

DETAIL CONSTRUCTION OF A LOCK

The great tube, later covered by concrete, carries the water for filling the chamber

dolph, on Margarita Island, there are eight mortars of the new type, two 14-inch guns and two 6-inch guns. That armament will protect the Margarita Island side of the entrance and it also controls the waters to the south. On the Toro Point side at Fort Sherman we have eight mortars, two 14-inch guns, and two 6-inch guns. There are in addition two 6-inch guns provided at Manzanillo Point, city of Colon. In my opinion this armament is entirely adequate for the defense of the Atlantic side'".

It is apparent, therefore, that the unfortified Island of Taboga is the one questionable point in our Pacific line of defense. It is wholly probable that steps will be taken to erect such defenses as will make the seizure of this island impracticable to any enemy.

Plans for the landward defenses of the coast forts had not been determined upon at the time of publication of this book. Necessary no doubt from a

strictly military point of view, they seem to the civilian mind rather superfluous in view of the character of the countryside along the borders of the Zone. The general who would undertake to lead an army through the jungle would encounter a natural foe such as armed forces have never had to overcome, and his invading column would hardly emerge upon the Zone in fit condition to give battle to any considerable army of occupation.

However, should an enemy once effect a landing at any point within striking distance of Panama or Colon, say on the Chorrera coast, or at Nombre de Dios or Porto Bello, some defensive works would be needed to prevent their taking the coast forts in the rear. Such works are being planned and an extensive permanent camp is to be built at Miraflores, at which point the Canal can be readily crossed—there are to be no permanent bridges—and smaller posts at Margarita Island, Toro Point

and Culebra Island. To man the actual seacoast forts there will be 12 companies of coast artillery of 109 men each; while distributed in the army camps will be, according to present estimates, three

ence, and perhaps reduce to insignificance some of the present considerable ports of the world.

Certain very common misbeliefs may be corrected with merely a word or two of explanation. Nothing is more common than to look upon all South America as a territory to be vastly benefited by the Canal, and brought by it nearer to our United States markets. A moment's thought will show the error of this belief. When we speak of South America we think first of all of the rich eastern coast, of the cities of Rio de Janeiro, Montevideo and Buenos Ayres. But it is not to this section that the greatest advantage will come from the Canal. Vessels from our Pacific coast can indeed carry the timber of Puget Sound, the fish of Alaska and the Columbia River, the fruits of California thither more cheaply than now, but that is but a slight fraction of their trade. Nor are Brazil and the Argentine participators in Oriental trade to any great extent, though the Canal may make them so. The western coast of South America is chiefly affected by the Canal, and that to a degree rigidly limited by the distance of the point considered from the Straits of Magellan, and the size of the Canal tolls imposed.

Nor will the Suez Canal be an abandoned waterway after our own cut at Panama is completed. It will, indeed, be not surprising to see the Suez Canal tonnage increase, for trade breeds trade, and the Panama Canal will be a stimulant as well as a competitor. To all of British India and Southern China the distance from Liverpool via Suez is less than via Panama, and to Melbourne, Sidney and other Australian ports the saving in distance via Panama is less than 2000 miles. The Suez Canal,



Photo by H. Pütter

Courtesy National Geographic Magazine

A GROUP OF GUYAMI GIRLS

regiments of infantry, a squadron of cavalry and a battalion of field artillery, making in all rather more than 8000 men.

The probable influence of the Panama Canal on commerce, on trade routes, on the commercial supremacy of this or that country, on the development of hitherto dormant lands is a question that opens an endless variety of speculations. Discussion of it requires so broad a knowledge of international affairs as to be almost cosmic, a foresight so gifted as to be prophetic. A century from now the fullest results of the Canal's completion will not have been fully attained. This creation of a new waterway where a rocky barrier stood from the infinite past in the pathway of commerce will make great cities where hamlets now sit in somno-

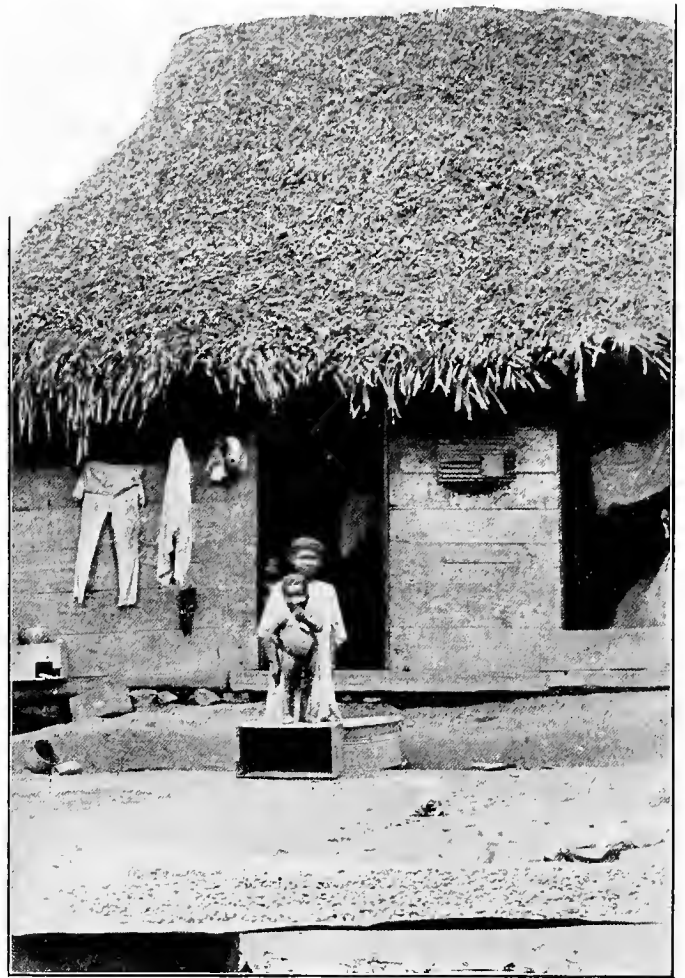


A ZONE SIGN OF CIVILIZATION

it is to be remembered, is owned by Great Britain and a very slight concession in rates will be all that is needed to keep British merchant vessels to their long accustomed routes. We have had a harder task in digging our Canal than the French had at Suez, but we need cherish no delusive idea that we are going to put the earlier waterway out of business.

The really great material advantage which the United States is to derive from this monumental national undertaking will come from the all-water connection between our own Atlantic and Pacific coasts. A ship going from New York to San Francisco via the Straits of Magellan traverses 14,000 miles of sea—some of it the very most turbulent of all King Neptune's tossing domain. By Panama the same ship will have but 5000 miles to cover. The amazing thing is that ships are going around the Horn, or at least through the Straits, but the high rates on transcontinental railroads make even that protracted voyage profitable. What the Canal will do to transcontinental rates is a matter that is giving some railroad managers deep concern. It was in fact a consideration which led to prolonged and obstinate opposition to the building of any canal at all. Water carriage between the two coasts has long been a bogey to the railroad managers. When coastwise steamships on the Atlantic and Pacific with the Panama Railroad for a connecting link offered some competition, the five transcontinental railways pooled together and, securing control of the Pacific Mail Steamship line operating between San Francisco and Panama, used it to cripple all competition. For a time there was danger that the methods then employed might be

adopted to destroy the usefulness of the Panama Canal, and it was to guard against this that Congress adopted the law denying the use of the Canal to vessels owned by railroad companies.



HIS MORNING TUB

At the time of its passage this law created much discussion. The reason for it was widely misunderstood. Its first effect was the canceling of several orders for ships placed by railroad companies with shipbuilders in anticipation of the Canal's opening, and the public naturally cried out against a measure which seemed to interpose an obstacle to the reappearance of the American flag on the high seas. But the law was bred of bitter experience. In bygone days it was discovered that both time and money could be saved on shipments from California to New York or other Atlantic seaports by sending them to Panama by water, across the Isthmus by rail, and then by water from Colon to their destina-



PART OF THE COMPLETED CANAL



NATIVE GIRL, CHORRERA PROVINCE

tion. This route grew in favor until the transcontinental railroads intervened to check its further development. Getting control of the Pacific Mail line of steamers from San Francisco to Panama, they first put their rates so low as to drive all competing ships from the route. Of course they lost money, but the loss was apportioned among the companies forming the pool, and when the competing concerns had been ruined or driven out of business, the rates were put up again and the losses that had been incurred were speedily recouped. Once the complete monopoly on the Pacific had been secured, every effort was made to discourage shipments by that route. The ships passed Los Angeles, the greatest fruit port in the country, without a call, but touched at innumerable little mud villages in Central America so as to make the time of through shipments intolerable. They often sailed with half a cargo—refusing to take freight that lay at their

docks on the plea that all their cargo space was disposed of. It was—to the railroads who afterward gathered up the rejected freight and shipped it east over their own lines at prices to suit themselves.

Taught wisdom by these tactics—against which they had unavailingly employed all the expedients of law and of coöperative competition—the shippers of California appealed to Congress to act wisely lest the Panama Canal as a waterway for all and a regulator of transcontinental freight rates be throttled by the railroads. They pointed out that the roads might in combination maintain one line of ships between New York and San Francisco which would make rates so low that no other line could meet them and live. Doubtless such a line would lose money, but the loss, divided among the conspiring roads, would be but a flea bite to each, and would be more than recouped by the higher rail rates they might charge. In response to this



NATIVE BOY, CHORRERA PROVINCE

appeal Congress enacted the law denying railroads the right to maintain lines of water carriage on what would be normally competitive routes. The statute though planned primarily for the maintenance of the highest usefulness of the Panama Canal affects other routes, notably Long Island Sound. It is denounced by the railroads and has doubtless checked to some extent American shipbuilding, but it is nevertheless the only apparent weapon against a very real and harmful device in the railroads' efforts to maintain high rates.

The question of the tolls to be charged for passage through the Canal is one that has evoked a somewhat acrimonious discussion, the end of which is not yet. About the amount of the toll there was little dispute. It was determined by taking the cost of maintenance of the Canal, which is estimated at about \$4,000,000 annually, and the interest on its cost, about \$10,000,000 a year, and comparing the total with the

for the first year at 10,500,000 tons, with an increase at the end of the first decade of operation to 17,000,000, and at the end of the second decade to 27,000,000 tons. The annual expenses of the Canal, including interest, approximates \$14,000,-



MAIN STREET, CHORRERA

000, and Congress has accordingly fixed the tolls at \$1.20 a ton for freight and \$1.50 per passenger. It is anticipated that these figures will cause a deficit in the first two or three years of operation, but that the growth of commerce through the Canal will speedily make it up.

In legislating upon the question of tolls Congress opened an international question, which has been fiercely debated and which remains a subject of diplomatic negotiation between our State Department and the British Foreign Office. This was done by the section of the law which granted to American-built ships engaged in the coasting trade the right to



PARK AT DAVID

amount of tonnage which might reasonably be expected to pass through annually. Prof. Emory R. Johnson, the government expert upon whose figures are based all estimates concerning canal revenues, fixed the probable tonnage of the Canal

use the Canal without the payment of any tolls whatsoever. At the time of its appearance in Congress this proposition attracted little attention and evoked no discussion. It seemed to be a perfectly obvious and entirely justifiable employ-

ment of the Canal for the encouragement of American shipping. The United States had bought the territory through which the Canal extended and was paying every dollar of the cost of the great work. What could be more natural than that it should concede to American shipping owners, who had borne their share of the taxation which the cost of the Canal necessitated, the right of free passage through it?

The concession seemed the more obvious and proper because the privilege of free passage was limited to vessels in the coastwise trade. Under our navigation laws maritime trade between ports in the United States is confined to ships built in American shipyards. This regulation is clearly intended to confer upon the United States a monopoly of the building of coastwise ships, and the subsequent exemption of coastwise ships from Panama Canal tolls was a further benefaction to this monopoly. As a matter of fact, our coastwise trade was at the moment passing into monopolistic control, and the wisdom of making so prodigious a gift to a monopolistic combination might have justly been questioned. But the strictly business features of the Canal have always been decorated with more or less sentimental declamation about reestablishing the American flag on the high seas, and it was to contribute to the latter desirable end that the tolls were to be remitted. It seemed to occur to no one that the ships thus favored were either owned by railroad com-

panies and used largely to stifle competition or by a somewhat notorious organizer of trusts whose ambition was to control water transportation from Maine to the Mexico border, and who was checked in the attainment of his aim by a sentence to the Federal penitentiary. It is not only in war time that the flag is waved most enthusiastically by men

who only want the bounty that goes with it.

Nobody, however, at the time of the passage of the act regulating tolls thought it had any particular international significance. Its signature by the President was taken as a matter of course and it was not until some time afterward that the Ambassador of Great Britain presented his country's claim that the exemption clause was in violation of the Hay-Pauncefote treaty. The section of that treaty which it is claimed is violated reads thus:

"The Canal shall be free and open to the vessels of commerce and of war of all nations observing these rules on terms of entire equality, so that there shall be no discrimination against any such nation, or its citizens or subjects, in respect of the conditions or changes of traffic".

The outcry against the exemption clause soon became very vociferous. Perhaps the Canadian railroads or some of their officials may have been instrumental in this, seeing a possible profit in running ships from Montreal or Quebec to Vancouver or Victoria, touching at various United States ports en route. Such a voyage would not



A PLACID BACK WATER IN CHIRIQUI

constitute a "coastwise passage" under our laws, and foreign vessels might engage in such traffic. But they saw that the exemption in tolls by which a United States vessel of 12,000 tons would escape canal tolls amounting to \$15,000 would put them at a serious disadvantage. Hence they appealed to Great Britain and the protest followed. Whether affected by the vigorous colonial protest or not,

sacrificed her coastwise register if she continued her voyage to Yokohama or Hong Kong.

