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FOREWORD

Information pertaining to means of communication in China has been extremely meager, and, therefore, with the constantly increasing interest in China's highway development in mind, the present work is offered. The compilation has been made in as comprehensive a form as was possible and from the most recent available sources that could be secured.

China occupies an area larger by one-fifth than that of the United States. It has a population equal to all the European nations combined, and is rich in agricultural and mineral resources, yet its vast resources are woefully undeveloped, and foremost, probably, among present causes is its inadequate means of communication.

With China's administrative problems now apparently greatly improved, promising much encouragement for progressive development, it is believed that a description of highway development in that country, as now in course of construction and under projection, is of timely interest.

WILLIAM L. COOPER, *Director*,
Bureau of Foreign and Domestic Commerce.

JANUARY, 1931.

MOTOR ROADS IN CHINA

INTRODUCTION

The first attempt to compile a survey of motor highways in China in May, 1929, found expression in a mimeographed edition, which was considered worthy of reproduction, but so great has been the interest in highway development since the original compilation that publication was withheld pending a revision.

Without an opportunity to travel over the entire country, no one can be certain of the exact conditions existing, but reports from American consular representatives, from provincial authorities, and from commercial interests, checked through other available sources, make the data herein contained as reliable as it is possible to obtain in the absence of more exhaustive personal investigation. The merit of this report perhaps lies in the fact that nowhere else is to be found a similar compilation in English, although the National Good Roads Association of China has recently issued a volume in Chinese based on data obtained from its branches throughout China. This volume, however, deals with the technique of road building adaptable to China and does not purport to be a complete survey of actual roads constructed and open to traffic.

China, the oldest of all nations, boasts a remarkable independent civilization. It has a population equal to that of all European nations combined, being the largest single race unit on earth, in a territory one-fifth again as large as the United States, reaching in latitude from 19° north in the island of Hainan to 53° north in Manchuria, and extending in longitude from 72° east in Turkestan to 134° east at the mouth of the Ussuri River. Eighty per cent of the population is agricultural, two-thirds of which is concentrated in one-third of the country's area, in the great Yangtze Basin. The Yangtze River, with its headwaters in the high Tibetan Ranges, flows eastward for a distance of 3,200 miles and empties into the China Sea. It is navigable for at least 1,500 miles of this course and forms the principal transportation artery in Central China. The Yellow River, flowing eastward across North and Central China for some 2,600 miles, and the West River in South China, 1,200 miles in length, provide for these areas their principal means of communication.

There are two distinct seasons, with rainfall heaviest in the spring and summer months. In North China the temperature falls to 4° F. in winter and rises to 100° F. in summer; in Central China temperatures range from 15° to 98° F. while in South China the winter temperature rarely falls below 32° F., and the summer maximum is about 98° F. The climate, however, is extremely moist and humid. The annual rainfall in North China averages 25 inches, in the Yangtze region 44 inches, and in South China 70 inches.

China, though rich in agricultural and animal products, is equally endowed with vast mineral resources; yet to-day the country is famine stricken in many districts and its vast resources lie undeveloped. Many have asked why such conditions exist, and as many have tried to solve the riddle. Many are agreed that the chief hindrance to the development of China's resources and to a real unification for effective administration by one stabilized central government has been the lack of adequate means of communication. It is more than probable that China would have fewer dialects if travel between communities were more easily effected and if agricultural, animal, and mineral resources were developed to a greater extent by a readily available transportation system.

The coast line of China extends along the Pacific Ocean for a distance of 2,150 miles, or with all indentations 5,000 miles. This, together with the abundance of navigable rivers and the extensive network of canals, has greatly retarded the development of more modern means of communication. Less than 10,000 miles of railways have been constructed. But this condition is being changed with the advance of motor roads, airplane routes, and additional railroad construction in Manchuria.

TRANSPORTATION COSTS

The tremendous supply of cheap coolie labor available in China has often given rise to the belief that this constitutes cheap transportation. The fallacy of this idea has frequently been commented upon, but perhaps has nowhere been more cogently stated than in Some Bigger Issues in China's Problems, a recent publication by Julean Arnold, American commercial attaché to China. Mr. Arnold states therein that the human beast of burden of China is "15 times as costly as the luxurious railway train in America," and estimates that "an American railway will haul a ton of wheat for what it costs to haul a picul (133⅓ pounds) the same distance" by coolie carrier in China. The chapter on transportation costs in Mr. Arnold's Commercial Handbook of China [1] indicates that transportation by pack animals and carts in Shansi Province averages about 16 cents Chinese silver a ton-mile; motor transportation from 20 to 25 cents a ton-mile; whereas railways should be able to carry cargo at less than 3 cents a ton-mile.

An illuminating story regarding transportation costs in Shansi is that of a shipment of 20,000 piculs (about 1,400 tons) of Manchurian grains which arrived at Taiyuan by railway for transportation to Linfeng, about 700 li (233 miles) distant, by carts and pack animals, for famine relief. The cost of transportating this shipment is reported to have been $220,000 silver, or 79 cents (gold 31.7 cents), a ton-mile. While a railway might have hauled this tonnage for 1.9 cents a ton-mile, there are no railways in that territory, and to construct one would cost in the neighborhood of $81,000,000 silver. The same shipment might have been transported by tractors and

[1] Issued in 1919 by the Bureau of Foreign and Domestic Commerce as Miscellaneous Series No. 84 (2 vols.), which was superseded in 1926 by a revised edition entitled "Commercial and Industrial Handbook of China," Trade Promotion Series No. 38, in one volume. The revised edition can be obtained for $1.75 from the Superintendent of Documents, Government Printing Office, Washington, D. C.

trailers over an existing cart road at a cost of between $35,000 and $40,000 silver.

While railways may furnish a cheaper form of transportation, the financing of such undertakings presents a very real problem to China. The initial investment represented in the construction of railways, as against that for motor highways, presents many arguments in favor of highways over railways at this period of China's domestic life.

If the progress which has been made in road construction within the past five years amid civil strife and turmoil is in any sense a measuring standard for the future, there is reason to believe that within the next five years motor-highway construction will greatly exceed new railway development and will thus furnish to the country

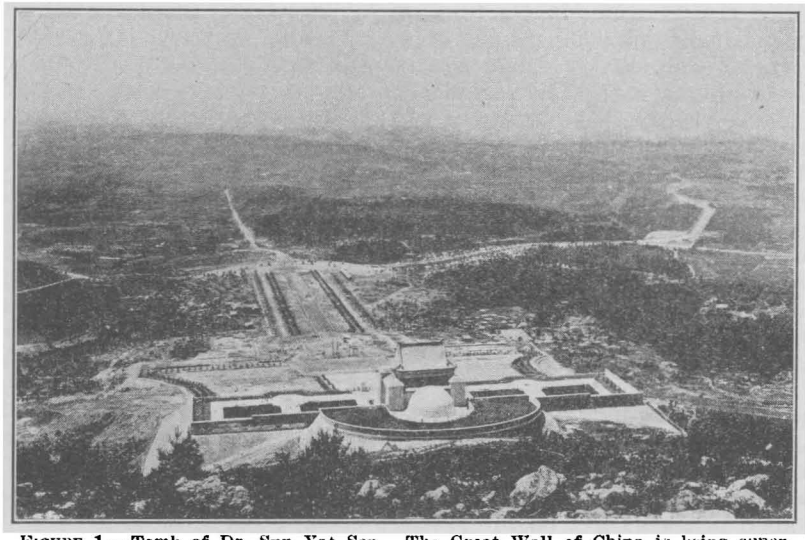

FIGURE 1.—Tomb of Dr. Sun Yat Sen. The Great Wall of China is being superseded in Chinese sentiment by this mausoleum. The site chosen for the erection of the new Nanking Government buildings lies in the rolling valley in front of this memorial tomb. The airplane view presented here shows the highway development in the Nanking district

a system of transportation which the laying of rails could not hope to accomplish for many years to come.

In this connection, statements made by Mr. H. Stringer in The Chinese Railway System seem particularly applicable. After recounting China's railway history, he says:

> Roads and motor tractors would appear then to be much the cheapest and most noncommittal investment for a country like China, whose resources even now are very little known and whose present financial position, owing to a long series of disturbances, is deplorable.

Continuing further in an analysis of the feasibility of narrow-gage railways to reduce initial railway investments, he states:

> Roads (highways) at a maximum cost of M$14.000 per mile, with a capacity of from 3,000 to 4,000 tons daily, are undoubtedly a sounder investment than 2-foot-gage lines costing M$19,000 per mile, and with a very limited capacity—a capacity, moreover, liable to fall to zero in time of war, in which respect roads have a further advantage.

ANCIENT COURIER ROUTES

Although China has constructed no national system of modern highways, it is a mistake to suppose that the country has been for ages without means of transportation and communication. It is equally misleading to state that China had no roads before the coming of the foreigner or the arrival of western motor-propelled vehicles.

The Chinese people have availed themselves of their natural waterways, and have supplemented them with canals, of which the greatest, the Grand Canal, from Hangchow to Peiping, has long been one of the wonders of the East, though now sadly neglected and in extreme disrepair in its northern portion. For centuries the Chinese Government maintained courier roads or postal highways, called the "Kwan Ma Da Lu" or "public horse great roads," and by means of imperial courier it was possible to reach the remotest parts of the country from the national capital within a comparatively short time. These courier roads adopted as nearly as possible a straight line for their course, often cutting a path along the sides of mountains, or even making tunnels for their passage. When these roads ran through plains they expanded to a width of 20 to 25 yards, were often paved, and sometimes were bordered with rows of trees. At intervals of 10 li, roughly 3 miles, signal towers were erected, and inns, relay posts, and stations of soldiers were to be found throughout the length of these roads. Imperial couriers formerly traveled on horseback from Peking (now Peiping) to Canton in less than 10 days.

Early Chinese legend says that the immediate descendants of the first man lived in trees and had no use for roads. However, as time went on and their sphere of activity enlarged, travel was for the most part by natural waterways. Penetration of the country was first by trail, followed by the establishment of paths which later became highways. Ancient Chinese history also tells of a war waged in 2688 B. C. on the people's enemy, Chi Yui, by Huang Ti, one of China's first three known rulers. To expedite his operations against Chi Yui's mysterious defending forces, Huang Ti put into use the first compass known to man to determine the direction of movements of his own troops. This compass was in the form of a mechanical device known as the fairy's hand, fixed on the top of his chariot. Whichever way his chariot moved the fairy's hand always pointed to the south. Huang Ti is also said to be first person in China who measured the roads, for according to the San Hai Ching, this early ruler measured the distance that he had traveled during his cross-country inspection tours by means of a wooden figure attached to a wheel of his chariot which automatically beat a drum once at the end of every li (one-third of a mile) of road over which the wheel had rolled a certain number of times; he then marked the distance of the road by piles of earth or stone. The ascertaining of directions and the measurements of distances were two essentials to traveling before men resorted to other transportation and communication facilities on land or by water.

Legendary history likewise records that in the days of the ruler Yao, about 2350 B. C., China was flooded. Later, in the days of the

ruler Shun (Swen), the great Yu was commissioned to regulate the water systems of the country. He traveled all over the country, cutting down trees as he and his party went along, thus laying out routes of travel. He erected many dams and completed other engineering projects which made the country and towns in their locality free from floods. Ruler Shun (Swen) then abdicated in Yu's favor in recognition of his service to the state. During his 9-year tenure of office (2205–2196 B. C.) great Yu divided China into nine Provinces and is said to have constructed a number of roads, but nothing seems to have been recorded regarding the type and state of roads in those early days of China's history, except what might be gathered from a description of Wu Wang's invasion of the Central Kingdom in 1001 B. C. It is stated that he was driven in a chariot drawn by eight horses, and that he rode "wherever wheel ruts ran and the hoofs of horses had trodden."

