

*AN ECONOMIC SURVEY OF THE
PACIFIC AREA*

Frederick V. Field, *General Editor*

PART II

Transportation

BY

KATRINE R. C. GREENE

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AN ECONOMIC SURVEY OF THE PACIFIC AREA

PART II

TRANSPORTATION

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Preface

The present work is one of a group of monographs constituting *An Economic Survey of the Pacific Area* and designed to supplement and bring up to date the key sections of the *Economic Handbook of the Pacific Area*, published by the Institute of Pacific Relations in 1934. The value of this publication, it is believed, rests in the need for making available to a large number of people information on the Pacific area which is otherwise scattered in hundreds of different official and private sources, many of which are exceedingly difficult to locate and, to a large proportion of the potential readers, unavailable because of the variety of languages in which they are issued and also because of the often very limited distribution of the original documents. Without implying that the Pacific area is a wholly self-contained economic unit (indeed that cannot be said of any section of the world, large or small), it can be said that the world-wide importance of this region has been growing year by year and that information on its fundamental problems must be made more generally available in up-to-date form.

Like its precursor, the present work begins with studies of the populations of the Pacific countries, their growth and movements, and the relations of people to their physical environment. Other sections are concerned with trade and trade control; with the means of transportation, both internal and international; with the production and control of certain basic commodities produced in the Pacific area; with the enormously important changes wrought in the Pacific countries by the growth of industrialization in regions which, until very recent years, had not developed this form of economy.

The preparation of the studies has naturally been greatly affected by world events. War in both the Far East and Europe during the period of preparation has made some materials inaccessible and necessitated important revisions in the general plans adopted at the outset. To avoid undue delay the International Secretariat has decided that certain sections already in their final stages of preparation should be published immediately and is, therefore, issuing them in separate monographs as they are completed.

The nations, colonies or territories directly treated in this *Survey* are Japan Proper, Korea and Formosa, Manchuria, China, French Indo-China, Thailand, the colonies forming British Malaya, the Netherlands Indies, the Philippines, Australia, New Zealand, Canada, the United States of America, and the Union of Soviet Socialist Republics. The countries listed above do not by any means comprise a self-sufficient group; their external relations reach to the farthest corners of the globe. Indirectly, therefore, the study touches a much wider area. For example, the population of Australia and New Zealand cannot be considered without reference to Great Britain; the economy of Indo-China has been intimately linked with France; the trans-Pacific emigration of

Japanese has been greatest to Brazil and Canada ; the United States and the U.S.S.R. have still closer contacts with other regions than they have with the Far East.

Moreover, a whole continent facing the Pacific has been omitted. The growing importance of the relations between the Orient, especially Japan, and Latin American countries, is one which the Institute has long recognized and to which it wishes to devote concentrated study. While certain of the general tables introducing the various sections include basic data on the Latin American countries bordering on the Pacific Ocean, it has not proved feasible at this time for the Institute to gather material for those countries which would be comparable in scope and quality to that collected for the countries enumerated above. However, the very rudimentary data which are included in the present survey are being amplified in a separate forthcoming Institute report on the trans-Pacific relations of the Latin American countries.

The editorial staff, under the leadership of Mr. Frederick V. Field during the period of planning and early preparation, included Miss Anita Bradley, Miss Billie Cookinham, Dr. Eleanor Dennison, Mr. Andrew J. Grajdanzev, Dr. Karl J. Pelzer and Mr. Joseph D. Phillips. In the final drafting of the chapters Dr. Pelzer, Mr. Phillips, Miss Katrine R. C. Greene, Miss Kate L. Mitchell, and Dr. Russell G. Shiman assumed the major responsibilities. In addition, almost every page has benefited from special data and comments furnished by Miss Catherine Porter, Miss Miriam Farley and Dr. Kurt Bloch of the research staff of the Institute's American Council and Miss Harriet Moore of the American Russian Institute. The late Dr. Carl L. Alsberg, Dr. Nicholas Mirkowich, Mr. Daniel Marx, Jr., Mr. Sydney B. Smith and officials of the Bureau of Foreign and Domestic Commerce have all contributed information and comments. Mention should also be made of the valuable clerical and technical assistance given by the office staff of the Institute's American Council and International Secretariat, especially Mrs. Annette Blumenthal, Miss Hilda Austern, Miss Elizabeth Downing, Miss Paula Sobotker, Miss Elizabeth Jorgensen, Miss Janet Howie, and Dr. Alfred Landsberger. Finally, it is necessary to record here the special thanks of the Institute's International Research Committee to the general editor, Mr. Frederick V. Field, and its great indebtedness to him for having assumed the arduous task of planning the project and directing the collection and editing of a vast mass of material throughout all but the final stages of the work.

Though this and the other monographs in the group are issued under the auspices of the International Secretariat as reports in the Institute's International Research Series, it should be noted that neither the Secretariat nor the Institute as a whole assumes responsibility for statements of fact or opinion in the studies. For all such statements the authors alone are responsible.

W. L. HOLLAND
Research Secretary

New York
March 1, 1941

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AN ECONOMIC SURVEY OF THE PACIFIC AREA

PART II

TRANSPORTATION

Transportation

INTRODUCTION

Four types of transportation are considered in this study—shipping, railways, highways and motor vehicles, and airways. Two of these are old-established forms of communication and two are new, one being an entirely novel development of the last two decades and the other a development of new, fast vehicles travelling over resurfaced highways many of which date back for hundreds of years. Highways and railways may be considered as mainly internal forms of transport, and shipping and airways as both domestic and international. These two latter have the added characteristic of being carried on by a number of nationalities, often situated far from the Pacific Ocean. Railways, too, are to a considerable extent financed from outside the Pacific area, but by the very nature of their organization they are managed in the country in which they are located while the home offices owning and operating large portions of the shipping plying in the Pacific Ocean are located in England, Norway, Germany, Denmark, the Netherlands and Greece. The principal international air lines operating in the Pacific area are American, French, Netherland and British, with subsidiary companies in Latin America, the Netherlands Indies, the Dominions and certain of the British colonies. Japan is the one exception, both in shipping and in airways, in that it is the only country located in the Far East which is a large owner and operator of shipping fleets and international air services.

To a greater or lesser extent, government control operates in all forms of transport. In shipping, privately owned European tonnage, after competing, with increasing difficulties over a number of years, with the subsidized Japanese vessels which enjoyed additional advantages accruing from the vertical corporate set-up of large business groups in Japan, has been forced more and more to employ methods of government control, cooperation and subsidy, although still remaining largely in private hands. Railways are government-owned in many of the countries bordering the west shore of the Pacific and in Oceania (including in this category the semi-governmental S.M.R., the various government-sponsored operating companies in occupied China, the government-owned but privately operated Haiphong-Yunnanfu line in Indo-China, and the government-leased Johore Line in British Malaya); in Japan and her colonies, the Philippines, the Netherlands Indies, Canada and certain Latin American countries there are both publicly and privately owned lines; and in the United States all lines are in private hands but are subject to government regulation. While highways have been government-built and maintained longer than any other

form of transport, they present the paradox of a state-supported route largely used by private exploiting companies. Here also, however, the trend is toward either government regulation or absorption by the competing railroads. With the exception of certain very prosperous freight lines, such as those developed in connection with the construction or operation of gold fields and pipe lines in inaccessible regions of Canada, Siberia, New Guinea and Latin America, airways have generally needed heavy subsidies in order to bring about the phenomenal growth of the last decade, and these have been provided through direct subsidies, mail contracts and other forms of government aid such as meteorological services and the construction of airports. In the U.S.S.R., Japan and the yen-bloc countries, and in Thailand, air services are government-owned and operated. Since the outbreak of the European war, the Chinese government has operated the E.A.C., one of the two Chinese lines. In the Netherlands Indies, the Dominions and the United States airways receive varying forms of support and are subject to government regulation, but are privately operated.

The aim of government control has not only been to ensure proper regulation and the safety, uniformity and efficiency of transportation. In the case of shipping, for instance, it has also attempted to prevent the predominance of foreign shipping in the coastwise transport of a country, and to secure the continuance of that country's own share of the foreign carrying trade of the countries of the Pacific area. In the case of land transport there has been the added problem that the sudden growth of automotive transportation during the depression and the serious reductions in rail traffic at that time resulted in demands for the restriction of road-rail competition, or at least for the institution of some form of road-rail coordination. "In many countries throughout the world, it may be said that such legislation as has been enacted, avowedly for the purpose of coordinating two or more forms of transport, has, in effect, been regulatory action for the protection of rail carriers against competition. In instances where rail and highway services are noncompetitive, it will usually be found that the highway services operating are to a large extent either controlled directly by, or affiliated with, the rail carrier, or operated under the administration of a government department."¹ Instances of the lack of true competition may be seen in Malaya, where no competitive road services are authorized over the same route, and in Thailand where for many years no highways were built which could offer competition to the state-owned railways. While much of the depression-born highway freight traffic may have been economically unsound, and indeed many of the companies were short-lived, it did contribute to improvements in competitive services, for example in the United States where fast freight trains on regular schedules and improvements such as air conditioning of passenger trains have been largely directed at highway competition.

¹ Long, W. Rodney, *Transport Control Abroad*, U. S. Department of Commerce, Bureau of Foreign and Domestic Commerce, Trade Promotion Series—No. 196, Washington, 1939, pp. 1-2.

Effects of War.

In the last three years the transportation systems of the Pacific area have been affected in various ways by two wars. The effect of the Sino-Japanese conflict, while more localized than that of the European war, has been correspondingly severe. Apart from the reduction in Japanese tonnage sharing in the shipping of most Pacific area nations not included in the Far Eastern conflict, the latter's direct impact upon transportation developments has been generally limited to China, Japan, her colonies, Manchuria and Indo-China. In China it has resulted in a reduction in the shipping tonnage engaged in domestic trade from 100 million tons in 1936 to 22 million in 1938, while the tonnage in foreign trade dropped from 45 million in the former year to 30 million in 1939. This has been accompanied by an increase in Japan's share of this shipping. Railways in China have been perhaps the most drastically affected form of transport; in addition to actual destruction caused by military operations, complete railroads, rolling stock, rails and all, have been moved from the combat zones and set up in the interior. Remaining railroads in Japanese-occupied China have been taken over by Japanese concerns but have operated only with difficulty because many sections either have been destroyed or are still in Chinese hands. The Chinese government, as a result of the war, has been developing many new highways in the interior. The construction of the Burma road, an outstanding engineering achievement, has also proved of vital economic, military and political importance not only to China but to the whole Far Eastern scene. At the same time, motor vehicles have been imported so that, in spite of war-time losses, total registrations are now higher than before hostilities, and government highway transport concerns now operate throughout the interior. While a very large proportion of China's air lines have been re-routed, in 1939 they were actually a little longer than in 1936. In Japan, her colonies and Manchuria the Far Eastern war has resulted in an increase in the proportion of Japanese tonnage engaged in the overseas trade, and in a very great increase in both freight and passenger traffic on the railways. The latter has brought in its train a serious shortage of rolling stock in all these countries and great resulting difficulties in handling traffic. While information on Japanese highways has been considered a military secret for some time, in Manchuria the last few years have seen a large increase in highway mileage, doubtless built for strategic as well as economic reasons. At the same time, Manchurian highway traffic, both of goods and passengers, has seen a remarkable development since the outbreak of war. As part of her effort to administer efficiently her newly acquired territories, as well as in order to continue her military activities, Japan has greatly increased her airway network under the impetus of the Far Eastern war, in just two years more than doubling the length of routes and more than tripling the number of passengers carried. Lastly, the Sino-Japanese war enormously increased the traffic on the French railway running from Haiphong, Indo-China, to Kunming in Yunnan province, China, as this route became—during the early months of 1940—one of the last remaining passages for Chinese foreign

trade. Airway connections between these countries, though frequently interrupted, were operated by various routes and companies until the French collapse in Europe and the Japanese penetration of Indo-China closed these air and land routes to China.

While the European war's more acute stage is still of such recent date that it is impossible to describe accurately its impact on the transport systems of the Pacific area, certain effects have already become apparent. The withdrawal of considerable portions of the tonnage of European nations from the Pacific is bound to have serious repercussions upon the shipping of that ocean. In the European colonies and in the Dominions one effect of the war has been an increase in rail freight traffic, growing out of increased demands for strategic Far Eastern products. In airways, particularly in the case of the long-distance international routes, the war has caused serious disruptions and changes. Air France's services from Marseille to Indo-China ceased in June 1940; both passenger and mail services from the Netherlands to the Indies have been suspended; and several of the German-financed lines in Latin America either ceased operations, were reorganized or suffered serious restrictions of one type or another. On the other hand, Pan American Airways have finally commenced regular operations on the California to New Zealand route; trans-Tasman Sea service between Australia and New Zealand has been inaugurated; both Japan and the Netherlands Indian K.N.I.L.M. have increased their services and facilities; and China is now operating international routes to Burma and to the U.S.S.R.

The four tables which accompany this introduction should be used with the utmost caution. The purpose of drawing them up has been to gather together recent essential data for most of the countries treated and to arrange them in a generally parallel manner, in the hope of illustrating the present condition of the four main types of Pacific area transportation. The tables present the latest data included in the detailed tables illustrating the later sections of the study. In few countries, however, are statistics on any subject presented in truly comparable form and in few are they compiled with a similar degree of accuracy. In attempting detailed comparisons, therefore, the reader is referred to the more elaborate tables in the later sections. In the case of Tables 2 and 3, where comparisons have been made of the length of routes to land area and of the population and motor vehicle registrations, it should be noted that these ratios are based on the area and population data given in Table 1 of *Population of the Pacific Area*, by Karl J. Pelzer, the initial study published in the present Survey.

Shipping: Water transportation is the principal link between the various countries bordering the Pacific as well as with the remainder of the world. It is not surprising, therefore, that developments in Pacific shipping should at once reflect and stimulate the rapid political, economic and social transitions taking place in the world.

Prior to the first World War British shipping was clearly the dominant factor in the trade routes of the Pacific. The Japanese took advantage of that disruption of normal trade and transportation connections to

TABLE 1. PRINCIPAL COUNTRIES SHARING IN THE OVERSEAS SHIPPING OF PACIFIC AREA NATIONS

COUNTRY	YEAR AND DESIGNATION OF TONNAGE ENTERED (E) OR CLEARED (C)	NATIONALITY OF TONNAGE IN OVERSEAS SHIPPING (In percentages)						Total
		American	British	Japanese	Netherlands	Norwegian	Other	
A. LATEST PRE-WAR DATA								
ASIA:								
Japan	1936 E	4.0	13.7	59.5	1.9(a)	4.1	16.8	100.0
Manchuria	1936 E	1.0	9.8	42.4	1.5	..	45.3(b)	100.0
China	1936 E & C	6.9	35.7	20.8	3.1	4.3	29.1(c)	100.0
Indo-China	1936 E	1.7	22.5	16.1	5.8	6.1	47.7(d)	100.0
Thailand	1936/37 E & C	0.7	22.5	16.0	10.3	28.5	22.1(e)	100.0
Malaya	1936 E	(f)	31.7	18.2	23.8	6.2	20.1	100.0
Netherlands India	1936 E	0.8	28.3(g)	5.2	45.0(h)	11.2	9.7	100.0
Philippine Islands	1936 E	15.8	33.6	16.4	6.8	9.4	18.0(i)	100.0
OCEANIA:								
Australia	1936/37 E	3.2	73.0(j)	5.5	2.8	7.0	8.5	100.0
New Zealand	1936 E	12.8	76.7(k)	(f)	(f)	5.9	4.6	100.0
THE AMERICAS:								
Canada	1936 E & C	(f)	42.4	(f)	(f)	(f)	57.6(l)	100.0
United States	1936 E	31.3	34.4	4.1	2.9	8.6	18.7	100.0
B. LATEST DATA AVAILABLE								
ASIA:								
Japan	1939 E	1.6	11.2	67.2	1.8(a)	3.8	14.5	100.0
Manchuria	1938 E	0.1	10.5	44.3	0.8	..	44.7(m)	100.0
China	Jan.-Jun. 1940 E & C	5.5	17.6	51.6	4.0	5.2	16.1(n)	100.0
Indo-China	1938 E	1.1	35.2	9.6	7.6	5.3	41.2(o)	100.0
Thailand	1937/38 E & C	0.4	26.4	14.3	13.4	25.6	19.9(p)	100.0
Malaya	1938 E	(f)	34.4	12.0	25.6	6.6	21.4	100.0
Netherlands India	1938 E	0.7	30.7(g)	2.9	46.7(q)	9.4	9.6	100.0
Philippine Islands	1938 E	10.0	31.0	21.6	7.1	10.1	20.2(r)	100.0
OCEANIA:								
Australia	1938/39 E	2.6	72.8(s)	4.9	4.3	4.8	10.6	100.0
New Zealand	1939 E	11.6	77.2(t)	(f)	(f)	4.9	6.2	100.0
THE AMERICAS:								
Canada	1939 E & C	(f)	41.9	(f)	(f)	(f)	58.1(u)	100.0
United States	1938 E	27.0	34.5	4.0	3.6	10.5	20.4	100.0

- (a) Including Netherlands India.
(b) " 12.7% Chinese, 21.8% Kwantungese and 3.0% Manchoukuoan.
(c) " 16.2% Chinese.
(d) " 24.6% French.
(e) " 10.4% Danish and 4.9% Thai.
(f) Included with "Other."
(g) United Kingdom only.
(h) Including 24.2% Netherlands and 20.8% Netherlands Indian.
(i) " 8.3% German.
(j) " 5.2% Australian and 8.3% New Zealand.
(k) " New Zealand, and 51.2% United Kingdom.
(l) " 22.6% Canadian.
(m) " 21.3% Kwantungese, 8.6% Chinese and 3.6% Manchoukuoan.
(n) " 7.5% Chinese.
(o) " 25.5% French.
(p) " 9.9% Danish and 6.0% Thai.
(q) " 25.8% Netherlands and 20.9% Netherlands Indian.
(r) " 8.6% German.
(s) " 4.9% Australian and 8.4% New Zealand.
(t) " New Zealand, and 50.5% United Kingdom.
(u) " 24.0% Canadian.

enter new routes and increase their participation in those in which they were already engaged. Aided by a successful subsidy policy, depreciation of the yen, and an intimate connection between shipping, industrial, commercial and financial interests, Japan has increased her gains and modernized her fleet so that at present her shipping carries more than two-thirds of Japanese trade.

The growth of Japanese competition led, during the thirties, to agreements in the routes between Japan and Australia-New Zealand and between Japan and the Netherlands Indies whereby Japanese carriers were assured of from 50% to 80% of the business. These gains were made at the expense of British and *Netherland shipping*, although the latter, because of government cooperation, has fared somewhat better than the British. Japan's most serious inroads on the shipping of other countries have taken place on routes to and from Japan, which is made apparent by the fact that nearly 80% of Japanese shipping is occupied in carrying the imports and exports of Japan herself.

The great competitive strength of Japanese shipping in her own import and export trade is not hard to explain when the intimate corporate relationship between Japanese shipping companies and her great commercial, manufacturing and financial dynasties are fully borne in mind. These business affiliates buy and sell in such a manner as to control the routing and, furthermore, the profits of one enterprise in the group may offset the losses incurred by another operation necessary to complete the transaction. It is quite natural, therefore, to find that Japanese shipping has made the greatest progress where Japanese commercial relations have also shown the greatest advances. Competition between various Japanese lines themselves became extremely severe in several cases and led to the enactment of the Shipping Routes Control Law in 1936, the purpose of which was to prevent this type of uneconomic competition.

Thanks to a consistent policy of government encouragement and the temporary stimulation of a depreciated currency, as well as the competitive strength of her corporate organization, Japan has constructed a fine fleet of fast, modern vessels and now has a larger proportion of vessels under seven years of age in her merchant fleet than any other maritime power. Nonetheless, her tonnage has not been sufficient to handle with ease the transport requirements of the Sino-Japanese war. As a result the Shipping Routes Control Act of 1936 was supplemented by additional legislation giving the government increasingly greater control over the operation of Japanese shipping and the rates charged. Nevertheless, the problem has not been completely solved and Japan is still confronted with the dilemma of taking more ships off foreign trade routes, at the sacrifice of badly needed foreign exchange, or of facing a shortage in the China service. The pressure on Japan's overseas shipping is illustrated in Table 1, which shows a shrinkage in Japan's share of the foreign shipping of all Pacific area countries excepting China, Manchuria, Japan's colonies and the Philippines. The increase in the latter represents larger Philippine iron ore shipments, also a result of the war.

British shipping includes vessels registered in the Dominions as well as in the United Kingdom, though the latter is by far the greater even in the Oriental trades.² Japanese competition has been felt most keenly on the Japan-Australia and New Zealand route and on the trans-Pacific route from Japan to North America, and more recently on the route from the Straits Settlements to the United States. Nevertheless, British shipping is still the largest factor in Oriental transportation although serious inroads were made by the Japanese on wayport business in British Malaya and China. This competition was provided by the Japanese lines operating between India and Japan and between Australia and Japan, which handled much traffic to intermediate ports in addition to through cargoes between the terminal countries. Another division of Oriental shipping in which the British were firmly entrenched was the domestic coastwise business of Australia, New Zealand and China. The importance of the dominant position of British shipping in many of the trades within the Orient cannot be overemphasized and must be included in any consideration of the effects of both the Sino-Japanese and European wars on Oriental commerce.

A report of the Imperial Shipping Committee published in London in 1939 indicates that both the actual and the potential threat of Japanese competition have been realized by the British. Torn between the desire to retain their traditional policy of *laissez-faire*, which has permitted them to attain the commanding position that British shipping still enjoys, and the necessity of meeting the challenge of the Japanese, it is significant that the Imperial Shipping Committee recommended government subsidies and closer cooperation of British shipper and shipping interests.

United States shipping has also felt the keen competition of the Japanese on the trans-Pacific route. Although up until 1937 American carriers handled approximately one-third of all freight moving between the United States and China and the Philippines, American bottoms accommodated only about 8% of the movement between their country and Japan. Still further inroads on the American business occurred at that time because of the revision of the United States' maritime policy. The disruption of service caused by the transition from a mail contract basis to an open subsidy arrangement, coupled with the financial reorganization of the principal American line operating to the Orient, led to a decline in the share handled by United States carriers. The Sino-Japanese war and the application of American neutrality legislation renders it impossible to isolate the effect of each of these disruptive influences, but the total unfavorable result on American shipping can be seen in Table 1 as well as in the figures for individual countries. The present European hostilities and the strained position of Japanese shipping may render the efforts of the United States Maritime Commission to reestablish the American merchant marine in the Pacific somewhat easier than would have been the case without this preoccupation of non-American shipping.

² This definition of British shipping is not used throughout Table 1, notably in the Canadian and Netherlands Indian percentages.

One recent remarkable development in the trade between Japan and the United States has been the shift in the transportation of Japanese silk from Japanese to American ports. In the early thirties direct shipments of Japanese silk via the Panama Canal to New York became important, taking the place of shipments via Seattle or San Francisco and thence overland across the continent. At that time, the price of silk was low and shipping space available in Japan was relatively ample for its needs. Up until about 1939, three-fourths of this highly-valued commodity imported by the United States came via this new route, almost 80% being carried in Japanese bottoms. In 1940, however, other shipping needs of Japan (mainly military) grew so pressing that the former trend was reversed. Late in 1940 and in the early months of 1941 the combined sea-land transportation of Japanese silk was resumed, transportation via the Panama Canal shrinking to little importance.

With one exception all American lines operating to the Orient are subsidized by the United States government. It is significant that the one line not receiving government aid is the subsidiary of a large American industrial corporation and thereby resembles the Japanese carriers in their intercorporate characteristics.

Besides Japanese, British and American shipping, the Orient relies primarily on vessels of the Netherlands, Norway, Denmark, Sweden, Germany, Italy, France and Greece. Although the Netherlands East Indies registers a sizeable merchant marine, Japan alone of Oriental countries can be considered a maritime nation. Australian and New Zealand tonnage is primarily employed coastwise, although one New Zealand line operates to the Pacific Coast of North America, and prior to the European war a Canadian line maintained connections between the west coast of Canada and Japan and China. When one bears in mind this dependence on foreign shipping, the disturbing effect of the European war on Oriental commerce can readily be appreciated, not to mention the other disturbing influences of total war on the trade of this area. The present preoccupation of Japanese shipping precludes effective amelioration from that quarter.

The effect of the curtailment of United States shipping in 1937 and 1938 stimulated the introduction of two Philippine transpacific services. More recently the shortage of vessels in Eastern waters has led the government of Thailand to acquire several old ships in order to provide a certain and independent medium for the maintenance of a small share of that country's exports and imports. It is interesting to speculate on how far the growing spirit of nationalism in both countries may lead them to subsidize their shipping and whether or not they will be able to take advantage of their cheap labor and the present disorganization of the world's commerce to secure a share of world shipping.

On the other side of the Pacific Ocean, on the coast of the Americas, the merchant marines of the United States, Great Britain, Japan and Scandinavia account for almost all the business. The Japanese operate the only transpacific service to South America. Mexico and Chile both have small mercantile fleets, while Panama registers a substantial mer-

chant tonnage, most of which operates as tramp vessels. Much of this Panamanian tonnage, however, is owned abroad, especially in the United States, and is registered in Panama to escape legislation which is considered burdensome.

An aspect of shipping to which sufficient attention is rarely paid is domestic or coastwise shipping. Of the larger Pacific area countries, China alone opens its coastwise shipping to the fleets of all nations, although there has been considerable agitation to exclude foreigners. Prior to the Sino-Japanese war British shipping accounted for about one-half the Chinese business. Although the total British tonnage in this trade in 1939 totalled but one-fourth that in 1936, proportionately this share grew from 41.3% to 49.5%, mostly at the expense of Chinese tonnage, while Japanese tonnage increased only from 15.5% to 17.0%. Japan's domestic shipping is reserved to vessels of the Japanese flag and those specially licensed. In recent years licenses have been granted only to vessels of Japan's dependencies and to Japanese-owned vessels of foreign registry. The Netherlands Indies closed their domestic carrying trade to foreigners except by license in 1936. In the coastwise trade of Australia and New Zealand the conditions of entry virtually prohibit foreign participation although there is no legal exclusion. Both Dominions have threatened to extend the coasting restrictions to trade between them in retaliation against the United States' practice of extending their strict coastwise exclusion laws to Hawaii, but this threat has not been carried out.

It may be seen from the foregoing that in the shipping industry, as well as elsewhere, the main underlying trends of nationalization and rationalization are quite apparent in the Pacific area. The increasingly large sums devoted to subsidies, the growing interest of the British in this type of competition, the extension of coastwise regulations favoring a country's own nationals and the emergence of merchant marine services under the flags of some of the smaller nations all indicate the nationalistic direction of the wind. Evidence of rationalization is found in the strength of the vertical integration of Japanese enterprise and in the recent shipping legislation of that country, and also in the recognition by Great Britain of the necessity for greater cooperation between British shipping and shippers. The Merchant Marine Act of 1936 and the United States Maritime Commission thereby created have both officially recognized the problem of strengthening American shipping by preventing uneconomic competition between American flag lines in overseas trade.

Railways: The data in Table 2 indicate the great differences in railway mileages and distribution among the nations bordering on the Pacific. On the whole, the Philippines, China, Indo-China, the U.S.S.R. and some of the Latin American countries may be described as having more than one hundred square miles of area per mile of railway while Japan, Formosa and the United States have less than ten square miles of area per mile of line and can therefore be described as having the most extended railway networks of the area. While, at first glance, Australia appears to fall into the former category, it must be remembered that

large sections of that country are desert and uninhabited; about one-third of the land surface is at present useless, and railway development has naturally concentrated in the more densely settled regions of the east and south. Including only inhabited area, the Australian ratio of land surface to railway mileage would be much smaller than the figure given in Table 2. On the other hand, the Netherlands Indian ratio may be misleading in just the reverse way. The ratio given in Table 2 is based only on the area of Java, Madura and Sumatra, there being no railways in any of the other Outer Provinces. The total area of Netherlands India is 735,000 square miles, and on that basis the ratio of land surface to railway mileage would be 161.3. Manchuria has produced the largest increase of mileage in comparison to land area in recent years: in 1930 there were 115 square miles of area per mile of line and by 1939 this ratio had been reduced to 81. The increase can be described as in large part strategic rather than a wholly economic development.

As an indication of efficient railway operation, data on ton-miles of freight hauled and passenger-miles of passengers carried are more accurate than the rather rough approximations furnished by the data in Table 2, describing freight and passengers carried per mile of railway. The former, however, were not available for the majority of the coun-

TABLE 2. RAILWAY TRANSPORTATION IN PACIFIC AREA COUNTRIES

COUNTRY	YEAR	DESCRIPTION OF MILEAGE	LENGTH (In miles)	SQUARE MILES OF AREA PER MILE OF RAIL- WAY	FREIGHT CARRIED (In thousand short tons)		PASSENGERS CARRIED (In thousands)	
					Total	Per Mile of Railway	Total	Per Mile of Railway
ASIA :								
U.S.S.R.	1938	First track	53,438	152.9	569,117	10.7	1,177,800	22.0
Japan	1937	Line open to traffic	15,187	9.6	131,616	8.7	1,634,000	107.6
Manchuria	1939	Length of line	6,214	80.9	55,924	9.0	52,966	8.5
Korea	1938	Line open to traffic	2,321	36.6	12,533	5.4	35,906	15.5
Formosa	1938	Line open to traffic	2,209	6.3	13,465	6.1	27,486	12.4
China	1935/36	Length of track	6,054	660.5	37,879	6.3	46,920	7.8
Indo-China	1938	Line in use (a)	2,095	136.4	1,706	0.8	17,426	8.3
Thailand	1938/39	Length open for traffic	2,060	97.1	1,752(b)	0.9	5,723	2.8
Malaya	1938	First track	1,068	47.9	2,079	1.9	9,923	9.2
Netherlands India	1938	Average length open for traffic	4,556	51.4(c)	10,711	2.4	66,700	14.6
Philippine Islands	1938	Length of line	833	136.9	2,126	2.6	12,628	15.2
OCEANIA :								
Australia	1938/39	Length open for traffic	27,973	106.3	37,852	1.4	385,151	13.8
New Zealand	1939	Length open	3,319	31.0	8,444	2.5	23,266	7.0
THE AMERICAS :								
Canada	1938	Total track	56,760(d)	61.1	76,175	1.3	20,911	0.4
United States	1938	Total track operated	411,324(e)	7.2	1,928,000(f)	4.7	500,000(f)	1.2
Mexico	1936	Length of roads	14,206	53.8	15,805	1.1	27,132	1.9
Colombia	1937	Length of line	1,987	226.0	3,714	1.9	12,737	6.4
Peru	1936	Length of line	2,624	183.7	3,291	1.3	4,218	1.6
Chile	1936	Length of line	5,434	52.6	10,208	1.9	19,509	3.6

(a) Including mileage in Yunnan.

(b) 1936/37.

(c) Based on area of Java, Madura and Sumatra (234,000 sq. mi.).

(d) First track is 42,742 miles long.

(e) First track is 237,000 miles long.

(f) 1937.

tries in question. While Japan and the United States are in a similar position with respect to railway mileage in comparison to land area, Japan's railways are almost twice as heavily worked in respect to freight hauled. In this the U.S.S.R., Japan and Manchuria present the problem of very heavily worked railway systems—the former never having had a transport system of any type sufficient for her needs, and the two latter suffering from severe war-time and reconstruction demands on their transport facilities. Recent data indicate that the situation in Japan is continuing to become more difficult; in 1938, 9,710 short tons of freight were carried per mile of line by the state railways, representing a 12% increase over the average for all railways the previous year.

The very large number of passengers carried by Japanese railways is explained by the fact that the average length of passenger journeys in that country is very short, being only 15.4 miles long on the state railways and 5.4 on the local lines in 1937. In the four years between 1936 and 1940 passenger traffic is reported to have increased by 60%. The combined freight and passenger traffic pressure upon the Japanese railway system has been such that the state lines have reversed their policy of encouraging passenger travel in order to give precedence to military and industrial freight.

In both the United States and Canada, on the other hand, railway traffic is still considerably lower than in the twenties and, in the latter, even lower than the average for 1909-13. It is not possible to define how much of this lost traffic has gone to competitive services such as trucks and buses and how much has been a result of the slowing down of internal migration.

The Soviet data in Table 2 refer to the whole U.S.S.R. and thereby give a picture which is rather unlike conditions in those portions of the Union which are oriented toward the Pacific. Although the main railway of that region is double-tracked—a contrast to many Pacific area nations in which a large proportion of the mileage is single track—the larger portion of the Soviet railway system is concentrated in European Russia, while Siberia depends on the Trans-Siberian and a few feeder lines. Freight carried in the Far Eastern economic region in 1937 totalled only 16 million metric tons, out of a total of 517 million for the whole Union.

A serious barrier to international continental traffic is found in the different railway gauges employed. Nor is this a wholly international problem; in some countries several gauges are used as, for instance, Netherlands India where although most of the lines use a 1.067-meter gauge, several other gauges are also used, and Australia where five gauges make rail transport expensive and slow.

The great majority of the Soviet railways use the five-foot wide gauge but the railways of its neighbor, Manchuria, use the 4'8½" standard gauge. The latter is also used by the majority of the Chinese railways, although there are certain exceptions. The Haiphong-Yunnanfu railway, running through the mountains between China and Indo-China, however, is only one meter wide, as are the other lines in that colony. There is no rail connection from Indo-China to Thailand

but unimpeded rail traffic exists between Thailand and British Malaya as the one-meter gauge is used in both. The same situation occurs on the other side of the Pacific where two of the largest railway systems, the Canadian and the American, use the 4'8½" standard gauge and consequently enjoy uninterrupted traffic. Island nations like Japan, the Philippines and New Zealand have the advantage of using the gauge which suits local conditions best, without reference to the gauges used in neighboring countries. Japan, however, has encountered certain difficulties in Manchuria where, in order to provide efficient international connections with Korea and China, the 4'8½" gauge was adopted; it has therefore been impossible to use Japanese rolling stock for either Korean or Manchurian lines.

Highways and Motor Vehicles: In connection with Table 3 it should be pointed out that while motor vehicle registration data in Pacific area countries are neither complete nor wholly comparable, the highway data probably include a much greater proportion of dissimilarity in that the definition of automobile highway differs considerably from country

TABLE 3. AUTOMOBILE HIGHWAYS OPEN AND MOTOR VEHICLES REGISTERED IN PACIFIC AREA COUNTRIES

COUNTRY	AUTOMOBILE HIGHWAYS			MOTOR VEHICLES REGISTERED		PERSONS PER VEHICLE
	Year	Length (In miles)	Square Miles of Area per Mile of Highway	On January First	Number	
ASIA :						
U.S.S.R.	1939	1,682,000	4.9	1940	801,000	213
Japan	1939	594,651	0.3	1940	248,820	278
Manchuria	1939	18,527	27.1	1940	14,350	2,749
Korea	1939	19,043	4.5	1940	10,750	2,130
Formosa	1939	10,999	1.3	1940	4,710	1,107
China	1939	52,816	75.7	1940	70,267	6,082
Indo-China	1938	17,051	16.8	1939	23,799	968
Thailand	1940	4,394	45.5	1940	13,015	1,111
Malaya	1939	6,764	7.6	1940	48,565	107
Netherlands India	1939	42,741	17.2	1940	90,410	757
Philippine Islands	1938	11,915	9.6	1940	54,194	295
OCEANIA :						
Australia	1939	485,000	6.1	1940 (a)	895,000	7.8
New Zealand	1937/8	52,628	2.0	1940	294,027	5.5
THE AMERICAS :						
Canada	1938	496,000	7.0	1940	1,433,000	7.8
United States	1938	3,065,000	1.0	1940	31,136,103	4.2
Mexico	1939	56,923	13.4	1940	105,470	185
Colombia	1939	14,637	30.7	1940	33,143	261
Ecuador	1940	3,000	58.7	1940	3,602	833
Peru	1939	14,074	34.2	1940	22,216	315
Bolivia	1939	5,788	87.6	1940	1,983	1,656
Chile	1939	22,613	12.6	1940	48,954	95

(a) On June 30.

to country. The highway mileages in Table 3 have been chosen in an attempt to include only roads generally usable for motor vehicle traffic during the major part of the year. Roads such as Malayan bridle tracks and cart roads, the unformed legal roads of New Zealand, and Indo-Chinese roads described as passable for less than six months of the year have therefore been excluded. In certain cases, e.g. Japan and the U.S.S.R., no information on types of road is available.

