

A CARPENTER'S MAKESHIFT.

A good mechanic will generally have his tools in good order, but through accident or the meddling of some careless or ignorant individual, even a good mechanic may find tools out of order and requiring attention before they can be used.

Our artist the other day sketched a carpenter who, evidently having become tired of a dull saw, resorted to the expedient illustrated. Not having a suitable vise at hand, he inserted his saw back downward in a



AN EXTEMPORIZED SAW VISE.

kerf in the timber on which he was working, and proceeded to file his saw as though it were held in the most approved manner.

A LARGE PUNCHING MACHINE.

The Cockburn Barrow and Machine Company, of Jersey City, N. J., have recently completed one of the largest punching machines ever built in this country, of which an illustration is herewith presented. The company have heretofore made many powerful, quick-working punches, running without gears, but this is a triple gear machine, with only two shafts, working in the same way as the back gear of a lathe, while it is also adapted to run without gear, for quick punching, without shifting the belt. To run direct from the belt, the gear wheels are moved out of mesh by means of the hand wheel, when the fly wheel and main driving wheel are locked together, a change which can be made in less than two minutes, and the machine will then have a speed of one hundred revolutions a minute, and will punch 3 1/2-inch holes through 3/4-inch steel plate. When the gears are in mesh, the machine makes ten turns a minute, and will punch holes four inches or more in diameter through 1-inch steel plate. The machine has 50-inch gap, and the lower jaw is made to take a die ten inches in diameter, facilitating the heaviest punching work required by boiler makers and shipbuilders. The machine was built for Messrs. Wm. B. Pollock & Co., of Youngstown, Ohio, makers of the heavy steel converters employed at the Carnegie works. It weighs thirty-five tons, and occupies a floor space of 4 x 12 feet. The pressure obtained in the machine is about 400 tons.

A DISPATCH from Aalesund, Norway, April 24, says the American North Polar expedition under the command of Mr. Walter Wellman sailed to-day for the island of Spitzbergen on the steamer Ragnvold Jarl. The American aluminum boats which the expedition carries were greatly admired here for their beauty, strength and lightness. As the steamer left the quay the stars and stripes were hoisted at the

foremast head, and salutes were fired. All the shipping in the harbor was decorated with flags in honor of the Arctic explorers. A large fleet of small boats escorted the Ragnvold Jarl out of the harbor.

French Exploration in South Africa.

The Paris Geographical Society listened, at a recent meeting, to an account of a journey from the Cape of Good Hope to Lake Nyassa, by M. Edouard Foa. His address is given at length in the *Revue Francaise de l'etranger et des Colonies et Exploration Gazette Geographique*, and from this we take some of the most interesting facts presented.

The region north of the Zambesi, and extending from that river to Lake Nyassa, is the field of his exploration hitherto least known. The expedition was organized at Quilimane, situated in Mozambique on a northern mouth of the Zambesi, and from there it started up the river. The party consisted of four Europeans, including M. Foa, and twenty-eight Arabs. Upon their arrival at Nyassa, two of the Europeans and eleven of the Arabs had died from fevers or other diseases; the rest of the company was nearly prostrated from fatigue, privation and disease, but they had penetrated a region never before explored by Europeans.

This country between the Zambesi and Lake Nyassa covers an area of 68,312 square miles. The average altitude of the valley is about 1,100 feet above sea level. The surface is diversified and covered with rough vegetation. Numerous chains of mountains of an altitude varying from 1,800 to 6,000 feet traverse the territory. At their base are a great many streams, many of which are dry a part of the year. The climate is unhealthy along the rivers, but is more agreeable among the mountains. The average temperature is 95° Fah. in the day time and 68° at night. Some parts of the region the population is dense, in others it is very sparse. The natives are clothed with the bark of trees and skins. The Azimbas are a tribe with numerous branches, which are armed with bows and arrows, and their hair is adorned with feathers of many colors.

