

CHUNGKING PAMPHLETS

No. 8

**TRANSPORTATION IN
WARTIME CHINA**

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Dr. Wallace Crawford has been connected for many years with West China Union University, Chengtu, Szechwan. He knows the Old as well as the New China—the China of the push-cart and the China of Buicks and Fords. He has seen China at peace and at war. He has travelled extensively in all parts of the country by road, by river and by air.

In this pamphlet Dr. Crawford tells the story of how transportation has been developed in wartime China.

TRANSPORTATION CHINA

By WALLACE CRAWFORD

Many years ago I lived in the city of Kiating, probably the most conservative city in West China. One old superstition was that if the night watchman struck the fifth watch in the early morning, the dragon would wake and destroy the city. How typical of the China of yesterday! But no one can accuse China of lethargy to-day. Released from his hibernation the Chinese dragon no longer sleeps but goes streaking across the land, scooping out motor highways, magically levelling railroad beds and huge airports, throwing up docks and wharves on the river banks, and completely revolutionizing methods of transportation.

Navigation

China has always been a nation that "goes down to the sea in ships." Millenniums ago she was building ships—huge and ungainly but none the less efficient. They ploughed the seas far from home to trade with other peoples. In recent years steamships have been added. Before the war, China had some of the finest coastal ships in the Pacific basin. The inland waterways have always been crowded with river craft. In many parts of the country, they were

the chief means of travel and communication. Navigation has been one of the most important industries in China.

But Japan has swept China's shipping from the seas. Even fishing fleets are machine-gunned and their crews drowned without warning. Consequently, the Ministry of Economic Affairs of the Chinese Government has determined to make greater use of the inland waterways. These gain in importance where they connect with the railways and highways under control of the Ministry of Communications. As the Japanese have pushed further westward, the Chinese have carried their shipping farther back to the waters of the hinterland. This intensification of activity on the lakes and rivers has taken place, for the most part, in the southern and western provinces, and possibly to the greatest extent on the "River of Golden Sands," the upper reaches of the mighty Yangtze. In high water, shallow draft steamers go up stream as far as Kiating, about 1,500 miles from the coast. They leave the Yangtze by its last important tributary, the Min, which debouches from the mountains at Kwanhsien, and is joined by the Tong and the Ya Rivers at Kiating. Heretofore, the Yangtze has been navigable only about 160 miles (500 *li*) above Ipin (Suifu). Steam vessels never went beyond Ipin and the stiff rapids above the 500 *li* mark made navigation beyond that point impossible.

Because of the need for more efficient

transportation from the south, steps are being taken to deepen the Putu River, in order that Kunming, capital of Yunnan Province, may be linked with the Yangtze. As Kunming is the northern terminus of the new highway from Burma and the French Railway from Indo-China, water transportation from it to other points in the hinterland is imperative. With the deepening of the Putu and the construction of a short canal, this will be quite possible, and navigation will be opened from Kunming to the nation's wartime capital, Chungking.

Kweiyang, the capital of Kweichow Province, will be linked up with the Yangtze by the Wu River system which runs into the Yangtze at Fowlin (Fowchow). At present the Wu is navigable for only about 250 miles (400 kilometres), but dynamiting of the rapids is going on apace, and much more of the river will be navigable for shallow draft vessels and for native junks. Besides making transportation in the interior of China more efficient, the joining of Kweiyang with the Yangtze will greatly help in the war.

The Kialing River, which empties into the Yangtze at Chungking, has long been navigable for boats of shallow draft, but it is now being deepened and the rapids levelled so that shallow draft vessels will be able to go beyond Hochwan, sixty-two miles above Chungking. Even beyond this bifurcation point, the two streams are navigable many miles up into north-western Szechwan, and the eastern branch of the river

brings cargoes from far north Kwangyuan and even still farther Kansu. At Luhsien (Luchow) the Lu River drains a huge basin in which are grown great quantities of sugar cane. The Chi River is the object of much attention by the National River Conservancy Bureau. Dams and shiplocks are being constructed, thus making it possible for still another stream to carry supplies from Kweiyang to a point on the Yangtze just above Chungking. The Tong and the Ya Rivers will continue to carry coal, iron, timber, and other cargoes to the Min River and thence on down the river to the Yangtze.

