course which are rapidly relieving the threatened ennui.

The children, on the other hand, look actually happier and stronger than they do in the cities of the United States. They are in the open air all day, for sunstroke is rare on the Isthmus; they are bronzed, active, fearless in bearing, and apparently thoroughly satisfied with themselves and with their surroundings. Even when within doors they are still in a sense in the open air, for the windows are unglazed, and the houses are constructed so as to secure a free circulation of air.

It has been said that the possession of India taught the English the value of the cold bath, an institution which has been slowly adopted from us by other Northern nations in Europe. Perhaps the possession of the Canal Zone will lead to the salutary open-window habit, which is not yet general in the United States.

The Commission clubs for gold-employees at the principal stations are commodious structures, admirably designed for social
recreation; their management is entrusted to the Young Men's Christian Association. There are well-equipped reading and writing rooms and gymnasia, mainly used by the men, but the interests of the women and children are not neglected, and for the last playrooms are provided. The large halls are used for entertainments and for meetings of the numerous benevolent "secret" societies which have been so important a factor in the preliminary organisation of American society in newly settled territories. In the clubs only "soft" drinks are provided, but I can testify to their excellent effects.

The question whether the white race can make a home in the tropics depends ultimately upon the tropical baby—upon his own health and that of his mother. The American occupation is still recent, but as far as experience goes it seems that the white children born on the Isthmus have not shown unusual delicacy, and the mothers have made a normal, though sometimes rather slow, recovery from confinement.

The views of Colonel Gorgas upon the
future of the white race in the tropics deserve quotation. He writes*:

"I think the sanitarian can now show that any population coming into the tropics can protect itself against these two diseases [malaria and yellow fever] by measures that are both simple and inexpensive; that with these two diseases eliminated life in the tropics for the Anglo-Saxon will be more healthful than in the temperate zones; that gradually, within the next two or three centuries, tropical countries, which offer a much greater return for man's labour than do the temperate zones, will be settled up by the white races, and that again the centres of wealth, civilisation and population will be in the tropics, as they were in the dawn of man's history, rather than in the temperate zone, as at present."

In this connection I may perhaps be permitted to refer to an interesting suggestion made in the course of conversation by Colonel Gorgas, although I omitted to inquire if it had been published. This suggestion was

* "Sanitation in the Canal Zone."
that the records of the movements of great armies under the rulers of ancient Meso-
opotamia and Egypt indicate that malaria did not then exist in the nearer East, and that malaria, like yellow fever, was once a local disease.

From what I have seen as tourist and traveller (not as resident) in the West Indies and in the Orient, I have arrived at the following tentative conclusions, viz.:—

That the debilitating effect which the tropics have been observed to exercise upon those who come from temperate regions has been due mainly to the presence of certain diseases which can be done away with.

That the rapid deterioration of the white stock which is usually noticed in the tropics, especially near the equator, is mainly due to the same cause.

But that Anglo-Saxons cannot perform nearly the same amount of hard bodily labour in a constantly hot climate as they can in the temperate zone, and Anglo-Saxon immigrants never will be able to do so. In this I think the Mediterranean races—at all
NEAR THE SITE OF MILAFLORES LOCKS.

NORTH TO CULEBRA DIVIDE FROM ANCON HILL.

[To face page 146,
events the Spaniards and Italians—are our superiors.

Whether the descendants of Anglo-Saxon stock who have settled in a tropical country purified from tropical diseases will be able to support continued hard bodily labour better than their immigrant ancestors is a matter about which we have at present no direct evidence.

It may possibly be worth noting, however, that some years ago, when wintering in Manitoba, I found that some of the farmer immigrants from England felt the cold more as the years went by, but that their children born in the country were unaffected by it.

It is the case that in the tropics, particularly in the equable equatorial belt, many evils of the temperate zone are avoided, chiefly those due to cold and to sudden changes of temperature. It is this equatorial belt of equable temperature and heavy rainfall that I chiefly have in mind, for it comprises those vast regions of prolific vegetation which appear capable of supporting so large a population.
The white man already rules, or has marked off for rule, the whole of the equatorial belt, but who is to be the peasant cultivating this belt? In those parts of tropical Asia already peopled by industrious Orientals there can never be a white peasantry. Equatorial Africa presents great differences in different parts with respect to native population, and the question of a possible future for white peasantry is there a complicated one. In South America, however, there are vast equatorial regions either wholly unpeopled, or sparsely inhabited by tribes of that Indian stock which has elsewhere proved so slight an impediment to the establishment of the white labourer. Served by a system of rivers unrivalled elsewhere in equatorial regions, already partitioned among Christian Governments, and for the most part uninhabited, the forests and savannahs of Equatorial South America offer the readiest field for the establishment on a vast scale of a white peasantry under the equator.