The data in Table 3 illustrate two aspects of road transport—the extension of the highway systems in relation to the land surface of the countries of the Pacific area and a comparison of the population of these countries in relation to the number of motor vehicle registrations. The first describes the actual highway interconnections within a country and the second indicates what proportion of that country's population has access to fast highway transport. Development in these two fields, though to some extent related, is far from parallel or even similar within any single country. While Japan and New Zealand, for instance, present somewhat comparable pictures as regards land area per mile of road, the latter has one motor vehicle for every five persons while the former has only one for every 278. Formosa, with 1.3 square miles of land per mile of road, has 1,107 persons per motor vehicle while the United States, with one square mile of surface for every mile of road, has only 4.2 persons per automotive vehicle. The reverse of this may be illustrated by a comparison of the situations in Indo-China and Thailand; these neighboring countries are quite alike in the number of persons per motor vehicle, but the former has a far greater road network in proportion to area than has the latter. Only those countries having both an extensive highway system and a large number of motor vehicles in relation to population can be described as having highly developed automotive transport. Included in this definition are the United States, Canada, Australia and New Zealand.

Two countries showing considerable increases in their highway systems are Manchuria and Thailand. In the first the number of square miles of area per mile of road decreased from 60 in 1933 to 27 in 1939; and in the second, from 225 to 46 between 1926 and 1940. One of the countries showing the greatest changes in the ratio of population to motor vehicle registrations was the U.S.S.R. where this figure dropped from 2,221 in 1932 to 213 in 1940; while in Japan the ratio dropped from 700 in 1932 to 278 in 1940, and in China from 12,680 in 1930 to 6,082 ten years later.³

It is unfortunate that the very nature of automotive highway transport, which first developed largely in the form of small, independent and generally unregulated enterprises, has made the collection of traffic data practically impossible, at least up to the present time. All that can be done now is to compare length of roads and number of commercial vehicles registered, and note the growth of the latter which in turn has stimulated the extension of highways. In most countries passenger cars account for the greater share of the motor vehicle registrations; this is particularly true in the Dominions and the United

³Comparisons are made with data in Tables III and IV, *Economic Handbook of the Pacific Area*, 1934, pp. 146-147.

States. In the U.S.S.R., however, commercial vehicles outnumber passenger cars almost seven to one while China has seen the lead shift from passenger to commercial vehicles in the years following the depression. On the whole, bus registrations have not grown much in this period, although data are incomplete because many countries do not record them separately from other commercial vehicles. It is probable, however, that this slower growth may be in part offset by larger capacities of individual bus units, in which case the increase in available highway transport would be larger than these data indicate. Japan is the only country showing a large increase in bus registrations—from an average of ten thousand in 1930-33 to nearly 30 thousand at the beginning of 1940. Another point on which information is difficult to secure is the distribution of Diesel units; the rapid increase in their use, however, makes some discussion important.⁴ Their economical operation and efficiency for long hauls, as well as their use of crude oil, have made them valuable in countries like China where refined gasoline is expensive and where long highway hauls often replace rail service. Although most of the world's estimated 180,000 Diesel units are not located in the Pacific area, China is the leader in the Far East in this respect, having 1,851, while Japan has 120, Manchuria 350, Indo-China 100, British Malaya 124, Thailand 145, the Philippines 94, and Netherlands India 265. No data on Australian Diesels are available and New Zealand reports only 171. On the other side of the Pacific, Canada has a mere 288 while the United States has 5,000, mostly concentrated on the West Coast. In Latin America the only countries with important registrations are Peru with 330 and Chile with 455. Proportionately to total registrations, therefore, China, Manchuria and Netherlands India are the leading users of Diesel units in the Pacific area. As will be noted in later sections, it is in the first two countries that the greatest development of highway transport has occurred in recent years. In both, highways have been emphasized lately because they are cheaper and quicker to build than railways and can thus meet the rapidly increasing economic and strategic demands for better communications, in spite of the relatively higher cost of highway freight. In Netherlands India bus and truck transport have profited from short hauls and from the distances separating certain plantations from the railways. Automotive transportation, however, has not been without its complications as it intruded upon the transport and communications systems of Pacific area countries. In the depression years the fact that automotive transport could be set up by one man with one vehicle, using government-built and maintained highways, played havoc with the freight and passenger traffic of the railways. In some countries, such as the United States, Canada and the Netherlands Indies, the fact that rail freight rates were based on the value of the commodity hauled, rather than the actual cost of transport, resulted in automotive concerns' being able to capture this high-value trade by charging rates closer to actual

⁴ The following data and discussion are based on U. S. Dept. of Commerce, Bureau of Foreign and Domestic Commerce, *Automotive World News*, May 20, 1940. As Diesel registration figures are not available for many countries, the world total is probably larger than here stated. World Diesel registrations increased 375% between 1935 and 1940.

costs, while at the same time not attempting to compete for the carriage of bulky, low-value commodities such as raw materials, from which, in any case, the railroads had not been securing very profitable returns.

Airways: The earliest data on commercial air services in the Pacific—the air mail operating in the United States in 1918—refer to the American continent; however, they hardly antedate the initiation of government subsidies of air lines in Australia, which began in 1920, or the inauguration of air transport service in Thailand in 1922. Few regular statistics are available referring to years earlier than the late twenties and, while considerable progress was made in air transportation in the early thirties, the development of this new form of transport has been greatest since about 1936. In spite of war conditions which have curtailed some services and discontinued others, including some of the most ambitious international ones, it is still making extraordinary strides. In view of this recently accelerated growth, it is unfortunate that so many of the data in Table 4 are at least two years old. Another dis-

TABLE 4. AIR TRANSPORTATION IN PACIFIC AREA COUNTRIES

COUNTRY	TYPE OF SERVICE	PERIOD COVERED	LENGTH OF ROUTES (In miles)	DISTANCE FLOWN (In thousand miles)	PASSENGERS (Number)	FREIGHT CARRIED (In short tons)	MAIL CARRIED (In short tons)
ASIA:							
U.S.S.R.	Domestic	1939	83,885	..	307,000	43,711	12,695
Japan	International	1938	5,081	2,358	45,411	250	681
	Other	1938	4,993	1,683	28,273	84	233
China	Domestic and international	1938	9,198(a)	1,689	27,572	518	325
Indo-China	Excluding traffic in transit	1938	..	..	1,829	14	19
Thailand	Domestic	1936/37	444	74	22	2	14
	International	1936/37	..	..	845	3	5
Malaya	International	1938	..	8,007	12,774	586	1,808
Netherlands India	Domestic	1938	2,904	762	19,355	98	48
	International	1938	8,335	1,353	2,864	16	12
Philippines	Domestic	1939	962(b)	736	22,063	1,587	8
	International	1938	..	..	1,019	5	3
OCEANIA:							
Australia	Domestic and international	1938/39	(25,207)	14,099	147,919	867	370
New Guinea	Domestic	1938/39	..	1,456	14,478	13,532	81
New Zealand	Domestic	1938/39	..	1,574	53,039	83	158
THE AMERICAS:							
Canada	Domestic	1938	..	9,544	133,000	10,838	652
	International	1938	..	2,750	16,000	15	299
United States	Domestic	1939	36,581	72,572	1,876,000	4,757	8,853(c)
	Foreign and territorial	1939	43,528	8,405(d)	169,000(d)	699(d)	338(e)
Mexico	Domestic and international	1937	..	3,204	67,827	2,182(f)	249
Colombia	Domestic	1939	5,321(b)	2,324	54,621	5,659	..
	International	1937	..	475	4,774	..	..
Ecuador	Domestic and international	1935	..	1,128	22,930	2,275	..
Peru	Domestic and international	1939	..	1,910	29,360	680	542(b)
Bolivia	Domestic and international	1939	..	478	18,407	1,185(b)	40(b)
Chile	Domestic	1939	2,490(b)	417	3,174	16	9

(a) 1939.

(b) 1938.

(c) 1936.

(d) Excluding operations of three Latin American subsidiaries of Pan American Airways.

(e) Foreign mail only.

(f) In addition, 891 tons of baggage were carried.

advantage is the probability of duplication in some of the international traffic statistics. For instance, the Australian figures include the operations of Qantas Airways from Darwin to Singapore while the Malaya data include all international traffic calling at Singapore and other Malayan airports. In the same way, the international data given for the Philippines, which represent Pan American's traffic on the California to Hongkong route, are also included under the international traffic of the United States. In most cases elimination of this sort of duplication, however, is not possible and it appeared useful to include even obvious duplications like Pan American's Philippine traffic in order to indicate the relative importance of such regions as the Philippines, Malaya and Thailand, which serve as the crossroads of the international air routes of the Pacific. In spite of these and other disadvantages, the data given in Table 4 illustrate two points: (1) the greater proportion of mail in comparison to passengers carried in international traffic as against domestic service and (2) the importance of the commercial development of domestic airways as freight carriers in certain regions. The former may be explained by the fact that government subsidies, for various political and strategic reasons, have encouraged the development of international air routes for which there is often no important commercial demand. Subsidies often take the form of airmail contracts and cheap airmail rates, and the advantages of this form of communication are immediately reflected in airmail statistics. The second point is explained by the development of unsubsidized, commercial air routes as an essential factor in the operation of gold mines in New Guinea, Siberian Yakutia and in Canada's Yukon and Northwest Territories. These are very sparsely inhabited and inaccessible regions where more usual forms of transportation would be too expensive to build, and gold mining is an industry in which the value of the product, in spite of its weight, is high enough to warrant its export by air and the transportation, also by air, of mining machinery, personnel, and the general merchandise needed by new communities. A similar situation has occurred in Mexico and Colombia in connection with gold mines in the former and with the construction of oil pipe lines in the latter. In the latter case, however, it may be assumed that, once the pipe lines are laid, that particular demand for air freight transport will cease.

Like shipping, many international airways operating in the Pacific area have been financed from non-Pacific countries. The most notable exceptions are Japan, Thailand and the United States. The air companies operating in China are financed partly by American and partly by German funds, as well as with Chinese money; the airways in Indo-China were operated by the French concern, Air France; in Malaya and Australia the leading companies are Imperial Airways (British) and its Australian subsidiary, Qantas Airways; in New Zealand international air services are partly American and partly Australian and British; and in Latin America airlines, both local and international, have been partly or wholly financed from Germany, Italy and the United States.

The three outstanding nations in regard to air routes and air traffic are the U.S.S.R., the United States and Australia, as illustrated in

Table 4. In Latin America it will be noted that, in proportion to the population and size of those nations, airways are also remarkably developed, particularly with respect to passenger traffic, this latter resulting in part from the lack of competition from other forms of transport. Japan's international air traffic is much more important than her domestic services, a result of the small size of Japan proper and the contrasting extent of her colonies and dependencies.

The U.S.S.R. is a nation which is short of every type of transportation and one where, because of enormous distances, the development of air transportation is particularly important for its economic and political development. In the United States, on the contrary, airways have competed with other, highly developed, forms of transportation and communication. The country's great size and prosperity have both contributed to the growth of the airways network, as have its far-flung territories and insular possessions. The Australian population is very unevenly distributed, large sections of the country being practically uninhabited, and, until very recently, airways formed the only overland connection linking all the capital cities of the Commonwealth; they also serve to unite the Dominion with Great Britain and with other British possessions. On the whole, however, domestic airway traffic in Australia, as in the U.S.S.R., is greater than the international services.

An obstacle to the development of international airways has been the necessity of securing governmental permission both to call at foreign airports and to fly over the territory of foreign countries. In most cases, reciprocal inter-governmental agreements have had to be made. An important exception, however, was the development of Pan American's trans-Pacific service which was greatly facilitated by the possibility of calling at American-controlled territory all the way across the Pacific. China, however, never permitted foreign air services over her territory or at her airports, until the war enabled Japan to establish such services in North and Central China and extending down to Canton, and to avoid this problem Pan American Airways made private arrangements with the authorities of Macao and Hongkong. Japan is another nation which has never permitted foreign air services to call at her territory. On the other hand, Thailand has welcomed foreign planes, permitting them to use an airport close to the military airfield at Dong Muang and thereby enabling Bangkok to become an important airways junction. Indo-China has also permitted certain foreign airlines to operate over her territory, including the Chinese S.W.A.C., flying to Hanoi from Canton, K.N.I.L.M., operating from Batavia to Saigon, and Imperial Airways, calling at Saigon between stops at Bangkok and Hongkong. Until 1940, however, neither Thailand nor Indo-China had allowed Japanese air services to fly over their territory and, while the inauguration of the Japanese-operated Tokyo-Bangkok line in February 1940 was based on a reciprocal arrangement between those nations, it was not until September, after the French collapse in Europe, that permission to fly across Indo-China shortened the route considerably. British authorities have never made airways agreements with the Japanese, in contrast to the arrangements which have been made between Australia and the

Netherlands Indies, and between Malaya and the Indies, by which K.L.M. and K.N.I.L.M. both extended their routes to include Singapore; the latter also operates services to Darwin and Sydney, in return for which Qantas Airways calls at Batavia en route to Singapore. Manila would be a logical stopover for a route connecting Japan and Netherlands India, but no agreements for the extension of foreign international airlines to the Philippines have yet been made on their behalf by the United States, to which the foreign affairs of the Commonwealth are reserved by the terms of the Philippine Independence Act.⁵ On the other side of the Pacific, American-Canadian aerial cooperation has on the whole worked smoothly.

All the questions touched upon in the preceding pages are further elaborated, and illustrated with whatever basic statistics have become available, in the following sections, in which the material has been arranged by countries and subdivided according to the four types of transportation. The countries themselves have been taken up in geographical order, beginning with the U.S.S.R. and following down the west shore of the Pacific to Oceania, concluding with the nations of North America.

⁵ In the Spring of 1941 Pan American clipper service was extended from Manila to Singapore.

1. UNION OF SOVIET SOCIALIST REPUBLICS

Shipping: Through military losses in the first World War, about 183,000 gross tons, or 23% of the total Russian commercial fleet of 1914, was destroyed. The effects of the civil war were even more disastrous. In 1924 it was estimated that, with the exception of the Caspian fleet, the Soviet mercantile marine amounted to less than 100,000 gross tons of seaworthy tonnage.¹ Table 5 shows the great increase, in both number and tonnage, of Soviet shipping since 1928. On July 1, 1938, 95 vessels, or 36% of those over 1,000 gross tons, were more than 20 years old.

TABLE 5. U.S.S.R.: NUMBER AND TONNAGE OF MARINE VESSELS²

ITEM	1928	1932	1933	1934	1935	1936	1937	1938 (a)
Total number of marine vessels, on January 1st	222	340	352	370	..	..	..	678 (b)
Tonnage (in thousand metric tons)								
Total	335.6	777.0	867.5	993.9	1,208.4	1,249	1,308.4	1,370 (c)
Motor ships	45.1	257.8	330.2	403.1	..	..	..	..
Seamships	290.5	519.2	537.3	590.8	..	..	..	..

(a) On July 1.

(b) Including 503 steamers and 141 Diesel-propelled vessels.

(c) Approximate gross tonnage.

Table 6 indicates the tonnage of imports and exports carried in Soviet and foreign vessels in 1932, 1934 and 1935. Unfortunately, no later data are available.

¹ Saugstad, J. E., *Shipping and Ship-building Subsidies*, U.S. Department of Commerce, Trade Promotion Series, No. 129, Washington, 1932, as quoted in *Economic Handbook of the Pacific Area*.

² *Sotsialisticheskie Stroitelstva*; 1938 data from *Foreign Shipping News*, 1940, No. 18, May 3.

TABLE 6. U.S.S.R.: FOREIGN TRADE, BY NATIONALITY OF CARRYING VESSELS³

(In thousand metric tons and in percentages of total imports and exports)

CARRIED IN BOTTOMS OF THE FOLLOWING NATIONALITIES	TYPE OF TRADE	1913	1926	1928	1930	1932	1934	1935
		Tons %	Tons %	Tons %	Tons %	Tons %	Tons %	Tons %
U.S.S.R.	Imports	.. ..	.. ..	.. ..	.. ..	815 41.6	682 82.9	715 67.4
	Exports	.. ..	.. ..	.. ..	.. ..	886 5.2	2,673 16.6	3,845 24.2
British	Imports	.. ..	.. ..	.. ..	.. ..	420 21.5	51 6.2	38 3.6
	Exports	.. ..	.. ..	.. ..	.. ..	2,218 12.9	2,004 12.4	2,225 14.0
Danish	Imports	.. ..	.. ..	.. ..	.. ..	88 4.5	6 0.7	11 1.0
	Exports	.. ..	.. ..	.. ..	.. ..	672 3.9	671 4.2	710 4.5
French	Imports	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
	Exports	.. ..	.. ..	.. ..	.. ..	659 3.8	416 2.6	273 1.7
German	Imports	.. ..	.. ..	.. ..	.. ..	300 15.3	30 3.6	1 0.1
	Exports	.. ..	.. ..	.. ..	.. ..	1,617 9.4	1,348 8.4	1,379 8.7
Greek	Imports	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
	Exports	.. ..	.. ..	.. ..	.. ..	2,085 12.2	2,406 14.9	2,497 15.7
Italian	Imports	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
	Exports	.. ..	.. ..	.. ..	.. ..	2,902 16.9	1,802 11.7	1,138 7.2
Japanese	Imports	.. ..	.. ..	.. ..	.. ..	25 1.3	8 1.0	157 14.8
	Exports	.. ..	.. ..	.. ..	.. ..	935 5.4	193 1.2	203 1.3
Norwegian	Imports	.. ..	.. ..	.. ..	.. ..	159 8.1	6 0.7	44 4.1
	Exports	.. ..	.. ..	.. ..	.. ..	2,464 14.3	1,885 11.7	1,405 8.8
Swedish	Imports	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
	Exports	.. ..	.. ..	.. ..	.. ..	808 4.7	612 3.8	561 3.5
Other	Imports	.. ..	.. ..	.. ..	.. ..	151 7.7	40 4.9	95 8.9
	Exports	.. ..	.. ..	.. ..	.. ..	1,925 11.3	2,117 12.5	1,637 10.6
Total	Imports	5,504	1,128	1,391	1,815	1,958	823	1,061
	Exports	15,662	9,337	9,337	20,171(a)	17,171	16,127	15,873

(a) 1930-31.

TABLE 7. U.S.S.R.: SHIPPING ON INTERIOR WATERWAYS⁴

PERIOD	FREIGHT CARRIED (a) (In million ton-kilometers)		PASSENGERS CARRIED (In million passenger-kilometers)	LENGTH OF NAVIGABLE WATERWAYS IN OPERATION (In thousand kilometers)
	A	B		
1913	37,198	...	...	72.0
1925-29	...	...	...	...
Average	21,437	15,902 (b)	2,036	68.3
1930	33,376	...	4,045	75.0
1931	38,756	...	4,061	76.0
1932	36,127	25,078	4,572	77.6
1933	...	25,966	3,723	82.2
1934	...	28,887	3,014	81.2
1935	...	33,932	2,895	83.8
1936	...	33,300	...	...
1937	...	33,100	...	101.0
1938	...	32,000	3,200	...
1942	...	...	...	115.0(c)

(a) Column A quotes *Sotsialisticheskoe Stroitelstvo SSSR*, 1934, while Column B quotes the same yearbook for 1936. In the former, the figure for 1928 is 22,815, while the latter gives it as 15,902. No explanation has been found by the editors for the discrepancy in the 1928 or 1932 figures and both are therefore given.

(b) Figure for 1928 only. See footnote (a).

(c) Plan.

³ *Vnesbiaina Torgovlia SSSR*.

⁴ *Sotsialisticheskoe Stroitelstvo SSSR, Rechnoi Transport*.

The development of the Northern Sea route is important from the point of view of transportation facilities in Siberia for it forms another link with European Russia; as the main rivers of Siberia flow northward, this route will connect with inland waterways. Figures for shipping traffic on the latter are given in Table 7.

In 1940 more than 100 vessels operated in Soviet arctic waters. It is hoped that the North Sea Route can become a normally functioning commercial sea lane for about two months yearly throughout its length. In the Far East, Vladivostok is the focal point for shipping as its harbor is kept free of ice and it is the terminal of the trans-Siberian railroad. It is estimated that one-quarter of Russian merchant shipping is assigned to the Far East, and September 1940 saw the inauguration of a new Soviet shipping route from Vladivostok to Seattle, the first regular service on this route.⁵

Railways: The relative importance of railways in the Soviet transportation system is indicated by the fact that in 1937 90% of all freight was carried by rail, 8% by waterways and only 2% by truck.⁶ "Transport conditions have long been considered the Achilles' heel of the country's economy . . ." and this is particularly true in Siberia. Of a total railway mileage of some 53,000 miles in 1939, the larger part was netted over European Russia, thinning out toward the east. East of Omsk "the wide expanse of Siberia depends on the Trans-Siberian for a rail traffic artery, with only a few feeder lines." The most immediate problem is the reconstruction of the permanent way, largely laid with old, light rails which must be replaced in order to carry the heavy traffic resulting from the growing industrialization of the region. "New and heavier rails have been laid on some 16,000 miles, but all the tracks must be strengthened and the roadbed metaled." In the second Five-Year Plan "both the railways and the river transport system in the Khabarovsk Region tripled the freight they carried in the last five-year period."⁷ The main railway connecting Moscow and Vladivostok is double-tracked throughout its entire length. In addition to the Trans-Siberian, there is the new Baikal-Amur Magistral, or trunk line, which will run north of Lake Baikal; this has been under construction for some time and it is reported that 1946 will see its completion. New lines from Ufa to Omsk and from Ufa to Akmolinsk in central Siberia are now completed. These roads, together with new sections to run from Akmolinsk to Barnaul and Taishet, will be combined into a new trans-Siberian railway, running south of the present line from Ufa to Taishet, and north of Lake Baikal thereafter.⁸ Other new lines include one connecting Volochaevka (near Khabarovsk) with Komsomolsk, which is now in operation; two others, one running from Ulan Ude to Kiakhta on the Mongolian frontier and another connecting the Turk-Sib with the Chinese frontier, are both reported completed.

⁵ *Foreign Shipping News*, 1939, No. 52, Dec. 29; 1940, No. 36, Sept. 20; and *Foreign Commerce Weekly*, Oct. 19, 1940.

⁶ Molotov, V., "Report," *Industriya*, Mar. 16, 1939.

⁷ *Far Eastern Survey*, 1939, pp. 299-300; 1940, p. 182.

⁸ *The New York Times*, November 15, 1940.

Practically the entire length of Soviet railways is 5' gauge; in 1913, of 58,549 kilometers of line within present-day frontiers, 55,574 were of that gauge; in 1935, of the total 83,818 kilometers of line, as much as 82,721 kilometers were wide gauge. (References to "present-day frontiers" indicate the frontiers as of mid-1939, excluding territories acquired thereafter.) Electrified line has increased from some 128 kilometers in the 1930-34 period to 1,193 kilometers on December 31, 1937, and to over 1,800 kilometers in 1939. Total available locomotives on January 1, 1940, taking depreciation into account, are estimated at 20,214; and railway cars, both passenger and freight, on that date, including depreciation, were estimated at 728,050, in terms of 2-axle units.⁹ The total freight-carrying capacity of freight cars in 1929 was 8.7 million metric tons; this increased to 12.3 in 1935, 13.7 in 1936 and 15.7 in 1937.

Figures given in Table 8 include the whole Soviet Union; unfortunately, data by regions are not generally available. Freight transported from the Far Eastern economic region increased from 5.4 million metric tons in 1932 to 15.6 in 1937, or by 288.9%.¹⁰ This, however, is only a minor part of the total freight transported in the Soviet Union in 1937, which amounted to 517 million metric tons.

TABLE 8. U.S.S.R.: RAILWAY OPERATIONS¹¹

PERIOD	LENGTH ON JANUARY FIRST	PASSENGERS CARRIED		FREIGHT CARRIED	
		(In millions)	(In million passenger-kilometers)	(In million metric tons)	(In million ton-kilometers)
1913 (a)	58,549	184.8	25,215	132.4	65,696
1923	69,640	121.8	...	58.0	...
1927	75,753	254.2	...	135.9	...
1928	76,863	291.1	24,255 (b)	156.2	81,887 (b)
1929	77,010	365.2	...	187.6	113,000
1930-34					
Average	81,041	821.2	68,783	269.2	166,110
1935	83,818	919.1	67,936	388.5	258,066
1936	84,367	990.8	76,900	483.2	323,500
1937	85,280 (c)	1,142.0	90,900	516.7	355,000
1938 (d)	86,000	1,177.8	...	516.3	370,500
1939	...	...	...	...	...
1940	84,800 (e)	...	...	...	...
1941	...	...	...	...	...
1942	...	...	...	...	510,000 (f)

(a) In present-day frontiers, excluding Finnish, Polish, Baltic and Rumanian territories.

(b) Average, 1925-1929.

(c) On July 31, 1937.

(d) Preliminary.

(e) First track mileage on January 1, excluding Western Ukraine and White Russia (6,700 km.), Bessarabia, Northern Bukovina and regions ceded by Finland (2,300 km.) and Latvia, Estonia and Lithuania (7,000 km.), U.S. Dept. of Commerce, *Industrial Reference Service—Part 9—Motive Products and Equipment*, November 1940.

(f) Plan.

⁹ U.S. Dept. of Commerce, *Industrial Reference Service—Part 9—Motive Products and Equipment*, November 1940.

¹⁰ *Foreign Railway News*, 1940, No. 2, Jan. 12.

¹¹ *Narodnoye Khozyaystvo*, 1932, as quoted in first edition of *Economic Handbook; Sotsialisticheskoe Stroitelstvo SSSR.*; and *S.S.S.R.: Kapitalisticheskie Strany*, 1939; and *Planovoye Khozyaystvo*, No. 8, 1939, as quoted in *Foreign Railway News*, No. 3, Jan. 19, 1940.

Highways and Motor Vehicles: Highway statistics for the Soviet Union are not available in any detail. The most significant appear to be those in Table 9, which shows the increase in length of postal automobile roads since 1928. In 1913 postal roads of all kinds measured 170,900 kilometers and this increased to 350,000 in 1928. In that year roads of all types in the Union extended 1,238,200 kilometers, and apparently included some 36,000 kilometers of roads paved in stone. This grew to 1,368,000 kilometers of constructed roads on January 1, 1935, of which 1,146,400 were natural gravel and 221,600 were built roads. In 1939 it was reported that there were 2,706,800 kilometers (1,682,000 miles) of highways in the U.S.S.R. but details on types of construction were not available.¹²

TABLE 9. U.S.S.R.: LENGTH OF POSTAL AUTOMOBILE ROADS¹³
(In thousand kilometers)

1913	1928	1929	1930	1931	1932	1934	1935
0	10.9	14.6	20.7	23.4	24.0	54.3	84.6

Highway construction in the Far Eastern Region was financed with some 265 million rubles in the second Five-Year Plan. In 1935 an automobile road 250 miles long was completed, connecting Komso-molsk and Khabarovsk; another between Khabarovsk and Vladivostok, 500 miles in length, was also finished at the end of the same year. The latter forms part of the projected Vladivostok-Moscow turnpike. Highways and caravan trails some thousand miles long connect the Trans-

TABLE 10. U.S.S.R.: NUMBER OF REGISTERED MOTOR VEHICLES¹⁴

TYPE OF VEHICLE	1925-29 AVERAGE	1930-34 AVERAGE	1935	1936	1937	1938	1939	1940
Passenger cars	8,417	9,297(a)	33,500	44,100	52,000	65,096	85,418	102,000
Trucks	8,075	39,241	146,500	201,500	300,000	449,344	587,534	699,000
Motorcycles	6,550	7,961	..	..	..	6,000	6,000	..
Others	1,395	1,362	..	..	4,000	..	..	..
Total	24,437	57,861	180,000	245,600	356,000	520,440	678,952	801,000

(a) For 1930 the figure given is 10,000; for 1931, 2,610; and for 1932, 12,857. The 1931 figure appears to be a misprint.

¹² *The Statesman's Year-Book* and U.S. Dept. of Commerce, *Automotive World News*, Sept. 1, 1939.

¹³ *Sotsialisticheskoe Stroitelstvo*.

¹⁴ U.S. Dept. of Commerce, *Foreign Commerce Year Book*, except for the data for 1925 and 1926 which are quoted from *Statisticheskyy Spravochnik SSSR, 1928*, and the data for 1939 and 1940, from *Automotive World News*. It should be pointed out the less detailed figures given by certain Soviet sources differ somewhat from the above:

(In thousands)

TYPE OF VEHICLE	1913	1935	1936	1937	1938
Passenger cars, including others	..	63.8	70.5	95.5	..
Trucks	..	201.2	315.5	474.5	..
Total	10	265.0	386.0	570.0	760.0

These figures are quoted from *SSSR i Kapitalisticheskie Strany, 1939*, and *Sotsialisticheskoe Stroitelstvo*.

Siberian Railway at Ulan Ude and other points with Chahar, Shensi and Suiyuan; but although these routes are graded, they are not surfaced beyond Ulan Bator. *Other roads connect the Turk-Sib railway with China via Sinkiang and Kansu and with Outer Mongolia along the valley of the Irtysh.

Table 10 indicates the number of motor vehicles registered in the U.S.S.R. in the last fifteen years. The sharply increased use of motor vehicles in Soviet agriculture between 1933 and 1938 is illustrated in Table 11.

TABLE 11. U.S.S.R.: TECHNICAL EQUIPMENT OF AGRICULTURE¹⁶
(In thousands)

AT THE END OF THE YEAR:	1933	1934	1935	1936	1937	1938
Tractors,	210.9	276.4	360.3	422.7	454.5	483.5
Tractors, horsepower	3,209.2	4,462.8	6,184.0	7,672.4	8,385.0	9,256.2
Combines	25.4	32.3	50.3	87.8	128.8	153.5
Locomotives and inner combustion prime-movers	48.0	60.9	69.1	72.4	77.9	83.8
Threshers	120.3	121.9	120.1	123.7	126.1	130.8
Lorries	26.6	40.3	63.7	96.2	144.5	195.8
Passenger cars	4.0	5.5	7.6	7.6	8.2	9.6

Highway transportation is used in the Soviet Union but not to any great extent. It is largely managed in rather small units with resulting loss in efficiency.¹⁶

Airways: Soviet airways, which are government-operated, started in 1922 with 250 miles of lines. All parts of the Union are now connected by air and international services reach Berlin, Stockholm, Sofia, and Urumchi (in Sinkiang). In Siberia air lines now follow the great rivers, connect with distant goldfields, especially in Yakutia, and connect Ulan Ude and Ulan Bator. "Aviation to and from the arctic region is of considerable importance in the opening of the Soviet far north. . . . The planes engaged in polar flying during the navigation season of 1936 travelled 1,398,750 miles with a flying time of 12,900 hours. Passengers carried numbered 5,400 and freight transported weighed 1,980,000 pounds."¹⁷ An indication of the importance attached to the North is found in the fact that aviation in that region is under the control of the Chief Administration of the North Sea Route—the only exception to the rule that all civil aviation in the U.S.S.R. is under the authority of the Chief Administration of the Civil Air Fleet.¹⁸ Regular air mail flights were scheduled to begin in 1937 from Khabarovsk to Cape Wellen during the winter, when that region is otherwise quite isolated; and regular air services were scheduled to begin in December 1938 between Vladivostok and Moscow.¹⁹ Air connections exist be-

¹⁶ Stalin, Josef, "Report," *Bolshhevik*, March 1939.

¹⁷ *Foreign Commerce Weekly*, Nov. 2, 1940.

¹⁸ *Far Eastern Survey*, 1937, p. 79.

¹⁹ Smith, Sydney B., *Pacific Aviation*, unpublished manuscript.

²⁰ *Far Eastern Survey*, 1939, p. 2.

tween Kamchatka and Sakhalin, and the mainland; in 1940 two important new services were inaugurated, from Moscow to Irkutsk and from Moscow to Alma Ata, 4,538 and 3,576 kilometers long respectively.

Table 12 gives figures on the operations of commercial airways since 1925, excluding those of Deruluft, a half-German, half-Soviet concern which operated air services between the U.S.S.R. and Germany from 1922 until the end of 1936. With the improvement in diplomatic relations between these countries, service was resumed early in 1940, but Deruluft was not revived. An indication of the proportion of Soviet airways operations which take place in the eastern portions of the country is found in the fact that in 1938 "Far Eastern commercial pilots flew 2,860,000 miles carrying about 16,000 passengers and 1,422 tons of freight and mail."²⁰

Reliable reports, including Soviet sources, explain that the comparatively unfavorable operations in 1939 were caused by the use of part of the civil air fleet for services of a military character; probably this use took the form of urgent mobilization and other transportation rather than specifically military operations.

While complete 1940 data are not yet available, total ton-miles flown in that year numbered 20,293,200, a considerable increase over the 1939 figure of 15,783,600. Other estimated data for 1940 are included in Table 12.

TABLE 12. U.S.S.R.: OPERATIONS OF COMMERCIAL AIRWAYS²¹

YEAR	LENGTH OF AIRWAYS ON JANUARY 1ST (In kilometers)	KILOMETERS FLOWN (In thousands)	PASSENGERS CARRIED (In thousands)	TOTAL TRAFFIC, INCLUDING PASSENGERS, MAIL, BAGGAGE AND FREIGHT (In thousand ton-kilometers)	TOTAL TONS CARRIED	
1925	3,354	498	3.1	...	9,885	
1926	4,764	938	3.6	...	8,452	
1927	5,922	1,451	6.1	...	9,454	
1928	9,326	1,726	7.0	...	...
1929	15,426	2,751	9.3	440	...	
1930	26,316	3,962	12.0	729	...	
1931	27,716	5,241	19.0	1,294	...	
1932	31,934	5,413	27.2	1,571	...	
1933	34,761	9,304	42.7	2,898	Mail Freight	
1934	42,440	17,864	68.5	5,991	...	
1935	45,609	26,721	96.3	9,324	5,800	10,000
1936	50,384	...	178.3	21,926	6,200	32,800
1937	104,000	...	235.0	25,000	9,000	36,000
1938	93,300 (a)	...	292.7 (a)	30,300(a)	10,700	45,500
1939	135,000	...	307.0 (b)	28,000	11,517	39,654
1940 (c)	142,000	...	...	36,000	...	...

(a) Excludes Northern Sea Routes: total length in 1938, 12,300 kilometers; passengers carried, 12,270; total work, 1,435,000 ton-kilometers.

(b) Approximate.

(c) Estimated.

²⁰ *Ibid.*, 1940, p. 182.

²¹ *S.S.R. i Kapitalisticheskie Strany*, 1939; *Sotsialisticheskoe Stroitelstvo*; *Far Eastern Survey*, 1936, p. 125; *Foreign Commerce Weekly*, Nov. 2, 1940; *National Economic Plan of the U.S.S.R. for 1937*; *Pravda*, Aug. 18, 1938, and Aug. 18, 1940; State Plan Commission, *1938 Yearbook*, 1939; and *Civil Aviation*, Nos. 4-5, 1940, as quoted in Smith *op. cit.*

2. JAPAN

Shipping: Of the eight main shipping nations of the world only one, Japan, is an Asiatic nation, and from the point of view of total tonnage it is a poor third. In the 1931-1939 period, however, it made the largest gain of any nation, 31.7%, while Norway's and Germany's gains were 19.0% and 6.1% respectively. In a single year, June 30, 1938, to June 30, 1939, Japan's gross tonnage increased 12%. It should also be noted that Japan's merchant fleet is a fast and modern one.

TABLE 13. JAPAN'S PLACE IN WORLD SHIPPING¹
(In thousand gross tons, excluding sailing vessels and steamers under 100 tons)

COUNTRY	JUNE 30, 1931	JUNE 30, 1938	JUNE 30, 1939	INCREASE (+) OR DECREASE (-)
British Empire	23,127	20,719	21,002	—
U.S.A.	12,892	11,404	11,490	—
Japan	4,276	5,007	5,630	+
Norway	4,062	4,613	4,834	+
Germany	4,226	4,232	4,482	+
Italy	3,274	3,259	3,425	+(a)
The Netherlands	3,111	2,852	2,969	—
France	3,513	2,881	2,934	—
Total, including others	...	...	68,508	...

