

A detailed geological description of the different formations met on the line of the canal would go far beyond the limits of this succinct sketch, in which a mere mention of the principal features of the Panama Canal Works is all that can be attempted. However briefly described, the course of the canal runs for a distance of 27 miles through mud, sand, gravel, peat, unctuous and arenaceous clay, meeting occasionally with beds of soft calcareous tufa, argillous schist, limestone conglomerate, sandstone and argillite, the aggregate length of these rocky formations being only $3\frac{1}{2}$ miles. Then for 13 miles, the cut runs through a mass of hard, igneous, vitreous and metamorphic rocks, in which predominate compact limestone, volcanic agglomerates, hard sandstone, basalts, argillite, carbonaceous shale, arenaceous tufa, etc., covered however with a thick layer of clay and earth. On the western shores of the Isthmus, and in Panama Bay, the canal runs through beds of clay, sand, gravel, mud and shells, for a distance of some seven miles.

At the end of the year 1887, just seven years after the beginning of the works, the Panama Canal Company found itself in a very difficult position. It had already incurred liabilities far exceeding the cost of the canal as estimated by the congress of Paris (\$209,000,000); its financial department required some 15 or 16 millions of dollars annually; the treasury was nearly empty; seven-twelfths of the time allowed by the charter to complete the works had gone by; and yet, there was hardly one quarter of the excavation done, and that even the easiest portion.

It is true that immense preparations had been made. The Isthmus, and let this be borne in mind, enjoys the well deserved reputation of having the most insalubrious climate; there were no population, no agriculture, no manufactures, no trade, nothing, absolutely nothing there to depend upon or to help in the construction of the canal, except however the Panama Railroad. Everything had and has to be imported: laborers, contractors' plant, dwelling houses, all sorts of materials and supplies, even meat, butter, milk and water! To do this alone denotes on the part of the promoters indomitable energy and unshaken faith in the ultimate success of their enterprise. Blunders may have been committed, money may have been spent with a lavish hand, but such faults are inherent in all great works and almost beyond man's control.

The plant alone comprises: Fifty steam dredges of the most powerful built; thirty tugs; two hundred scows; one hundred and twenty steam excavators; two hundred locomotive engines; six thousand large dumping cars; two hundred miles of standard-gauge railway;