American public men and the American press are radically divided on the question. A majority, perhaps, are inclined to thrust it aside with a mere declaration of our power in the matter. "We built the Canal and paid for it", they say, "and our ships have the same rights in it that they have in the



GATUN LAKE. FLOATING ISLANDS MASSED AGAINST TRESTLE

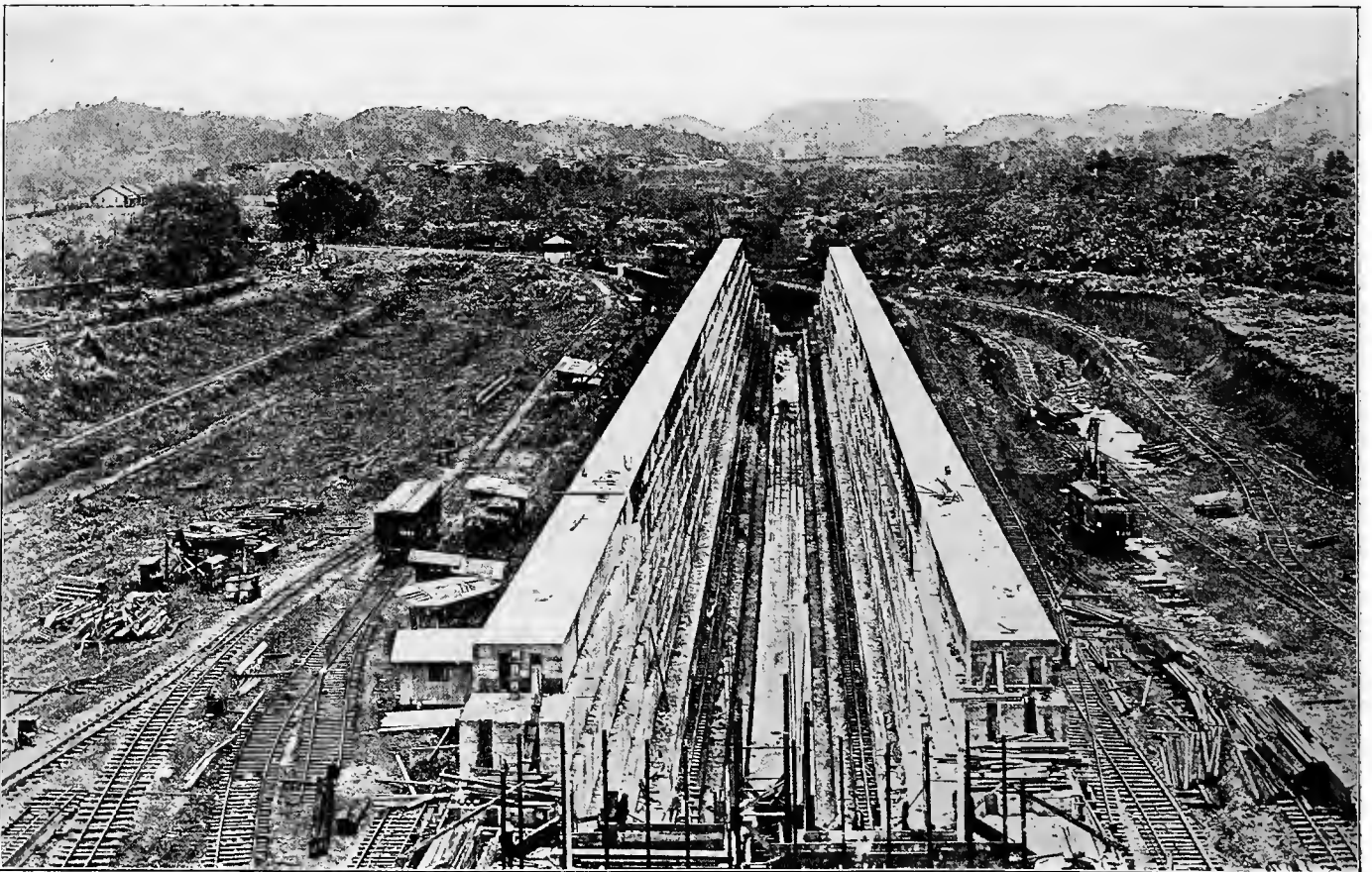
the British government urges that the United States will very properly adjust its tolls to meet the needs of the Canal for revenue, and that if the coastwise shipping be exempted there will be a loss of some millions of dollars in revenue which will compel the imposition of higher tolls on other shipping. It is urged also on behalf of the protestants that the word "coastwise" is capable of various constructions and that a vessel plying between New York and Los Angeles might be held not to have

Hudson River or the canal at the Soo. Besides the British cannot engage in our coasting trade anyway, and what we do to help our coastwise ships concerns no one but us". Which seems a pretty fair and reasonable statement of the case until the opponents of the exemption clause put in their rejoinder. "Read the treaty", they say. "It is perfectly clear in its agreement that the United States should not do this thing it now proposes to do. Treaties are, by the Constitution, the supreme law of the

land. To violate one is to violate our national honor. It would be disgraceful to let the word go out to all the world that the United States entered into sacred obligations by treaty and repudiated them the moment their fulfilment proved galling. The protected shipyards, the already subsidized coastwise steamship companies, are asking for more gratuities at the cost of our national honor. What is the use of reestablishing on the high seas a flag which all peoples may point out as the emblem of a dishonorable state"?

So rests the argument. The advocates of the remission of tolls to the coastwise ships of the United States have the best of the position, since their contention is already enacted into law, but the opposing forces are vigorously urging the repeal of the law. Congress will of course be the final arbiter, and as the Canal cannot be opened to commerce before 1915 there is ample time for deliberation and just judgment. A phase of the problem

which I do not recall having seen discussed arises out of the literal acceptance of the language of the treaty as bearing upon the use of the Canal in war time. It declares that the Canal "shall be free and open to the vessels of commerce and of war of all nations . . . on terms of entire equality"; and while it goes on to prescribe the rules to be followed in war time it nowhere declares the right of the United States to debar to the warships of a hostile nation the privilege of passing through the Canal. Under the strictest construction of the language of the treaty the refusal of the United States to permit a German or a Japanese fleet to pass through, even though that nation was at war with us, would be a violation of the treaty which would justify English interference to enforce the opening of the Canal—which of course would be war. No such contingency could possibly arise, nor any such construction be put upon the language of the treaty by any reasonable and responsible party. Yet it



GUIDE WALL AT MIRAFLORES

This picture shows method of lock construction. The space within these two walls will be filled with dirt and cement. The ground on either side will be inundated, forming a small lake through which the Canal passes.

is scarcely a more forced construction than the one applied in order to make it appear that we may not free our own ships in purely domestic trade from canal tolls.

The fundamental principle controlling the amount of the tolls is to fix them at such a figure as to minimize the competition of Suez. Commerce proceeds by the cheapest route. Some slight advantage may accrue to the Panama route if the government can

make such contracts with American mines as to be able to furnish coal at the Isthmus at a price materially less than is charged at Suez. The estimates, supplied by Prof. Johnson, of probable commerce have been based on a price for coal at Cristobal or Colon of \$5 a ton and at Balboa of \$5.50 a ton. At the time the prices for coal at Port Said on the Suez

Canal were from \$6.20 to \$6.32 a ton. This, plus cheaper tolls, will give Panama a great advantage over Suez.

The first immediate and direct profit accruing to the people of the United States from the Canal will come from the quick, short and cheap communica-

tion it will afford between the eastern and western coasts of the United States. People who think of passenger schedules when they speak of communication between

distant cities will doubtless be surprised to learn that on freight an average of two weeks will be saved by the Canal route between New York and San Francisco. The saving in money, even should the railroads materially reduce their present trans-continental rates, will be even more striking. Even now for many classes of freights there is a



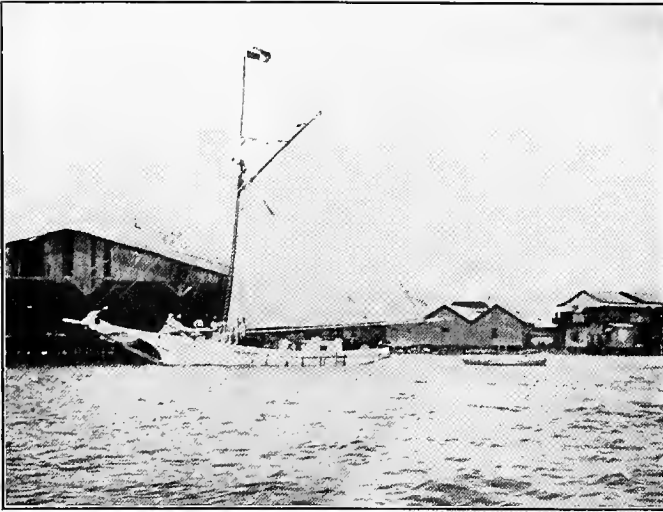
POLING OVER THE SHALLOWS



Photo by American Press Association

THE SPILLWAY ALMOST COMPLETE.

The scaffolding will be removed and all towers built to height of those on left



SAN BLAS LUGGER IN PORT

profit in shipping by way of the Straits of Magellan—a distance of 13,135 miles. By Panama the distance between New York and San Francisco is but 5262 miles, a saving of 7873 miles or about the distance across the Atlantic and back. From New Orleans to San Francisco will be but 4683 miles. Today there is little or no water communication between the two cities and their tributary territory.

At least one month's steaming will be saved by 12-knot vessels going through the Panama Canal over those making the voyage by way of the Straits of Magellan. A general idea of the saving in distance between points likely to be affected by the Canal is given by the table prepared by Hon. John Barrett, Director General of the Pan-American Union and published on page 384.

The Pacific coasts both of the United States and of South and Central America will be quickened into new life when the stream of commerce begins to flow through the new channel at Panama. It may be wise to lay emphasis at this point upon the fact that so far as industrial and commercial life on our own Pacific coast is concerned it needs little quickening, as the march to civic greatness of those communities has been unparalleled. But even that magnificent advance has been impeded and harassed by the difficulty of communication with the markets of the Atlantic coast. The struggles of the Pacific coast planters and lumbermen to break the bondage imposed upon them by the railroads have been fairly frantic, and their uniform failure pathetic. Perhaps the railroad managers have demanded no



Photo by Brown Bros.

THE BEGINNING OF A SLIDE

The great crack has opened in the side of a road; note house in the distance about to go

more than a rightful care for the interests of their stockholders warranted. This is no place to argue the railroad rate question. But from the shipper's point of view the demands have been so intolerable that every expedient for resisting them has been tried and failed. Even now there is profit to a corporation—and to the shippers that patronize it—in carrying goods from San Francisco to Hawaii, thence to Tehuantepec and across that Isthmus to the Gulf and thence again to New York in competition with the direct railroad lines. If freight can be thus handled profitably, with two changes from ship to car and vice versa, it is easy to see how vastly beneath the charges of the railroads will be the all-water route between New York and San Francisco. It is little exaggeration to say that for commercial purposes all the Pacific seaboard will be brought as near New York and European markets as Chicago is today. The forward impetus given by this to the commercial interests of the Pacific baffles computation.

But it is Latin America that has reason to look forward with the utmost avidity to the results that will follow the opening of the Canal. For the people of that little developed and still mysterious coast line reaching from the United States-Mexico boundary, as far south at least as Valparaiso, the United States has prepared a gift of in-



THE HAPPY CHILDREN OF THE ZONE

calculable richness. Our share in the benefit will come in increased trade, if our merchants seize upon the opportunity offered.

From Liverpool to Valparaiso today is 8747 miles and from New York 8380. But when the ships go through the Canal the English vessels will save little. For them the run will be reduced to 7207 miles, while from New York the distance will be cut to 4633. With such a handicap in their favor New York shippers should control the commerce of Pacific South America north of Valparaiso. Guayaquil, in Ecuador, will be but 2232 miles from New Orleans; it has been 10,631. Callao, with all Peru at its back, will be 3363 miles from New York, 2784 from New Orleans. In every instance the saving of distance by the Panama route is more to the advantage of the United States than of Great Britain. Today the lion's share of the commerce of the South American countries goes to England or to Germany.

North of the Canal

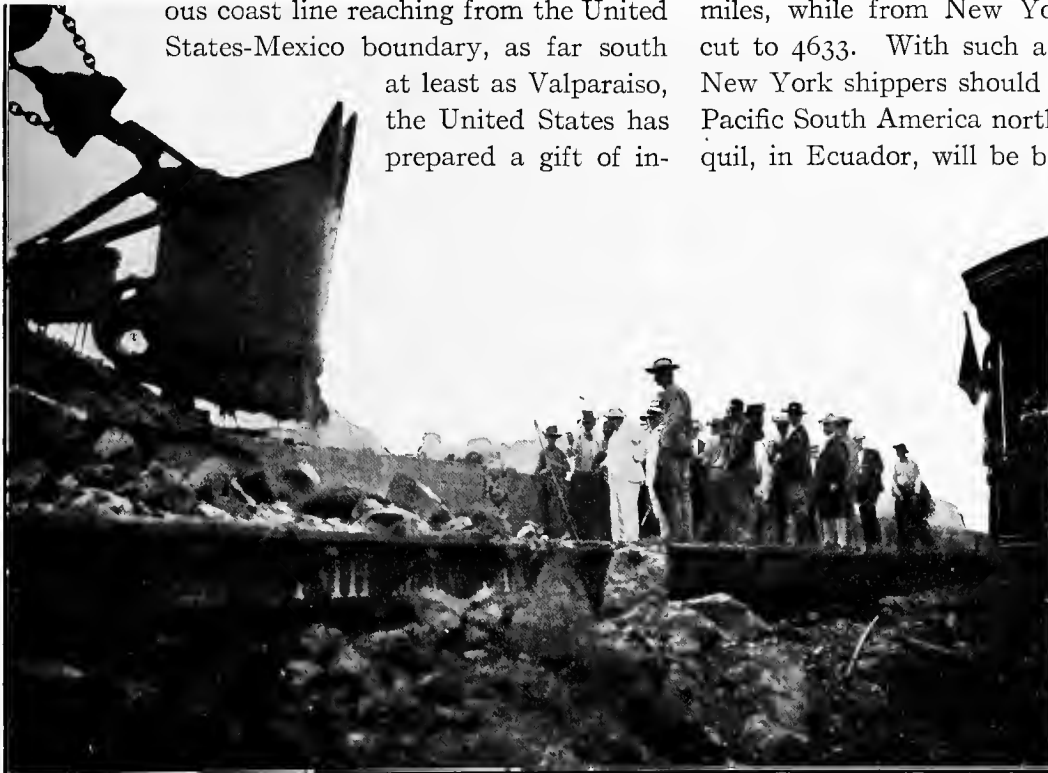


Photo by Brown Bros.

