

any sluice ways, the course of the Rio Chagres being deflected through a new channel, on the left side of the canal. (*)

This dam will be about 80 feet in height, 1,600 feet in length, and 80 feet in width on the top, its two extremities butting against the cerros Santa Cruz and Obispo. It will be built of the materials excavated from the heavy cuttings near by, the core being made of clay and the outer surfaces covered with broken rock. The slopes adopted for the sides will be 2 to 1 for the upper one, and 5 to 1 for the lower one.

From Gamboa to the sea, the 10 deflections of the Rio Chagres aggregate $20\frac{1}{4}$ miles in length, the total fall of the river being some 45 or 50 feet.

The Rio Obispo flows in the Chagres near Gamboa, but on the right side of the canal, and its course generally lies on that side up to the point where it runs also at right angles to its former direction, on the left side of the canal. This river will be deflected on the right side of the canal, down to the sea, or rather down to the point where the actual bed of the Rio Chagres leaves the line of the canal to run towards Limon Bay.

This will necessitate the building of a flume bridge at kilometer 52, thrown across the canal at the height of 180 feet above sea level. This flume bridge, designated on the plan as "2nd pont-bâche," will carry the waters of the Rio Obispo and of Lake Lapita by means of two troughs, each 6 ft. 8 in. x 6 ft. 8 in. A similar bridge will be built at kilometer $48\frac{5}{10}$, to carry over the canal the waters of the Lake Margarita and of the Rio Sardinilla; the height of this bridge will be 135 feet above sea level. The length of these flume bridges will be about 500 feet. All the tributaries of the Rio Chagres, coming from the right side of the canal, the Rios Caravali, Culo Seco, Baila Monos, Caimito, Trinidad etc., will be collected in these deflections, their aggregate length being $21\frac{1}{4}$ miles.

On the Pacific Coast, the rivers will be dealt with in a similar way, the Rio Grande being deflected on the right side of the canal, and the Rios Pedro-Miguel, Caimitillo, Cardenas, etc., will be deflected on the left side. A few only of these last deflections have been located, aggregating $4\frac{3}{4}$ miles in length.

(*) The starting point of the centre line of the Panama Canal is at Colon, and all the works, deflections, etc., are also numbered from the same point, and referred to as being on the right or left side of the canal, as they would be on the right or left hand side of a man walking along the centre line towards Panama.