It was not until the formal opening of the Chow dynasty in 1129 B. C. that a special department of the Government of China was established to supervise the construction and maintenance of roads. The great statesman Chow Kung secured its creation by the first ruler of the Chow dynasty, who included in the Book of Principles of a Government a set of regulations classifying the roads of the country into "Ching" or cattle and horse trails; "Cheng," or cart path; "Tu" or 1-rut chariot roads; "Dao," or 2-rut chariot roads; and "Lu," or 3-rut highways. According to the Book of Kuo Yu, the roads of the Chow dynasty were bordered with trees and preserved by hired laborers. The State highways connected the national capital and the frontier points of the territory in all directions and were governed by a special central office under the Yieh Lu Shih.

Down to the fifth century B. C., Shensi Province was under the rule of Shih Huang Ti. He gradually annexed all other kingdoms of China, united the whole territory (then known to the Chinese as "the universe") into the Chin State, from which is probably derived the name China as we know it to-day. In his reign State highways were built from Sian to Peking (now Peiping), in the Kingdom of Yen; Chinkiang via Hsuchow, in the Kingdom of Woo; Tsinan, in the Kingdom of Tsi; Canton, in the Kingdom of Yueh; and to Chengtu, in the Kingdom of Su. These highways, according to the Chia Shan Tze Yen, were 50 steps wide, bordered by pine trees at 30-foot intervals. The stone road between Sian and Chengtu, covering a distance of 900 li, or 300 miles, was built in the Han dynasty between 206 B. C. and 220 A. D. It is a great example of the work of those ancient road builders, and even to-day it is passable. The road from Chengtu, capital of Szechwan Province, then known as the State Su, to Yunnan, then known as Tien, was built by the famous Chu K'o Liang in the last days of the Han dynasty.

As to international routes, records are found of Chow Mu Wang's military expedition against the Chuen Lung. He is said to have led six divisions of selected troops for the subjugation of Chuen Lung in Siberia, traveling via Chengting, Taiyuan, Yanmenkwan, Ningsia, Kansu, Sining, to Kokonor, thence to Turkestan, Persia,

and European Russia, and back to China by way of Siberia and Outer Mongolia in the winter of 1001 B. C.

Reference is also found to General Pau Chao leading an army from China by the overland route to Antiachia Margiana in A. D. 97. It is said that from here he sent his lieutenant to the Persian Gulf to embark on an embassy to Rome. From A. D. 166 to 250 there is recorded the arrivals of the Romans. It is possible that some of the Roman ideas of road construction were imported into China, for Rome was well advanced at that time in the science of road building, as evidenced by the Appian Way.

Roads in China were gradually widened, and their condition was improved throughout the Middle Ages. The Tang rulers from A. D. 617 placed the courier roads under the Board of War and maintained 1,639 land courier stations and 1,297 waterway stations, as well as 86 joint stations, but the upkeep of the roads and the dispatch of military messages, as well as the transportation of goods, were still handled by hired civilian labor. The Sung rulers (between A. D. 959 and 1273), however, made use of soldier labor on these courier roads. During the days of Kublai Khan and Ghengis Khan the 2,000 miles of China's imperial highways were completely repaired and improved. Ghengis Khan, in handing over these imperial highways in good condition to the Ming rulers in A. D. 1368, boasted before he died that he had made China so safe for travelers that a merchant could go from end to end of the country without molestation, but the Mings and their successors, the Manchu rulers, paid little attention to communications and allowed the splendid old imperial highways to fall into ruin, until to-day a bit of causeway and a half-hidden stone pavement are all that remain.

ANCIENT COURIER ROADS RADIATING FROM PEKING

A list of the ancient courier roads radiating from Peking is given below. The figures in parentheses indicate the number of miles from Peking unless specified otherwise.

1. Peking to Tungchow, Yungping, Shanhaikwan, and Mukden.
2. Peking to Jehol (122), and Tsitsihar.
3. Peking to Dolonnor and Khailar.
4. Peking to Kalgan (125), Urga, Maimachin, and Kiachta.
5. Peking to Kalgan, Kweihauting, Uliassutai, Kobdo, and Semipalatinsk.
6. Peking to Taiyuan, Sian (770), Lanchow (1,120), Liangchow, Kanchow, Suchow (Gobi Desert), Hami (2,092), Urumtsi, and Kashgar (3,439)—or from Hami northwest to Lake Zaisani.
7. Peking to Lanchow (as above), Sining (159 miles from Lanchow), Dangar, Kokonor, Nakchuka, Lhasa, and Gartok (800 miles from Lhasa).
8. Peking to Taiyuan, Sian, Chengtu (via West Tsinling and Tiensha Pass), Tatsienlu, Litang, and Lhasa.
9. Peking to Chengting, Kaifeng, Siangyang, Kingchun, Changteh, Kweiyang, Yunnan, Tali, Tengyueh, Bhamo (from Yunnan to Mengtz, and Hanoi or to Szemao).
10. Peking to Chengting, Kaifeng, Hankow, Yochow, Hengchow, and Kweilin.
11. Peking to Hankow, Hengchow, and Canton.
12. Peking to Tehchow, Hsuchow, Luchow (Anhwei), Kiukiang, Nanchang, and Canton (Ambassador's Road).
13. Peking to Tehchow, Hsuchow, Chinkiang, Hangchow, Wenchow, Santuao, and Foochow.

MODERN HIGHWAYS REPLACING ANCIENT WALLS

Many of the ancient city walls of China are being replaced by modern city highways. Such work already completed or contemplated is indicated in the following paragraphs:

Roads constructed.—Canton, concrete municipal road; each of the following cities—Shanghai, Nantungchow, Hangchow, Changsha, Chuanchow, Waichow, Nanchang—motor road surfaced with broken stone.

City walls now being partially or totally demolished.—Kunsan (Kiangsu), Chuansha (Kiangsu), Kiukiang (Kiangsi), Yangchow (Kiangsu), Kashing (Chekiang), Changchow (Kiangsi), Pinghu (Chekiang), Wuching (Kiangsu), Soochow (Kiangsu), Wuchow (Kwangsi), Chaoching (Kwangsi), Wuhu (Anhwei), Chinkiang (Kiangsu), Wuchang (Hupeh).

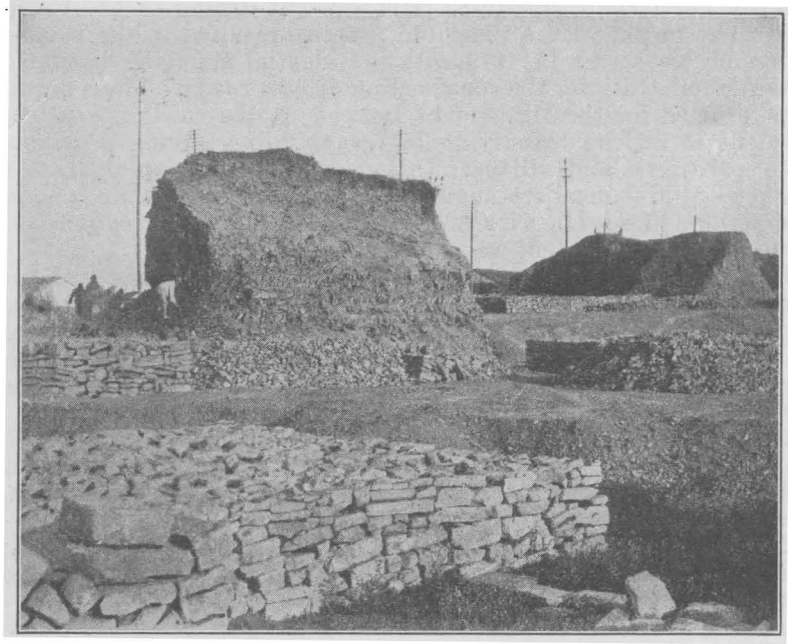

FIGURE 2.—An ancient city wall giving way to modern road building

City walls to be pulled down and replaced by modern motor roads in the near future.—Ningpo (Chekiang), broken-stone roads projected; Wuchang (Hupeh), stone road; Peiping (Hopeh), concrete municipal road; Chengtu (Szechwan), broken-stone road; Chungking (Szechwan), large-stone surface; Tianyuan, broken-stone road; Mukden (Liaoning), broken-stone road; Kweilin (Kwangsi), broken-stone road; Changsuh (Kiangsu), coal-dust surface; Sinhui (Kwangtung); Ichang (Hupeh); Wusih (Kiangsu).

MODERN HIGHWAY SYSTEMS

China's elaborate system of courier routes finds no counterpart in its modern road development. Sporadic road construction throughout the Provinces has opened up many areas to modern means of transportation. The longest regular motor route in China, that from Kalgan to Urga, is an overland caravan trail 800 miles in length, suitable for motor traffic when the ground is frozen during winter months.

It is difficult to state when "better roads" were first advocated in China. The original exponent, however, seems to have been Lo Kou-shui, who, while serving as technical secretary and adviser to the Peking Ministry of Communications in 1913, strongly urged the adoption of a highway program as a complement to the construction of a national system of railways then being drawn up. It was his opinion that any large investment in new railways would fail to bring adequate returns unless feeders in the form of modern roads were constructed to permit the produce of the tributary districts to be transported cheaply to the railway. Mr. Lo at that time ranked as one of China's foremost foreign-trained engineers, being among the first group of students returned from America and a graduate of Troy Polytechnic Institute. His constant urging of the Peking authorities to put such a plan into practice resulted in the promulgation, on November 15, 1919, of a presidential mandate stipulating certain regulations for the construction of new roads. These regulations, drafted for the Ministry of Interior by the road experts, consisted of 15 articles classifying highways into national, provincial, hsien (district), and village. Unfortunately the promulgation of this presidential mandate amounted to nothing more than a paper transaction, in so far as any real impetus for the creation of a national highway system was concerned.

The principal factors which have contributed to the actual construction of modern road building may be classified under the following five headings: (1) Public works departments of the foreign concessions at various treaty ports; (2) famine relief, 1920; (3) Good Roads Association, 1921; (4) provincial, military, and civil governors; (5) private bus-line interests.

The road-building programs carried out under the direction of the American Red Cross to alleviate famine-stricken districts in 1920 undoubtedly furnished the first big impetus for modern roads. This stimulus, caught on the crest of the wave by a group of individuals at Shanghai, headed by Dr. C. T. Wang (Minister of Foreign Affairs, 1928 and 1929), resulted in the formation of the National Good Roads Construction Association of China, in May, 1921—popularly known as the good roads movement. This organization has played a considerable part in educational propaganda for better roads. Its Good Roads Monthly, published in Chinese since March, 1922, claims a circulation of 8,000. In addition, 1,000 copies of a voluminous work in Chinese entitled "A Book on Roads" has been published and circulated by the association. Special pamphlets and other material have likewise been issued in the Chinese language and disseminated throughout the country. The association also claims in its record of achievements a measure of success in the stimulation of motor-bus services. It further claims to have repeatedly urged the Nanking Ministry of the Interior, in the early days of the new Government, to bring pressure to bear upon the officers of different Provinces and districts to establish provincial and district highway bureaus, and during 1928–29 the Nanking authorities by law created provincial boards of construction with highway bureaus throughout the Provinces. The association has through educational propaganda endeavored to encourage the people throughout China to tear down

the ancient city walls and build roads and has sought to stimulate private interests to organize motor-bus transportation companies.

On the practical side, however, the China International Famine Relief Commission has doubtless done more than any other single medium in the actual construction of roads and in the extension of a road-building program in China. From 1923 to 1928 it was responsible for the administration of several million dollars on reclamation work and the construction of dikes and roads. In many places the commission has been able to carry on construction, irrespective of military operations and the instability of local governments. It aims to have local authorities with whom it is operating match, with funds or an equivalent value in labor and materials, the China International Famine Relief funds expended on certain projects.

A few Provinces, however, have independently planned road-construction programs which have been carried through entirely by Chinese engineers. Provincial authorities generally were more active in highway construction during 1929 than in any previous year.

Aside from the feeble attempt of the Peking Government, through its promulgation of a paper mandate in 1919, no national interest was displayed in highway construction until the coming of the new national government at Nanking. Early in its régime the National Reconstruction Commission urged upon the Provinces the desirability of creating provincial highway bureaus for the immediate construction of highway systems. Various district or hsien road bureaus throughout the Provinces held conferences in 1928, as a result of which many new bureaus were created. Latterly these have been reorganized and amalgamated with the provincial boards of construction.

