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THE WHEAT damaged by the sinking of the Propeller Myles will be sold by the bag cheap at the Kingston Foundry Wharf. This is the finest damaged wheat sold in Kingston for years. Apply to JAS. RICHMOND & CO. Nov. 3

NOTICE.

TUESDAY, THE TWENTY-SECOND OF FEBRUARY next, will be the last day for receiving Petitions for Private Bills.
TUESDAY, the First of March next, will be the last day for introducing Private Bills to the House.
TUESDAY, the Fifteenth of March next, will be the last day for presenting Reports of Committees relative to Private Bills.
CHARLES T. GILMOUR
Clerk of the Legislative Assembly.
Jan. 18, 1887.

EADS AND THE JETTIES.

THE GREAT ENGINEER AND HIS UNFINISHED WORK.

A Scheme That Has Been Before the World for Ages—The Estimated Cost of the Jetties—Time Alone Can Tell the Value of Them in the World—Plans Demanding Skill.

[Special Correspondence.]

NEW YORK, March 14.

The fame of Capt. James B. Eads, lately deceased, is inseparably connected with the famous jetties at the mouth of the Mississippi, which have insured ready entrance to the largest ocean vessels and almost restored the old time prosperity of New Orleans. The remarkable success of Capt. Eads in constructing gunboats and engineering work for the government caused the authorities to consult him in the improvement of Mississippi navigation, especially as to the outlet of that river. Like all great rivers which flow through alluvial soils, the Mississippi creates an immense bar at its mouth—a bar which has been the puzzle of engineers



JAMES B. EADS.

and navigators since the settlement of the country. As early as 1726 the French and Spanish engineers employed a peculiar device; immense iron harrows were dragged along the bottom, being attached by stout cables to sailing vessels, and the mud thus stirred up was swept away by the current and a temporary channel secured. But in no long time, so gentle was the current just beyond the river's mouth, the mud again shoaled up till the water on the bar was but five or six feet deep. The Spaniards, and after them the French again, tried many devices, but all in vain. After the American occupation thorough surveys were made and the following facts established:

1. The real mouth of the Mississippi is at the last bluff, near Baton Rouge. All the bayou country, so called, below this is "made land." Geologists estimate that 4,400 years were required to make the region between Baton Rouge and the mouth of the river.
2. At flood the river contains about ten times as much water as at its lowest—some 9,000,000 gallons per second passing New Orleans, each gallon carrying a few grains of silt. The result is that enough silt is carried down the Mississippi each year to fill one mile square 300 feet deep.
3. The conclusion from the foregoing facts is that if the volume of the river were uniform, or approximately so, its channel would be uniform, but with the variations of level the channel constantly shifts, plows out or shoals up, and as soon as the current slackens, as it must just beyond the mouth, the mud begins to drop and form a bar. The mouth of the main channel thus moves forward into the gulf at an average rate of 100 feet a year, and the crest of the bar moves on in advance of it—this crest being from a mile and a half to a mile and three-quarters out into the gulf beyond the real mouth of the river. It was further shown that whenever one of the mouths (called "passes") closed another opened. If a shoal at the Southwest Pass closed it entirely, then there was a barely passable channel at South Pass, or Pass a l'Outre, and vice versa.

The best known devices for "getting off the bar" were known as "warping," "rocking" and "dragging," and when one large vessel had worked through the submarine bank of tough mud, as the current naturally followed her track, there was always an easier passage for others for a few days after.
Many and novel were the devices suggested to overcome this difficulty, but popular favor finally settled on a canal via Lake Pontchartrain. The question became complicated with that of levees for protecting the low lands, and for the latter purpose outlets were proposed at various points to draw off the surplus waters of the Mississippi by side channels. So the "outlet system" and the canal became associated in a general way in the popular favor, and were approved by the government engineers. But when the subject was submitted to Capt. Eads he swept all these plans aside, and submitted an entirely new one, based upon the following laws as to running water:

The capacity of a river current to carry silt increases as the square or cube of its velocity, as it may be a straight or a whirling current. "A whirling wind takes up more dust than a straight wind, and a wind of ten miles per hour more than twice as much as one of five miles per hour." Thus, if we assume that a current of one mile per hour will carry one grain of silt to the gallon of water, a current of two miles per hour will carry not two grains, but four or five. (These figures are not exact, they only illustrate the principle.)

A deep channel, therefore, is to be secured, not by dividing but by concentrating the current. If you withdraw one-half the river's volume, that section below the point of withdrawal will slacken and shoal up, the current deepening not one-half but three-fourths or more of its silt.

