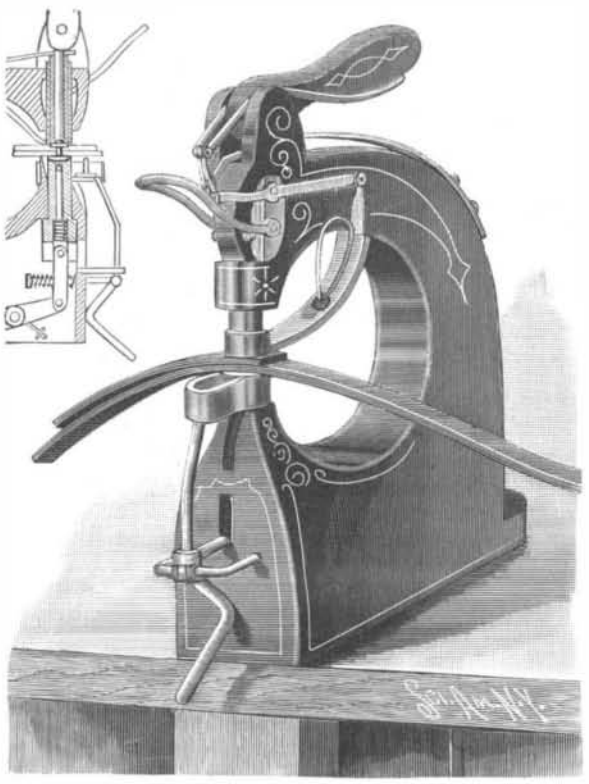
A LEATHER RIVETING MACHINE.

The machine shown in the accompanying illustration has plungers or rods to puncture the material, insert the rivet and washer and upset or head the end of the rivet shank. It has been patented by Christian A. Skeie, St. Hilaire, Minn. The small figure is a central sectional view. The presser plunger, which moves vertically in the arm of the machine, is tubular, and moving vertically in it is a washer-holding plunger,



SKEIE'S RIVETING MACHINE.

also tubular, to receive an inner riveting plunger. A spring plate attached to the upper side of the arm has a forked outer end surrounding the upper end of the riveting plunger and bearing upon the washer-holding plunger, the spring forcing the plunger down on a washer. Pivoted to the outer end of the arm is a hand lever for forcing the riveting plunger downward, and pivoted also at the same point is a bifurcate lever adapted to be rocked in one direction by the hand lever. Communicating with a side opening in the lower portion of the plunger is a curved washer chute, the washer being held in place in the chute by a spring finger, which yields sufficiently to allow the washer to be forced forward by a pusher connected to a pivoted lever whose other end has a pivoted link connection with the bifurcate lever, so that the washer may be fed by the operation of the hand lever which forces down the riveting plunger. Moving in line with the plunger, in a tubular portion of the base, is an anvil whose lower end has a link connection with a pivoted rock arm, the lower end of which is connected by a link with a driving power or foot treadle. A puncturing tool or awl is movable vertically in the anvil, and the lower end of the tool is attached to a yoke plate in such manner that, by the interposition of a coiled spring, the puncturing tool may be moved upward to puncture the leather without moving the anvil upward. Connected to a yoke whose arms extend through holes in the hollow base is an upwardly extending rivet pusher finger, movable in a slot in the bottom of a rivet tray, the finger being moved to push a rivet into position by a depending angle lever handle.

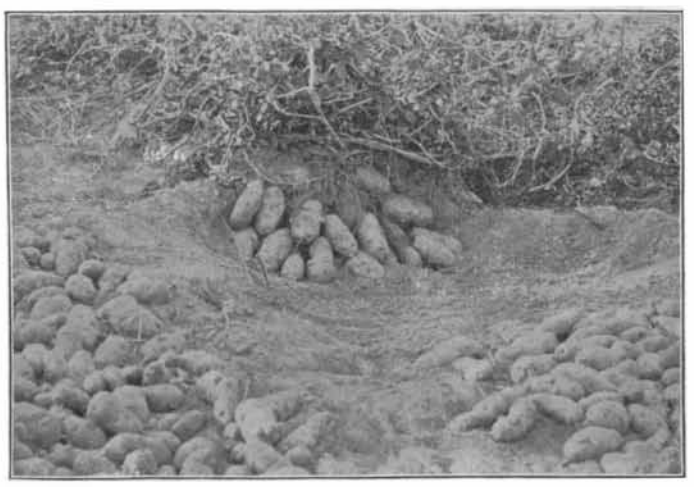
To place the work in position for riveting, the plunger is raised by a forwardly extending, curved, yoke-like handle, the plunger being then allowed to return to bear upon the yoke. The bifurcate lever is then rocked to push the washer down upon the work, and the treadle is operated to punch the hole, the rivet being forced into position by the angle lever handle; the anvil is then pushed upward to force the shank of the rivet through the perforation, and the hand lever is moved to force the riveting plunger down upon and upset the end of the rivet.

