

# The World's Greatest Canals.

Described by Frank G. Carpenter En Route to Panama.

(Special Correspondence of the Deseret News by Frank G. Carpenter.)

ON the Steamship "Advance" bound for Panama—By the time this letter is published I shall be on the Isthmus of Panama, where I go to describe the big ditch which Uncle Sam is about to dig from ocean to ocean. Before we begin our investigations, however, I want you to take a trip with me from great canal to great canal around the globe. I have seen most of them, including the French beginnings at Panama.

## AT SUEZ.

We shall start in the harbor of Suez. We are on the edge of the Red sea near the place where Moses led the Israelites across and Pharaoh and his chariot were swallowed up by the rushing waters. All around the land is bleak, bare, brown desert, rising at the left in the Ataka mountains, and at the right, spreading away in vast plains of sand. If we should go northward less than a hundred miles we should reach the Mediterranean sea. Part of the way would be on the shores of brackish lakes, some below the level of the Mediterranean and the Red sea and others not so deep. Along two-thirds of the distance there would be nothing but sand, and an engineer could lay out a line 87 miles long which would pass through the lakes and so from one point to the other. This is what was done by Ferdinand de Lesseps when he projected the Suez canal. He began at the time Millard Fillmore was president. The actual digging was started during the presidency of Buchanan, and the canal was in full swing and almost a paying proposition on the accession of President Grant. It took about 11 years to do the work of cutting out the sand and joining the lakes, so that the waters flowed uninterruptedly from ocean to ocean.

## A TRIP THROUGH THE CANAL.

But let us take ship and pass through the canal from Suez to the Atlantic. The voyage requires about 15 hours, but the canal is thoroughly lighted by electricity and the night will be turned into day. We steam along slowly. The traffic is heavy, and the canal officials regulate the speed. The ditch is over 200 feet wide at the top and 150 feet wide at the bottom, and the water within is as quiet as a mill pond. Notice how green it is and how the green shines out in contrast with the bare yellow sands which line it. As we stand on the ship and look to the right and left we are traveling through sands. On each side of us as far as we can see there is nothing but desert, with now and then a little town or village on the banks of the canal.

There are but few signs of life. Here a caravan trots along over the yellow waste, the long ungainly camels with their black-gowned riders bobbing up and down against the clear sky of the horizon. Now a flock of long-necked cranes springs from the water into the air, and now away across the sand, at the side of the ship, we see a new ship and new waters which look as real as the green waters through which we are moving. That is the mirage so common to the Libyan desert. It fades as we come nearer, and vanishes like a castle of the air.

Going onward we now and then have

to stop in basins, cut for the purpose, to allow other vessels to pass. We notice that most of the ships fly the union jack. About three-fourths of all the tonnage which passes through belongs to Great Britain, and next comes the ships of the French, Dutch and Germans. There are but few American vessels. A solitary gunboat on its way to Manila is the only one we see during the voyage. At last we reach Ismailia, the town midway of the canal, where De Lesseps lived while it was building, and then go on to Port Said, on the Mediterranean, where the waters of the Atlantic have flowed in to start, through this great ditch on their way to the Red sea and Indian ocean.

## HOW THE SUEZ CANAL PAID.

And does the canal pay? If you will come with me to the offices here at Port Said I can show you that it is one of the best investments ever made by a nation. The canal in the beginning belonged to the French and the Egyptians. It is still managed by the French, but the British practically control it, as they do also the Suez Canal Company. The receipts within one term of 10 years were more than \$105,000,000, and the dividends at its close were between 40 and 50 per cent. There are altogether 400,000 shares. Great Britain paid something like \$25,000,000 for almost half of them to the Khedive of Egypt. She made the purchase through the Rothschilds in 1875, and the Rothschilds received a big commission on the deal. Since then Great Britain has been receiving dividends right along, and her shares are now worth about six times what she paid for them.