(a) In 1938 Italy's tonnage, 3,259,000, was still under the 1931 figure.

The increase of shipping tonnage depended largely on the purchase of foreign ships during the 1920's but this practice is now practically prohibited as it resulted in too large a proportion of old vessels. While in 1913, 23.6% of registered Japanese vessels by number and 13.1% by tonnage were less than 5 years old, in 1929 comparative figures were 15.6% and 9.2%. In the next few years a government-sponsored scrap and build program and heavy taxes levied on the purchase of old vessels so altered the situation that in 1936 (the latest date for which figures are available) 21.2% by number and 15.4% by tonnage were less than five years old. In other words, the modernity of Japan's merchant marine, from the point of view of tonnage, was proportionately a little greater than before the first World War. Vessels having a speed of over 15 knots increased in number from 124 in 1929 to 208 in 1936, and from 762,000 to 1,335,000 registered tons.

Table 14 indicates the share of foreign nations in Japan's shipping. A different classification of the nationality of Japan's overseas shipping is given in Table 15, which shows the value of goods carried by the vessels of each nation. In the pre-War period about half of Japan's trade was carried in her own vessels; in the early thirties, this proportion was something like three-quarters, and in 1936, the latest year for which data have been published, it had fallen to about two-thirds. The

¹ Lloyd's Register of Shipping, as quoted in *Japan-Manchukuo Year Book*, 1940, p. 215, and *Foreign Shipping News*, 1939, No. 35, Sept. 1.

TABLE 14. JAPAN: TONNAGE OF STEAM VESSELS ENTERED FROM FOREIGN COUNTRIES, BY NATIONALITY²
(In thousand tons and percentages of total tonnage)

NATIONALITY	1909-13	1925-29	1930-34	1935	1936	1937	1938	1939
	AVERAGE	AVERAGE	AVERAGE	Tonnage%	Tonnage%	Tonnage%	Tonnage%	Tonnage%
Japanese	10,170 47.8	32,873 66.0	37,950 63.5	43,932 59.5	45,573 59.5	41,161 56.5	36,659 58.9	44,020 67.2
Kwanrunge	.. ..	.. ..	3,522 5.9	3,531 4.8	3,941 5.1	3,318 4.6	2,065 3.3	2,608 4.0
Chinese	48 .2	38 .1	356 .6	1,806 2.4	3,340 4.4	3,933 5.4	2,311 3.7	1,618 2.5
Hongkong	.. ..	.. ..	361 .6	484 .7	530 .7	527 .7	480 .8	431 .7
British	6,394 30.0	8,935 17.9	7,996 13.4	10,656 14.4	10,497 13.7	11,053 15.2	9,943 16.0	7,311 11.2
Canadian	.. ..	.. ..	710 1.2	742 1.0	720 .9	659 .9	565 .9	642 1.0
French	344 1.6	640 1.3	482 .8	298 .4	310 .4	343 .5	282 .5	169 .3
German	1,516 7.1	1,084 2.2	1,351 2.3	1,927 2.6	1,687 2.2	1,637 2.2	1,460 2.3	1,062 1.6
Netherland (incl. Nether- lands Indian)	184 .9	1,090 2.2	1,280 2.1	1,532 2.1	1,465 1.9	1,459 2.0	1,319 2.1	1,199 1.8
Norwegian	259 1.2	614 1.2	1,251 2.1	2,876 3.9	3,138 4.1	3,646 5.0	3,377 5.4	2,477 3.8
U.S.A.	1,346 6.3	3,611 7.3	3,386 5.7	3,750 5.1	3,080 4.0	2,419 3.3	1,162 1.9	1,050 1.6
Other	1,027 4.8	914 1.8	1,144 1.9	2,270 3.1	2,367 3.1	2,727 3.7	2,604 4.2	2,923 4.4
Total	21,288	49,799	59,789	73,804	76,648	72,882	62,237	65,510

TABLE 15. JAPAN: VALUE OF GOODS CARRIED IN OVERSEAS TRADE, BY NATIONALITY OF CARRYING VESSEL (Including Sailing Vessels)³
(In million yen)

IN VESSELS OF THE FOLLOWING NATIONS		1909-13	1925-29	1930-34	1935	1936
		AVERAGE	AVERAGE	AVERAGE		
Japan	Exports	244.4	1,511	1,148	1,697	1,827
	Imports	236.5	1,490	1,045	1,549	1,716
Kwantung	Exports	..	..	..	53	47
	Imports	..	..	..	48	60
China	Exports	0.4	0	2	22	36
	Imports	0.5	1	4	30	61
Hongkong	Exports	..	..	..	22	21
	Imports	..	..	..	..	..
Great Britain	Exports	124.5	299	151	215	228
	Imports	191.2	417	237	315	346
France	Exports	31.9	24	11	30	33
	Imports	9.0	20	7	7	8
Germany	Exports	42.2	6	18	44	46
	Imports	55.2	93	62	91	111
Netherlands	Exports	2.1	32	3	11	13
	Imports	5.7	37	9	12	9
Norway	Exports	2.0	2	16	43	72
	Imports	2.3	43	73	127	172
Denmark	Exports	0.1	0	9	22	18
	Imports	3.0	12	19	33	42
United States	Exports	39.5	167	106	146	113
	Imports	17.4	157	96	131	110
Other countries	Exports	6.9	50	145	194	234
	Imports	26.5	63	130	128	128
Total	Exports	494.0	2,091	1,609	2,499	2,688
	Imports	547.3	2,333	1,682	2,471	2,763

² Financial and Economic Annual of Japan; and Monthly Returns of the Foreign Trade of Japan.

³ Financial and Economic Annual of Japan.

greater share carried in Japanese bottoms in the depression would appear to reflect an effort to conserve foreign exchange. While this effort was continued in 1935 and 1936 (although the situation was less pressing), the increases in the value both of the total trade and of that carried in Japanese vessels in those years were evidences that the volume of business was expanding faster than Japan's ability to carry that increase in her own ships.

Japanese shipping is controlled by the Shipping Control Committee, which is in charge of rates, and the Central Maritime Transportation Control Association, which has jurisdiction over operations.⁴ Greatly increased traffic resulting from Sino-Japanese hostilities reduced the Japanese tonnage assigned to ocean routes from 1,680,000 in 1936 to 1,400,000 in 1940. This situation was intensified by the withdrawal of large portions of British, Dutch, Danish and Scandinavian tonnage from the Pacific Ocean as a result of the war developments in 1940. In view of the increased shipping activity favored by the Japanese government, restrictions on importing and chartering tonnage were being relaxed toward the end of 1940.⁵

Railways: The Japanese railway system started in 1872; in 1937 it was still almost wholly steam operated. Japanese railways are narrow gauge, i.e., 3'6" wide. In 1937, of 17,422 kilometers of state lines worked, 15,293 kilometers were single track. The main railway lines are owned and operated by the state which purchased them in 1907, while minor and feeder lines are under local management, but local lines receive certain government subsidies. In 1938, 246 local lines operated 6,824 kilometers of line. A large proportion of Japan's freight trade is water borne. Of the 87 million metric tons carried by the state railways in 1938, 38.5 million, or 44.1%, were accounted for by coal shipments. While the proportion of passengers to freight carried is very high on Japan's railroads, the average passenger journey was only 24.8 kilometers on the state and 8.7 kilometers on the local lines in 1937. Both state and private lines continued to operate at a profit from 1928 to 1937. Statistics on the operation of state and local lines are given in Table 16.

As was the case with shipping, railway operations have greatly increased as a result of Sino-Japanese hostilities. This is apparent in the 1938 figures given in Table 16; comparative data for the first ten months of 1938 and 1939 given in Table 17 indicate that the trend is continuing. While no indication is given as to whether or not these figures cover the operations of auxiliary services such as motor trucks, buses, ships and ferries, a comparison with fiscal year totals for 1937 and 1938 would seem to indicate that the auxiliary services are included. The monthly average volume of revenue freight carried by the Japanese State Railways increased from 4,972,000 metric tons for the 1921-25 average, to 7,936,000 in 1938 and 8,549,000 in the first 11 months of 1939. Although certain railway statistics have been regarded as military secrets since October 1939, it is reported that in 1940 passenger traffic had

⁴ *Foreign Commerce Weekly*, Jan. 25, 1941.

⁵ *Foreign Shipping News*, 1940, No. 22, May 31.

increased 60% over 1936, and that April 1940 showed a 30% increase over the same month of 1939. Resulting serious traffic congestion has caused the government railways to reverse their policy of encouraging passenger travel.⁶

TABLE 16. JAPAN: RAILWAY OPERATIONS⁷

YEARS ENDING MARCH 31.	TYPE OF LINE	LENGTH OF LINE OPEN TO TRAFFIC (In kilometers)	PASSENGERS CARRIED (In millions)	GOODS HAULED (In thousand metric tons)
1909-1913 Average	State Lines	7,821	140	27,339
	Local "	901	27	2,642
	All "	8,722	168	29,981
1925-1929 Average	State Lines	12,941	738	75,507
	Local "	5,256	277	21,292
	All "	18,198	1,015	96,779
1930-1934 Average	State Lines	14,905	819	67,121
	Local "	6,963	431	23,626
	All "	21,868	1,250	90,746
1935	State Lines	16,427	914	77,478
	Local "	7,088	500	26,327
	All "	23,516	1,413	103,805
1936	State Lines	17,030	985	81,039
	Local "	7,098	532	28,130
	All "	24,128	1,517	109,169
1937	State Lines	17,422	1,042	89,342
	Local "	7,019	576	30,059
	All "	24,441	1,634	119,401
1938	State Lines	17,934 (a)	1,009 (b)	87,294 (b)
	Local "	6,824 (a)	...	...
	All "	24,758 (a)	...	...
1939	State Lines	...	1,522 (b)	97,440 (b)
	Local "	...	...	...
	All "	...	...	...

(a) *Japan-Manchoukuo Year Book*, 1940, pp. 195, 197. These data represent operating lines.

(b) *The Oriental Economist*, Sept. 1940, p. 575.

TABLE 17. JAPAN: GOVERNMENT RAILWAYS, COMPARISON OF RESULTS IN FIRST TEN MONTHS OF CALENDAR YEARS 1938 AND 1939⁸

ITEM	1938	1939	% OF INCREASE
Passengers carried (in millions)	1,084	1,279	17.9 (a)
Freight loaded (in thousand metric tons)	77,516	86,859	12.0
Freight discharged (in thousand metric tons)	84,828	94,458	11.3

(a) Figure as given in source, 10.6%, apparently a misprint.

Highways and Motor Vehicles: Except in the vicinity of the larger cities, Japan lacks good roads. Recent figures on Japanese roads are not

⁶ *Foreign Commerce Weekly*, Nov. 2, 1940; *Foreign Railway News*, 1940, No. 7, Feb. 16.

⁷ The Department of Finance, *Financial and Economic Annual of Japan*.

⁸ *Foreign Railway News*, 1940, No. 7, Feb. 16.

available, as they are considered matters of military importance. Although Japanese statistics do not furnish information on paved or unpaved roads, or suitability for automobile traffic, the designation of national and prefectural roads as "routes" and of municipal and village roads as "chemins" in official government publications⁹ seems to indicate that the latter are not primarily designed for motor vehicle traffic although a considerable proportion can carry motor vehicles. The widths of national and prefectural highways are to be more than 24 and 18 feet respectively, those of important municipal and village roads more than 18 and 12 feet. Table 18 shows the development of Japanese roads from 1924 to 1935. In 1939, 957,000 kilometers of highways were reported in Japan, but no data were available for the different types of roads.¹⁰

TABLE 18. JAPAN: ALL ROADS¹¹
(In kilometers)

TYPE OF ROAD	1924	1927-29 AVERAGE	1930-34 AVERAGE	1935
National highways	8,181	8,253	8,196	8,108 (a)
Prefectural highways	91,730	97,382	100,206	103,904
Municipal roads	17,547	23,939	35,815	45,018
Village roads	915,643	814,179	810,285	807,377
Local roads	...	...	...	3,454
Total	1,033,101	937,743 (b)	959,610 (b)	971,442 (b)

(a) Given elsewhere on the same page as 8,463.

(b) Error not editor's.

Table 19 shows the motor car and other roads used as postal routes from 1929 to 1937.

TABLE 19. JAPAN: ROADS USED AS MAIL ROUTES¹²
(In kilometers)

YEAR ENDING MARCH 31	MOTOR CAR ROADS	OTHER ROADS
1929	10,808	16,691
1930	12,521	15,590
1931	13,472	14,484
1932	15,266	17,288
1933	16,648	16,594
1934	16,821	16,343
1935	17,215	15,855
1936	18,010	15,234
1937	19,909	14,781

The Japanese Postal Service had 80,344 kilometers of routes in 1937, 17,366 of which were water routes; 6,033 kilometers, air routes; 22,191,

⁹ Bureau de la Statistique Générale au Cabinet Impérial, *Resumé Statistique de l'Empire du Japon*.

¹⁰ *Automotive World News*, Sept. 1, 1939.

¹¹ *Japan-Manchoukeo Year Book*.

¹² *Ibid.*

railway; 64, other; 19,909, motor car roads; and 14,781, other roads. Beginning in 1907 with 16 motor vehicles, there were 4,683 passenger cars and 7,439 business cars registered in Japan by 1921.¹³ The growth of registrations between 1925 and 1938 is shown in Table 20.

TABLE 20. JAPAN: MOTOR VEHICLE REGISTRATIONS¹⁴

ON JANUARY 1	1925-29 AVERAGE	1930-33 AVERAGE	1935	1936	1937	1938	1940
Passenger cars	30,963	56,173	53,012	59,716	65,560	75,720	106,000
Trucks	10,624	30,976	41,441	46,871	53,170	70,707	50,000
Buses	5,558	9,802	25,359	26,672	28,151	29,334	29,800
Motorcycles	17,579(a)	35,419	500(b)	51,711	56,506	57,506	62,900
Total	64,724	132,370	120,312	184,970	203,387	233,267	248,820 (c)

(a) Three-year average, 1927-29.

(b) Apparently a misprint.

(c) Including 120 Diesel units.

In connection with passenger car figures, however, it should be noted that a Japanese source¹⁵ which gives a total of 74,008 "ordinary cars" at the end of 1935 divides these into 9,213 passenger cars and 64,795 taxicabs.

Commercial motor transportation is developing in Japan. Eighty-five motor truck companies carried 334,234 metric tons of freight in 1936-37, and 2,123 motor bus companies (about three-quarters of the bus carriers) transported over a billion passengers. The Department of Railways runs a motor car service which, in 1937, carried 8,944,321 passengers and 73,724 metric tons of freight.¹⁶

Airways: While airmail between Tokyo and Osaka started as early as 1925, the development of commercial aviation in Japan lagged behind that in other countries, until 1935, partly because the mountainous configuration of the country presented serious obstacles and partly because the comparatively short distances between important centers minimized the characteristic time-saving advantages of air transport. The greatest expansion began in 1937-38, coincident with the outbreak of hostilities, and took the form of the development of important air routes in the colonies and Japanese-dominated areas. A service to Formosa was inaugurated in 1936 as well as a one-day service from Tokyo to Mukden which was soon extended to Hsinking. Services to Sapporo and Tientsin began in 1937 and to Peking, Nanking, Canton and Palau in the mandated islands in 1938 and 1939; regular service began on the new Tokyo-Bangkok airmail route, 3,107 miles long, in 1940. At the end of 1938 the Japan Airways Company, a merger of the two main air companies, was established. It is a half-governmental company with

¹³ *Ibid.*

¹⁴ *Foreign Commerce Year Book*; and Motive Products Division, U.S. Dept. of Commerce. Figures for 1939 are omitted because they are identical with those for 1940, with the exception that the 1939 motorcycle figure is 63,000.

¹⁵ *The Japan Year Book*, 1939-1940, p. 581.

¹⁶ *Ibid.*, pp. 570, 581.

a practical monopoly on national and international civil air transportation. Table 21 illustrates the development of civil aviation and refers to routes taken over by the Japan Airways Company.

TABLE 21. JAPAN: GROWTH OF CIVIL AVIATION, NATIONAL AND INTERNATIONAL¹⁷

YEAR	LENGTH OF ROUTES (In kilometers)	AGGREGATE LENGTH OF FLIGHTS (In thousand kilometers)	PASSENGERS CARRIED (Number)	GOODS CONVEYED (In kilograms)	MAIL MATTER CONVEYED (In kilograms)
1929-30	2,575	1,020	2,755	2,444	8,594
1930-31	2,575	1,671	7,642	8,966	25,063
1931-32	2,575	1,753	6,766	32,414	40,871
1932-33	2,575	1,744	10,716	28,510	93,950
1933-34	2,575	1,715	10,992	28,049	219,560
1934-35	2,618	1,684	12,187	51,023	197,199
1935-36	4,228	1,833	10,822	67,497	263,960
1936-37	6,925	2,856	18,955	80,116	354,641
1937-38	10,306	5,126	47,342	248,607	591,158
1938-39	15,335	6,210	69,268	297,807	819,261

Table 22 furnishes a classification of air transportation by routes for the year 1938. It is noteworthy that the two Japan-Manchoukuo lines (Tokyo-Dairen and Tokyo-Hsinking), while forming only 27.5% of the total air routes in length, carried 47.9% of the passengers, 60.7% of the goods and 68.9% of the mail, and flew 47.3% of the cumulative distance flown by all Japanese air services. On the other hand, the two Japan-China lines, with 23.0% of the route length, carried but 13.8% of the passengers, 14.2% of the goods and 5.6% of the mails, and flew 11.0% of the cumulative distance.

TABLE 22. JAPAN: AIR SERVICES BY ROUTES, 1938¹⁸

ROUTE	DISTANCE (In kilometers)	CUMULATIVE FLIGHT DISTANCE (In thousand kilometers)	PASSENGERS CARRIED (Number)	GOODS CARRIED (In kilograms)	MAIL CARRIED (In kilograms)
Tokyo-Sapporo	940	408	3,404	3,167	24,298
Fukuoka-Taihoku (Formosa)	1,610	1,041	8,737	37,089	112,223
Tokyo-Dairen (Manchoukuo)	2,132	1,721	20,698	81,218	353,528
Tokyo-Hsinking (Manchoukuo)	2,320	1,355	14,574	102,547	217,833
Tokyo-Peking (China)	2,505	359	3,020	13,063	22,807
Fukuoka-Nanking (China)	1,220	359	7,119	29,990	23,529
Others	5,485	1,260	16,132	35,431	74,833
Total	16,212	6,503	73,684	302,505	829,051

¹⁷ *Ibid.*, p. 584.

¹⁸ *Japan-Manchoukuo Year Book*, 1940, p. 212.

3. MANCHURIA

Shipping: By far the largest proportion of the shipping calling at Manchurian ports since the establishment of Manchoukuo has been Japanese and Kwantungese, as indicated in Table 23. Total tonnage entering decreased steadily after 1935, but the proportion of Kwantung tonnage increased regularly and importantly from 1932 to 1938, dropping slightly in 1938. As Kwantung is Japanese territory, however, Kwantungese vessels should be included with Japanese. In 1938, therefore, Japan owned practically two-thirds of the shipping tonnage calling at Manchurian ports.

TABLE 23. MANCHURIA: STEAMER TONNAGE ENTERING MANCHURIAN PORTS, BY NATIONALITY¹
(In thousand tons and percentages of total tonnage)

NATIONALITY	1932-34 AVERAGE		1935		1936		1937		1938	
	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%
China	1,159	13.3	937	10.5	1,158	12.7	921	11.1	617	8.6
Germany	305	3.5	381	4.3	346	3.8	348	4.2	301	4.2
Great Britain	1,012	11.6	992	11.1	891	9.8	831	10.0	755	10.5
Japan	4,252	48.9	3,903	43.7	3,849	42.4	3,458	41.7	3,186	44.3
Kwantung	1,134	13.0	1,704	19.1	1,975	21.8	1,828	22.0	1,533	21.3
Manchoukuo	99	1.1	227	2.5	268	3.0	285	3.4	259	3.6
Netherlands	168	1.9	117	1.3	132	1.5	120	1.5	55	0.8
U.S.A.	206	2.4	189	2.1	85	1.0	51	0.6	7	0.1
Others	368	4.2	475	5.4	364	4.0	458	5.5	480	6.7
Total	8,703	100.0	8,925	100.0	9,068	100.0	8,299	100.0	7,193	100.0

At the end of September 1938 there were some 6,800 kilometers of inland waterways in Manchuria on which the Navigation Association operated 127 steamers totaling 51,883 tons as well as 273 tugboats of 74,945 tons, or a total tonnage of 126,828. Rivers are open to navigation only 7 months of the year. While South Manchurian rivers are shallow, most of the northern ones are navigable by steamer. The General Direction of State Railways, through the Harbin Direction for Navigation, supervises navigation on the Sungari, which, with the Amur, is of particular importance. Through other agencies all inland navigation is government-supervised. Goods transported on Manchurian rivers in 1937 amounted to 603,000 metric tons of exports and 670,000 metric tons of imports, or 1,273,000 metric tons of waterborne international trade.²

Railways: The Manchurian railway system, including 344 kilometers of the North Chosen line managed by the S.M.R. since 1936, extended 10,000 kilometers in 1939, of which 3,897 kilometers, or more than one-third, had been built since 1932. The Chinese Eastern Railway was

¹ *Annual Returns of the Foreign Trade of Manchoukuo; Monthly Returns of the Foreign Trade of Manchoukuo; Japan-Manchoukuo Year Book.*

² *Japan-Manchoukuo Year Book, 1940, p. 691.*

purchased from the Soviet Union in 1935 (final payment being made in January 1940), which added 1,732 kilometers to the state lines. The General Direction of Railways (Tetsudo Sokyoku) controls and supervises the operation of all railway lines. The S.M.R. uses the 4'8½" or standard gauge throughout all of its lines. The same gauge was adopted as standard by the state railways when the General Direction of Railways was organized, but much mileage had to be changed, including the whole Chinese Eastern Railways system. With the exception of unimportant feeder lines the Manchurian railway system was standard gauge by 1939. The S.M.R.'s main north-south line has been double tracked from Dairen to Hsinking, a distance of 704 kilometers. Practically all other lines are single track. Operations on Manchurian railways since 1934 are described in Table 24.

TABLE 24. MANCHURIA: GENERAL RAILWAY STATISTICS³

YEARS ENDING MARCH 31	1934	1935	1936	1937	1938	1939 (a)
Length of line (in kilometers)						
State Line	3,403	4,173	7,207	7,745	8,183	8,365
S.M.R. Line	1,291	1,291	1,291	1,291	1,291	1,291
N. Chosen Line	344	344	344	344	344	344
Total	5,038	5,808	8,842	9,380	9,818	10,000
Passengers carried (in thousands)						
State Line	7,869	8,815	13,280	17,107	19,818	28,876
S.M.R. Line	11,634	13,786	15,123	15,750	17,515	21,030
N. Chosen Line	747	1,611	1,718	2,149	2,441	3,060
Total	20,250	24,212	30,121	35,006	39,774	52,966
Goods carried (in thousand metric tons)						
State Line	8,918	11,872	14,956	18,658	20,955	24,314
S.M.R. Line	18,851	21,671	20,981	21,377	25,130	26,420
N. Chosen Line	519	1,123	1,474	2,089	2,433	...
Total	28,288	34,666	37,411	42,124	48,518	50,734

(a) Estimates.

The traffic increase between 1934 and 1939 shown in Table 24 is very great. Moreover, it is reported that from April 1 to September 30, 1939, the Manchurian railways handled 29,520,854 metric tons of freight which was a 27% increase over the same period in 1938. This very rapid increase has resulted in a serious shortage of freight cars. In early 1939, it was estimated that between five and six thousand were needed.⁴ In order to meet the traffic problems arising from the Sino-Japanese hostilities, eight representatives of major traffic institutions in the yen-bloc countries met in June 1939 to discuss the unification of the transport systems of Japan, China and Manchuria. Shortages of

³ *Ibid.*, p. 702.⁴ *Foreign Railway News*, 1939, No. 12, March 24, and No. 30, July 28; 1940, No. 7, Feb. 16.

rolling stock in all three countries, plus the greatly increased traffic, indicate that prompt relief of the problem is unlikely.

Highways and Motor Vehicles: All the principal cities of Manchuria are connected by roads but the country possesses only a scant length of paved highways. Under the First Five-Year Plan (1932-36) 8,992 kilometers of national highways were completed; the Second Five-Year Plan (1937-41) proposed the construction of 13,268 kilometers of national highways, of which 4,613 were completed in the first two years. In addition, the Second Five-Year Plan will also build 14,580 kilometers of local roads; the standard width for these roads is from 6 to 8 meters.

No figures on paved and unpaved roads, or suitability for motor vehicle traffic, are available. Automobile highways 18,527 miles long were reported for 1939 while at the end of 1937 there were 50,468 kilometers of roads in Manchuria, of which 10,773 (20%) were usable all year, 18,267 (36%) were unusable after rains, 15,723 (31%) were unusable in the rainy season—the summer—and 5,706 (12%) were usable in winter only.⁵ Table 25 shows the length and types of new roads built in Manchuria from 1932 to 1937.

TABLE 25. MANCHURIA: NEW ROADS CONSTRUCTED⁶
(In kilometers)

YEAR	NATIONAL	LOCAL	TOTAL
1932	708	...	708
1933	3,001	5,219	8,220
1934	2,632	2,138	4,770
1935	580	1,469	2,049
1936	2,071	1,486	3,557
1937	2,169	990	3,159
Total	11,161	11,301	22,462

At the end of 1936 there were 2,946 passenger cars, 261 motorcycles, 2,223 lorries and 168 other motor vehicles registered in Manchuria, a total of 5,598;⁷ these figures exclude Kwantung and the S.M.R. Zone. On January 1, 1940, 3,000 passenger cars, 6,000 lorries, 4,000 buses, 350 Diesel units and 1,000 motorcycles were reported, a total of 14,350.⁸

The whole motor transport industry is under the control of the Department of Communications. The General Direction of State Railways manages bus lines which are in competition with the railways or which play an important part in opening up undeveloped regions and are not paying propositions. Table 26 gives operating figures for both governmental and private bus lines. In 1934 there were 19 government bus lines and 32 private lines; in 1937 these had increased to 80 governmental and 123 private lines.

⁵ *Automotive World News*, Jan. 20, 1940, and *Japan-Manchukuo Year Book*, 1940, p. 686. Error not editor's.

⁶ *Ibid.*, p. 685. Some 2,445 kilometers of national roads were reported constructed in 1938, according to *The Japan Year Book*, 1939-1940, p. 1026.

⁷ *Japan-Manchukuo Year Book*, 1940, p. 689.

⁸ *Automotive World News*, May 20, 1940.

More recent figures are not exactly comparable to those in Table 26, but the emphasis placed on improved highway transport in Manchuria is indicated in the following data for the S.M.R. In 1938, 4,250,000 passengers and 39,000 metric tons of baggage were carried by S.M.R. bus lines; in 1939 these figures increased to 8,600,000 and 56,000 respectively. On March 31, 1939, S.M.R. passenger buses were operated on 14,076 kilometers of highways, as compared to 7,377 the previous year. By May 10, 1940, the total length of S.M.R. bus lines had increased to 20,007 kilometers.⁹

TABLE 26. MANCHURIA: MOTOR BUS TRANSPORTATION¹⁰

YEAR	LENGTH OF EXTENSION LINES (In kilometers)	LENGTH OF OPERATING LINES (In kilometers)	PASSENGERS CARRIED (In thousands)	GOODS CARRIED (In thousand metric tons)
Governmental lines				
1934	8,876	3,544	358	6,650
1935	9,935	4,366	515	5,103
1936	11,272	5,644	722	7,081
1937	13,103	5,104	1,132	38,066
Private lines				
1934	3,752	3,311	...	...
1935	4,693	4,125	34,278	16,742
1936	5,518	4,215	43,697	41,252
1937	6,922	...	72,821	...

Airways: The airways of Manchuria form a part of the north Asia network being organized by Japan. Commercial air services are managed by the Manchoukuo Aeronautical Company, established in 1932. The total length of the 13 air routes operated by this company in 1939 was 4,715 kilometers.¹¹ This figure apparently includes some duplication of routes, as well as some which are also flown by the Japan Airways Company, but it represents wholly domestic lines. No data on air traffic within Manchuria are available, the reader being referred to Table 22 for traffic returns on the Japan-Manchuria routes.

⁹ *Foreign Railway News*, 1939, No. 44, Nov. 3; 1940, No. 22, May 31, and No. 35, Aug. 30.

¹⁰ *Japan Manchoukuo Year Book*, 1940, p. 687.

¹¹ *The Japan Year Book*, 1939-1940, p. 1026.

4. KOREA

Shipping: The great majority of the shipping entering Chosen's ports is Japanese, as indicated in Table 27. The increase in the proportion of foreign shipping in 1939 reflects the shipping shortage occasioned by Sino-Japanese hostilities. There are some 1,300 kilometers of navigable rivers in Korea.

Railways: Beginning with 29 kilometers in 1899, the state railways of Chosen had increased to 4,070 kilometers in 1939, of which 329 kilometers, the North Chosen Line, have been operated by the S.M.R.

since 1936. The gauge used in Korea is the standard, 4'8½" gauge. In 1938 private railways had 1,328 kilometers of line open to traffic. Since 1911 Korean railways have connected directly with the S.M.R. Statistics for the operations of the private railways are not available. In 1939, 500 kilometers of new lines and 170 kilometers of double tracking were completed and opened to traffic. The greater part of the former were private feeder lines. Both government and private railways were very prosperous in 1939, gross government railway revenues from April 1 to December 31, 1939, having increased 33% over the corresponding period in 1938.¹

TABLE 27. KOREA: ENTRANCE OF STEAMERS INTO CHOSEN PORTS²
(In thousand tons and percentages of total tonnage)

YEAR	FOREIGN		JAPANESE		TOTAL
	Tonnage	%	Tonnage	%	Tonnage
1935	1,519	10.5	12,942	89.5	14,461
1936	1,649	10.8	13,624	89.2	15,273
1937	1,729	11.7	13,009	88.3	14,738
1938	1,937	13.7	12,230	86.3	14,167
First half: 1938	880	12.2	6,321	87.8	7,201
" " 1939	957	14.2	5,789	85.8	6,746

TABLE 28. KOREA: STATISTICS OF GOVERNMENT RAILWAYS³

YEARS ENDING MARCH 31	LENGTH OF LINE OPEN TO TRAFFIC (In kilometers)	PASSENGERS CARRIED (In thousands)	GOODS CARRIED (In thousand metric tons)
1914	1,556	4,995	1,389
1925-29 Average	2,251	19,306	4,968
1930-34 Average	2,927	21,276	6,325
1935	3,077	25,615	7,682
1936	3,390	29,344	8,668
1937	3,576	33,708	9,980
1938	3,735	35,906	11,370

TABLE 29. KOREA: MOTOR VEHICLE REGISTRATIONS⁴

ON JANUARY 1	1929	1930-33	1935	1936	1937	1938	1939	1940
Passenger cars	666	1,374	2,140	2,290	2,480	2,600	2,700	2,250
Trucks	529	1,333	2,557	2,957	3,290	3,900	3,895	3,500
Buses	1,360	1,898	2,452	2,482	2,700	3,000	2,900	2,500
Motorcycles	735	917	980	1,000	1,300	1,800	2,100	2,500
Total	3,290	5,522	8,129	8,729	9,770	11,300	11,600 (a)	10,750

(a) Includes 5 Diesel units.

¹ *Foreign Railway News*, 1940, No. 22, May 31.

² *Japan-Manchoukwo Year Book*.

³ *Financial and Economic Annual of Japan and Japan-Manchoukwo Year Book*.

⁴ U.S. Dept. of Commerce, *Foreign Commerce Year Book*, and *Automotive World News*, May 20, 1940.

Highways and Motor Vehicles: At the end of 1937, the total length of highways in Chosen was 27,731 kilometers of which 3,241 were first-class roads, 9,966 were second-class roads, and 14,524 kilometers were third-class roads, while in 1939 30,646 kilometers or 19,043 miles of highways were reported.⁵ Table 29 gives the numbers of motor vehicles registered in Korea on January 1 from 1929 to 1940.

⁵ *The Japan Year Book*, 1930-40, p. 925, and *Automotive World News*, Jan. 20, 1940.

5. FORMOSA

Railways: While a little less than a third of the railway mileage in Formosa belongs to the government lines, they accounted for about 85% of the passengers and 60% of the goods carried by all lines in 1938. The private lines were constructed mainly by sugar refining companies for transporting cane and other materials. This explains the relatively much smaller proportion of passengers carried by them. The main government rail freight was coal, totalling 1,400,000 tons in 1938, with sugar and rice next in importance. As has been the case in Japan, the great traffic increases in recent years have brought about a serious freight car shortage and congestion at every freight station.

TABLE 30. FORMOSA: OPERATIONS OF GOVERNMENT AND PRIVATE RAILWAYS¹

YEAR ENDING MARCH 31	1914	1930	1934	1935	1936	1937	1938
Lines open to traffic (in kilometers)							
Government	1,307	998	1,003	999	1,002	1,002	1,040
Private	...	2,156	2,292	2,352	2,371	2,441	2,515
Total	...	3,154	3,295	3,351	3,373	3,443	3,555
Passengers carried (in thousands)							
Government	4,881	20,580	17,351	18,344	20,723	21,680	23,290
Private	...	4,362	2,981	3,189	3,838	4,069	4,196
Total	...	24,942	20,332	21,533	24,561	25,749	27,486
Goods hauled (in thousand metric tons)							
Government	1,184	5,209	5,154	5,796	6,330	7,208	7,345
Private	...	3,914	2,744	2,956	4,418	4,716	4,870
Total	...	9,123	7,898	8,752	10,748	11,924	12,215

Highways and Motor Vehicles: Japanese statistics do not give information on types of roads in Formosa. Table 31 merely divides roads according to width. An American source reports a total of 153 kilometers of macadam, asphalt or concrete roads in 1939, with 15,940 kilometers of improved earth, sand, clay or gravel and 1,609 kilometers of

¹ *Japan-Manchoukuo Year Book*, 1940, p. 545, for all figures except those for 1913-14, quoted from *Financial and Economic Annual of Japan*, 1922, p. 225. *Foreign Railway News*, 1940, No. 16, April 19, reports 7,861,808 metric tons of freight carried by the government line in 1938-39.

unimproved, non-surfaced roads, making up a total of 17,702 kilometers for that year.² The same source reports a total of only 4,710 motor vehicles registered in Formosa as of January 1, 1940, including 1,390 passenger cars, 1,368 buses, 1,242 trucks and 710 motorcycles.

TABLE 31. FORMOSA: ROADS ACCORDING TO WIDTH³
(In kilometers)

YEAR	LESS THAN 3.65 METERS	FROM 3.65 METERS TO 7.27 METERS	MORE THAN 7.27 METERS	TOTAL
1899	6,049	521	164	6,734
1914	8,823	2,959	281	12,063
1934	6,743	4,939	4,223	15,905
1935	6,938	5,107	4,456	16,501
1936	2,949	3,690	10,341	16,980

² *Automotive World News*, May 20, 1940; Sept. 1, 1939.

³ *Japan-Manchoukuo Year Book*, 1940, p. 543.

6. CHINA

Shipping: China's foreign and domestic shipping, by nationality, is shown in Table 32 on the opposite page.

The decline in American participation in China's foreign shipping after 1935 was caused partly by hostilities and partly by American subsidy adjustments. Japan is the only country which, both relatively and absolutely, has increased its part in China's foreign shipping. This is particularly apparent for the first half of 1940. The continuation of hostilities, with the concomitant necessity for the transportation of large military personnel and supplies, is an important factor in Japan's preponderant position in China's shipping. In both foreign and domestic shipping China has lost very heavily in recent years, although part of the decrease in her share in her own domestic shipping is accounted for by the fact that the 1938 and 1939 data exclude junks. In 1937, of the 19,797,000 tons of Chinese shipping engaged in this trade, 1,154,000 represented junks.