“MAKING THE DIRT FLY”

DISTANCE SAVED BY THE PANAMA CUTOFF

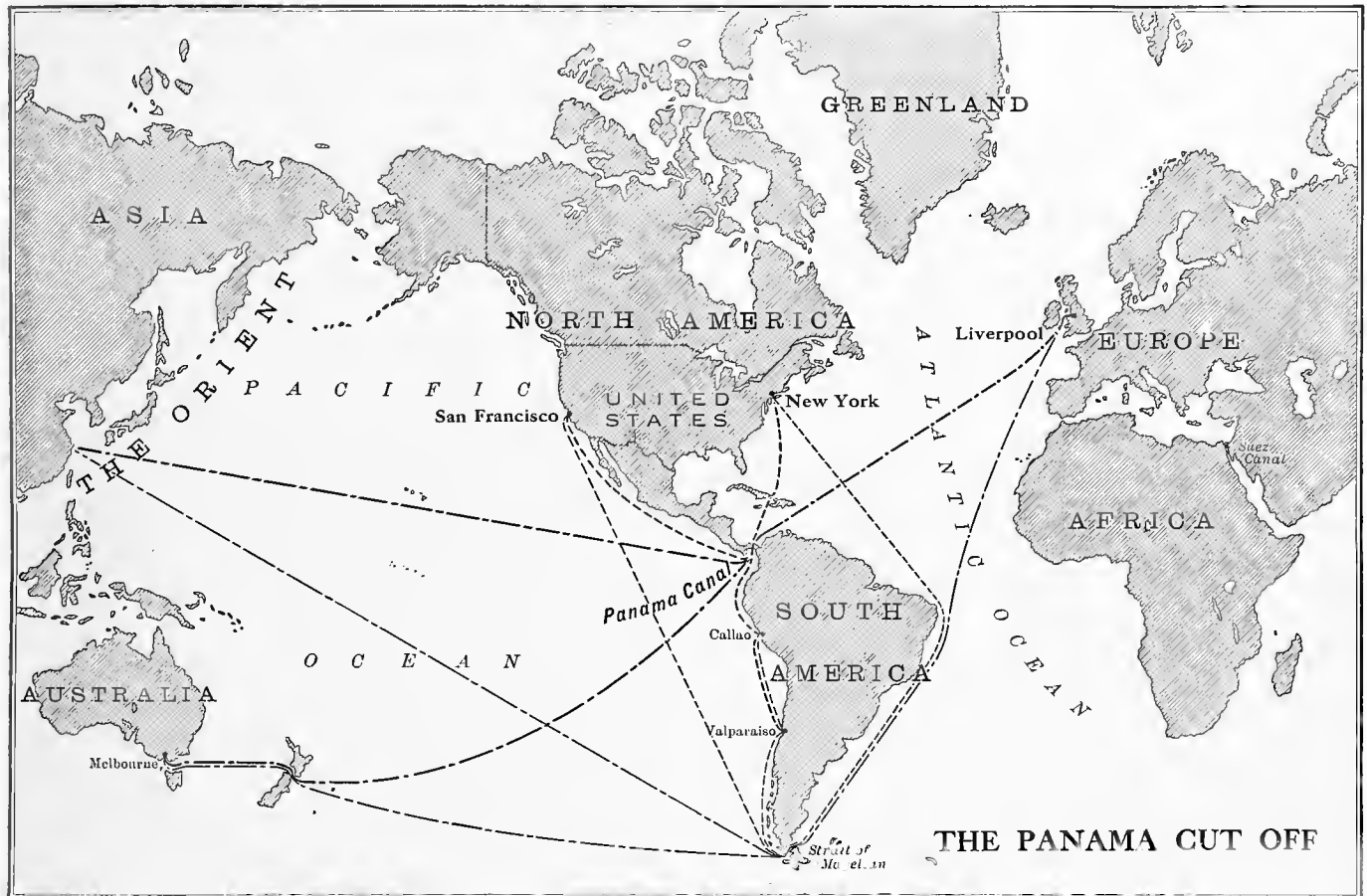
COMPARATIVE DISTANCES (IN NAUTICAL MILES) IN THE WORLD'S SEA TRAFFIC
AND DIFFERENCE IN DISTANCES VIA PANAMA CANAL
AND OTHER PRINCIPAL ROUTES

To	Via	From					
		New York	New Orleans	Liverpool	Hamburg	Suez	Panama
Seattle....	Magellan.....	13,953	14,369	14,320	14,701	15,397	.....
	Panama.....	6,080	5,501	8,654	9,173	10,447	4,063
Distance	saved.....	7,873	8,868	5,666	5,528	4,950	.....
San Francisco.....	Magellan.....	13,135	13,551	13,502	13,883	14,579	.....
	Panama.....	5,262	4,683	7,836	8,355	9,629	3,245
Distance	saved.....	7,873	8,868	5,666	5,528	4,950	.....
Honolulu.....	Magellan.....	13,312	13,728	13,679	14,060	14,756	.....
	Panama.....	6,702	6,123	9,276	9,795	11,069	4,685
Distance	saved.....	6,610	7,605	4,403	4,265	3,687	.....
Guayaquil.....	Magellan.....	10,215	10,631	10,582	10,963	11,659	.....
	Panama.....	2,810	2,231	5,384	5,903	9,192	793
Distance	saved.....	7,405	8,400	5,198	5,060	2,467	.....
Callao.....	Magellan.....	9,613	10,029	9,980	10,361	11,057	.....
	Panama.....	3,363	2,784	5,937	6,456	7,730	1,346
Distance	saved.....	6,250	7,245	4,043	3,905	3,327	.....
Valparaiso.....	Magellan.....	8,380	8,796	8,747	9,128	9,824	.....
	Panama.....	4,633	4,054	7,207	7,726	9,000	2,616
Distance	saved.....	3,747	4,742	1,540	1,402	824	.....
Wellington.....	Magellan.....	11,344	11,760	.....	13,353	9,694	.....
	Suez.....	.....	.....	12,989	.....	.....	.....
Distance	Panama.....	8,857	8,272	11,425	11,944	9,205	6,834
saved.....	.....	2,493	3,488	1,564	1,409	489	.....
Melbourne.....	Cape Good Hope	13,162	14,095	.....	11,845	8,186	.....
	Suez.....	.....	.....	11,654	.....	.....	.....
Distance	Panama.....	10,392	9,813	12,966	13,452	10,713	8,342
saved.....	.....	2,770	4,282	1,312	1,607	2,527	.....
Manila.....	Suez.....	11,589	12,943	9,701	9,892	6,233	.....
	Panama.....	11,548	10,969	14,122	14,608	11,869	9,370
Distance	saved.....	41	1,974	4,421	4,716	5,636	.....
Hongkong.....	Suez.....	11,673	13,031	9,785	9,976	6,317	.....
	Panama.....	11,691	11,112	13,957	14,443	11,704	9,173
Distance	saved.....	18	1,919	4,172	4,467	5,387	.....
Yokohama.....	Suez.....	13,566	14,924	11,678	11,869	8,210	.....
	Panama.....	9,798	9,219	12,372	13,858	11,119	7,660
Distance	saved.....	3,768	5,705	694	1,989	2,909	.....
Panama.....	.....	2,017	1,438	4,591	5,110	6,387	.....

See also map on page 385

are the Central American countries of Costa Rica, Nicaragua, Honduras, Salvador, Guatemala and Mexico. On their Gulf coasts harbors are infrequent and poor, but on the Pacific plentiful. Their territory is as yet little developed, but with few manufacturers of their own they offer a still undeveloped market for ours. In all, the twelve Latin-American countries bordering on the Pacific have an area of

to which the Canal will give the readiest access. Here other nations will profit equally with ours unless our merchants show a greater energy in the pursuit of foreign trade than they have of late years. Time was that the old shipping merchants of Boston, Philadelphia and New York asked odds of no man nor of any nation, but had their own ships plying in the waters of all the world, with



THIS MAP SHOULD BE STUDIED IN CONNECTION WITH THE TABLE OF COMPARATIVE DISTANCES ON PAGE 384

over 2,500,000 square miles, or about that of the United States exclusive of Alaska and its insular possessions. They have a population of 37,000,000 and their foreign trade is estimated at \$740,000,000. In this trade the United States is at the present time a sharer to the extent of \$277,000,000 or about 37 per cent. With the Canal in operation it is believed that the total commerce will be doubled and the share of the United States raised to 50 per cent.

However, it is the great Australasian and Asiatic markets, now scarcely touched about the outskirts

captains who were at once navigators and traders—equally alert to avoid a typhoon and to secure a profitable cargo or charter. But that sort of foreign trade is now vanished with the adventurous spirits who pursued it. Unless conditions governing the American merchant marine materially change within the next two years—of which there seems today no likelihood—it will be England and Germany with their existing lines of ships that will chiefly benefit by the United States \$400,000,000 gift to the commerce of the world.

Curiously enough New York, or for that matter



Photo by Brown Bros.

AN ERUPTION OF THE CANAL BED

The pressure of the adjoining hills has forced up the soil at its weakest point, namely the bed of the Canal, to a height of 18 feet, as shown by the dotted line

any North Atlantic seaport of the United States, is in a sort a way station for ships from Europe to North Asiatic ports. In navigation the straight course is not always the shortest course, for the very simple reason that the equator is the longest way around the world. On account of the curvature of the earth's surface a vessel from Liverpool to Hamburg to the Panama Canal by following the great circle route can make New York a stopping-place by adding only one day's steaming to the voyage. On the other hand a vessel en route from Panama to Yokohama can touch at San Diego and San Francisco with only two days' extra steaming. These facts make for the advantage of the shipper by adding to the vigor of competition for cargoes, but they add to the fierceness of the rivalry which the American ship owner will have to meet and for which the kindly government prepares him by forcing him to buy his ships in the costliest market

and operate them in accordance with a hampering and extravagant system of navigation laws.

The ease however with which English or German ships en route to the Far East may touch at New York, Boston or Philadelphia will doubtless divert to Panama some of the traffic that would find a shorter through route via Suez. For example, from Liverpool to Melbourne is 1312 miles less via Suez than by way of Panama, while to Hongkong it is 694 miles less. Yet it is quite conceivable that the advantage of taking New York or other United States Atlantic ports on the way may secure some of this traffic for Panama.

The really striking saving in time and distance is shown by a comparison of the present distances between our Atlantic coast towns and Australasia and the Orient. Prof. Johnson has put this in two compact tables, which I quote from *The Scientific American*:

TABLE I.—DISTANCES AND TIME SAVED VIA THE PANAMA CANAL AS CONTRASTED WITH ROUTES VIA THE SUEZ CANAL, THE CAPE OF GOOD HOPE, AND THE STRAITS OF MAGELLAN BETWEEN THE ATLANTIC GULF SEABOARD OF THE UNITED STATES AND AUSTRALASIA

To	FROM NEW YORK						FROM NEW ORLEANS					REMARKS	
	Dis- tance saved	Days saved for vessels of					Dis- tance saved	Days saved for vessels of					
		9 knots	10 knots	12 knots	14 knots	16 knots		9 knots	10 knots	12 knots	14 knots		16 knots
Adelaide...	Miles 1,746	7.5	6.7	5.6	4.6	4.0	Miles 3,258	14.6	13.1	10.8	9.2	8.0	Difference between routes via Panama, Tahiti, Sydney, and Melbourne, and via St. Vincent and Cape of Good Hope. Difference between routes via Panama, Tahiti, and Sydney and via St. Vincent, Cape of Good Hope, and Adelaide. Difference between routes via Panama and Tahiti, and via St. Vincent, Cape of Good Hope, Adelaide, and Melbourne. Difference between routes via Panama and Tahiti and via Straits of Magellan.
Melbourne.	2,770	12.3	11.0	9.1	7.7	6.7	4,282	19.3	17.3	14.3	12.2	10.7	
Sydney....	3,932	17.7	15.8	13.1	11.2	9.7	5,444	24.6	22.2	18.4	15.7	13.7	
Wellington	2,493	11.0	9.9	8.1	6.9	6.0	3,488	15.6	14.0	11.6	9.9	8.6	

TABLE II.—DISTANCES AND DAYS SAVED BY THE PANAMA OR THE SUEZ CANAL BETWEEN THE ATLANTIC GULF SEABOARD OF THE UNITED STATES AND JAPAN, CHINA, THE PHILIPPINES, AND SINGAPORE

To	VIA	FROM NEW YORK						FROM NEW ORLEANS					REMARKS	
		Dis- tance saved	Days saved for vessels of					Dis- tance saved	Days saved for vessels of					
			9 knots	10 knots	12 knots	14 knots	16 knots		9 knots	10 knots	12 knots	14 knots		16 knots
Yoko- hama..	{ Panama..	Miles 3,768	16.9	15.2	12.6	10.7	9.3	Miles 5,705	25.9	23.3	19.3	16.5	14.4	Via San Francisco. Via Colombo, Singapore, Hongkong and Shanghai.
	{ Suez....													
Shanghai	{ Panama..	1,876	8.1	7.3	6.0	5.1	4.4	3,813	17.1	15.4	12.7	10.8	9.4	Via San Francisco and Yokohama. Via Colombo, Singapore and Hongkong.
	{ Suez....													
Hong- kong...	{ Panama..							1,919	8.4	7.5	6.2	5.2	4.5	Via San Francisco, Yokohama and Shanghai. Via Colombo and Singapore.
	{ Suez....	18												
Manila..	{ Panama..	41						1,978	8.6	7.7	6.4	5.4	4.7	Via San Francisco and Yokohama. Via Colombo and Singapore.
	{ Suez....													
Singa- pore...	{ Panama..													Via San Francisco and Yokohama. Via Colombo.
	{ Suez....	2,484	11.0	9.8	8.4	6.9	5.9	547	2.0	1.7	1.4	1.1	0.9	

So far as Asiatic traffic is concerned, there is almost sure to be some overlapping of routes. Conditions other than those of time and space will occasionally control shipmasters in the choice of a route. But so far as the trade of our Atlantic ports with Hongkong, the Philippines and points north and east thereof is concerned it will all go through Panama. So, too, with the vessels from English, French or German ports. If the contemplated economies offered by the price of coal and fuel oil at Balboa are effected, the inducements of this route will divert from Suez all European shipping bound for Asiatic ports north of India. A careful study of the Suez Canal shows that the trade of the United States with all foreign countries made up 33 per cent of the total traffic, and the commerce of Europe with the west coast of South America comprised 38 per cent. Col. Johnson compiled for the benefit of the Commission a table which showed the vessels which might advantageously have used the Canal in 1909 and

1910, and accompanied it with another giving his estimate of the amount of shipping that actually will use the Canal in 1915 and thereafter. As the expression of official opinion based upon the most careful research, these tables are here republished.

