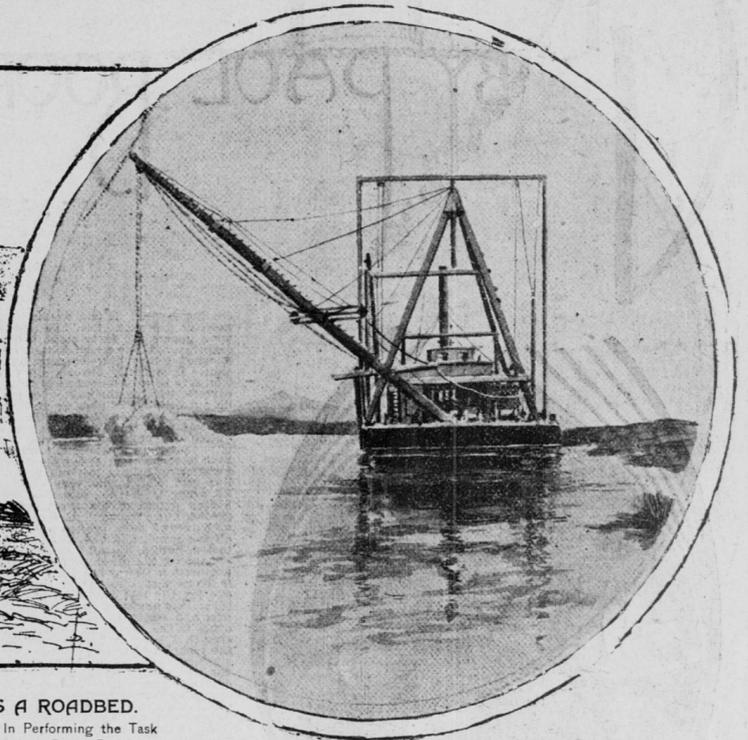
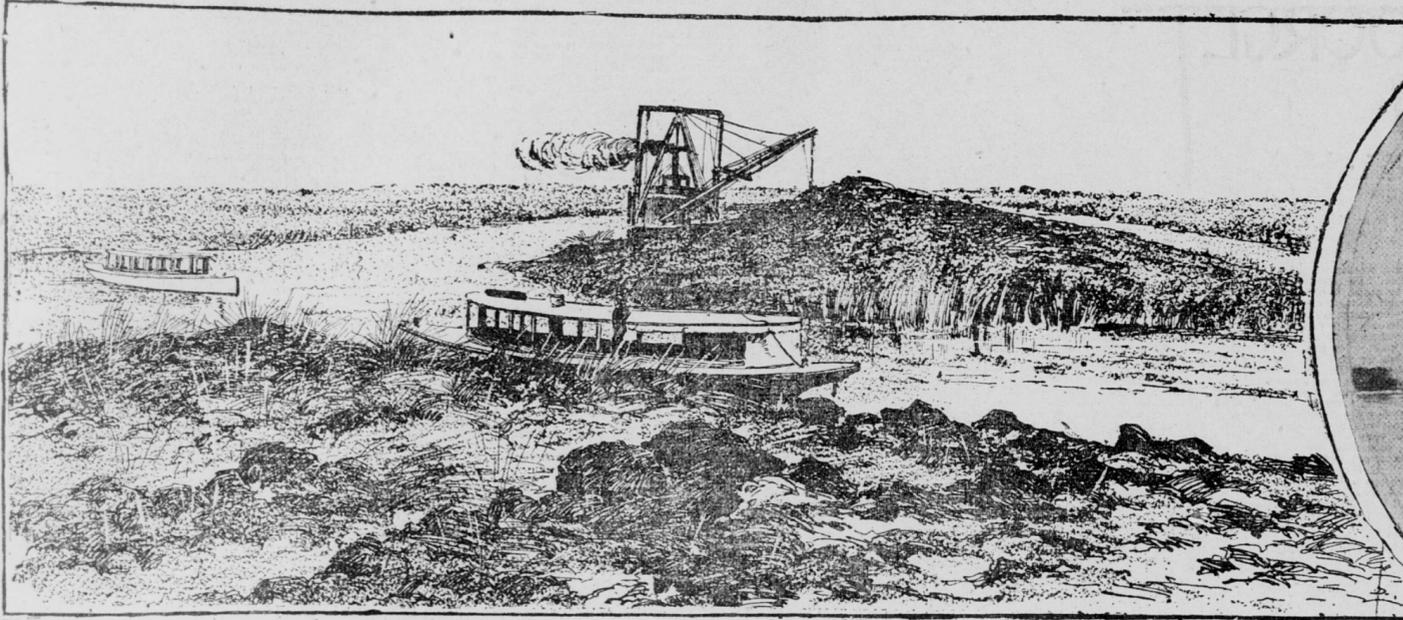


Building a Railroad Through a Swamp.