The first forward step, from a national viewpoint, was taken by the Ministry of Railways in January, 1929, when a ministerial order for the organization of the National Highway Planning Commission was signed. Upon the invitation of this commission each respective Province was requested to send a delegate from the provincial commission of construction to a highway conference which convened in Nanking on February 20, 1929. In addition to the provincial delegates, three representatives were appointed directly from the Ministry of Railways. Nineteen Provinces sent responsible delegates. The three members appointed by the Ministry of Railways were Y. S. Chun, director of planning and construction department; T. King, technical expert of the ministry; and Y. M. Lin, director of the Nanking city planning bureau. Upon the convening of the conference Y. S. Chun was selected as chairman of the commission. This commission organized itself into four committees, which met and carried on studies for the course of three months, at the end of which time plans for a national system of highways were presented on May 23, 1929. The projects, having received the indorsement of Minister Sun Fo, were subsequently placed before the State council and the Legislative Yuan for final approval and adoption. As a result thereof highway laws were promulgated in September, 1929, as the first step toward the realization of this national plan.

The commission divided national highways into two classes, namely, China proper lines and frontier defense lines. The latter

were selected solely from the viewpoint of national defense, while the former, designed to connect the different provincial capitals with Nanking, were guided by the following principles:

1. Highways to traverse the most populous and most productive districts.
2. To pass through the most important commercial centers of the Provinces.
3. To act as feeders to railway lines.
4. To be the most economical both in the cost of construction and in maintenance.
5. Provincial highways either already in existence or definitely scheduled for construction to be linked together to become national highways, should their importance warrant.
6. Projected railway lines, if not likely to be built in the near future, to be first built as national highways.

PROJECTED NATIONAL HIGHWAYS

1. *Nanking to Kwangsi.*—To extend from Nanking to Lungchow, Kwangsi, via Kuyung, Ihing, Changhing, Huchow, Hangchow, Shaohing, Taichow, Wenchow, Foochow, Hinghwa, Chuanchow, Changchow, Chaochow, Haifeng, Lufeng, Canton, Shiuhing, Wuchow, Yuling, and Nanning. It incorporates the provincial highways of Kiangsu, Chekiang, Fukien, Kwangtung, and Kwangsi, linking together the most important cities of the five Provinces. From Nanking to Canton the route followed is far apart from the proposed Nanking-Canton Railway, and for the rest of the line only the short section from Canton to Wuchow is paralleled by the projected Canton-Yunnan Railway. This line is also important from the standpoint of national defense for the southeastern coast.

2. *Nanking, Yunnan, and Sikang line.*—From Nanking to Kunming via Pukow, Luchow, Anking, Hankow, Hanyang, Shasi, Changteh, Chenchow, Tungjen, Yuping, Yungan, Kweiyang, Anshun, Panhsien and Chuching; from Kunming, one line to Puerh and Cheli and another to Tsuhsiung and Tali; from Tali, one line to Sicking, Yungchang, and Tengchung, and another to Likiang and Patang. The two branches in Yunnan are primarily for frontier defense.

3. *Nanking to Tibet.*—From Nanking to Lhasa via Pukow, Luchow, Luan, Kushih, Kwangchow, Loshan, Sinyang, Tunpeh, Tsaoyang, Fancheng, Laohokow, Yunyang, Paiho, Hingan, Hanchung, Tungchow, Chengtu, Yachow, Tatsienlu, Litang, Chamuto and Locheng. This line follows the route of the formerly projected Pukow-Sinyangchow Railway, which is not on the present railway construction program of the government.

4. *Fukien to Sinkiang.*—Foochow to Ili via Yenping, Shaowu, Kwangtseh, Nancheng, Fuchow, Nanchang, Ani, Changkungtu, Paicha, Yangsing, Ocheng, Wuchang, Hankow, Siangyang, Laohokow, Yunyang, Sian, Lanchow, Chiayukwah, Anchang, Singungchia, Hamicheng, Sichitai, Tihwa, Suilai, and Wusu.

There are two important reasons for the selection of this line—first, to connect the northwestern with the southeastern Provinces, and second, to develop the great northwest. The western end of the line is mainly for the purpose of national defense. From Nanchang to Foochow it coincides with the projected Foochow-Nanchang Railway.

5. *Nanking to Mongolia.*—Nanking to Maimaichen via Pukow, Fenyang, Yingchow, Chouchiakow, Chengchow, Chinghua, Tsehchow, Taiyuan, Tatung, Pingtichuan, Pangkiang, Ude, Taoling, and Urga, with branch from Fenyang to Linghuaikwan. This line is to afford Shansi and Mongolia convenient access to the capital and also to facilitate national defense on the northern frontier.

6. *Nanking to Heilungkiang.*—From Pukow to Taheiho via Luho, Huaiying, Haichow, Chuchow, Weihsien, Wuting, Tsangchow, Tientsin, Peiping, Chengteh, Chihfeng, Kailu, Taonan, Lungkiang, Nunkiang, and Aigun.

The line is based on the projected provincial highways of Kiangsu, Shantung, and Hopeh. The northern section from Jehol and Heilungkiang to the border is also the route of a projected railway, of which the Taonan-Anganki section is already in existence.

7. *Kalgan to Suiyuan.*—From Kalgan, in Chahar, to Suiyuan, in Kirin, via Chihfeng, Chaoyang, Singlitun, Sinmin, Mukden, Hailung, Kirin, Wuchang, Fangcheng, Ilan, and Lingkiang.

8. *Kansu, Tibet, and Sinkiang line.*—From Sining, in Kansu, to Hotien (Khotan), in Sinkiang, via Yienchih, Yushutussu, Lhasa, Tsashihlunpu, Niehkamu, Chiatoke, and Lotoke.

9. *Suiyuan to Sinkiang.*—From Paotou, in Chahar, to Sula, in Sinkiang, via Wuyuan, Ningsia, Liangchow, Sining, Tanhuang, Jotsiang, Chiemo, Yutien, and Hotien (Khotan).

10. *Heilungkiang to Mongolia.*—Nanchouli to Wusu via Urga, Uliassutai, Kobdo, Chenhuassu, and Tacheng.

11. *Tihwa to Sula.*—Tihwa to Sula via Tulufan, Ichi, Kuchu, Paicheng, Wensuh, Wushih, and Pachu.

12. *Shensi to Kwangsi.*—From Tungkwan to Wuchow via Sian, Paochi, Hanchung, Tungchuan, Chengtu, Luchow, Tsunyi, Kweiyang, Tuyun, Kingyuan, and Liuchow.

CONSTRUCTION PROGRAM

In the proposed construction program the projected lines were divided into four groups as follows:

Group 1.—Nanking-Kwangsi line; Nanking-Tali section, Nanking-Yunnan-Sikang line; Yunyang-Chengtu section, Nanking-Tibet line; Wuchang-Lanchow section, Fukien-Sinkiang line; Paotou-Sining section, Suiyuan-Sinkiang line.

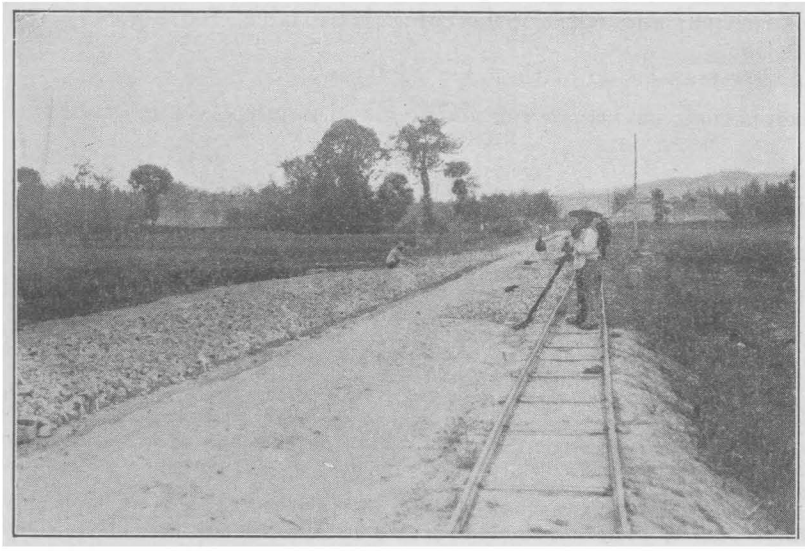

FIGURE 3.—Road construction, showing track for dump car. So far the only modern equipment used in road building in China has been the industrial railway dump car and the steam roller

Group 2.—Tali-Tenchung section, Nanking-Yunnan-Sikang line; Luchow-Singyang and Shasi-Chengtu sections, Nanking-Tibet line; Foochow-Wuchang and Lanchow-Tihwa sections, Fukien-Sinkiang line; Nanking-Mongolia line and Pangkiang-Kalgan branch of Shensi-Kwangsi line.

Group 3.—Tali-Patang and Kunming-Cheli sections, Nanking-Yunnan-Sikang line; Chungtu-Lhasa section, Nanking-Tibet line; Tihwa-Ili section, Fukien-Sinkiang line; Kalgan-Suiyuan line.

Group 4.—Kansu-Tibet-Sinkiang line; Sining-Sula section, Suiyuan-Sinkiang line; Heilungkiang-Mongolia-Sinkiang line; Tihwa-Sula line.

The lines in the first two groups constitute those of China proper, while the remainder are the frontier defense lines. As the establishment of communication is all-important, it is proposed that earth roads be built first, to be macadamized later when and as funds are available.

The plans call for the supervision by the Ministry of Railways of the construction of 67,553 li (22,518 miles) of national highways, over a period of 20 years, the construction work to be divided into four periods. The total cost of construction is estimated at $364,068,000 silver. Preliminary conference estimates indicated that the lines in China proper could be completed with earth roads for approximately $70,000,000 silver. A substantial portion of the lines in China proper have already been opened to traffic, as they consist of highway construction formerly begun in different Provinces.

NATIONAL HIGHWAY LAWS

As an outcome of the recommendations of the Highway Planning Conference, several national laws have recently been promulgated governing national highways, covering such subjects as building and maintenance of national highways, raising of funds for highway construction, and conscription of private labor for highway construction.

A free translation of these laws follows:

REGULATIONS GOVERNING THE BUILDING AND MAINTENANCE OF NATIONAL HIGHWAYS IN CHINA

[Promulgated Aug. 16, 1929]

ARTICLE 1. The building and maintenance of national highways in China shall be carried out in accordance with the following regulations:

ART. 2. All roads leading direct from the national capital to the various Provinces and special administrative districts or to points of special military and national defensive significance or to important commercial centers shall be known as national highways.

ART. 3. All national highways of China shall be fixed by the Ministry of Railways, which organization shall decide upon the details for the construction of these roads and which lines are to be built first.

ART. 4. All national highways of China shall be under the control of the Ministry of Railways. If necessary, the Ministry of Railways may establish special bureaus for the supervision and control of national highways, the regulations governing the organization and functions of such bureaus to be formulated separately.

ART. 5. National highways lying within the various Provinces of the country shall be built by the provincial boards of construction under the supervision of the Ministry of Railways, except those sections selected by the ministry for direct construction by the Central Government.

ART. 6. In building the national highways, the provincial authorities shall observe the regulations and engineering standards decided by the Ministry of Railways.

ART. 7. The expenses incurred by the various Provinces for the construction of national highways shall be covered by funds raised in accordance with the regulations governing the raising of national highway funds decided by the Ministry of Railways.

ART. 8. National highways lying at the outskirts of the country's territory shall be built directly by the Ministry of Railways or by the Provinces concerned.

ART. 9. Private labor may be locally pressed into service by the various provincial authorities for the construction of the national highways lying within their provincial limits. The pressing of private labor for road construction in the Provinces shall be governed by special regulations to be promulgated separately.

ART. 10. The use of privately owned land for the construction of national highways shall be governed by special regulations published by the Central Government. Regulations governing the payment of land along the national highways with public-loan bonds or road debentures shall be drafted by the Executive Yuan and presented to the Legislative Yuan for final approval.