The closure of many Chinese ports by the Japanese blockade is evidenced in the 77% decrease in domestic tonnage between 1935 and 1939. Although Japan's position in China's domestic shipping receded in the first war years, the formation by several Japanese companies of a corporation to exploit this trade resulted in the sharp increase, both relatively and absolutely, of Japanese tonnage in 1939. German, Norwegian and Dutch tonnage in domestic Chinese trade also increased in these years, the very large increase in the former resulting from the return, through Japanese intervention, to a German firm of ships sold to the Chinese government which had been unable to complete payment for them. While British tonnage in this trade has decreased since 1937, Britain's relative share has actually grown.

TABLE 32. CHINA: NATIONALITY OF SHIPPING¹
(In thousand tons and percentages of total tonnage)

	1909-13 AVERAGE Tonnage %	1925-29 AVERAGE Tonnage %	1930-34 AVERAGE Tonnage %	1935 Tonnage %	1936 Tonnage %	1937 Tonnage %	1938 Tonnage %	1939 Tonnage %	JAN. TO JUNE 1939 Tonnage %	JAN. TO JUNE 1940 Tonnage %
A. CHINA: SHIPS ENTERED AND CLEARED IN FOREIGN TRADE										
American	567 2.2	3,997 9.0	3,707 8.0	3,712 7.7	3,121 6.9	1,663 4.7	329 1.1	769 2.6	345 2.2	737 5.5
British	9,948 38.0	14,404 32.6	17,754 38.2	18,542 38.5	16,158 35.7	12,941 36.5	12,350 42.0	8,297 27.8	4,843 30.5	2,342 17.6
Chinese (incl. junks)	4,108 15.7	3,659 8.3	4,995 10.8	7,623 15.8	7,335 16.2	5,791 16.3	2,243 7.6	2,226 7.5	1,080 6.8	1,001 7.5
French	1,107 4.2	1,339 3.0	1,200 2.6	1,253 2.6	1,237 2.7	1,046 3.0	1,006 3.4	804 2.7	433 2.7	343 2.6
German	2,710 10.3	1,449 3.3	1,386 3.0	1,871 3.9	1,965 4.3	1,587 4.5	1,449 4.9	1,187 4.0	855 5.4	..
Japanese	5,192 19.8	15,148 34.3	11,536 24.8	9,197 19.1	9,419 20.8	6,797 19.2	6,485 22.0	11,994 40.2	5,709 36.0	6,861 51.6
Netherland	256 1.0	1,464 3.3	1,675 3.6	1,359 2.8	1,415 3.1	1,159 3.3	998 3.4	1,026 3.4	552 3.5	532 4.0
Norwegian	..	..	1,923 4.1	1,839 3.8	1,966 4.3	1,891 5.3	1,848 6.3	1,550 5.2	920 5.8	693 5.2
Others	2,323 8.9	2,723 6.2	2,278 4.9	2,710 5.6	2,618 5.8	2,568 7.3	2,722 9.3	1,972 6.6	1,119 7.1	792 6.0
Total	26,211 100.0	44,183 100.0	46,454 100.0	48,106 100.0	45,234 100.0	35,443 100.0	29,430 100.0	29,825 100.0	15,856 100.0	13,301 100.0
B. CHINA: SHIPS ENTERED AND CLEARED IN DOMESTIC TRADE										
American	204 0.3	2,294 2.5	2,053 2.1	1,075 1.1	650 0.7	396 0.7	98 0.3	56 0.3	..	..
British	25,891 41.8	34,558 37.1	41,111 41.4	41,571 43.4	41,187 41.3	23,165 42.4	16,210 54.6	10,936 49.5	..	..
Chinese	14,395 23.2	26,229 28.2	29,834 30.0	34,333 35.8	36,836 36.9	19,797 36.3	4,691 15.8	2,012 9.1	..	..
French	2,066 3.3	727 0.8	328 0.3	313 0.3	360 0.4	388 0.7	349 1.2	262 1.2	..	..
German	4,019 6.5	1,906 2.0	1,570 1.6	858 0.9	659 0.7	502 0.9	1,197 4.0	940 4.3	..	..
Japanese	14,103 22.8	23,093 24.8	18,215 18.3	12,722 13.3	15,495 15.5	6,018 11.0	2,259 7.6	3,762 17.0	..	..
Netherland	114 0.2	916 1.0	1,336 1.3	1,083 1.1	1,136 1.1	845 1.6	649 2.2	788 3.6	..	..
Norwegian	..	..	3,296 3.3	2,725 2.8	2,582 2.6	2,316 4.2	1,722 5.8	1,704 7.7	..	..
Others	1,169 1.9	3,471 3.7	1,578 1.6	1,193 1.2	880 0.9	1,167 2.1	2,487 8.4	1,642 7.4	..	..
Total	61,961 100.0	93,094 100.0	99,321 100.0	95,873 100.0	99,785 100.0	54,594 100.0	29,662 100.0	22,102 100.0	..	..
C. HONGKONG: FOREIGN-GOING VESSELS ENTERED AT PORTS IN THE COLONY										
British	5,263(a) 27.6(a)	5,918 28.9	6,235 30.0	5,988 29.9	5,875 32.4	..	..	..	..	..
" river steamers	3,642(a) 19.0(a)	3,882 18.9	3,804 18.3	3,364 16.8	3,061 16.9	..	..	..	..	..
American	1,550(a) 8.1(a)	1,554 7.6	1,452 7.0	1,284 6.4	1,102 6.1	..	..	..	..	..
Chinese	497(a) 2.6(a)	487 2.4	1,017 4.9	914 4.6	534 2.9	..	..	..	..	..
" river steamers	259(a) 1.4(a)	431 2.1	390 1.9	524 2.6	369 2.0	..	..	..	..	..
" junks	1,525(a) 6.7(a)	1,417 6.9	1,155 5.6	1,054 5.3	801 4.4	..	..	..	..	..
Dutch	896(a) 4.5(a)	935 4.6	897 4.3	917 4.6	887 4.9	..	..	..	..	..
French	874(a) 4.4(a)	598 2.9	631 3.0	635 3.2	612 3.4	..	..	..	..	..
Japanese	2,908(a) 15.3(a)	2,936 14.3	2,668 12.8	2,822 14.1	2,179 12.0	..	..	..	..	..
Norwegian	642(a) 3.4(a)	855 4.2	918 4.4	979 4.9	978 5.4	..	..	..	..	..
German	548(a) 2.9(a)	586 2.9	688 3.3	710 3.5	739 4.1	..	..	..	..	..
Total, including others	19,041(a) 100.0(a)	20,496 100.0	20,768 100.0	20,018 100.0	18,132 100.0	..	..	..	..	..

(a) Averages for 1927-1929.

¹ The Maritime Customs, *The Trade of China*, Shanghai, annual, and *Monthly Returns of the Foreign Trade of China*. Chinese shipping includes junks, except for domestic trade in 1938 and 1939. The 1937 domestic shipping figures for Wuhu, Nanking, Chinkiang and Soochow and the 1939 domestic shipping figures for Kiukiang and Wuchow were not obtainable, owing to local hostilities. Data for Hongkong from *Hongkong Blue Book*, Hongkong, annual.

Another effect of Sino-Japanese hostilities on Chinese shipping has been the change in Shanghai's relative position. In 1933 entrances and clearances in foreign trade through Shanghai accounted for 43.6% of the total Chinese tonnage; this dropped to 35.8% in 1936 and 31.9% in 1937. While actual shipping tonnage going through Shanghai in 1938 showed a further decrease, relatively to China's entire foreign trade it increased to 34.6%. In 1939, it rose sharply to 50.3%—a result of the increased use of the port for Japanese military and commercial purposes; while in the first six months of 1940 it dropped slightly to 48.5%. Canton's part in this trade, on the other hand, dropped from 10.1% in 1938 to a mere 0.3% in 1939. Junks remain an important item in China's river and coastal trade and carry a small amount of merchandise to nearby foreign countries. Between 1882 and 1930 the increase in the tonnage of junk trade was 2,734%, whereas the increase in steamship tonnage was 842%. In 1882, 1,324 junks with a total tonnage of 108,000 tons cleared Customs, the corresponding figures for 1930 being 40,823 junks of 3,061,000 tons. This trend continued and in 1936 the comparable figures were 75,527 junks of 4,816,000 tons. In 1930, entrances and clearances of Chinese-owned foreign-type vessels enumerated by the Maritime Customs numbered 41,133, with a tonnage of 26,138,000; in 1936 these were respectively 73,497 and 39,355,000. Figures for 1932 through 1935 are not given separately. Table 33 gives the percentages of the foreign, domestic and total shipping of China formed by Chinese junks and Chinese-owned foreign-type vessels.

TABLE 33. CHINA: PROPORTION OF CHINESE-OWNED SHIPPING TO TOTAL SHIPPING TRADE^a
(In percentages)

CHINESE-OWNED SHIPPING IN:	FOREIGN TRADE	DOMESTIC TRADE	TOTAL TRADE
1936 Junks	7.47	1.44	3.32
Foreign type	8.75	35.47	27.14
1937 Junks	8.02	2.11	4.44
Foreign type	8.32	34.15	23.98
1938 Junks	4.93	(a)	2.46
Foreign type	2.69	15.82	9.28
1939 Junks	5.17	(a)	2.97
Foreign type	2.29	9.11	5.19

(a) Not available.

Railways: Statistics for the operations of the Chinese Government Railways prior to the Sino-Japanese hostilities are given in Table 34. It is noteworthy that, although length of line and length of track decreased in the depression, mainly as a result of the loss of the Manchurian lines, freight carried increased in each year and by 1936 was more than double the figure for 1915.

Information on railroad operations since 1937 is very difficult to secure. With the loss of Canton and Hankow, China was left with

^a *Trade of China.*

only one short, narrow-gauge railway in full operation throughout its length in all the great northwestern and southwestern provinces—the Haiphong-Yunnanfu (Kunming) line. By the end of July 1939 there were 4,546 miles of Japanese-controlled railways in China and about 2,285 held by the Chinese.³

Railways in the Japanese-occupied zones have been taken over by two Japanese concerns, the Central China Railway Company and the North China Railroad. In retreating, the Chungking government in many cases removed rolling stock and dismantled sections of line which were then utilized in new railway construction in central, northwestern and southwestern China. Indeed, railway building in free China has been stimulated to a remarkable extent by hostilities and the resultant need for effective transportation facilities in regions in which railway and highway construction had been neglected in the twenties and early thirties.

TABLE 34. CHINA: STATISTICS OF GOVERNMENT RAILWAYS^a
(Figures prior to 1932 include Manchurian lines)

PERIOD COVERED (Calendar years until 1933-34; fiscal years ending June 30 thereafter)	LENGTH OF LINE (In miles)	LENGTH OF TRACK (In miles)	PASSENGERS CARRIED (In thousands)	FREIGHT CARRIED (In thousand metric tons)
1915	3,383	4,141	26,025	15,910
1925-29 Average	5,165	6,657	33,068	18,030
1930	4,893	6,376	42,957	22,953
1931	4,854	6,307	43,448	25,224
1932	4,301	5,820	42,824	26,065
1933	4,471	5,833	45,857	27,076
1933-34	4,471	5,836	45,841	29,113
1934-35	4,511	5,911	45,646	32,959
1935-36 (a)	4,609	6,054	46,920	34,364

(a) In addition, approximately 1,610 miles were operated by private and provincial interests.

In the Southwest the Yunnan-Burma highway is being complemented by the construction of the Yunnan-Burma railway; 400 kilometers of its 860 kilometer roadbed had been completed by May 1940.⁵ While the original plan for this railway necessitated construction of the Burmese section from Lashio to the border by the Burmese authorities, the latter have not started building and it is now planned to complete the line as far as Hsiangyung, entirely at the charge of the Chinese government.⁶ The Suifu-Kunming railway, 773 kilometers long, now under construction, will open up the richest and most populous of the southwestern provinces. Some 80 kilometers of these two lines were in operation in November 1940 and an additional 180 kilometers were expected to be in commission by February 1941.⁷ In addition to other railroads under construction throughout China, the greatest railway pro-

³ *Foreign Railway News*, 1939, No. 40, Oct. 6.

⁴ U.S. Dept. of Commerce, *Foreign Commerce Yearbook*. Most of China's railroads are single track.

⁵ *Foreign Railway News*, 1940, No. 30, July 26.

⁶ Chi Ch'ao-ting, *War-Time Economic Development in China*, unpublished manuscript.

⁷ *Foreign Commerce Weekly*, January 11, 1941.

ject in the northwest is still tentative; it is the Kansu-Sinkiang railway, some 1,810 kilometers long, which would connect Alma-Ata on the Turk-Sib railway with Lanchow. The latter is connected by highway with Paochi, the railhead of the Lunghai railway which may ultimately be extended to Lanchow.

While the Chungking government has continued to meet the foreign obligations of railways in free China, those in occupied territory are in default. Some 75% of the foreign investment in Chinese railways was British.

The North China Railroad operates the large majority of Japanese-controlled Chinese railways—some 5,530 out of a total of 6,195 kilometers. The principal North China railways accounted for 77% of the total cost of the Chinese National Railways in 1936, and carried 42% of the passengers and 87% of the tonnage.⁸ The total tonnage now moving over these lines is lower than the 1936 figures because of serious breaks in the Japanese control of such lines as the Peiping-Hankow and Lunghai railroads, sections of which are still in Chinese hands. While the North China lines earned \$88 million, or 90% of the total Chinese freight revenue, in 1936, it is estimated that freight revenue in 1940 will amount to only \$50 million. In spite of acute shortages of rolling stock, the North China Railways carried larger volumes of passenger and freight traffic in the first half of 1940 than in the same period in 1939. In the year ending March 31, 1940, 30,525,084 metric tons were hauled on this line, a 50% increase over 1939. Some 42% of the 1939-40 freight tonnage, however, represented either military or official traffic.

Data for the Central China Railway Company are meager. Some 221,000 and 178,000 tons of freight were hauled respectively in July and August 1940, while revenues dropped from 1,058,000 yen to 865,000 yen.⁹

One of China's most important transport routes is the non-Chinese railway running from Kunming to Haiphong in French Indo-China. This is the only railroad which connected free China with a non-belligerent port throughout the first 3 years of the Sino-Japanese war. Despite interruptions in the last year, traffic over this road increased enormously as other Chinese export routes were closed. For details on the operations of this line the reader is referred to the section on Indo-China.

Highways and Motor Vehicles: The construction of roads suitable for motors outside the foreign concessions has taken place almost entirely since 1921 when it was estimated that less than 100 miles of improved roads existed in China. National roads are constructed under the auspices of the National Economic Council, whose activities began in 1932. In 1939, according to American estimates,¹⁰ there were some 98,000 kilometers of roads, including 74,000 of improved earth and 24,000 of macadam. About one-third of these, however, were in East China, had suffered severely from hostilities and probably were not

⁸ *Foreign Railway News*, 1940, No. 20, May 17.

⁹ *Foreign Commerce Weekly*, 1940, Oct. 5, Oct. 26, Nov. 9; *Foreign Railway News*, 1940, No. 20, May 17.

¹⁰ *Automotive World News*, Sept. 1, 1939; June 5, 1940.

usable. There were some 19,200 kilometers of highways open to motor traffic in North China and Inner Mongolia in 1939-40.¹¹ In west and southwest China the government has constructed about 5,600 kilometers of new roads and improved some 16,000, thus bringing the total length of roads open to traffic in 1939 to something like 85,000 kilometers. The development of the national interprovincial highways constructed under the auspices of the Bureau of Roads of the National Economic Council is shown in Table 35.

TABLE 35. CHINA: INTERPROVINCIAL HIGHWAYS¹²
(In kilometers)

END OF	SURFACED	EARTH	TOTAL
May, 1932	2,558	5,936	8,494
1932	2,740	6,726	9,466
1933	4,541	7,256	11,797
1934	8,379	9,692	18,071
1935	10,224	10,721	20,945
1936	12,773	11,103	23,876

In one year, 1937-38, 3,224 kilometers of highways were completed under the direct supervision of the National Government, 1,602 kilometers of which were new roads. In the same period some 10,849 kilometers were being constructed or improved; this included the Yunnan-Burma road, about 900 kilometers long, which was opened in 1938. Among the important roads completed in 1937-38 was the extension of the Hunan-Kwangsi highway to the Indo-China border. As in the case of railways, highway construction since the outbreak of hostilities has emphasized the importance of developing regions such as the rich southwest and of opening routes for international trade. In addition to the two strategic highways just mentioned there are the very important overland route to Russia, and roads, under construction, to Sikang on the Indian border. The former, the Chinese-Soviet Highway, running from Sian to Tachen on the Soviet border, where it meets the highway to Sergiopol on the Turk-Sib, stretches for 3,443 kilometers. It is passable for motor vehicles but traffic is mainly carried by camel. The latter, the Szechwan-Sikang road, runs for some 400 kilometers from Chengtu to Kangting and Paan (Betang). Although the surfacing was still incomplete, construction work was reported finished at the end of October 1940.¹³

The Ministry of Communications controls the Northwestern and Southwestern Highway Transportation Administrations which are in charge of passenger and freight highway traffic in those regions. While general highway transport figures are unavailable, it is reported that some 6,000 tons of imports are carried monthly on the Burma Road and that this figure will shortly be increased considerably through the efforts

¹¹ *Foreign Railway News*, 1940, No. 20, May 17.

¹² *The Chinese Year Book; The China Year Book*.

¹³ The China Information Committee, *News Release* (mimeographed), Chungking, Dec. 2, 1940, p. 753.

of traffic specialists. The following bus routes give an indication of the extent and rapid growth of automotive passenger transportation in China during the war years. Regular bus services were either inaugurated or scheduled to begin on the Burma Yunnan Road and between Chungking and Kunming and Chungking and Shanghai in 1939; in 1940 through service was scheduled to begin on the 915 kilometer Kunming-Liuchow road and the 2,800 kilometer Foochow-Chungking highway.¹⁴ Freight rates for automotive transport are very high; air freight charges from China to Rangoon are only 50% greater than truck rates. The difficulty of importing fuel has led to the development of alcohol- and charcoal-burning vehicles and is reflected in the very great increase in Diesel-powered vehicles shown in Table 36, as well as in the increased use of pack and draft animals.

The 1940 Chinese registrations show a 47% increase over the previous year, which may be attributed chiefly to military activities and the Chinese government's development of motor transport in free China. While passenger car registrations have decreased considerably, begin-

TABLE 36. CHINA: MOTOR VEHICLES REGISTERED¹⁵

ON JANUARY 1ST	PASSENGER CARS	TRUCKS	BUSES	MOTORCYCLES	TOTAL
1. CHINA					
1922	...	...	...	...	8,200
1925-29	...	...	...	...	...
Average	13,827	3,087	675	1,369 (a)	18,958
1930-33	...	...	...	...	...
Average	24,832	7,667	5,630	2,399	40,528
1935	29,372	11,197	8,193	3,285	52,047
1936	27,465	11,917	8,060	2,135	49,577
1937	25,343	10,406	7,112	2,077	44,938
1938	20,344	11,446	5,625	1,545	39,861 (b)
1939	18,370	23,629	3,197	1,891	47,813 (c)
1940	26,893	34,833	3,616	3,074	70,267 (d)
2. HONGKONG					
1926	...	...	...	...	1,445
1929	1,600	477	0	525	2,602
1930-33	...	...	...	...	...
Average	2,008	561	170	422	3,161
1935	2,988	856	155	318	4,317
1936	3,204	973	132	275	4,584
1937	3,380	945	79	261	4,665
1938	3,665	1,041	60	262	5,128
1939	4,359	945	62	291	5,826 (e)
1940	4,823	1,201	50	362	6,627 (f)

(a) Average for 1927-1929.

(b) Includes 901 Diesel units.

(c) Includes 726 Diesel units.

(d) Includes 1,851 Diesel units.

(e) Includes 169 Diesel units.

(f) Includes 191 Diesel units.

¹⁴ *Foreign Railway News*, 1939, No. 35, Sept. 1; No. 39, Sept. 29; 1940, No. 2, Jan. 12.

¹⁵ *Foreign Commerce Year Book*, and *Automotive World News*.

ning even before hostilities did, truck registrations have increased steadily year by year and have tripled since 1935. The decreases in Chinese bus registrations between 1936 and 1938 may have resulted in part from the fact that military authorities took over large numbers of buses at the outbreak of hostilities and transformed them into ambulances and military transports, thereby cancelling their registrations as buses. In this connection it should be noted that the 1939 and 1940 data (with the exception of the Diesel units, which are not specified) represent privately owned vehicles, no information being given regarding those owned by the government.

Airways: Prior to the Sino-Japanese hostilities, China's air communications were provided by three companies. C.N.A.C. (China National Aviation Corporation), a Chinese-American concern, was set up in 1930 and has been self-supporting since 1935. Its routes lay along the Chinese coast from Peiping to Canton, and up the Yangtze to Chengtu. Formally inaugurated in 1931, E.A.C. (Eurasia Aviation Corporation), a German-Chinese company, operated inland routes north and west of the Yangtze and did not fly along the northern coast at all. The purpose of establishing this line was to provide direct air communications between China and Europe through Manchuria; when this had to be abandoned after the invasion of Manchuria, attempts were made to route the flights across the northwestern border, but this proved impractical and Eurasia's operations remained purely domestic. The Southwestern Aviation Corporation, S.W.A.C., mainly developed by the provincial governments, started service between Canton and Lungchow in 1934. By 1936 its routes extended to Kweilin, Hanoi and Kiungchow on Hainan Island. S.W.A.C. had to suspend business after hostilities began because its lines were in constant danger of attack. Trans-Pacific connections with the Philippines and the Americas began in 1937 when the *Pan American Airways clipper service from California to Hongkong* was inaugurated. So long as North China was independent, permission for a Japan-China service was refused; it was inaugurated in 1938 under Japanese auspices, and the reader is referred to the section on Japan for further discussion.

When war broke out in 1937 the Ministry of Communications helped move the offices and repair shops of the air lines inland, continued connections with the international air services and developed new air fields and services in the interior. Air traffic during the first war years actually increased although there was a decrease in the length of routes operated from 14,332 kilometers in 1936-37 to 7,975 in 1937-38.¹⁶ In 1939, air lines 14,803 kilometers long were reported, 12,510 of which were new routes, while an additional 1,630 kilometers represented new lines to be opened.¹⁷ In the same year C.N.A.C. and E.A.C. were reported to be flying 35,122 kilometers weekly; it may therefore be assumed that the distance flown yearly would be approximately 1,826,344 kilometers.¹⁸ The Chinese government has been operating E.A.C. with

¹⁶ *The Chinese Year Book*.

¹⁷ Chang Kia-ngau, "Development of Civil Aviation in China," *China Quarterly*, Vol. IV, No. 4, Autumn 1939, Shanghai, p. 611, as quoted in Chi, *op. cit.*

¹⁸ *Aeronautical World News*, Jan. 30, 1940.

Chinese pilots since the outbreak of the European war. Hostilities have spurred the development of China's airways, as of highways, in an effort to replace lost rail and sea communications. In 1940 commercial air services connected Chungking, Hongkong, Kunming, Rangoon, Chengtu, Sianfu, Sinkiang, Lanchow (to connect with the service to Moscow) and Hanoi, although the Japanese invasion of Indo-China interrupted the latter in the course of the year.¹⁹ Thus, in some eleven years, and despite tremendous reorganization caused by the war, China has acquired a far-flung airways system with wide international connections.

Table 37 gives the operations of C.N.A.C. and E.A.C. from 1929 to 1938.

TABLE 37. CHINA: OPERATIONS OF C.N.A.C. AND E.A.C.²⁰

YEAR AND COMPANY	MILEAGE FLOWN (In thousand kilometers)	PASSENGERS CARRIED (Number)	FREIGHT (In thousand kilograms)	MAIL (In thousand kilograms)
1929 C.N.A.C.	93	354	(a)	4
1930 C.N.A.C.	531	2,654	(a)	18
1931 C.N.A.C.	717	2,296	(a)	34
E.A.C. (b)	120	644	...	0.3
1932 C.N.A.C.	694	3,153	(a)	51
E.A.C.	254	589	7	2
1933 C.N.A.C.	1,075	3,132	(a)	50
E.A.C.	413	810	25	4
1934 C.N.A.C.	1,435	5,223	(a)	63
E.A.C.	603	1,476	53	6
1935 C.N.A.C.	1,906	11,004	27	74
E.A.C.	745	2,951	86	10
1936 C.N.A.C.	2,484	18,588	47	86
E.A.C.	911	5,618	222	29
1937 C.N.A.C.	2,061	14,986	42	85
E.A.C.	1,283	9,215	336	41
1938 C.N.A.C.	1,308	14,505	86	121
E.A.C.	1,410	13,067	384	174

(a) Not available.

(b) June-December.

TABLE 38. CHINA: AIRWAY TRAFFIC AT KOWLOON, 1938²¹

COMPANY	PASSENGERS		MAIL (In kilograms)		FREIGHT (In kilograms)	
	In	Out	In	Out	In	Out
Imperial Airways	150	200	35,574	29,138	2,335	2,108
Air France	201	186	720	...	301	135
Pan American Airways	325	306	3,636	1,835	2,910	867
C.N.A.C.	1,331	805	6,982	16,275	4,072	36,741
E.A.C.	3,958	2,462	27,486	77,903	12,428	58,922
Total	5,965	3,959	74,398	125,151	22,046	98,773

¹⁹ *Foreign Commerce Weekly*, Nov. 2, 1940.

²⁰ *The Trade of China, 1939*, Vol. I, Part 1, p. 121.

²¹ *The Trade of China, 1938*, Vol. I, Part 1, p. 56.

The relative importance of Hongkong as an airway terminal is illustrated in Table 38, which indicates, however, that, with the exception of British-carried mails, domestic traffic forms by far the largest proportion of airways operations in that part of China.

7. INDO-CHINA

Communications between the rugged northern half of Indo-China and the low-lying plains of Cambodia and Cochin China run through the narrow, mountainous sections of Laos and Annam, and are therefore very difficult. From Laos, indeed, internal communications lead more naturally toward Thailand than toward Cochin China. Coastwise shipping between Haiphong and Saigon is infrequent and irregular and the Mekong River, in spite of its north-south direction, is impractical because of innumerable rapids and great seasonal changes. In Tonkin and Annam there are 450 and 300 kilometers respectively of inland waterways navigable for steamers at all times and in Cochin China there are 2,100 kilometers of major canals and rivers as well as many more kilometers of less important ones. *Traffic on Cochin China's inland waterways amounts to something like 27 million metric tons a year.*¹

Shipping: French and English vessels form the major part of Indo-China's shipping, with the relative position of the latter declining from 35.3% of the tonnage entering Indo-China's ports in 1913 to 16.7% in the 1925-29 period; since then it has increased steadily and made

TABLE 39. INDO-CHINA: INCOMING SHIPPING BY NATIONALITY²
(In thousand tons and percentages of total tonnage)

NATIONALITY	1913		1925-29 AVERAGE		1930-34 AVERAGE		1935		1936		1937		1938	
	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%
A. STEAMERS														
Chinese	24	1.0	299	7.2	240	5.5	408	7.6	300	5.4	299	5.7	38	0.7
Danish	..	..	..	..	51	1.2	134	2.5	140	2.5	140	2.7	169	3.1
English	838	35.3	695	16.7	801	18.2	1,162	21.6	1,254	22.5	1,268	24.1	1,928	35.2
French	794	33.4	1,447	34.7	1,547	35.2	1,510	28.0	1,368	24.6	1,395	26.5	1,396	25.5
German	280	11.8	67	1.6	146	3.3	160	3.0	208	3.7	129	2.4	72	1.3
Greek	..	..	..	..	..	..	226	4.2	317	6.0	182	3.5	160	2.9
Italian	..	..	..	..	77	1.7	121	2.2	268	4.8	326	6.2	304	5.5
Japanese	215	9.0	872	20.9	870	19.8	862	16.0	898	16.1	706	13.4	525	9.6
Netherlands	64	2.7	177	4.2	226	5.1	342	6.3	323	5.8	337	6.4	417	7.6
Norwegian	88	3.7	321	7.7	242	5.5	323	6.0	337	6.1	345	6.5	292	5.3
Thai	4	0.2	28	0.7	22	0.5	17	0.3	17	0.3	18	0.3	18	0.3
U.S.A.	10	0.4	144	3.5	119	2.7	100	1.9	97	1.7	62	1.2	61	1.1
Others	29	1.2	76	1.9	37	0.8	13	0.2	24	0.4	52	1.0	90	1.6
B. SAILING VESSELS (a)														
	31	1.4	39	0.9	21	0.4	10	0.2	11	0.2	11	0.2	14	0.3
Total	2,376	100.0	4,165	100.0	4,400	100.0	5,388	100.0	5,562	100.0	5,270	100.0	5,484	100.0

(a) Almost entirely Chinese.

¹ Agard, A., *L'Union Indochinoise Française ou Indochine Orientale*, Hanoi, 1935.
² Service de la Statistique Générale, *Annuaire Statistique de l'Indochine*, Hanoi.

particularly large gains in 1938 at the expense of the Chinese and Japanese. In the meantime the French share had decreased from 35.3% in the 1930-34 period to only 25.5% in 1938. Japanese tonnage rose from 9.0% in 1913 to 20.9% in the 1925-29 period but decreased in the 1930's. Table 39 illustrates the growth of shipping entering Indo-Chinese ports since 1913.

While more recent shipping figures for all Indo-China have not become available, the growth of the tonnage of overseas shipping entering the port of Saigon has been considerable: 3,256,642 tons in 1937, 3,222,668 in 1938 and 4,198,000 in 1939.³

Railways: The Indo-Chinese railways are government-operated with the exception of the concessioned Haiphong-Yunnanfu line, part of which runs through Chinese territory. The last link of the trans-Indo-China railway was completed in 1937 and through traffic from Haiphong to Saigon inaugurated, thereby providing direct Saigon-Yunnanfu communication. Both the Haiphong-Yunnanfu and the Hanoi-Saigon lines are meter gauge. There is no railway connection from Saigon to Bangkok, although construction is proceeding in both Thailand and Indo-China. In December 1939 it was announced that construction of the Indo-China section from Mongolborey to Aranya was to be commenced immediately and would be completed in July 1940.⁴

The Haiphong-Yunnanfu line is only 859 kilometers long, or about one-quarter of the total exploited length of Indo-China's railways, but it reported receipts of 4,504,000 piastres and expenses of 2,649,000 piastres in 1936 while the non-concession lines (wholly within Indo-China) reported receipts of 5,164,000 and expenses of 4,899,000 piastres. In other words, in 1936 the Haiphong-Yunnanfu line received a profit of 1,834 piastres per kilometer exploited, while the comparable figure for the whole Indo-Chinese railway system was only 552 piastres. These 1936 figures reflect a condition of long standing. Figures for more recent years indicate the rapid growth of traffic on the Yunnanfu line as Sino-Japanese hostilities closed other Chinese outlets. Net receipts per kilometer of line in 1937 were 3,480 piastres for the Yunnanfu line and 1,164 for all the Indo-Chinese railways; in 1938 this increased to 6,830 and 1,190 respectively.⁵ In the first, second and third quarters of 1939 receipts per kilometer on this line were 4,095, 4,286 and 4,697 piastres respectively. In 1936 the Haiphong-Yunnanfu line carried 302,000 tons of freight; this increased to 320,700 tons in 1937 and 396,500 in 1938, and to 133,000, 140,000 and 132,000 in the first, second and third quarters of 1939. In other words, in the first three-quarters of 1939 more freight was carried than in the whole year of 1937 and nearly as much as in 1938.⁶ Receipts and carloadings on all the Indo-Chinese railways in the second quarter of 1940 increased over both the second quarter of 1939 and the first quarter of 1940; carloadings on the

³ *Ibid.*, and Service de Statistique de l'Indochine, *Supplément Statistique Mensuel au Bulletin Economique de l'Indochine*, Hanoi.

⁴ *Foreign Railway News*, 1940, No. 1, January 5.

⁵ *Annuaire Statistique*.

⁶ *Ibid.*, and Direction des Services Economiques de l'Indochine, *Bulletin Economique de l'Indochine*, Hanoi, 1939, pp. 682-3, 1085-6, 1273-4.

Yunnan line increased over the first and second quarters of 1939, in spite of the closing of the road in June 1940.⁷

Statistics on the operation of all Indo-Chinese railways since 1913 are given in Table 40.

TABLE 40. INDO-CHINA: STATISTICS OF ALL RAILWAYS^a

ITEM	1913	1925-29 AVERAGE	1930-34 AVERAGE	1935	1936	1937	1938
Length of line in use at year end (in kilometers) (including line in Yunnan)	2,013	2,255	2,654	3,154	3,372	3,372	3,372
Length in Indo-China (in kilometers)	1,549	1,791	2,190	2,690	2,908	2,908	2,908
Passengers carried (in thousands)	6,124	9,890	9,430	10,502	12,193	15,434	17,426
Freight carried (in thousand metric tons)	454	1,082	800	778	995	1,104	1,548

Highways and Motor Vehicles: The colonial government has emphasized the building of roads in Indo-China where internal communications are far from adequate. Asphalt-surfaced roads were first listed in the official statistics in 1927, when they measured 187 kilometers; in 1938 they measured 5,418 out of a total of 27,441 kilometers. All-weather motor roads now run down the entire coast from Haiphong to Saigon and from Saigon inland to the Thai frontier, about 250 kilometers from Bangkok. From Haiphong all-weather roads run inland to Hanoi and to the Chinese frontier at several points.

The practice of building highways paralleling the railways, combined with growing numbers of motor vehicles and bus fares which were much cheaper than those of the railways, precipitated sharp railway-

TABLE 41. INDO-CHINA: HIGHWAYS SUITABLE FOR MOTOR VEHICLES^b
(In kilometers)

ON DECEMBER 31	MOTOR ROADS				OTHER ROADS To be built or passable less than 6 months of the year
	TOTAL	Surfaced		Graded and pass- able at least 6 months of the year	
		Asphalt	Gravel		
1920	18,645	...	10,603	8,042	7,227
1925-29 Average	23,757	13,707		10,050	8,274
1930-34 Average	24,786	2,307	13,513	8,966	8,116
1935	27,534	4,039	13,561	9,934	6,299
1936	26,218	4,319	14,000	7,799	9,612
1937	26,811	4,607	13,948	8,256	...
1938	27,441	5,418	13,565	8,458	9,025

⁷ *Foreign Commerce Weekly*, 1940, Nov. 16.

⁸ *Annuaire Statistique de l'Indochine*.

⁹ *Ibid.*

highway competition during the depression, with salutary results. "Press campaigns had vainly tried to rouse railways from that irresponsible slumber, but it took motor bus competition to speed up railway schedules, to lower their rates, and to import a few new locomotives."¹⁰

Details of Indo-China's highway development are given in Table 41 while Table 42 illustrates the growth of motor vehicle registrations since 1922.

TABLE 42. INDO-CHINA: MOTOR VEHICLES IN CIRCULATION¹¹

ON DECEMBER 31	TOTAL	PASSENGER CARS	TRUCKS	BUSES	MOTORCYCLES
1922	4,088	...	...	...	...
1924-28		...	...	...	...
Average	12,796	...	...	...	...
1929-33		...	...	...	...
Average	15,900	11,239	1,302	1,762	1,598
1934	13,460	11,013	1,108	(a)	1,339
1935	16,000	11,500	1,100	2,200	1,200
1936	17,047	12,421	1,474	1,652	1,500
1937	17,151	13,263	1,941	1,917	...
1938	23,799 (b)	18,045	4,866 (c)	...	788

(a) Source gives only 5 buses; apparently a misprint.

(b) Includes 100 Diesel units.

(c) As motorcycles are not given separately in the source, they may be included under trucks, which would explain this very great increase.