Remarkable Engineering Feat on the Lower San Joaquin River Accomplished by the Santa Fe Company to Shorten the Distance Between Stockton and San Francisco



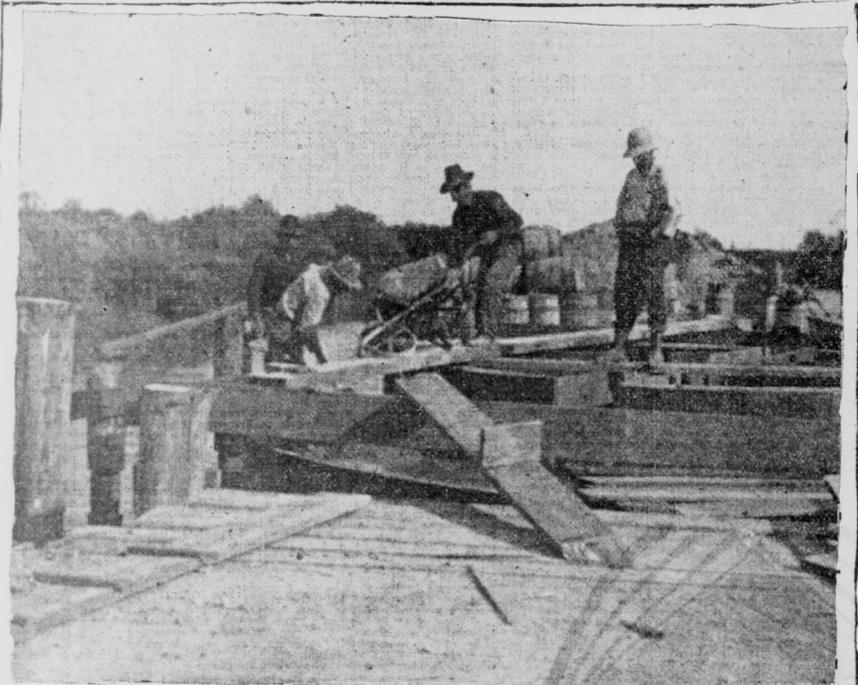
THE BIG DREDGER AT WORK.

PILING UP THE LEVEE TO BE USED AS A ROADBED.

This Work Was Done by the Aid of Six Monster Dredgers. In Performing the Task Two Parallel Canals Were Cut Through the Country and the Earth From Them Piled Up in the Center.

was made last week by a Sunday Call representative. Engineer Storey was on hand and made all explanations. The beginning of the western end of the roadbed through the swamp is a few miles from Brentwood. At this point there is a slough, across which a bridge has yet to be built. The new roadbed is one of the most extraordinary sights of its kind in the world. At present it is merely a big pile of black earth, with a canal on either side. The canals were made by the dredgers, that gouged out the earth and piled it up for the new roadbed. Naturally this produced a channel. "We are going to keep these canals here," said Engineer Storey "for two reasons. One is to prevent the tule fires that are sure to rage on both sides from jumping across and burning off our track. The other reason is because the canals are navigable and will make it easy for us to get in certain kinds of supplies, such as ties, without unloading them from the schooners till we get them to their destination." About four miles from the Brentwood end of the roadbed there are two navigable rivers—New River and Middle River—which the track must cross. Steel drawbridges will be put in at these points and the work will consume nearly all summer. Just beyond the river provision has been made for carrying off the enormous body of water that would cover the country for miles and miles in time of a flood. As it happens, the roadbed is built at right angles across the direction in which the water flows, and would be likely to be washed out unless some provision were made for its escape. This is accomplished by building a trestle about a mile and a half long. The water will flow through this without doing any damage to the roadbed. Careful calculations have been made and it is believed that the trestle will allow several times the amount of water that is likely to gather in any flood to run off without the slightest difficulty. At a point about six miles from Brentwood six dredgers are still at work piling up earth on the roadbed. As the soft mud from the bottom of the canal is piled on to the roadbed it slowly settles and very unevenly. Those parts that sink below the desired point have to be built up again. Often the work has to be gone