ART. 11. Besides being supervised by representatives of the Ministry of Railways, the various provincial boards of construction shall prepare and submit to the Ministry of Railways monthly reports on the exact conditions of the highways under construction, together with detailed statements of receipts and expenditures thereof.

ART. 12. The maintenance and control of the national highways within the limits of the particular Provinces, as well as the freight and passenger services of the transportation companies, shall be controlled by the various provincial boards of construction.

ART. 13. Private transportation companies may be allowed to operate vehicles on the national highways. The periods of their right of usage shall be granted with the following provisions: (*a*) Years of special right of usage and the rental for the lease; (*b*) the responsibility for the maintenance of the sections of the national highways covered and the other structures connected therewith; (*c*) rate of charges for freight and passenger services shall be decided by the Ministry of Railways; (*d*) for the safety and convenience of both freight and passengers, the vehicles and other equipment of these transportation companies shall be subject to inspection by the Ministry of Railways; (*e*) a portion of the net profit of the company shall be received by the Ministry of Railways; (*f*) the inspection of the company's books and other statements; (*g*) in the event that the freight service on any section of a national highway thus leased out be considered at any time by the Central Government as of special importance to the ecenomic status of the people, the Ministry of Railways shall have the right to take it back for direct management.

ART. 14. Charges for usage of national highways by private individual vehicle owners shall be decided separately.

ART. 15. In case of dispute between the various Provinces concerning national highways, the Ministry of Railways shall be called upon for arbitration and its decisions shall be final.

ART. 16. Detailed regulations under the present regulations shall be decided later.

ART. 17. The present regulations shall come into force on the day of their promulgation (August 16, 1929).

REGULATIONS GOVERNING THE RAISING OF FUNDS

The following regulations governing the raising of funds for highway construction in China, recommended by the National Highways Planning Commission, were promulgated by the Ministry of Railways of China on August 16, 1929:

ARTICLE 1. Construction funds for all national highways designed by the Ministry of Railways shall be raised in accordance with the following principles:

ART. 2. National highway construction funds shall be classified into two kinds: (1) Appropriations from national revenues, and (2) proceeds of public loan bonds or special road debentures.

ART. 3. All national highways within the internal Provinces of China shall be built with part or whole of the surtax on farm lands, which may be supplemented by customs or salt surtax if necessary. National highways in the outlying Provinces of the country shall be constructed with money from customs and salt surtax or appropriations from the basic customs and salt revenues.

ART. 4. Surtaxes mentioned in the preceding article shall be issued at a rate sufficient to finance the construction and completion of all national highways within the internal Provinces of China in 10 years, and those in the outlying Provinces in not more than 20 years, when the surtaxes shall be abolished.

ART. 5. Public loan bonds or debentures for the construction of highways, whether said highways are built by the Ministry of Railways or by the Provinces, shall be issued by the Ministry of Railways and shall be secured on a portion of the land tax, customs revenue, or salt revenue, in addition to the whole of the net profit of the particular highway built. The payment of interest and the repayment of principal shall be made unconditionally in the thirty-eighth year of the Republic of China (1947). The servicing of the loans and the control of sinking funds shall be intrusted to a special commission, the majority of the members of which shall be prominent private banks of the country.

ART. 6. On behalf of the Ministry of Railways, the Provinces may levy such local surtaxes in their Provinces in addition to that on farm land, if

necessary. In case of further financial assistance, the Central Government will make up the deficit, provided the financial subsidy shall not exceed 30 per cent of the total expense.

ART. 7. All national highways lying within the internal Provinces of China shall be built by the various Provinces concerned on behalf of the Central Government, but if the assigned roads are not completed within the time limit set for the purpose, the Ministry of Railways may take them back for construction by its own agents.

ART. 8. All national highway construction funds shall under no circumstance be used for any other purpose, and for every line of national highways or section thereof a special commission shall be established for the collection of revenues, control of expenditures, and the rendering of financial reports, the detailed regulations governing which shall be decided separately.

ART. 9. In addition to the land required directly for the construction of national highways, adjacent land may also be acquired for the purpose of productivity and improvement of road building, as well as for further security of public loan bonds and debentures.

CONSCRIPTION OF PRIVATE LABOR FOR CONSTRUCTION OF NATIONAL HIGHWAYS

Regulations governing the conscription of private labor for construction of national highways in China as promulgated by the Ministry of Railways are as follows:

ARTICLE 1. For the construction of national highways in China, private labor may be impressed in accordance with the following regulations:

ART. 2. Male residents of all districts through which national highways pass and their adjacent hsien (districts) between the ages of 18 and 50 shall be liable for impressed labor on highway construction. Such male residents, if proved to the satisfaction of the local authorities as the only male member of any family upon whose shoulders the family livelihood depends, may be exempted from compulsory work on highways.

ART. 3. The impressing of private labor for highway construction shall be done only during the leisure month of the farmers.

ART. 4. The impressed laborers shall be furnished only with their food. This may be in the form of cash payment, or in time of famine such laborers shall be given their food for the time spent on traveling back and forth from their homes to the highway under construction. Whenever necessary famine refuge laborers engaged in road construction shall also be given their proper lodging.

ART. 5. The responsibility of the impressed laborers for the construction of national highways shall be distributed equally; i. e., every district or county shall be responsible for the construction of a certain section of the highway and upon the completion of that section to the satisfaction of the authorities in charge, the duty of the residents of that particular district or county shall be fulfilled and no more.

ART. 6. All road-building equipment, except extraordinary equipment furnished by the Government, shall be provided by the laborers themselves.

ART. 7. In case any persons refuses to work on the highways, payment of twice the amount of wage for a hired laborer for his portion of the work shall be imposed, the exact amounts to be decided separately.

ART. 8. In case of sickness, injury, or death resulting directly from work on highway construction, special medical allowance, pensions, and burial expenses shall be borne by the institution directly in charge of highway construction in that particular Province or district.

ART. 9. Impressed laborers may be rewarded or fined by the local magistrates in accordance with their services.

ART. 10. Announcements should be made at least one month ahead of time in case of impressing private labor for highway construction in the country, and other publicity should be made in order to persuade the people to participate willingly.

ART. 11. The impressing of private labor for highway construction shall be carried out by the provincial institution directly in charge of road building, in cooperation with the various district magistrates.

ART. 12. Local officials may be rewarded or fined for their work in highway construction at the recommendation of the provincial institution in charge of road building.

ART. 13. The provincial institutions in charge of highway construction shall carry out their sections of the work in national highway construction in accordance with the detailed regulations for the impressing of labor for road construction.

ART. 14. The present regulations may be amended by the Executive Yuan of the National Government of China at the request of the Ministry of Railways.

ART. 15. The present regulations shall come into force on the day of promulgation (August 16, 1929).

REGULATIONS GOVERNING MOTOR TRANSPORTATION ON NATIONAL HIGHWAYS

ARTICLE 1. All motor transportation in China shall be controlled by the various provincial boards of construction under the supervision of the Ministry of Railways.

ART. 2. Private transportation companies may be organized but must be registered at the provincial road bureaus under the provincial boards of construction.

ART. 3. All transportation companies and organizations must render periodical reports on operating conditions to the Government organs in charge of national highways in their district or Province for inspection.

ART. 4. All transportation companies must pay rental for the usage of national highways.

ART. 5. All transportation companies and organizations must maintain automobile servicing and repair plants.

ART. 6. When all national highways are completed, joint transportation services shall be rendered under the through traffic policy of the Government.

NATIONAL HIGHWAY CONSTRUCTION COSTS

The following standards set by the National Highway Planning Commission were made public in Nanking on August 16, 1929:

Class of road	Type of district through which route passes	Amount required per li [1] for mud road	Amount required per li [1] for macadam road
Class A	Level land on which road can be made without difficulty	M$3,000	M$5,400
Class B	Mountainous districts where stones and numerous streams necessitate the construction of many drains, and work on road building difficult.	4,080	6,000
Class C	Mountain ranges and slopes where stones prevail and work very difficult.	7,080	9,000

[1] 1 li equals one-third mile.

NOTE.—The above estimates do not include expenses for the construction of long bridges.

It is impossible to gauge the exact amount of money required for the construction of a road until that particular route has been carefully surveyed. The above estimates are made merely as a guide for road-building plans in China and are based on the following conditions:

(*a*) Macadam roads 6 meters wide.

(*b*) Macadam roads to have broken-stone surface 1.8 decimeter thick.

(*c*) On the basis of (*a*) and (*b*) 240 fangs of broken stone would be required for every li of road. (One fang equals 150 square feet, Chinese measure, and 1 li equals one-third mile.)

(*d*) If M$8 to M$10 in materials and labor are required for every fang of road, the cost for surfacing 1 li of road with broken stones would be from M$1,920 to M$2,400.

(*e*) If highways cover land to the average width of 60 Chinese feet, 18 mows of land would be bought for every li of highway.

(*f*) If the cost for every mow of land should be as low as M$10 to M$60, the total cost of land will range from M$180 to M$1,080 for every li of road.

With the above conditions in view, the National Highway Planning Commission of the Ministry of Railways of China has come to the following conclusion in estimating expenditures for the construction of every li of national highway:

ESTIMATED COST PER LI FOR CHINESE NATIONAL HIGHWAY CONSTRUCTION

Item	Class A roads	Class B roads	Class C roads
Cost of land	M$1,808	M$360	M$180
Surveying and administrative expenses	300	600	900
Cost of road base and drainages	1,500	3,600	6,000
Broken stone surfacing	2,400	1,920	1,920
Contingent expenses	120	120	
Total	5,400	6,000	9,000

It should be noted that these estimates fail to include sums for bridge building, which in Central and South China is a heavy item, owing to the intricate network of canals and other waterways.

As a matter of comparison with the above standards outlined by the National Highway Planning Commission it may be well to record such fragmentary data as have been found from other sources upon highway construction in China.

Stringer, in his Chinese Railway System, issued in 1925, reports the cost of unmetaled roads in famine areas in 1921 to have been as follows:

COST OF UNSURFACED ROADS IN FAMINE AREAS IN CHINA IN 1921

District	Miles	Cost per mile	District	Miles	Cost per mile
Shantung	485	M$1,719	Pintingchow	78	M$6,410
Hantan (southern Hopeh, formerly Chihli)	46	2,500	Pingyao	27	1,200
			Honan	37	1,880

Reports regarding road construction in Hunan Province, Central China, indicate that construction costs for an 8-inch broken-stone surfaced road have ranged from M$6,600 to M$10,000 per mile.

NATIONAL HIGHWAY BUDGET

Guided by the principles of economic and military strategy, the National Highway Planning Commission of the Ministry of Railways has decided upon the construction of 12 lines of national highways for China, divided into two classes, namely, the China proper lines and the frontier defense lines, as follows:

1. Nanking-Kwangsi.
2. Nanking-Yunnan-Sikang.
3. Nanking-Tibet, with branch from Shasi to Chengtu.
4. Fukien-Sinkiang.
5. Nanking-Mongolia, with branch from Kalgan to Pangkiang.
6. Nanking-Heilungkiang line.
7. Kalgan-Suiyuan (Chinese port near Habarovsk).
8. Kansu-Tibet-Sinkiang.
9. Suiyuan-Sinkiang.
10. Heilungkiang-Mongolia.
11. Tihwa-Sula.
12. Shensi-Kwangsi.

Judged by their importance as regards the size of the population, economic conditions, and transportation requirements, as well as geographic aspects of the districts traversed and their usefulness in linking up such towns and cities in the districts and Provinces with Nanking, the national capital, the projected national highways of China are divided into four groups for construction. The lines which meet the most urgent requirements come under the first period of the program, the less urgent lines under the second period, while all the frontier defense lines are placed under the third and fourth groups for construction.