CLASSIFICATION OF ESTIMATED NET TONNAGE OF SHIPPING USING THE PANAMA CANAL IN 1915, 1920 AND 1925

	Average per annum during 1915 and 1916	1920	1925
Coast-to-coast American shipping.....	1,000,000	1,414,000	2,000,000
American shipping carrying foreign commerce of the United States.....	720,000	910,000	1,500,000
Foreign shipping carrying commerce of the United States and foreign countries.....	8,780,000	11,020,000	13,850,000
Total.....	10,500,000	13,344,000	17,000,000



CULEBRA CUT ON A HAZY DAY

NET TONNAGE OF VESSELS THAT MIGHT HAVE ADVANTAGEOUSLY USED A PANAMA CANAL IN 1909-10.

	Total Entrances	Total Clearances	Total Entrances and Clearances
Europe with:			
Western South America.....	1,553,887	1,594,513	3,148,400
Western Central America and Pacific Mexico.....	80,788	118,714	199,502
Pacific United States, British Columbia, and Hawaii....	419,865	269,853	689,718
Pacific United States via Suez Canal.....	(1)	(1)	(1) 158,000
Oriental countries east of Singapore and Oceania...	618,704	555,881	1,174,585
Eastern United States coast with:			
Western South America, Pacific Mexico, and Hawaii..	309,909	166,686	467,595
Pacific Coast of United States (via Cape Horn).....	117,147	55,508	172,655
Pacific Coast of United States and Hawaii (via American-Hawaiian S.S. Co.).....	181,713	181,713	363,426
Oriental countries east of Singapore and Oceania...	600,000	900,000	1,500,000
Pacific traffic:			
Pacific Coast.....	158,558	259,932	418,490
Atlantic Coast.....			
Eastern Canada with Alaska, Chile and Australia.....	13,410	22,248	35,658
Total.....	4,044,981	4,125,048	8,328,029

NOTE.—(1). Reported by Suez Canal Company; hence the total is not separable into entrances and clearances at American ports.

After all, however, the most patient investigation of the past and the most careful and scientific calculations of the probabilities of the future may produce a wholly inaccurate result. The real effect of the Canal on the world's commerce may be something wholly different from what the experts expect. But we may proceed upon the well-established fact that no new route of swifter and cheaper transportation ever failed to create a great business, and to develop thriving communities along its route. This fact finds illustration in the building up of the suburbs and back country by the development of trolley lines, and, on a larger scale, the prodigious growth of our Pacific coast after the transcontinental railroads had fought their way to every corner of that empire still in the making. Much is uncertain about what the Panama Canal will do for the expansion of our trade and influence, but the one thing that is certain is that no sane man is likely to put the figures of increase and extension too high.

More and more the exports of the United States are taking the form of manufactured goods. The old times when we were the granary of the world are passing away and the moment is not far distant when we shall produce barely enough for our rapidly increasing population. British Columbia is taking

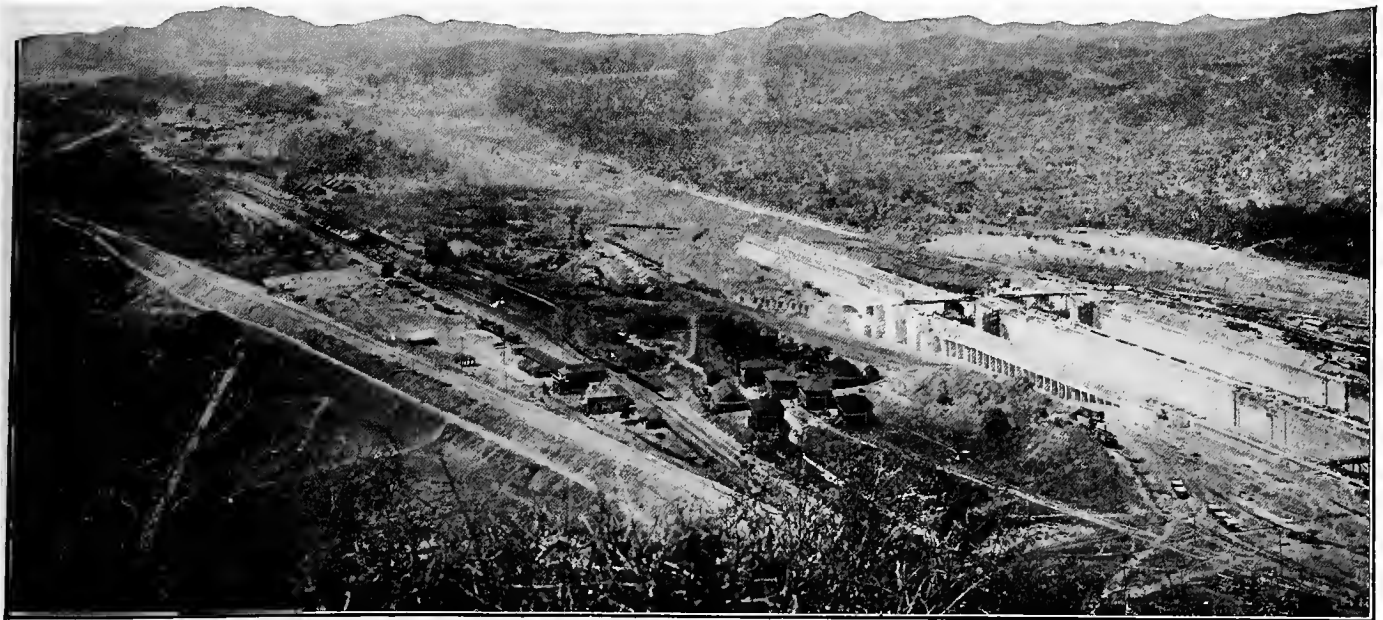


Photo by Brown Bros.

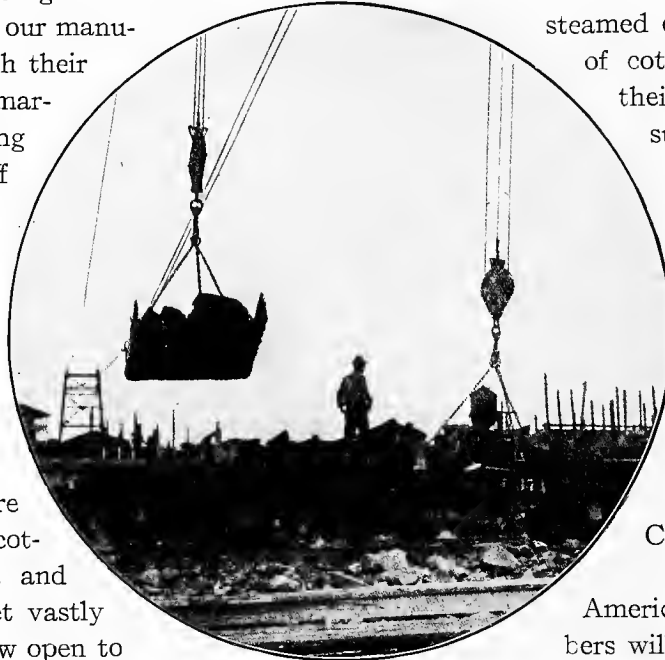
BIRD'S-EYE VIEW OF MIRAFLORES LOCK

At the upper end of the lock the guide wall extends into Miraflores lake; the lower end opens into the tide-water Canal.

up the task of feeding the world where we are dropping it. On the other hand, our manufacturing industry is progressing with giant strides and, while a few years ago our manufacturers were content with their rigidly protected home market, they are now reaching out for the markets of foreign lands. Figures just issued show that in 10 years our exports of manufactured goods have increased 70 per cent. The possibilities of the Asiatic market, which the Canal brings so much more closely to our doors, are almost incalculable. For cotton goods alone China and India will afford a market vastly exceeding any which is now open to our cotton mills, and if, as many hold, the Chinese shall themselves take up the manufacture of the fleecy staple they will have to turn to New England and Pennsylvania for their

machinery and to our cotton belt of states for the material. The ships from Charleston, Savannah, New Orleans and Galveston, which so long steamed eastward with their cargoes of cotton, will in a few years turn their prows toward the setting sun. Indeed these southern ports should be among the first to feel the stimulating effect of the new markets. Southern tobacco, lumber, iron and coal will find a new outlet, and freight which has been going to Atlantic ports will go to the Gulf—the front door to the Canal.

How swiftly and efficiently American manufacturers and jobbers will seize upon the new conditions and avail themselves of this opening of new fields is yet to be determined. The enemies of a protective tariff are not the only ones who hold that it has had the



HANDLING BROKEN ROCK

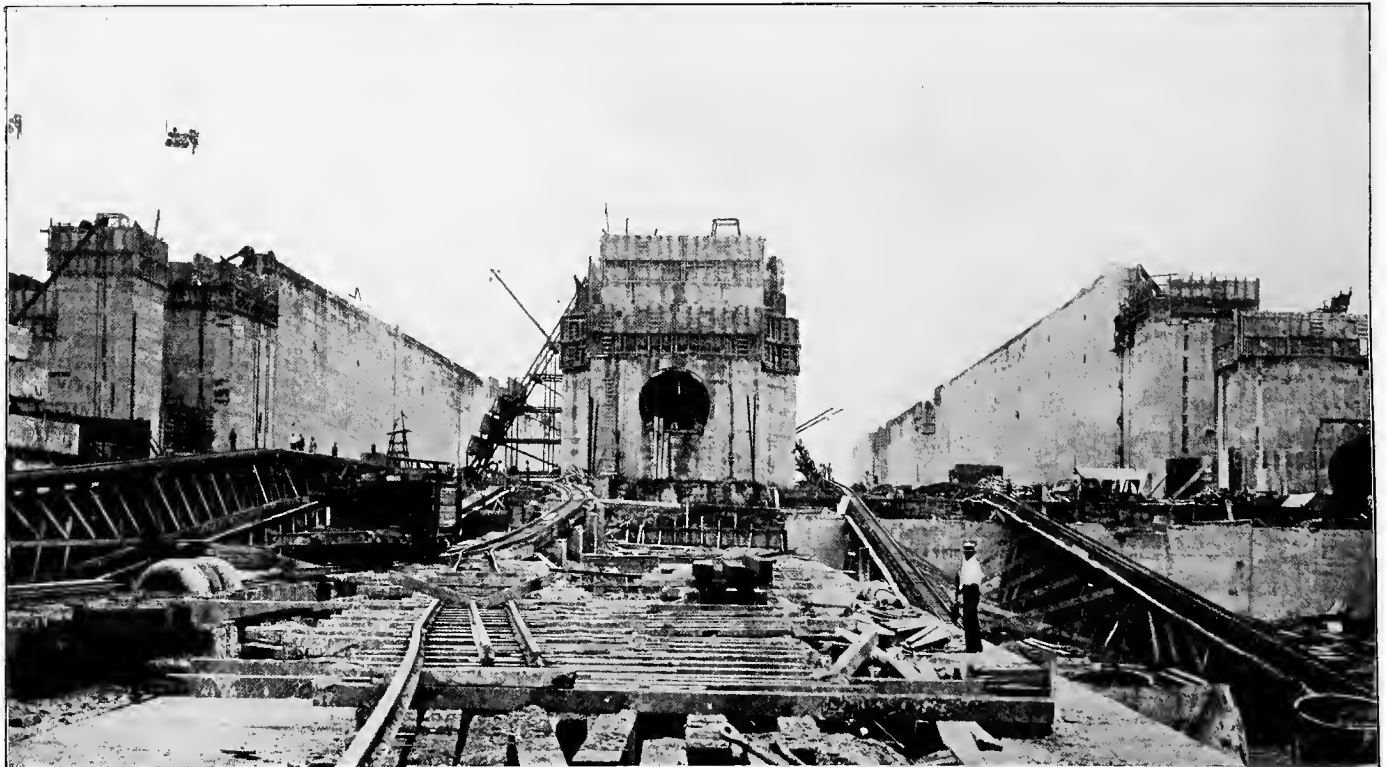


Photo by American Press Association

LOCK CONSTRUCTION SHOWING CONDUITS

result of dulling the keen spirit of adventurous enterprise for which our people were once noted. The absolute possession of a home market ever growing in size and into which no foreigner could enter with any hope of successful competition has naturally engaged at home the attention of our captains of industry. Bold and dashing spirits of the sort that one hundred years ago were covering

president or the head of a great manufacturing industry.

Whether the earlier spirit of world conquest will again spring up in the American mind so long content with the profits of its own national preserves is yet to be demonstrated. To what extent it has vanished any thoughtful traveler in foreign lands observes with a sigh. One sees evidences of its



TRAVELING CRANE HANDLING CONCRETE IN LOCK-BUILDING

These cranes are the striking feature of the Canal landscape, handling thousands of tons of concrete daily

the seas with Baltimore clippers and the output of the New England shipyards turned their attention half a century ago to the building of railroads and the development of our western frontier. When the middle-aged men of today were boys, the heroes of their story books ran away to sea and after incredible adventures came home in command of clipper ships trading to China. Today the same class of fiction starts the aspiring boy in as a brakeman or a mill hand and he emerges as a railroad

weakness at every foreign international exhibition, for the American section is generally the least impressive there. The opinion of our manufacturers is often that to show their products abroad is folly because foreign manufacturers will imitate them with cheaper materials and labor. In most foreign markets, in the cities of Europe, South America and the Orient the chief American products you see displayed are those manufactured by one of those combinations of capital we call a trust, and

they are usually sold abroad at lower prices than at home. Typewriters, adding machines, sewing machines, shoes and the divers products of the protean Standard Oil Company seem to be the most vigorous representatives of American industrial activity abroad. Nevertheless the recent statistics show that our experts are on the up-grade, and evidences of growing interest in our export trade multiply daily.