over several times until the required height and strength is obtained. "These dredgers have been working steadily twenty-two hours a day for the past year," said Engineer Storey. "They lift about four tons of earth each time they are filled, and they will carry about one hundred loads an hour. So you can figure out what an enormous amount of soil has to be moved in order to get that pile of dirt in condition to lay a railroad track on top of it." The Stockton end of the swamp roadbed is at a point on Whiskey Slough about four miles from the city. From this point to Brentwood the road is almost in a straight line. Standing on the highest point it is possible to get a view of the whole length. It can be dimly traced as a black line through the green tule lands, with here and there a dredger at work showing through the haze. From the end of the swamp roadbed into Stockton is about four miles, over which the grading is nearly all done. At the San Joaquin River a drawbridge is being built. This is a stupendous piece of work. The piers are of concrete set on piles driven into the river bottom. The concrete piers are first made in frames and then sunk by means of screws until they set on the piles, which have been sawed off perfectly even. The drawbridge is to be of steel. It is to be of the best construction, like all the other work on the Valley road. "From our depot here in Stockton," said Engineer Storey, "to the foot of Market street, San Francisco, by our road is only seventy-two miles. Within a year we will be covering the distance in about two hours, and I think that from the very first we will make it inside of three hours. "From here we run down the river bank, then cross the swamp to Antioch. From there we go toward the south and through a tunnel in the Coast Range, then run parallel to the Southern Pacific to Point Richmond. From here our new boat will cross the bay in thirty-five minutes and end the journey. If everything goes well the whistles of our first engine will be heard at Point Richmond about the 1st of next November. From then on we expect to give the best kind of service and to constantly improve it."



BUILDING THE CONCRETE PIER FOR THE DRAWBRIDGE OVER SAN JOAQUIN RIVER.

WHEN it was decided to build the Valley road from Stockton to San Francisco the engineers were confronted with as big a problem as ever worried a railroad man. This was to find a means of crossing the twelve miles of swamp between Stockton and Brentwood so as to save thirty miles of travel and over an hour of time. The Southern Pacific Company goes around this swamp by way of Lathrop, which course the Valley road directors were anxious to avoid. But the big problem has been solved and the roadbed is finished all the way across the tide lands. The laying of rails will commence in a few weeks. Literally speaking, the solution of the problem has been in course of development for years and years and the railroad engineers have simply taken advantage of what has been studied out for another purpose. This is the building of levees for the purpose of reclaiming tide lands to be used for growing wheat. The demand for a means of building levees quickly and cheaply led to the construction of the strange looking dredgers that can be seen all along the banks of the San Joaquin River. This dredger has been through many phases of development during the last quarter of a century, until at the present time it is the ideal machine for railroad building through swamps. The work done by the dredgers for the roadbed of the Valley road does not vary in the least from that done for the reclamation of swamp land. This being the case, it is an easy matter to comprehend that the new railroad is to be merely built on top of an enormous levee. But the work has not been without its

How General Grant Raised the Standard of Beauty.

CERTAINLY the story is authentic that President Grant once asked me if I could not raise the standard of beauty in the dead letter office," said Assistant Attorney General James Tyner, laughingly, "but the sequel to it has never been published. "The President was passing through the department and jokingly commented on the unattractive appearance of the clerks and quizzically inquired if I could not raise the standard of 'emal beauty. "Naturally I regarded the matter as a jest and replied that I would be glad to do so, and was open to suggestions and unsolicited as she was pretty. She was a Southerner, and had lived on a plantation all her life, but wanted a Government position, and, being backed by the President, I set her to work in the dead letter office. "While Grant was on his trip around the world I spent a couple of months with him in Paris, and one evening as we sat talking of the past I asked him if he remembered this young lady. "Certainly I do, for I have good cause to remember her," he responded cordially. "I intimated that I was satisfied, but must be a story back of his appointment, and as he was in one of his rare reminiscent moods he related the following extraordinary experience: "It was just before the battle of the Wilderness that I mounted my horse and went for a ride. I was full of anxiety, and in my preoccupation went outside of our lines and found to my dismay that I was being chased. "My horse was a good one, and I rode hard until I came to a little, half-con-