Owing to the financial stringency of the country it is impossible to complete any one line of national highway at once. It is, therefore, necessary to divide certain lines of one group into several sections for construction. The Ministry of Railways is authorized to arrange with the various provincial governments concerned for the decision upon a final program of construction, but all lines of national highways under group 1 must be completed within a period of 5 years and those of group 2 within 10 years, but may be built within 5 or 7 years if financial conditions in the country permit. It is the aim of the central Goverment to complete all the national highways of China proper within 10 years and the frontier defense lines within 20 years. The four groups of national highways in the proposed construction program are:

Group 1:
- The whole of the Nanking-Kwangsi line.
- Nanking-Tali section of the Nanking-Yunnan-Sikang line.
- Yunyang-Chengtu section of the Nanking-Tibet line.
- Wuchang-Lanchow section of the Fukien-Sinkiang line.
- Paotou-Sining section of the Suiyuan-Sinkiang line.

Group 2:
- Tali-Tengchung section of the Nanking-Yunnan-Sikang line.
- Luchow-Sinyang section of the Nanking-Tibet line.
- Shasi-Chengtu section of the Nanking-Tibet line.
- Foochow-Wuchang section of the Fukien-Sinkiang line.
- Lanchow-Tihwa section of the Fukien-Sinkiang line.
- The whole of the Nanking-Mongolia line and its branch from Kalgan to Pangkiang.
- The whole of the Nanking-Heilungkiang line.
- The whole of the Shensi-Kwangsi line.

Group 3:
- Tali-Patang section of the Nanking-Yunnan-Sikang line.
- Chengtu-Lhasa section of the Nanking-Tibet line.
- Tihwa-Ili section of the Fukien-Sinkiang line.
- The whole of the Kalgan-Suiyuan line.

Group 4:
- The whole of the Kansu-Tibet-Sinkiang line.
- Sining-Sula section of the Suiyuan-Sinkiang line.
- The whole of the Heilungkiang line.
- The whole of the Tihwa-Sula line.

With the program of construction worked out and the determination of which sections or lines of the national highways are to be built within a certain period, the next thing of importance is the cost of construction. It is necessary first to find how much of these highways will traverse particular Provinces, and how many of them have already been constructed as provincial lines; next, to ascertain the cost of building dirt roads in such Provinces and the amounts required for surfacing with broken stone.

After careful consideration of reports received from various sources and discussion with the provisional delegates to the National Highway Planning Commission during February to May, 1929, a table showing the length already built and the aggregate cost of construction for the first and second periods of the construction program has been worked out. (See next two tables.) The estimated total provincial highway budget of the various Provinces for 15 years is considered in the table on page 19. It is of equal importance to know which line in any particular Province should be built during each construction period. Taking the Province of Kiangsu for illustration, there are set down for completion during the first period of construction the Nanking-Kwangsi line, the Nanking-Yunnan-Sikang line, and the Nanking-Tibet line. Work can not be commenced on all of them at the same time; hence, a detailed program of construction of the China proper lines during every year of the first and second periods of construction has been decided upon. (See table on p. 20.) The total cost of completing all of the projected national highways of China is given on page 20.

HIGHWAY CONSTRUCTION

[Length of national highways to be built in each Province during first and second periods of construction and estimated cost thereof]

FIRST CONSTRUCTION PERIOD

Province and highway	Length already built	Length to be built	Cost of building dirt road	Cost of surfacing with broken stone	Total cost of road
	Miles	*Miles*			
Kiangsu:					
Nanking to Tangshan	13	275	M$705,000	M$660,000	M$1,365,000
Nanking to Anhwei border		29	359,000	211,000	570,200
Chekiang: Kiangsu border to Fukien border	43	273	3,390,000	2,448,000	5,838,000
Fukien: Chekiang border to Kwangtung border	233	291	3,488,000	3,930,000	7,418,000
Kwangtung: Fukien border to Kwangsi border	87	377	3,572,000	3,480,000	7,052,000
Anhwei: Kiangsu border to Hupeh border	20	214	2,355,000	1,684,800	4,039,800
Hupeh:					
Hankow to Shensi border		260	2,520,000	2,016,000	4,536,000
Anhwei border to Hunan border		314	3,652,000	2,263,200	5,915,200
Hunan: Hupeh border to Kweichow border		251	2,875,000	1,804,800	4,679,800
Kweichow: Hunan border to Yunnan border	73	264	2,650,000	2,428,800	5,078,800
Yunnan: Kweichow border to Tali	35	318	5,730,000	2,544,000	8,274,000
Shensi:					
Hupeh border to Szechwan border		234	2,862,000	1,682,400	4,544,400
Hupeh border to Kansu border via Sian	107	132	1,615,000	1,718,400	3,333,400
Szechwan: Shensi border to Chengtu	17	263	3,723,000	1,947,000	5,670,000
Hupeh: Yunyang to Shensi border		33	404,000	237,600	641,600
Kwangsi: Wuchow to Lungchow	337			2,424,000	2,424,000
Suiyuan: Paotow to Ningsia border		227	2,040,000	1,632,000	3,672,000
Ningsia: Suiyuan border to Ningsia City	153			1,104,000	1,104,000
Kansu:					
Ningsia City to Sining	337			2,424,000	2,424,000
Shensi border to Lanchow	217			1,560,000	1,560,000
Total	1,672	3,755	41,940,000	38,200,200	80,140,200

SECOND CONSTRUCTION PERIOD

Fukien: Foochow to Kiangsi border		246	M$5,022,000	M$1,674,000	M$6,696,000
Kiangsi: Fukien border to Hupeh border		309	2,700,000	4,860,000	7,560,000
Hupeh:					
Honan border to Siangyang		77	944,000	554,400	1,498,400
Shasi to Szechwan border		137	1,230,000	984,000	2,214,000
Kiangsi border to Wuchang		114	1,024,000	818,400	1,842,400
Kiangsu:					
Pukow to Anhwei border		13	120,000	96,000	216,000
Pukow to Hwaian via Tsiangpa	60	68	615,000	924,000	1,539,000
Hwaian to Shantung border		73	660,000	528,000	1,188,000

HIGHWAY CONSTRUCTION—Continued

[Length of national highways to be built in each Province during first and second periods of construction and estimated cost thereof]

SECOND CONSTRUCTION PERIOD—Continued

Province and highway	Length already built	Length to be built	Cost of building dirt road	Cost of surfacing with broken stone	Total cost of road
	Miles	*Miles*			
Anhwei:					
Lochow to Honan border		88	M$1,078,000	M$633,600	M$1,711,600
Liangsu border to Honan border		222	2,001,000	1,500,800	3,501,800
Fengyang to Linhwaikwan		6	54,000	43,200	97,200
Honan: Anhwei border to Hupeh border		167	2,045,000	1,202,400	3,247,400
		217	2,455,000	1,564,800	4,019,800
Shansi: Honan border to Chahar border	343	40	360,000	2,784,000	3,144,000
Shantung: Kiangsu border to Hopeh border	40	287	2,580,000	2,352,000	5,052,000
	43	[1] 254	[1] 120,000		
Hopeh: Shantung border to Kupehkow	127	107	960,000	1,896,000	3,561,000
		[2] 157	[2] 705,000		
Jehol: Hopeh border to Liaoning border via Chengteh	43	305	3,565,000	2,505,600	6,070,600
Liaoning: Jehol border to Heilungkiang border		163	1,029,000	1,176,000	2,205,000
Heilungkiang: Liaoning border to Heino (Amur)		337	2,120,000	2,424,000	4,544,000
Shensi: Tungkwan to Hanchung via Paochi	167	81	1,000,000	1,785,600	2,785,600
Szechwan:					
Chengtu to Kweichow border via Luchow	100	260	3,182,000	3,297,000	6,497,000
Hupeh border to Chengtu	50	577	7,577,000	4,266,000	11,843,000
Kweichow: Szechwan border to Kwangsi border	341	3	30,000	2,484,000	2,514,000
Kwangsi: Kweichow border to Wuchow via Hochih	310	55	675,000	2,628,000	3,303,000
Suiyuan: Shasi border to Mongolian border		321	2,896,000	2,316,000	5,212,000
Yunnan: Tali to Tengchung		280	5,950,000	2,016,000	7,966,000
Kansu: Lanchow to Sinkiang border	143	480	3,024,000	4,488,000	7,512,000
Chahar: Kalgan to Pangkiang		240	2,160,000	1,728,000	3,888,000
Outer Mongolia: Suiyuan border to Maimatchin (Kiakhta)	430			3,609,000	3,096,000
Sinkiang: Kansu border to Tihwa (Urumtsi)	200	115	724,000	2,260,000	2,984,000
Total	2,397	5,790	58,605,000	58,885,800	117,490,800

[1] Length of dirt road from Weihsien to Chingtze and cost of widening.
[2] Length of dirt road from Peiping to Chengteh and cost of widening.

The following statement shows the estimated national highway budget, by Provinces, for lines of groups 1 and 2 to be constructed in China proper over a period of 15 years:

Kiangsu	M$4,878,200	Szechwan	M$23,992,000
Chekiang	5,838,000	Shansi	3,144,000
Fukien	14,114,000	Shantung	5,052,000
Kwangtung	7,052,000	Jehol	6,070,600
Kwangsi	5,727,000	Liaoning	2,205,000
Anhwei	9,350,400	Heilungkiang	4,544,000
Kiangsi	7,560,000	Chahar	3,888,000
Hupeh	16,647,600	Kansu	11,496,000
Hunnan	4,679,800	Suiyuan	8,884,000
Kweichow	7,592,800	Ningsia	1,104,000
Yunnan	16,240,000	Outer Mongolia	3,096,000
Honan	7,267,200	Sinkiang	2,984,000
Hopeh	3,561,000		
Shensi	10,663,400	Total	197,631,000

ORDER OF CONSTRUCTION OF NATIONAL HIGHWAYS

[Order of construction of national highways in each Province for China proper lines of first and second groups by year]

Highway	1st year	2d year	3d year	4th year	5th year	6th year	7th year	8th year	9th year	10th year	11th year	12th year	13th year	14th year	15th year
Kiangsu	a	a,b	b,f	f	e,f	a	a,b,f	f	f	e,f					
Chekiang	a	a	a	a	a	a	a	a	a	a					
Fukien	a	a	a,d	d	d	a	a	a	a	a	a,d	d	d		
Kwantung	a	a	a	a	a	a	a	a	a	a					
Kwangsi	h	h	a	a	a	a	a,h	h	h	h					
Anhwei	b	b	b,c	c,e	e	b	b	b	c	c,e	e	e			
Kiangsi	d	d	d	d	d	d	d	d	d	d					
Hupeh	b	b,c	c,d	c,d	c	b	b	b	b,c,d	d	d	d	d,c	c	c
Hunan	b	b	b	b	b	b	b	b	b	b					
Kweichow	b	b	b	b	b,h	b	b	b	b,h	b,h	h	h	h	h	
Yunnan	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b
Honan	c	c	c,e	c	c	e	e	c,e	e	e					
Hopeh	f	f	f	f	f	f	f	f	f	f					
Shensi	c	c	c,d	d	d,h	c	c	c,d	d	d,h	h	h	h		
Szechwan	c	c	c	c,h	h	c	c	c	c	c	c	c,h	h	h	h
Shansi	e	e	e	e	e	e	e	e							
Shantung	f	f	f	f	f	f	f	f	f	f					
Jehol	f	f	f	f	f	f	f	f	f	f	f	f			
Liaoning	f	f	f	f	f	f	f	f	f	f					
Heilungkiang	f	f	f	f	f	f	f	f	f	f					
Chahar	e	e	e	e	e	e	e	e	e	e					
Kansu	d	d	d	d	d	d	d,g	d	d,g	d	d	d	d	d	d
Suiyuan	g	g	g,e	e	e	g	g	g	g,e	e	e	e	e	e	e
Ningsia	g	g	g	g	g	g	g	g	g	g	g	g	g	g	g
Mongolia	e	e	e	e	e	e	e	e	e	e	e	e	e	e	e
Sinkiang	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d

NOTE.—The letter (a) represents the Nanking-Kwangsi line; (b) represents the Nanking-Yunnan-Sikang line; (c) represents the Nanking-Tibet line; (d) represents the Fukien-Sinkiang line; (e) represents the Nanking-Mongolia line; (f) represents the Nanking-Heilungkiang line; (g) represents the Suiyuan-Sinkiang line; (h) represents the Shensi-Kwangsi line.