That the Canal of itself will not make amends for indifference or lethargy on the part of our manufacturers goes without saying. The nation may supply them with the waterway, but it cannot compel them to use it, or even teach them how. Every American traveler in South America has groaned over the reports that come from every side concerning the fatuity with which our manufacturers permit themselves to be distanced in the race for the trade of those republics. Our consular reports are filled with suggestions from consuls, but the various associations of exporters are so busy passing

platitudinous resolutions about the need of taking the consular service out of politics that they have no time to heed the really valuable suggestions offered. Our methods of packing goods, and our systems of credits, are repugnant to the South American needs and customs and the fact has been set forth in detail in innumerable consular reports without any response on the part of our exporters. The American attitude is "what is good enough at home is good enough abroad"—which is patriotic but not a good rule



on which to attempt building up foreign trade. Incidentally sometimes what is good enough for a home market is often too good for a Latin-American one. The English and the Germans recognize this and govern themselves accordingly.

It is a far cry from digging a canal to the system of educating young men to represent a firm in foreign lands. Yet one finds in visiting South America, or for that matter Oriental cities, that a great deal of the rapid expansion of German trade is due to the systematic education of boys for business in foreign lands. The weakest part of the educational system of the United States is its indifference to foreign tongues, an indifference possibly quite natural because but few Americans have really any need for any language except their own. But the German representatives sent to South America are at home in the Spanish tongue, and care-



TIVOLI HOTEL FROM HOSPITAL GROUNDS

fully schooled in the commercial needs and customs of the Latin-American countries before they reach them. They are backed, too, by a strong semi-official organization in their own country. They have in most of the principal South American towns German banks quite as interested as the salesmen themselves in the extension of German trade. It is reported that whenever paper involved in an American transaction with a South American buyer passes through a German bank in South America a report of the transaction is sent to some central German agency which tries to divert the next business of the same sort into German hands. I have no personal knowledge of such transactions, but the story is current in South America and it is quite in accord

with the German's infinite capacity for taking pains with little things.

Foreign ships, no less than foreign banks and the excellence of foreign commercial schools, are and will continue to be a factor in the building up of foreign trade via the Canal. Just as the German banks report to their home commercial organizations the transactions of other countries in lands whose trade is sought, so foreign ships naturally work for the advantage of the country whose flag they fly. Surprising as it may seem to many, and dis-



HOW CORN IS GROUND

appointing as it must be to all, it is the unfortunate fact that within a year of the time set for opening the Panama Canal to commerce there is not the slightest evidence that that great work is going to have any influence whatsoever toward the creation of a United States fleet in foreign trade. England, Germany, Italy and Japan are all establishing new lines, the last three with the aid of heavy subsidies. But in April, 1913, a recognized authority on the American merchant marine published this statement: "So far as international commerce via Panama is concerned not one new keel is being laid in the United States and not one new ship has even been projected. The Panama Canal act of last August reversed our former policy and granted free American registry to foreign-built ships for international commerce through the Panama Canal or elsewhere. But this 'free-ship' policy has utterly failed. Not one foreign ship has

hoisted the American flag, not one request for the flag has reached the Bureau of Navigation".

The reason for this is the archaic condition of our navigation laws. The first cost of a ship, even though somewhat greater when built in American yards, becomes a negligible factor in comparison with a law which makes every expense incurred in



THEY USED TO DO THIS IN NEW ENGLAND

operating it 10 to 20 per cent higher than like charges on foreign vessels. James J. Hill, the great railroad builder, who planned a line of steamships to the Orient and built the two greatest ships that ever came from an American yard, said once to the writer, "I can build ships in the United States as advantageously as on the Clyde and operate

has been to deprive the sailor of the ships necessary to earn his livelihood.

However, coastwise shipping will be greatly stimulated by the Canal. In the midst of the lamentation about the disappearance of the American flag from the high seas it is gratifying to reflect that the merchant marine of the United States is really



Photo by Brown Bros.

PILE-DRIVER AND DREDGE AT BALBOA DOCK

them without a subsidy. But neither I nor any other man can maintain a line of American ships at a profit while the navigation laws put us at a disadvantage in competition with those of every other nation". Those mainly responsible for the enactment and maintenance of the navigation laws declare them to be essential to secure proper wages and treatment of the American sailor, but the effect

the second in the world, though our share in international shipping is almost negligible. That we rank second as a whole is due to the phenomenal development of our shipping on the great lakes where with a season barely eight months long a shipping business is done that dwarfs the Mediterranean or the German Ocean into insignificance. This has built up a great shipbuilding business on

the lakes, and steel ships are even now being built on the Detroit River to engage in Panama trade. There are not wanting those who hold that if the money which has been spent at Panama for the good of the whole world, had been expended in making a thirty-foot ship canal from Lake Erie to tide-water on the Hudson, the benefit to the people of the

Gulf and from the Lakes to the Atlantic. After Panama the nation is unlikely to be daunted by any canal-digging project. Having improved the ocean highway, the people will demand easier access to it. Already there is discussion of whether the railroads will help or hamstring the Canal. Cargoes for the ships have to be gathered in the interior. When delivered

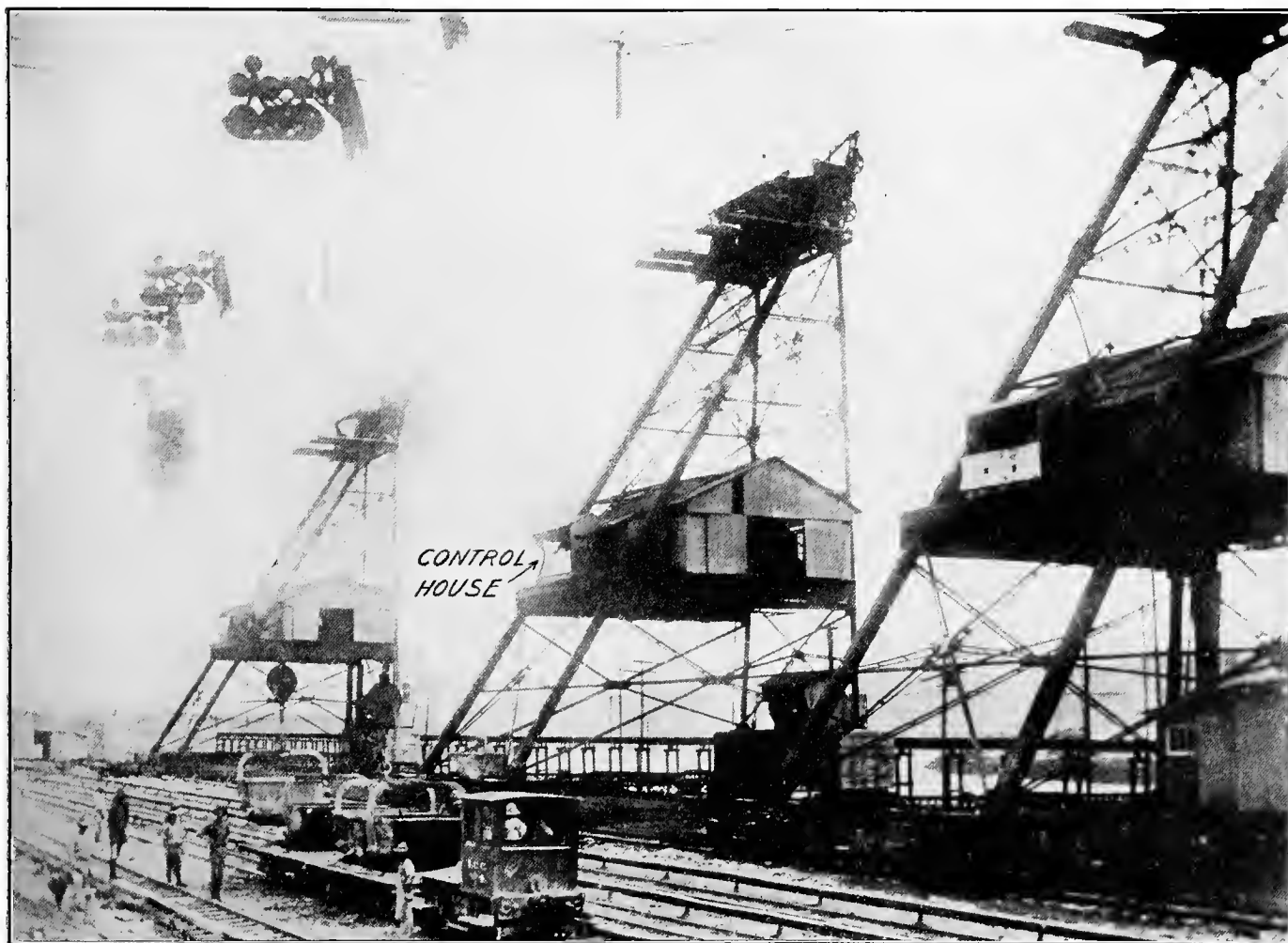


Photo by Brown Bros.

GIANT CEMENT CARRIERS AT WORK

Placed in pairs on either side of a piece of work requiring concrete, these frames support cables in which swing cars carrying concrete and controlled by a workman in the elevated house shown

United States, and to American shipping would have been vastly greater.

Indeed one of the pathetic things in the history of commerce is the persistence with which enterprising Chicagoans, and other mid-westerners, have tried to establish all-water routes to the European markets. All such endeavors have failed, costing their projectors heavily. It will aid, however, if the success of the Panama Canal shall not reanimate the effort to secure deep-water channels from the Lakes to the

at the seaport of their destination they have to be distributed to interior markets. It is in the power of the railroads to make such charges for this service as would seriously impede the economic use of the Canal.

Among the great canals of the world that at Panama ranks easily first in point of cost, though in length it is outdone by many, and its place as a carrier of traffic is yet to be determined. There are now in operation nine artificial waterways which may properly be called ship canals, namely:

1.—The Suez Canal, begun in 1859 and completed in 1869.

2.—The Cronstadt and St. Petersburg Canal, begun in 1877 and completed in 1890.

3.—The Corinth Canal, begun in 1884 and completed in 1893.

4.—The Manchester Ship Canal, completed in 1893.

5.—The Kaiser Wilhelm Canal, connecting the Baltic and North Seas, completed in 1895.

6.—The Elbe and Trave Canal, connecting the North Sea and Baltic, opened in 1900.

7.—The Welland Canal, connecting Lake Erie with Lake Ontario.

8 and 9.—The two canals, United States and Canadian, respectively, connecting Lake Superior with Lake Huron.

The Suez Canal naturally suggests itself for comparison, though it falls far short in volume of traffic of either of the two canals at Sault Ste. Marie, between Lake Superior and Lake Huron. It is ninety miles long, or just about twice the length of the Panama, and about two-thirds of its length is dredged through shallow lakes. It is 31 feet deep as against Panama's 45, with a surface width of 420 feet, while the Panama Canal is from 300 to 1000 feet. The Suez Canal cost slightly under \$100,000,000 and pays dividends at the rate of 12 per cent. Lord Beaconsfield, who bought control of it for England in face of fierce opposition and was savagely denounced for wild-cat financiering, secured for the Empire not merely its strongest bond, but a highly profitable investment as well. The tolls now charged are about \$2 a ton according to the United States net measurement.



TRACKS ASCENDING FROM LOWER TO UPPER LOCK

Doors giving access to service tunnels are shown at either side of the central ascent

Of the other canals enumerated some, like the Manchester and the Elbe and Trave Canals, are of purely local importance, while others, like the Kaiser Wilhelm (better known as the Kiel) Canal, are mainly for naval and military purposes. In volume of traffic the first of all canals in the world is the American canal at the "Soo", with the Canadian canal paralleling it a fair second. The volume of traffic passing through these waterways during the eight or nine months they are free from ice is incredible. In 1911 it approximated 40,000,000 tons and exceeded in volume Suez and all the other ship canals heretofore enumerated together. To the facilities for water carriage afforded by this and the neighboring Canadian canal is due much of the rapid growth and develop-

ment of the country about the western end of Lake Superior. What countries will profit in the same way by the work at Panama? The Pacific coast, both of North and South America. Perhaps South America even more than our own land, for its present state admits of such development.

One problem opened by the Panama Canal which seldom suggests itself to the merely casual mind is the one involved in keeping it clear of the infectious and epidemic diseases for which Asiatic and tropical ports have a sinister reputation. The opening of the Suez Canal was followed by new danger from plague, cholera and yellow fever in Mediterranean countries. A like situation may arise at Panama.

It is proposed, though I think not yet officially, to have passing vessels from infected ports inspected at the entrance to the Canal. If infection exists the ship can be fumigated during the passage through the Canal, which will take from ten to twelve hours, while the subsequent voyage to her home port, whether on our Atlantic coast or in Europe, will make any subsequent delay in quarantine needless. The plague is the disease most dreaded in civilized

communities, which it only enters by being brought by ship from some Asiatic port in which it is prevalent. Its germs can be carried by rats as well as by human beings, and for this reason in some ports vessels from suspected ports are not allowed to come up to a dock lest the rodents slip ashore carrying the pestilence. Some-



Photo by Brown Bros.

COL. GOETHALS' HOUSE AT CULEBRA

As is fitting, "The Colonel's" house tops the highest hill in Culebra, looking down the cut

times in such ports you will see a vessel's hawsers obstructed by large metal disks, past which no rat may slip if he tries the tight-rope route to the shore. The new contracts for wharves, docks and piers at all our Zone ports prescribe that they shall be rat-proof. Indeed the rodents are very much under the ban in Panama, and the annual slaughter by the Sanitary Department exceeds 12,000.