cealed cabin, where I dismounted and said to a man that came to the door: "Are you a Confederate or a Union man?" "I am a Confederate," he answered proudly. "Well, sir, I am General Grant. Can you hide me for a little while, as I am being pursued." "How do you know that I won't betray you?" he inquired curiously. "Because I trust your face," I replied, and without more ado he seized my horse by the bridle and we went into a room back of his home, where a moment later he left me, bidding me to keep perfectly still. "It was a glorious moonlight night and I could see every object distinctly. About 11 o'clock I heard the bushes crackle and for a moment my heart leaped for fear as my host came cautiously up behind me. "Have you betrayed me?" I inquired sharply. "No, sir," he replied almost harshly, "the pursuing party has passed, the coast is clear and you can return to your army." "He put me on the right road, and as I jumped into the saddle I grasped his hand and tried to thank him. I told him that if I could serve him or his to let me know. "I never saw him again, but the day you spoke to me his daughter came to me with a letter from her father, who is very poor, reminding me of my promise. And this," continued General Grant, "was the sole reason I wanted to raise the standard of female beauty in the dead letter office."

ANECDOTES OF KIPLING.

Seldom one tells a joke on one's self; not so, however, with Mr. Kipling, who relates an amusing story at his own expense. During his stay at Wiltshire one summer he met little Dorothy Drew, Mr. Gladstone's granddaughter, and, being very fond of children, took her in the

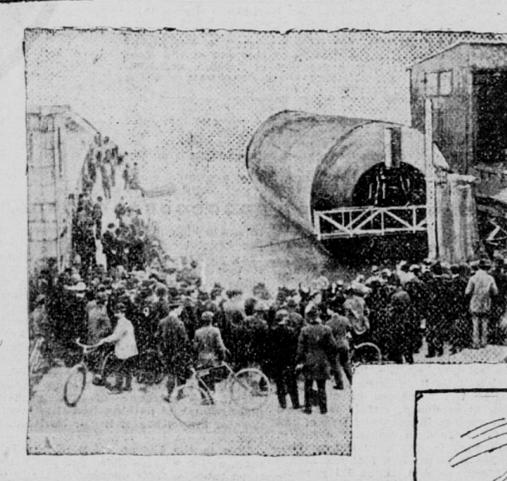
grounds and told her stories. After a time Mrs. Drew, fearing that Mr. Kipling must be tired of the child, called to her and said: "Now, Dorothy, I hope you have not been wearying Mr. Kipling." "Oh, no, not a bit, mother," replied the small celebrity, "but he has been wearying me." Mr. Kipling sent Captain Robley D. Evans of the warship Iowa a set of his works and with them these verses: "Zogbaum draws with a pencil And I do things with a pen, But you sit up in a conning tower, Bossiping eight hundred men. "Zogbaum takes care of his business, And I take care of mine, But you take care of ten thousand tons, Sky-shooting through the brine. "Zogbaum can handle his shadows, And I can handle my style, But you can handle a ten-inch gun To carry seven mile. "To him that hath shall be given, And that's why these books are sent To the man who has lived more stories Than Zogbaum or I could invent." At the time he wrote "The Last Chanty" some one asked him how he pronounced it. "Well," he replied, "the really elegant and well-bred people pronounce it 'Chanty,' but those who know what they are talking about call it 'Shanty.' Mr. Kipling sold a book to a London publisher at a price that netted the author one shilling a word. The publication of this fact came under the notice of a Fleet-street humorist, who, "for the fun of the thing," wrote to the author, saying that, as wisdom seems to be quoted at retail prices, he himself would like one word, for which he enclosed a shilling postal order. The reply came in due course. Mr. Kipling had kept the shilling postal order and politely returned the one significant word "Thanks," written on a large sheet of writing paper. "I told her my soul was wrapped up in her." "What did she say?" "She warned me to be more careful or I'd be making love to her before long."—Philadelphia North American. "Do you think bachelors ought to be taxed?" asked some one. "I'm not quite sure yet," she answered, dreamily. "Give me another week, and maybe I'll be able to land him without any outside help."—Chicago Post.

ROLLER BOAT: The Latest Sea-Going Freak Designed to Revolutionize Navigation.

