

Shipping Lumber on the Coast.

The shore line of the west coast of the United States has very few good harbors. Between San Francisco and the straits of Fuca, some 700 miles, there is really not a single harbor which is always accessible during gales. There are a number of open roadsteads, giving partial shelter from the summer northwest winds, and several bar harbors, all of which are dangerous of access and utterly impracticable in heavy or even moderately bad weather. There are only four places on our 1,300 miles of coast line where it is broken by rivers or inlets of any magnitude, or where there are harbors of any importance. These are San Diego, near our southern frontier; San Francisco, 500 miles north of San Diego; the Columbia river, 620 miles north of San Francisco; and the strait of Fuca, 160 miles north of the Columbia, separating us from British territory. San Francisco and San Diego are the only two good harbors on this long line of coast.

For nearly the whole length of the northern coast the immense forests, extending back for miles from the shore, furnish employment for labor and investment for capital. At every available point for shipment stands a saw-mill, turning trees into lumber which is sent here by sea and thence distributed. Every little river has its fisheries and canneries, and all the valleys and bottom lands their agricultural population.

The produce is mainly shipped by sea and under the peculiar existing conditions the people have had to devise means to overcome the natural disadvantages of the coast line. From these necessities has grown up the "chute system" of loading and discharging vessels, which it is the purpose of this article to describe. As stated, the rugged character of the coast line is such that there are few harbors or landing places where it is possible to maintain a wharf, so that chutes have to be constructed. Most of these chutes are on the coast

north of San Francisco, although there are a few on the south coast also. These chutes consist of a long incline of wood in the form of a shallow trough, extending from a headland of a shipping point or from a high wharf or pier, out to a point where water is deep enough to allow vessels to come under and load. Of course, no average can be given of their length, size, cost of construction, or length of shears. These items all depend on the location and conformation of the coast. In some cases they are 60 feet long, as when used from a wharf or pier, and in others 600 feet or more. The length depends entirely upon the vertical height from sea level to the point from which the lumber is started. There must be inclination enough for lumber to slide by its own weight, and yet not so much that its impetus will be too great. In practice the angle is about 30 degrees, though in very long chutes it is common to give them much more pitch at the start, and have the lower end nearly level, or even ascending a little to check the force or speed of the sliding lumber. This is done for several reasons. First—In a long chute it would be nearly impossible, except at great expense, to preserve a true line of incline, and there is always more or less sag on account of the lightness of construction. Secondly—If the headland was high it would often be impossible to obtain the correct inclination without great expense and a very long chute, perhaps too long for service, and extending clear across the harbor. It is

usual, therefore, to pitch them sharp at first and then graduate them to suit. No part of the structure ever touches the vessel, except by accident, but the whole thing is suspended from the various shears or supports, and the outer end or apron is raised or lowered to suit the stage of the tide, height of vessel, and weight of lumber, according as it is light or heavy. In stormy weather they are, of course, hoisted high in the shears.

At the lower end and close to it, say within ten or twenty feet, is a break, or "clapper," as it is usually called, which consists of a heavy flap of planks, faced smoothly with iron on its lower underneath edge. This is hinged to the top edges of chute, and the lower edge rests on the bottom. A lever handle is fastened to a frame on one side connected to the clapper in the center with an iron bar and extends through a similar frame on the other side, allowing the clapper to be raised on its hinges. When shipping lumber, a man is stationed at the clapper and a couple of boards at a time are shoved down the chute. They slide down rapidly at

a row is then stood up against the outside rail. The clapper is then lifted, and the ties or posts are allowed to run down, one after the other, a car-load at a time, each lot being stowed before the next car-load is sent down. In loading shingles, the chute is filled, one bunch behind the other, from clapper to top, and one bunch at a time let pass; the chute being lowered or raised so that the clapper man can control them as stated, and be sure of their not getting away from him. If they should, the bunches, by striking the deck and each other, would be broken up.

These chutes are, with few exceptions, placed on the north sides of the landings or coves, that side being usually the highest, with a reef extending out, which affords pretty smooth water during the prevailing northwest winds of the shipping season. The peculiar formation of the coast brings nearly all the chutes on the north side of the landings.

The engraving which we have had made to accompany this article shows a typical chute. Some are much wider and some more elabo-

in case anything gives way they go on the rocks. Frequently in trying to get to sea they come to grief on the rocks or shoals at the entrance. Once clear of the land, however, they are generally all right.