Preparations are being made to make Balboa a quarantine station of world-wide importance. The mere proximity of the date for opening the Canal has caused discussion of its effect upon the health of civilized nations. At Suez an International Board exists for the purpose of so guarding that gateway

from the East that none of the pestilences for which the Orient has an ill-fame can slip through. No suggestion has been made of international control at

nation alone. Despite this cheerful optimism of Europe, there has not yet been a very prompt acquiescence by Congress in the estimates presented by



ELECTRIC TOWING LOCOMOTIVES ON A LOCK

Panama. In fact such of the foreign articles as have come under my eye have been flattering to us as a nation, asserting, as they all do, that in sanitary science the United States is so far ahead that the quarantine service may be safely entrusted to this

Col. Gorgas for the permanent housing and maintenance of the quarantine service. Since the United States is to give the Canal to the world, it should so equip the gift that it will not be a menace to the world's health.

CHAPTER XX

DIPLOMACY AND POLITICS OF THE CANAL



HAVING built the Panama Canal at a heavy cost of treasure and no light cost of life, having subdued to our will the greatest forces of nature and put a curb upon the malevolent powers of tropical miasma and infection, we are about to give the completed result to the whole world. It stands as a free gift, for never can any tolls that will be im-

posed make of it a commercial success. It was the failure to recognize this inevitable fact that made it impossible for the French to complete the task. It will be a national asset, not because of the income gathered at its two entrances, but because of the cheapening of freight rates between our two coasts and the consequent reduction of prices to our citizens.

But this advantage will accrue to peoples who have not paid a dollar of taxation toward the construction of the Canal. There is absolutely no advantage which the Canal may present to the people of New England that will not be shared equally by the people of the Canadian provinces of Quebec and Ontario if they desire to avail themselves of the opportunity. Our gulf ports of Mobile, New Orleans and Galveston expect, and reasonably so, that the volume of their traffic will be greatly in-

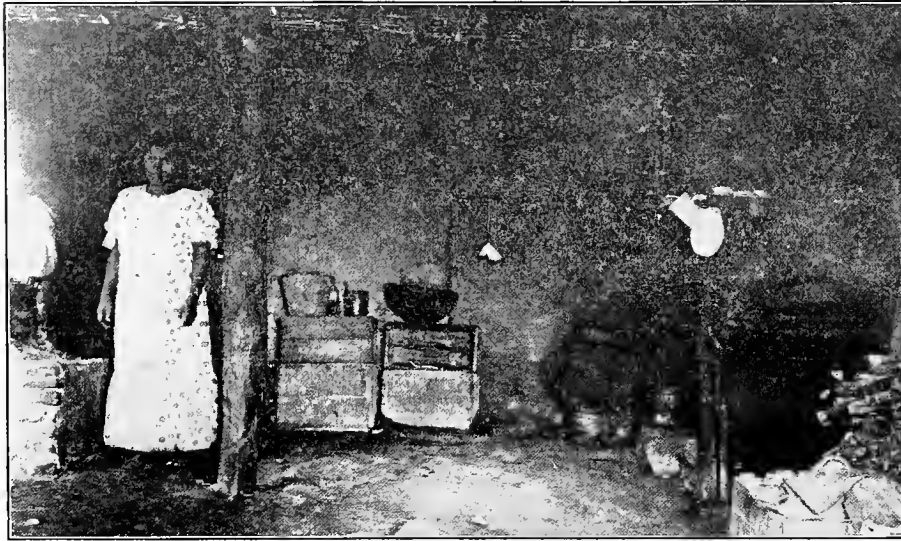
creased by the opening of the Canal. But if Rio de Janeiro, Buenos Ayres and Montevideo have products they desire to ship to the Orient or to the western coast of their own continent of South America the Canal is open to them as freely as to our ships.

Having given to the world so great a benefaction, it will be the part of the international statesmen of the United States, the diplomatists, to see to it that the gift is not distorted, nor, through any act of ours, divided unequally among those sharing in it. Upon the diplomacy of the United States the opening of the Canal will impose many new burdens and responsibilities.

Scarcely any general European war involved more intricate and delicate questions of the reciprocal rights of nations than did the acquisition of the Suez Canal by Great Britain. Volumes have been



A CHURCH IN CHORRERA



A NATIVE KITCHEN

America, where that doctrine should be hailed as a bulwark of protection, it is looked upon askance. That feeling is largely due to the attitude of this country toward the Republic of Colombia at the time of the secession of Panama.

A problem of the highest importance to the credit of the United States in Latin America, which should be settled in accordance with principles of national honor and international equity, is the determination of what reparation we owe the Republic of Colombia for our part in the

written on the subject of the diplomacy of Suez. The Constantinople conference called for the discussion of that topic, and the specific delimitation of the authority of Great Britain and the rights of other maritime nations was one of the most notable gatherings in the history of diplomacy. The Panama waterway will bring new problems and intensify old ones for the consideration of our statesmen.

The Monroe Doctrine is likely to come in for a very thorough testing and perhaps a new formulation. The precise scope of that doctrine has of late years become somewhat ill defined. Foreign nations say that the tendency of the United States is to extend its powers and ignore its responsibilities under this theory. In Latin

revolution which made Panama an independent state and gave us the Canal Zone.

In an earlier chapter I have tried to tell, without bias, the story of that revolution and to leave to the readers' own judgment the question whether our part in it was that merely of an innocent bystander, a neutral looker-on, or whether we did not, by methods of indirection at least, make it impossible



NATIVE HOUSE IN PENOMENE

for Colombia to employ her own troops for the suppression of rebellion in her own territory. As President, and later as private citizen, Mr. Roosevelt was always exceedingly insistent that he had adhered to the strictest letter of the neutrality law—always that is except in that one impetuous speech in San Francisco, in which he blurted out the boast, "I took Panama and left Congress to debate about it afterward".

Mr. Roosevelt's protestations of innocence had, however, little effect upon his own friends and party associates, for early in the Taft administration the conviction became general among men in high station that reparation of some sort was due to Colombia for what was—to express it guardedly—our connivance at a conspiracy that cost that republic its richest province—cost it further a lump payment of \$10,000,000 and an annual sum of \$250,000 to eternity. The records of diplomacy are enmeshed in many concealing veils; but enough is known of the progress of the negotiations to reflect



A STREET IN CHORRERA

credit upon the diplomacy of Colombia. That country has neither threatened nor blustered—and the undeniable fact that the comparative power of Colombia and the United States would make threats and bluster ridiculous would not ordinarily deter a Latin-American President from shrieking shrill defiance at least for the benefit of his compatriots. Colombia has been persistent but not petulant. It has stated its case to two administrations and has

wrung from both the confession that the United States in that revolution acted the part of an international bandit. Out of the recesses of the Department of State has leaked the information that the United States has made to Colombia a tentative offer of \$10,000,000, but that it had been refused. But the offer itself was a complete confession on the part of the United States of its guilt in the transaction complained of. Naturally, Colombia declined the proffered conscience money. Panama received from the United States not merely \$10,000,000, but will get \$250,000 a year for an indefinite period. All this Colombia lost and her valuable province as well because the captain of a United States man-of-war would not let the Colombian



GIANT CACTI OFTEN USED FOR HEDGING

Planted close together, these cacti form a barrier impassible by animals

colonels on that day of revolution use force to compel a railroad manager to carry their troops across the Isthmus. The grievance of the Colombians is a very real and seemingly just one.

We hear much of the national honor in reference to canal tolls but less of it in relation to this controversy with Colombia. Yet that controversy ought to be settled and settled justly. It is inconceivable, of course, that it should be determined by restoring the status as it existed before that day of opera-

President Roosevelt wrote the word Panama on the list of nations and moved on vastly pleased with the record.

The situation at the same time is one not to be lightly dealt with. The United States is none too popular at any point south of its own borders. It is at the one time hated and feared. The very Panamanians whom we invested with independence have no liking for us and the hatred of the Colombians for the nation that despoiled them is so general and



Photo by Brown Bros.

THE TOWN OF EMPIRE, SOON TO BE ABANDONED

bouffe revolution. Our investment in the Canal Zone, our duty to the world which awaits the opening of the Canal, and our loyalty to our partner, Panama, alike make that impossible. The Republic of Panama is an accomplished fact not to be obliterated even in the interest of precise justice. As the Persian poet put it:

“The moving finger writes, and having writ
 Moves on; nor all your piety nor wit,
 Shall lure it back to cancel half a line,
 Nor all your tears wash out one word of it”.

extreme that their rulers are entitled to the utmost credit for having observed all the courtesies of diplomacy in their efforts to secure some measure of reparation. The question presents itself, is it wise to leave such a hot-bed of hatred, of resentment perhaps justifiable, in the very midst of Latin America, just when we are hoping by our new Canal to extend and cement our commercial relations with them? Among the Latin Americans there is a very general feeling that our devotion to the Monroe Doctrine is indicative only of our purpose to protect

our neighbors against any selfish aggressions except our own. It is of the very highest importance that this feeling be dissipated, and there is perhaps no more immediate way of beginning that task than by reaching such an agreement with Colombia as shall indicate to other South American governments our purpose of doing exact justice among our neighbors, be they great and powerful or small and weak.

With all the South American countries the commerce of the Canal will tend to bring us into closer

besides maintaining two nitrate plants in Chile does a prodigious business in explosives with the various states—and not mainly for military purposes only. The United States Steel Company has a vanadium mine in Peru where 3000 Americans are working. The equipment of street railways and electric-lighting plants in South American cities is almost wholly of American manufacture. Even without the systematic encouragement of their home government, American business men have begun to make



THE PANAMA RAILROAD BRIDGE AT GAMBOA

relations and to multiply the possibility of international dissension. Moreover, the growing interests of United States business men in those countries form national outposts on which we must ever keep a friendly eye. It is ridiculous to urge upon individuals the task of stimulating and extending our foreign trade if the government is to be wholly indifferent to their efforts. It is known that the great beef packers of Chicago have considerable plants in the Argentine; that a famous iron manufacturer of Pittsburgh has in Chile what is believed to be the largest iron mine in the world; that the Standard Oil Company has its agencies throughout the continent; and the Du Pont Powder Company

inroads upon German and English commercial power in South America, and the opening of the Canal will increase their activities. Today our Pacific coast is practically shut off from any interchange of commodities with Brazil and the Argentine; with the Canal open a direct waterway will undoubtedly stimulate a considerable trade. The more trade is stimulated, the more general travel becomes between nations, the less becomes the danger of war. There is no inconsistency in the statement that the Canal will become a powerful factor in the world's peace, even though it does necessitate the maintenance of a bigger navy and the erection of powerful forts for its defense in the improbable event of war.



A STREET IN CHORRERA.

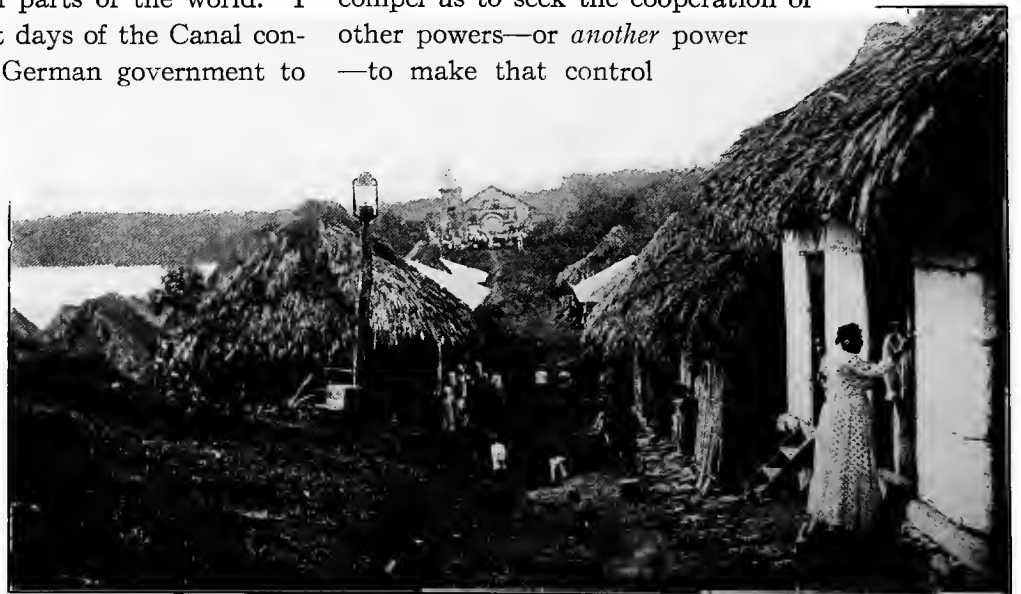
This is but one phase of the influence the Canal will exercise upon countries other than the United States. What it will do for the Latin-American countries immediately adjacent to Panama in the direction of leading them to establish improved sanitation systems, or to perfect those they now maintain, is beyond present estimate. Many such governments have had their representatives on the Zone to study the methods there in force, and while the present writer was there Col. Gorgas was besought to visit Guayaquil to give its rulers expert advice on the correction of the unsanitary state of that city. Members of the staff of Col. Gorgas are in demand as experts in all parts of the world. I know of one who in the last days of the Canal construction was sent by the German government to establish in some of the German South African provinces the methods that brought health to the Isthmus after the days of the futile French struggle with fever and malaria.

It is because of this influence upon foreign peoples, already apparent, that far-sighted people find intolerable the proposition to let the Canal Zone grow up into jungle and return to its original

state of savagery. It can and should be made an object lesson to the world. From every ship that makes the ten-hour passage of the Canal some passengers will go ashore for rest from the long voyage and to see what the Zone may have to show them. Are we content to have them see only the hovels of Colon and the languid streets of Panama—exhibits that give no idea of the force, the imagination, the idealism that gave being to the Canal? Today the Zone is a little bit of typical United States life set down in the tropics. So it might remain if due encouragement were given to industrious settlers. There

is not so much land in the world that this need be wasted, nor have there been so many examples of the successful creation and continuance of such a community as the Zone has been as to justify its obliteration before the world has grasped its greatest significance.

There are not lacking those philosophers who hold that the first political effect of the Canal will be to force us to abandon that attitude of national isolation and aloofness prescribed in Washington's deprecation of "entangling alliances abroad". They hold that this latest and greatest addition to our reasons for solicitude about the control of the Pacific will compel us to seek the cooperation of other powers—or *another* power—to make that control



A PEARL ISLAND VILLAGE

complete. Perhaps the proposition is most frankly stated in this paragraph from Mr. Frank Fox's "Problems of the Pacific".

