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LIFTING BRIDGE AT TARANTE.

The bridge of which we give a view crosses the canal that forms a communication between the so-called great and little seas of Tarante, and joins the new town with the old one. This fine work, which was carried out by the Impresa Industriale Italiana di Costruzioni Metalliche, directed by Mr. A. Cottrau, was opened for traffic with much ceremony on May 23 last, and is undoubtedly the finest example of its class in Italy. The original scheme is due to Vice-Admiral Acton, who, with the intention of putting it into execution during his tenure of office as Minister of Marine, put out the work to competition among the various Italian constructors. A large number of firms responded to this proposal, and the project that was accepted was the one submitted by the Impresa Cottrau of Naples, on account partly of the very great economy of the design, and partly because of the elegance it displayed, and the simplicity of the hydraulic mechanism employed for opening and closing the bridge.

The following are some of the principal data of the work:

Distance between the axes of rotation.....	219 ft. 9 8 in.
Clear distance between abutments.....	188 " 3 9 "
Width between handrails.....	23 "
Rise in center.....	12 " 1 6 "
Clear head way.....	41 "
Total length of ironwork.....	292 "
Weight of ironwork.....	526 tons.
" counterbalance.....	532 "

The bridge consists of two half-arcs meeting accurately in the center when closed. Each leaf is subjected to two movements, a rising and a rotating motion, effected by mechanism that is actuated by two turbines of 14 horse power, working at a speed of 240 revolutions per minute, or by hand power, where 36 men are required at each half of the bridge to work the capstans provided for the purpose. The time required for opening or closing the bridge by hand is 17 minutes. With the turbines the complete operation is effected in 5

minutes. The two turbines are driven from a large reservoir holding about 20,000 cubic feet of water, and placed at a height of 62 feet above the mean sea level. The rotating movement which has to be given to each arm to allow passage for the large ironclads is obtained from two large wheels mounted on Vignoles rails and placed at the end of the abutment, where they are controlled by a system of gearing worked by the turbines. The rising and falling movements are obtained by four nuts worked from an endless screw and by gearing driven from the turbines. Before the bridge was opened for traffic it was tested with a uniformly distributed load of 280 tons, which was kept on the platform for twenty-four hours. The maximum deflection that took place under this load was 3 35 in., or exactly half the amount allowed in the conditions of the government scheme. On the load being removed, this deflection wholly disappeared.—*Engineering.*

Artesian Wells in Dakota.

A correspondent who is traveling in Dakota writes as follows from the town of Artesian, Sanborn County:

This town, as its name indicates, is the center of an artesian well district that extends about ten miles in every direction. It seems to be a sort of a natural artesian well section, where by drilling 60 to 139 feet in depth they get a moderate flow of water, with pressure sufficient to carry it up in a 3 inch pipe about 15 to 20 feet above the surface of the ground, costing the farmer (and nearly every farmer has one) about \$100 for well, pipe, etc., included—an invaluable adjunct to a farm. The water just here, in the village, is very hard and impregnated with iron, but some of the wells yield fairly soft water. The water varies from extremely hard to nearly soft.

The district was first discovered when the Chicago, Milwaukee & St. Paul Railway, at this point, three years ago, for railway purposes, commenced a well which was dug 10 feet diameter, 50 feet deep, without success. A drill was then introduced 56 feet further,

6 inches diameter, when, suddenly, it sank 4 feet into a chamber, and the well immediately flowed 10,000 gallons per hour.

The surplus water of all the various wells gives no trouble, finding its way to slough and lake bottoms. Some farmers, as well as the railway company, now run rams with the surplus water that pumps it up 30 feet high, as the pressure is not as great as when first discovered.