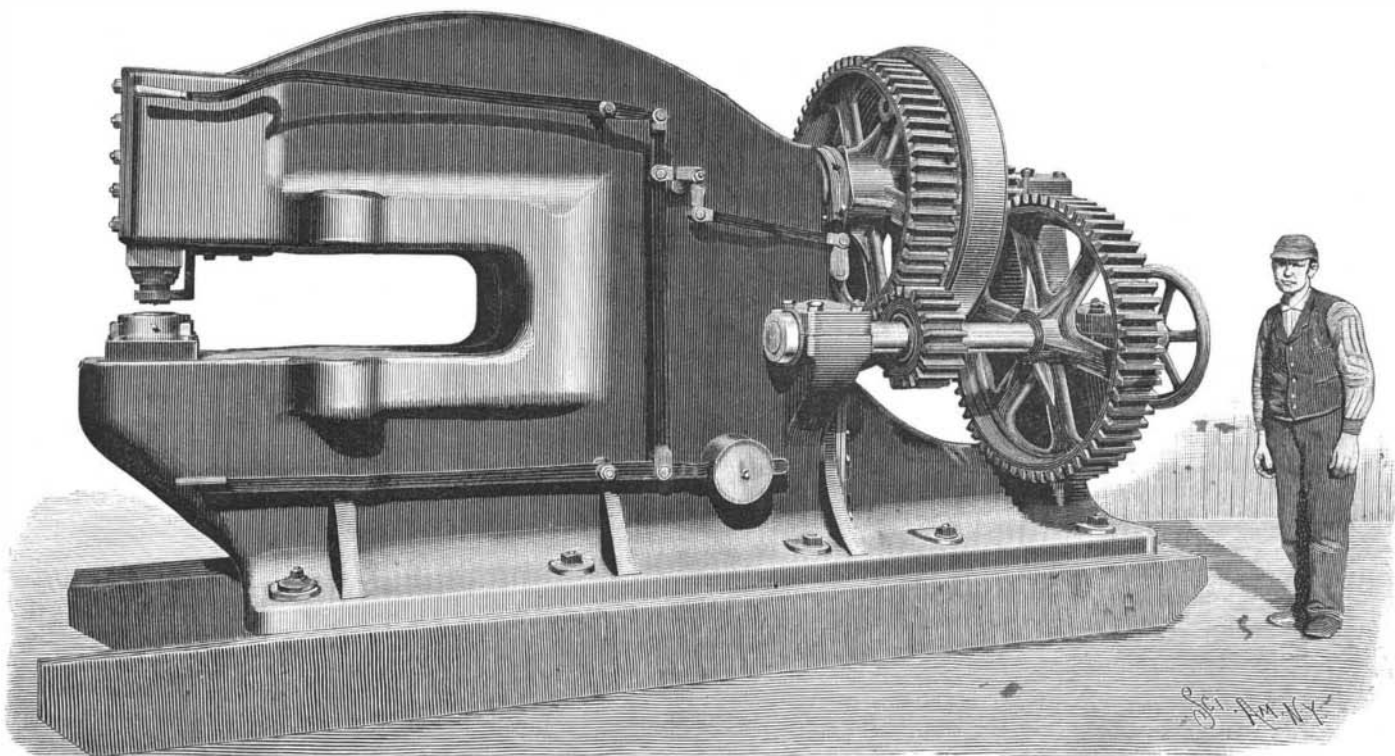
The natural resources of the country are undoubtedly great. Gold and other precious metals, coal, copper, and especially iron, are abundant. India rubber, gums, dye and cabinet woods, textile plants, skins, indigo and other products will one day swell the volume of commerce along the river.

M. Foa gave thrilling accounts of episodes of the expedition. For two and a half months he and a part of his men were separated from the others and held prisoners in a region devastated by famine and the incursions of a hostile tribe, by the swollen rivers, which from sometime dry fords were changed into impassable torrents.