By clearing the scrub within one or two hundred yards of his cottage, and by em-
ploying wire screens, the cultivator can protect himself against malaria, and his crops come not once, but several times a year.

If the Spanish, Portuguese, and Italian peasant were to turn his attention to this field, instead of, or in addition to, that of navvy work, great things might come of it. The circumstance that South America is a Roman Catholic continent, where the Latin races are dominant, would enormously favour the experiment. On the Zone, the Spanish labourer works in order to save and to depart, the *milieu* being foreign to him and un-attractive. In a Latin State it would be different.

In writing of the possibilities of the white race in the equatorial zone it is understood that the problem relates to the lowlands. There are, of course, favoured highlands, such as those of Colombia, where the temperature is at the same time moderate and equable and the climate appears admirably adapted to white men.

A healthy city life in the tropics would be easily attainable in a new country settled
wholly by white people and under a medical despotism.

The general, but non-specialist, opinion upon the Isthmus is not as sanguine as that of Colonel Gorgas upon the hygienic future of the white race in the tropics. The general opinion among Americans seems to be that, as far as they are concerned, they would, if engaged in the tropical parts of South or Central America, avail themselves of the improving means of transit to revisit frequently the United States, and would rely upon such vacations in higher latitudes for the retention of their native vigour.
ON THE SHORTENING OF DISTANCES BY SEA, AND ON THE STEAMSHIPS AVAILABLE FOR CANAL TRANSIT
CHAPTER VI

ON THE SHORTENING OF DISTANCES BY SEA, AND ON THE STEAMSHIPS AVAILABLE FOR CANAL TRANSIT

The Shortening of Distances by Sea.

As the sole object of a ship canal is to shorten sea distances, the figures given in this section are of primary importance to a proper understanding of the subject. The figures here given are those for steamships following the actual or prospective routes. They are adopted from the figures supplied to the Canal Commission from the United States Hydrographic Bureau and are expressed in nautical miles. It is perhaps not wholly superfluous to warn the reader that the apparent relative distances as shown on charts of the world, especially those on the
usual Mercator projection, are very different from the real relative distances. Moreover, it is impossible to see correctly the relative distances between places far apart on a globe, for the foreshortening of the rounded surface produces distortion. By applying a measuring tape to the globe the true relative distances can be readily ascertained. This is a salutary exercise and serves to correct the erroneous notions which tend to fix themselves in the minds of all of us owing to the appearance of the surface of the globe on the plane of the paper or on the plane of vision. Such a measurement of shortest distances would give a very fair notion of the actual reductions due to the Suez and Panama Canals, but there would still be considerable differences between these figures and the distance calculated from the actual courses pursued by steamships, which in what follows will be referred to simply as "the" distance between ports.

The most notable effect of the Panama Canal will be the reduction of distance between the Atlantic and Pacific ports of North
RIO GRANDE, NEAR LA BOCA.

RIO GRANDE, FROM ANCON HILL.
America. Taking New York as our port of reckoning on the Atlantic, the distance thence to Panama and all ports north thereof on the Pacific seaboard of Central and North America will be reduced by 8,415 miles.

The reduction of distance from New York to the Pacific ports of South America, on the other hand, is not constant, but varies from the above maximum of 8,415 miles at Panama to a minimum of about 1,004 miles at Punta Arenas (in the Straits of Magellan). The average shortening on this coast is therefore

\[
\frac{8,415 + 1,004}{2} = 4,709 \text{ miles.}
\]

The actual shortening to Iquique, the nitrate port in Chile, is 5,200 miles. We shall not be far out in saying briefly that the distance between New York and South American Pacific ports will be shortened by an average of 5,000 miles.

The Canal shortens the distance between the Pacific coast of the Americas and the ports of Europe also, though in a lesser degree. Thus, taking Liverpool as our ex-
ample (and the reductions are much the same for London, Antwerp, or Hamburg), the Canal will shorten the distance to Panama and all ports on the coast to the north by a constant quantity, viz., 6,046 miles.