Even the upper reaches of the Yellow River, "China's Sorrow," are being made to contribute to the delivery of much needed cargoes to Central China. In the warmer months of the year skin boats are being used on the shallow reaches of the river to carry down cargo even from beyond the far western borders, where commerce is brisker than before the opening of hostilities.

Possibly the greatest improvement of available waterways is being made in Hunan and Kwangsi where the Siang River running into Tungting Lake below Changsha is connected with the Kwei River by the Lin Canal, built in the Han Dynasty (221 B.C.-206 A.D.). The deepening of the waterway will enable larger junks to be towed from the Pearl River delta in Kwangtung Province to Hankow on the Yangtze, *via* the West River. Although part of this system is in occupied area, most

of it is still rendering good service to the Chinese cause as a substitute for the Canton-Hankow Railway.

Although China has lost some thirty of her dockyards, she has speeded up work on projects inland. One is an immense ten million dollar (Chinese currency) plant far in the interior. Szechwan shipyards are busy turning out new ships as well as reconditioning old ones. The Shensi Provincial Bureau of Reconstruction and the National River Conservancy Bureau are building special cargo junks which will carry much larger cargoes at materially lower costs than did the former junks.

The Min Sen Shipping Company was organized only in 1928 but it has rapidly increased the capacity of its yards until now it owns more than one hundred power-driven ships besides other craft. Some of its steamers are especially constructed to brave the rapids and gorges of the Upper Yangtze. An unbelievable amount of ship-building has been accomplished since the beginning of the war, because much of the equipment of other dockyards was brought from the coast.

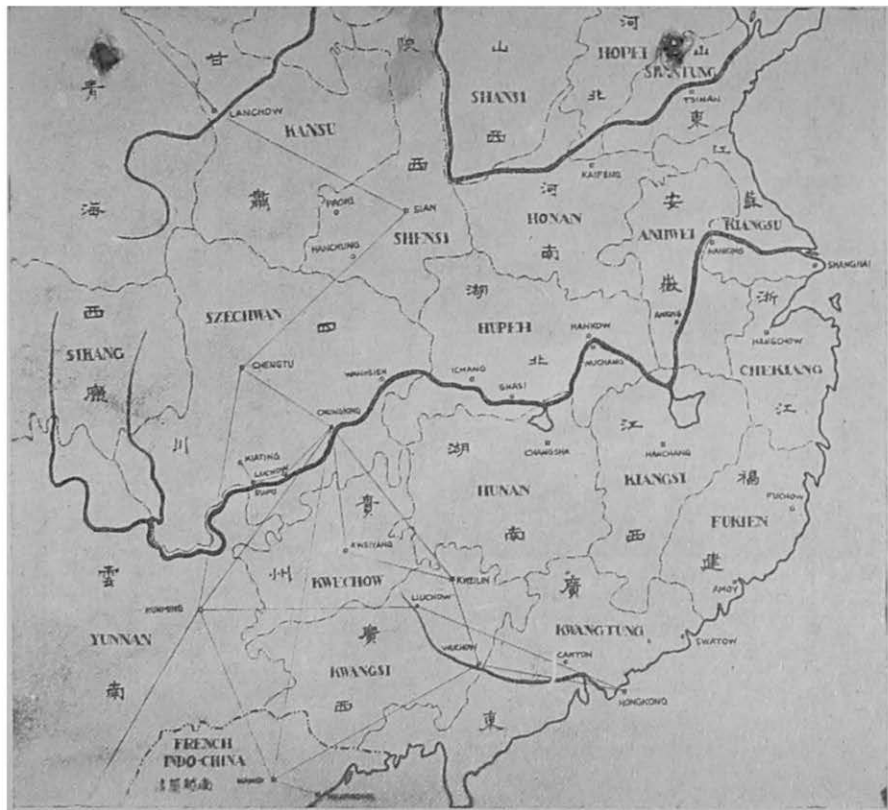
The migration into the hinterland has added at least one hundred ships to the upper reaches of the Yangtze, about doubling the number of modern vessels. Use is being made of waterways which heretofore were hardly thought navigable. To help the weaker steamers and junks over the most difficult rapids, the Navigation Bureau of the government has made

available eight powerful tugs. Repair depots and shipyards established at larger centres also make for greater efficiency in river transportation. In addition, at least five thousand junks and numberless smaller river craft are supplementing the modern steamships on the upper Yangtze.

Nor is the welfare of the personnel neglected. The huge army of workers on this immense fleet has the attention of both the Navigation Bureau and the River Conservancy Bureau. Technical education is available and navigation schools have been opened.

