1917-9-15 Journal of Commerce

MARSEILLES-RHONE CANAL

A TRENCH OF SOME IMPORTANCE.

Not all the digging in France line been for building trenches. While the most tremendous fighting in the world's history has been going on not many miles away one of the greatest peaceful engineering enterprises of modern times has been nearing its completion—the Marseilles-Rhone Canal, intended to complete, with its tributary streams, a waterway about 350 miles in length, navigable by heavy freight barges. Begun in 1903, this canal is to be completed in to 1919—after the war, one would be tempted to say if the same phrase had not already been applied to the year 1917. At any rate, work on the canal goes steadily forward with that of and pushing the invaders back to the boundary, and its constructors are doing work for France that will doubtless be in evidence long after the trenches on the western front are filled up and ploughed over. Says the writer of an article describing this great work in "The Scientific American Supplement:—

Marseilles, the gateway of the Orient, is the logical link of commercial connection between the overseas products which crowd her wharves and those of the busy manufacturing centres of western and northern Europe accessible to the navigable Rhone. But the river and city are comparatively new each other as the crow flies; they are separated by obstacles which have hitherto provided insuperable; on the one hand the treacherous waters of the Gulf of Lyons, with its dangerous depths, its inhospitable shores and the violent winds which rushing down from the Cevennes Mountains, whip its waves into sudden fury; on the other the various difficulties which the conformation of the land opposes to traffic, including the Crau desert, the Berre Lake, and the mountainous projection of l'Etoile, running west to east from the Gulf of Fos to l'Huveaune.

Though the public utility of a waterway which could overcome these obstacles has been clearly perceived for something like a century, the decree under which the present canal was begun was not finally signed until December 22, 1903, the great railway expansion in the middle of the 19th century being one of the factors in the delay. The work is expected to be concluded in 1919, and to cover a total length of 82 km, or 50 miles, between its extreme points, Marseille basin of the Madrague and the 'Bras-Mort' of Arles.

The early promoters of the canal projected no fewer than 24 locks, but as it is now being built it has none, being at sea-level throughout its course.

Important structures connected with the canal are the cut of the Ulede, that of Gignac, which is a mile and a quarter long and 100 feet deep… and the Rove tunnel, the most important work connected with the future waterway. This is said by 'Larousse Mensuel' (Paris), to which we are indebted for the details in this article, to be not only the longest work of this kind ever executed upon French soil, but to be wider than any other in the world, 71.5 feet… From the bottom of the canal at the top of the vault is nearly 50 feet, which gives a section equal to 6 times that of an ordinary double track railroad tunnel. The debris to be extracted amounts to… twice as much as that of the double tunnel of the Simplon Pass, which still holds the record of being the longest in the world… Three years more will be required to finish the Rove tunnel.

Owing to the unforeseen difficulties created by the war, the expense of the undertaking will much exceed the estimated figure. The estimated expense of about $18,280,000, of which the Rove Tunnel claimed $11,120,000, is expected now to exceed $20 million.

This expense is distributed among the Government, the Department of Bouches du Rhône, and the City and the Chamber of Commerce of Marseilles. The benefits expected from this vast expenditure of manifold. First, the prevention drainage to a low land adjacent to the canal: secondly, the continuity of communication between the great seaport of Marseilles and the ports of the Rhône. But there is another advantage which looms large in these days of conflict. This will be best understood by a glance at the map of the region.

The fine interior body of water known as the Lake or Pond of Berre… with a shoreline of nearly 50 miles, forms, together with a similar body, Lake Caronte, an immense natural basin capable of

holding the military and commercial fleets of France secure from all hostile attacks.… Industrial establishments of all kinds have, in fact, sprung up on the shores of the Berre Lake since the beginning of the war. Obviously, as soon as the great canal is finished, they will have the advantages of cheap freight rates to the great seaport, and then to the Mediterranean, with its facilities for reaching all parts of the globe. This canal, indeed, prolonged by the Rhône and then by the Saone completes a continuous waterway of 350 miles length, navigable by barges capable of carrying 600 tons of freight. Smaller boats will extend this freight route by means of the Saone Canal and those of the basin of the Seine even to Havre and to the extreme north of France. Thus, say enthusiasts, in 1919 the North Sea and the English Channel will be united with the Mediterranean by an unbroken aquatic ribbon, and France will reaffirm her claim to being a neutral roadway between the nations. If this stream be too iridescent it cannot be doubted at least that the great canal will immensely stimulate the traffic of merchandise in Marseille, which had grown from 4,372,000 tons in 1870,to more than 21,090,000 tons in 1913

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SEATTLE SHIP CANAL

According to the January issue of the 'Bulletin" of the National City Bank of New York, a long talked-of public improvement, serviceable to commerce, has been completed at Seattle by opening the ship canal connecting Lake Washington, through Lake Union, with the waters of Puget Sound. Lake Washington is a fine body of fresh water, 25 miles long and four miles wide, lying on the eastern boundary of Seattle, the surface being 9 ft. above the Sound at high tide. As long ago as 1856 a Government engineer recommended the construction of a water way on the line now followed by this canal. There was not much commercial use for it at that time, but, as Seattle grew to be an important port, the project was revived, and finally undertaken. The national Government bore all of the cost of the locks, which are capable of accommodating larger vessels than any other locks in the American continent, save those of the Panama Canal. The Canal is eight miles long, 100 feet wide and 36 feet deep. The principal lock is 825 feet long, 80 feet, wide, and holds a depth of 50 feet of water. Ocean-going vessels make the passage through the large lock in twenty minutes, and smaller craft go through a smaller chamber in five to ten minutes, The total cost of the canal, including right-of-way, locks &c., was about 5,000,000 dols.

The canal provides access to a great non-tidal harbour, with an abundance of frontage for docks and warehouses, convenient of access from the city. Its completion is an important event to Seattle