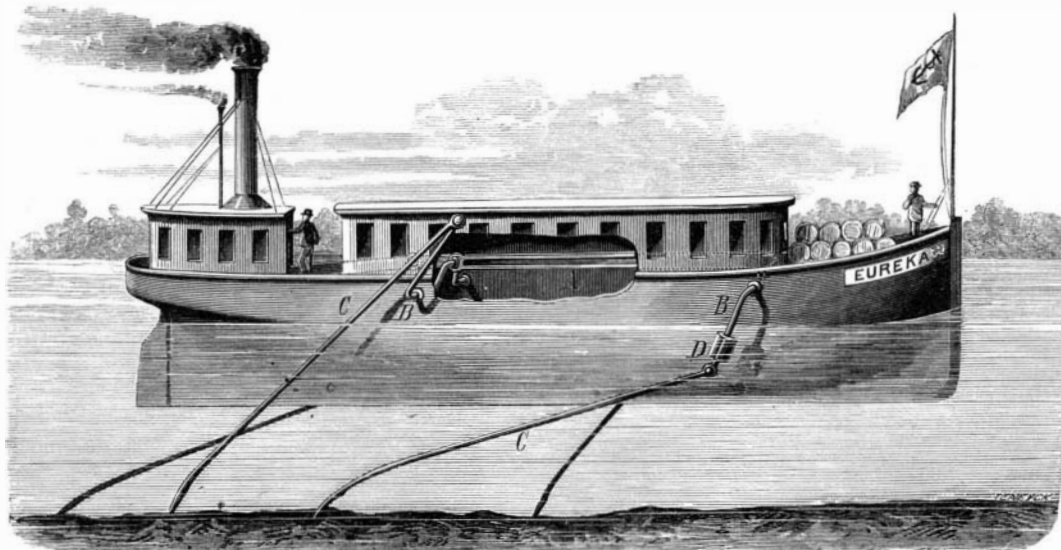


IMPROVED METHOD OF PROPELLING CANAL BOATS.

We illustrate herewith a new mode of propelling canal boats, which consists mainly in mechanism for actuating a series of push bars. The device is certainly simple, and, in the opinion of the inventor, when applied to boats, will prevent any loss of power by slip and any washing away of the banks of the canal. It may easily be arranged in the ordinary boats in use.

Placed thwartships the boat, and revolving in bearings attached to the framework of the same, are two shafts having cranks at their centers. These cranks are connected by a rod, A, so that the shafts may move together. To one end of the connecting bar the piston rod of a steam engine is attached. On the ends of the shafts are formed cranks, B, to the extremities of which are pivoted the push bars, C. The lower ends of the latter are formed to take hold of the ground on the bottom of the canal and push the boat forward. The cranks, B, are so arranged that one rod on each side of the boat may be working while the others are moving forward. The weights shown at D are intended to balance the cranks and give uniformity of motion to the shafts.

Patented through the Scientific American Patent Agency, February 15, 1876. For further particulars relative to purchase of patent, address the inventor, Mr. Louis F. A. Legouge, Wheatland, Yuba county, Cal.

**LEGOUGE'S METHOD OF PROPELLING CANAL BOATS.****IMPROVED FLOOD GATE.**

We illustrate herewith a novel and simple floodgate which any farmer can make from a couple of trace chains, a dozen stout staples, and a few boards. Its advantages are that it allows the water to flow past freely, and so not only obviates any danger of sediment or floating material blocking the channel, but favors the washing and deepening of the latter; it is entirely drift-proof and self-adjusting, and needs no skill to manufacture.

It consists simply of a series of boards united by the chain staples in such a way that the lower part of each may overlap the upper part of each lower board upon the up stream side. By this construction, as the water rises, the lowest board will float; and as the rising continues each board in consecutive order will be carried up. Any floating material will strike against the smooth surface of the gate and pass beneath it, so that there can be no obstruction of the water and no consequent damming and back flow.

The gate may extend entirely across the water course, or stakes may be driven at its ends, as shown. This last construction renders it less easy for stock to push the barrier open and pass down stream. The invention has been practically tested on a large farm with excellent results.

Patented through the Scientific American Patent Agency, March 7, 1876. For further particulars, relative to sale of county and State rights, address the inventor, Dr. R. H. C. Rhea, Uniontown, Union county, Kentucky.

Ill Advised Procrastination.