Airways: International air connections from Indo-China to France began in 1931 when the Marseille-Saigon line of Air France was inaugurated, the Marseille-Hanoi line being opened in February 1935. Air France also provided service between Bangkok and Hanoi and Bangkok and Saigon, while service between Hanoi and Canton was furnished by the Southwestern Aviation Co., a Chinese concern, beginning in July 1936 and continuing until December 1937 when hostilities in China interrupted its operations. In its place Eurasia started a Yunnanfu-Hanoi route in December 1937. In August 1938 Air France extended its route to Hongkong and K.N.I.L.M. inaugurated its Batavia-Saigon service. Airway statistics for 1938 are given in a form different from that of Table 43. Excluding traffic in transit through Indo-China, 1,829 passengers, 17,644 kilograms of mail and 12,909 kilograms of freight entered or left the three airports—Saigon, Vientiane and Hanoi—in 1938 as compared with 613 passengers, 15,619 kilograms of mail and 15,983 kilograms of freight the previous year.¹²

Figures for domestic air traffic between Hanoi and Vientiane are first available for 1936; later this line was extended to Saigon. In the last four months of 1939, 81 passengers were carried on this route, some

¹⁰ Thompson, Virginia, *French Indo-China*, London, 1937, p. 210.

¹¹ *Ibid.*, *Foreign Commerce Yearbook*, and *Automotive World News*. Data for 1922 include passenger cars, trucks and buses; the 1924-29 average includes passenger cars and trucks.

¹² *Annuaire Statistique de l'Indochine*, 1937-1938.

1,600 kilometers in length, as well as 263 kilograms of mail and 683 kilograms of freight and excess baggage; the distance flown was about 54,400 kilometers.¹³ Table 43 gives statistics on both international and domestic air traffic in Indo-China and emphasizes the importance of the international freight and mail services.

TABLE 43. INDO-CHINA: AIRWAYS¹⁴

PERIOD COVERED	PASSENGERS CARRIED		MAIL CARRIED (In kilograms)	FREIGHT CARRIED (In kilograms)
	Passengers	Company Officials		
INTERNATIONAL TRAFFIC				
1932 (a)	42	13	6,756	658
1933	159	38	10,215	1,435
1934	125	41	10,642	2,222
1935	214	22	10,585	6,081
1936	258	57	11,382	5,406
1937	427	76	14,930	6,829
DOMESTIC TRAFFIC: HANOI-VIENTIANE				
1936	26	4	222	3,032
1937	38	17	340	4,577

(a) Neither passengers nor freight were carried in the first quarter of 1932.

¹³ *Aeronautical World News*, June 15, 1940.

¹⁴ *Annuaire Statistique de l'Indochine*. International figures represent arrivals and departures at Saigon, 1932 to 1934; at Saigon and Hanoi, beginning in February 1935; and at Saigon, Hanoi and Vientiane, for 1936 and 1937. Figures include the operations of Air France from 1932 to 1937, and of Southwestern Aviation Company beginning July 10, 1936; S.W.A.C. appears to carry no freight. Domestic figures represent operations of Air France only.

8. THAILAND

Shipping: The proportion of Thailand's overseas shipping tonnage which is of Japanese and Dutch nationality has increased very considerably since 1914, while Britain's share increased slightly and Germany's dropped from 32.4% to 1.8% in 1937-38. Except for 1937-38, Norwegian tonnage has held the preponderant position, remaining at about 30% until 1934; in 1937-38 it dropped very slightly behind the British. The discontinuance of the Saigon-Bangkok service accounts for the absence of French tonnage in 1935-36 and 1936-37. Thailand's own position, which is relatively unimportant, increased sharply during the first World War, from 5.9% in 1913-14 to 17.7% in 1918-19, but it lost this temporary increase to the Norwegians, Dutch and Danes during the twenties and has remained near its pre-War level during the last few years. The very large proportion of the overseas tonnage in the hands of European powers which have now been involved in war, together with the great increase in Thai nationalistic feeling in the last two or three years, is resulting in another increase in Thai's share in this tonnage. The government, which now has control of river and coastal services, has purchased the British-controlled Siamese Steam Packet Company and has organized the Thai Maritime Navigation

Company which purchased five foreign vessels for freight and passenger service in 1940. The withdrawal of the two foreign oil companies from Thailand in 1940 and a resulting fuel shortage have emphasized the withdrawal of much tanker tonnage, mainly owned in Europe.

Bangkok is the principal shipping center of Thailand. As a port it suffers from a sandbar across the channel of the Menam over which some 40% of Thai's imports have to be lightered, and from poor dock facilities. However, 1939 saw the inauguration of dredging works and harbor improvements which it was planned to complete in about five years.¹ Table 44 shows the changes in overseas shipping clearing through the port of Bangkok since 1913-14.

TABLE 44. THAILAND: NATIONALITY OF SHIPPING CLEARED IN AND OUT OF THE PORT OF BANGKOK²
(In thousand metric tons and percentages of total tonnage)

NATIONALITY	1913/14		1925/26-29/30 AVERAGE		1930/31-34/35 AVERAGE		1935/36	1936/37	1937/38	APRIL 1940		
	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%		
American	..	..	49	2.1	70	2.9	14	0.5	18	0.4	..	..
British	402	22.6	686	29.8	689	28.9	672	24.7	609	22.5	587	26.4
Chinese (a)	..	..	..	..	..	..	23	0.8	76	2.8	18	0.8
Danish	47	2.7	180	7.8	299	12.6	255	9.4	282	10.4	221	9.9
Dutch	57	3.2	134	5.8	175	7.3	261	9.6	277	10.3	297	13.4
French	18	1.0	30	1.3	8	0.3	..	..	..	..	3	0.1
German	578	32.4	38	1.7	31	1.3	44	1.6	107	4.0	40	1.8
Japanese	14	0.8	182	7.9	197	8.3	419	15.4	433	16.0	316	14.3
Norwegian	533	29.9	753	32.7	711	29.8	868	31.9	770	28.5	568	25.6
Thai	106	5.9	189	8.2	165	6.9	146	5.4	131	4.9	133	6.0
Others	27	1.5	58	2.6	38	1.6	17	0.6	..	..	29	1.3
Total	1,783	100.0	2,299	100.0	2,384	100.0	2,719	100.0	2,703	100.0	2,222	100.0
											174	100.0

(a) Included under "Others" before 1935/36.

Some 20% of the cultivated land in Thailand is irrigated; and canals are built with a view to their use as inland waterways as well as for irrigation purposes. Eighty per cent of the paddy sent to market is carried on boats. Total licensed river craft, cargo boats, ferries and motor and steam launches numbered 86,795 in 1911-12 but have since declined until in 1936-37 they numbered 65,563, of which 63,649 were cargo boats and ferries, 318 steam launches and 1,596 motor launches. The launches in many cases compete with the railways for passenger traffic.³

Railways: The Royal State Railways of Siam are owned by the government, directed by the Railways Commission and operated by the Department of State Railways of the Ministry of Economic Affairs. The gauge is one meter and, with small exceptions, the line is single track. In 1937-38 the double tracking of the 60-kilometer line from Bangkok to Ban Phaji was completed; Ban Phaji is the junction of the two main northern lines, one running directly north toward the Chinese-

¹ Thompson, Virginia, *Thailand*, unpublished manuscript.

² Central Service of Statistics, *Statistical Year Book of the Kingdom of Siam*, Bangkok; *The Bangkok Times*, June 5, 1940, for 1940 data.

³ Thompson, *op. cit.*, and *Statistical Year Book*.

Burmese border, and the other going east to the Indo-Chinese border.⁴ While the Thai railways connect with those of British Malaya to the south, they do not reach to the Indo-Chinese border. In 1939 an additional hundred kilometers of line were opened from Khon Khaen to Udorn Dhani, forming part of the line which will ultimately reach the border, about 50 kilometers further, and connect with the French railway to Vientiane.⁵

Between 1920 and 1930 railroad construction received such an impetus that Thailand became the leading Asiatic nation in that respect. Diesel engines have been in use on the Malaya run since 1931 and on the Chiangmai line since 1933. The railroads have united the four major and previously isolated regions of Thailand, and that with a minority of foreign capital and with a completely Siamese management which is remarkably efficient. Since such few highways as existed in Thailand until recent years were not built parallel to the railways, but as feeders thereto, the State Railways have enjoyed a monopoly of fast transportation, and ever since their inception they have been very profitable, net receipts ranging as high as 11 million baht in 1928-29 and 7 million in 1936-37 while gross receipts were 20 million in the former and 15 million in the latter year. Table 45 shows traffic figures for the State Railways since 1909-10.

Highways and Motor Vehicles: Thailand is virtually a roadless land, transportation of persons and commodities being chiefly by river and

TABLE 45. THAILAND: OPERATIONS OF STATE RAILWAYS⁶

PERIOD	KILOMETERS OPEN FOR TRAFFIC	PASSENGERS CARRIED (In thousands)	FREIGHT CARRIED (a)	
			GOODS (In thousand metric tons)	LIVESTOCK (In thousand metric tons)
Average for 1909/10-1913/14	1,031	3,201	317	5
Average for 1925/26-1929/30	2,763	6,310	1,295	23
Average for 1930/31-1934/35	3,023	3,988	1,210	17
1935/36	3,100	5,112	1,415	13
1936/37	3,100	5,672	1,590	14
1937/38	3,315	5,556	338 (b)	4.6(b)
1938/39	3,315	5,723	448 (b)	4.9(b)

(a) Excluding "free hauled" and "dead weight."

(b) In million ton-kilometers. In 1935-36, 395.6 million ton-km. of goods and 5.7 million ton-km. of livestock were hauled; in 1936-37 comparative data were 445.2 and 5.1.

⁴ *Statistical Year Book; Foreign Railway News*; and Bailey, J., *Report on Economic and Commercial Conditions in Siam*, April 1937, Dept. of Overseas Trade, Report No. 673, London, 1937, p. 20.

⁵ *Foreign Railway News*, 1939, No. 31, August 4.

⁶ *Statistical Year Book; Foreign Railway News*, 1940, No. 3, Jan. 19, for 1937-38 and 1938-39 data.

canal. Until 1936 Bangkok itself was almost isolated with respect to vehicular traffic although within the capital there is transportation by electric tram, tricycle taxi, ricksha and, recently, a municipal bus service. As stated above, the policy of the Public Works Department, apart from its concentration on streets in Bangkok, has been to construct roads as feeders to the railway rather than where the economy of the countryside most required them. In recent years, however, with the increased number of motor vehicles, highway construction has begun, especially in frontier regions (e.g. the peninsular roads near Malaya) and in those totally lacking in other methods of transportation. The most important road is that which links Lampang, which is on the railway, with Chiangrai near the northern border where it meets the caravan route into south China; this has opened up a region previously without communications and incidentally has brought much traffic to the railway. Another road parallels the new rail line from Khon Khaen to Udorn Dhani and continues to the Indo-Chinese frontier. A comprehensive, five-year highway program was inaugurated in 1936-37 and aims to connect all the principal cities, with three main roads radiating from Bangkok; two of the latter were opened in the same year.⁷ Of the 3,000 kilometers projected under this plan, 1,520 had been completed by 1939⁸ while by 1940, excluding streets some 642 kilometers

TABLE 46. THAILAND: LICENSED MOTOR VEHICLES⁹

PERIOD	PASSENGER CARS		BUSES	LORRIES	MOTOR-CYCLES	OTHERS (a)	TOTAL
	Private	For Hire					
Average 1909/10-1913/14	139	...	...	...	30	...	169
Average 1925/26-1929/30	2,517	1,038(b)	1,372 (c)	1,899	424	...	6,587
Average 1930/31-1934/35	3,210	1,201	424	3,043	350	...	8,229
1935/36	3,565	1,587	131	3,725	387	217	9,611
1936/37	3,783	1,415	112	4,070	503	278	10,161
1937/38	4,416 (d)	1,494 (d)	146	4,233 (c)	559	591	11,439
1940 (f)	6,000		770	5,150	950	145 (g)	13,015

(a) Includes special equipment of Public Roads Department, tractors, trailers, etc.

(b) Two-year average; before 1928-29 included under buses.

(c) Average for 1928-29 and 1929-30 only; earlier data include passenger cars for hire.

(d) Including tricycles equipped with motors.

(e) Includes 3,428 lorries for hire and 805 private lorries (which includes firefighting equipment).

(f) January 1.

(g) Diesel units; only 45 reported in the previous year.

⁷ Bailey, *op. cit.*, p. 21.

⁸ Coulter, W. W., *Report on Economic and Commercial Conditions in Siam, April 1939*, Dept. of Overseas Trade, Report No. 730, London, 1939, p. 25.

⁹ *Statistical Year Book of the Kingdom of Siam, 1935-1937*; 1940 data from *Automotive World News*.

long in 52 municipalities, there were 7,071 kilometers of highways in Thailand, including 388 kilometers of surface-treated macadam, 2,557 of waterbound macadam, 2,586 of sand, clay and gravel, and 1,540 of unimproved, non-surfaced roads.¹⁰ A considerable portion of the roads under construction in 1939 formed a network in the eastern part of the country and reached to the Indo-Chinese border at several points.

Practically all the private passenger cars (3,185), all the buses (112) and most of the passenger cars for hire (902) in Thailand in 1936-37 were registered in Bangkok. On the other hand, 3,288 of the 4,070 lorries were registered in other Changvats. Figures prior to 1926-27 given in Table 46 refer to Greater Bangkok (Circle Krung Deb) only; thereafter they apply to all Thailand.¹¹

Airways: "The first public air transport service within Siam", and one of the first in the Far East, "was inaugurated in June 1922 on a 363 kilometer route in the northeastern provinces, with Royal Siamese Air Force equipment and personnel. . . . As replacement for the Royal Siamese Air Force which was contemplating suspension of these civil air services, the Aerial Transport Company of Siam, Limited, signed an airmail contract with the Department of Posts and Telegraphs in August 1931 and it has proceeded since to extend the routes gradually. . . . For some years, Bangkok has been a regular port of call on the intercontinental air transport routes operated by Imperial Airways . . . K.L.M. . . and Air France The commercial airport utilized by these long-distance operators is alongside the Military Airport at Dong Muang, some 35 kilometers north of Bangkok For the new Imperial Airways flying boats, a marine airport is now operating at Klong Toi, a down-river suburb."¹² The Aerial Transport Company has a completely Siamese personnel, unlike most Far Eastern air transport companies it is not subsidized by the government, and its financial position is good. Geographically, Thailand holds a key position for the intercontinental services listed above, and Bangkok, which was rather off the beaten track of land and sea routes, has become an airways center of great importance through its first-class bases at Dong Muang and Klong Toi. Of the international lines, K.L.M. is the most important as regards number of passengers and weight of cargo transported.¹³ February 1940 saw the inauguration of a weekly air service between Bangkok and Tokyo, the result of negotiations dating back to 1936; early in September permission was secured by Japan to fly via French Indo-China to Thailand, thus eliminating the long detour over seas around the French possession, necessary since June.¹⁴ The operations of the domestic airways of Thailand since 1922-23 are indicated in Table 47, while the passenger, mail and goods traffic of the three international companies stopping at Bangkok in two recent years are shown in Table 48.

¹⁰ *Automotive World News*, February 10, and June 5, 1940.

¹¹ *Statistical Year Book of the Kingdom of Siam, 1935-1937*.

¹² *Statistical Year Book of the Kingdom of Siam*, No. 19, p. 249.

¹³ Thompson, *op. cit.*

¹⁴ *Far Eastern Survey*, 1940, pp. 83, 252.

TABLE 47. THAILAND: REGULAR DOMESTIC AVIATION ROUTES¹⁵

PERIOD	LENGTH OF ROUTES OPEN (In kilometers)	AIRCRAFT KILOMETERS FLOWN	PERSONS CARRIED (Number)	MAIL CARRIED (In kilograms)	FREIGHT CARRIED (In kilograms)
1922/23	363	8,160	1	1,705 (a)	9,418
Average 1925/26- 1929/30	800	75,258	780 (b)	3,513 (a)	15,496
Average 1930/31- 1934/35	671	93,120	57 (c)	10,876 (d)	4,711
1935/36	715	122,290	22	12,066	2,564
1936/37	715	118,960	22	12,454	1,819

(a) Figures for 1922 and 1925/1930 in number of bags; in kilograms thereafter.

(b) Includes free passengers, 1926/27 to 1929/30.

(c) Free passengers included in 1930/1931; 167 free passengers carried in that year.

(d) Four-year average, 1931/32-1934/35.

TABLE 48. THAILAND: INTERNATIONAL AIR SERVICES AT BANGKOK AIRPORT¹⁶

YEAR	PASSENGERS (a)			MAIL (b)			GOODS TRAFFIC		
	Arrived (No.)	Departed (No.)	Total (No.)	Received (In kilograms)	Dis- patched (In kilograms)	Total (In kilograms)	Received (In kilograms)	Dis- patched (In kilograms)	Total (In kilograms)
1936/37	384	461	845	2,245	2,518	4,763	1,484	1,240	2,724
1937/38	511	545	1,056	4,161	3,625	7,786	4,550	1,432	5,982

(a) Excluding through passengers.

(b) Incoming mails recorded in gross weight, outgoing mail in net weight.

¹⁵ *Statistical Year Book of the Kingdom of Siam.*

¹⁶ *Ibid.* Includes operations of Imperial Airways, K.L.M. and Air France.

9. BRITISH MALAYA

Shipping: Great Britain, the Netherlands and Japan are the three nations most prominent in the shipping clearing through Malayan ports. The figures in Table 49 represent one entrance only, irrespective of the number of ports in Malaya at which a vessel may have called.

The two more detailed tables showing the shipping of the Straits Settlements and of the Federated Malay States, however, are not comparable to Table 49 because the first, Table 50, includes repeated voyages, and the second, Table 51, includes only shipping clearing through Port Swettenham, the major port of the Federated Malay States. Singapore is the most important Malayan port, accounting for about two-thirds of the Straits Settlements shipping tonnage.

TABLE 49. BRITISH MALAYA: NATIONALITY OF SHIPPING ENTERING MALAYAN PORTS (a)¹
(In thousand net registered tons and percentages of total tonnage)

YEAR	BRITISH		DUTCH		JAPANESE		NORWEGIAN		OTHERS		TOTAL
	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%	
1928	10,176	48.4	3,967	18.8	2,442	11.6	4,461		21.2		21,046
1929	10,351	46.6	4,423	19.9	2,571	11.6	4,864		21.9		22,209
1930	10,348	45.7	4,386	19.4	2,633	11.6	5,259		23.2		22,627
1933	4,587	32.8	3,316	23.7	2,462	17.6	3,619		26.0		13,984
1935	4,864	32.3	3,498	23.2	2,630	17.5	4,061		27.0		15,052
1936	4,902	31.7	3,671	23.8	2,810	18.2	958	6.2	3,101	20.1	15,443
1937	5,474	32.9	4,007	24.1	2,607	15.7	1,025	6.2	3,506	21.1	16,618
1938	5,589	34.4	4,163	25.6	1,948	12.0	1,068	6.6	3,475	21.4	16,243

(a) Singapore, Penang and Port Swettenham, 1926; and Malacca 1928-1930; Malayan Registration Area thereafter.

TABLE 50. STRAITS SETTLEMENTS: TONNAGE AND NATIONALITY OF MERCHANT VESSELS OVER 75 TONS NET REGISTER CLEARED THROUGH FIVE PORTS, INCLUDING REPEATED VOYAGES²
(In thousand net tons and percentages of total tonnage)

NATIONALITY	1911		1925-29 AVERAGE		1931-34 AVERAGE		1935		1936		1937		1938		1939
	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%	
American	401	1.6	1,089	2.7	930	2.1	898	2.0	788	1.7	779	1.6	390	0.8	..
British	14,258	59.2	19,841	49.3	18,890	43.4	19,116	42.5	18,748	41.2	20,179	42.3	19,604	43.4	..
Chinese	..	..	77	0.2	32	0.1	62	0.1	150	0.3	248	0.5	36	0.1	..
French	643	2.7	1,826	4.5	2,311	5.3	1,843	4.1	1,782	3.9	1,810	3.8	1,859	4.1	..
German	3,313	13.8	1,833	4.6	2,532	5.8	2,592	5.8	3,063	6.7	3,009	6.3	2,658	5.9	..
Japanese	1,484	6.2	5,162	12.8	6,145	14.1	6,889	15.3	7,250	15.9	6,592	13.8	4,652	10.3	..
Netherlands	2,222	9.2	7,167	17.8	7,795	17.9	7,911	17.6	8,404	18.5	9,070	19.0	9,165	20.3	..
Norwegian	445	1.8	1,128	2.8	1,827	4.2	2,324	5.2	2,385	5.2	2,520	5.3	2,615	5.8	..
Others	1,302	5.4	2,114	5.3	3,068	7.0	3,325	7.4	2,961	6.5	3,502	7.3	4,166	9.2	..
Total	24,067	100.0	40,237	100.0	43,529	100.0	44,960	100.0	45,531	100.0	47,709	100.0	45,145	100.0	..
Shipping through Singapore	15,455	64.2	27,164	67.5	29,062	66.8	30,255	67.3	30,367	66.7	32,791	68.7	31,254	69.2	31,648

Annual totals for the Federated Malay States are the only data available for years earlier than those indicated in Table 51. In 1925, 6,113,000 tons, exclusive of native craft, entered and cleared; in 1930 the total rose to 8,485,000, and dropped again to 7,791,000 in 1931.³ These figures are not exactly comparable with those of Table 51, however, which include only shipping calling at Port Swettenham. In 1931, for

¹ Dept. of Overseas Trade, *Reports on Economic and Commercial Conditions in Malaya*, London. Includes vessels over 50 net registered tons before 1933, vessels over 75 net registered tons thereafter.

² Great Britain, Colonial Office, *Colonial Reports*, Annual. Previous to 1931, the figures include vessels of over 50 tons net register.

³ *Malayan Statistics*, as quoted in *Economic Handbook*, p. 151.

instance, total tonnage entered and cleared through that port was only 5,556,000 tons. The 1938 decrease in Federated Malay States shipping had three main causes: troubled conditions in the Far East, the trade depression and the restricted export of the principal commodities produced in the States. In 1935 and 1936 the Japanese attempted to control Malayan shipments, especially of tin and rubber, to the United States, but partly owing to the Chinese boycott of Japanese trade and partly owing to other demands upon Japanese shipping, her percentage of Malayan tonnage decreased after that period. The change in her share of Malaya's shipping is proportionately far greater in the Federated States than in the Straits Settlements, rubber and tin being the chief products of the former.

While the nationality of the chief shipper in Malaya is British, the countries to which travelled the greatest proportion of Malaya's foreign shipping are Japan and the Netherlands Indies; in 1936, the last year unaffected by hostilities, 22.6% and 22.7% respectively of the shipping entering Malayan ports came from these two regions while Great Britain and Europe combined accounted for only 21.1%. Hostilities have altered this situation, Japan's position dropping while that of the Indies and of Europe increased, and it is to be expected that the demands for colonial products resulting from European conditions in 1939 have continued this trend.

TABLE 51. FEDERATED MALAY STATES: TONNAGE AND NATIONALITY OF OCEAN-GOING MERCHANT VESSELS ENTERING AND CLEARING THROUGH PORT SWETTENHAM^a
(In thousand tons and percentages of total tonnage)

NATIONALITY	1931-1934 AVERAGE		1935		1936		1937		1938	
	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%
American	92	1.7	87	1.4	78	1.2	85	1.2	33	0.5
British	4,148	75.3	4,474	72.6	4,488	69.2	5,208	72.0	4,802	72.9
Chinese	...	...	...	...	14	0.2	27	0.4	...	...
Danish	208	3.8	331	5.4	322	5.0	326	4.5	345	5.2
French	...	...	2	...	14	0.2	5	0.1	...	...
German	342	6.2	369	6.0	444	6.8	433	6.0	422	6.4
Japanese	231	4.2	261	4.2	405	6.3	214	3.0	...	...
Netherland	351	6.4	395	6.4	467	7.2	668	9.2	616	9.3
Norwegian	101	1.8	207	3.4	236	3.6	238	3.3	302	4.6
Other	39	0.7	39	0.6	14	0.2	31	0.4	71	1.1
Total	5,512	100.0	6,166	100.0	6,482	100.0	7,234	100.0	6,590	100.0

^a Colonial Reports.

TABLE 52. MALAYA: MERCHANT STEAMERS OVER 75 TONS NET REGISTER ENTERING FROM AND CLEARING TO PRINCIPAL REGIONS WITH CARGO⁵*(In thousand net tons and percentages of total tonnage)*

REGION	1932		1934		1936		1938	
	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%
United Kingdom								
Entered	1,191	8.5	1,071	7.2	1,067	6.9	997	6.1
Cleared	826	6.0	962	6.6	986	6.6	904	5.8
British Possessions								
Entered	2,268	16.3	2,487	16.7	2,717	17.6	2,780	17.1
Cleared	2,426	17.8	2,420	16.6	2,674	17.9	2,845	18.1
Europe								
Entered	2,030	14.6	2,212	14.9	2,190	14.2	2,639	16.2
Cleared	2,322	17.0	2,504	17.1	2,314	15.5	2,747	17.5
United States								
Entered	450	3.2	460	3.1	512	3.3	576	3.5
Cleared	828	6.1	818	5.6	870	5.8	868	5.5
Japan								
Entered	3,023	21.7	3,240	21.8	3,496	22.6	3,119	19.2
Cleared	2,856	20.9	3,155	21.6	3,344	22.4	3,017	19.2
Netherlands East Indies								
Entered	3,186	22.9	3,322	22.4	3,510	22.7	3,962	24.4
Cleared	2,740	20.0	3,043	20.8	3,123	20.9	3,381	21.5
China								
Entered	597	4.3	673	4.5	617	4.0	667	4.1
Cleared	713	5.3	583	4.0	478	3.2	624	4.0
Other Foreign Countries								
Entered	1,193	8.6	1,385	9.3	1,334	8.6	1,503	9.3
Cleared	954	7.0	1,125	7.7	1,126	7.6	1,311	8.4
Total								
Entered	13,938	100.0	14,850	100.0	15,443	100.0	16,243	100.0
Cleared	13,665	100.0	14,610	100.0	14,915	100.0	15,697	100.0

Railways: With the exception of the Johore Line, all railroads in British Malaya are owned by the Federated Malay States government and, since the latter operates the Johore State Railways under a lease, all railroads are controlled by it. The general plan of railway com-

TABLE 53. BRITISH MALAYA: RAILWAY OPERATIONS⁶

ITEM	1910-14 AVERAGE	1925-29 AVERAGE	1930-34 AVERAGE	1935	1936	1937	1938
Miles open (first track)	685	1,024	1,069	1,068	1,068	1,068	1,068
Passengers carried (in thousands)	11,218	13,768	6,865	6,678	7,463	9,476	9,923
Revenue freight carried (in thou- sand long tons)	947	2,378	1,311	1,302	1,667	2,147	1,857

⁵ Statistics Department, S.S., and F.M.S., *Malayan Year Book*, Singapore.⁶ Federated Malay States Railways, *Fifty Years of Railways in Malaya, 1885-1935*, Kuala Lumpur, 1935; *Railways Reports*, annuals; *Malayan Year Book*.

munications consists of two north and south trunk lines running from Singapore to the Siamese border where both connect with the Siamese railway system. The western line runs near the coast and has a system of lateral feeders to the ports while the East Coast Line, completed in 1931, has no feeders except the short branch line running to the Thailand border. The railway gauge is one meter, which corresponds to that used in Thailand, and practically all the mileage is single track.

As in other countries the railways have been severely affected by highway transport competition for both passengers and goods. To meet this the railways maintain road transport services at the principal stations in order to provide door-to-door transport. Control of highway transport has also been introduced and is discussed in the following paragraph.

Highways and Motor Vehicles: Of a total of roughly 8,600 miles of roads, the great majority are maintained by the Public Works Department, only 255 miles being kept up by the municipalities. In 1937, of a total of 5,416 miles of metalled roads, 992 were in the Straits Settlements, 2,939 in the Federated and 1,485 in the Unfederated Malay States. In 1939 there were 5,164 miles of macadam, concrete and asphalt roads, 615 miles of improved earth and 985 of unimproved earth or of unspecified types, making a total of 6,764 miles of highways.⁷ The fact that this total is smaller than that for 1938 which is given in Table 54 is explained by the fact that the latter includes bridle paths and cart

TABLE 54. BRITISH MALAYA: HIGHWAYS⁸
(In miles)

CLASSIFICATION	1930-34 AVERAGE	1935	1936	1937	1938
Straits Settlements					
Municipal areas	236	245	247	253	319
Rural areas					
Metalled roads	...	718	731	739	688
Gravel and natural	...	94	166	173	214
Total	840	812	897	912	902
Total Straits Settlements	1,078	1,057(a)	1,144	1,165	1,221
Federated Malay States					
Gravelled and metalled	2,835	2,902	2,916	2,939	3,067
Unsurfaced bridle paths and cart roads	1,811	1,659	1,640	1,619	1,759
Total Federated Malay States	4,646	4,561	4,556	4,558	4,826
Total Unfederated Malay States	1,797	1,983	2,018	2,113	2,528
Total British Malaya	7,509	7,601	7,718	7,836	8,575

(a) Decrease due to retrocession of the Dindings to the State of Perak.

⁷ *Automotive World News*, Sept. 1, 1939.

⁸ *Malayan Year Book*.

roads. The development of highways and the growth of motor vehicle registrations are shown in Tables 54 and 55.

Regulation of highway transport in Malaya is of very recent date. The Road Traffic Enactment of the Federated Malay States, effective January 1, 1938, regulates bus services, fixes rates and in general controls this traffic. No competitive services are licensed over a single route. Of 2,680 freight transport vehicles licensed under this Act in 1938, 1,051 were private vehicles, 795 public and 834 used for both purposes. Similar road traffic legislation has been introduced in Kedah and it is expected that regulation will be undertaken in other parts of British Malaya as well.⁹

TABLE 55. BRITISH MALAYA: MOTOR VEHICLES, PUBLIC AND PRIVATE¹⁰

VEHICLES	1925	1929	1930-34 AVERAGE	1935	1936	1937	1938	1939	1940
Passenger cars	...	29,900	26,370	27,504	29,273	33,042	32,090 (a)	32,232	32,873
Motor trucks	...	5,600	6,358	7,045	7,557	8,691	8,598	10,054	9,841
Buses	...	2,000	2,000	1,999	2,010	2,740	2,392	2,376	2,224
Motor-cycles	4,060 (b)	3,884	4,010	4,210	3,568	3,568	3,504
Others	415 (c)	430	527	499	589	124 (d)	123 (d)
Total	20,720	37,720	37,350	40,862	43,377	49,182	47,237	48,354	48,565

(a) Includes 29,042 private cars and 3,048 taxis and gatage cars.

(b) 3-year average, 1932-34.

(c) 2-year average, 1933-34.

(d) Diesel units.

Airways: Either directly or indirectly Singapore is connected by airways with the major countries of the world. Table 56 includes figures for K.N.I.L.M. (Royal Netherlands Indies Airways) and Imperial Airways, Ltd., in 1933; from 1934 to 1938 Qantas Empire Airways, Ltd. (Australian) and K.L.M. (Royal Netherland Air Services) are also included. Passenger figures omit Imperial Airways in 1933 and Qantas from 1934 to 1937. In addition, Wearne's Air Services, Ltd., began a wholly internal service from Singapore to Penang (381 miles) in 1937. Originally an independent service, this has been government-subsidized since 1938. Its results for 1938 were: mileage flown, 277,368; passengers carried, 2,189; freight carried, 26,331 lbs., and mail carried, 4,183 lbs. Under the so-called "all up" air mail scheme inaugurated by Empire Airways and its subsidiary, Qantas Empire Airways, all first-class mail matter was carried by plane without surcharge, beginning in 1938. With the outbreak of the European war, however, this arrangement was discontinued.

⁹ *Foreign Railway News*, 1939, No. 32, Aug. 11; and *Report on Economic and Commercial Conditions in Malaya*.

¹⁰ *Malayan Year Book*. Figure for 1925 from Straits Settlements, *Blue Book*. U.S. Dept. of Commerce, Motive Products Division, for 1939 and 1940 data.

TABLE 56. STRAITS SETTLEMENTS: INTERNATIONAL AIRWAYS¹¹
(Includes flights wholly within British Malaya)

PERIOD COVERED	MILEAGE FLOWN	PASSENGERS Number	MAIL CARRIED In tons	FREIGHT In tons
1933	...	395	...	...
1934	...	1,509	...	...
1935	3,324,415	6,194	...	...
1936	4,294,188	7,052	...	...
1937	4,902,554	9,552	...	...
1938	8,007,254	12,774	1,613.9	523.3

¹¹ Straits Settlements, *Blue Book*, annual.

10. NETHERLANDS EAST INDIES

Shipping: The main share of Netherlands Indian foreign shipping is in the hands of the colony and the mother country, with the United Kingdom outdistancing all other foreign nations. In 1914 vessels from the United Kingdom accounted for a somewhat larger proportion of the tonnage in foreign trade than the Netherlands and the Indies combined. This relation was altered during the War and by 1938, although the United Kingdom still outranked them individually, as a unit they accounted for 46.7% as against the latter's 30.7%. Norway's rapid rise to third place, most evident in the twenties and early thirties, was slowed down slightly in 1937 and 1938 while Germany's increased both proportionately and actually in the same years.

TABLE 57. NETHERLANDS EAST INDIES: NATIONALITY OF INCOMING SHIPPING TRAFFIC BETWEEN THE INDIES AND OTHER COUNTRIES¹

(In thousand net cubic meters and percentages of totals)

NATIONALITY	1910-14 AVERAGE	1925-29 AVERAGE	1930-34 AVERAGE	1935	1936	1937	1938
Netherlands	3,162 22.7	6,571 22.9	7,035 22.9	6,715 21.8	6,604 20.8	7,225 21.2	7,127 20.9
East Indies	2,257 16.2	6,373 22.2	7,460 24.3	7,103 23.1	7,696 24.2	8,258 24.3	8,776 25.8
Netherlands	65 0.5	505 1.8	285 0.9	311 1.0	281 0.9	257 0.8	264 0.8
China	39 0.3	195 0.7	171 0.6	24 0.1	19 ..	103 0.3	(d) ..
France	1,600 11.5	1,825 6.4	1,363 4.4	1,192 3.9	1,092 3.4	1,474 4.3	1,603 4.7
Germany	.. ..	9 ..	88 0.3	468 1.5	859 2.7	465 1.4	396 1.2
Greece	1 ..	103 0.4	238 0.8	258 0.8	310 0.9	333 1.0	478 1.4
Italy	346 2.5	1,129 3.9	1,949 6.4	1,983 6.4	1,639 5.2	1,541 4.5	980 2.9
Japan	174 1.3	936 3.3	2,341 7.6	2,817 9.1	3,545 11.2	3,567 10.5	3,218 9.4
Norway	.. ..	5 ..	37 0.1	90 0.3	130 0.4	175 0.5	175 0.5
Panama	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..	.. ..
United Kingdom	5,919 42.6	10,045 35.0	8,816 28.7	9,322 30.3	8,985 28.3	9,993 29.2	10,462 30.7
U.S.A.	.. ..	597 2.1	402 1.3	257 0.8	282 0.8	269 0.8	241 0.7
Others	344 2.5	411 1.4	539 1.8	359 1.2	431 1.4	443 1.0	351 1.0
Totals (a)	13,905 100.0	28,699 100.0	30,687 100.0	30,809 100.0	31,743 100.0	34,043 100.0	34,071(d)100.0
(b)	13,347 96.0	27,274 95.0	30,082 98.0	30,359 98.5	31,312 98.6	33,705 99.0	33,279(d)97.7
(c)	558 4.0	1,425 5.0	605 2.0	450 1.5	431 1.4	338 1.0	792 2.3

(a) Grand Total.

(b) Steam vessels.

(c) Sailing vessels and sailing vessels with auxiliary motors.

(d) Figure given in source for French shipping—2,748,000 cubic meters representing only one vessel—is apparently a misprint. It has therefore been omitted and subtracted from totals (a) and (b).

¹ Departement van Economische Zaken, Centraal Kantoor voor de Statistiek, *Indisch Verslag, II. Statistisch Jaaroverzicht van Nederlandsch-Indie*, Batavia, annual.