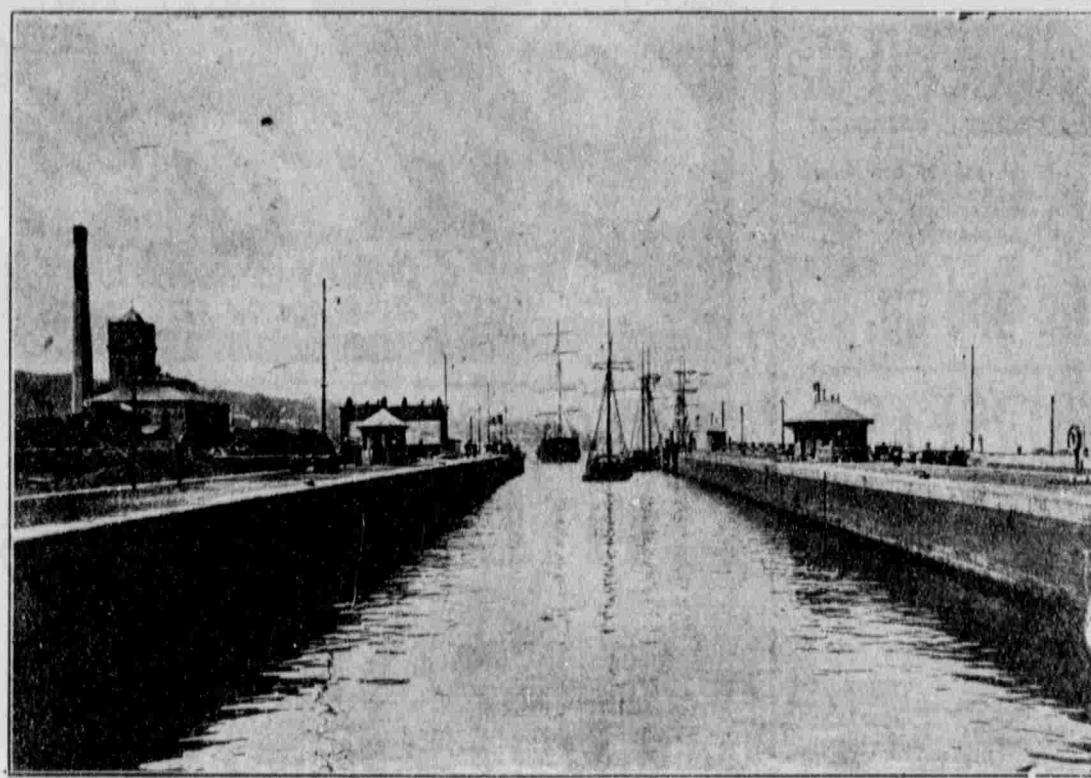
It was one of the best investments John Bull ever made. As it is now the canal receipts amount to \$20,000,000 and upward a year. The rate charged is \$2 per ton, which means, I suppose, that a 5,000-ton ship would have to pay \$10,000 to go through the canal. This seems much, but when one considers that the same ship would have to travel around the Cape of Good Hope to get from Asia to Europe one can see that it is cheap enough after all. A charge is also made for every passenger who rides through the canal, and as the passengers sometimes number 150,000 a year this item is valuable.

## AT CORINTH.

We have crossed the Mediterranean, and are standing on the Isthmus of Corinth. At our back is continental Greece, with Athens away off at the left. In front of us lies the Peloponnese, which, until about 1890, was a peninsula. Then the canal at our feet was cut through and that part of old Greece became an island. The canal is less than four miles in length, but if you look at the map you will see how it shortens the distance between Athens and the Adriatic and the western Mediterranean.

It begins Athens 175 miles nearer Venice and more than 100 miles nearer Rome. The Corinth canal is 72 feet wide at the bottom and 26 feet deep. It took seven years to dig it, and its cost was in the neighborhood of \$5,000,000. The canal was cut through soft granite and soil. It has no locks and the wa-

Suez and Its Enormous Profits—How John Bull Made 600 Per Cent—The Corinth Canal Which Cuts Greece in Two—Russia's Baltic Waterway—The Big Ditch the Kaiser Dug—German and French Canals—What a Ship Canal Did for Manchester—The Grand Canal of China—The Waterways of India, Japan and Egypt, etc.



ON THE FAMOUS MANCHESTER SHIP CANAL.

ter flows at sea level. The tolls are 18 cents per ton and 20 cents per passenger.

## RUSSIAN WATERWAYS.

Leaving the Mediterranean, let us take a jump across Europe and light on the Baltic. We are sailing through a wide waterway, walled with stone, which connects St. Petersburg and the Neva with the Bay of Cronstadt. It is 16 miles long and 26 feet deep, and forms the northern passage out from and into the great empire of Russia.

It cost about \$10,000,000, but it is of enormous value to the czar, for it communicates with other waterways covering a great part of his empire. Russia is a land of canals. Its great rivers are joined to one another by them, and there is now talk of building a ship canal from the Baltic to the Black sea. The Russians are men of enormous endurance and wonderful patience. Their plans run through

generations, and death and loss seem but incidents along the way. When Peter the great founded St. Petersburg he said he wanted a window to look out upon Europe. What he really planned was a harbor which might enable him to hold his own against the maritime nations of the world. The Cronstadt canal is his outlet to that harbor.