Most of our coasting schooners are center-board vessels so as to insure large carrying capacity with comparatively light draught of water. They are mainly built on this coast from native lumber, and are as fine a class of vessels as there are in the world. To the Puget sound ports, of course, a number of square rigged "lumber droghers" ply, and they are principally used in the coal trade as well, but the main coast carrying trade is done by the schooners.

These conditions are peculiar to the California coast, there being no other part of the world where this chute system is in vogue. They are built on all sorts of places along the coast. The extreme edge of a headland or point is often selected on account of depth of water. It must be remembered that the ocean surf is constantly rolling in, and even behind many of the small points or headlands there is a heavy swell. In many places the insurance men refuse to take risks on the vessels, on account of the danger of loss.

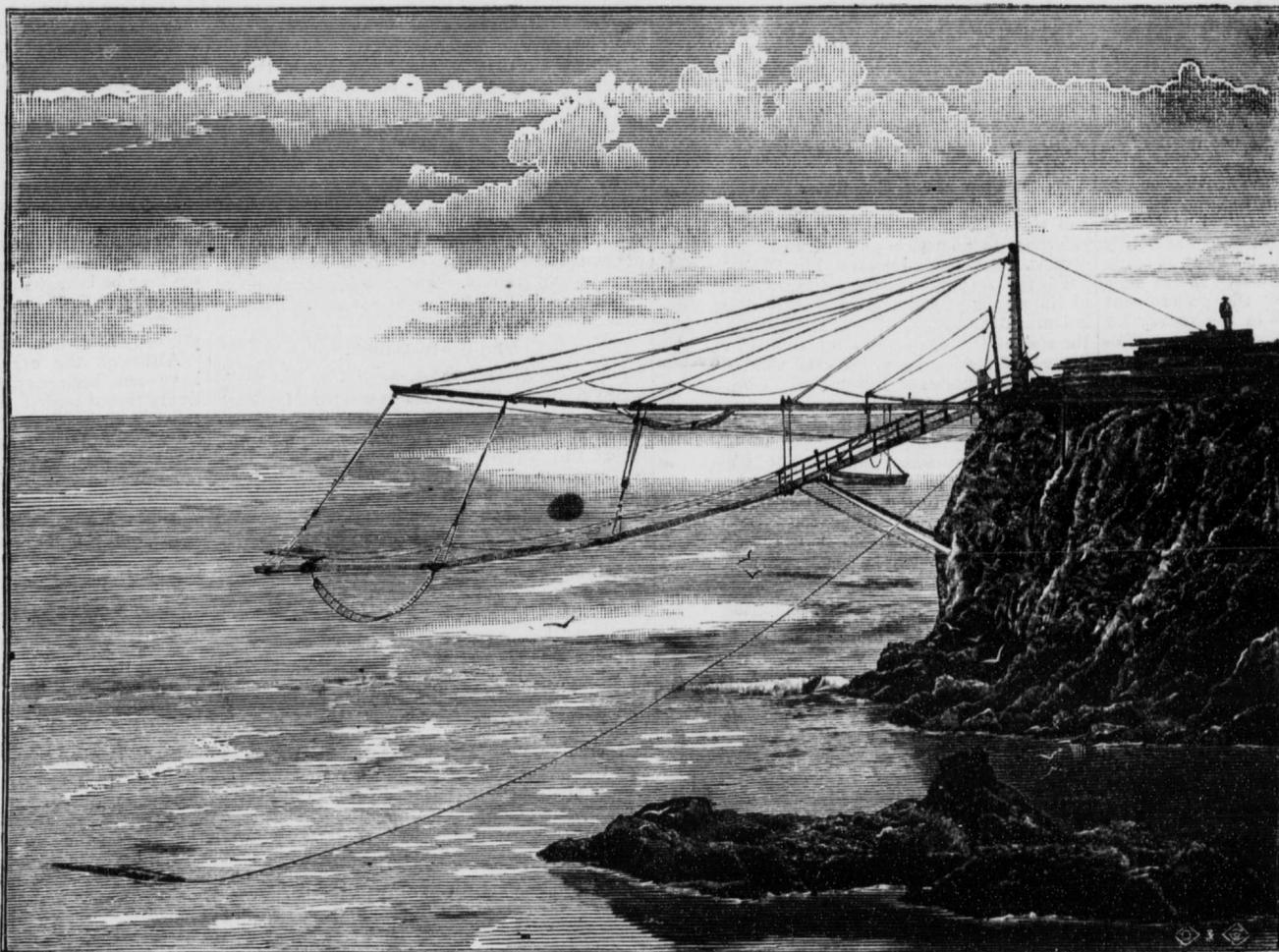
ELECTRICITY IN FISHING.—A new iron steamer has just been built in England for fishing in the Java seas. This is the first practical application on a large scale of the use of the electric light for such purposes. The lamp is of 15,000 candle-power. It was recently tried on the Clyde, and the result was in every way satisfactory. An account of this test is thus given: "In the test, the submarine lamp was lowered into the sea some few feet below the surface, and subjected to a four hours' continuous working trial. The engine and dynamo, which are placed in a convenient corner of the engine-room, made a speed of 700 revolutions per minute, with the result of perfect illumination of the sea for a considerable distance around