TOTAL COST OF CONSTRUCTION OF ALL NATIONAL HIGHWAYS OF CHINA

Highway group	Miles of road			Estimated cost of construction		
	Not yet built	Already built	Total	Dirt roads	Surfacing	Total
Group 1	3,755	1,572	5,327	M$41,940,000	M$38,940,000	M$80,880,000
Group 2	5,730	2,397	8,127	58,605,000	58,885,800	117,490,800
Total for groups 1 and 2	9,485	3,969	13,454	100,545,000	97,086,000	198,370,800
Group 3	2,792	305	3,097	46,652,000	22,301,000	68,953,000
Group 4	6,008		6,008	54,224,000	43,260,000	97,484,000
Total for groups 3 and 4	8,800	305	9,105	100,876,000	65,561,000	166,437,000
Grand total	18,285	4,274	22,559	201,421,000	162,647,000	364,807,800

ROAD MILEAGE

Various estimates of the motor-road mileage of China have been made. According to the National Good Roads Association, less than 100 miles of improved roads existed in all of China (exclusive of foreign concessions) in 1921, whereas by the end of 1928 a total of 20,973 miles had been constructed. O. J. Todd, who has traveled extensively over China as chief engineer of the China International Famine Relief Commission, stated publicly in 1928 that there were 10,000 miles of motor roads. Based upon the experience gained by digesting a voluminous amount of material in preparation of this

report, it is believed that a conservative estimate of road mileage in China suitable for motor traffic, including caravan routes in Manchuria and Mongolia, may be set at 39,938 miles. Roads constructed, under construction, and projected are estimated as follows: Roads constructed, 39,938 miles; roads under construction, 5,061 miles; roads projected, 31,099 miles.

The 22,518 miles of proposed national highways should be regarded as being included within the figure of 31,099, as the principal national arteries are chiefly provincial trunk lines long projected by provincial highway bureaus.

MILEAGE ESTIMATES OF ROADS OPEN TO MOTOR TRAFFIC

Province or district	Good Roads Association of China		China Year Book, 1926	A. Viola Smith, American trade commissioner	
	1926	1928		May, 1928	November, 1929
Anhwei	489	1,010	185	469	1,082
Chahar	1,562	1,562			1,509
Chekiang	224	559	462	615	529
Fukien	323	336	811	332	566
Hainan Island				465	1,113
Heilungkiang					(1)
Honan	1,210	687	1,151	1,338	2,169
Hong Kong				138	250
Hopeh [2]	1,249	1,742	755	800	2,366
Hunan	155	291	210	249	389
Hupeh	1,251	808	777	865	830
Jehol		733			440
Kansu	232	1,787	70	290	1,200
Kiangsi	80	312	13	28	118
Kiangsu	901	1,036	503	1,241	1,987
Kirin		107			(1)
Kwangsi	185	1,336	166	500	1,593
Kwantung Leased Territory					874
Kwangchow-wan					100
Kwangtung	1,095	2,440	1,160	765	1,133
Kweichow		890		358	743
Liaoning		343			(1)
Macao				9	9
Manchuria	25		300	1,500	6,524
Mongolia	2,494	250	1,822	2,620	5,640
Ningsia					440
Shansi	821	1,307	575	1,069	1,526
Shantung	2,001	1,535	50	1,675	3,385
Shensi	97	107		575	270
Sikang		333			
Sinkiang				350	350
Suiyuan		495			1,430
Szechwan	412	735	167	829	1,188
Tibet					
Tsinghai					150
Yunnan	35	267	11	15	35
Total	13,189	20,973	9,188	18,485	39,938

[1] See Manchuria.
[2] Formerly Chihli.

NOTE.—The China International Famine Relief Commission in 1928 estimated 10,000 miles as the total or roads open to motor traffic in China proper.

Approximately 90 per cent of China's modern road mileage is of simple earth construction. Very little gravel or macadam construction has been done.

The usual method of road construction throughout China (exclusive of the foreign concession) is to cut or fill to the level of the proposed road. When the proper level is reached, the road may be either rolled or left to traffic to be beaten down. The mechanical

equipment used is practically nil, although recently industrial-railway dump carts have been introduced. If the stretch happens to be a cut, the material excavated is shoveled by hand into baskets and carried away to a fill by two coolies who support the load on a bamboo pole slung from shoulder to shoulder. The surface is usually leveled by the use of a native-made rake having three prongs.

If rock is abundant in the vicinity through which the road passes, it may be used either for foundation or for surfacing. In the majority of cases all rock is broken and placed on the roadbed by manual labor, and is later filled in with loose earth or sand. When the construction has reached this stage it is tamped with a piece of

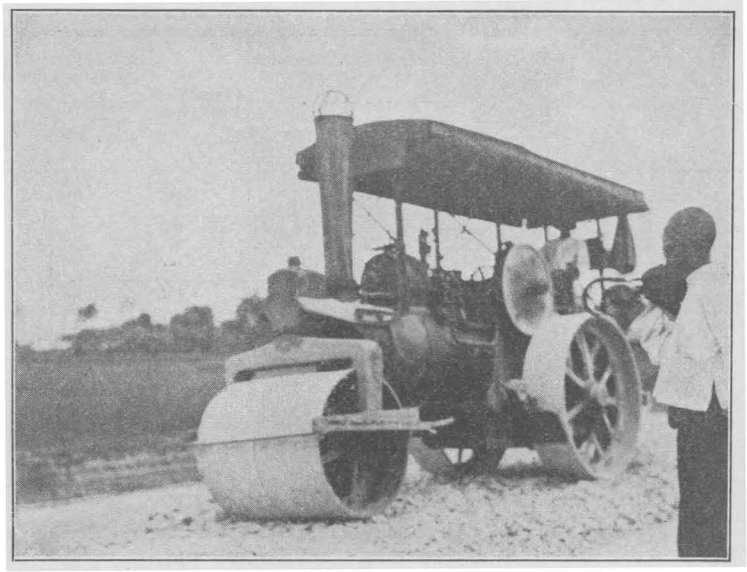

FIGURE 4.—One of the few steam rollers used in road building in China. The native workers often prefer the use of the hand-drawn roller

timber 12 by 12 inches by 3 feet in length. A wooden handle is attached to the top of this timber and several ropes are attached to the bottom. The end of each rope is held by a coolie who, at a signal from the coolie grasping the handle, pulls upward and the tamper is then allowed to drop to the earth, thus packing the foundation. For surfacing, small stones, hand broken, are laid upon the tamped road bed and covered with mud, after which it is usually rolled and left to harden by the sun.

Hand rollers constructed of iron filled with cement and pulled by upward of 16 coolies are the usual rolling equipment, although a few steam rollers are found on some construction jobs. Yet it is not unusual to see a steam roller standing by the roadside with steam up, while a gang of coolies calmly roll the road with a hand roller. The abundance of cheap labor makes the introduction of modern methods extremely difficult. Furthermore, faced with finding employment for such huge numbers as will be involved in carrying out its troop-disbandment program, China may be expected to continue to utilize hand methods for some years. Time or lasting

qualities are of no consideration in the present stage of highway development in China.

The majority of roads in China are of two types—dirt or crushed stone. It is not difficult to visualize their condition after rainstorms or heavy traffic, or after use by narrow-tired carts or wheelbarrows. Maintenance of existing highways has not been practiced.

The use of asphalt has been confined principally to the foreign concessions in the larger treaty ports, although asphalt has been used to a slight extent in some Chinese cities. The Chung Shan Road in Nanking is perhaps the longest asphalt road to have been laid by Chinese highway engineers.

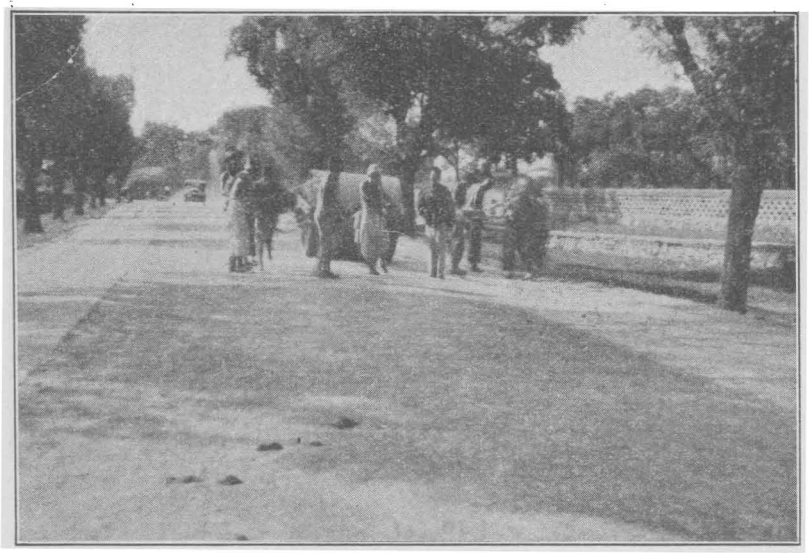

FIGURE 5.—Utilization of hand roller drawn by coolies

The use of concrete has been practically nil, except in one or two instances at the larger treaty ports for experimental purposes. In Foochow and Amoy, however, native cement is reported to have been thinly spread over crushed stone to secure a hard-surfaced road.

There are occasional wooden or stone bridges, but scarcely any structural-steel highway bridges.

MOTOR VEHICLES

In China less than 40,000 motor vehicles are in operation, one-third of which are to be found in the foreign concessions at Shanghai.

The tendency of provincial authorities themselves to operate or to grant franchises to private bus companies for the exclusive use of given roads limits the opportunity for passenger cars. The right to operate motor cars over China's newly constructed roads is still chiefly reserved to Government officials or to bus-line interests, private citizens having little opportunity, or even as yet the desire, to utilize existing roads outside those at the foreign treaty ports.

Whatever expansion may come in the automotive field in China will undoubtedly be confined for several years to that of motor trucks for bus service rather than for privately owned vehicles.

The wonder is, however, that any headway has been made at all during the recent years of civil strife, banditry, and chaos. The awakening of a "good roads consciousness" amidst these years of turmoil must augur well for the future.

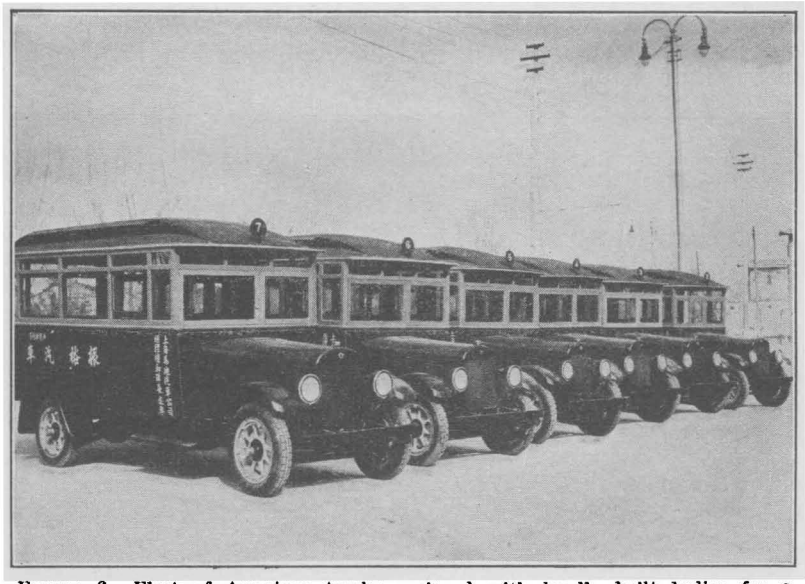

FIGURE 6.—Fleet of American trucks equipped with locally built bodies for a Chinese motor-bus company

GEOGRAPHIC NOTES

China proper formerly consisted of 18 Provinces, exclusive of Manchuria (the three eastern Provinces of Heilungkiang, Kirin, and Fengtien, now Liaoning), Mongolia, Tibet, and Turkestan, and several specially administered areas. Since the establishment of the national government at Nanking numerous changes have occurred. Several of the Provinces have been renamed, while the special administrative districts have been elevated to the status of Provinces.