Air Route

A decade ago speed in West China was measured by the pace of pack mules making their way across time-worn mountain trails, or by the leisurely movement of junks up the innumerable rapids of the rivers. Within an incredibly short time the Ministry of Communications has developed an excellent air service for goods, men, and mails. At the time of the outbreak of hostilities China could boast of almost 9,000 miles (13,800 km.) of skyways. Many of the old routes in occupied areas have had to be abandoned but newly opened ones bring the total up to more than 10,000 miles (16,400 km.). Excellent service is being maintained despite the attempts of Japanese airmen to bring down the planes. Lines still operating are:



Air
Lines
in
Free
China

	<i>miles</i>	<i>km.</i>
Chungking-Kweiyang-Kunming	810 or	1,300
Chungking-Kunming	425 ..	630
Chungking-Chengtu	180 ..	290
Chungking-Kunming-Hanoi ..	750 ..	1,200
Kunming-Chengtu	425 ..	680
Chungking-Kweilin-Hongkong	800 ..	1,300
Chungking-Luhsien-Ipin- Kiating	350 ..	560
Chungking-Hanchung-Lanchow- Hami	1,650 ..	2,600
Chungking-Kunming-Rangoon	800 ..	1,300
Chungking-Chengtu-Lanchow- Suchow-Hami	1,750 ..	2,800
Hami-Tihwa-Alma Ata to Moscow	(?)	(?)

In 1909, when M. Vallon, a Frenchman, first demonstrated the possibilities of air travel in China there was only one plane, a Sommer biplane. To-day many ships tour the sky and one may see Douglas, Stinson, D. Dolphin, Commodore, Junkers, and many other planes—all of which contribute their bit to the success of New China. What a far cry from the pack animal or the man-handled junk to the new Douglas plane which speeds mails and merchants on their way to the coast or brings back valuable merchandise to inland cities! These are the planes that link up with Imperial Airways at Rangoon, and with the Trans-Pacific Clippers at Hongkong. Mail from New York is delivered now within eleven days at Chengtu. The writer received an answer to a

letter sent to London within twenty-three days.

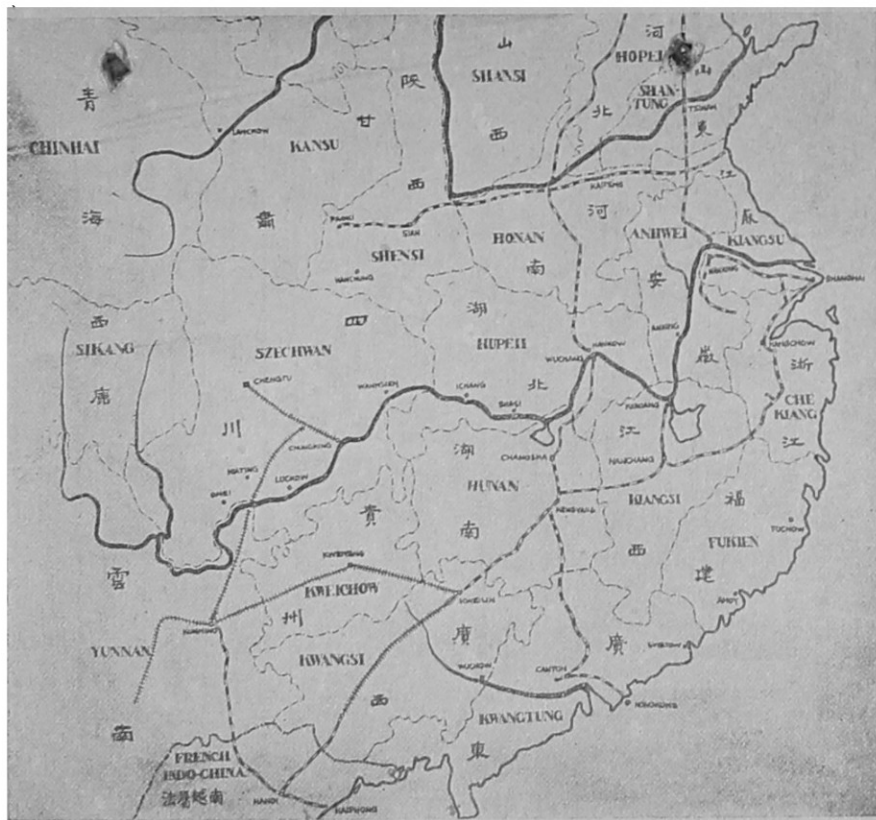
In 1929 the China National Aviation Corporation introduced air navigation in China. The Eurasia Corporation came next on the scene. These two companies have been responsible for most of the air transportation. In 1936 their planes covered more than a million and a half miles (2,500,000 km.) and carried almost 20,000 passengers and 41,000 pounds (90,000 kg.) of mail. Headquarters of both companies were originally in Shanghai, but were later moved to Chungking and the organizations began to use Hongkong as the coastal base. The first route flown was from Shanghai to Hankow; the second from Shanghai to Peiping; later, a third from Shanghai to Hongkong. Each of these was gradually extended to Chungking, then to Chengtu, and still later to Sian, and Lanchow. As the invaders have advanced into the country, the routes have been changed but the coastal base is still Hongkong and planes fly from there to Chungking as regularly as the exigencies of war permit. Hankow had to be abandoned as a port of call, but other cities have been added and have benefited thereby. The total distance flown has increased and service to free China has been greatly augmented. The companies have made it their policy to use a splendid type of plane. The very latest model German planes fly the Eurasia routes, and the American Douglas planes fly those of the China National Aviation Corporation.