As matters now appear in the American section of the Centennial main building, there is going to be a repetition of the farce yearly enacted at the American Institute shows in this city. At the time of writing, beyond a floor neatly ornamented with chalked and lettered boundaries, and a few show cases, there are no signs of preparing the full exhibit promised from American exhibitors in the main structure. In Machinery Hall, more energy has been displayed, and progress is comparatively rapid; but elsewhere, it remains a disagreeable but none the less true fact that the French, English, and Spanish entries are much further advanced than those of our own country. It will be very unfortunate, not to say humiliating, if the opening day, now scarcely three weeks distant, shall find the American section a chaos of confused and badly arranged exhibits.

The Western Tanning Plant.

Messrs. Moffat Brothers, of Buffalo, N. Y., send us a letter from a Chicago firm in reference to the western tanning plant, described by us on page 181, current volume. The firm report that they made an experiment with the plant two years ago, and distributed it to other firms, the result in every case being that there was not tannin enough in the plant to preserve the green hides from decay; and making leather was altogether out of the question. If any one can throw light on the difficulty, we shall be glad to hear from him.

Danger from Street Telegraph Wires.

During the recent high winds in London, the following accident occurred in Farringdon street. Charles Holmes, a cabman, was driving a cab, and, when near the viaduct, one of the post office telegraph wires passing over the road

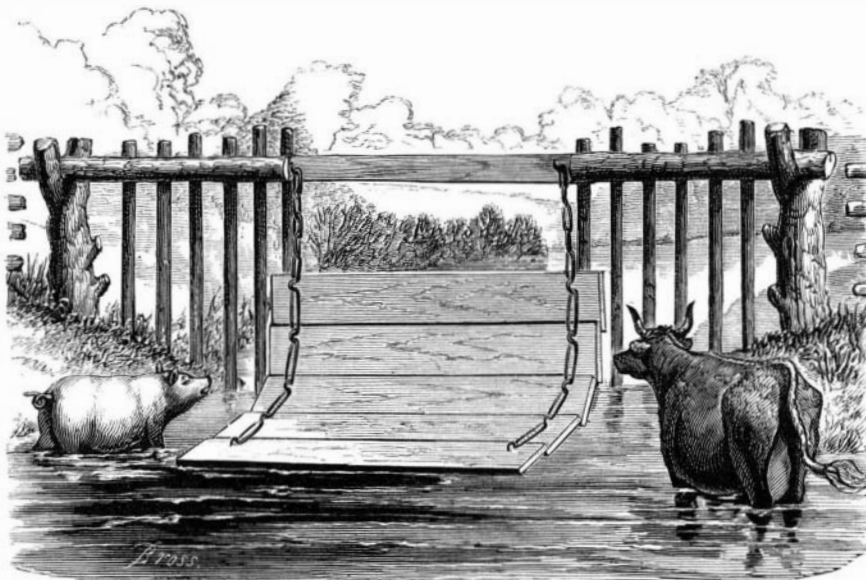
snapped, and fell about the horse's head and body. The animal took fright, and bolted for some distance down the road, until it got entangled in the wire in such a manner that it was thrown completely over. It was with great difficulty that it could be extricated, and it was then found to be so severely injured that it would probably have to be killed. The driver had a narrow escape.

A similar accident occurred about the same time in St. Bride street. A telegraph wire broke, and a cab driver was caught round the neck by the broken wire, but fortunately he was not injured.

Another accident of the same kind in Islington was unhappily fatal. A Brompton omnibus, after finishing its journey at about five minutes past two o'clock, pulled up as usual at the York Hotel; and one of the horsekeepers, named William Stevens, was driving it to the stables, when a telegraph wire was blown away, and it fell round the poor fellow's neck, and nearly cut his head from his body.

Lightning.

The celebrated experiment of Benjamin Franklin, by which he demonstrated the identity of lightning and the common electric spark, was performed by him in June, 1752, at Philadelphia, Pa. Having made a small cross-stick kite, he covered

**RHEA'S FLOOD GATE.**

it with a silk handkerchief instead of paper, so that it would stand rain, attached a tail, etc. The upper end of the cross had an iron point, connected by a string to the usual kite cord, which was of hemp. To the lower end of the cord an iron key was attached, and to that a short length of silk ribbon, as a non-conductor, by which the kite string could be safely held in the hand. On the approach of a thunderstorm he proceeded to a common near the city, and, with the assistance of his son, sent up the kite. Ere long the thunder cloud approached, the electricity came down the kite string, and Franklin, standing under a shed, received the electric sparks through his knuckles which he applied to the key, and charged his Leyden jar by putting its conductor in contact with the key. The rain then fell, which improved the conductivity of the kite cord, and the electricity appeared in increased quantity.