To facilitate understanding of this somewhat complex situation, a list of Provinces, with geographical comments, is given below:

Anhwei.—Pronounced "An-whay."

Chahar.—Pronounced "Cha-haerh." Formerly a special administrative district, now a Province.

Chekiang.—Pronounced "Jeh-kiang."

Chihli.—Renamed "Hopeh," but commonly spelled "Hopei."

Fengtien.—Formerly Shengking; renamed Liaoning.

Fukien.—Pronounced "Foo-kee-en" or "Foo Jean."

Hainan Island.—Pronounced "Hai-nan." Administered by Kwangtung Province.

Heilungkiang.—Pronounced "Hei-lung-kiang." (See Manchuria.)

Honan.—Pronounced "Ho-nan."

Hong Kong.—British Crown colony; Chinese name, "Hsiang Kang."

Hopeh.—Pronounced "Ho-bay." Formerly Chihli Province; renamed "Hopeh" although commonly spelled as "Hopei."
Hunan.—Pronounced "Hoo-nan."
Hupeh.—Pronounced "Hoo-bay."
Jehol.—Pronounced "Zeh-hol." Formerly special administrative district, now a Province.
Kansu.—Pronounced "Gan-soo."
Kiangsi.—Pronounced "Geeong-she" in the northern and "Keeóng-see" in the southern dialect.
Kiangsu.—Pronounced "Geeong-soo" in the northern dialect and "Keeong-soo" in the southern.
Kirin.—Chinese name "Gi-ling". (See Manchuria.)
Kwangsi.—Pronounced "Gwong-sai."
Kwantung Leased Territory.—(Dairen) Pronounced "Kwandoong."
Kwang-chow-wan.—Pronounced "Gwong-tsou-wan." French leased territory, Kwangtung Province.
Kwangtung.—Pronounced "Gwong-doong."
Kweichow.—Pronounced "Gway-tsou."
Liaoning.—Pronounced "Liao-ning." (See Manchuria.) Formerly Shengking, latterly Fengtien.
Macao.—Portuguese colony.
Manchuria.—Consists of the "three eastern Provinces"—Heilungkiang, Kirin, and Liaoning (formerly Shengking, latterly Fengtien). Chinese name, "Mantsou."
Mongolia.—Chinese name "Mon-goo."
Ningsia (postal spelling, although more commonly used as "Ninghsia.")—Pronounced "Ning-shia." A new Province, formerly Sitao, special administrative district of Kansu Province.
Shansi.—Pronounced "Shan-she."
Shantung.—Pronounced "Shan-doong."
Shengking.—Formerly Fengtien, now renamed Liaoning.
Shensi.—Pronounced "Shen-she."
Sikang.—Pronounced "She-kang." Formerly part of Szechwan.
Sinkiang.—Pronounced "Shing-geeong." Chinese Turkestan.
Sitao.—Pronounced "She-tao." Formerly a special administrative district; now Ningshia Province.
Suiyuan.—Pronounced "Sway-yuan." Formerly a special administrative district.
Szechwan.—Pronounced "Sze-chwan."
Tibet.—Chinese name, "She-tsang."
Tsinghai.—Pronounced "Ching-hai." A new Province, formerly Kokonor special administrative district.
Yunnan.—Pronounced "Yuin-nan."

Owing to the many variations in the romanization of Chinese names, the spelling given in the official Chinese Postal Guide is generally adhered to throughout this report. For places not listed in the Postal Guide effort has been made to use a standard anglicized form.

Names ending with "hsien" (district), "chow" (department), "ting" (subprefecture), "fu" (prefecture or capital of a Province), to represent the size or rank of a city in former days, have now largely been abolished by the present national Government. When to drop a "hsien," "chow," or "fu," is still very difficult to determine, as by custom many prominent centers are still called by their former names. Ancient names also play an important part in the geography of China, custom often using the ancient name rather than the official postal spelling. To minimize this confusion, ancient names, or others, have in some instances been placed in brackets to indicate that it is one and the same place. Population figures are those of the Chinese postal census.

Motor-vehicle figures used in this report are as of January 1, 1930, the last available census, as estimated by the Department of Commerce.

PROVINCIAL HIGHWAYS

Highway development in China, heretofore lacking the stimulus and guidance of a national program, has been conducted by the Provinces in a sporadic manner. The thousands of miles of roads which have been built furnish in only a few rare instances connecting arteries for continuous travel from any one Province to another. Just as in ancient days all courier routes radiated from Peking, so have the Provinces in their attempts to build roads usually commenced at the provincial capitals and struck outward in many directions within the Province rather than concentrating upon the completion of one single highway to an adjoining territory. A few

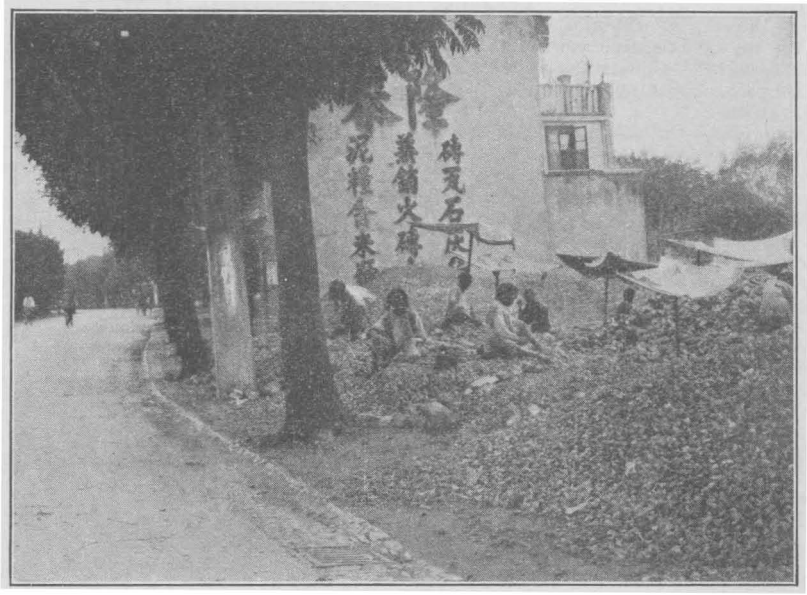

FIGURE 7.—Women breaking stone for road surfacing

Provinces—notably Chekiang, Shansi, Hunan, Honan, Kwangsi, Kweichow, and Szechwan—have shown considerable vision and initiative in road building. In Szechwan Province, lying 1,500 miles from the seacoast, with a population of 60,000,000 and not a single mile of railway, several hundred miles of roads have been constructed, thereby furnishing routes for motor-bus transportation. In Kwangsi Province, South China, 1,200 miles of highways have been built within the last two years. Even in isolated Kweichow, through an enlightened former military governor, the placing of 200,000 laborers at road building resulted in the construction of over 600 miles of provincial roads.

Elaborate highway programs have been projected by practically every Province in China, but military strife and lack of funds have, except in a few regions, prevented actual construction. Prior to the establishment of the National Government at Nanking in 1927,

only a few progressive Provinces had established highway bureaus. The inclusion of highway development in the reconstruction plans of the National Government, though there lacked national funds with which to aid the Provinces, has resulted in the establishment of a board of construction in each Province and the stimulating of road-building efforts in hitherto backward Provinces.

The National Conference of Provincial Highway Officials held at Nanking in February, 1929, under the auspices of the National Government, and the subsequent promulgation of a national system of highways, will undoubtedly serve to systematize road building throughout the Provinces. Provincial plans will in all probability be modified and future construction directed toward the completion of an artery which will afford continuous travel. National authorities are already stressing the necessity of the completion of the line between Nanking and Hangchow, which is to connect the national capital with the provincial capital of Chekiang. As a result provincial authorities in both Provinces are hastening road construction on this line. The Kiangsu section, from Nanking to the Chekiang border, has already been completed and was formally opened to traffic on October 26, 1929. Chekiang authorities have completed a 60-mile stretch out of the provincial capital of Hangchow and are rushing through the remaining portion to connect with the Kiangsu section at the provincial border.

Accurate details covering provincial highway systems are extremely difficult, if not almost impossible, to obtain. The digest which follows, compiled from voluminous material received from consular officers, provincial highway officials, business organizations, commercial travelers, and numerous periodicals, represents the most reliable data available. It illustrates the intense interest which exists in modern road building and shows that in many regions this enthusiasm has been translated into active highway construction against overwhelming odds. Inadequate and incomplete as are existing provincial highways as lanes of transportation, it is astonishing that any progress has been possible in view of the many years of civil strife which has racked the country.

ANHWEI

The Province of Anhwei, about the size of the State of Iowa, lying to the north of Chekiang and west of Kiangsu, is one of the important Provinces of Central China. Its population of 20,000,000—350 per square mile—is densest in the north. Cities having more than 100,000 population are Anking (capital), Wuhu, and Pochow. Other important cities are Pengpu, Tatung, Hweichow, and Luchow. Wuhu and Pengpu are treaty ports. The Tientsin-Pukow Railway, running through the northeastern section of the Province, is its only means of modern transportation aside from river steamers on the Yangtze and a few motor-bus lines operating over dirt roads.

About 900 miles of motor roads have been built in the northern part of the Province. The International Famine Relief Commission spent $196,000 Mexican on road construction, while private bus-line interests in conjunction with provincial authorities have been responsible for additional road building.

Anhwei is not a rich Province and had made little progress i road building until the winter of 1928, when Li Van-yee assume office as commissioner of reconstruction. This Province, accordin to instructions from the central Government, was expected to com plete six trunk lines with an aggregate mileage of over 2,000 l (667 miles) during 1929, but because of the lack of man power an the difficulties in raising necessary funds, together with military an climatic disorders, the realization of this program was impossible A considerable portion was carried out despite these tryin conditions.

Three major projects—the Nanking-Wuhu road (ordered b Chiang Kai-shek to be built within three months' time for militar purposes), the Wuhu-Suencheng road and the Anking-Hofei (Lu chow) road—were estimated to require an expenditure of $3,600,00 Mexican during 1929. The 1929–30 provincial budget included th sum of $8,400,000 Mexican for road building. This amount, whe considered entirely too high by the provincial financial conference i August, 1929, was vigorously supported by Commissioner Li Van-yee who said it was barely enough, if not insufficient, for the road-build ing plans of the Province.

A translation of an article in the Sin Wan Pao, Shanghai, o February 7, 1930, gives the following tables as indicating the presen status of the new provincial highways. This article, while not cor responding in every particular to a map furnished by Commissione Li as to highways completed and proposed, is illustrative of highway construction costs.

PROVINCIAL HIGHWAYS COMPLETED AND ACTUAL COSTS THEREOF

Highway	Length in li [1]	Total cost	Average cost per li
Nanking-Wuhu (Anhwei portion)	60. 00	M$76, 060. 00	M$1, 267. 6
Anking-Tsienshan-Taihu	198. 40	157, 083. 28	791. 7
Anking-Hofei (Luchow)	57. 00	20, 778. 63	364. 5
Hofei (Luchow)-Chaohsien	124. 50	117, 724. 96	945. 5
Hofei (Luchow)-Pengpu	360. 00	16, 880. 00	[2] 46. 8
Pengpu-Showchow	102. 20	62, 948. 84	606. 1
Liuan-Showchow	162. 50	70, 482. 64	433. 7
Total	1, 064. 60	521, 958. 35	490. 2
Plus road-building materials		187, 018. 98	175. 6
Grand total	1, 064. 60	708, 977. 33	665. 9

[1] 1 li equals one-third mile. [2] Maintenance only.