"The friendly coöperation between the United States and Great Britain would give to the Anglo-Saxon race the mastery of the world's greatest ocean, laying forever the fear of the Yellow Peril, securing for the world that its greatest readjustment of the balance of power shall be effected in peace, while rivalry between these two kindred nations may cause the gravest evils and possibly irreparable disasters".

This is no place to discuss this thesis, but even the most casual consideration shows how great a mutual interest the United States and Great Britain have in the Panama Canal and its safeguarding from any disturbing conditions in the Pacific. Until conditions change and the United States regains its place among the maritime nations of the world the bulk of the trade passing through

the Canal will be in British ships. For New Zealand and all of the eastern part of British Australia the Panama route offers the most expeditious connection with Liverpool. Canada, too, is vitally interested in the Canal. By the employment of the system of Georgian Bay and St. Lawrence Canals, which the Dominion government has created, with a foresight far greater than our own, the wheat, even of the Winnipeg region, may be sent by water

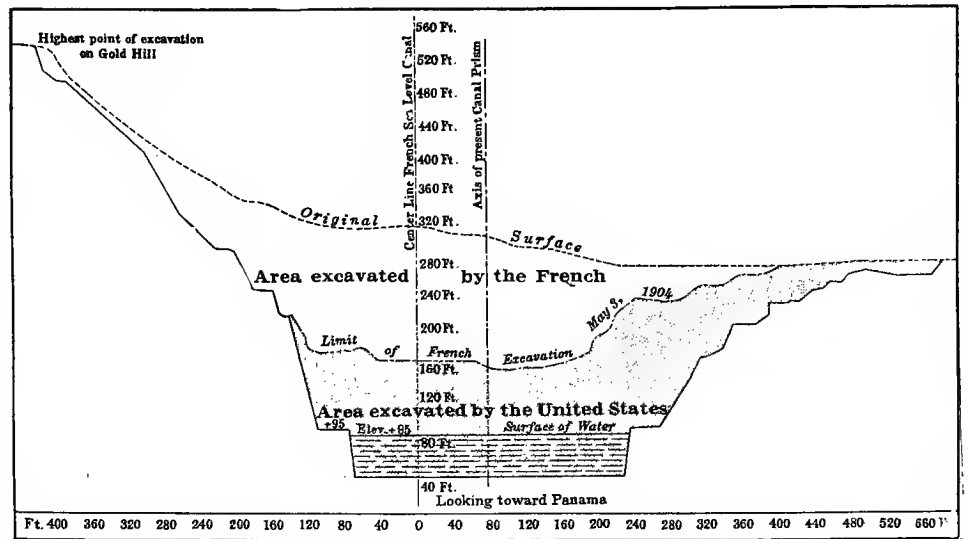


DIAGRAM OF COMPARATIVE EXCAVATIONS BY THE FRENCH AND AMERICANS IN CULEBRA CUT



Photo by W. R. Burtis

VIEW OF PEDRO MIGUEL LOCKS NEARING COMPLETION



NATIVE WOMAN, COCLE

to Montreal and thence in sea-going ships to the further shore of the Pacific. Even though owned by the United States, the Canal will be a powerful tie to bind closer together the widely separated parts of the British Empire.

That being true it will further cement the spirit of friendliness between the United States and Great Britain. It will accomplish this without formal treaties or proclaimed alliance. The alliance will be tacit, resulting from the very logic of the situation. Great Britain cannot afford to be otherwise than friendly with the owner of the Canal—the little passing tiff over the question of tolls on coastwise shipping notwithstanding. It is idle to ask that the control of the Pacific be assured by an Anglo-American compact. More intelligent is it to assume that any effort to break down that control, which now virtually exists, would be met by action on the part of the two English-speaking nations quite as effective as though a treaty existed. This, too, despite the present Anglo-Japanese treaty which so disquiets our California citizens, but quite needlessly, in fact, because of that convention for it

promises no support to Japan in the event of the latter being the aggressor.

Any formal convention, however, any international agreement for the control of the Pacific which should leave Germany out, would be an incentive to trouble rather than a bright harbinger of peace. For no nation is making more active and intelligent preparations to reap to the fullest the advantages of the Canal than are the Germans. Their nation's great interests in Brazil, Argentine, and Chile, her colonizing activities in Asia, her Chinese port of Kiau-Chou, forcibly wrested from China, all impel her to take a lively interest in the Canal and the Pacific. The Kaiser would not look with any placid indifference upon such an Anglo-American agreement as has been urged, and as its ends can be, and probably

will be attained without formal pronouncement, any open diplomatic negotiations for such a convention would probably be unwise. Enough to say that while speculation concerning such an agreement is quite general among publicists today, no discussion of

it has yet engaged the attention of any statesmen.



RIVER VILLAGE IN CHIRIQUI



THE PEARL ISLAND VILLAGE OF SABOGA

After considering the problem of what the Canal will be worth, let us reverse the ordinary process and figure out what it will cost. Exact statement is still impossible, for as this book is being printed the Canal is months away from being usable and probably two years short of completion if we reckon terminals and fortifications as part of the completed work.

In an earlier chapter I have set forth some of the estimates of its cost from the figure of \$131,000,000 set by the volatile De Lesseps to the \$375,000,000 of the better informed and more judicious Goethals. In June, 1913, however, we had at hand the official report of all expenditures to March, 1913, duly classified as follows:

CLASSIFIED EXPENDITURES—ISTHMIAN CANAL COMMISSION

A statement of classified expenditures of the Isthmian Canal Commission to March 31, 1913, follows:

PERIODS	Department of Civil Administration	Department of Law	Department of Sanitation	Department of Construction and Engineering	General Items	Fortifications	Total
Total to June 30, 1909....	\$3,427,090.29	.....	\$9,673,539.28	\$69,622,561.42	\$78,022,606.10	.....	\$160,745,797.09
Total—Fiscal Year, 1910....	709,351.37	.....	1,803,040.95	26,300,167.05	2,863,088.83	.....	31,675,648.20
Total—Fiscal Year, 1911....	755,079.44	.....	1,717,792.62	27,477,776.19	3,097,959.72	.....	33,048,607.97
Total—Fiscal Year, 1912....	820,398.57	24,729.16	1,620,391.12	28,897,738.10	2,819,926.53	1,212,881.66	35,396,065.14
July, 1912.....	63,913.12	1,448.53	123,803.64	2,649,246.61	200,970.55	104,126.92	3,143,509.37
August, 1912.....	62,182.51	1,468.26	123,154.48	2,539,680.83	*98,054.61	111,402.55	2,739,834.02
September, 1912.....	59,201.01	1,207.82	120,385.70	2,285,979.89	77,003.53	127,168.25	2,670,946.20
October, 1912.....	64,383.37	2,033.75	137,574.61	2,473,280.76	83,523.30	129,736.37	2,890,532.16
November, 1912.....	62,200.12	1,892.14	119,031.66	2,420,085.77	75,779.01	300,016.33	2,979,005.03
December, 1912.....	58,987.96	1,462.18	115,819.26	2,871,977.03	120,946.61	118,152.57	3,287,345.61
January, 1913.....	57,699.58	1,469.59	114,562.04	2,825,872.06	6,463.72	119,272.77	3,125,339.76
February, 1913.....	56,586.06	1,649.00	127,324.80	3,784,370.51	123,034.12	314,994.96	4,407,959.45
March, 1913.....	58,761.03	1,899.22	105,891.08	2,712,218.10	7,706.70	131,940.75	3,003,003.48
Grand total.....	\$6,255,834.43	\$39,259.65	\$15,902,311.24	\$176,860,954.32	\$87,385,540.71	\$2,669,693.13	\$289,113,593.48

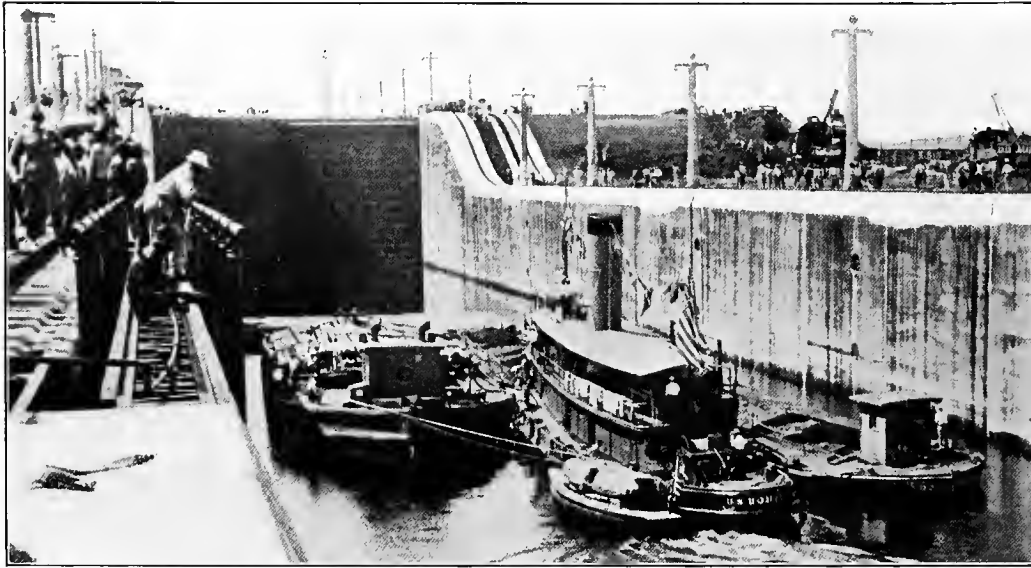
*Denotes credit.

It will be observed that since the beginning of the fiscal year 1913, expenditures have averaged a trifle over \$3,000,000 a month. This rate of expenditure may be expected to decrease somewhat during the eighteen months likely to elapse before the Canal, terminals and forts are completed. Probably if we allow \$250,000 a month for this decrease we will be near the mark making the future expenditures average \$2,750,000 monthly until January, 1915, making in all \$57,750,000. Adding this to the Commission expenditures up to March 31, 1913, and adding further the \$50,000,000 paid to the French stockholders and the Republic of Panama we reach the sum of \$396,863,593—a reasonable estimate of the final cost of the great world enterprise; the measure in dollars and cents of the greatest gift ever made by a single nation to the world.

It is worth noting that all this colossal expenditure of money has been made without any evidence of graft, and practically without charge of that all-pervading canker in American public work. During a long stay on the Isthmus, associating constantly with men in every grade of the Commission's service, I never heard a definite charge of illegal profits being taken by anyone concerned in the work. In certain publications dealing with the undertaking in its earlier days one will find assertions of underhanded collusion with contractors and of official raids upon the more select importations of the Commissary without due payment therefore. But even these charges were vague, resting only on hearsay, and

had to do with an administration which vanished six or more years ago. Today that chronic libeler "the man in the street" has nothing to say about graft in connection with Canal contracts, and "common notoriety", which usually upholds all sorts of scandalous imputations, and is cited to maintain various vague allegations, is decidedly on the side of official integrity at Panama.

This is not to say that the work has been conducted with an eye single to economy. It has not. That is to say it has not been conducted in accordance with the common idea of economy. All over the land contractors, apprehensive of the effect of the Panama example of government efficiency in public work, are telling how much more cheaply they could have dug the Panama Canal. Probably they could if they could have dug it at all. But the sort of



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THE TUG BOHIO WITH BARGES IN MIDDLE GATUN LOCK

economy they are talking about was definitely abandoned when Col. Gorgas convinced the Commission that it was reckless extravagance to save \$50,000 or so on wire screens and lose forty or fifty lives in a yellow-fever epidemic. The contractor's idea of economy was emphatically set aside when Col. Goethals determined that it was cheaper to pay engineers one-third more than the current rate at home, and make such arrangements for their comfort on the Zone that they would stay on the job, rather than to pay ordinary prices and have them leave in haste after a month or two of dissatisfied and half-hearted work.

From which it appears that a new definition of "economy" is needed in the application of the word to the Canal work.

Whatever may be the influence of the Canal on the position of the United States as a world power, its influence on the industrial life at home is likely to be all pervasive and revolutionary. The government is the

largest employer of labor in the land. It ought to be the best employer. On the Zone it has been the best employer, and has secured the best results. When government work is to be done hereafter it will not be let out to private contractors without hesitation and discussion. A consideration of the results obtained by the State of New York in its latest expenditure, by the methods of private contract, of the Erie Canal appropriation of \$101,-

000,000, will go far to show the superiority of the Panama system. In a recent interview the Secretary of the Navy, Josephus Daniels, declared it to be the policy of the Department to build battle-ships in navy yards so far as possible—a policy which the shipbuilding interests have steadily resisted in the past. It is not too much to infer that the success of the army in digging a canal encouraged the Secretary to show what the navy could do in building its own ships.

If the system and conditions of employment that have existed in Panama could be applied to public



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LOOKING DOWN CANAL FROM MIRAFLORES LOCK TO THE PACIFIC

service in all other parts of the United States, the condition of all labor, all industry, all professional service would be correspondingly improved. For with the most extensive employer setting the pace all others would have to keep step with it.

When the long account comes to be balanced we may find that the United States will owe quite as much to the Panama enterprise on the moral as on the material side. Of course it is going to increase our trade both foreign and domestic—that, as the

cities along the Atlantic coast. At the same time the output of our eastern steel mills and New England cotton and woolen factories will find a more expeditious and cheaper route to the builders and workers of the Pacific coast.

Incidentally the labors of the Interstate Commerce Commission are likely to be multiplied almost incalculably. For it must be accepted as a fact that free competition is no longer a complete regulator of freight rates whether by rail or by water. Any



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CULEBRA CUT PARTIALLY FILLED WITH WATER

French say, goes without saying. It will cheapen the cost of building cottages in New York suburbs, because lumber will be brought from the forests of Oregon and Washington for half the freight cost now exacted. It will stimulate every manufacturing interest on the Pacific coast for coal from West Virginia will be laid down there at dollars per ton less than now. The men who catch and can salmon in the rushing waters of the Columbia, the men who raise and pack the luscious oranges of southern California will have a new and cheaper way of carrying their products to the eager markets of the great

one can charter a ship and send it through the Canal with the same rights and privileges that a long established line will enjoy. But not every independent ship can find dockage facilities at both ends of its voyage, although it is true that the enterprising cities of the Pacific coast are warding off monopoly by building municipal docks. Moreover, the owner of the independent ship will have his troubles in getting the railroads at either end to handle his cargoes and distribute them at such charges as will leave him any profit. Indeed the independent ship will be but little of a factor in fixing rates. That

will be done by the regular lines. Normally there should be keen competition between the railroads and the steamships with a very marked drop in rates. But it will not be well to base too great hopes on this possibility. Transportation rates, even where there is nominally free competition, are not often based wholly on the cost of the service. What the traffic will bear is more often the chief factor in rate making. Because ships can carry freight from New York to San Francisco for three

less vigilance and probably necessitate a material extension of its authority.

