

Natural Gas in China.

The following abstract of an account given by Baron Von Richtofen of natural gas wells in China is given in the United States consular reports by Charles Denby, United States consul at Peking. These wells are found in Sz'ehwan, near a town called Tsz-lin-tsing. In an area of twenty-seven li (9 miles) diameter salt wells are found. To make a well the Chinese use a long and elastic bamboo pole, supported in the middle by a cross piece, a rope made by coupling the ends of long (not twisted) slices of bamboo, and an iron instrument which weighs 120 catties (catty = $1\frac{1}{2}$ lb.) The rope is fastened on the thin end of the pole, and the iron on the end of the rope. A slight up and down motion of the thick end of the pole makes the iron hop and bore a vertical hole with its broad, sharpened edge. The ground to be perforated consists chiefly of sandstone and clay. When a portion of the rock is mashed, clear water is poured into the hole, a long bamboo tube with a valve in the bottom is lowered, and the turbid water raised to the top. Pipes of cypress wood are rammed in to protect the sides of the bored hole and to prevent the water contained in the surrounding ground from getting access to the well; the pipes are attached to each other at the ends with nails, hemp, and tung oil.

at least up to the time that Baron Richtofen wrote, a long column of fire rose from that pit, and it is considered nearly impossible to stop the flame.

The gas pits and brine pits are owned separately by corporations. The owners are subjected to the control of the government. The government monopoly is in the hands of the "taotai," who resides at the place. The salt works of Tsz-lin-tsing yield considerable revenue to the government, and have besides enriched numerous proprietors, and give occupation to a numerous population. The number of "fire pits" is twenty-four, and the salt pits are innumerable. Some of them do not enjoy the advantages of gas. The brine is evaporated with grass and wood.

2,500 H. P. CORLISS ENGINE.

As illustrative of the progress of the Corliss system of engines we give an engraving, from *Engineering*, showing a fine pair of compound Corliss engines lately constructed by Messrs. Douglas & Grant, of Kirkcaldy, for the Mazayon Spinning and Manufacturing Company. The cylinders are 40 in. and 70 in. in diameter respectively, and have a stroke of 6 ft. The power, which amounts to 2,500 indicated horse power, is transmitted to the various lines of shafting in the mills by

ent proprietors living on the stream, none of the proprietors can use the water for either irrigation or manufacturing, but for domestic purposes and watering stock, one proprietor will be justified in consuming all the water.

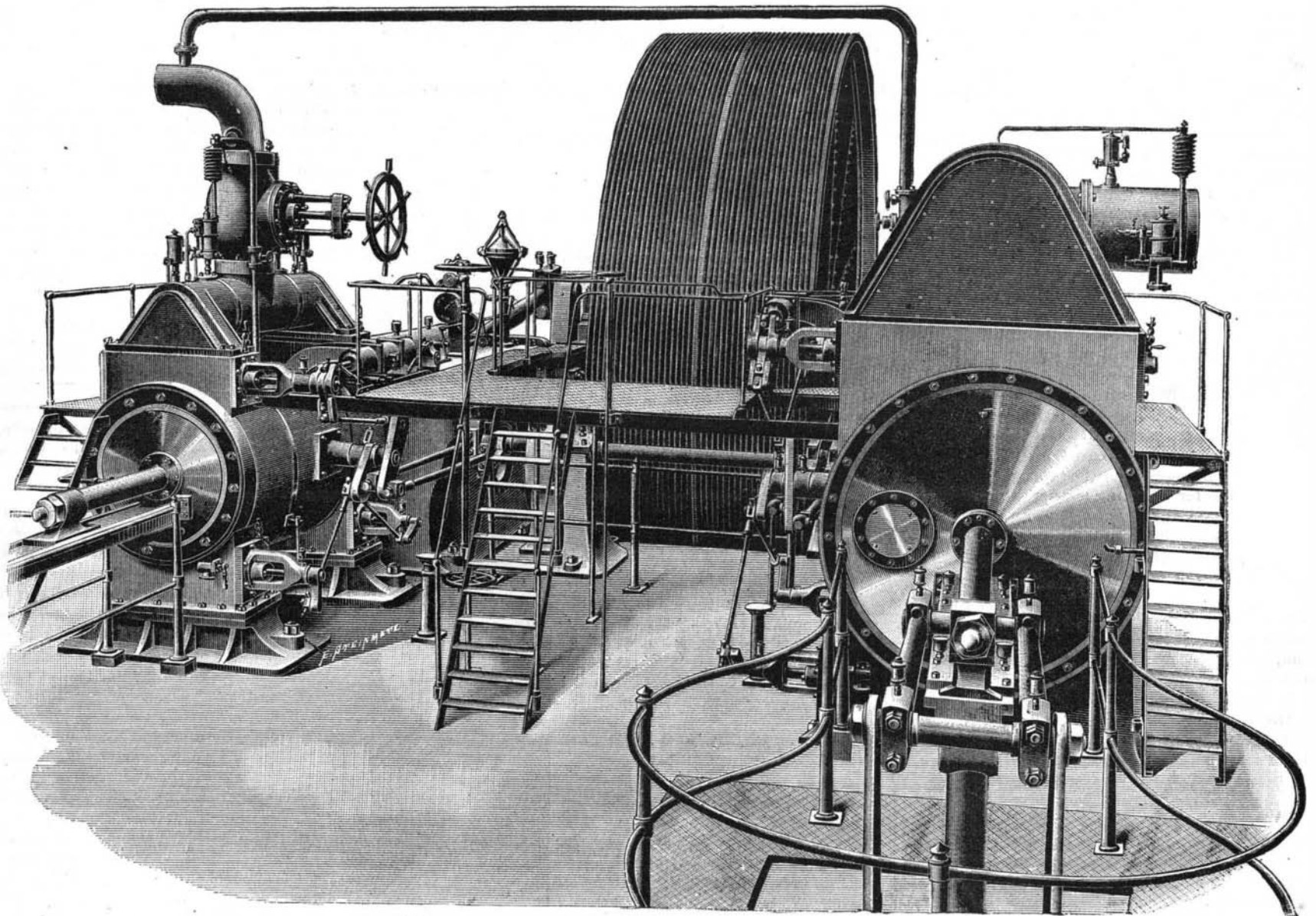
Twenty years' use adverse to the right of another, will give the person so using the stream the right to continue the use, regardless of the other's rights.

