that, had they all waited until the cool of the evening to hunt for their insect prey, many of the weaker and less active toads would have been supperless. So, by hunting both by day and night, they were able to secure both diurnal and nocturnal insects. Over two hundred toads were counted in a short stroll between 4 and 5 o'clock in the afternoon of a July day. At this period there were no snakes of any kind to be met with on the island. That a few did exist I do not doubt, but they were not observed.

Now, this narrow island is separated from the mainland by a small bay or thoroughfare, which is perhaps over a quarter of a mile wide at its narrowest portion. The vegetation on the island consisted of little else than rank grass, stunted cedars, and pines.

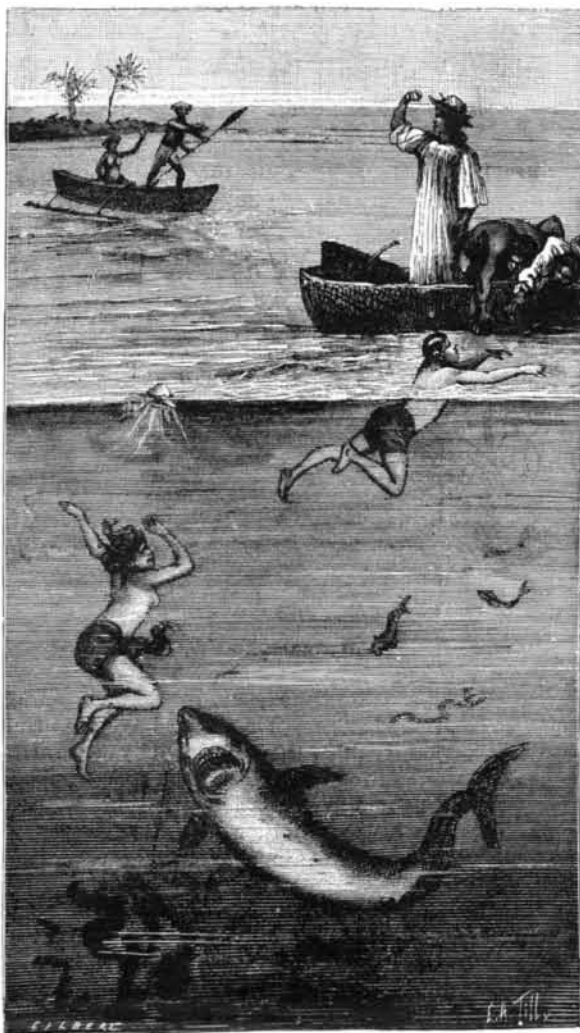
In the season following the one above noted, the toads were again innumerable, but, what was startling, "blowing vipers" (*Heterodon platyrhinus*) were numerous also. They were observed in nearly every part of the island, and were seen pursuing, capturing, and swallowing the toads, as though bent on their extermination. Sometimes a toad would endeavor to escape by quickly burrowing into the sand, but the snake, having marked the spot where the toad disappeared, would force its head, with shovel-like snout, into the sand, seize the unfortunate toad, drag it from its hiding place, and swallow it.

What was the cause of this sudden appearance and number of snakes? They made their appearance in early summer, when the young *Heterodons* were not yet out of the egg, and it requires several months of growth before they are capable of mastering an averaged sized toad. Did they come from the mainland by swimming across the bay, which at its narrowest part is a quarter of a mile wide? This would seem like a great undertaking for a non-aquatic species, but, nevertheless, it is the only way in which they could have come. A migration of snakes has never before come under my notice, and yet I must consider this sudden appearance of "blowing vipers" as such. It is highly probable that food became scarce in their old haunts, and they migrated to the island in hopes of finding food more plentiful. It is not probable that their sense of smell is so highly developed as to have scented the toads from such a distance, and that they were quitting their old home with the certain knowledge that food in abundance awaited them on this sandy island.