The party lived entirely upon game, but suffered much from want of food, and three died of starvation, during this time. An elephant hunt and a lion chase were among the minor episodes described.

M. Foa dwelt upon the fact that the English are rapidly extending their protectorate in the African lake region.

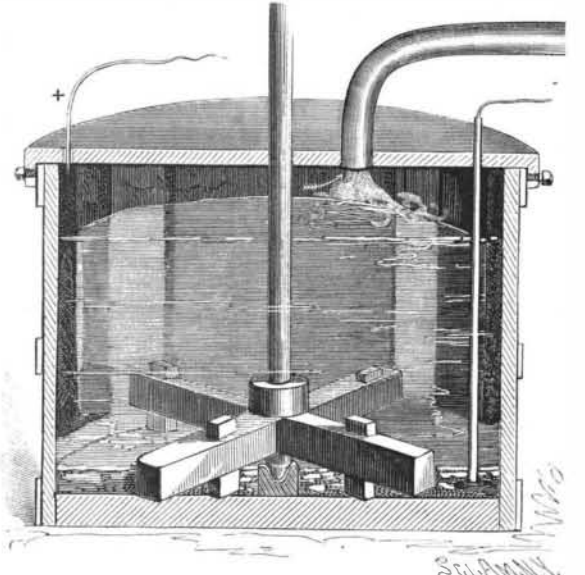
THE tide tables for the Atlantic coast of the United States, together with 207 stations on the Atlantic coast of British America, for the year 1895, published by the U. S. Coast and Geodetic Survey, are now ready for issue, and copies can be obtained at the agencies of the Survey in this city, or by addressing the office at Washington. Price, 25 cents.



A LARGE PUNCHING MACHINE.

A METHOD OF AND APPARATUS FOR AMALGAMATING ORES.

The freeing and amalgamating of gold or silver, either from free milling or base ores, by this method, is designed to save all the metals capable of being decomposed by an electric current from aqueous solution. The invention has been patented by Mr. Hubert F. Edwards, of Butte, Montana (box 910). The tank employed is preferably of wood, or of any material forming a poor conductor, to prevent the freed gold and silver from being plated on its sides, and in the bottom of the tank is a bath of quicksilver. The crushed ore or pulp with which the tank is charged is kept stirred by an agitator, con-



EDWARDS' ORE AMALGAMATING APPARATUS.

sisting of a central vertical shaft with radial blades and paddles, and from the top of the tank leads a pipe connecting with a suitable condenser, so that the vapors and gases generated during decomposition of its contents by the electric current may be condensed and used. The tank is lined with carbon or similar plates, whereby the liquid in the tank is connected with the positive pole of a battery, +, while the negative pole is connected by a wire, -, with the quicksilver in the tank bottom, the wire being led in through a suitable insulator.

According to the method of the inventor, the crushed ore or pulp supplied to the tank is mixed with some decomposing conducting chemical liquid or solution of some salt, as an aqueous solution of cyanide of potassium, which, when decomposed by the electric current, reacts on the metals united with the gold or silver, and is capable of dissolving the precious metals themselves, the solution being decomposed by the electric current to liberate the free gold and silver. The particles of silver and gold are amalgamated with the quicksilver at the bottom of the tank, and are thus charged negatively, the potassium also collecting at the negative pole, while the cyanogen separated combines with hydrogen to form prussic acid, the main part of which goes off as gas, hydroxide of iron being held in solution in the water. By this method the loss due to the flowering of the quicksilver is avoided, and the formation of calomel or other quicksilver salt is prevented.

Another Mississippi Bridge.

Mr. Huntington, president of the Southern Pacific Railroad, has signed a contract with the Phoenixville Bridge Company for the construction of a bridge for the company's line over the Mississippi near New Orleans. The bridge, which will cost five million dollars, will be ten thousand five hundred feet long, with a double track. It will be built on the cantilever principle. The object of its construction is to give the Southern Pacific an all-rail entrance into New Orleans.