In other than material ways the nation will largely profit. I think that the fact of the Canal's having been built by army engineers will go far toward correcting a certain hostility toward the army which is common in American thought. The Canal proves that the organization of the army, the education of its officers, is worth something in peace as well as in war. Of course this has been shown before in



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ollars a tra c-ton less than the railroads do... imply that they will do so. Nor does it ensure that railroad rates will drop spasmodically in a vain effort to keep all the business away from the ship. Rather is it probable that certain classes of freight like lumber, coal and ore will be left wholly to the ships, and some form of a reement as to the essentials of the general rate card will be arrived at. It is this agreement, which in some form or other is sure to come that will eage the attention of the Interstate Commrce Commission, arouse its cease

... unless public... ever happened... There... Colonel... do not believe that the most shrilling... Isthmian on either business or pleasure found any ground to complain... by any dis... The Canal... a rural community harboring about...

railroad 47 miles long. Yet in the story of its government there is much that is instructive to the rulers of our American cities. Every head of the Department of Sanitation in an American city would profit by a study of Col. Gorgas's methods in dealing with the problems of dirt, sewage, and infection. Indeed many of the ideas he developed are already being adapted to the needs of North American municipalities. It is becoming quite evident that the scientific method of controlling insect pests by destroying their breeding places is the only efficient one. The larvacide man in the waste places, or the covered garbage can, and screened stable are not as melodramatic as newspaper shrieks of "Swat the Fly", but they accomplish more in the end.

The management of the Panama Railroad by and for the government affords an object lesson that will be cited when we come to open Alaska. Though over-capitalized in the time of its private ownership and operation the railroad under the direction of Col. Goethals has paid a substantial profit. Though rushed with the work incident to the Canal construction it has successfully dealt with its commercial business, and has offered in many ways a true example of successful railway management.

But to my mind more important than any other outcome of the Canal work, is its complete demonstration of the ability of the United States to do its own work for its own people, efficiently, successfully and honestly. That is an exhibit that will not down. The expenditure of fully \$375,000,000 with no perceptible taint of graft is a victory in itself. There



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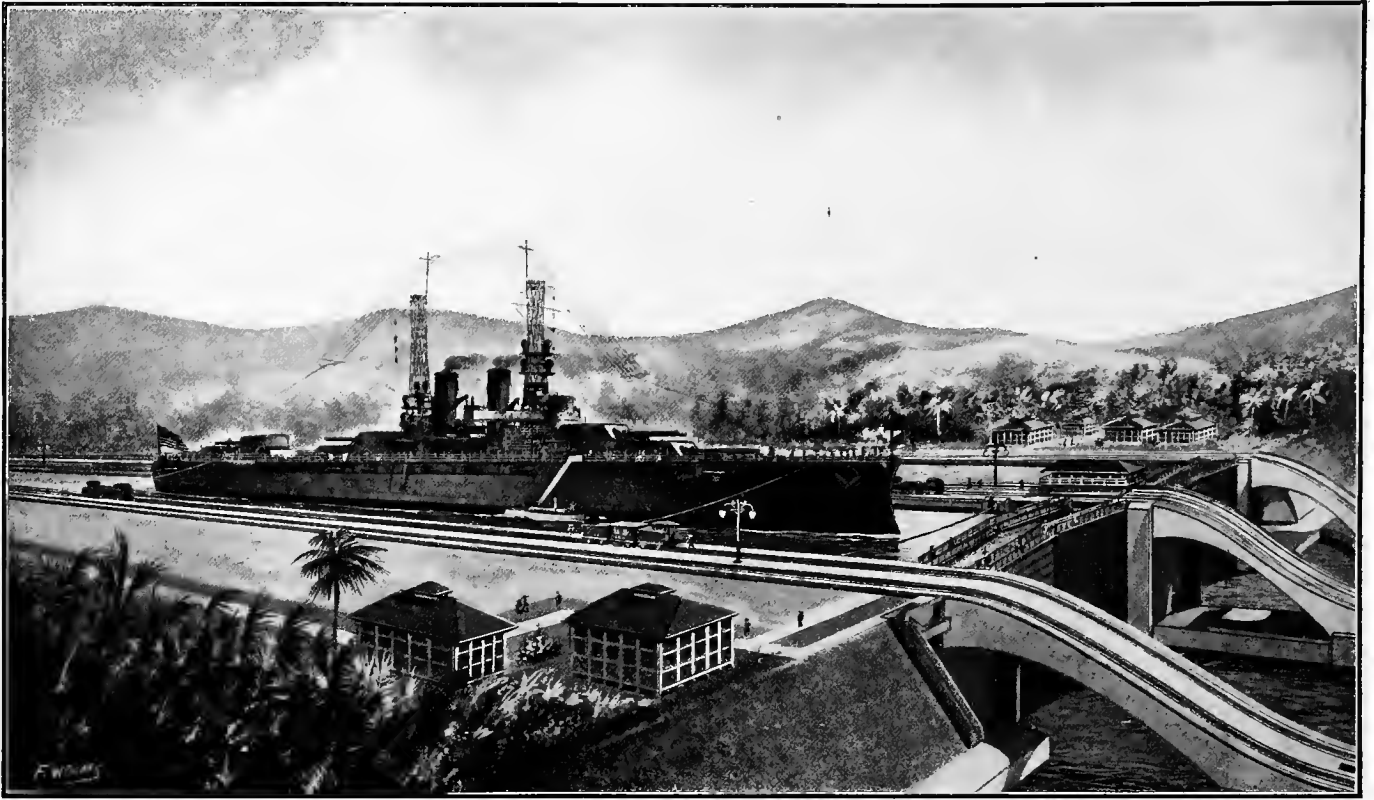
THE FIRST BOAT THROUGH. I.

The commission tug *Gatun*, with members of the commission aboard, is approaching the lower Gatun lock from the Atlantic end of the Canal. The two pairs of gates are opening for her admission.

are exceedingly few of our great railroad corporations that can show as clean a record, and the fact somewhat depreciates the hostility of some of their heads to the extension into their domain of the activities of the government. In urging this point no one can be blind to the fact that the Zone was governed and the Canal work directed by an autocrat. But the autocrat was directly subject to Congress and had to come to that body annually for his supplies of money. It was dug by the army, but no one now

doubts that the navy could have done as well, and few will question that, with the Panama experience as a guide, a mixed commission of civilians and military and naval officers could efficiently direct any public work the nation might undertake.

wholly by the United States, it is to exist for the general good of all mankind, it should be, in the ages to come, the greatest glory attached to the American flag. In abolishing human slavery we only followed last in the train of all civilized nations.



THE FLAG IN TWO OCEANS.

The Oregon steamed 10,000 miles in 1898 to carry the flag from the Pacific to the theater of war in the Atlantic. Ten hours of steaming through 50 miles of canal will henceforth make our fleet available in either ocean.

So with the Panama Canal approaching completion we can see that its effects are to be manifold—domestic as well as foreign, moral as well as material, political as well as economic. If it be properly conducted in its completed state, managed and directed upon the broad principle that, though paid for

But in tearing away the most difficult barrier that nature has placed in the way of world-wide trade, acquaintance, friendship and peace, we have done a service to the cause of universal progress and civilization the worth of which the passage of time will never dim.

EARLY in the afternoon of October 10, 1913, President Wilson, standing in the executive offices of the White House, pressed a telegrapher's key. Straightway a spark sped along the wires to Galveston, Tex., thence by cable to the Canal Zone and, in an instant, with a roar and a quaking of the earth a section of the Gamboa Dyke,

which from the beginning has barred the waters of Gatun Lake from the Culebra Cut, was blown away. The water gushed through, though not in such a torrent as sightseers had hoped for, since pumps, started on Oct. 1st, had already filled the cut to within six feet of the level of the lake. But presently thereafter a native cayuca, and then a

few light power boats sped through the narrow opening, and there remained no obstacle to the passage of the canal by such light craft from ocean to ocean.

By the destruction of the Gamboa Dyke on the date fixed Colonel Goethals carried out a promise he had made long before to himself and to the people. It was on the 10th of October, 1913, that

October. On the 26th of September the first vessel was raised from the Atlantic level through the three steps of the Gatun locks to Gatun Lake. There was no particular pomp or ceremony observed. The craft was merely an humble tug employed regularly in canal work. Indeed it is said that it was not at "the colonel's" initiative that the ceremony of having Gamboa Dyke blown up



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THE CONTINENT'S BACKBONE BROKEN

The blast that destroyed Gamboa Dyke completed water connection between the Atlantic and Pacific.

Balboa strode thigh-deep into the Pacific Ocean, and, raising on high the standard of Spain, claimed that sea and all countries abutting upon it for his sovereign. The United States just four centuries later celebrated one of the final steps in opening to the commerce of all the world the water-way between the oceans.

The demolition of Gamboa Dyke was the culmination of a series of steps forward toward the completion of the canal during the first week in

by wire from the White House was observed. That quiet but efficient army engineer signaled his service on the canal rather by doing things than by celebrating them when done.

From the Pacific end the first lockage was effected on October 14, when the tug *Miraflores* with two barges was put through the *Miraflores* locks, and floated on Lake Miraflores. The locks at Pedro Miguel were in condition to elevate the boats to the level of Culebra Cut, but there was not at



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THE FIRST BOAT THROUGH. II.

The *Gatun* is in the lock, but the gates are not yet closed. They can be seen folded flush with the wall. When closed water will be admitted from the sides and bottom of the lock, raising the boat 28 $\frac{1}{8}$ feet to the next lock.

the moment enough water in the cut to receive and float them.

Not long before the first lockages to the level of Gatun Lake there occurred very great activity

of the Cucaracha slide, filling the canal bed from side to side. As a result no actual passage of the entire canal was then possible for boats of commercial size. The material thus blocking the cut is mainly soft earth, and suction dredges were speedily installed by which it was pumped out and deposited behind the hills bordering the canal and nearly two miles away.

When the Gamboa Dyke was blown away the villages on the south side of the canal became wholly inaccessible. Culebra, Matachin, Empire, Gorgona,—all stirring towns during the busy days of canal construction,—could no longer be reached by railroad, and their abandonment, determined upon long before, became final. The houses which had been the admiration of all visitors to the Zone were taken down in sections and removed to sites of the new towns which the commission intends shall be permanent. Culebra lasted longest, as it could still be reached by shuttle trains crossing the canal on a precarious bridge near the Pedro Miguel locks; but it in the end vanished with the rest.

There remain no epoch-making events to be celebrated in the progress of the canal to completion. As the dredges make further inroads upon the Cucaracha slide, larger and larger vessels will pass through, without

ceremony, until the canal is open to all. The final celebration, January 1, 1915, will not precede but follow long after the actual employment of the canal by the commerce of all nations.

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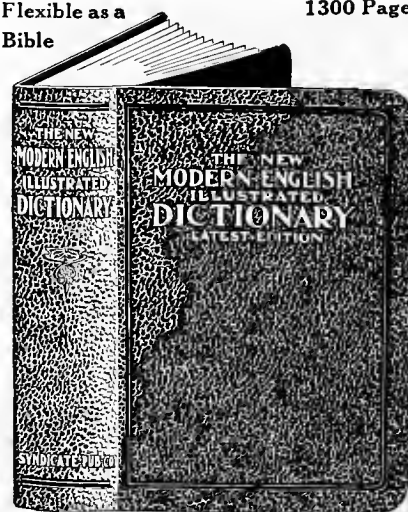
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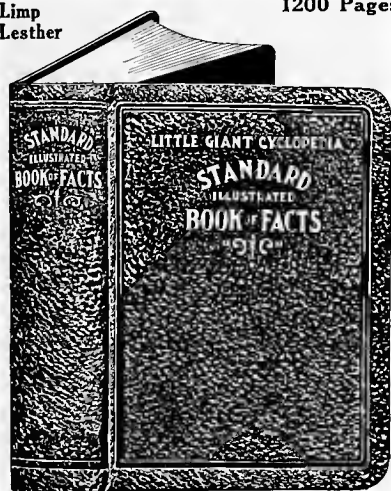
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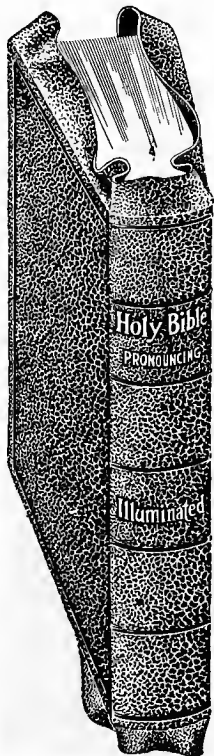


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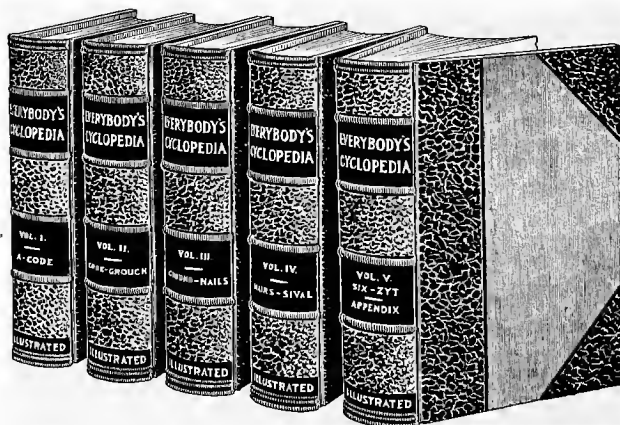
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