REMARKABLE POTATO GROWING.

Mr. C. E. Ford, of Rusk, Texas, who writes that he has been taking and has kept files of the SCIENTIFIC AMERICAN for thirty years, sends us a photograph, from which the accompanying picture was made, and gives us particulars of the remarkable success he has achieved in raising potatoes. The potatoes he prefers for forcing are of the Early Rose variety, the vines or stalks growing 6 to 8 feet, and but seldom blooming or having balls. The Triumph is said to make a crop quicker than the Early Rose and to stand the dry weather better. Mr. Ford believes in "intensive" culture, or the higher fertilizing and increased labor on a small piece of land, rather than little labor and fertilizing on a large tract. He sprouts his potatoes to the size of English peas or marbles before planting and then raises a crop in from four to six weeks, all of large size, without a peck of small potatoes to an acre. He writes:

"There were forty seed the size of peas planted to every double hill. I plant my potatoes in the water furrow and leave a balk 4 to 6 inches wide, and when the potato seed is dropped on the balk a part of the seed fall on each side of the narrow balk. I cover with two furrows of turning plow. I make my rows 3 feet apart; the hills 18 inches apart in row, which makes 140 hills across an acre and 70 rows to the acre makes 9,800 double hills of potatoes to the acre, or 19,600 single hills. As you will see, a hill of 40 seed potatoes goes across the balk, making the hill cover some 18 inches, or half the ground. I never plant less than 20 and have planted 60, and the 60 will every one make as fine potatoes if we have plenty of rain. I also give my potatoes fertilizing with liquid manure every rain. It takes from 60 to 75 potatoes to make a bushel, never more than 75. I have kept the same seed for 26 years and have potatoes both sweet and Irish the whole year round.

"By sprouting your potatoes you have eating potatoes in less than one-half the time it takes under the old style of planting. It takes from four to six weeks to sprout the seed potato to the size of peas; the sprout room I keep warm by a small charcoal fire in a bake oven. One barrel of charcoal will be plenty for the whole time. I put my potatoes into old barrels or small boxes, so as to get them warm easier than in a big heap or bunk. The smaller the boxes, the easier and quicker they will sprout. When the potatoes get large enough, I knock off the hoops, take down the staves, and there are thousands upon thousands of small potatoes from the size of a bird's eye to that of peas and a few the size of marbles; the whole mass is held together with small roots. I take a hand barrow (not a wheel barrow) and carry the seed down the row, and the third person breaks off as many as you wish—not less than twenty to forty—and let them fall on the balk in the water furrow and give two plowings. My sprout house has double walls and is filled in between with sawdust, also overhead, and has double doors."



EARLY ROSE POTATOES—3000 BUSHELS TO THE ACRE.

STEAM AND SOLAR HEAT.

La Nature recently published a description of a vessel found at Pompeii with an internal fire box provided with tubes. The discovery of this apparatus or of another analogous to it dates back twenty years, for the Revue des Deux Mondes mentions it in its number of September 1, 1866.

Seneca, in his Natural Questions (vol. iii, p. 24) speaks of the Draco, a sort of boiler formed of a large spiral tube placed against the interior walls of the cylinder forming the furnace.

Heron, of Alexander, is still more explicit, and, in his Pneumatics, describes the very arrangement of the Pompeiian apparatus under the name of Miliarion, a Greekized Latin term applied to the heat generator in general on account of its resemblance to a milestone.

I was the first to give a French translation of this description in a volume now out of print. I give a summary of it here with the aid of a figure that has been skillfully restored by our draughtsman from the simple line drawing of Heron, and which shows, besides, the arrangement indicated by the Alexandrine engineer for producing one of those effects of amusing physics of which the ancients were so fond. Fig. 1 shows in the center the furnace in the form of a vertical cylinder. All around there was a boiler, likewise cylindrical, filled with water. A certain number of tubes, such as K, M and N, put its different parts in communication in passing through the furnace and thus increasing the heating surface.

