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REMOVAL.

The SCIENTIFIC AMERICAN Office is now located at 361 Broadway, cor. Franklin St.

Contents.

(Illustrated articles are marked with an asterisk.)

Table listing various articles such as Acid, liquid carbonic, Alcohol in glutinous liquids, and others with their respective page numbers.

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THE SCIENTIFIC AMERICAN SUPPLEMENT

No. 440,

For the Week ending June 7, 1884.

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Table listing sections I through IX, including CHEMISTRY AND METALLURGY, ENGINEERING AND MECHANICS, TECHNOLOGY, PHYSICS, ELECTRICITY, ETC., ARCHITECTURE, ART, AND ARCHAEOLOGY, and MISCELLANEOUS.

THE STATE OF MANUFACTURING.

Visits during the first half of May to the manufacturing towns in four counties of Connecticut show a condition of business activity much more favorable than the general reports in the newspapers, taken from all parts of the country, would seem to justify.

Some annoyance has been caused by the debates and delays in Congress on the matter of a tariff on foreign productions as affecting home manufactures, and some of the manufacturers attribute the falling off of orders to the uncertainty which this state of Congressional business produced.

PORCELAIN HEADED NAILS.

One of the familiar illustrations of the benefit of rapid machinery in producing articles of use combined with elegance, is in the manufacture of the ornamentally headed nails used for picture hanging and similar purposes.

The press forms the setting into a cup shape for the glass or porcelain head, and this, when inserted, is held in position by having its edges turned in over the head by a press.

The formation of the screw thread on the other end of the wire shank is somewhat interesting. The thread is not cut with dies—in fact, it is not cut at all. It is rolled up from the material of the shank, and the threaded portion becomes larger than the original wire.

SOFTENING AND HARDENING CAST IRON.

Questions have lately been asked as to the possibility of altering the texture or changing the qualities of cast iron by heating and chilling. In the respect of resistance to the superficial changes which are induced on steel by heating and sudden chillings, cast iron stands alone.

As to hardening of cast iron there is no ordinary process, that is generally convenient, except that of casehardening. In this the cast iron article should be polished as well as finished—the surface being made as homogeneous as can be—so that the flux of casehardening be given as large a surface for action as possible; for the composition of cast iron

is a honeycomb instead of a solid; and it is not even a series of layers of fibers, as is wrought iron, or of a network of fibers, as is cast steel, but it is a mass of material of which pure iron itself is not always the largest part.

Even heating is necessary to caseharden cast iron; and yet the heat must be less than that allowed for wrought iron and low steel, for at much less than the white heat for wrought iron or the "high heat" for carbonized steel, the cast iron would disintegrate.

The Petroleum Industry.

From recent statistics it appears that there are 20,000 producing oil wells in Pennsylvania, yielding at present 60,000 barrels of oil a day. It requires 5,000 miles of pipe line and 1,600 iron tanks, of an average capacity of 25,000 barrels each, to transport and store the oil and surplus stocks.

The speculative transactions in petroleum represent more than \$400,000,000 annually. The lowest price crude petroleum ever brought was 10 cents a barrel, in 1861. In 1859, when there was only one well in existence, Colonel Drake's Pioneer at Titusville, the price was \$24 a barrel.

Simple Intensifier for Gelatine Negatives.

The mercury intensifier for gelatine plates, now largely used by photographers, has been somewhat improved by Mr. H. J. Newton quite recently.

The advantages claimed for it are its simplicity, speed, and in giving to the negative a good color. The intensifier, combining mercury, iodide of potassium, and hyposulphite of sodium, sometimes gives to a negative a yellow color, which makes it a slow printer.

Mr. Newton's formula overcomes these objections. He first takes 10 grains of bichloride of mercury, pulverizes it in a mortar, and dissolves in 10 ounces of water. He next dissolves 190 grains of iodide of potassium in 3 ounces of water, and gradually pours the same into the mercury solution.

To intensify, Mr. Newton pours a sufficient quantity of the intensifier into a tray, and immerses in the same the dry or dried negative. The action of the intensifier takes place in a few seconds, and the intensification is completed in two or three minutes.

The plate is then washed and immersed for a few seconds in a very dilute solution of hyposulphite of sodium, again washed, and dried. Negatives in which there was very little detail in the shadows have been very easily brought up to good printing density with this intensifier.

Its action is easily observed by the formation on the film of a milky precipitate, which may be easily washed off.

AMONG the recent patents is one for the combination of a holy water font and a poor box.