All great rivers flowing through alluvial regions are making deltas; they drop silt at their mouths, they maintain their channel through the deposit because the mud on each side drops to the bottom and so confines the channel. Thus they make their own banks up to the level of the highest floods. So the Mississippi has an average depth of over 100 feet below Baton Rouge, till it reaches the gulf; but as soon as the water passes the land's end it turns to the right and left, the current at once slackens, the silt at once begins to sink and a bar is formed. But directly at the river's mouth the current operates to bore out a channel a little way straight ahead; on each side the slack water drops its silt till the banks thus formed become steep; they fill up to the high water level, and the river creates its own banks as its mouth moves forward.

It is needless to detail the objections encountered, the long controversy before congress between the government engineers and the supporters of Capt. Eads, or the many objections to be met and answered. Suffice it to say that the captain converted the leading men of St. Louis and New Orleans to his views, then obtained the aid of government and capitalists and completed his great work, which was considered an assured success as early as 1879. Including the salaries of United States engineers, to see that the exact terms of contract were complied with, and all incidentals, the total cost of the jetties to the government is usually set at \$7,000,000. The result is that, with possibly two or three exceptions, the largest vessels in the world can now pass out to sea from New Orleans without being detained as many minutes as was in of average draught were once detained

however, that before many years a bar will form beyond the mouth of the jetties as formidable as ever. The plan is simple. Beginning at the end of South Pass, two sea walls are built, of rock and "mattresses" (square frames filled in with willows), from the bottom of the gulf to a few feet above the water, these walls extending a mile and nine-tenths beyond the mouth of the pass; by them the water, which would slacken, is confined to a channel only 600 feet wide; this increases its current so much that it bores out a deep channel and through the crest of the bar, and it is claimed by the friends of the scheme that the silt scooped out is swept away by the gulf current to the southwest. Time alone can determine this, and the use that can be made of the jetties before they will again have to be extended.
J. B. HANSON.

THE PANAMA CANAL.

Scenes Showing the Nature of the Work and of the Country.

The Panama canal enterprise, now that Capt. Eads is dead, assumes new importance in the eyes of the civilized world. For it is very far from the impossible that the Eads ship railway scheme may be abandoned. The mission of De Lesseps to the German court,



PORT OF ASPINWALL.

and the official recognition he has received there notwithstanding his nationality, also lends additional interest to the enterprise. Aside from these extrinsic elements, the Panama canal impresses the visitor as being one of the most gigantic engineering enterprises of modern times. Among the many difficulties to be overcome are those of taking the canal through the Chagres river some twenty times, through a hill several hundred feet high by means of a deep cutting,



STREET IN PANAMA.

and through numerous swamps and beds of rock. When completed it will be over fifty miles in length, twenty of which are now so far finished as to admit water, three miles having a depth of twenty-five feet, and the remaining seventeen a depth of eight feet. The sketches of the port of Colon, or Aspinwall, at once attract attention, with its extensive wharves and sheds running out into the sea. Alongside these huge ships of all nations are so secured as to be ready "to slip" at short notice in case of a gale coming on—a very necessary precaution, as not long ago seventeen large vessels were driven from their moorings and totally wrecked by the violence of a tropical storm.



DEEP CUTTING AT CULEBRA.

The work is never still, and to guard against its being so the entrance to the canal has been protected by a large breakwater run out into the sea, formed of concrete blocks, at the end of which is a large statue of Christopher Columbus, presented by the Empress Eugenie. At Minli and other passages to be seen the bungalows of the engineers and workmen employed on the canal. These look beautifully clean and cool, and compare most favorably with the shanties of the negroes and Chinamen, who swarm about these parts. The Cite de Lesseps—named after that illustrious Frenchman—is only a collection of huts built of bamboo and any old refuse, and supported mostly on piles, often overhanging the muddy



CANAL ENTRANCE AT ASPINWALL.

river, over swamps—in fact, anywhere. The canal cuts through the Chagres river there, and two large steam dredgers may be seen at work on the river discharging the dredged up refuse far over the river's bank, through a long shoot. Not only are there dredgers on the river, but on the land also, as at Las Cascadas, where a large locomotive dredger scoops up the earth and empties it into trucks on the other side, by which it is taken away to form embankments, as at Bas Obispo. Culebra presents a most animated scene—gangs of negroes, engines of novel construction in great numbers, all at work cutting through a hill some hundreds of feet high, through which the canal must pass.

Advice to Mothers.
Mrs Winslow's Soothing Syrup should always be used when children are cutting teeth. It relieves the little sufferer at once; it produces natural, quiet sleep by relieving the child from pain, and the little cherub awakes as "bright as a button." It is very pleasant to the taste. It soothes the child, softens the gums, allays all pain, relieves wind, regulates the bowels, and is the best known remedy for diarrhoea, whether arising from teething or other causes. Twenty-five cents a bottle. Be sure and ask for Mrs. Winslow's Soothing Syrup, and take no other kind.

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