of California to grind with her own moist wheat, and there is no country but California where one man can successfully cultivate five hundred acres of wheat unaided by either man or fertilizer.

With this canal completed, the grain of San Francisco, which is now more than four months on its way to Boston or Liverpool, could be landed there in less than three weeks. The vessel transporting it, instead of making one trip yearly, would accomplish many trips, by the aid of steam, now prohibited by the length of the voyage.

To the United States the canal will be most useful in developing the products of the Pacific coast, and exchanging them for our manufactures. To the British Isles it is even more important, as they draw one-fifth of the wheat they consume from California and Oregon, and by means of this canal may save annually a million sterling in the freight.

To France it is important for the diffusion of her manufactures over the isles and coasts of the Pacific, while the whole continent of Europe and most of South America are deeply interested in this enterprise.

IS A SHIP-CANAL FEASIBLE?

Both England and the United States have made diligent inquiry for a short-cut across the Isthmus free from lockage and tunnels.

The Isthmus has been carefully surveyed, but no route for a canal has been discovered which would not require deep rock-cutting and a vast expenditure. The only route to the Pacific free from such embarrassments is one across Central America, by the San Juan River and the Lake of Nicaragua, from the port of San Juan to the port of Brito, on the Pacific—a distance of 190 miles. On this route 140 miles will be open river and lake navigation, and fifty miles ship-canal. The San Juan route was carefully examined in 1851 by Child, an American engineer, whose report was indorsed by Colonel Abert, an eminent officer of the Engineer Corps of the United States.

This report gave the following results, viz.: that the summit level is found in a large navigable lake, whose surface is but 110 feet above the level of the sea on either side; that this lake is twice the size of Lake Champlain, being 110 miles in length and thirty-five miles in width, and lies in a country where the rain-fall is three times as great as the rain-fall of New York, being ninety-eight inches annually. The San Juan River flows from this lake into the Caribbean Sea—a distance of 119 miles; its average width is 600 feet, and it receives from the lake in dry seasons a supply of water equal to 800,000 cubic feet per minute, which is four times the amount required for a canal in each direction from the sea. Its descent to the sea averages but ten inches to the mile, which is less than that of the Ohio, and as there are but four rapids in it, the Castillo, Del Toro, Balus, and Machuca, which are easily overcome, it is at all times navigable for vessels drawing three feet of water, and in freshets for steamers of a much larger size. The engineer has estimated for thirteen locks upon the river and eastern canal, but there is reason to believe that a portion of them may be dispensed with, so gentle and equable is the flow of the river. We learn further from Child's report that the river, for ninety miles from the sea, may be made navigable for large ships at a moderate cost, and for twenty-nine miles more to the lake a ship-canal may be easily constructed on its bank.

The indentations of the coast are such at each terminus that good harbors may be made; the height of land between the lake and the Pacific is but nineteen feet above the lake, and the route adapted for a ship-canal. Indeed, we are led by the report to the conclusion that the rock encountered on both routes will be less than that requisite for the masonry of the canal and its harbors. The climate, although the lake is within fifteen degrees of the equator, is healthful—a point of no little importance to those who build as well as to those who shall use the canal. The report finally apprises us that a ship-canal of size sufficient to accommodate steam-ships drawing seventeen feet of water of the largest class in use in 1851 might be constructed for less than thirty-three millions of dollars. But there is ample water for a larger canal. The Suez Canal, which is of greater length than that proposed, is two hundred feet in width and twenty-five feet in depth, and we must adopt its dimensions if we expect its success. We may double the cost, and to cover contingencies and interest during construction shall find it advisable to carry the estimates up to eighty millions of dollars, which is not far from the cost of the Suez Canal.