This brief account of flying in China would not be complete without some word regarding the personnel. China can be proud of the quality of the young men who have been carefully selected to fly her planes. Their long and thorough training makes them fully dependable. In time they will equal the sky pilots of any country.

Railways

For millenniums China has trusted to her waterways to bear the brunt of her transportation. Only within the last three decades has she begun to develop railways. Quick to see the terrible handicap that loss of communication would impose upon China, the invaders took possession of the Lower Yangtze, and then tried to capture the railways as well. Japan's effort to destroy the Canton-Hankow Railway, and the heroic spirit of the men who kept the trains running make a story worthy of the ablest pens.

China has a geographical area approximating that of the United States, but only ten thousand miles of railways as compared with 250,000 miles in the United States. Julian Arnold is authority for the statement that China needs 50,000 miles more to give her adequate railway facilities. For the benefit of those interested in the trade, this will mean an expenditure of \$3,000,000,000, U.S. currency. China already has experienced and western trained engineers who can handle problems of



construction adequately. But most materials will have to be brought from abroad, which will be no small item for western nations.

At the commencement of hostilities two main railway lines ran north and south and three east and west. The north-south lines ran: one from Shanghai to Peiping *via* Nanking, crossing the Yangtze at Nanking; the other, a much longer line, from Hongkong to Peiping through Canton, Changsha, and Hankow. These were crossed by the Lunghai line running from Haichow on the coast to Paoki *via* Suchow and Sian, and by the Chekiang-Kiangsi line running from Hangchow through Nanchang and Hengyang. Since the war began this last line has been extended to Kweilin. A third east-west line ran from Peiping westward through Kalgan and Tatung to Patow.

Important sections of all railways are now in the hands of the invaders. But the guerrillas have discovered that the best steel they can command for rifles is railway rails. Hence these are often missing when the enemy's inspectors look over the track before the pilot train makes its trip. The depredations of the guerrillas upon the railways is costing Japan millions of yen each year. The Chinese are still putting up a stiff resistance to hold the east-west lines and still have charge of trains running over sections of them. Following the victory in north Hunan, another section of the Canton-Hankow Railway has been again functioning under the Chinese and they now control this

railway from a point seventy miles above Canton to the Yangtze port of Yoyang (Yochow).

Perhaps the most spectacular example of wartime railway construction is the extension of the Chekiang-Kiangsi Railway referred to above. This is a stretch of 220 miles (350 km.) from the busy city of Hengyang to Kweilin, capital of Kwangsi Province. It was completed in 390 days from the time the first sod was turned, and it is still functioning. This work was part of a five-year programme which the Chinese Government laid out in 1936. This programme also projected the extension of the Lunghai Railway as far as Lanchow; the construction of the Chungking-Chengtou line of 325 miles (523 km.); a new trunk line from Paoki to Chengtu of 280 miles (450 km.); a line from Chungking to Kweiyang of 230 miles (350 km.); and one from Kweiyang to Kunming of 310 miles (490 km.). Several lines radiating from Kunming are already under construction, including one of 430 miles (770 km.) to Ipin on the Yangtze. Other lines projected out of Nanchang and Nanking have had to be postponed because of the activities of the Japanese. However, the lines already mentioned above would more than offset the Japanese efforts to strangle transportation in China.

