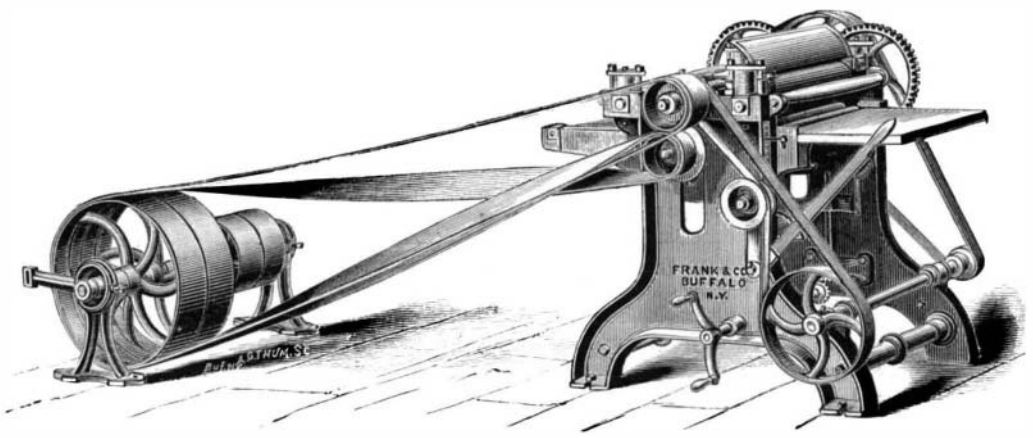
IMPROVED WOOD PLANER.

This machine is well adapted for planing lumber for all kinds of boxes, sashes, doors, window and door casings, etc. In planing door panels it does its work sufficiently smooth so as not to require any hand planing, and it is substantially built of the very best material. The bearings in which the cutterhead journals run are cast solid to the frame and are self-oiling. The lower cylinder is placed so near under the upper one that the bed or plate over it passes as far under the upper cylinder as it can and escapes the cutters. It is claimed that this, when once properly adjusted, does not require to be readjusted when the machine is changed to plane different thicknesses of lumber, as is necessary with other double-surfacing planers. This planer has a feed roll outside of the under cutter head to carry the lumber clear from the machine after the lower cylinder has done its work, which is a feature not often found in the large double surfacers in use. The countershaft furnished with this planer has C. Purdy's patent self-oiling device for the loose or idle pulley. Three sizes are constructed to plane 16, 20, and 24 inches wide, and from ⅛ to 8 inches thick.

Further information may be had on application to Frank & Co., 176 Terrace street, Buffalo, N. Y.



DOUBLE SURFACING PONY PLANER.

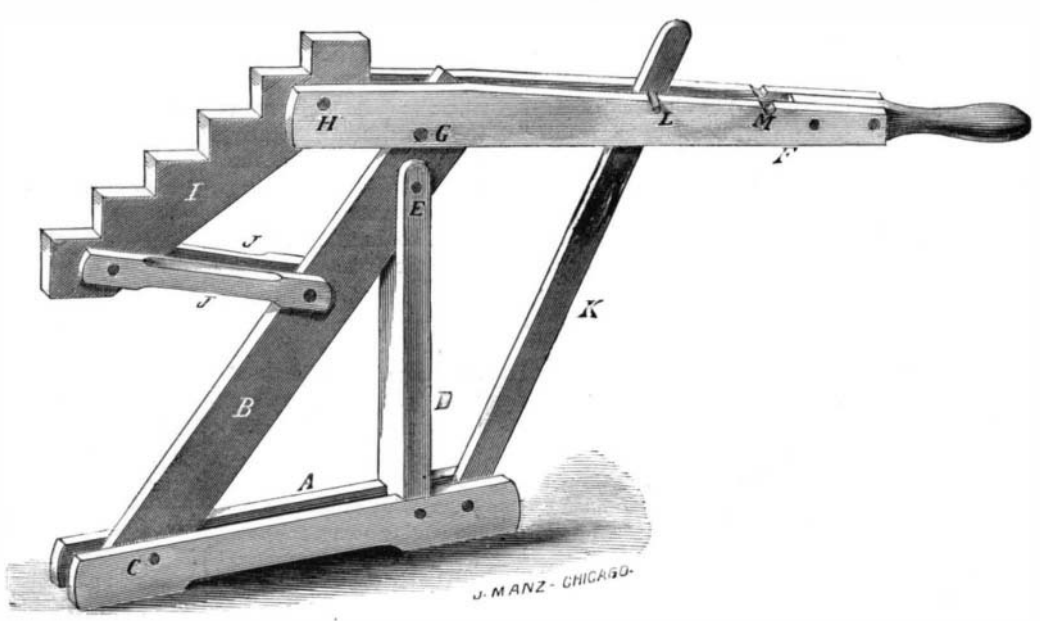
Jute Culture and Manufacture in the South.