The K.P.M. (Royal Packet Navigation Co.) is the largest shipping company registered in Netherlands India. It maintains a number of inter-insular services and several international lines including the Orient-Java-Africa Line; the next largest company is the Java-China-Japan Line. Owing to her petroleum production, tankers play a considerable part in Netherlands Indian shipping. As Norway and the United Kingdom control a large portion of the world's tanker tonnage, this may explain to some extent the large part played by these countries in the Indies' overseas shipping. Competition from Japanese shipping has been increasing and, following several years of growing pressure from Japan, an agreement was reached in 1936 between Dutch and Japanese shipping companies by which the "business between the two countries was divided on a basis of about 60 per cent for the Japanese and 40 per cent for the Dutch lines."² The outbreak of hostilities in China and the consequent demand for Japanese ships on the near-seas routes, however, cancelled out any expected increase in Japan's share in Netherlands India's total foreign shipping tonnage, which dropped, both actually and proportionately, in the two years subsequent to this agreement.

In contrast to Table 57, the shipping traffic between Netherlands India and the major regions of the world is indicated in Table 58. The major changes in this traffic in the last fifteen years have been the decrease in the proportion of shipping plying between the Indies and Europe and the increase in the traffic with Australia. Another impor-

TABLE 58. NETHERLANDS EAST INDIES: OVERSEAS SHIPPING TONNAGE BY ORIGIN AND DESTINATION, STEAM VESSELS ONLY³
(In thousand net cubic meters and in percentages of total arrivals and departures)

ITEM	1925-29 AVERAGE (a)		1930-34 AVERAGE		1935		1936		1937		1938	
East Asia (b)												
arrivals	6,028	34.5	7,417	39.0	8,113	44.0	6,540	36.4	5,395	27.2	8,464	33.5
departures	5,266	27.0	5,668	29.2	5,885	30.8	5,570	30.9	6,753	33.4	6,206	24.5
British India												
arrivals	3,309	19.0	3,119	16.4	2,462	13.4	3,117	17.4	4,874	24.6	5,188	20.5
departures	5,072	26.0	4,627	23.8	3,961	20.8	4,123	22.9	3,628	17.9	6,643	26.2
Europe												
arrivals	4,401	25.2	3,866	20.3	3,092	16.8	3,503	19.5	3,882	19.6	4,810	19.0
departures	5,397	27.7	4,637	23.9	3,939	20.6	3,257	18.1	3,736	18.5	5,309	21.0
America												
arrivals	1,594	9.1	1,835	9.7	1,588	8.6	1,327	7.4	1,513	7.6	2,041	8.1
departures	1,654	8.5	1,586	8.2	1,659	8.9	1,225	6.8	1,625	8.0	2,656	10.5
Africa												
arrivals	417	2.4	766	4.0	852	4.6	1,026	5.7	1,495	7.5	1,063	4.2
departures	220	1.1	849	4.4	1,214	6.4	1,515	8.4	1,296	6.4	1,014	4.0
Australia												
arrivals	1,701	9.7	2,011	10.6	2,327	12.6	2,442	13.6	2,656	13.4	3,732	14.8
departures	1,882	9.7	2,064	10.6	2,391	12.5	2,318	12.9	3,174	15.7	3,508	13.8
Total												
arrivals	17,450	100.0	19,015	100.0	18,434	100.0	17,955	100.0	19,815	100.0	25,298	100.0
departures	19,492	100.0	19,431	100.0	19,089	100.0	18,008	100.0	20,212	100.0	25,336	100.0

(a) Figures for departures represent averages for 1927-1929.

(b) Siam, British Borneo, Cochin China, the Philippines, Japan, China and Siberia.

² Vandenbosch, Amry, "Netherlands India and Japan," *Pacific Affairs*, Sept. 1940, p. 258.

³ *Indisch Verslag*. The totals are smaller than those in Table 57 since the former omits local traffic in the Straits ports and Portuguese Timor as well as ships calling at Sabang for coal and water but not otherwise calling at Netherlands Indian ports.

tant development is the increase in the tonnage leaving for East Asia in 1937 and arriving from that region in 1938, at the same time that tonnage travelling in the opposite directions decreased in those two years. This is a reversal of the trend of the whole previous period which always showed a greater proportion of arrivals from East Asia.

From end to end the Netherlands Indies are more than 5,000 miles long. Inter-island shipping therefore takes on almost the internal character of railways in other countries. As with foreign shipping, the great majority of this traffic is controlled by the colony and by the Netherlands, with Great Britain the principal foreign country. Some of the interinsular lines are directly owned by the Netherlands Indian government; and the K.P.M. receives a monopoly of the Molucca trade. By their monopoly of the government carrying trade the Netherlands lines enjoy a practical subsidy, excluding profitable competition.⁴ In 1936 new legislation restricted certain Netherlands Indian ports, calling them "coastal places"; these and coastal shipping are reserved to the Netherlands flag, although foreign shipping companies previously sharing in this trade could continue to do so under license.⁵

Interinsular shipping figures, shown in Table 59, are about three times as great as the totals for the shipping traffic with foreign countries. This is because most vessels call at and are recorded at more than one port.⁶

TABLE 59. NETHERLANDS EAST INDIES: SHARE OF DIFFERENT COUNTRIES IN THE INCOMING COASTWISE AND INTER-ISLAND SHIPPING WITHIN NETHERLANDS INDIA⁷
(In thousand net cubic meters and in percentages of totals)

COUNTRY	1910-14 AVERAGE		1925-29 AVERAGE		1930-34 AVERAGE		1935		1936		1937		1938	
	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%
Netherlands	42,231	56.0	73,026	52.8	75,760	55.1	71,819	55.0	73,832	54.8	76,241	54.8	64,264	45.4
East Indies	18,514	24.5	36,200	26.2	32,407	23.6	29,605	22.7	33,006	24.5	33,646	24.2	47,742	33.7
China	81	0.1	266	0.2	97	0.1	137	0.1	162	0.1	184	0.1	73	0.1
Germany	3,660	4.9	4,455	3.2	4,070	3.0	3,287	2.5	3,778	2.8	3,607	2.6	4,770	3.4
Italy	2	..	234	0.2	844	0.6	665	0.5	96	0.1	242	0.2	454	0.3
Japan	688	0.9	3,418	2.5	4,921	3.6	5,402	4.1	4,721	3.5	4,302	3.1	3,864	2.7
Norway	265	0.4	891	0.6	1,930	1.4	2,358	1.8	2,399	1.8	2,704	1.9	2,839	2.0
Panama	..	..	5	..	38	..	98	0.1	121	0.1	232	0.2	153	0.1
United Kingdom	9,892	13.1	18,792	13.6	16,680	12.1	16,560	12.7	15,965	11.8	17,296	12.4	16,906	11.9
U. S. A.	..	..	767	0.6	530	0.4	655	0.5	628	0.5	404	0.3	396	0.3
Others	110	0.2	334	0.2	306	0.2	108	0.1	86	0.1	199	0.1	226	0.2
Total (a)	75,443	100.0	138,388	100.0	137,583	100.0	130,694	100.0	134,794	100.0	139,057	100.0	141,687	100.0
(b)	71,456	94.7	135,841	98.2	135,094	98.2	127,486	97.5	131,651	97.7	135,498	97.4	137,689	97.2
(c)	3,987	5.3	2,547	1.8	2,489	1.8	3,208	2.5	3,143	2.3	3,559	2.6	3,998	2.8

(a) Grand total.

(b) Steam and motor vessels.

(c) Sailing vessels with auxiliary motors.

⁴ Keller, Arthur S., "Netherlands India as a Paying Proposition," *Far Eastern Survey*, 1940, p. 17.

⁵ Gelderen, J., van, *The Recent Development of Economic Foreign Policy in the Netherlands East Indies*, No. 20, Publications of the Graduate Institute of International Studies, New York, 1939.

⁶ *Economic Handbook*.

⁷ *Indisch Verslag*.

In contrast to foreign shipping, the shares of various countries in the inter-island shipping of the Indies have remained remarkably constant. While later figures are not yet available in exactly the form used in Table 59, the amounts of certain commodities shipped in this trade are good indications that transportation in this field, as in others, was active in 1939. Inter-island rice shipments rose from 157,395 tons in 1938 to 217,484 in 1939, pitcoal from 682,582 to 754,091, rubber from 7,030 to 10,553 and copra from 72,561 to 93,359.⁸

Railways: Railways in the Netherlands Indies were first opened to public use in 1872. Because of the mountainous character of the countryside and the great number of rivers, building the railway network presented considerable difficulties. With some exceptions the 1.067-meter gauge has been adopted as standard. The Government Railways form the largest railway system in Netherlands India and the greatest rail development is found in Java. The so-called tramway companies carry passengers and freight and connect with the Government Railways while the smaller private railways were mostly constructed for the sugar companies or for the government salt works in Madura. In 1933, 1934, 1935 and 1936 the Government Railways ran at a deficit, the first time such an event had occurred. The private lines, however, dependent as they are upon specific products for freight, have been less successful.⁹ Of the total railway lines in the Indies at the end of 1938 (some 7,332 kilometers), government lines in Java and Madura were 2,929, and in Sumatra 1,421 kilometers long, while private lines in Java and Madura were 2,429 and in Sumatra only 553 kilometers long. This uneven distribution of railway mileage is a reflection of the extremely dense population of Java and Madura and the relatively sparse population of Sumatra. The state lines in Java and Madura included some 215 kilometers of double track at the end of 1939. Of the 1,279 locomotives in use in 1938, only 14 were electric and 13 of these belonged to the State Railways of Java and Madura. Table 60 further indicates the development of railways in Java and Madura as compared with Sumatra.

TABLE 60. NETHERLANDS EAST INDIES: RAILWAY OPERATIONS IN JAVA AND MADURA, AND SUMATRA, IN 1938¹⁰

REGION	AVERAGE LENGTH OPEN FOR TRAFFIC (In kilometers)	PASSENGERS CARRIED (In millions)	FAST AND SLOW FREIGHT CARRIED (In thousand metric tons)
Java and Madura	5,358	54.5	7,256
Sumatra	1,974	12.2	2,461
Total, Netherlands Indies	7,332	66.7	9,717

⁸ Departement van Economische Zaken, *Economisch Weekblad voor Nederlandsch-Indië*, 1940, April 26, Special Number—*Jaaroverzicht, 1939*, Batavia, p. 760.

⁹ Götz, J. F. F., "Railways in the Netherlands Indies, with Special Reference to the Island of Java," *Bulletin of the Colonial Institute of Amsterdam*, 1939, pp. 267-290.

¹⁰ *Indisch Verlag*.

Table 61 gives statistics for both public and private railways up to 1938, and for the Government Railways for 1937, 1938 and 1939. While passenger traffic on the state lines in 1939 increased 2.3%, freight traffic increased 14.7% over 1938. The stimulus to trade in the second half of 1939 produced by the outbreak of the European war and the resulting demand for colonial products explains the great increase in freight traffic in that year.

TABLE 61. NETHERLANDS EAST INDIES: RAILWAY OPERATIONS¹¹

PERIOD	AVERAGE LENGTH OPEN FOR TRAFFIC (a) (In kilometers)	PASSENGERS CARRIED (In millions)	FAST AND SLOW FREIGHT CARRIED (b) (In thousand metric tons)
ALL RAILWAYS			
1915	5,216 (c)	103.2	10,246
1925-29 Average	7,250	140.2	16,633
1930-34 Average	7,358	74.5	11,099
1935	7,341	50.7	7,181
1936	7,341	51.9	7,609
1937	7,337	64.9	10,046
1938	7,332	66.7	9,717
STATE RAILWAYS ONLY			
1937	4,350	39.6	5,835
1938	4,350	41.5	5,596
1939	4,350	42.4	6,416

(a) Up to 1929, inclusive, street cars were included; excluded thereafter. In 1938 street car lines extended 64 kilometers.

(b) In addition, in 1915, 56,000 metric tons of luggage and 36,000 metric tons of parcels were hauled; in 1938, 19,300 metric tons of luggage and 14,100 metric tons of parcels were carried.

(c) Distance open for traffic on December 31. Average length open for traffic slightly smaller.

Highways and Motor Vehicles: Like railways, highways are far more extensive in Java and Madura than in other sections of the Netherlands Indies. There are some 50,000 kilometers of first-class roads in the Indies, of which 12,269 kilometers are asphalted and 40,521 hardened but not asphalted. In addition there are nearly 16,000 kilometers of roads with unimproved surfaces. Table 62 gives figures for road development on January 1, 1939.

TABLE 62. NETHERLANDS EAST INDIES: ROADS,
AS ON JANUARY 1, 1939¹²
(In kilometers)

REGION	ASPHALTED	HARDENED BUT NOT ASPHALTED	NOT HARDENED	TOTAL
Java and Madura	8,640	14,058	4,084	26,782
Outer Provinces	3,629	26,463	11,911	42,003
Netherlands Indies	12,269	40,521	15,995	68,785

¹¹ *Indisch Verslag; Economic Handbook*, p. 171; *Economisch Weekblad*, p. 768.

¹² *Indisch Verslag*, 1939, pp. 406, 410.

Motor vehicle registrations, after reaching a peak in the early thirties, decreased sharply in the depression; between 1935 and 1940 they increased again by almost one half. In Table 63 the figures given for registrations on January 1, 1939 and 1940, are not comparable with the earlier figures. The 1940 data are from an American source and those for 1939 represent "the number of motor vehicles in the Netherlands Indies," while data for 1938 and earlier represent "motor vehicles in use according to the statistics of number licenses [*sic*] issued and withdrawn." Moreover, the 1939 data are classified differently from those for earlier years.

The passenger car figure for 1939 includes 38,540 private and 14,550 public vehicles, the latter being distributed as follows: 9,761 in Java and Madura, and 4,789 in the Outer Provinces, while the former included 29,094 in Java and Madura, and 9,446 in the Outer Provinces.

TABLE 63. NETHERLANDS EAST INDIES: MOTOR VEHICLES¹³

PERIOD	PASSENGER CARS	BUSES	TRUCKS AND TRAILERS (a)	MOTORCYCLES	THREE-WHEELERS	TOTAL
1925-29 Average	51,648	3,524	9,250	10,358	(b)	74,780
1930-34 Average	60,392	6,542	13,576	13,196	(b)	93,706
1935	36,163	5,741	8,019	10,029	1,898	61,850
1936	41,422	6,639	9,602	11,691	2,024	71,378
1937	44,921	7,114	10,298	11,804	1,799	75,936
1938	47,642	8,899	11,524	12,517	1,800	82,382
1939	53,090	7,216	9,655	13,239	(b)	83,200
1940	53,000	8,600	13,150	15,400(c)	...	90,410(d)

(a) Trucks only, 1935-1939. In 1939, 204 semi-trailers and 677 trailers were listed but not included in the total of 83,200.

(b) Not given.

(c) Includes three-wheelers.

(d) Includes 265 Diesel units.

Distribution of motor vehicles in various sections of the Indies on January 1, 1939, is illustrated in Table 64.

TABLE 64. NETHERLANDS EAST INDIES: MOTOR VEHICLES IN JAVA AND MADURA, AND IN THE OUTER PROVINCES, JANUARY 1, 1939¹⁴

REGION	PASSENGER CARS	BUSES	TRUCKS	MOTORCYCLES	TOTAL
Java and Madura	38,855	1,529	5,306	9,647	55,337
Outer Provinces	14,235	5,687	4,349	3,592	27,863
Netherlands Indies	53,090	7,216	9,655	13,239	83,200

Motor bus and truck competition with the railways for freight and passenger traffic became of considerable magnitude during the depression, facilitated by the fact that hauls are short in the Indies (the average distance goods are actually carried on railways is 100 kilometers while the average passenger rail trip is only 30 kilometers long) and the fact

¹³ Dept. van Economische Zaken, *Statistisch Jaaroverzicht van Nederlandsch-Indië, 1933-36*; *Indisch Verslag*; and U.S. Dept. of Commerce, Motive Products Division, for 1940 data.

¹⁴ *Indisch Verslag*.

that government rail freight rates are proportionate to the value of the commodity; this results in a highly varied rate scale from which unorganized motor truck transport could profit by considerable undercutting.

Since 1936 a "Road Traffic Ordinance" has begun the regulation of passenger and freight automotive traffic by means of licenses; while this has produced more or less successful results in respect to the former, truck competition for freight remains a serious problem for the railways. In this field truckers have the added advantage of being able to transport directly from the estates—often situated at a considerable distance from railway stations. Satisfactory combined motor and rail arrangements have been worked out in many such instances. At the present time the bus lines are more than 50% owned by the government.¹⁵ Severe competition in Java as in Sumatra has forced truck freight rates down until nearly every truck trip shows a loss; as a result, several transport companies have failed. In an effort to rehabilitate the motor truck business in West Java, a Central Freight Bureau has been established in Batavia which will take over the entire freight traffic business in cooperation with the State Railways and the truck concerns. It plans to introduce uniform tariffs, and will distribute freight traffic proportionately between the various transportation concerns and the State Railways.¹⁶

Table 65 gives some rather incomplete figures on the automobile services which are maintained by the government as well as by the private railway and tramway companies; figures for independent companies are not available.

TABLE 65. NETHERLANDS EAST INDIES: AUTOMOBILE SERVICES MAINTAINED BY THE GOVERNMENT AND BY PRIVATE RAILWAY AND TRAMWAY COMPANIES¹⁷

YEAR AND REGION	DISTANCE COVERED (In thousand kilometers)	PASSENGERS CARRIED (In thousands)	GOODS CARRIED (In metric tons)
1931 Java and Madura	(a)	(a)	(a)
Sumatra	1,601	42	8,271
1932 Java and Madura	12,513	9,230	6,857
Sumatra	1,094	(a)	(a)
1933 Java and Madura	7,552	2,728	(a)
Sumatra	787	34.5	4,190
1934 Java and Madura	3,113	800	(a)
Sumatra	706	35.7	3,836
1935 Java and Madura	2,080	503	(a)
Sumatra	716	33.6	6,586
1936 Java and Madura	1,998	447	(a)
Sumatra	692	37.3	4,134
1937 Java and Madura	2,382	524	66,840
Sumatra	782	55.4	4,620
1938 Java and Madura	2,211	579	(a)
Sumatra	712	59.3	3,977

(a) Not available.

¹⁵ Götz, *op. cit.*; and *Far Eastern Survey*, 1940, p. 16.

¹⁶ *Foreign Railway News*, 1940, No. 1, January 5.

¹⁷ *Indisch Verlag*, 1939, p. 403; *Foreign Railway News*, 1940, No. 14, April 5, p. 121.

Airways: International air service in the Pacific area has been made available to Netherlands India since 1930 when the Netherlands-Netherlands Indies route was opened by K.L.M. In the same year K.N.I.L.M., which had been operating domestic services within the Indies since 1928, entered the international field by inaugurating its Batavia-Singapore line. In 1933 K.L.M. also extended its domestic lines, operating within the Indies since 1930, to Singapore and this service has continued regularly ever since, with only a two-month break at the end of 1934. In September 1938 K.N.I.L.M. extended its Singapore route to Saigon while in July of the same year it inaugurated a Batavia-Darwin-Sydney service. In the meantime the Australian company, Qantas Airways, Ltd., opened a new service on December 8, 1934, flying from Darwin via Koepang, Rambang, Soerabaya and Batavia to Singapore. International airway service in Netherlands India in 1938 was therefore provided by three companies, one of which was of foreign nationality. K.N.I.L.M. has been able to maintain its services with practically 100% regularity.

Domestic air services, beginning in 1928, were remarkably developed in Netherlands India in 1938; domestic traffic in the latter year was the highest yet recorded.

TABLE 66. NETHERLANDS EAST INDIES: OPERATIONS OF AIR LINES¹⁸

YEAR	LENGTH OF ROUTES (a) (In kilometers)	KILOMETERS FLOWN (In thousands)	PASSENGERS CARRIED (Number)	GOODS AND BAGGAGE CARRIED (In kilograms)	MAIL CARRIED (In kilograms)	COMPANIES OPERATING
A. ON WHOLLY DOMESTIC ROUTES						
1928	510	...	1,365	3,509	200	K.N.I.L.M.
1929	1,765	422	11,243	62,000	2,205	"
1930	4,929	683	13,279	115,000(b)	11,266	" and K.L.M.
1931	5,649	893	12,967	87,000	32,874	" " "
1932	5,064	927	10,355	59,000(b)	18,395(b)	" " "
1933	2,877	755	9,400	62,400	21,372	K.N.I.L.M. "
1934	2,877	790	10,098	67,000	24,546	"
1935	3,967	808	9,300	62,000	21,623	"
1936	4,396	952	10,840	63,200	26,031	"
1937	4,673	1,087	13,319	71,200	27,890	"
1938	4,673	1,226	19,355	87,300	43,390	"
B. ON INTERNATIONAL ROUTES, INCLUDING DOMESTIC TRAFFIC						
1930	1,161	102	616	6,000	668	K.N.I.L.M.
1931	1,161	121	501	8,000	1,075	"
1932	1,161	121	462	6,900	1,064	"
1933	2,199	244	676	9,600	2,205	" and K.L.M.
1934	2,199	242	833	8,700	2,271	" " "
1935	6,790	807	1,154	10,000(b)	1,208(c)	" " " Qantas
1936	6,790	1,150	1,915	6,200(b)	1,331(c)	" " " "
1937	6,234	1,269	895(b)	6,900(b)	1,759(c)	" " " "
1938	13,414	2,177	2,864(d)	14,200(c)	10,677(c)	" " " "

(a) Includes duplications. Beginning with 1937 the length of routes is given as the direct distance between aerodromes; previously a certain percentage was added to account for extra distance actually travelled.

(b) Figure for K.L.M. not available.

(c) K.N.I.L.M. only.

(d) Figure for Qantas not available.

¹⁸ *Indisch Verlag.*

"[Netherlands] Government subsidies largely support the K.L.M. air lines which derive their principal income from East Indian Government business, including the mails and the transportation of officials and government business."¹⁹ The Netherlands Indian Government subsidizes K.N.I.L.M.; in 1939 this support amounted to \$392,200, \$265,000 of which was for the Indies-Australian service. The 1940 budget included \$531,900 as a cash subsidy to the K.N.I.L.M.²⁰

In Table 66 the *international section includes flights within the Pacific area, but omits statistics on the Batavia-Amsterdam service.* This section also includes some domestic traffic. Data are given in the source as traffic over certain specified routes, some purely domestic and others which, although their termini are in foreign countries, also include stops at domestic airports. No differentiation is made between domestic traffic carried on these international routes, and purely international traffic. The international section of Table 66 therefore probably includes some domestic traffic; but the domestic section does not include any international traffic.

Traffic in 1938 and 1939 on the Amsterdam-Batavia line operated by K.L.M. is illustrated in Table 67.

TABLE 67. NETHERLANDS EAST INDIES: K.L.M.'S AMSTERDAM-BATAVIA SERVICES IN 1938 AND 1939²¹

YEAR	PASSENGERS CARRIED	MAIL CARRIED (In kilograms)	EXPRESS CARRIED (In kilograms)
1938	5,720	124,362	97,075
1939	6,088	164,752	87,899

In the last two years, K.N.I.L.M. has been increasing its international operations in the Far East, as is indicated in Table 68; and in 1940 a new route from Macassar to Amboina (Molucca) and New Guinea was opened.

TABLE 68. NETHERLANDS EAST INDIES: OPERATIONS OF K.N.I.L.M. IN 1938 AND 1939²²

YEAR AND OPERATION	KILOMETERS FLOWN (In thousands)	GOODS CARRIED (In kilograms)	MAIL CARRIED (In kilograms)	PASSENGER-KILOMETERS (In thousands)
1938				
Domestic	1,226	87,300	43,390	4,769
International	777	14,200	10,677	2,227
Total	2,003	101,500	54,067	6,996
1939				
Domestic	1,220	90,300	43,084	5,563
International	1,220	24,500	18,097	4,473
Total	2,440	114,800	61,181	10,036

¹⁹ Keller, Arthur S., *op. cit.*, p. 16.

²⁰ *Aeronautical World News*, October 31, 1939, p. 259.

²¹ *Aeronautical World News*, March 15, 1940, p. 395.

²² *Economisch Weekblad*, p. 791.

11. THE PHILIPPINES

Shipping: The distribution of the overseas shipping of the Philippines among various foreign countries is illustrated in Table 69. The share of the United States declined sharply throughout the period covered, while Britain's, although dropping from 37.8% to 31.0%, is still the leader. The Philippines' own share, inconspicuous as it was, declined until 1935; by 1938 it had risen to a mere 1%. Two Philippine shipping lines were started in that year, so a further increase in this percentage may be expected. Japan is the leading Asiatic country engaged in this trade, while Norway's share has been increasing steadily.

In view of the fact that neither the highway system nor the railway routes of the islands are very highly developed, and also because of the geographic distribution of the islands, a large proportion of the transportation within the Commonwealth is carried by inter-island and coastwise shipping, which is confined by law to domestic lines. While there was a great increase in coastwise shipping between 1910 and 1929, since

TABLE 69. THE PHILIPPINES: NATIONALITY OF VESSELS ENTERING IN FOREIGN TRADE¹
(In thousand tons and percentages of total tonnage)

NATIONALITY	AVERAGE 1925-29	AVERAGE 1930-34	1935	1936	1937	1938
	Tonnage %	Tonnage %	Tonnage %	Tonnage %	Tonnage %	Tonnage %
American	480 25.5	423 20.1	397 19.3	355 15.9	328 14.1	236 10.0
British	711 37.8	666 31.6	692 33.7	751 33.6	688 29.5	735 31.0
Chinese	6.7 0.4	10 0.5	19 0.9	46 2.1	52 2.2	27 1.1
Danish	7.9 0.4	47 2.3	73 3.6	78 3.5	77 3.3	89 3.8
Dutch	83 4.4	145 6.9	132 6.4	152 6.8	166 7.1	169 7.1
Filipino	17 0.9	6.8 0.3	0.4 . .	4 0.2	11 0.5	24 1.0
German	211 11.2	201 9.6	213 10.4	186 8.3	208 8.9	204 8.6
Japanese	259 13.8	392 18.6	299 14.5	366 16.4	445 19.1	512 21.6
Norwegian	60 3.2	157 7.5	155 7.5	209 9.4	222 9.5	239 10.1
Total, including others	1,879 100.0	2,104 100.0	2,055 100.0	2,234 100.0	2,330 100.0	2,370 100.0

TABLE 70. THE PHILIPPINES: COASTWISE AND BAY AND RIVER SHIPPING²
(Number of vessels and tonnage in thousand tons)

PERIOD	COASTWISE		BAY AND RIVER		TOTAL	
	Number	Tonnage	Number	Tonnage	Number	Tonnage
1910/11-1912/13 Average	628	52	...	...	...	...
1925-1929 Average	1,657	85	1,747	42	3,404	127
1930-1934 Average	1,596	89	1,720	45	3,316	134
1935	1,591	82	1,577	43	3,168	125
1936	1,668	82	1,503	43	3,171	125
1937	1,545	81	1,362	45	2,907	126
1938	1,737	88	1,595	51	3,332	139

¹ Dept. of Finance, Bureau of Customs, *Annual Reports of the Insular Collector of Customs, Manila.*

² *Ibid.*

the latter date neither the number nor the tonnage of these vessels has changed materially, as indicated in Table 70. In 1927 the monopolies operating many of the inter-island lines were abolished which resulted in considerably improved and regularized service. Unfortunately, figures indicating the passenger and freight traffic on coastwise and bay and river shipping are unavailable.

Railways: There are approximately 5,000 kilometers of railways and tramways in the Philippines, less than 1,500 kilometers of which are used for public service, the remainder being the property of such organizations as sugar and lumber companies. There are two public service railway lines in the Philippines; the largest, the Manila Railroad Company, has been owned by the Philippine Government since 1917, when it was purchased from a British firm. It operates 1,128 kilometers of line on Luzon. The Philippine Railway Company is privately owned and operates 212 kilometers of line on Cebu and Panay. The Manila Railroad Company's track are 3'6" gauge, and only 13.5 kilometers are

TABLE 71. THE PHILIPPINES: RAILROAD TRANSPORTATION³

PERIOD AND LINE	LENGTH OF LINE (In kilometers)	PASSENGERS CARRIED (In thousands)	FREIGHT CARRIED (In thousand tons)
1910-14 Average (a)	756	5,135	646
1925-29 Average	1,277	10,646	1,978
1930-34 Average			
Manila RR.	1,154	7,721	1,753
Philippine RR.	212	2,323	410
Total	1,365	10,043	2,163
1935			
Manila RR.	1,183	7,042	1,246
Philippine RR.	212	2,790	341
Total	1,395	9,832	1,587
1936			
Manila RR.	1,183	8,926	1,291
Philippine RR.	212	2,545	359
Total	1,395	11,470	1,650
1937			
Manila RR.	1,091	10,279	1,575
Philippine RR.	212	2,473	370
Total	1,303	12,752	1,945
1938			
Manila RR.	1,128	10,159	1,543
Philippine RR.	212	2,469	385
Total	1,340	12,628	1,929
1939 Manila RR.	...	...	1,520

(a) No data available for North Luzon line for 1910 and 1914.

³ Dept. of Commerce and Industry, *Philippine Statistical Bulletin*, for 1910-1929 figures; Department of Agriculture and Commerce, *Bulletin of Philippine Statistics*, for figures for 1930-1938; 1939 data from U.S. Dept. of Commerce, *Philippine Economic Conditions*, and *American Chamber of Commerce Journal*.

double tracked; the Philippine Railway also uses the 3'6" gauge. In order to speed up service the Manila road has purchased oil-burning and Diesel locomotives.⁴ After serious financial difficulties in the early thirties it also entered the motor transport business, purchasing buses and trucks and establishing a number of routes feeding into the railway system throughout Luzon. The coastwise shipping facilities combine with these land services to form a reasonably complete transport situation for Luzon. On Mindanao, by contrast, with no railways and few roads, and with many inland regions inaccessible, because of the island's size, for water transport, communications of all kinds are seriously lacking. Table 71 shows the operations of the Philippine railroads since 1910, separated according to operating company after 1930.

Highways and Motor Vehicles: The highway program of the Commonwealth is being vigorously pushed as a part of its effort to open virgin territories to colonization and to provide transportation facilities for marketing products grown in regions accessible only by foot or bridle paths. (In 1937, in addition to the 17,622 kilometers of highways, there were 4,923 kilometers of trails.) The length of first-class highways in the Philippines increased fivefold between 1910 and 1938 while the mileage of third-class roads remained practically unchanged. There were 4,500 kilometers of highways having macadam surfaces of various types in 1937, but only 141 kilometers of concrete-surfaced roads.⁵ Of the total length of roads in the Philippines in 1938, as given in Table 72, there were 431 kilometers of first-class, 138 second-class and 57 third-class, or a total of 626 kilometers, listed as being located in cities.

TABLE 72. THE PHILIPPINES: LENGTH OF ROADS⁶
(In kilometers)

AT YEAR END	1ST CLASS	2ND CLASS	3RD CLASS	TOTAL
1910-1914 Average	1,891	1,782	3,105	6,778
1925-1929 Average	6,137	2,995	2,373	11,505
1930-1934 Average	8,101	4,295	2,241	14,637
1935	9,272	4,879	1,966	16,117
1936	9,556	5,105	2,083	16,744
1937	9,882	5,654	2,086	17,622
1938	10,409	5,975	2,791	19,175

The growth in motor vehicle registrations has also been very rapid the number registered in 1938 being double the average for the 1925-29 period. This growth has been accompanied by the development of bus and truck transportation which began as far back as 1911. At present motor transport companies represent an eight million dollar investment and operate under franchises granted by the Public Utility Commission. Since the depression the independent motor companies have suffered

⁴ *Foreign Railway News*, 1940, No. 21, May 24.

⁵ *Automotive World News*, Sept. 1, 1939; and *Annual Report of the Secretary of Public Works and Communications to the President of the Philippines*, Dec. 31, 1938, Manila, 1939, p. 28.

⁶ *Philippine Statistical Bulletin* for 1910-1929 data; *Statistical Handbook of Philippine Islands*, 1932, for 1930-1932 data; *Philippine Statistical Review*, for 1933-1936 data; and *Bulletin of Philippine Statistics*, for 1937-1938 data.

from competition with the bus and truck lines operated by the Manila Railroad Company since 1930. The Manila Railroad operated about 35 motor transport routes in 1938, for both passengers and freight, over routes aggregating 1,800 kilometers, including duplication.⁷ The basic bus transportation charge of one centavo per passenger per kilometer is the same as the third-class railway charge. Unfortunately, data on traffic via motor transport are not available for comparison with those for railway traffic. Table 74, however, gives the profits and losses of various types of land transport companies in recent years.

TABLE 73. THE PHILIPPINES: MOTOR VEHICLES REGISTERED⁸

VEHICLES	1912-14 AVERAGE	1925-29 AVERAGE	1930-34 AVERAGE	1935	1936	1937	1938	1939	1940
Automobiles	700	17,900	24,600	27,381	28,420	30,361	32,301	32,424	32,918
Trucks	80	7,999	15,100	16,457	17,355	18,293	18,869	16,603(a)	20,630(a)
Motorcycles	300	700	500	524	518	540	581	581	552
Total	1,100	25,600	40,100	44,362	46,293	49,194	51,751	49,608	54,194(b)

(a) Trucks and buses.

(b) Including 94 Diesel units.

TABLE 74. THE PHILIPPINES: OPERATIONS OF PUBLIC UTILITIES ENGAGED IN LAND TRANSPORTATION⁹
(Expressed as percentages of investment: Profit and Loss(-))

UTILITIES	1934	1935	1936	1937
Auto-calesa	-20.78	- 9.57	11.37	0.85
Automobiles (PU)	11.51	11.39	16.34	2.74
Auto-trucks (TH) (a)	28.76	13.24	25.15	40.61
Auto-trucks (TPU)	13.12	9.32	8.11	17.06
Garage (automobiles)	- 8.52	-23.03	- 1.03	- 3.99
Railways	1.30	7.10	0.10	0.83
Taxicabs	-12.05	- 4.09	11.57	0.36
Tramways	3.10	2.24	2.17	- 0.21
Average return	1.08	1.45	1.91	2.23

(a) Freight trucks.

Airways: The Philippine Air Transport Company, founded in 1930, suspended operations at the end of July 1940 because of unprofitable returns, partly caused by the decline in mining activity, the backbone of the Manila, Baguio, Legaspi and Paracale services. This left one air company which operated 962 miles of domestic routes¹⁰ in the Philippines in 1938, as well as Pan American Airways, which has been flying its trans-Pacific clippers since 1935. Table 75, which gives figures for

⁷ *Foreign Railway News*, 1940, No 21, May 24.⁸ *Philippine Statistical Review*, 1936, for 1912-1934 figures; *Bulletin of Philippine Statistics* for 1935-1938 figures. Data for 1939 and 1940 from Motive Products Division. Data up to 1934 in round numbers.⁹ *Bulletin of Philippine Statistics*, 1939, Nos. 1-2, p. 286.¹⁰ *The Third Annual Report of the President of the Philippines to the President and Congress of the United States*, Washington, 1940, p. 16.

domestic aircraft operations, indicates a rather stable number of passengers during the years for which data are available, most of the increase which did occur being accounted for by the rather large growth in the number of free passengers, while at the same time the increase in air mail and air express has been dramatic. Table 76 gives figures for three years of Pan American's operation of the clipper service from Alameda, California, to Manila and Hongkong.

TABLE 75. THE PHILIPPINES: DOMESTIC AIRCRAFT OPERATIONS¹¹

YEAR	DISTANCE FLOWN (In thousand miles)	PASSENGERS CARRIED			AIR EXPRESS CARRIED (In pounds)	AIR MAIL CARRIED (In pounds)
		Paying	Free	Total		
1933	382	17,840	1,893	19,733	...	1,920
1934	525	20,408	1,023	21,431	...	4,920
1935	521	19,984	927	20,911	...	7,550
1936	702	17,813	1,043	18,856	60,703	8,498
1937	844	20,090	2,294	22,384	88,600	5,324
1938	784	18,860	2,868	21,728	1,043,387	8,661
1939	736	17,187	4,876	22,063	3,173,862	15,737

TABLE 76. THE PHILIPPINES: INTERNATIONAL AIR SERVICE, PAN-AMERICAN AIRWAYS¹²

YEAR	PASSENGERS	MAIL (In pounds)	EXPRESS (In pounds)
1936	217	2,791	2,646
1937	911	7,232	9,865
1938	1,019	7,385	10,399

¹¹ *Bulletin of Philippine Statistics*, for 1933-1938 data; 1939 data from *Aeronautical World News*, May 15, 1940, p. 448.