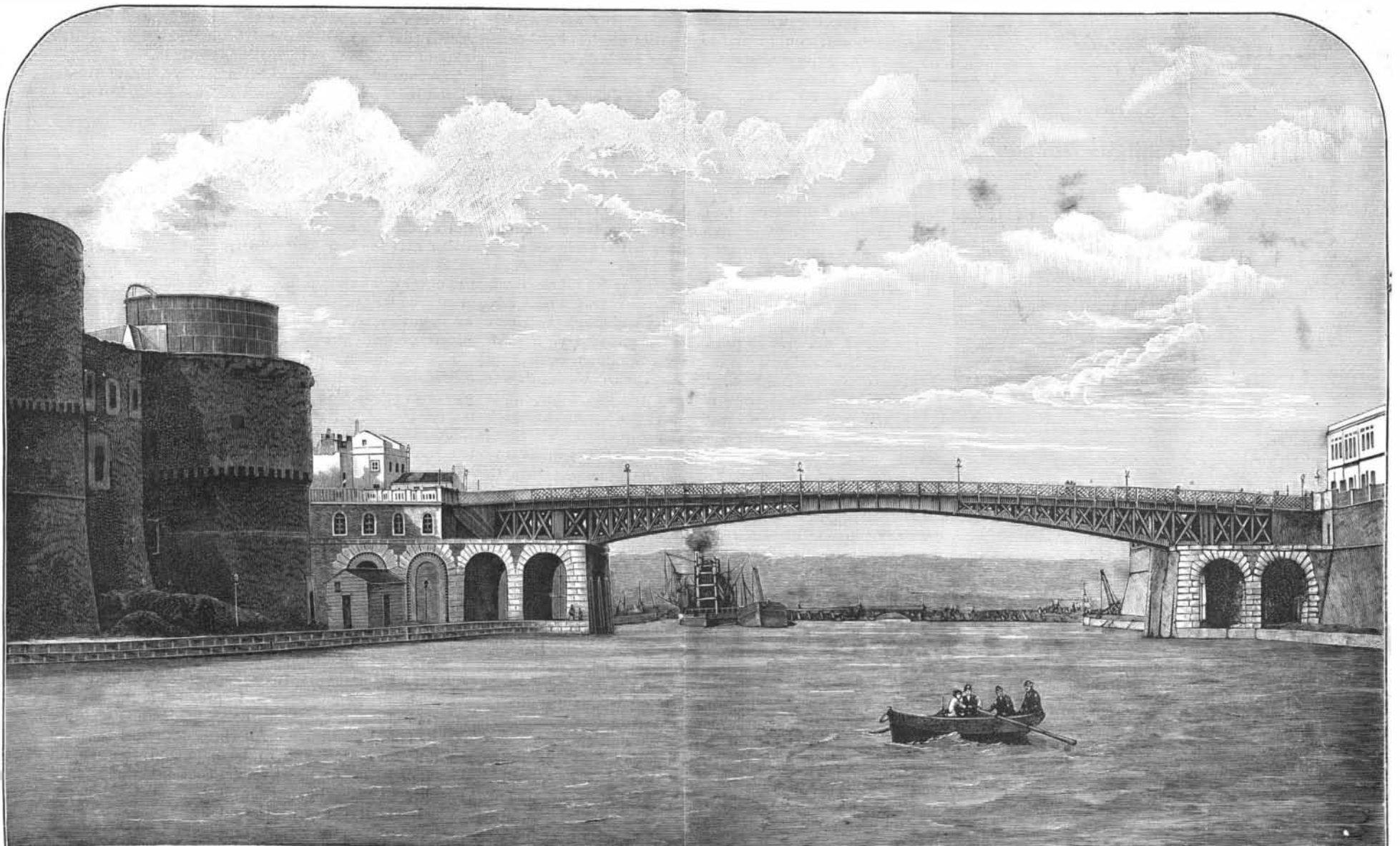
I am told that at Aberdeen, 100 miles north of this place, where they have an artesian well 1,100 feet deep, it throws up live fish.

It would seem feasible to arrange a system of sprinklers over a section of land, whereby water might be turned on to the wheat or other crops in case of drought.

Good beef steers sell here now for 2 cents per pound live weight, and farmers kick at the low price. Hogs are worth 4 cents, which is thought to be an excellent price. Corn sells at 20 cents per bushel, or say \$5.75 per ton, allowing 70 pounds to the bushel—very cheap. Some talk of burning it for fuel, as it is considered fully as cheap as Pennsylvania hard coal, present price of which is \$11.50 per ton. Corn on the ear is said to make first class fuel by those who have used it.

The Return of the Waters.

A recent phenomenon in Central Illinois puzzles scientific and other people. After weeks of drought, the streams and wells becoming exhausted, abundant water suddenly appeared, without rain or other visible source of supply. Water flowed freely in the streams, and even the shallowest wells were replenished. Where this water came from and the cause of its sudden appearance are mysteries which no man can find out. Some religious people believe it was an answer to prayer. It is probable that the effect was produced by a subterranean disturbance similar to that of an earthquake shock.—*Chicago Journal.*



NEW LIFTING BRIDGE AT TARANTE, ITALY.