right of the machine in this and foreign countries, and also for the sale of nails made by it.—*Scientific American.*

New Process of Making Steel.

"It was discovered some time since by Deville that if oxide of iron is mixed with wrought iron, the wrought iron will melt at much lower temperature than it will without the oxide. Mr Gerhardt applies this principle to making cast-steel by heating scraps of wrought iron in crucibles, to a high degree, and then introducing into the crucibles oxide of iron, or other suitable substance containing oxygen, and immediately after the introduction of the oxide, pouring a quantity of melted pig iron into the crucibles. The oxygen of the oxide combines with a portion of the carbon in the cast iron, and the remainder of the carbon enters into combination with the whole mass to form steel. The degree of carbonizing can be adjusted to a nicety by regulating the proportion of cast iron in the mixture."

Direct Production of wrought Iron and Steel in the Blast Furnace.

A very interesting method for obtaining the above result has recently been patented by Mr. Johnson, of Lincoln's Inn Fields, England. The process consists essentially in the introduction of finely divided oxide of iron into the blast, which, of course, conveys it to the metal in the furnace. The result of this introduction of oxide is that the cast iron becomes decarbonated in the blast-furnace itself, without being placed in puddling or other furnaces. Any other oxide which acts in a similar manner may be employed with equal advantage, and other substances may be employed for the purpose of purifying the metal. The crucibles which are usually employed must undergo some modification in order to admit of the patented system being carried into execution. It is thought advisable to heat the oxide to dull rednees before allowing it to enter the blast pipe.

Maize Paper.

Over and above the abundant use which is now made of maize as an article of food, a new market is likely to be opened for this produce through the inventions for manufacturing paper and cloth out of the fibre. The *Social Science Review* says:—The Austrians are the people to whom we are indebted for this advance in science and industrial art; they have now brought the manufacture of maize paper to such perfection that nothing remains to be desired more, and although as yet they have been unsuccesful in producing a fine cloth, nothing but time is required to render that effort also perfect. Through the kindness of Mr. William Short, of Sheffield, we are indebted for specimens of the paper produced from the fibre of maize in the Vienna manufactory. The qualities vary from coarse, strong wrapping paper to the smoothest and finest writing paper. The paper glazes beautifully, but the most remarkable feature of it is its wonderful transparency. Some even moderately thick specimens are so transparent that they more than match our English prepared tracing paper, the most delicate lines being visible through it. The thicker sort equals our thick hot-pressed paper. The price of the maize paper is from a penny to twopence a quire. We shall hope soon to see the same paper manufactured in England. In the process there is no secret, nor is there anything different in principle from the manufacture of ordinary rag paper. [Specimens may be seen in the Library of this Board.—Ed. Jl.]

Spirits of Turpentine.

The very high price of spirits of turpentine resulting from the war, is causing great efforts to be made for producing it at the North. There are very large numbers of pitch-pine trees in many portions of the Northern States, and we are having inquries from correspondents of the proper mode of procuring turpentine from the trees.

The method of procuring pitch from the pine trees of North Carolina is to chop a box or pocket in the trunk of the tree. A long-bladed axe is used, the lower lip of the box is made horizontal with a deeper portion in the rear, and the upper surface is inclined; the box holding from one to three pints. From one to three boxes are made in a tree according to its size. The boxes are cut during the winter, and the pitch begins to flow about the middle of March. A thin shaving of wood must be taken from the top of the box once in eight or ten days so as to expose a fresh surface. The sap is collected by means of ladles from the boxes as they become filled, and deposited in barrels.

The spirits of turpentine is obtained by distilling the pitch in stills similar to those used for distilling ardent spirits. The article may be purified by a second distillation with caustic soda or potash. —*Scientific American.*

How to obtain Neat's Foot Oil.

The process of obtaining this kind of oil is very simple, and many farmers often throw away enough feet annually to furnish oil sufficient to keep all their harness, shoes, and leather machine belts in the best condition. By breaking a bone of the leg of a fat bullock or cow, it will be found full of an oily substance which often appears as rich and edible as a roll of excellent butter. This is neat's foot oil, and it is sometimes surprising to see how much a single foot and leg will yield when it is properly treated.

"In order to extract the oil, wash the hoofs clean —then break up the shin bones, the finer the better, and cut the hoofs and bones of the feet into small pieces. Then put them in a kettle of any kind, and pour in water enough to cover the bones. The kettle should never be filled so full that the water will boil over the top of it. The finer the bones are broken, or cut, or sawed, the sooner the oil will be driven out. Now, let the kettle be covered as tightly with a lid as it can be conveniently, and boil the bones thoroughly all day. Of course, it will be understood that more water must be poured into the kettle as it evaporates.

"The object of covering the kettle with a close lid, is to retain the heat as much as possible, and thus expel the oil from the bones. The hot water and steam will liquify the oil and expel it from the bones, when it will immediately rise to the surface of the water. Therefore it is very important that the water should not be allowed to evaporate so low that the oil that has risen to the surface of the