¹² *Annual Report of the Secretary of Public Works and Communications*, 1938, Manila, 1939, p. 21.

12. AUSTRALIA

Shipping: Australia's share in her own overseas shipping has decreased since the pre-War period but the comparative positions of the British as opposed to the "foreign" shares in this shipping, while showing a sharp drop in the depression years, by 1938-39 had returned to almost exactly their pre-War proportions. Norway leads among the foreign countries engaged in the trade. Japan's share reached its highest peak, 9.5%, during the depression and, while it is not of great importance in the general picture, Japanese shipping has assumed a dominant position in the trade between Australia and the Far East which "led the Australian Government to intervene [in 1938] when discussions between the shipping companies concerned broke down after an unsuccessful attempt to settle a fixed allocation of cargoes between Japanese and Australian lines on a percentage basis. As a result of this intervention it was

announced in June [1938] that a compromise arrangement had been reached under which during the next two years Japanese lines will carry 77.5% and British-Australian lines 22.5% of the cargoes."¹ In this, the Australian shipping situation is similar to that in the Netherlands Indies where disputes between Japanese and Netherland shipping companies finally resulted in a similar adjustment, also for a rather short period.

Unfortunately, Table 77, which gives the distribution by nationalities of the tonnage of Australia's overseas shipping, does not furnish details on shipping in the Pacific area alone. Table 78, however, shows the direction of overseas shipping, divided by large geographical areas. This furnishes only a rough indication, however, since shipping bound ultimately for the United Kingdom, for instance, may be routed via African ports, although the vessels concerned are recorded only according to their final destination; and, while they may touch at New Zealand ports, vessels on their way to the United States or Canada are not included in the records of Australian shipping leaving for New Zealand. In other words, Australian statistics record vessels according to the first port of origin and the port of final destination.

TABLE 77. AUSTRALIA: NATIONALITY OF SHIPPING ENTERING AUSTRALIAN PORTS²

(In thousand net tons and percentages of total tonnage)

YEARS ENDING JUNE 30 (after 1914)	1909-1913 AVERAGE (a)		1924/25-1928/29 AVERAGE		1930/31-1934/35 AVERAGE		1937/38		1938/39	
	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%
BRITISH :										
Australian	810	8.3	363	6.6	265	4.6	363	5.1	331	4.9
United Kingdom	5,225	53.6	3,114	56.8	3,074	53.8	4,021	56.4	3,744	55.8
Canadian	...		75	1.4	58	1.0	31	0.4	20	0.3
New Zealand	1,097	11.3	452	8.2	306	5.4	506	7.1	563	8.4
Other British	31	0.3	91	1.7	135	2.4	237	3.3	229	3.4
Total British	7,164	73.5	4,095	74.6	3,837	67.2	5,158	72.3	4,887	72.8
FOREIGN :										
Danish	8	0.1	57	1.0	64	1.1	56	0.8	55	0.8
Dutch	148	1.5	136	2.5	166	2.9	200	2.8	291	4.3
French	433	4.4	106	1.9	111	1.9	103	1.4	108	1.6
German	1,029	10.6	119	2.2	121	2.1	180	2.5	141	2.1
Italian	71	0.7	75	1.4	72	1.3	70	1.0	68	1.0
Japanese	160	1.6	242	4.4	540	9.5	318	4.5	330	4.9
Norwegian	501	5.1	265	4.8	378	6.6	482	6.8	325	4.8
Swedish	49	0.5	99	1.8	123	2.2	116	1.6	124	1.8
U.S.A.	84	0.9	251	4.6	225	3.9	216	3.0	175	2.6
Others	94	1.0	42	0.8	72	1.3	228	3.2	207	3.1
Total Foreign	2,578	26.5	1,391	25.4	1,872	32.8	1,970	27.6	1,824	27.1
Grand Total	9,743	100.0	5,486	100.0	5,710	100.0	7,128	100.0	6,711	100.0
	(a)									

(a) Vessels entered and cleared.

¹ Shepherd, Jack, "Britain Acts on Shipping Committee Report," *Far Eastern Survey*, 1939, April 12, p. 96.

² Bureau of Census and Statistics, *Official Year Book of the Commonwealth of Australia*, annual, Canberra.

TABLE 78. AUSTRALIA: DIRECTION OF SHIPPING³
(In thousand net tons and percentages of total tonnage)

YEARS ENDING JUNE 30, AFTER 1914	1909-1913 AVERAGE		1925/26- 1929/30 AVERAGE		1930/31- 1934/35 AVERAGE		1935/36		1936/37		1937/38		1938/39 (a)	
	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%
ENTERED FROM														
U. K. and Europe														
Cargo	1,939	39.6	1,878	34.5	1,610	28.2	1,812	29.0	1,679	26.8	1,792	25.1	} 1,997	29.8
Ballast	88	1.8	22	0.4	512	9.0	281	4.5	233	3.7	362	5.1		
New Zealand													} 1,010	15.0
Cargo	675	13.8	474	8.7	457	8.0	557	8.9	732	11.7	774	10.9		
Ballast	162	3.3	191	3.5	113	2.0	134	2.1	169	2.7	204	2.9		
Asiatic countries and islands in the Pacific													} 2,461	36.7
Cargo	728	14.9	1,240	22.7	1,292	22.6	1,722	27.6	1,833	29.2	2,051	28.8		
Ballast	148	3.0	233	4.3	555	9.7	353	5.7	231	3.7	281	3.9		
Africa													} 169	2.5
Cargo	29	0.6	35	0.6	20	0.4	35	0.6	49	0.9	55	0.8		
Ballast	290	5.9	68	1.2	184	3.2	172	2.8	194	3.1	291	4.1		
North and Central America													} 1,059	15.8
Cargo	488	10.0	1,290	23.6	956	16.7	1,162	18.6	1,135	18.1	1,233	17.3		
Ballast	37	0.8	10	0.2	5	0.1	6	0.1	6	0.1	56	0.8		
South America													} 15	0.2
Cargo	18	0.4	7	0.1	2	..	3	..	3	..	5	0.1		
Ballast	297	6.1	6	0.1	4	0.1	..	..	..	..	24	0.3		
Total														
Cargo	3,878	79.2	4,925	90.2	4,336	75.9	5,291	84.8	5,441	86.7	5,911	82.9	..	..
Ballast	1,021	20.8	531	9.7	1,374	24.1	947	15.2	833	13.3	1,217	17.1	..	..
Grand Total	4,899	100.0	5,456	100.0	5,710	100.0	6,238	100.0	6,274	100.0	7,128	100.0	6,711	100.0
CLEARED FOR														
U. K. and Europe														
Cargo	2,010	41.5	2,373	43.1	2,528	44.2	2,719	43.1	2,735	43.2	3,004	42.4	} 2,791	40.8
Ballast	..	..	8	0.1	9	0.2	17	0.3	3	..	27	0.4		
New Zealand													} 938	13.7
Cargo	1,005	20.8	594	10.8	468	8.2	537	8.5	832	13.1	918	12.9		
Ballast	52	1.1	39	0.7	50	0.9	74	1.2	40	0.6	38	0.5		
Asiatic countries and islands in the Pacific													} 2,429	35.5
Cargo	922	19.0	1,171	21.3	1,562	27.3	1,695	26.9	1,474	23.3	1,544	21.8		
Ballast	52	1.1	413	7.5	373	6.5	526	8.3	588	9.3	819	11.5		
Africa													} 178	2.6
Cargo	113	2.3	128	2.3	61	1.1	50	0.8	43	0.7	112	1.6		
Ballast	..	..	5	0.1	1	..	..	..	3	..	50	0.7		
North and Central America													} 486	7.1
Cargo	195	4.0	516	9.4	527	9.2	591	9.4	519	8.2	498	7.0		
Ballast	33	0.7	215	3.9	126	2.2	88	1.4	92	1.5	81	1.1		
South America													} 12	0.2
Cargo	455	9.4	41	0.7	14	0.2	5	0.1	8	0.1	2	..		
Ballast	6	0.1	3	0.1	..	..	4	0.1	..	..	..	..
Total														
Cargo	4,701	97.1	4,822	87.6	5,159	90.2	5,598	88.8	5,612	88.5	6,078	85.7	..	..
Ballast	142	2.9	682	12.4	559	9.8	709	11.2	726	11.5	1,015	14.3	..	..
Grand Total	4,843	100.0	5,504	100.0	5,718	100.0	6,307	100.0	6,338	100.0	7,093	100.0	6,835	100.0

(a) Figures for 1938-39 include vessels with cargo and in ballast.

³ Official Year Book of the Commonwealth of Australia.

Taken together, the shipping which plies from Australia to New Zealand and other Asiatic countries accounted for about 50% of total overseas tonnage entering and clearing Australian ports in 1938-39 as compared to the 1925-29 period when it averaged only about 40%. Tonnage leaving for Europe has increased absolutely in the last fifteen years (although proportionately it has been decreasing) while that originating there decreased until 1937-38. Shipping bound for New Zealand and for Asiatic countries has shown the greatest increases while that travelling to and from the Americas is relatively unimportant and has been decreasing in the last two years.

Both the number and tonnage of vessels on the state registers of Australia have declined, while the tonnage of vessels engaged only in the interstate trade has increased.

TABLE 79. AUSTRALIA: NUMBER AND TONNAGE OF VESSELS ON STATE REGISTERS⁴
(On December 31st of each year)

YEAR	STEAM & MOTOR		SAILING		NOT SELF-PROPELLED		TOTAL	
	No.	Net tons	No.	Net tons	No.	Net tons	No.	Net tons
1925	974	372,222	1,260	34,141	227	62,801	2,461	469,164
1930-34 Average	787	253,029	1,310	33,195	185	54,956	2,282	341,179
1935	696	232,005	1,321	35,076	173	49,190	2,190	316,271
1936	710	250,512	1,327	37,301	168	48,750	2,205	336,563
1937	702	248,031	1,335	37,880	171	48,429	2,208	334,340
1938	701	251,709	1,285	40,292	189	49,521	2,175	341,522

TABLE 80. AUSTRALIA: NUMBER AND TONNAGE OF VESSELS ENGAGED SOLELY IN INTERSTATE TRADE⁵

PERIOD	ENTERED		CLEARED	
	Number	Net tonnage	Number	Net tonnage
1926/27-29/30, 4-year average	4,681	6,337,810	4,692	6,393,354
1930/31-34/35, 5-year average	4,309	5,971,451	4,315	6,051,377
1935/36	4,840	6,940,271	4,846	6,943,714
1936/37 (a)	5,803	10,074,903	...	...
1937/38 (a)	6,145	10,747,427	...	...

(a) Figures for 1936/37 and 1937/38 are not comparable to earlier ones because of different methods of compilation. Figures for tonnage cleared in these two years are not given.

Railways: The railways of Australia are almost all state or federal owned. While the total mileage itself grew from 18,013 miles in 1910-11 to 28,439 miles in 1925-26, privately owned mileage, which remained

⁴ *Ibid.* Beginning with 1935/36, sailing vessels with auxiliary engines have been listed as sailing vessels; previously these had been included under steam vessels.

⁵ *Ibid.*

at about 10% of the total during these years, dropped to 3.1% in 1928-29 and in 1937-38 was only 2.8%. Meanwhile, since 1925-26, there has been little change in the total length of Australia's railways; in 1937-38 they were 27,973 miles long. In 1938-39 there were 720 miles of electrified track.

Railway construction has been undertaken by each state separately under the constitutional provision granting the states control of their internal transport facilities. In consequence, the present railway system is composed of a variety of gauges. Queensland, Western Australia, North Australia and Tasmania have adopted a 3'6" gauge; New South Wales, 4'8½"; Victoria, 5'3"; and South Australia, both 5'3" and 3'6". The most closely settled State, Victoria, does not have unbroken railway communication with the next most closely settled, New South Wales, nor with parts of its other neighbor, South Australia. In linking Western and South Australia by the Transcontinental Railway, 3,474 miles long, the Commonwealth government decided on the 4'8½" gauge, and this has become national policy. A large part (some £336 million) of the Australian indebtedness is represented by railways, and the savings which would accrue from gauge standardization and eventual amalgamation under national control would be considerable. Estimates of the cost range from £60 million to £21 million for a modified scheme. In spite of the real need for standardization, however, there has been strenuous opposition from various vested interests. It is possible that the increasing competition presented by the fast-growing air services may help lead toward unification;⁶ recently the question has again been brought to the fore as a matter of national defense.

Table 81 represents combined traffic results on both federal and state railways, beginning in 1934-35; earlier data include only the state railways.

TABLE 81. AUSTRALIA: PASSENGER AND FREIGHT TRAFFIC ON GOVERNMENT RAILWAYS⁷

ITEM	1924/25- 1928/29 AVERAGE	1929/30- 1933/34 AVERAGE	1934/35	1935/36	1936/37	1937/38	1938/39
Number of passenger journeys (in thousands)	373,355	324,141	355,997	368,196	377,634	384,942	385,151
Tonnage of goods and live-stock carried (in thousands)	36,639	27,414	29,909	31,149	32,605	35,729	33,796

Highways and Motor Vehicles: The construction of roads, bridges and ferries is part of the functions of the local Australian authorities. In New South Wales and South Australia, however, especially in the large

⁶ Milne, E. O., "Imperial Communications and Transport," *Australia in the British Commonwealth*, prepared by the A.I.I.A. for the British Commonwealth Relations Conference, 1938, Australian Supplementary Papers, Series C., mimeographed.

⁷ *Official Year Book of the Commonwealth of Australia; Foreign Railway News*, June 28, 1940, for 1938-39 data.

unincorporated areas, these duties are undertaken directly by the government. In some states a certain proportion of the roads and bridges is constructed and maintained by the government which, in addition, advances money for main roads to be expended by the municipalities under the supervision of special boards. Total federal grants to states for road construction from 1922-23 to 1938-39 were £34 million, and federal aid for roads in 1938-39 amounted to £4 million.

State road statistics are somewhat incomplete and, as the definition of the various categories varies from state to state, it is not possible to present a statement of the length of different types of roads in the various states. In 1937-38 the length of all roads was 418,528 miles, as compared to 280,000 miles in 1931. In 1939 Australian highways were divided as follows: 276 thousand miles of unimproved roads, 108 thousand of improved earth and gravel, 71 thousand of waterbound macadam, 28 thousand of other macadam surfaces, and 2 thousand miles of surfaces such as concrete and asphalt, or a total of 485 thousand miles.⁸ As in the case of railways, no good roads existed between Northern Australia and the other states until the outbreak of the European war made the construction of a strategic highway essential; furthermore, practicable commercial roads between Western and South Australia have not been built.⁹

TABLE 82. AUSTRALIA: MOTOR VEHICLES REGISTERED¹⁰
(In thousands)

AT JUNE 30TH:	MOTOR CARS	MOTORCYCLES	COMMERCIAL VEHICLES	TOTAL
1926-1930 Average	401	81	65 (a)	548
1931-1935 Average	440	74	114	628
1936	485	77	181	743
1937	499	78	214	791
1938	535	80	242	857
1939	562	79	258	900
1940	557	74	263	895

(a) Incomplete, included with motor cars.

By 1939, the peak year, the number of motor cars had increased 27.8% over the 1931-35 average, while commercial vehicles increased by 126.3%, reflecting the growth in commercial transport by road. Total registrations increased by 44.3% in this period. The rolling stock, other than locomotives and coaches, of the government railways, however, declined from 86,413, the 1930-34 average, to 86,003 in 1938. The tonnage of goods and live-stock carried by railway had increased 30.3% in 1937-38 over the average for 1929-30 to 1933-34. Comparable figures for tonnage carried by motor vehicles, however, are not available. Certain coordinated rail and highway services are maintained by Australia's railways.

⁸ *Automotive World News*, Sept. 1, 1939.

⁹ Milne, *op. cit.*

¹⁰ *Official Year Book of the Commonwealth of Australia*; and Bureau of Census and Statistics, *Monthly Review of Business Statistics*.

Airways: Unlike rail and road facilities, there are air connections between all the capital cities of Australia. Government subsidies of air lines began in 1920, and of 29,505 miles¹¹ of routes, 23,401 miles were subsidized in 1938-39. Commercial air services in Australia were reorganized in 1934 with three main achievements: "the establishment of through service between Australia and the United Kingdom, Australia's responsibility for the maintenance of that part of the service east of Singapore, and the operation of mail and passenger planes connecting every section of the Commonwealth." The major lines receive the benefit of government subsidies which are granted for the carriage of mail while minor lines, operating over short stretches, do not.¹²

Since the discovery of gold in New Guinea in 1927 air service from the coast to the goldfields has proved the only efficient method of transportation. The trip by air from the coast to the fields takes less than an hour; by mountain road it takes a week. Machinery and petrol for the mines account in part for the very large amount of freight carried.

Plans were far advanced, and ships ordered, for the proposed trans-Tasman service from Sydney, Australia, to Auckland, New Zealand, but this was postponed in 1939 and did not take place until the spring of 1940 when a weekly Sydney-Brisbane-Auckland service was inaugurated.

TABLE 83. AUSTRALIA: DEVELOPMENT OF CIVIL AVIATION¹³

YEAR ENDING JUNE 30	AIRCRAFT (Number)	LENGTH OF ROUTE (In miles)	MILEAGE FLOWN (In thousand miles)	PASSENGERS CARRIED (Number)	GOODS CARRIED (a) (In thousand pounds)	MAIL CARRIED (In thousand pounds)
A. AUSTRALIA						
1928	90	...	1,153	42,026	116	...
1930-34	Average	...	3,002	80,912	233	39 (b)
1935	208	...	3,854	57,283	249	68
1936	228	...	5,820	75,119	442	121
1937	214	...	8,732	102,164	823	168
1938	286	...	12,292	158,903	1,169	229
1939	296	25,207	14,099	147,919	1,735	740 (c)
B. NEW GUINEA						
1928	12	(d)	107	908	519	6
1930-1934	Average	...	503	5,550	8,383	52
1935	25	...	1,094	14,403	17,448	98
1936	38	...	1,487	16,559	21,883	129
1937	34	...	1,466	13,100	24,442	122
1938	40	...	1,560	13,264	25,574	167
1939	47	...	1,456	14,478	27,064	163

(a) Prior to 1934/35 for South Australia and Western Australia stage freight figures are included in some instances.

(b) Average for 1930/31 to 1933/34.

(c) Includes gross weight of oversea mails.

(d) Not given in *Year Book*. Sydney-Rabaul (New Guinea) route, 2,522 miles, and Salamaua-Medong-Wewak (New Guinea) route, 335 miles, included under Australia.

¹¹ Including the Darwin-Sydney route operated by K.N.I.L.M.

¹² Hall, Russell E., "Expanding Airways in the Far East," *Far Eastern Survey*, 1937, April 28, p. 98.

¹³ *Official Year Book of the Commonwealth of Australia*, except for length of routes which is quoted from U.S. Department of Commerce, *Aeronautical World News*, October 31, 1939. In addition there is the K.N.I.L.M. service from Batavia to Darwin and Sydney, of which the latter section is 2,225 miles in length.

Particulars on the flights over the Darwin-Singapore section of the Imperial Airways route (included in the general data given in Table 83) are also given separately in Table 84. The Australian sector of the Imperial Airways route is operated by Qantas Empire Airways.

TABLE 84. AUSTRALIA: OPERATIONS BETWEEN DARWIN AND SINGAPORE¹⁴

YEAR ENDING JUNE 30TH	MILES FLOWN (Number)	PASSENGERS CARRIED (Number)	GOODS CARRIED (In pounds)	MAIL CARRIED (In pounds)
1935 (Dec. '34 to June '35)	140,706	49	1,019	24,828
1936	290,542	177	8,564	69,436
1937	494,105	351	17,582	89,647
1938	488,417	522	28,080	113,117

In August 1939 Qantas Empire Airways was running 3 flights weekly from Sydney to Singapore, via Darwin, a distance of 4,676 miles.¹⁵ There is one foreign air line operating in Australia, the Netherlands Indian K.N.I.L.M., which inaugurated its Batavia-Darwin-Brisbane-Sydney route on July 3, 1938. Flights in that year occurred twice weekly and carried 688 passengers, 17,937 pounds of mail and 11,905 pounds of goods and baggage over the 3,778-mile route, 418,877 miles being flown during that period.¹⁶

¹⁴ Official Year Book of the Commonwealth of Australia.

¹⁵ Aeronautical World News, Oct. 31, 1939, p. 263.

¹⁶ Indisch Verlag, 1939, p. 411.

13. NEW ZEALAND

Shipping: British vessels form by far the largest proportion of the overseas shipping entering New Zealand ports, but while British tonnage has increased, its share in the total tonnage decreased from 96.5% before the first World War to 77.2% in 1938. The comparable figures for United Kingdom tonnage are 45.5% and 50.5%, indicating that the decrease has been in Dominion rather than Great Britain tonnage. The U.S.A. and Norway are the two leading non-British countries sharing in New Zealand's overseas shipping. Unfortunately, New Zealand's own share is not clearly indicated in official figures, being included in the category "Other British" in Table 85. This point may be partly explained by the fact that while many of the vessels of the Union Steamship Company of New Zealand (one of the major shipping companies), for instance, were registered at Wellington and Dunedin, several of its larger vessels, employed in both the coastal and foreign trade of the Dominion, were registered in the United Kingdom. Excluding vessels employed wholly in the river trade, there was a total of some 83,000 net tons of shipping registered in New Zealand in 1937-38, 30,000 of which were employed only in the coastal trade, 46,000 in foreign trade, and some 7,000 in both.

TABLE 85. NEW ZEALAND: OVERSEAS SHIPPING ENTERING,
BY NATIONALITY¹
(In thousand net tons and percentages of total tonnage)

PERIOD	BRITISH						FOREIGN				GRAND TOTAL					
	United Kingdom		Other British		Total	American	Norwegian	Other	Total							
	Tonnage %	Tonnage %	Tonnage %	Tonnage %	Tonnage %	Tonnage %	Tonnage %	Tonnage %	Tonnage %							
1909-13 Average	687(a) 45.5	768(b) 50.9	1,456	96.5	(c)	(c)	(c)	54	3.6	1,509	100.0					
1925-29 Average	1,414	63.7	631	28.4	2,044	92.0	81	3.6	84(d) 3.8	11	0.5	176	7.9	2,221	100.0	
1930-34 Average	1,385	57.9	563	23.5	1,948	81.4	235	9.8	117	4.9	92	3.8	444	18.6	2,392	100.0
1935	1,307	50.8	701	27.3	2,008	78.1	354	13.8	95	3.7	114	4.4	563	21.9	2,571	100.0
1936	1,460	51.2	738	25.5	2,218	76.7	369	12.8	170	5.9	132	4.6	671	23.2	2,890	100.0
1937	1,450	48.9	814	27.5	2,264	76.4	346	11.7	162	5.5	191	6.4	699	23.6	2,963	100.0
1938	1,558	50.5	825	26.7	2,383	77.2	359	11.6	151	4.9	192	6.2	702	22.8	3,085	100.0

(a) Designated as "British" in this period.
(b) Designated as "Colonial" in this period.
(c) Not given separately.
(d) Three-year average, 1927-29.

TABLE 86. NEW ZEALAND: SHIPPING TRAFFIC WITH CERTAIN
PRINCIPAL COUNTRIES²
(In thousand net tons and percentages of total tonnage)

COUNTRY	1909-13	1925-29	1930-34	1935	1936	1937	1938							
	AVERAGE	AVERAGE	AVERAGE	Tonnage %	Tonnage %	Tonnage %	Tonnage %							
	Tonnage %	Tonnage %	Tonnage %	Tonnage %	Tonnage %	Tonnage %	Tonnage %							
FROM :														
ENTERED														
Australia	709	47.0	900	40.5	845	35.3	992	38.6	1,155	40.0	1,222	41.2	1,359	44.1
United Kingdom	462	30.6	435	19.6	575	24.0	571	22.2	566	19.6	607	20.5	604	19.6
United States	119	7.9	425	19.1	447	18.7	398	15.5	415	14.4	373	12.6	317	10.3
Canada	60	4.0	200	9.0	216	9.0	251	9.8	252	9.8	238	8.0	235	7.6
Fiji	49	3.2	56	2.5	28	1.2								
Pacific islands (other than Fiji)	51	3.4	74	3.3	80	3.3	115	4.5	130	4.5	157	5.3	161	5.2
Netherlands East Indies	..	..	..	..	111(a)	4.6	106	4.1	141	4.9	169	5.7	204	6.6
Total, including others	1,509	100.0	2,221	100.0	2,392	100.0	2,571	100.0	2,890	100.0	2,963	100.0	3,085	100.0
TO :														
CLEARED														
Australia	822	55.1	1,090	49.1	981	41.1	1,102	42.1	1,136	39.8	1,319	45.1	1,413	45.6
United Kingdom	497	33.3	554	25.0	719	30.1	694	26.5	746	26.2	738	25.2	785	25.3
United States	27	1.8	231	10.4	306	12.8	445	17.0	404	14.2	292	10.0	341	11.0
Canada	37(b)	2.5	130	5.9	136	5.7	144	5.5	199	7.0	145	5.0	125	4.0
Fiji	41	2.7	51	2.3	52	2.2								
Pacific islands (other than Fiji)	59	4.0	91	4.1	81	3.4	106	4.0	164	5.8	166	5.7	178	5.7
Netherlands East Indies	..	..	..	..	65(a)	2.7	55	2.1	77	2.7	123	4.2	144	4.6
Total, including others	1,491	100.0	2,218	100.0	2,386	100.0	2,618	100.0	2,851	100.0	2,926	100.0	3,102	100.0

(a) 1934 only.
(b) Four-year average, omitting 1910.

¹ Census and Statistics Department, Dominion of New Zealand, *The New Zealand Official Year-Book*, Wellington.
² *Ibid.*

Table 86 illustrates the changes in the direction of New Zealand's overseas shipping traffic. While before the War Australia and the United Kingdom accounted for 47.0% and 30.6% of the tonnage which entered New Zealand, in 1938 they represented only 44.1% and 19.6% respectively. While tonnage entering from the United States rose from 7.9 to 19.1% in 1925-29, it has dropped steadily ever since, to a mere 10.3% in 1938. Vessels leaving for the United States on the other hand, from only 1.8% of the pre-War tonnage, accounted for 11.0% in 1938. Unlike the Australian shipping data given in Table 78, however, it is not clear from the source whether the figures given in Table 86 indicate the first origins and final destinations of shipping entering and clearing New Zealand ports, or whether vessels are recorded according to their last outbound port of call and first destination. Caution should therefore be used in making any comparisons.

Railways: The railways of New Zealand are practically all state-owned, although some were originally built by private enterprise. In 1876 they passed from provincial to Dominion control and since March 1936 they have been operated by the Minister of Railways through a General Manager. The New Zealand railways use the 3'6", or narrow, gauge. Although electrification has been started, of the 572 locomotives in use in 1938-39 only 12 were electric. In addition to the state railways there were 189 miles of private railways open for the transport of passengers and goods in 1937, exclusive of the numerous railroads mostly serving coal mines and saw mills and used solely for goods belonging to the line-owner. Table 87 gives figures on the operations of the state railways. In 1939 the mileage of these lines was evenly divided with 1,569 miles in the North Island and 1,750 in the South. In addition to the passenger figures shown in Table 87 the Railways Department manages certain road services and a steamer service on Lake Wakatipu, 16,077 passengers and 6,451 tons of goods being carried on the latter in 1938-39.

TABLE 87. NEW ZEALAND: STATE RAILWAYS³

YEAR ENDED MARCH 31ST	LENGTH OPEN (In miles)	TRAIN MILEAGE (In thousands)	PASSENGERS		GOODS AND LIVESTOCK (a) (In thousand tons)
			Including Season Ticket Holders (In thousands)	Excluding Season Ticket Holders (In thousands)	
1889	1,777	2,796	...	3,133	1,954
1909-13					
Average	2,759	8,175	11,563	...	5,725
1925-29					
Average	3,171	10,416	26,143	10,583	7,317
1930-34					
Average	3,312	10,693	20,946	7,324	6,341
1935	3,320	10,626	19,654	7,809	6,024
1936	3,320	11,050	20,359	7,964	6,189
1937	3,320	11,868	21,235	8,285	6,813
1938	3,323	12,778	22,441	8,069	7,516
1939	3,319	13,073	23,266	7,813	7,539

(a) Livestock converted to equivalent tonnage.

³ *Ibid.*

Highways and Motor Vehicles: The control of roads and bridges comes under the administration of the Minister of Public Works. Rural roads are controlled by local authorities, while since 1922 arterial highways are administered by a Main Highways Board, often through the local authorities, and financed by the Dominion government. On March 31, 1939, there were 12,206 miles of main highways. The formation of roads, as well as railways, in many parts of New Zealand is expensive and difficult because of the configuration of the country and the number of rivers. In 1938 there were, for instance, 6,679 highway bridges of more than 25-foot length. The figures for 1922 given in Table 88 must be regarded as approximations, for that was the first occasion on which particulars of this nature were requested. Roads in New Zealand are divided into three main categories: formed roads of dray width, bridle tracks and unformed legal roads. Only the former are included in Table 88. On March 31, 1938, there were 5,711 miles of bridle tracks and 17,216 miles of unformed legal roads in addition to 52,628 miles of formed roads of not less than dray width.

TABLE 88. NEW ZEALAND: ROADS AND STREETS⁴
(In miles)

YEAR ENDING MARCH 31	BITUMINOUS OR CEMENT CONCRETE	BITUMEN OR TAR	METAL OR GRAVEL (b)	NOT PAVED OR SURFACED	TOTAL FORMED ROADS
1922	27,508 (a)	...	...	16,954 (c)	44,462
1925-1929 Average	152	1,044	30,070	16,319	47,585
1930-1934 Average	350	2,120	33,944	13,834	50,248
1935	379	2,819	36,444	12,161	51,802
1936	395	3,246	36,307	12,110	52,058
1937	404	3,503	37,406	11,015	52,328
1938	412	3,852	37,784	10,580	52,628

(a) Includes a short mileage of unspecified roads.

(b) Metalled roads.

(c) Not metalled roads.

Motor vehicle registrations on June 30, 1925, numbered 106,449 including 71,403 cars, 11,330 trucks, 1,032 omnibuses, 21,585 motor cycles and 1,099 miscellaneous vehicles. While these figures are not wholly comparable with those given in Table 89, it is apparent that the growth of motor vehicle registrations in recent years has been considerable, nearly threefold in 14 years. With the exception of data for 1940 which do not clarify this point, all the figures given in Table 89 include "dormant" registrations, i.e. registrations neither cancelled nor renewed. Cancellation does not take place until a registration has been dormant for two years. Dormant registrations numbered 34,756 in 1939, 31,962 in 1938 and 24,110 in 1937.

⁴ *Ibid.* For 1939 *Automotive World News*, Sept. 1, 1939, reports 545 miles of bituminous or cement concrete roads, 5,512 of macadam and 57,730 of improved earth, or a total of 63,787, excluding 5,812 miles which appear to represent the category "bridle tracks" and 17,389 miles apparently representing the "unformed legal roads" referred to above. The grand total for 1939, 86,988 miles, differs considerably from the grand total for 1938, 75,555 miles, and presents a sharp contrast to the regular increase in previous years; because of uncertainty as to the reason for this difference these data are omitted from the above table.

Independent motor transport has been developing in New Zealand since the early 1920's. Since 1921 it has been regulated by the Dominion government, not only to control competition with the tramways and railways, but also to secure financing for highway maintenance and extension. Regulation of passenger transport was first carried out; that of freight is not yet fully developed. Since 1926 the New Zealand

TABLE 89. NEW ZEALAND: MOTOR VEHICLES LICENSED⁵

YEAR ENDING MARCH 31	PASSENGER CARS	BUSES	TRUCKS, TRACTORS AND TRACTION-ENGINES (a)	MOTOR-CYCLES	TRAILERS	OTHERS (b)	TOTAL
1933	127,753	559	37,172	25,105	(c)	3,255	193,844
1934	128,618	548	39,443	24,689	(c)	2,954	196,252
1935	138,188	661	39,633	24,570	3,428	2,982	209,462
1936	152,475	573	43,661	24,099	4,159	3,280	228,247
1937	173,099	655	48,343	24,347	5,764	3,540	255,748
1938	194,217	787	50,961	23,020	7,865	3,477	280,327
1939	216,516	873	55,107	21,259	10,597	3,579	307,931
1940 (d)	219,376	1,075	55,523	17,882	(e)	(e)	294,027(f)

(a) Tractors and traction-engines numbered 2,727 in 1939.
 (b) "Others" includes service cars, taxis and miscellaneous. Taxis numbered 1,695 in 1939.
 (c) Not given separately but included under tractors and trucks.
 (d) On January 1.
 (e) Not given.
 (f) Including 171 Diesel units.

Railways have operated coordinated rail and highway transportation. In January 1939 the government railways operated 300 passenger buses over 2,578 miles of routes, including urban and intercity travel. They also operate freight highway services.⁶ In addition to the bus services operated by the tramways of New Zealand, which carried 5,735,000 passengers and covered 1,364,000 vehicle-miles in 1938-39, and in addition to the 5,732,282 passengers carried by the Railways Department's road services, the independent motor services carried some 27 million passengers in 1938-39. Table 90 gives figures illustrating the growth of this form of transportation.

TABLE 90. NEW ZEALAND: MOTOR TRANSPORT SERVICES⁷

YEAR	VEHICLE-MILES COVERED		PASSENGERS CARRIED Passenger Services (In thousands)
	Passenger Services (In thousands)	Goods Services (In thousands)	
1932/33	22,756	...	16,066
1933/34	21,921	...	16,549
1934/35	21,542	45,991	15,975
1935/36	22,029	49,465	17,949
1936/37	22,782	56,629	21,507
1937/38	23,509	70,295	23,277
1938/39	25,455	...	26,655

⁵ *Ibid.*; 1940 data from U.S. Dept. of Commerce, Motive Products Division.
⁶ *Foreign Railway News*, 1940, No. 29, July 19.
⁷ *The New Zealand Official Year-Book*.

Airways: All commercial air transport services in New Zealand are licensed by the Minister of Transport, but the comparative smallness of the country discouraged the early development of aviation. Commercial aviation only started at the end of 1934, and while there were three companies operating in 1939, no commercial night flying has yet been undertaken. International service, moreover, has only just begun. The California-New Zealand clipper service, which was started by Pan American Airways in December 1937, was discontinued after the loss of the clipper on its first trip southward from Honolulu in January 1938. Further experimental flights were made in 1939 before the inauguration of a regular service which is now operating from Los Angeles, via Honolulu, Canton Island and Noumea, French New Caledonia, to Auckland. Finally, the spring of 1940 saw the long-postponed inauguration of the trans-Tasman Sea air route, a weekly service being provided by Tasman Sea Airways from Auckland to Brisbane and Sydney, Australia.⁸

TABLE 91. NEW ZEALAND: TRAFFIC OF DOMESTIC AIR TRANSPORT COMPANIES⁹

YEARS ENDING MARCH 31	MILEAGE FLOWN	PASSENGERS CARRIED	GOODS CARRIED (In pounds)	MAIL CARRIED (In pounds)
1935/36	346,171	9,622	15,863	19,431
1936/37	776,938	24,251	44,074	111,377
1937/38	1,331,100	43,782	81,853	216,238
1938/39	1,574,395	53,039	166,278	316,380

⁸ *Far Eastern Survey*, Oct. 23, 1940, pp. 251-2; *Aeronautical World News*, May 31, 1940, p. 452; *The New Zealand Official Year-Book*, 1940, p. 356.

⁹ *The New Zealand Official Year-Book*.