In the summer following this migration, toads were not numerous, and only a few snakes were observed; and such, I learn, has been the case for the two or three intervening years since then. Of course, great numbers of the snakes were killed by man; not because they were thought to be poisonous, for this species is here generally and correctly understood to be perfectly harmless, nor always for mere wantonness, but from the belief that in destroying the snakes they were preserving the lives of many toads, which were beneficial to man, inasmuch as they fed upon mosquitoes. Now, the tormenting mosquito (*Culex damnosus*) is by far too small a species of game for the toad. I have examined the contents of the stomachs of several maritime toads, but failed to find mosquitoes. Very young toads, which have just left the water and the tadpole stage, do feed upon minute insects, such as gnats, ants, aphides, etc., but I refer only to the mature animals.

MOTHER-OF-PEARL.

The principal production of Tahiti is mother-of-pearl. This is what stimulates her commerce, this is what gives rise to the relatively important exchanges that take place in these far-off lands of Oceanica, and this is what attracts those vessels which, for a century past, have been sailing among the desolate and wild islands



PEARL FISHING IN TAHITI.

that make up the archipelagoes of Tuamotu, Gambier, and Tubuai.

On account of its rarity, mother-of-pearl has always been an object of luxury. Before navigators discovered that part of the world which is lost in the immensity of the Pacific, it was still rarer than it is now; it had more value, perhaps, but it was assuredly neither more sought for nor more prized. At present it is much employed in the manufacture of many objects. The mother-of-pearl employed in the industries is furnished by various species of shell-fishes, the most esteemed, most iridescent, and also the most beautiful being that

produced by the pearl oyster. Again, two sorts of pearl oysters are distinguished. One of these, known as the pintadine (*Meleagrina margaritifera*), is found in China, the Indies, in the Red Sea, off the Comore Islands, to the northwest of Australia, in the Gulf of Mexico, and particularly off the Tuamotu and Gambier Islands.

The other, which is more commonly known as the pearl oyster (*Meleagrina radiata*), is found in the Indies, in the seas of China, in the sea of the Antilles, in the Red Sea, and to the north of Australia.

The former of these has a harder, more azure, and more transparent shell, and one that attains larger dimensions than that of the latter. Some have been found that measured as many as 12 inches in diameter and weighed more than twenty pounds. The *Meleagrina radiata* rarely exceeds 4 inches in its largest dimensions, and never reaches a weight of five ounces. The two species furnish pearls. According to the fashion, or the prevailing taste, sometimes those of the one are preferred and sometimes those of the other; nevertheless, those of the pintadine have a brighter luster and more transparent and intense tones than those of its congener.

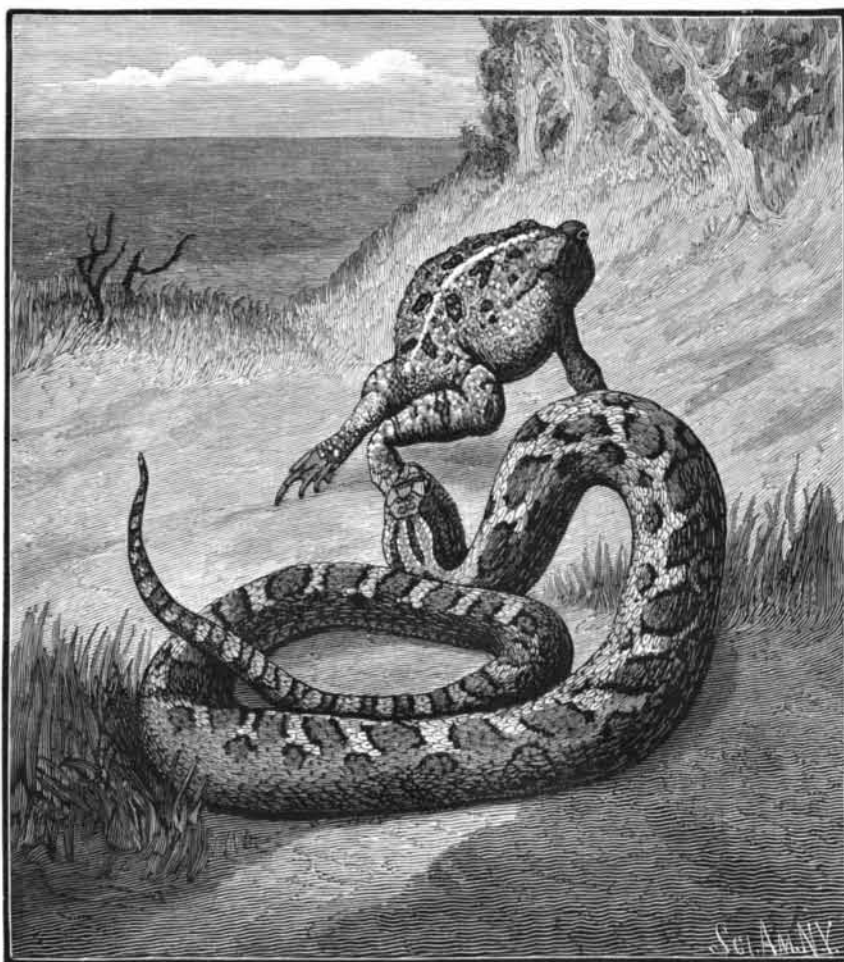
It is difficult to estimate the money value of the pearls collected in the French possessions of Oceanica. We cannot even fix upon an approximate figure as regards this, since this commerce escapes all control, and proceeds after a manner clandestinely. Some estimate that it reaches about \$20,000 per annum, and others that it amounts to \$100,000. According to what I have seen in the Tuamotu Islands, and, on another hand, considering the quite large number of persons who, at Papeete only, are concerned in this trade and live by it, I would give it as my opinion that it amounts to \$60,000. The most important markets for fine pearls are found in England.