The most significant railway being constructed at the moment is the 500 miles (800 km.) Yunnan-Burma line to complement the Yunnan-Burma highway. It was begun in December, 1938. It will scale the mighty

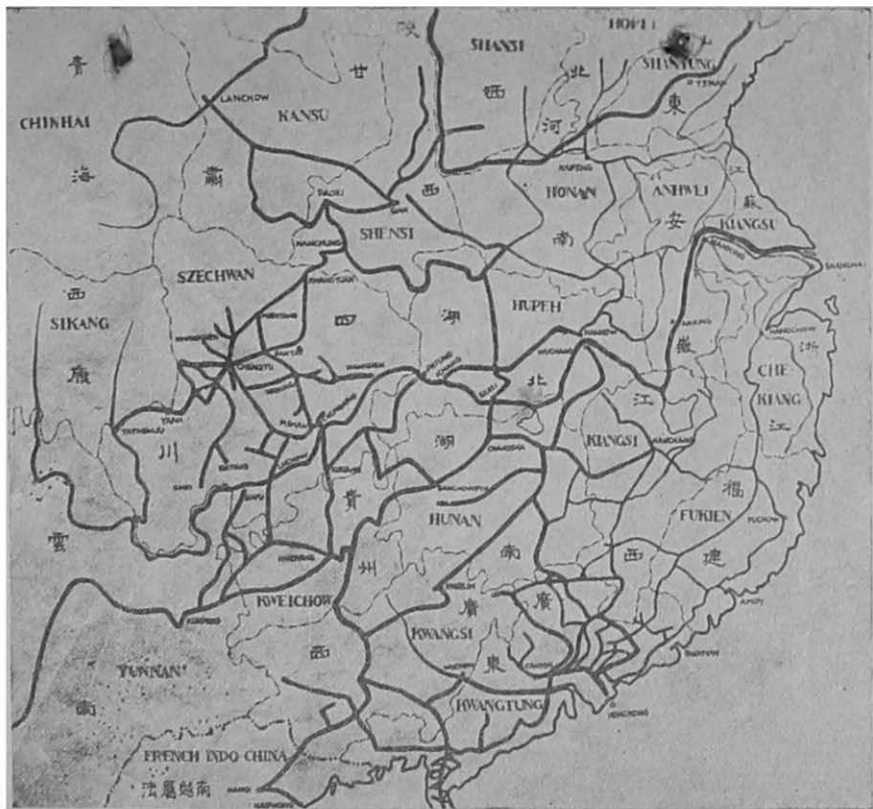
mountains of southwest Yunnan, some passes of which are as high as 8,000 feet.

The staffs of the Ministry of Communications have been untiring in their efforts to keep in operation the railroads under their control. Although it has often been impossible for trains to maintain a definite schedule, they have usually gotten through, despite almost insuperable difficulties. All this augurs well for the future development of the railways of this great nation.

Highways

How different China looks from the front curtain of a sedan chair, and through the windshield of a modern motor car! A few years ago motor cars were unknown in West China. China trusted to "Old Man River" for contact with the western provinces. But two years ago she was forced to seek other means of communication. With the closing of the Lower Yangtze her main method of transportation has become the motor vehicle, of which at least 100,000 are now in service. This is in marked contrast with the 11,000 motor vehicles of all kinds in service in 1923, mostly in Hongkong alone. Two decades ago there were no motor highways in China. Almost overnight, fine highways have sprung up, totalling now well over 100,000 miles in length. Hundreds of convoys are now carrying much-needed materials over the roads. China is fast becoming motor-minded.

The Government's first effort was to develop an efficient system of trunk lines by



Motor
Highways
in
Free
China

connecting and improving existing highways. This gave continued access to the outside world as well, when the coast was blockaded. The greatest of the highways is the Yunnan-Burma Road. It includes over 500 miles (800 km.) of modern road, extending from Kunming, provincial capital of Yunnan, to the Burma border. Most of this highway has been surfaced. With continued improvement it will be better able to meet increased demands of traffic and will become the most important back door to China. This highway makes possible a continuous route from the nation's wartime capital to Rangoon.