There is now in progress of organization in Charleston, S. C., a factory for the manufacture of cotton bagging from jute, which, it is said, will be in operation in less than two months. Jute seed has been distributed by the Agricultural Society of that State to about sixty planters along the coast, so that it is believed that within a very short time the South will raise, spin, and weave jute, not only for its own use, but for other districts. The culture and manufacturing of jute have become very extensive, as a million acres of land in India are devoted to its cultivation, and one factory near Calcutta employs 4,000 workmen, while at Dundee, in Scotland, there are said to be about a hundred jute mills, employing some 20,000 operatives.

It is believed that the South can grow jute as successfully as India can, and manufacture it as profitably as it can be done in Dundee, and that it will be done if the import duty on jute be allowed to stand until the Southern plantations and factories are allowed to have a fair start. To some extent the cultivation and manufacture of jute are an experiment, and unless there be a prospect of handsome returns, neither planters nor manufacturers will want to have anything to do with it. Notwithstanding this, it is proposed, just as the plantations and factories are about to make a beginning, to reduce the duty on jute, and expose such enterprises to a competition that did not exist and was not expected when they were projected. This is neither politic nor just, for, so long as the protective system exists, its beneficent effects should be felt by all young industries, whether in the North or South.

IMPROVED LIFTING JACK.

We illustrate herewith a new and simple lifting jack, applicable to all kinds of vehicles. The base, A, supports an inclined bar, B, and standard, D. The lever, F, has its fulcrum at G, in bar, B, and extending forward is pivoted to the notched bar, I, which is connected by the bar, B, by the short bars, J. It will be evident that when the lever, F, is operated the notched bar will be raised or lowered. The axle of the vehicle rests upon one of these notches according to the height of the axle. K is a bar which is pivoted to the base, and which extends upward above the lever, F. It carries a pin, L, which, when the jack is loaded, falls into one or the other of the recesses, M, in the top side of the lever, and thereby holds the load. When the load is to be lowered the rear end of the lever, F, is depressed to release the pin, when the bar, K, is thrown forward with the foot. The lever is then allowed to rise and release the jack. The device is strongly and inexpensively constructed.



ROWLAND'S IMPROVED LIFTING JACK.

Patented through the Scientific American Patent Agency, February 15, 1876. For further information relative to sale of territory, except Ohio and Illinois, address the inventor, Mr. James S. Rowland, Senecaville, Guernsey county, Ohio.

MR. JOHN L. STROUB, the inventor of the convenient apparatus for baking clams, illustrated on page 279 of the last issue of the SCIENTIFIC AMERICAN, may be addressed at 93 Canal street, New York city.

AMERICAN ACADEMY OF SCIENCES.

The annual meeting of the above named association convened at Washington, D. C., on April 15, under the Presidency of Professor Joseph Henry. The following are brief abstracts of the papers read.

ALACRANE REEF.

Professor Alexander Agassiz described the formation and structure of Alacrane Reef, in the Yucatan Bank, which at first sight appears to present features incompatible with the general theory of the coral reefs of this region, as set forth by Mr. Darwin, but on a more careful examination it confirms that theory. It is believed that the whole region of the Florida reefs and neighborhood is one of elevation. Cuba is the axis of elevation, and eventually this formation will fill the whole space of those waters. The elevation is comparatively recent. Alacrane Reef will serve as an epitome of the whole. Similar observations had been made on the neighboring coast of South America, and Professor Agassiz believes there is evidence to show that before this elevation, and late in the Tertiary period, the place now occupied by the Isthmus of Panama was the seat of a great equatorial current, which has produced a marked effect upon the fauna of adjoining oceans.

WATERSPOUTS.

Professor Ferrel spoke on the mathematical theory of waterspouts, and stated that a waterspout is simply the cloud by means of the centrifugal force of the gyrations diminishing the tension. It is not the fall of a body of water carried up as water. The conditions which give rise to a waterspout continue to supply it with material to support it. With a high temperature and an unusually low dew point, differing 16° from the temperature of the air, waterspouts a mile high have been produced.

MARS' MOONS.