## THE DITCH THE KAISER DUG.

On the other side of the Baltic is the big ditch the Kaiser dug, Emperor Wilhelm III is the Peter the Great of Germany. He needed a short cut for his men-of-war out to the ocean, and he made the Kiel canal. This reduced the time from sea to sea almost two days, and it has, for all practical purposes, made the Baltic a German lake. The Kiel canal is 60 miles long, and its cost when completed about \$40,000,000. In time of war it will be closed to outside nations, but today merchant vessels can pass to and fro through it.

This canal is wider and deeper than most ship canals. It is 70 feet broad at the bottom and of 30 feet draft. Our great ocean steamers grow larger from year to year. Many of the biggest boats could not now pass through the canal of Suez, and a canal which is to be built for all time should be 30 or more feet in depth.

About 30,000 vessels pass through the Kiel canal every year. When I visited it a few years ago a great German gunboat was just coming out, and several men-of-war were ready to start through on their way to the North sea. The canal is built as a sea-level canal, although it has great locks at either end to control the tides.

## GERMAN AND FRENCH CANALS.

We shall not have time to examine the German and French canals. Both countries are digging waterways from river to river until they have gridironed themselves, as it were. You can go all over France by boat. You can

take goods from the Seine to the Rhine by canal, and thence down to the Danube and on to the Black sea. Freight goes from Hamburg to Berlin and to the sources of the Elbe by boat. Canals for the Elbe and the Oder, and it is easy to travel from Rotterdam through the country by water to Paris.

Every one knows of the Dutch as canal diggers. They understand more about controlling the waters and taking advantage of them than any other people. Holland itself is not as big as a Texas county, but it has enough canals to reach from Philadelphia to the Rocky mountains, and other waterways which could stretch from San Francisco to New York. There are canals everywhere in Holland. There are so many that the government has a department of waterways, the clerks of which are the best of civil engineers. Some of the Dutch waterways are 300 miles long, and it connects the great town of Amsterdam with the Mersey river and the Atlantic ocean. When it was begun it was estimated that it would cost \$40,000,000; but when completed it was found that \$75,000,000 had been spent. The people I met at Manchester were satisfied with the cost. They say the canal has saved Manchester's business life. Before it was built the town was on the down grade, the great factories were falling and many of the shops were being transferred to Glasgow. Since that time prosperity has returned, and now you will find a more enthusiastic business man than him of Manchester.

## THE MANCHESTER SHIP CANAL.

I spent some time upon the Manchester ship canal when out scouting for the American invasion a year or so ago. This is one of the most important artificial waterways of Europe. It is about 35 miles long, and it connects the great town of Manchester with the Mersey river and the Atlantic ocean. When it was begun it was estimated that it would cost \$40,000,000; but when completed it was found that \$75,000,000 had been spent. The people I met at Manchester were satisfied with the cost. They say the canal has saved Manchester's business life. Before it was built the town was on the down grade, the great factories were falling and many of the shops were being transferred to Glasgow. Since that time prosperity has returned, and now you will find a more enthusiastic business man than him of Manchester.

I was surprised at the work it took to build the Manchester canal, although it was comparatively small in respect to our job at Panama. The ground is almost level and the excavation not difficult. A part of the canal was dug along the course of the little River Irwell, but some of it was from the solid rock. Miles of embankments were erected along the shores of the Mersey to keep back the sea, and great blocks were put in which by means of steel sluice gates raise and lower the ships to the height or depth of 60 feet. There are five such locks between Manchester and the Mersey. Manchester is about 50 feet above Liverpool, and the ships have to climb up these five steps to get to the latter port.

This canal goes right through some of the most beautiful farming country of England. In Manchester we are surrounded by great warehouses and factories. There are many docks and inclosed basins filled with shipping, and everything about us is smoky and busy.

Passing out of the city we go through a country as green as Ohio in June. The fields are hedged and upon the green grass fat cattle are feeding. Every now and then we pass a village or great manufacturing town. We go under railroad bridges, after railroad bridge, and finally pass out into the Mersey, with its vast shipping from all parts of the world. By means of that canal our Texas cotton is taken

direct from Galveston to the factories of Manchester.

## ON CHINA'S GRAND CANAL.

My next picture is painted on the other side of the world. It is on the Grand canal of China. I have seen it where it starts at Peking, the capital of the Celestial empire, and have traveled upon it at its lower end on the southern side of the Yangtze.

This canal is a greater wonder than the Chinese wall. It deserves to be ranked as one of the wonders of the world. It begins at Hangchow, south of the Yangtze, passes through Soochow and cuts the Yangtze near Chinkiang. From Chinkiang it goes northward 350 miles without a lock, and further on it is carried over the country on stone embankments twenty and more feet high. The canal at some of its gates managed by soldiers, and is a river was conducted into it, and the Chinese say that 300,000 men worked seven months to turn the waters of that stream. The Grand canal cuts the Yangtze river as well as the Yangtze more than a great ditch, and nearly everywhere it is now in bad repair. It is, in all told, about as long as the distance from New York to Chicago, and it passes through a territory containing about three times as many people as the United States.