The second great achievement has been to link up the provincial capitals. With very few exceptions it is now possible to drive directly from one to another. An excellent example of the trunk lines being constructed is the Yunnan-Kweichow highway which connects Kunming and Kweiyang. From Kweiyang one may drive to Changsha and then to Hankow, or down to Canton, or by another branch road to Kweilin. This provincial capital has recently been connected with Kweiyang direct. Two other trunk lines run out of Kunming northward; one, nearly completed, runs to Ipin on the Yangtze; the other runs to Luhsien (Luchow) and joins the Chungking-Chengtou highway at Lungchang. This latter highway shortens the distance from Kunming to Chungking by over 200 kilometres, and to Chengtu by three day's journey.

Several roads radiate from Kweiyang. One goes northward to Chungking, approximately

310 miles (500 km.) and then turns west another 270 miles (430 km.) to Chengtu. From this city the road continues a distance of 580 miles (1,000 km.) north to Sian. From Sian the highway bears north and west to Lanchow, a distance of 470 miles (750 km.).

From the central city of Chengtu also radiates a network of highways in every direction across the plain. One road goes west to the city of Yaan (Yachow). Thence it is projected to the city of Tatsienlu, now called Kanting, capital of China's new province, Sikang. The construction of this highway will be very difficult as one of the passes to be negotiated is over 16,000 feet high. The road will probably run around the foot of the mountain; but there are other very high passes to be gone over. Another road out of Chengtu runs westward to Kwanhsien, the great irrigation centre of West China, from which it will later be projected to the far northwest and may some day be the base of a new road to Lanchow. This would amplify the facilities offered by the present direct 750 mile (1,200 km.) route from Chengtu to Lanchow which breaks off the Chengtu-Sian road at Shwangshipu, and near Huachialing joins the Sian-Lanchow artery. Southward out of Chengtu a road goes to Kiating. Before reaching Kiating at the junction of the Ya and the Min Rivers, a branch follows the old trail to Omei. This road is now being projected westward to Mapien and Fulin and thence down the Chienchang valley to Kunming *via* Tali. A

road from Yaan will be projected southward to Fulin joining up with the new road to Omei. This will make available another highway into the back door of China through Kunming. Still another highway runs due east from Chengtu to Suining, and thence onward to Wanhsien on the Yangtze. This road will cross the Yangtze at Wanhsien and link up with the road from Kweiyang to Ichang and Changsha. It will then be possible to take this route to Changsha or Nanchang or even to Shanghai and Canton. Lesser roads link Chengtu with other cities of the plain.

From Chungking a new highway is now open to Sian. This follows the former westward highway to Pishan and then turns northward through Suining and Santai to Mienyang, where it joins the old highway and goes on to Kwangyuan and thence to the great Northwest. The great division point on this highway is the new centre of Shwangshipu where the road bifurcates, the new highway running westward to Lanchow and the old road running into Sian. This latter highway meets the Lunghai Railway at Paoki. This shortens the route to the north by at least two days and obviates the necessity of going through Chengtu. Another projected highway runs east from Kikiang just 100 miles (160 km.) south of Chungking linking up the south bank of the Yangtze with Ichang. It is now completed as far as Patung on the Yangtze. Out of Kikiang a fork of this road goes south, connecting with the Kweiyang-Changsha high-

way at Sanchiaoping in Hunan, near the borders of Szechwan and Kweichow. It will shorten the journey from Changsha to Chungking by missing Kweiyang as well as a difficult mountainous piece of roadway between the Hunan border and Kweiyang. The trunk line from Kweiyang to Changsha also links up the highways running both south and east; south to Canton, and thence to Hongkong; east to Hankow, Nanchang and Nanking; or to Nanchang, Hangchow, and Shanghai.

Before the Japanese invasion a highway was operating between Hankow and Ichang. This has now been projected from the city of Shasi northward and terminates by joining the Chengtu-Sian highway at Hangchung. This highway has been of immense service to the Chinese in moving troops and supplies to the west and the north.

From Kweiyang runs the most heavily travelled commercial highway, the Chungking-Hanoi highway which connects with the port of Haiphong *via* Hanoi. At Liuchow this highway connects with the cross trunk line from Changsha *via* Hengyang and Kweilin, eventually providing a line from Changsha to Haiphong.