14. CANADA

Efficient transportation is particularly necessary in Canada because of its size and the uneven distribution of its small population and because its bulky agricultural and mineral products are, to a considerable extent, exported. In recognition of the growing necessity for viewing the problems of transportation and related communications as part of a coordinated whole, the Dominion Department of Transport was organized in November 1936, unifying in one department the control and supervision of railways, canals, harbors, marine and shipping, civil aviation and radio, as well as the Meteorological Service.¹

Shipping: Complete statistics are not available for all Canadian shipping, but Table 92 presents a summary of Canada's seagoing, coastwise and inland international traffic. While coastwise shipping, which includes domestic shipping on the Great Lakes and such rivers as the St. Lawrence, has increased very slightly in the last fourteen years, proportionately it shows a small decrease. Seagoing shipping has grown considerably, as has total Canadian shipping, while inland international, or Great Lakes shipping between Canada and the United States, decreased

¹ Dominion Bureau of Statistics, *The Canada Year Book*, Ottawa, 1940, p. 633.

from 35 to 28 million tons in the last fourteen years. One reason for this decrease is the sharp competition from highway transport for the Canada-United States trade.

TABLE 92. CANADA: TONNAGE OF ALL VESSELS ENTERED AND CLEARED AT CANADIAN PORTS²
(In thousand registered tons and percentages of total tonnage)

PERIOD	SEAGOING		COASTWISE		INLAND INTERNATIONAL (a)		TOTAL (a)	
	Tonnage	per cent	Tonnage	per cent	Tonnage	per cent	Tonnage	per cent
1925-29 Average	47,081	27.9	87,166	51.6	34,530	20.5	168,778	100.0
1930-34 Average	53,029	30.8	87,896	51.0	31,508	18.3	172,432	100.0
1935	57,060	33.1	85,973	49.9	29,375	17.0	172,408	100.0
1936	58,053	33.7	84,795	49.2	29,471	17.1	172,318	100.0
1937	62,948	33.8	91,421	49.1	31,639	17.0	186,008	100.0
1938	62,824	34.9	88,732	49.3	28,545	15.8	180,101	100.0
1939	63,398	35.1	88,570	49.1	28,429	15.8	180,398	100.0

(a) The figures for Inland International and Total Shipping are inclusive of ferriage at Sarnia "arrived" and "departed" of: 1,415,612 tons for 1934; 1,433,031 tons for 1935; 1,620,820 tons for 1936; and 1,678,272 tons for 1937. Corresponding deductions for earlier years not available. Ferry at Sarnia discontinued in 1938.

Although the Canadian Government Merchant Marine of ten vessels was sold to British interests in 1936, the Dominion government still operates a fleet in the West Indies trade and the Canadian Pacific Railways operates fleets on both the Atlantic and the Pacific. Table 93 shows the distribution of the tonnage of vessels calling at Canadian ports, excluding the Great Lakes, as among British, Canadian and foreign shipping. Canadian and other British vessels accounted for two-

TABLE 93. CANADA: TONNAGE OF SEAGOING VESSELS ENTERED AND CLEARED AT CANADIAN PORTS, BY NATIONALITY³
(In thousand registered tons and percentages of total tonnage)

PERIOD	BRITISH		CANADIAN		FOREIGN		TOTAL	
	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%
1909-13 Average	12,279	54.0	3,759	16.5	6,699	29.5	22,738	100.0
1925-29 Average	18,539	39.4	8,970	19.1	19,573	41.5	47,082	100.0
1930-34 Average	20,510	38.7	10,325	19.5	22,194	41.9	53,029	100.0
1935	23,676	41.5	11,450	20.1	21,933	38.4	57,060	100.0
1936	24,594	42.4	13,105	22.6	20,354	35.0	58,053	100.0
1937	27,300	43.4	13,334	21.2	22,314	35.4	62,948	100.0
1938	25,710	40.9	15,503	24.7	21,610	34.4	68,824	100.0
1939	26,563	41.9	15,221	24.0	21,614	34.1	63,398	100.0

² The Canada Year Book.

³ *Ibid.*

thirds of this shipping in 1939 as compared to about 70% before the War. Canada's share in the total has increased by one-half while the share of other British vessels has decreased and the foreign percentage has increased from 29.5 to 34.1% in the same period.

Figures on the direction of overseas shipping traffic are not given in recent *Year Books* but some indication of the proportion of Canada's shipping which participates in Pacific area trade may be found in data on the tonnage calling at ports on the Pacific. In 1938-39 the tonnage of seagoing vessels entering and clearing Vancouver exceeded that of any other Canadian port, accounting for 33 out of the 63 million tons entering and clearing in that year; Montreal, however, led by a wide margin in respect to seagoing cargoes loaded and unloaded.

Table 94 illustrates the fact that Canadian traffic through the Panama Canal flows mainly from the Pacific to the Atlantic. Strictly inter-coastal Canadian cargo passing through the Panama Canal rose from 82,798 long tons in 1938 to 103,291 in 1939.

TABLE 94. CANADA: TRAFFIC TO AND FROM THE EAST AND WEST COASTS, VIA THE PANAMA CANAL⁴
(In thousand long tons)

YEAR ENDING JUNE 30	ORIGINATING ON		DESTINED FOR	
	West Coast	East Coast	West Coast	East Coast
1925-29 Average	1,941	172	214	540
1930-34 "	2,351	146	206	481
1935	2,490	249	177	548
1936	2,706	299	223	507
1937	2,780	380	240	589
1938	1,962	392	214	399
1939	2,873	348	164	297

Canal traffic plays an important part in Canada's domestic transportation. In 1910 some 22 million tons of American and 9 million tons of Canadian shipping passed through Canada's canals; by 1929 the lead had passed to the Canadians, with 2 million tons of United States shipping and 14 million of Canadian. The latter increased quite steadily in the ensuing years and American tonnage, which decreased in the first depression years, began growing in 1932. By 1939 the Canadian and American shares were 18 and 3 million tons respectively. The change in the nationality of this traffic reflects a change in the origin of the freight carried: 18.3% in 1910, 70.7% in 1929, and 60.5% in 1939 originated in Canada.⁵

Railways: The main railway lines of Canada run east and west; there is no main-line north and south connection on the Pacific coast by either rail or road. About half the Canadian railway mileage is government owned and the private companies have benefited by large governmental subsidies. By the end of 1938 the Dominion and provincial govern-

⁴ *Ibid.*

⁵ *Ibid.* Figures include duplications where cargoes use two or more canals.

ments had assisted the establishments of railways by grants of 47,639,972 acres (74,437 square miles) of land, the majority of which, 37 million acres, was granted to the Canadian Pacific System. In addition, cash subsidies of 219 million dollars had also been granted and 877 million dollars worth of bonds guaranteed. The Canadian Government owns the Canadian National Railways, which operate a single-track mileage of 23,790 and in 1938 carried 10,289,000 passengers and 40,577,656 tons of revenue freight. Under the Department of Transport, the Board of Transport Commissioners controls the operations of Canada's railways. Figures for all Canadian railways are given in Table 95.

TABLE 95. CANADA: LENGTH OF RAILWAYS, AND PASSENGERS AND FREIGHT CARRIED*

PERIOD COVERED (a)	RAILWAY MILEAGE		PASSENGERS CARRIED (c) (In thousands)	FREIGHT CARRIED (d) (In thousand tons)
	Single Track	Total (b)		
1909-13 Average	26,076	...	38,597	83,529
1925-29 "	40,734	54,884	41,130	107,940
1930-34 "	42,268	56,728	24,380	71,306
1935	42,916	57,171	20,032	69,141
1936	42,552	56,692	20,498	75,847
1937	42,727	56,835	22,039	82,220
1938	42,742	56,760	20,911	76,175

(a) Year ending June 30 in 1909-1913; December 31 for later years.

(b) Including second, industrial and yard track, and sidings.

(c) Duplications included.

(d) Duplications eliminated.

In spite of large increases in Canadian railway mileage, freight carried in 1938 was only 91.2% of the average for 1909-13, and passenger traffic was at only 54.4% of the pre-War level. Some of this decrease may be attributed to the decrease of immigration into Canada and of migration within the country toward the central and western provinces, but Canadian railroads have also felt the effects of highway competition. Until data on highway transport become available, however, it is not possible to find out how much this competition has actually influenced the situation of the railways. Nevertheless, freight rates have certainly been affected. Canadian rail freight rates are geared to the value of the commodities hauled; truck operators' rates on valuable commodities are closer to actual haulage cost than those of the railways, and highway transport has not competed for the haulage of raw materials, with the result that it has been able to secure some of the most profitable of the railways' freight traffic.

By 1940 registrations of commercial cars and trucks had increased 45.1% over the average for 1925-29 while passenger cars had increased only 20.8%, or a little less than half as fast. This important increase in the use of motor vehicles for the transport of freight does not, however, indicate whether it is concentrated on short-haul traffic or is seriously competing for the long-haul freight now carried by rail.

* *Ibid.*

Highways and Motor Vehicles: With a very large continental area, a thinly scattered population and climatic difficulties which make road upkeep expensive, Canada has a considerable highway problem. In 1929, for instance, there were 25 persons per mile of road and only one mile of road for every 9 square miles of area. The first year for which highway statistics are available is 1928, but preoccupation with this aspect of transportation was apparent as early as 1919 when twenty million dollars were appropriated by the Dominion government to construct and improve highways; this sum was expended through the provincial authorities during the next ten years. Total expenditures for construction and maintenance between 1919 and 1938 were \$781 million; in 1938, of the \$104 million spent, by far the greater share (\$93 million) was provincial, while Dominion and municipal expenditures were \$6 and \$5 million respectively. Highway distribution is uneven; there are large areas in the northern regions of the country with few people and few roads, but the southern sections of Canada are well supplied with roads. Table 96 classifies highway mileage by types, and Table 97 illustrates the distribution of roads in the eastern and western sections of Canada.

TABLE 96. CANADA: CLASSIFICATION OF HIGHWAY MILEAGE, EXCLUDING URBAN STREETS⁷
(In thousand miles)

YEAR	EARTH		GRAVEL AND STONE	MACADAM AND CONCRETE	TOTAL
	Improved	Unimproved			
1928	177	141	56	8	382
1929	166	152	64	8	390
1930	159	155	71	9	394
1931	133	158	81	6	378
1933	139	176	87	8	409
1934	143	173	85	8	409
1935		314 (a)	88	9	411
1936		311 (a)	88	10	410
1937	296	149		114 (c)	559 (b)
1938	296	89		111 (c)	496

(a) Other highways.

(b) This very large figure seems to be accounted for by the unimproved earth highways figure for 1937 which includes 74,713 miles in Manitoba while in 1938 only 15,000 miles are reported in that province, including some macadam-surfaced roads.

(c) Surfaced highways.

TABLE 97. CANADA: HIGHWAYS IN BRITISH COLUMBIA AND ONTARIO, IN 1938⁸

REGION	SURFACED (In miles)	EARTH		TOTAL (In miles)	SQUARE MILES OF AREA PER MILE OF HIGHWAY	PERSONS PER MILE OF HIGHWAY
		Improved (In miles)	Unimproved (In miles)			
British Columbia	7,822	9,988	2,604	20,414	17.6	37.9
Ontario	55,379	16,527	668	72,574	5.0	51.7
All Canada	110,637	295,643	89,458	495,738	7.0	22.8

⁷ *Ibid.* Does not give data for 1932.

⁸ *Ibid.*

Beginning in 1904 with Ontario reporting 585 motor vehicles, and in 1908 with eight provinces reporting 3,033, the number of motor vehicle registrations in Canada had grown to 1,394,853 in 1938, the number of persons per motor vehicle being 8.1 in Canada, 5.6 in Ontario and 6.5 in British Columbia. Automobiles are of special economic advantage in the rural areas of Canada, where, according to the 1931 census, there was a farm-owned motor vehicle for every second farm.

TABLE 98. CANADA: TYPES OF MOTOR VEHICLES REGISTERED^a
(In thousands)

PERIOD	PASSENGER CARS	COMMERCIAL CARS OR TRUCKS	BUSES	MOTORCYCLES	TOTAL
1909-11	...	...	...	...	24
Average	...	...	...	...	954
1925-1930	...	...	...	...
Average	...	...	...	...
1931-1934	...	...	...	...
Average	979	162	2	10	1,152
1935	990	174	2	10	1,176
1936	1,042	186	2	11	1,240
1937	1,103	203	2	11	1,320
1938	1,160	221	2	12	1,395
1939	1,183	235	2.6	12	1,433 (a)

(a) Includes 288 Diesel units.

Airways: The Controller of Civil Aviation, under the Department of Transport, supervises the operations of civil aviation. While commercial flying began in Canada in the early 1920's, it was not until 1927 that regular air mail services were established. Trans-Canada Air Lines were set up in 1937 to operate a transcontinental service, and through air mail service from Montreal to Vancouver was inaugurated on December 1, 1938. Transatlantic service, via Canadian airfields, was operated for a short time in 1939 by Pan American Airways but was interrupted by the European War. In recent years a greater amount of freight was carried by air in Canada than in any other country with the exception of New Guinea and the U.S.S.R. In Canada, as in New Guinea and the U.S.S.R., this large amount of air freight represents machinery and supplies for mines—especially gold mines—in regions otherwise difficult of access, i.e. the northern sections of Quebec, the western provinces and the Northwest Territories. Mail, other than that carried by regular mail contractors, also forms a considerable fraction of this type of freight. Of the mail carried in 1937 and 1938, 1,323,584 pounds in the former and 1,771,153 pounds in the latter year represented mail carried by Canadian postal contract.

Operations of Canadian aircraft since 1926 are shown in Table 99. These figures include commercial traffic, both Canadian and interna-

^a *Ibid.*, and U.S. Dept. of Commerce, Motive Products Division. Passenger cars include taxis; commercial cars and trucks include road machines, tractors, fire engines, etc. In 1938 buses in Manitoba were included under passenger cars and those in British Columbia under commercial cars.

tional, that on the airways operated by the Dominion and provincial governments (forest fire prevention work, aerial map work, patrol work by the Royal Canadian Mounted Police over the St. Lawrence and Atlantic seaboard, etc.) and the operations of light aeroplane clubs.

TABLE 99. CANADA: CIVIL AVIATION¹⁰

YEAR	TOTAL AIRCRAFT-MILEAGE FLOWN (In thousands)	PASSENGERS AND CREW CARRIED (In thousands)	FREIGHT OR EXPRESS CARRIED (In thousand pounds)	MAIL CARRIED (In thousand pounds)
1926	393	6	725	4
1927	826	19	1,098	14
1928	2,728	75	2,405	317
1929	6,284	125	3,904	431
1930	7,547	125	1,759	474
1931	7,046	100	2,372	470
1932	4,569	77	3,120	414
1933	4,538	85	4,206	539
1934	6,498	105	14,441	625
1935	7,522	177	17,616	1,126
1936	7,804	128	25,388	1,161
1937	10,756	169	26,279	1,450
1938	12,294	195	21,705	1,902
1939 (a)	10,969	162 (b)	21,253	1,900

(a) Preliminary.

(b) Passengers only.

A classification of the 1938 figures is given in Table 100 in order to indicate the proportions of the different types of traffic and show the relatively small place, except in mileage flown, taken by international air services. The latter are wholly carried on between Canada and the United States.

TABLE 100. CANADA: OPERATIONS OF CIVIL AIRCRAFT IN 1938¹¹

CLASSIFICATION	TOTAL AIRCRAFT MILEAGE FLOWN (In thousands)	PASSENGERS CARRIED (In thousands)	FREIGHT OR EXPRESS CARRIED (In thousand pounds)	MAIL CARRIED (In thousand pounds)
Dominion and provincial governments	1,063	9	2,081	...
Light aeroplane clubs	24	29	...	...
Commercial				
Canadian	8,457	105	19,594	1,305
International	2,750	16	30	597
Total	12,294	159	21,705	1,902

¹⁰ *Ibid.*, except for 1939 figures which are quoted from *Aeronautical World News*, July 31, 1940, p. 495.

¹¹ *The Canada Year Book*, 1940, p. 713.

15. UNITED STATES

Shipping: Table 101 shows the distribution by nationality of the vessels in the foreign trade of the United States, entering all ports. This table includes international trade with Canada via the northern border ports on the Great Lakes and the St. Lawrence and shipping through San Antonio on the Mexican border; the data represent shipping calling at the Atlantic and Gulf as well as the Pacific coasts.

TABLE 101. UNITED STATES: NATIONALITY OF VESSELS ENTERED IN FOREIGN TRADE, ALL PORTS¹
(In thousand net tons and percentages of total tonnage)

NATIONALITY	1909-13 AVERAGE		1925-29 AVERAGE		1930-34 AVERAGE		1935		1936		1937		1938	
	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%
American	10,336	23.6	29,531	38.5	25,746	37.5	22,372	34.6	20,682	31.3	19,527	27.3	19,020	27.0
British	21,534	49.2	28,015	36.5	22,902	33.3	21,373	33.1	22,714	34.4	25,857	36.1	24,307	34.5
Danish	473	1.1	1,158	1.5	918	1.3	1,050	1.6	1,007	1.5	1,030	1.4	1,357	1.9
Dutch	970	2.2	1,653	2.2	1,687	2.5	1,827	2.8	1,884	2.9	2,177	3.0	2,515	3.6
French	941	2.2	1,778	2.3	1,703	2.5	1,809	2.8	2,053	3.1	2,438	3.4	2,360	3.3
German	4,123	9.4	2,191	2.9	3,396	4.9	2,936	4.5	3,299	5.0	3,507	4.9	3,543	5.0
Honduran	255	0.6	863	1.1	897	1.3	727	1.1	773	1.2	890	1.2	947	1.3
Italian	800	1.8	2,171	2.8	1,861	2.7	1,599	2.5	1,405	2.1	2,126	3.0	2,047	2.9
Japanese	298	0.7	2,513	3.3	2,501	4.3	2,653	4.1	2,676	4.1	2,804	3.9	2,852	4.0
Norwegian	2,532	5.8	3,828	5.0	3,955	5.6	4,829	7.5	5,698	8.6	7,065	9.9	7,401	10.5
Panamanian	4	..	195	0.3	445	0.6	675	1.0	1,011	1.5	1,262	1.8	1,366	1.9
Swedish	60	0.1	891	1.2	1,022	1.5	1,081	1.7	1,164	1.8	1,171	1.6	1,277	1.8
Total, including others	43,753		76,687		68,719		64,612		65,972		71,560		70,516	

British (including Canadian) and American shipping are the leaders in this trade, with Norway in third place. American tonnage was second before the first World War, led British shipping during the 1920's and

TABLE 102. UNITED STATES: VESSELS ENTERED IN FOREIGN TRADE, ALL PORTS, BY REGIONS²
(In thousand net tons and percentages of total tonnage)

PERIOD	ATLANTIC COAST		GULF COAST		PACIFIC COAST		MEXICAN & NORTHERN BORDERS		TOTAL	
	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%	Tonnage	%
1911-15 Average	24,293	50.7	6,635	13.8	5,055	10.6	11,931	24.9	47,914	100.0
1926-30 Average	36,884	46.7	11,634	14.7	15,100	19.1	15,443	19.5	79,061	100.0
1931-35 Average	31,721	48.5	8,058	12.3	14,968	22.9	10,642	16.3	65,389	100.0
1936	31,489	47.7	8,840	13.4	14,395	21.8	11,248	17.0	65,972	100.0
1937	33,891	47.4	10,531	14.7	14,873	20.8	12,264	17.1	71,560	100.0
1938	31,366	44.5	11,932	16.9	14,822	21.0	12,396	17.6	70,516	100.0

¹ Dept. of Commerce, Bureau of Foreign and Domestic Commerce, *Foreign Commerce and Navigation of the United States*.

² Dept. of Commerce, Bureau of the Census, *Statistical Abstract of the United States*, 1939, Washington, 1940, p. 452.

TABLE 103. UNITED STATES: TONNAGE OF VESSELS IN FOREIGN TRADE, ENTERING AND CLEARING AT SEAPORTS, BY COUNTRIES OF ORIGIN AND DESTINATION^a
(In thousand net tons)

REGIONS ENTERED FROM OR CLEARED TO:	1910-14 AVERAGE	1926-30 AVERAGE	1931-35 AVERAGE	1936	1937	1938
Canada, Pacific Coast						
Entered	2,539	6,619	6,682	5,939	5,487	5,871
Cleared	2,589	6,556	6,878	6,364	6,085	6,334
Central America						
Entered	1,879	2,391	2,368	2,459	2,349	2,616
Cleared	2,121	2,692	2,801	2,956	3,351	3,513
Chile						
Entered	462	1,387	545	840	995	1,045
Cleared	327	1,058	507	675	665	698
Colombia						
Entered	199	958	1,056	663	678	526
Cleared	196	966	1,015	1,104	1,048	1,053
China, Hongkong and Kwantung						
Entered	442	1,044	827	797	921	553
Cleared	391	894	562	228	416	263
Japan						
Entered	646	2,320	2,169	2,651	3,050	2,881
Cleared	542	3,284	3,815	4,374	5,460	4,441
Philippine Islands						
Entered	85	611	1,012	984	1,079	1,048
Cleared	144	503	466	541	494	624
British India, British Malaya and Ceylon						
Entered	329	833	704	707	698	591
Cleared	131	428	289	273	264	255
Oceania						
Entered	238	931	778	854	753	706
Cleared	534	1,396	831	779	752	766
Total Pacific Area						
Entered	6,819	17,094	16,141	15,894	16,010	15,837
Cleared	6,975	17,777	17,164	17,294	18,535	17,947
Pacific Area as % of Grand Total						
Entered	19.4	26.8	29.4	28.9	26.7	26.7
Cleared	19.9	27.6	31.1	31.2	30.3	29.9
Grand Total, including all others						
Entered	35,212	63,768	54,928	55,038	59,980	59,223
Cleared	34,965	64,441	55,214	55,381	61,177	60,064

^a *Ibid.*, p. 455.

early 1930's and has decreased sharply since then—a temporary result of the reorganization of the merchant marine by the Merchant Marine Act of 1936. The growing importance of the Pacific coast in United States foreign shipping is illustrated in Table 102 which divides the figures given in the previous table according to the regions of the United States at which that tonnage entered. It indicates the decreasing relative importance of shipping at the northern and Mexican borders, and the considerable growth in shipping entering Pacific coast ports.

In spite of the increased tonnage calling at Pacific Coast ports, however, the large majority of the United States' overseas shipping enters from and clears to regions outside the Pacific area. Table 103 gives particulars on the direction of this traffic. Even including the Central American countries as parts of the Pacific area, (although their most important ports are on the Caribbean or the Gulf of Mexico) only 26.7% of the 1938 tonnage in foreign trade entered from that region, while a slightly larger proportion, 29.9%, cleared to those countries. This represents a substantial increase over the 1910-14 period when the proportions of tonnage entering and clearing were 19.4% and 19.9% respectively.

As the United States' overseas shipping plies in two oceans, the use of the connecting link between these oceans—the Panama Canal—is of interest. United States traffic through the Canal has decreased sharply in recent years while British traffic has altered little since 1925. On the other hand, German, Japanese, Netherland and especially Norwegian traffic have all increased considerably, the latter having more than tripled since the 1925-29 period. Data on the nationality of commercial shipping through the Panama Canal are presented in Table 104.

TABLE 104. UNITED STATES: COMMERCIAL TRAFFIC THROUGH THE PANAMA CANAL, BY NATIONALITY OF VESSEL⁴
(In thousand net Panama Canal tons)

YEAR ENDING JUNE 30	1925-29 AVERAGE	1930-34 AVERAGE	1935	1936	1937	1938
United States	13,166	12,250	12,266	11,323	9,333	9,906
British	7,581	6,784	6,635	7,229	7,647	7,265
French	513	517	662	579	570	587
German	926	1,239	1,317	1,244	1,340	1,461
Japanese	795	1,079	1,484	1,608	1,633	1,846
Netherland	594	568	548	610	807	825
Norwegian	1,006	1,838	2,479	2,622	3,285	3,289
Total, including others	26,627	26,557	27,806	28,024	27,492	28,058

In addition to United States tonnage, there is an increasing amount of Panamanian tonnage passing through the canal; in 1933, 121,000 net registered tons were Panamanian and this increased to 655,000 in 1936, dropping, however, to 369,000 in 1938. A considerable part of this tonnage represents United States-owned shipping registered in Panama.

⁴ *Ibid.*, p. 442.

With the exception of only two years (1921 and 1922) the tonnage of cargo travelling through the Panama Canal from the Pacific to the Atlantic has always been much larger than that travelling toward the Pacific; in 1937, 9,896,000 tons of cargo were transported to the Pacific and 18,213,000 tons, or nearly twice as much, toward the Atlantic. Comparable figures for 1938 were 9,689,000 and 17,697,000 tons respectively.

Paralleling the decrease in American shipping tonnage passing through the Panama Canal has been the shrinkage in cargo carried in the intercoastal traffic of the United States, as illustrated in Table 105.

TABLE 105. UNITED STATES: INTERCOASTAL TRAFFIC^a
(In thousand tons of cargo)

YEAR	CARGO
1925-29 Average	10,060
1930-34 Average	8,254
1935	7,963
1936	7,719
1937	6,540
1938	6,395
1939	6,885

Further details on the amounts of domestic cargo carried coastwise and on the lakes and rivers of the United States are given in Table 106, which shows that this traffic has increased considerably over the average for the 1925-29 period.

TABLE 106. UNITED STATES: CARGO TONNAGE OF DOMESTIC
WATER-BORNE COMMERCE^b
(In million short tons)

TYPE OF TRAFFIC	1925-29 AVERAGE	1930-34 AVERAGE	1935	1936	1937
Coastwise, between ports	116	110	115	132	149
Great Lakes, between ports	119	73	84	115	135
Local traffic of seaports and Great Lakes ports	80	67	80	91	95
Traffic between seaports and river points	40	30	32	41	55
Traffic on rivers, canals and connecting channels	124	118	150	179	199
Total	479	397	462	559	632

Railways: In contrast to a large number of Pacific area countries, in the United States railways are not government-owned although they are supervised by the federal government's Interstate Commerce Commission. The great development of the railroads in this country occurred before the period covered in the present volume. The mileage of first track owned has decreased slightly since 1909, although total

^a Annual Reports of the Governor of the Panama Canal.

^b Statistical Abstract.

track operated increased from 351,767 miles in 1910 to 411,324 in 1938, and the amount of freight carried in 1937 was but little greater than the average for the 1909-13 period, the depression having cancelled out the considerable increases in freight hauled during the twenties. Partly because of motorbus and truck competition, the return on railroad investment has been dwindling while passenger traffic, above the thousand million mark in the second decade of this century and again in the early twenties, began dropping even as early as 1926; it reached a low of 435 million in 1933 and had only recovered to 500 million in 1937. Much of the passenger traffic seems to have been lost to motorbuses which carried more passengers in intercity traffic in 1937 than the railways.

The data in Table 107 refer to the operations of all the United States railway lines. Unfortunately, data on the operations of all railroads in 1938 are not yet available but Class I lines carried 452,731 passengers in that year, as compared to 497,288 in 1937, and 1,399,259 tons of revenue freight, as compared to 1,825,342 in 1937. The total electrified track in 1937 was 6,127 miles long as compared with 3,132 in 1920; the majority of the electrified track was in the eastern sections of the country. While steam locomotives decreased from 68,554 in 1920 to 46,342 in 1937, there were 388 electric locomotives in 1920 and 872 locomotive units in 1937.

TABLE 107. UNITED STATES: RAILWAY OPERATIONS¹

PERIOD	MILEAGE OWNED FIRST TRACK (In thousand miles)	PASSENGERS CARRIED (In millions)	FREIGHT CARRIED (In million tons of 2,000 pounds)	PER CENT RETURN ON INVESTMENT
1909-1913 Average	247	982	1,818	(a)
1925-1929 Average	249	840	2,534	4.83
1930-1934 Average	247	525	1,573	2.06
1935	242	448	1,503	1.98
1936	240	492	1,806	2.66
1937	239	500	1,928	2.33
1938	237	455	1,483	1.47

(a) Not comparable with later years because of federal control accounting requirements.

Highways and Motor Vehicles: Highways in the United States are maintained by various government authorities, township, county and state. In addition to regular federal aid and state aid for road construction, during the depression years supplementary national and state funds have been available for this type of public work as part of the relief program. Disbursements for highways under the supervision of state highways departments in 1938 were 1,135 million dollars, including federal aid funds; this is nearly double the 1926 figure of 622 million. Data on types of highways for the whole country are not available. Table 108 gives figures on the increase in all rural roads in the United States since 1914 and on the state highway systems since 1926.

¹ *Ibid.* Mileage owned excludes duplication and covers continental United States only.

TABLE 108. UNITED STATES: RURAL ROADS
EXCLUDING CITY STREETS)⁸
(In thousand miles)

AT THE END OF:	ALL RURAL ROADS			STATE HIGHWAY SYSTEMS		
	Total	Earth	Surfaced	Total	Earth	Surfaced
1914	2,446	2,188	257	...	...	...
1921	2,941	2,554	388	...	...	...
1926	3,000	2,450	550	288	125	163
1930	3,009	2,316	694	324	98	266
1935	(a)	(a)	(a)	332 (b)	52 (b)	280 (b)
1936	(a)	(a)	(a)	340 (b)	51 (b)	289 (b)
1937	(a)	(a)	(a)	327 (b)	41 (b)	286 (b)
1938	3,065	...	...	327 (b)	34 (b)	293 (b)

(a) Data for county and local roads not available after 1930.

(b) Primary systems only.

Motor vehicle registrations multiplied by sixty in the period between 1910 and 1938. A more elaborate classification by types of motor vehicles than that given in Table 109 is the following, representing registrations as of January 1, 1940: 26,210,486 passenger cars, 156,996 buses, 4,637,388 trucks, 126,233 motorcycles and 5,000 Diesel units, or a total of 31,136,103.⁹

TABLE 109. UNITED STATES: MOTOR VEHICLE REGISTRATIONS¹⁰
(In thousands)

VEHICLES	1910	1920	1930	1938	1939
Cars, buses and taxis	459	8,226	23,059	25,262	26,201
Trucks, tractors, etc.	10	1,006	3,486	4,224	4,414
Total	469	9,232	26,545	29,486	30,615

As in other Pacific area countries, railway and automotive vehicle competition became particularly important during the depression years. Unfortunately, figures on investment returns, comparable to those given for railways in Table 107, are not available for bus or truck services; nor are data on bus operations given earlier than 1933. While the number of railway passengers dropped from 1,004 million in 1912 to 435 million in 1933, rising to only 500 million in 1937, the peak year, intercity public motor carriers transported 552 million in the same year, an increase of nearly 200 million over 329 million, the number of passengers they carried in 1933. In 1939 the majority (3,536 out of a total of 3,762 companies, including city, intercity and others) of the operating companies were owned by motor carriers, while 177

⁸ *Ibid.* for all data except 1938; the latter are quoted from *Automotive World News*, Sept. 1, 1939.

⁹ Motive Products Division. The figure for Diesels is an estimate. About half the Diesel units are located in the three Pacific Coast states.

¹⁰ *Statistical Abstract*.

are owned by electric railways and only 65 by steam railroads. Figures on freight hauled by truck are not available but this forms an important part of United States internal transportation, particularly in the growing use of Diesel-powered units. Further details on intercity motorbus lines, excluding the operations of city, sightseeing and irregular lines and of all non-revenue lines, are given in Table 110.

TABLE 110. UNITED STATES: MOTORBUS LINES, SUMMARY OF OPERATIONS OF INTERCITY PUBLIC CARRIERS¹¹

YEAR	NUMBER OF COMPANIES	NUMBER OF BUSES (In thousands)	MILES OF HIGHWAYS COVERED	PASSENGERS CARRIED (In millions)
1933	4,096	26	364,676 (a)	329
1934	3,904	23	354,000 (a)	378
1935	3,570	24	346,774	415
1936	3,600	25	345,050	500
1937	3,000	25	345,050	552
1938	2,848	20	355,000	374
1939	2,598	19	330,532	512

(a) Miles of routes operated (one way). Includes slight duplication resulting from use of same highway by more than one company.

Airways: Commercial flying in the United States is under federal control through the Civil Aeronautics Authority but is privately operated. With a total of 71,199 miles of airways, there were 139 regularly scheduled air transport services, flying 345 planes a total of 81 million airplane-miles during 1938, including both domestic and foreign and territorial services. In 1939 air services numbered 170, operating 339 planes, and flying some 90 million revenue miles. In the first half of 1940 there were 405 planes in operation, and during the whole year 99 million miles were flown and 2.2 million revenue passengers carried in the domestic services; at the same time 8.6 million revenue miles were flown in the foreign and territorial services, making a total of 108 million miles flown in 1940, an increase of more than one-fourth in two years.

A large proportion of these air services receive government subsidies in the form of airmail contracts, the mail income to contractors amounting in 1938 to 24 million dollars of which 15 million was for domestic and 8.6 million for foreign and territorial mail. Of the 81 million airplane-miles flown in 1938, 55 million were flown with mail. The first year for which air mail data are available is 1918 when there were 218 miles of airways in operation; in that year 18,000 pounds of mail were flown 16,000 airplane-miles. A large proportion of the increase in air services has occurred in the last eight years for which figures are available, 1930 to 1938. Table 111 divides aircraft operations into two categories, domestic, and foreign and territorial. The latter category includes the operations of American airlines in United States territories

¹¹ *Statistical Abstract*, 1939, p. 432; 1940, p. 456. Unlike those for earlier years, figures for 1937 and 1938 have been revised in keeping with actual operating revenues.

and in foreign countries. In 1940 Pan American Airways inaugurated its Seattle, Washington, to Juneau, Alaska, route which forms the final link in air routes which now extend unbroken down the entire eastern rim of the Pacific area from Nome, Alaska, to Valparaiso, Chile. The most ambitious trans-oceanic air services are those of Pan American which opened its San Francisco-Honolulu-Manila-Hongkong route in 1935 and its San Francisco-Honolulu-Noumea-Auckland route in 1940. (For data on the former, see Table 76 in the section on the Philippines.)

TABLE 111. UNITED STATES: CIVIL AERONAUTICS¹

YEAR	MILES OF ALL AIRWAYS IN OPERATION, DECEMBER 31	AIRPLANE-MILES FLOWN (In thousands)	REVENUE AND NON-REVENUE PASSENGERS CARRIED (In thousands)	EXPRESS AND FREIGHT CARRIED (a) (In thousand pounds)	MAIL CARRIED BY CONTRACTORS (In thousand pounds)
DOMESTIC SERVICES ONLY					
1927	8,865	...	...	...	...
1928	15,590	10,400	48	210	3,546
1929	24,874	22,380	160	250	7,100
1930	29,887	31,993	375	360	7,985
1931	30,451	42,755	470	758	9,097
1932	28,550	45,606	474	1,034	7,393
1933	27,812	48,772	493	1,510	7,362
1934	28,084	40,955	462	2,133	7,411
1935	28,267	55,380	747	3,822	13,269
1936	28,874	63,777	1,021	6,959	17,706
1937	31,084	66,072	1,103	7,127	(b)
1938	35,492	69,669	1,343	7,336	(b)
1939	36,581	82,572	1,876	9,514	(b)
1940, Jan.-June	...	49,022	1,255	5,205	(b)
FOREIGN AND TERRITORIAL SERVICES ONLY					
1927	257	...	...	...	...
1928	1,077	273	2	6	518
1929	11,456	2,761	14	8	672
1930	19,662	4,953	43	109	529
1931	19,949	4,891	61	412	546
1932	19,980	5,566	73	639	515
1933	19,875	5,871	83	980	454
1934	22,717	8,109	111	1,349	461
1935	32,184	8,487	127	1,743	504
1936	32,658	9,835	145	1,455	618
1937	32,572	11,332	187	1,857	714
1938	35,707	11,389	193	2,117	785
1939	43,528	8,405 (c)	169 (c)	1,398 (c)	675 (d)
1940, Jan.-June	...	4,618 (c)	114 (c)	834 (c)	438 (d)

(a) Freight excludes freight privately carried: 1,631,512 lbs. in 1928; 1,609,436 in 1929; 2,400,684 in 1930; 1,532,156 in 1931; and 669,011 in 1932.

(b) Not available.

(c) Does not include operations of three Latin American subsidiaries of Pan American which, prior to 1939, were included with foreign and territorial statistics.

(d) Data for 1939 and first half of 1940 represent foreign mail only.

¹² *Ibid.*; U.S. Air Commerce Bulletin; and Civil Aeronautics Journal.