The pintadine comes from the tropics. The archipelago of Tuamotu and Gambier is, as I have stated, the point where it is found in the greatest abundance. Here it finds surroundings that are congenial to it.

This archipelago, which was annexed at the same time as the islands of Tahiti and Moorea, consists of eighty islands, almost all of which yield mother-of-pearl, and seventy-two of which are inhabited intermittently by individuals of the Maori race. France has an excellent and devoted population there, which is very proud of its new nationality, and which remains indifferent to all attempts made against our influence. It loves France, proclaims the fact, and manifests it loudly every time that occasion requires it. Industrious, docile, submissive, of mild and simple manners, observing with scrupulous fidelity the laws and regulations that have been given it, it is one of the poorest on the face of the globe. The narrow tongue of land, or rather the crown of arid reefs that surrounds the lagoon of these coral islands, and which is destitute of vegetation, scarcely affords this people sufficient food for its miserable and precarious existence. While the neighboring happy population which dwells upon the fortunate shores of the Society Islands leads a life of ease and pleasure, where everything grows without labor and in abundance, the unfortunate Tuamotun is reduced to the necessity of feeding upon the cocoa-

nut and a few rare and meager seeds of Pandanus (nearly the only fruits on these sandy shores), fish, and shell-fish, which, during several months in the year, are poisonous.

The Tuamotu people are essentially nomadic—through necessity as well as through taste. When one lagoon is exhausted, when diving no longer yields anything, the native, without sorrow or regret, or without caring even, places his family and his goods in his boat, abandons the hut that he had built, and goes, somewhat at the will of the winds, to seek elsewhere, in another island, the wherewith to live. His only industry is diving. All take part in this—women as well as children. The women have a truly wonderful aptitude for this arduous and laborious occupation. At Anna there is a woman who explores depths of 25 fathoms, and sometimes remains under water for three minutes, and she is not an exception. And, then, how dangerous are these investigations in the dark depths of the lagoon, where reign as masters hungry sharks, which, when they cannot be avoided, must be fought! There does not pass a year in which some diver does not come out of the water mutilated. When an accident happens, terror reigns among the divers, and the fishing for mother-of-pearl ceases for some days. But this feeling of fear and of danger does not last, for it becomes necessary to give way to the imperious needs of life. To the Tuamotun, mother-of-pearl is current money. It is with this that he buys the scanty clothing that he wears,



BLOWING VIPER SWALLOWING A TOAD. (Drawn from Nature.)