With the fall of Nanning, China lost an important highway from the coast. But the government had just completed a second highway from the Indo-China border. At once additional routes were made available by completing three branch roads running from this new trunk line: one northeast (to connect with the Nanning-

Kweiyang highway), and two northwest (one to connect with Kweiyang-Kunming road and one running direct to Kunming). These three highways have greatly offset the loss of this Nanning highway, though they have not yet been brought to the efficiency of the Nanning-Kweiyang highway.

A fine highway runs north from the port of Kwangchowwan (called Fort Bayard by the French), which port is reached by sea from Hongkong. The road continues through Liuchow to Kweiyang and then to Chungking and points north and northwest. For 375 miles (600 km.) westward the Kweiyang highway runs over the Kweiyang-Yunnan border to Kunming. From there one can take the Yunnan-Burma highway to Rangoon. Thus one may now motor from Rangoon to Canton, Chungking, Shanghai, Peiping, or Lanchow where roads connect with the international highways to Russia.

To enumerate the highways within occupied China would be a task of wide proportions. East China has a network of roads and highways which make travel and transportation there compare favourably with that in many Occidental countries. Some roads are of the latest design. The one from Shanghai to Hangchow was well constructed and heavily travelled before the war. The one from Shanghai to Nanking had a good road bed but has deteriorated since its occupation by the Japanese.

For the most part China's building of roads has been empirical. But the skilled engineers called to build them through the mountains may

be proud of their accomplishments, for their cutting and grading have been excellently planned and well-executed. With the advent of hostilities the Central Government began a programme of improvement so that many of the transcontinental highways are now well-surfaced and others are being surfaced. Local stone rollers, six feet long and four feet in diameter, are quarried near the roads and manned by relays of coolies. They effectively take the place of steam rollers which are so difficult to secure and import; yet a surprising number of these latter are in use. Many road curves are well-banked and the hairpin turns are wide enough so that only occasionally do the largest trucks have to stop and reverse to negotiate them. Bridges easily carry five-ton loads and only a few had to be shored up in order to carry a thirty-ton load that was driven from Nanking to Chengtu.

Facilities for the repair of vehicles are rapidly improving. In some of the larger cities there are modern repair shops, and spare parts for the many makes of cars in China. Even without adequate materials, excellent repairing is done. Lately the General Motors Corporation has put a fleet of repair trucks on the inland highways and these have proven a boon to transportation. Other large motor corporations are planning to follow the example of General Motors.

But transportation is greatly hampered at present by insufficient supplies of gasoline and oil.

The most popular makes among the many trucks and buses on the road is perhaps the Dodge. Next in order of frequency are Chevrolets and Fords, followed by the higher priced trucks. The Government uses White trucks for larger loads on the more heavily travelled highways. Not many of the continental makes have found their way into the interior, possibly because of the difficulty of securing spare parts and repairs for them. For lighter-travel, Chrysler cars are in the majority; Ford, then Chevrolet and other General Motors makes follow. The determination of the Central Government to improve steadily the roads, and the bridges and ferries over the larger streams bids fair to insure an excellent system for motor travel across the country.

In the more inaccessible parts of the country, older methods of transportation are not neglected. Discarded tyres have been put on the wheels of old-fashioned springless carts, enabling them to carry heavier loads. In this way thousands of tons are transported by men, mules, or horses over roads impassable by motor vehicles. The rickshaw also is used for carrying freight. It can carry loads of even three or four hundred pounds. Pack animals: mules, horses, and camels are more numerous than ever before. One can often see merchandise being carried by a caravan of a hundred mules. And camel trains now come as far south as Chengtu, travelling over the ancient mountain trails that wind through the ranges between Shensi and Sze-

chwan. Where other methods ~~are~~ ~~impossible~~ the humble load carrier still does the transporting.

Naturally the facilities at present available for use have their handicaps. The relatively small number of ships at hand and the hardships of travel on many of the water courses are difficulties yet to be overcome. The normal course of present Chinese commercial aviation sometimes is checked by operations of the invader, and the wartime facilities do not nearly compare with those available for peacetime use. Highways often have been hurriedly constructed and road beds are sorely in need of more thorough surfacing.

But the rapidity and relative excellence with which projects are being developed show the adaptability of the Chinese in their determination to win for one-fourth of the world's population freedom from aggression and slavery. China has undertaken, in a masterful way, the task of readjusting her transportation system to the changes and exigencies of war. Although the results are at present primarily concerned with wartime efficiency, they will provide facilities that will be of inestimable benefit to the new post-war nation.

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