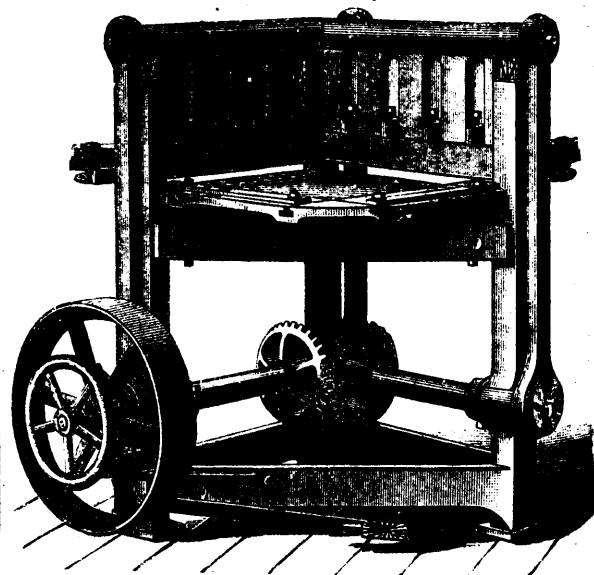


EXPERIMENT WITH BUCKWHEAT AND OATS GROWN IN BARREN SAND, AND SUPPLIED WITH DIFFERENT FERTILIZING INGREDIENTS.

NATURAL STRENGTH OF SOILS, AND ECONOMY IN MAKING USE OF IT.—Every one who has travelled through that part of Connecticut will remember the barren plains just north of New Haven. Large portions of this soil, if such a dry, drifting sand may be called a soil, are entirely devoid of vegetation. It comes nearer my idea of a desert than any other territory in this part of the country. The experiments referred to were made on portions of the poorest of this sand. Fifteen wooden boxes, each one foot square, were filled with the sand and arranged in three series of five each. The boxes of each series were numbered I., II., III., IV., V. In the first row buckwheat was sown; in the second oats, and in the third beans. To fertilize these, several solutions were prepared by dissolving the proper chemical salts in water. One of these contained all the materials which plants require for their food from the soil. This "normal solution" was the same as is used in the experiments in "water culture," previously described, and was applied to No. V. of each series. Another solution, containing the same ingredients, except that nitrogen was omitted, was used to water the plants in No. IV. A solution, with everything but phosphoric acid, was applied to No. III. of each series. Potash was in like manner omitted from No. II. Finally each No. I. received only rain-water. The plants came up, and grew. Those supplied with the complete fertilizer, No. V., were healthy, did well, and gave a fair crop. Where potash was omitted, No. II., the plants were about as tall, but thinner, and the yield of seed was only about half as large. Without phosphoric acid, No. III., the plants looked about as well, but the amount of seed was extremely small. Where nitrogen was left out, everything else being supplied, the plants were stunted, spindling, and sickly. They yielded almost no seed, and were, in fact, no better than those which had nothing but rain-water.—*American Agriculturist.*

STILES' IMPROVED POWER SHEARS.

The Stiles & Parker Press Company, Middletown, Conn., have recently brought out a new machine for cutting and squaring all sorts of sheet metal, of which we give an illustration on this page. It is only within a few years that machines of this kind, capable of doing large and accurate work, have been manufactured. It is only a short time since a large establishment in this city expended many thousand dollars in having a power squaring shears built for them, at that time nothing of the kind being in the market. The finally successful machine was only obtained, at least, after a great many trials and failures. The Stiles & Parker Press Company's machine is intended to meet the wants of those who need accurate and powerful shears for sheet metal. There are three sizes, made to cut 30, 36 and 42 inches wide, and up to three-sixteenths of an inch in thickness.



STILES' NEW POWER SQUARING SHEAR.

These machines are furnished with both front and back gauges, and, when desired, the back gauge can be had with screw attachment for moving it, and graduated scale for setting it accurately to parts of an inch. The bed is strongly made and braced, and the gearing arranged so as to give great power. The cut is made by means of two connecting rods attached to the frame which carries the upper knife, which at the lower end are connected to cranks upon the main shaft. A clutch is arranged to throw the shaft into gear whenever the cut is to be made. This clutch, we believe, is the same as that used by these manufacturers on most of their power presses, and is so arranged that, no matter where in the stroke the foot is placed upon the lever to disconnect the driving wheel, the cutting shear is left at the top of the stroke. The tool, taken as a whole, seems to be a very desirable one.

—*Plumber and Sanitary Engineer.*