The cock, T, served to draw off hot water and the cup, L, to introduce cold water into the boiler through a tube running to the bottom of the latter. The object of the bent tube was to allow of the escape of the air when water was poured in and to give exit to the steam that might be produced. In this way was prevented the projection of water through the cup, L. In the figure is seen a closed compartment into which the water did not enter, and which was designed to set in motion various figures through the aid of steam and a several way cock. This cock consisted of two concentric tubes capable of revolving, one within the other, with slight friction. The external tube, A, was fixed to the top of the heat generator, through which

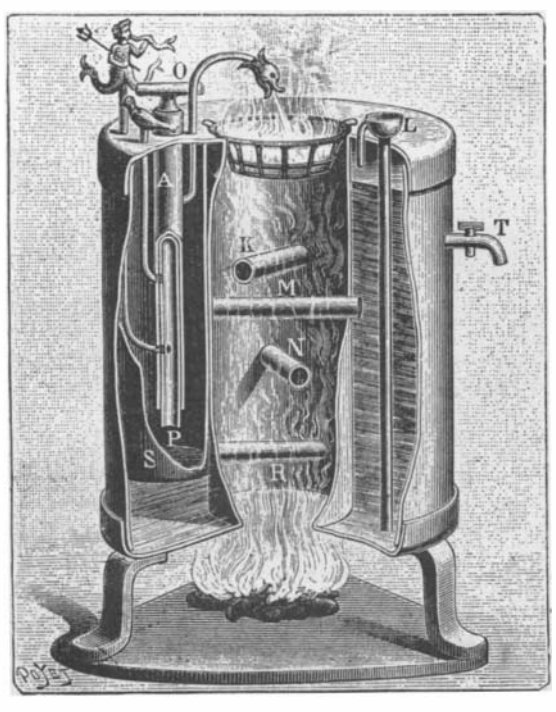


Fig. 1.—HERON'S TUBULAR BOILER.

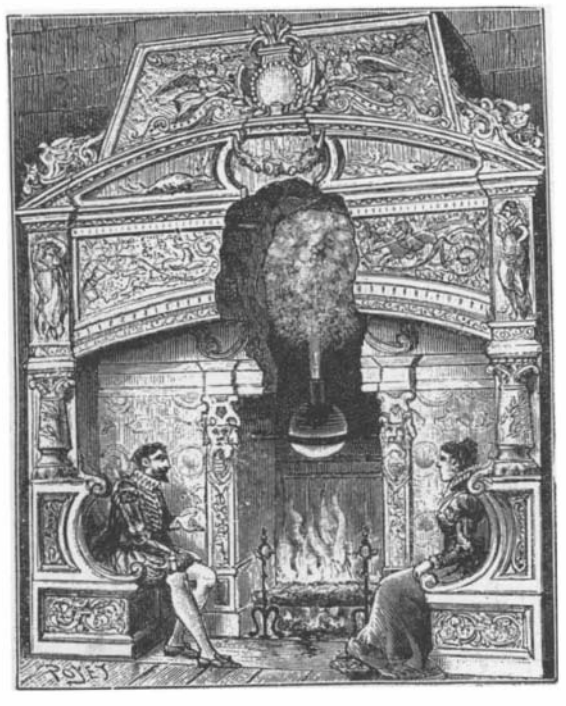


Fig. 2.—EOLIPYLE CHIMNEY.

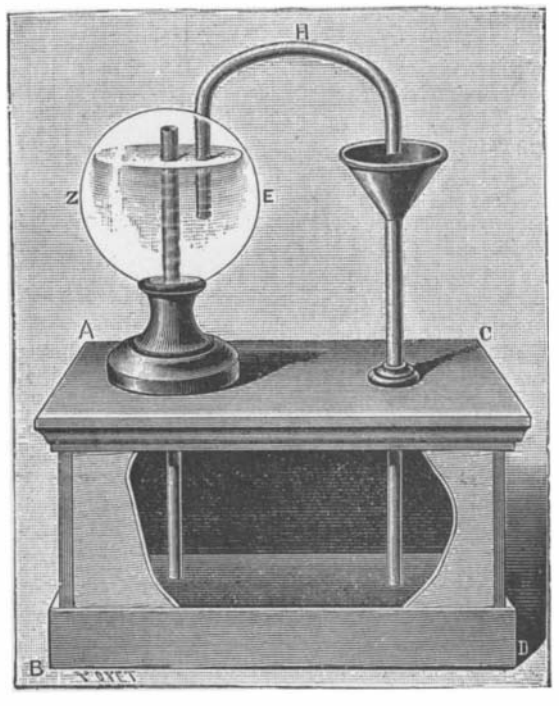


Fig. 3.—THE SOURCE.