Special to The Sunday Call. LAST year the world was amused, then perplexed, then astonished at the effort of Frederick A. Knapp, a daring Canadian inventor, to navigate a huge boat which rolled on the sea like a barrel. The initial trip of the experimental boat, convinced a number of capitalists that Mr. Knapp's invention would revolutionize the science of navigation, and now with thousands of dollars at his command the inventor is letting contracts for the construction of the first Knapp roller boat. It will enter into active competition with steam and sail vessels of the present type for the world's water traffic. The big cylinder will be finished and launched this summer. The success of the first full-sized roller boat, the initial steps in the building of which are now occupying the attention of Mr. Knapp and his associates in Chi-

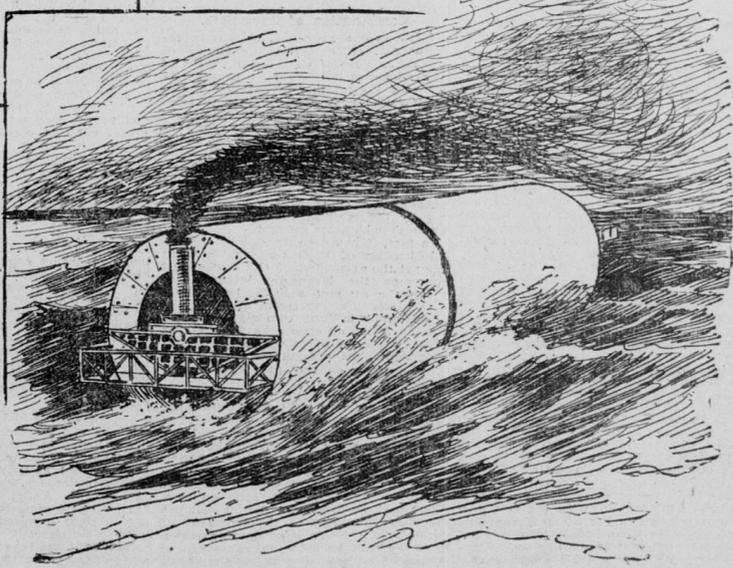
ago, will mean a complete and sweeping revolution of all deep water transportation. If this pioneer roller achieves no greater speed than that made by the crude model which has been operated in Toronto Bay the crafts now plowing the inland seas may read their orders to tie up in permanent quarters, for the carrying capacity of the roller boat is immensely greater than that of any vessel of the prevailing type of vessel, while the power required to propel it is far less. To form a correct mental image of the roller boat, picture a huge barrel or cylinder 600 feet long, 96 feet in diameter and 24 feet from the hollow core to the outer surface. This is constructed of boiler plate so riveted as to be air-tight. It has an inner, an outer and a middle skin, these tubes being held at proper distances from one another by circular partitions forming air-tight compartments which make the boat unsinkable. Not only is this great barrel the shell of the boat, but it is also its propeller—the wheel which gives the craft its actual traveling capacity. Think of a boat with a paddle-wheel 500 feet broad and 96 feet in diameter! But the term "paddle-wheel" is not strictly applicable in this case, for the roller boat has neither screw

The suspended interior is divided into three lengths, two long sections separated by a short one. The short central section of the inner cradle contains the engines, one end section the first class and the other the second class passengers. The passage from one to another of these sections is through the hollow "journal," which is a part of the non-rotating center of the boat. As these steel axles, in a roller boat for ocean service are bored by tunnels ten feet in diameter, it will be seen that they are ample for carrying all the electric lighting cables, telegraph and telephone wires, heating tubes, etc., and for affording a passage way. The steering is done by rudder drags at each end, operated from a bridge suspended outside the boat. A knotty problem in the construction of this boat was the application of the power by which the outside cylinder is revolved. This is accomplished by a battery of three engines, having a long upward stroke, the pistons being attached to "cranks" of the big driving shaft. The points on the circle of the shaft at which the pistons apply the power are equidistant from each other, or 120 degrees apart. At each end of the driving shaft is a powerful cog-wheel, fitting into the cogs of the cylinder's bearings, or more properly into an internal "spur gear" rigidly connected with the solid bulkhead of the cylinder. Above the suspended cradle of the boat is an arched ceiling hiding from view the interior of the revolving cylinder overhead. Light and air are freely admitted at the open ends. Only the ends of the cradle are, of course, in the least exposed to sea and weather, and the fact that the bottom of the suspended section of the boat is high above the reach of the fiercest storm waves is calculated to inspire in the future passengers of this craft a feeling of complete security, as there will be no swaying or pitching motion, the inventor promises entire exemption from seasickness. Rocking or swaying is prevented by the perfect equilibrium of the suspended body and the great length of the craft, together with the fact



The Roller Boat in Rolling Trim. From a Photograph Taken as She Lay at the Wharf in Chicago.

ESTIMATED To Travel 6 Miles an Hour And CARRY 600 Tons of Freight With 20-Horse Power.



The New "Roller Boat" as It Will Look at Sea.