The reduction to Pacific ports south of Panama is not a constant but a variable quantity, ranging from the above maximum of 6,046 miles at Panama itself to zero at a point between Punta Arenas and Coronel (the most southern industrial port of Chile). We may put the average shortening of distance between Liverpool and South American Pacific ports at about 2,600 miles.

Viewing the whole matter from the standpoint of the Pacific ports of the Americas, we see an absolute commercial advantage accruing to them all in the diminished distance to the Atlantic and Gulf ports of North America and to the ports of Europe.

Viewing the matter from the standpoint of the Atlantic and Gulf ports of North America—to fix our ideas we will say from the standpoint of New York—we see the
same absolute advantage plus a competitive advantage, in that the reduction is greater for New York than for Liverpool (i.e., Europe).

As the world is at present constituted, steamers from New York and from Liverpool proceeding to these Pacific ports all pass Pernambuco, in Brazil, near the easternmost point of South America, not far south of the equator. This port is 4,066 miles from Liverpool and 3,696 miles from New York, so that, by sea, San Francisco is only 370 miles nearer to New York than to Liverpool. But Colon is 4,720 miles from Liverpool and only 1,961 from New York, so that via the Canal all the Pacific ports of the Americas are 2,759 miles nearer to New York than to Liverpool.

Let us next consider the Canal as the starting place for Transpacific voyages, the rôle for which it was originally projected in the sixteenth century. In those days the Isthmus of Suez was firmly held by the hostile Moslem, and even if a canal had then been open there,
it would not have been available for the commerce of Christian Europe. Thus the discovery of a strait, or the cutting of a canal, at the Isthmus of Panama would at that time have opened to Europeans a shorter seaway to the Orient. But now that the Suez route has been opened for ships, the Panama Canal will not bring any port in Australia or the East Indies, nor any ice-free port in Asia or Asiatic Islands, nearer to any European port. Of all ports on the west, that is to say the Old World or "Oriental" side, of the Pacific, only those of New Zealand and some in Siberia will be brought nearer to Liverpool, and that to an insignificant amount.

Distances are, however, much diminished between New York and both the northern and the southern ports of the Oriental Pacific coasts, as the following table shows:

<table>
<thead>
<tr>
<th>New York to</th>
<th>Reduction.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Yokohama</td>
<td>by Suez ...</td>
</tr>
<tr>
<td></td>
<td>by Panama</td>
</tr>
<tr>
<td>Shanghai</td>
<td>by Suez ...</td>
</tr>
<tr>
<td></td>
<td>by Panama</td>
</tr>
<tr>
<td>Sydney</td>
<td>by Cape of Good Hope</td>
</tr>
<tr>
<td></td>
<td>by Panama (via Tahiti)</td>
</tr>
<tr>
<td>Melbourne</td>
<td>by Cape of Good Hope</td>
</tr>
<tr>
<td>Wellington, N.Z.</td>
<td>by Panama (via Tahiti)</td>
</tr>
<tr>
<td></td>
<td>by Straits of Magellan</td>
</tr>
<tr>
<td></td>
<td>by Panama (via Tahiti)</td>
</tr>
</tbody>
</table>
LA BOCA, FROM ANCON HILL.

THE CEMETERY AT ANCON.

[To face page 158.]
Since the Canal does not reduce the distances between these places and Europe (except slightly in the case of Wellington), the competitive gain of New York is equal in all cases to the absolute gain in distance. The following figures show the distances from New York to Hong Kong and Manila by the Suez and Panama routes:

<table>
<thead>
<tr>
<th></th>
<th>New York to</th>
<th>Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hong Kong</td>
<td></td>
<td></td>
</tr>
<tr>
<td>by Suez</td>
<td></td>
<td>11,655</td>
</tr>
<tr>
<td>by Panama</td>
<td></td>
<td>11,744</td>
</tr>
<tr>
<td>by Suez</td>
<td></td>
<td>11,601</td>
</tr>
<tr>
<td>by Panama, via San Francisco and Yokohama</td>
<td></td>
<td>11,585</td>
</tr>
<tr>
<td>Manila</td>
<td></td>
<td></td>
</tr>
<tr>
<td>by Panama, Honolulu and Guam</td>
<td></td>
<td>11,729</td>
</tr>
</tbody>
</table>

Ports on the mainland of Asia in these latitudes are of course nearer to New York by way of Suez.