the lamp, which, as the darkness of the night came on, had a very novel and striking effect. The trial was over at 10 P. M., when the lamp, still burning brilliantly, was hoisted up from the deep, and found to be working in perfect order. It is said that this will revolutionize deep sea fishing by insuring immense fares at a slight expense and with only slight risk of life.

GATHERING UP THE BUFFALO BONES.—Shipping buffalo bones from the great plains of the West to Eastern phosphate factories has developed into an important interest of late, since the reduction of trunk line freight rates. A single manufacturer in Philadelphia has received this summer more than 200 car-loads of these bones. The skeletons are worth \$25 per ton delivered at the factories, and as the freight is only from \$8 to \$10 per ton there is room for considerable profit for the gatherer. Besides extracting phosphates from the bones, the horns are used for tips for umbrellas, and certain bones are made into artistic and handsome buttons.

OUR WOOL PRODUCT FOR 1884.—The domestic supply of wool of the United States for the year 1884 is estimated at about 230,000,000 pounds. This is an increase of about 10,000,000 pounds over 1883.

REDWOOD FOR ENGLAND.—The ship *Charles Bal*, at this port, is taking on a large cargo of redwood lumber for England.



A LUMBER CHUTE FOR LOADING VESSELS ON THE CALIFORNIA COAST.

first, and the impetus given carries them to the clapper. As they reach it the man there raises it enough to allow them to go under, and, as they slide, puts his weight on the lever, slowing them down or stopping them with their ends sticking over the vessel. The vessel is moored directly under this end, with the chute about breast high above the deck, and the boards are seized by the men and passed below or stowed on deck, as the case may be; the apron being raised as the load is put on or tide rises. This is for boards or small timber. In shipping large timber, another brako is put on higher up, consisting of several long planks held together by cross pieces on top, and hinged at the top the same as the clapper, with a rope running from the lower end through a block overhead to the upper end of the chute. As the timber runs down it goes under this flap, and its force is checked by the weight and friction, a man at the rope regulating the same, so as not to stop it altogether. When it reaches the clapper its force is so spent that the man can then stop it. It is a very nice job, all this brake business, to apply just the required amount of check at the right time, and can only be learned by experience.

In shipping material by this means, no more is started down the chute until the preceding lot has been taken out. In loading railroad ties or posts, of which great quantities are shipped to this port, the practice is to send down enough carefully to cover the deck of the schooner, and

rate. The engraving was made from a photograph of Rockport chute, Mendocino county, formerly known as Cottanueve, a landing only considered available for six months in the year, and by no means the best on the coast at any time. Nevertheless, considerable money has been spent here in improving it as a shipping point. An isolated rock off the beach, which was so precipitous and pointed as to have a foothold at its pinnacle for only one man to work at first, has been cut down until it presents a surface available for storing over 200,000 feet of lumber. From this rock to another nearer shore has been stretched a wire suspension bridge, costing over \$13,000, and the horse-cars bringing lumber from the mill come on trestle-work to the bridge, and across it to the other rock. Everything is of the most substantial character in the work done. The chute comes down from the outer rock, where the lumber is piled. There are guys, stays and braces to steady the chute and to regulate the inclination as well.

The winter gales, like winter gales elsewhere, are the cause of great damage on the coast line. The vessels which are out must take it as they can, for they have no little snug coves to run into for a shelter. The greatest losses occur from the schooners being caught in the landings or coves in which it is impossible to ride out a gale. Sometimes they cannot get out, and have to ride it out at the moorings, and