The news of this wonderful experiment rapidly spread over the world, and was extensively repeated. In France, Professor Romas made a kite seven feet high, with a fine wire interwoven in the string. The kite was raised five hundred and fifty feet, and is alleged to have yielded flashes of electric fire ten feet in length. In St. Petersburg, Professor Richman, while attempting to repeat Franklin's experiment, received so heavy a charge of electricity that he fell dead. This was in 1793.

ONIONS given to horses in the first stage of the epizootic are said to be very beneficial. They cause the animal to cough and sneeze and discharge freely from the mouth.

Brains and Brain Nourishment.

There was once a gentleman who used to argue that the soul is seated in the pineal gland; and that there are special regions of consciousness in the brain, different parts of which have different functions, is a doctrine now establishing itself on what may be considered sufficient authority. Further investigation in this direction may avail to show what should be the remedy for an atonic or hypertrophied ideal or other function. Meanwhile we have the assurance of Mr. Frank Buckland, who has lately passed a brilliant examination on the *ostrea edulis* before a House of Commons committee, that "brain power in those engaged in business and literary pursuits was greatly strengthened by phosphorus conveyed in the form of oysters." This assurance, although weighted with the statement that oyster meat costs \$2.24 per pound, cannot fail to be of immense value to all those—not a large class—who have need of their brains. Candidates for the Indian Civil Service, Newdigate prize poem men, common jurymen, and the holders of foreign bonds will now, no doubt, eat, who never ate before; and city men, with whom, for their easy digestion, oysters are a favorite food, will eat the more. We cannot understand why "those engaged in business" should take precedence, in the repair of brain waste, of those engaged in literary pursuits, but can readily believe in the possibility of the proposal—

—a direct corollary to Mr. Buckland's assurance—that, as we have compulsory nurture of the mind, so we must have compulsory nurture of the brain. We wonder, says *Iron*, how much more luminous some of our most brilliant writers would have been had they but seen to a proper supply of phosphate of iron and osmazome.

The Railroads and the Centennial.

The various railroad companies whose lines lead to Philadelphia have met in convention and decided upon a reduction of twenty-five per cent in fares to the Centennial, and also that round trip tickets shall be issued for a period of sixty days. The Union Pacific is the only dissenting line, consequently the above reduction applies on all roads and east of Omaha. From St. Louis the Centennial fare will be \$40.50, and from Chicago \$33, for the round trips; and an additional dollar is charged if a route *via* New York city be chosen.

For use on the Pennsylvania railroads between this city and Philadelphia, two kinds of tickets will be issued. One good for fifteen days will cost \$5 for the round trip; the other is restricted to the day of issue, and is subdivided into three classes. The first class is good after 7 A. M., and costs \$4; the second, between 6 A. M. and 7 A. M., costs \$3; and the third, available for early birds, who prefer the cool of the morning for their journey, and hence start prior to 6 A. M., costs but \$2. The first class tickets are good for express trains, which will run through from terminus to terminus in from two and a half to three hours, landing the visitor on the Centennial grounds. The second and third class trains will yield the right of way to those above-mentioned, irrespective of relative hours of starting, and hence will occupy from four to five hours in the trip.

All trains, no matter whence they come, will run into the Centennial depot of the Pennsylvania road, which is located in Elm avenue, fronting Machinery Hall.

A New Plant for the Dooryard.

Among the plants distributed this year from the botanic garden in Washington, says the *Star*, is the *aralia papyrifera*. This plant produces the beautiful substance known as rice paper; it has soft, downy, palmate leaves; it grows ten feet high, with a stem four inches in diameter, full of white pith like the elder; in a full grown specimen the pith is about one inch in diameter. It is divided into pieces three inches long, and by the aid of a sharp instrument is unrolled, forming the thin narrow sheets known as rice paper, greatly used by the Chinese for drawing figures of plants and animals, and also for making artificial flowers. Until about 1850, the source of this substance was unknown to scientists. The Chinese, on inquiry, gave very fanciful figures and descriptions of it, illustrating the fact that then, as now, "for ways that are dark, and for tricks that are vain, the heathen Chinese is peculiar." It was first introduced from the island of Formosa to Europe, at Kent gardens, in 1853; from there it has been widely disseminated. It is almost naturalized in some parts of Australia; in the Southern States, and perhaps California, it will flourish. As an outdoor ornamental foliage plant, it is well worthy of cultivation in any part of the country.

J. C. S., Jr., says: I take seven papers, but would rather part with all others than with the SCIENTIFIC AMERICAN.