The opportunities of a port for commerce obviously depend in a great measure upon the centrality of its position with reference to the other ports of the world. Let us see how Liverpool and New York were originally situated in this respect, and how far their situations are altered first by the opening of the Suez route and secondly by that of
Panama; remembering also that the changes introduced by the canals have about the same effect on Antwerp or Hamburg as on Liverpool.

Prior to the opening of the Suez Canal in 1869 the route to Asia and Australia was via the Cape of Good Hope from both Liverpool and New York. This gave Liverpool an advantage of 480 miles for all Asiatic and Australian ports as well as for the East Coast of Africa. For most of South America and all the Pacific coast of the Americas the route was via Pernambuco, and New York had an advantage of 370 miles.

Suez being open but Panama still closed, the route to Asia is via Gibraltar for both Liverpool and New York. New York is distant 3,207 miles and Liverpool 1,283 from that place, so that Liverpool has an advantage of 1,924 miles instead of 480 on the voyage to all Asiatic ports, a competitive benefit of 1,444 miles resulting from the opening of the Suez Canal.

The voyage to Australia from New York being still made via the Cape of Good Hope,
while that from Liverpool is most shortly made by Suez, Liverpool is 1,622 miles nearer by the canal and 480 by the Cape, thus obtaining a benefit of 1,142 miles when the Suez route is taken.

The opening of the Panama route leaves unchanged the relative distances to the Atlantic coast of South America, to Africa, and to Asiatic ports south of Shanghai; but it is New York and not Liverpool which is now the nearer port to Yokohama, Sydney, and Melbourne; and Wellington, New Zealand, formerly nearly equidistant, is placed 2,739 miles nearer to New York than to Liverpool.

With reference to Northern China, however, it is to be noted that, although the Panama route shortens the distance between New York and Shanghai by 1,629 miles, Liverpool will still be the nearer to Shanghai by 295 miles, assuming the New York vessel to call at San Francisco.

These facts are illustrated by the figures given on the next page.
New York via Panama, San Francisco and by Great Circle ... ... 9,835

Yokohama
Liverpool via Suez, Aden, Colombo, Singapore, Hong Kong and Shanghai ... ... 11,640

New York via Panama and Tahiti ... ... 9,852

Sydney
Liverpool via Suez, Aden, Colombo, King George's Sound, Adelaide and Melbourne ... ... 12,234

New York via Panama and Tahiti ... ... 8,872

Wellington, N.Z.
Liverpool via Panama and Tahiti ... ... 11,631

Nearer to New York than to Liverpool by

-1,805 miles.

2,382 miles

-2,759 miles.*

* Liverpool to Colon, 4,720; New York to Colon, 1,961: difference, 2,759, the subsequent routes being identical.

Let us take a chart of the world and examine the portion comprised between the parallels of 40° North and 40° South and the meridians of 120° East and 160° East of Greenwich. This band, in which are included Japan and Korea, Shanghai and the Philippines, New Guinea and most of Australia, is of particular interest in relation to Canal trade. Let us take the standpoint, not of Europe or of America, but of traders residing in this area. Near its western margin the Suez and the Panama routes to New York are equal in length.
Near its eastern margin, which lies, however, outside Japan and Australia and only passes among small islands, the Suez and Panama routes to Liverpool are of equal length.

On a line rather west of the centre and running from rather west of north to rather east of south, all places are equidistant from New York and Liverpool—the latter via Suez, the former via Panama.

It needs no prophet to foresee interesting commercial developments in a region where the alternative routes and alternative sources of manufacturing supply offer almost equal allurements.

I must also draw attention to the position of New Orleans and other ports on the Gulf of Mexico in relation to the Canal. At present New Orleans by sea is further than New York from Valparaiso and San Francisco, Yokohama and Shanghai, but it is 581 miles nearer to Colon. Hence, when the Panama Canal is open it will be 581 miles nearer than New York to those ports, and to Sydney, Melbourne, and Wellington.
Thus, as the Mississippi waterway is improved, an increasing proportion of the manufactures and other products of the great Mississippi basin will find their way to foreign markets via the Gulf ports, and an increasing proportion of imports will find their way to the Mississippi basin through these ports.*

In dealing with the shortening of sea routes it was shown that the greatest reduction was that between the two coasts of North America, but even so the sea route remains longer than that by land, so that the question of commercial advantage is not settled by a mere statement of sea distances, and the indisputable and undiluted advantages of the Canal route for the Atlantic and Gulf