Professor Asaph Hall read an essay on the orbits of the satellites of Mars. The eccentricity of the inner satellite is very large, and this is the reverse of what would be expected if the diminution of its orbit had been occasioned by a resisting medium. The distance from its primary of the outer satellite is calculated at 12,500 miles; of the inner, 3,600, about as far as from Washington to Berlin.

THE SALT OF THE SEA.

Professor Hilgard described an optical ocean salinometer, for the determination of the saltness of the sea at different depths and localities. The new instrument resembles a spectroscope with telescope attached. The sea water to be examined is poured into a triangular bottle, which takes the place of the prism in the spectroscope. Light is admitted through a slit made by covering with black varnish all except a narrow space in a lens, and a lamp can be placed before this slit, all parts being practically secure against shaking by the motion of a ship. Professor Hilgard said that with this instrument a very regular scale of values had been attained.

Professor Alexander Agassiz gave a very interesting account of deep sea dredging in the Gulf of Mexico, and especially described

THE RECENT IMPROVEMENTS IN SOUNDING APPARATUS.

In sinking the lead to great depths, heavy weights are required. On the Challenger the only mode of ascertaining that the lead touched bottom was by noticing when the rope ran out more slowly than before. This operation was performed with a very heavy rope, such strength being necessary to hold the weights employed in sinking it. It was liable to an error of perhaps 300 fathoms in giving great depths. It is strange that the English did not use the invention of their own countryman, Sir William Thomson, instead of the antiquated sounding rope. The improvement principally consists in substituting a piano wire. This, after running out, leaves the shot, with which it is weighted, on the bottom. Repeated soundings with the piano wire on board the Blake indicated that the accuracy attained was within one-hundredth of one per cent; the Challenger soundings were only within five per cent. The time gained by using the wire is quite remarkable; for instance, twenty to twenty-five minutes as compared with two hours. The iron shot weight left on the bottom of the ocean is, perhaps, a sixth of that lost by the old process.

Professor Agassiz showed the dredge as now modified and used on the Blake. It embodied a method which did the sifting at the bottom instead of the top of the ocean. A rope was so fastened to the dredge that it no longer tended to bury itself. After this had been successfully tried, a further improvement was made by substituting a flat box for the dredge, with net sides; this ran smoothly along the bottom without burying at all. Tangles were attached behind the dredge which were of great service.

The trawl was another instrument needing improvement. Its tendency was to turn over sidewise, and then catch nothing. On the Blake no such difficulties were encountered; they used a contrivance somewhat like an oyster trawl, that had the merit of doing its work equally well whichever side was up.

The clumsy apparatus of the Challenger made its work costly. The total weight of dredge, rope, and shot in three miles' depth was three tons, and of course the rope wore rapidly under such a strain, and often parted while out. The British expedition lost 50,000 fathoms of such rope. The Blake expedition could not afford loss at a similar rate, even for a season's cruise, and it was determined to do for dredging what had been done for sounding—to substitute wire for rope. With wire, the dredge served sufficiently as a weight. The time saved by using wire with the dredge was as great proportionally as with the sounding lead. Hauls were made in two hours that would have consumed eight hours on the old plan, and five or six hauls were made per day instead of one. In three weeks one sixth as much was done as in the three or four years' work of the Challenger.

RESULTS OF THE CHALLENGER EXPEDITION.

The following observations are reported by Professor Agassiz: Where the depth is 1,800 to 2,000 fathoms inside the Windward Islands, the fauna corresponds to that of the Atlantic outside; the animals having doubtless penetrated through the openings between the islands. All classes of the animal kingdom found in the ocean are well represented. Inside the Caribbean Sea the fauna is more specialized and characteristic. On the Challenger expedition it had been ascertained that the red clay ooze of the ocean bottom was largely a result of the decomposition of the shells of surface animals—a disintegrated portion of the limestone contained in those shells. Everywhere in the Gulf a similar deposit was found. Pelagic animals, chiefly mollusks, may be said to fill this sea from the surface to 8, 10, or 25 fathoms in depth. The dredge always brings up a quantity of their half decomposed shells, and in instances where the test of proportion was carefully tried, it was found that more than half the mud consisted of shell fragments. There is no doubt that a stratum is forming at the bottom of the sea, due entirely to the coverings and hard parts of pelagic animals which exist in swarms near the surface. On the question as to the existence of many animals in deep water, near neither the surface nor the bottom, Professor Agassiz is inclined to distrust the Challenger observations. The apparatus there used could not furnish proof as to the point whether the animals