## A GREAT TAX ROUTE.

One of the chief uses of this Chinese canal has been to carry the tribute rice to Peking. At certain times of the year carrying rice. The government taxes are to a large extent collected in kind, and every year the families send about 125,000,000 pounds of rice to the capital. Along the banks of the canal I saw great barns filled with rice awaiting shipment and I was told that nearly every town on the canal had its government barns. Of late much of the rice has been shipped to Peking by sea, the steamers on the Yangtze getting it more cheaply than it can be taken by the canal. When the railroads have been built connecting Peking with the southern part of the canal, a large part of such traffic will go by them. The canal now is, navigation in some parts is difficult, and it requires several months for a rice boat to make its way from the Yangtze to Peking.

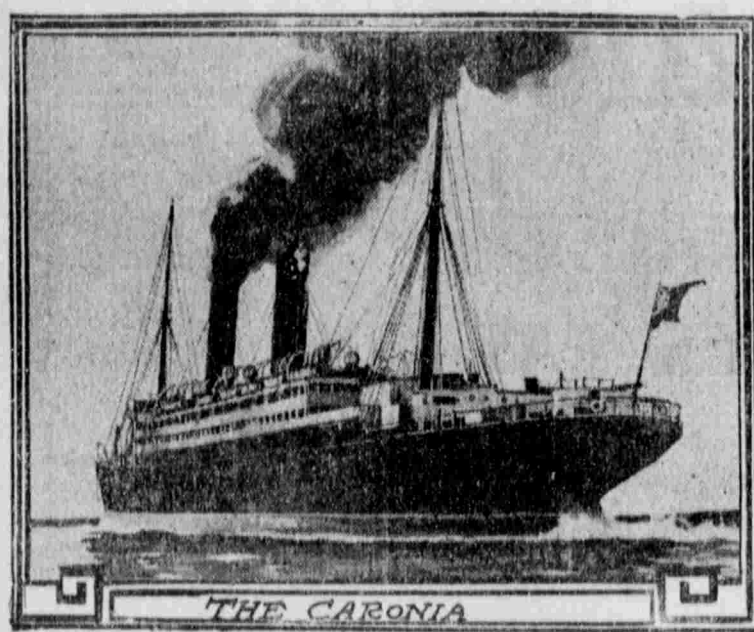
## THE CANALS OF INDIA AND JAPAN.

Japan is a land of canals, built both for traffic and for irrigation. One of the most wonderful is the Iwata canal, which was planned in a schoolboy's graduation essay, and was carried out by the same schoolboy appointed engineer.

India is said to have the best irrigation system of the world. It is the Ganges canal, which is 440 miles long, and which has more than 2,500 miles of branches. The Sindh canal is 342 miles long, and it has almost 1,000 miles of distributaries. There are great irrigation works in Persia, and as for Egypt, every one has heard of the wonderful water systems of the Nile valley.

FRANK G. CARPENTER.

## A NEW SEA GIANTESS.



In the Caronia, the latest member of the Cunard fleet, the first important ship built by the company since it became the British official rival of the International Mercantile Marine company, the steamship trust, one starting innovation in ocean travel will be adopted. This will be the providing of four classes of passengers. They will be designated as first class, second class, third class and steerage.

The Caronia, the largest vessel ever built in England or Scotland, will arrive in New York on March 6. She will be a 19-knot boat. The new Cunard, soon to be seen in American waters, is provided with reciprocating engines of the quadruple expansion type, capable of developing 20,000 horse power, or about 10,000 horse power less than the Campania and Lucania. Where the Campania and Lucania have developed nearly 22 knots, the Caronia will not be as fast by quite two knots or more. The Caronia will therefore be a "Sunday" or a "Monday" boat.

The Caronia, a sister ship, which is being built at the same yards—Messrs. John Brown & Co's at Clydebank—will be propelled by triple screws, actuated by turbines, so that next summer an opportunity will be presented of comparing upon their merits in two ships of identical type, size and weight, the two systems of propulsion, reciprocating and turbine engines.

The dimensions of the new Caronia are: Length over all, 675 feet; breadth, 72 feet 6 inches; depth to shelter deck, 52 feet; depth to boat deck, 80 feet; depth to bridge, 67 feet; gross tonnage, 21,000 tons; displacement, 23,000 tons. Her funnels rise 150 feet above her keel. Each is of sufficient diameter for two railroad trains to pass through abreast. The area of her plating is three acres. She can carry about 10,000 tons of cargo, coal and stores.



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