* Among West Indian ports affected by the Canal, Kingston, Jamaica, must be particularly mentioned. Now situate at the entrance of a cul de sac, it will then be placed in a position of much greater centrality for the world's commerce, and astride the route from Colon to the North American Atlantic ports. Thus the importance of Jamaica as a constituent of the British Empire will be enhanced. May the opening of the Canal increase the prosperity of our fellow subjects who have suffered so greatly from hurricane and earthquake!
ports of North America are those of commerce with the Pacific coast of South America, with New Zealand, Australia, Japan, Northern China, Manchuria, and Eastern Siberia.

From the naval point of view, however, the results of shortening the sea distance from New York to San Francisco are scarcely diminished by the fact of railway communication, since only crews and stores, and not warships, can be transported by rail.

In order to understand the effect of the Canal upon the naval position of the United States the student of affairs must, in addition to the information given above, examine the positions relatively to the Canal of the possessions, particularly the insular possessions, of the United States and of other naval Powers. This will enable him to gauge for himself the more permanent factors which determine the value of the new line of communication, the opportunities it affords for concentrating force where wanted, and the responsibilities of defence which it entails. With the aid of a fairly good atlas this can
easily be done by anyone acquainted with the general facts of naval power at the present time. The geographical facts, which are perhaps the only ones beyond question or dispute, are sufficiently simple.

*On the Steamships Available for Canal Transit.*

The Isthmian Canal Commission, in the Report of 1899, distinguishes between the commercial and the industrial benefits of the Canal, meaning by the former term the increased carrying of goods, and by the latter the development of production induced by improved facilities of carriage.

The tables of distances already given show the *potential* commercial advantages, and how they are distributed in different measure among different countries, and these figures have all the permanence which makes geographical figures of such enduring importance.

But the actual commercial advantage of a ship canal depends equally upon a second factor, viz., the available ship-tonnage. Supposing a Panama Canal to be open at
VIEW FROM SPANISH FORT, PANAMA.

CATHEDRAL SQUARE, PANAMA. [To face page 166.]
the present time, there would be hardly any United States ships to use it, except in transport between home ports from which ships flying foreign flags are debarred. The transport to South America, New Zealand, Australia, Northern China, and Japan would necessarily be almost wholly carried on by ships of other nations, especially British.

The absence of an American merchant marine trading with foreign ports is indeed a circumstance without parallel among other nations engaged in modern manufacture. Many interesting facts relating to this strange phenomenon were put on record in the debates of the United States Senate in the early part of 1908.*

At that time there was not one steamship flying the flag of the United States between her ports and those of Brazil, the Argentine, Chile, or Peru.

The three steamships of the Oceanic Line formerly plying to Australia were then laid up in the harbour of San Francisco, being unable, although subsidised for mails by

* Congressional Record, February 24, 1908.
the United States Government, to compete with foreign vessels. There were, however, three United States steamers plying from Puget Sound to Japan and China, occasionally reaching the Philippines.

The mails from New York and the other Atlantic ports of the United States to Brazil and the Argentine go *via* Europe, so that in this important matter New York is actually 3,000 miles further than Europe, instead of being 370 miles nearer to those countries.*

In the same debate Senator Depew said that ships receiving the United States mail subsidy, the only form of subsidy given, have to be American built, manned by Americans, and the diet of the sailors as prescribed by law. He added that—

"The labour unions have rightly and properly taken care of their wages. The result is that the cost in wages and food to run American ships under American conditions across the Pacific is double that of European or Japanese steamers."

The relative cost of operating American

* Senator Gallinger, *loc. cit.*
and European vessels was given by the Hon. Elihu Root, Secretary of State, in an address delivered November 30, 1906,* as follows:—

The operation of an American steamship of 2,500 tons costs $18,289 per annum more than that of a British ship of this tonnage, or $7.31 more per ton; and

The operation of an American steamship of 3,500 tons costs $15,315 per annum more than that of a German ship of the same size, or $4.37 more per ton.

Thus it is evident that, in spite of geographical advantages, there are at present some grounds for the extreme opinion sometimes expressed in the United States that the Canal is being built with American money for the use of Europe—and, one may add, of Japan.

What attempts may be made to remedy this state of things, and what effects such attempts may have, are matters on which I shall not stay to speculate.

THE COST OF THE CANAL