And as to the division of water, every farmer who owns land situated upon a stream has the following rights:

- 1st. To the natural flow of the stream.
- 2d. That it shall continue to run in its accustomed channels.
- 3d. That it shall flow upon his land in its usual quantity, natural place, and usual height.
- 4th. That it shall flow off his land upon the land of his neighbor below, in accustomed place and at its usual level.

These rights he has as an incident to the property in his land, and he cannot be deprived of it by grant or description.

If any farmer shall make any change in the natural flow of a stream to the material injury of any other owner situated upon it, or by any interference shall



IMPROVED CORLISS ENGINE OF 2,500 H. P.

The inner width of the pipes is about 5 inches. As the work proceeds the pipes are rammed deeper, and a new one attached on the top; the rope, too, is made longer. At a depth varying from 70 to 100 chang (700 to 1,000 feet) the brine is struck, and the well is fit for use. The brine is raised to the top through long bamboo tubes and bamboo ropes, as described, by means of a horse whim, and then carried to large pans for evaporation, or led to them through bamboo pipes.

Besides these wells there are others, which are bored to the depth of from 1,800 to 2,000 feet. At that distance below the surface petroleum is struck. Immediately on reaching it an inflammatory gas escapes with great violence. Work is now stopped, and a wooden cap fastened over the mouth of the pit, perforated by several rows of round holes. In each of them a bamboo pipe is inserted, and through these the gas is led under the evaporation pans. The pipes ramify, and on each end a tapering mouthpiece, terminating in a small aperture, is attached. The gas is then used for evaporating the brine.

The enterprising spirit which induced the Chinese to examine the ground at so great a depth is said to have had its origin in the drying up of a brine pit. The proprietor was in hopes of meeting brine at a greater depth, but found instead the gas.

When the country was infested with rebels during the Taiping rebellion, they removed the cap from one of the gas pits and set fire to it. Since that time, or

ropes running off a fly wheel 30 ft. in diameter by 8 ft. 6 in. wide, and grooved for 38 ropes. This wheel weighs about 110 tons, and runs at 60 revolutions per minute, giving a speed to the ropes of considerably over a mile a minute. The crankshaft, made of Whitworth's fluid compressed steel, is 25 in. in diameter in the body and 20 in. in the bearings. The steam pressure will be 100 lb. per square inch.

Right to the Use of Water.

The *Legal Adviser*, published at Chicago, gives its readers some information respecting water rights, which has been a source of great trouble and much litigation between neighbor farmers.

It is a general principle, says the writer, that every owner of land upon a natural stream of water has a right to use the water for any reasonable purpose not inconsistent with a similar right in the owners of the land above, below, and opposite to him. He may take the water to supply his dwelling, to irrigate his land, or to quench the thirst of his cattle; to use it for manufacturing purposes, such as the supplying of steam boilers or the running of water wheels or other hydraulic works, so long as such use does not sensibly and injuriously affect its volume. But this is a mere privilege running with the land, not a property in the water itself.

Where the stream is small and does not supply water more than sufficient to answer the wants of the differ-

ent proprietors living on the stream, none of the proprietors can use the water for either irrigation or manufacturing, but for domestic purposes and watering stock, one proprietor will be justified in consuming all the water. Twenty years' use adverse to the right of another, will give the person so using the stream the right to continue the use, regardless of the other's rights. And as to the division of water, every farmer who owns land situated upon a stream has the following rights:

The United States Commissioner for Brussels.

The Hon. John Bigelow was recently appointed United States Commissioner to the Brussels exposition, and has sailed for Europe to take charge of the American exhibits at the Belgian capital and see that they are properly placed and classified. The exposition will open on June 2, and close in November. The buildings and grounds cover 100 acres, and are said to exceed in size and grandeur those of any previous exposition. Enormous temporary structures of brick and iron and a large permanent building of stone have been erected. A large portion of the exhibits are now in place. Owing to the delay of Congress in appropriating \$30,000 to pay for the supervision and care of the exhibits from this country, fewer manufacturers have sent articles than was expected. Every prominent industry will be represented, however.