PROVINCIAL HIGHWAYS NOT YET COMPLETED AND COST THEREOF

Highway	Length in li [1]	Cost
Nanking-Wuhu	90. 00	M$224, 000. 0
Anking-Tsienshan-Taihu	198. 40	265, 000. 0
Anking-Hofei (Luchow)	190. 00	500, 000. 0
Hofei (Luchow)-Chaohsien	124. 50	[2] 40, 000. 0
Pengpu-Showchow	102. 20	193, 014. 0
Liuan-Showchow	162. 50	[2] 59, 191. 8
Total	867. 60	1, 281. 205. 8

[1] 1 li equals one-third mile. [2] Maintenance only.

ROADS CONSTRUCTED

Pengpu to Hwaiyuan.—Clay; 8 miles; built by International Famine Relief Commission. Cost, $50,000 Mexican spent by International Famine Relief Commission; $2,000 Mexican spent in 1928 for repairs. Built in 1921; open all seasons; provincial control; private cars allowed; bus service operated by Wei Ming Garage.

Hwaiyuan to Fengtai.—Clay; 30 miles; provincial construction. Cost, $5,000 Mexican. Built in 1928 in cooperation with Wei Ming Garage, which operates a bus service. No private cars allowed.

Fengtai to Chengyangkwan.—Clay; 50 miles; provincial construction. Cost, $3,500 Mexican. Under franchise to Wei Ming Garage.

Showchow to Chengyangkwan.—Clay; 20 miles; provincial construction; $1,000 Mexican spent in 1928 for repairs. An old cart road used for motor service; closed in rainy season. Private cars allowed. Bus service operated by Show-Cheng Lin-Ho Bus Co.

Chengyangkwan to Hwokiu.—Clay; 23 miles; built by military with farm labor in 1926. Repaired in 1929. A public road, closed during rainy season; private cars allowed; bus service operated by Li Hwo Bus Co.

Pengpu to Showchow.—34 miles; provincial construction. Cost $63,000 Mexican.

Showchow to Matowtsi.—54 miles; provincial construction. Cost, $71,000 Mexican.

Pengpu to Luchow via Linhwaikwan, Fengyang, Tingyuan, Showhsien and Tienfow.—Bus service operating from Pengpu to Tingyuan but not over rest of road.

Tienfow to Chaohsien.—Dirt; 45 miles; provincial construction. Cost, $118,000 Mexican.

Wuhu to Ningkwo (Nsuancheh) via Wanchih.—Clay; 46 miles; private construction. Cost, $150,000 Mexican. Known as the Hsuan-Wu-Kwan Road; controlled by private bus line of similar name.

Shwangkiao to Paofeng.—Clay; 13 miles; private construction. Private road built by Paofeng Coal Co.

Wuhu to Nanking.—Dirt; 40 miles; provincial construction. Cost $300,000 Mexican. The Anhwei section of this route is complete and motor busses are operating on the Wuhu-don-tu section, which is about one-half the route between Wuhu and the Kiangsu border.

Hwaiyuan to Pochow via Kwoyang and Mengcheng.—Partly macadamized; 120 miles; provincial and private construction. A public road but private cars allowed.

Pochow to Kwciteh, Honan.—Stone and sand on clay base; 46 miles; private construction. Cost $5,000 Mexican. Built in 1920 and 1924 by farmers who kept it in annual repairs; closed in rainy season; a public road over which private cars may operate. Bus service maintained by Ta Tung Bus Co.

Pochow to Checheng, Honan, via Luyi.—Clay; 10 miles of 30-mile stretch lies in Anhwei; provincial construction.

Pochow to Yingchow via Taiho.—Clay; 103 miles; provincial construction. Repaired by International Famine Relief Commission. Bus line operates occasionally when traffic warrants.

Taiho to Shenkiu, Honan.—Clay; 20 miles; provincial construction.

Yingchow to Chengyangkwan via Yingshang.—Clay; 60 miles. Old cart road repaired by International Famine Relief Commission. A public road; private cars allowed. Bus service operated by Tung Li Bus Co.

Yingchow to Suchow, Anhwei (Nansuchow) via Mengchang.—Clay; 80 miles; provincial construction.

Pochow to Suchow (Nansuchow), Anhwei via Yungcheng.—Clay; 50 miles; provincial construction; repaired by International Famine Relief Commission. A public cart road. Private cars allowed.

Kuchen to Szechow via Lingpi.—Clay; 53 miles; provincial construction; repaired by International Famine Relief Commission. A public cart road; private cars allowed. Bus line operating.

Lingpi to Suchow, Kiangsu.—Clay; 20 miles; provincial construction.

Anking to Taihu via Kaohopu and Tsienshan.—Dirt; 132 miles; provincial construction. Cost $422,000 Mexican. The road is practically complete, only a 7-mile stretch near Taihu remaining to be finished. Bus services

are being operated by provincial authorities over this route from Anking to Tsienshan.

Siuning to Chiki.—Dirt; 25 miles; provincial construction. Cost $142,000 Mexican.

ROADS UNDER CONSTRUCTION

Anking to Luchow (Hofei) via Tsingtsaoke, Tungcheng, and Shucheng.—82 miles; provincial construction. Cost $521,000 Mexican. The entire route is under survey and in course of construction. The Anking-Tungcheng section is complete with the exception of a large number of bridges. A survey made in August, 1929, indicated that no less than 40 bridges, including some 500 feet long, were required at an estimated cost of $540,000 Mexican. It is reported that the central Government subsequently issued an order for the appropriation of $600,000 Mexican for the purpose of completing this section within three months. However, later military activities have delayed further progress.

Luchow (Hofei) to Liuan.—Dirt; 30 miles; provincial construction.

Chuchow to Laian.—Dirt; 15 miles; provincial construction. The Laian section is reported complete but the completion of the Chuchow section has been delayed by the building of two bridges and the moving of a public cemetery. The construction bureau, however, has taken steps to bring about the immediate completion of this entire project.

Suchow (Nansuchow), Anhwei, to Chiakow.—Dirt; 20 miles; provincial construction. The Anhwei Reconstruction Department has ordered the extension of this road to be constructed immediately, in order to connect up with the Siaohsien, in Kiangsu Province.

Chengwangkwan to Luchow via Matowtsi, and Liuan.—Dirt; 60 miles; provincial construction.

Linhwaikwan to Wuho.—Dirt; 30 miles; provincial construction.

Luchow (Hofei) to Liuan.—Length 30 miles; provincial construction.

Liuan to Yingshang via Hwoshan.—Provincial construction.

Taihu to Susung.—Length, 10 miles; provincial construction.

Wanchih to Kwangtch.—Length, 40 miles; provincial construction.

Szechow to Wuho.—Length, 30 miles; provincial construction.

Szechow to Szeyang, Kiangsu.—Length, 30 miles; provincial construction.

Other routes.—Liuan to Honan border; Wuhu to Yenki via Tikangchen, Tungling, and Tatung; Yenki to Kiukiang, Kiangsi, via Wangkiang, Susung, and Hwangmei, Hupeh; Ningkwo to Tunki via Chiki (120 miles); Hweichow to Shunan, Chekiang; Siuning to Kiangsi border via Yuting and Kimen.

MOTOR VEHICLES

Motor vehicles operating in Anhwei Province as of January 1, 1930, are estimated as follows: Passenger cars, 4; motor busses, 118; motor trucks, 21; tractors, 3; total, 146.

CHAHAR

The former special administrative district of Chahar, a part of Inner Mongolia, was elevated to the status of a Province by the Nanking Government in 1928. Its area of 31,929 square miles was increased by 4,710 square miles, with a total population of 2,988,684, according to an estimate based on the Chinese Postal Report for 1923. The name of this Province is derived from a Mongolian tribe which lived immediately north of Kalgan, known as Chahar in the Ming dynasty, meaning the tribe nearest to China proper. Kalgan is the former seat of the Tatung, the Mongolian governor of Chahar, and the capital city of the new Province.

No motor highway has been constructed in Chahar, except those old camel caravan routes which were improved in 1924 and 1925 for motor transportation. The annexation of the 10 hsien (districts) of Chihli (now Hopeh) Province by Chahar in 1928 added to this Prov-

ince two-thirds of the Peking-Kalgan motor road stretching from Chuyungkwan, north of the Nankow Pass, to Kalgan, the gate of the outer line of the Great Wall, a distance of 60 miles. The roads in Chahar adaptable to motor transportation total 1,509 miles, and are as follows:

Chuyungkwan to Kalgan.—Dirt; 60 miles; constructed by Chinese International Famine Relief Commission.

Kalgan to Tolunnoerh (Dolonnor).—Dirt and clay; 188 miles; provincial construction. Cost $4,000 Mexican. An old caravan route; improved in 1918 by Feng Yuhsiang's troops for military purposes, since which time about $4,000 Mexican has been spent on it for maintenance work. Controlled by Chahar

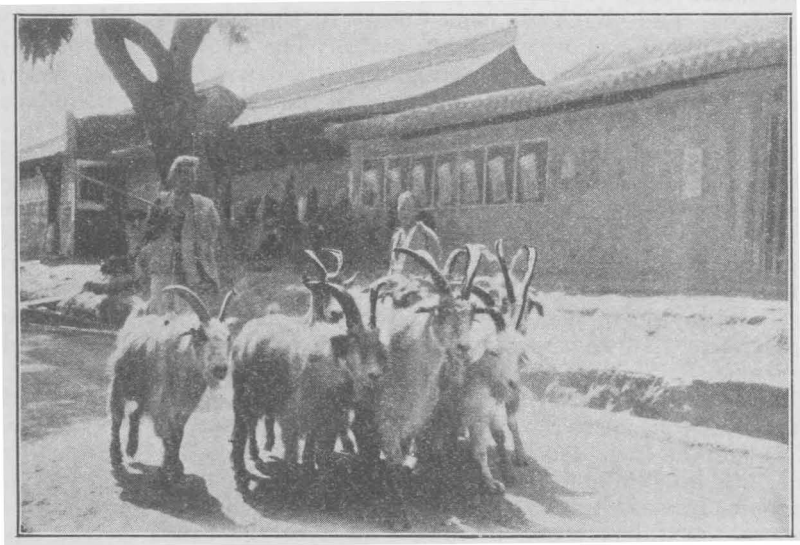

FIGURE 8.—Gray Mongolian goats, Suanhwa, Chahar. Illustration shows how road has been built up and ditched at side to effect drainage

provincial motor service bureau. Motor-bus service operated by Mei Hua Garage. Private cars taxed $52 Mexican per round trip.

Kalgan to Pingtichuan.—Dirt; 187 miles; improved by Feng Yuhsiang's troops for military purposes.

Kalgan to Pangkiang.—Dirt; 275 miles; branch of Kalgan-Urga road used by Chinese postal trucks.

Kalgan to Wuteh (Ude).—Dirt and clay; 450 miles; provincial construction. Cost $10,000 Mexican. This is the section of the Kalgan-Urga road that lies within Chahar Province. The total distance from Kalgan to Urga is estimated to be 1,037 miles. Dirt and clay construction, 70 miles of which has been constructed, the remainder natural caravan-trails; $10,000 Mexican originally spent on road built in 1914, with an additional $4,000 Mexican supposed to be spent annually for repairs. Kalgan-Erhlien section controlled by the Chahar provincial motor car service bureau. Erhlien to Urga section controlled by Mongolian government. Forty Chinese motor-car hongs operate bus services over the entire route from Kalgan to Urga. Passport charges, $300 Mexican per car per trip.

Kangchwang to Yangtsing.—Dirt; 12 miles; provincial construction. Follows main cart road; closed during rainy summer season; controlled by Chahar provincial motor car service bureau. Private cars allowed on road by payment of special tax. Motor-bus service operated by Chinese Bus Co. Repairs and maintenance made at the expense of motor-car hongs.

Hsihwayuan to Yuchow.—Dirt; 77 miles: provincial construction. Follows main cart road; maintenance work done by private motor-bus companies at own expense. Closed during rainy summer season; controlled by Chahar provincial

motor car service bureau. Private cars operate by payment of special tax. Motor-bus service operated by Chinese Bus Co.

All other motor routes—Dirt; 260 miles.

CHEKIANG

Chekiang Province, with an area of 37,000 square miles, is about the size of the State of Indiana. Its population of 24,000,000—640 to the square mile—is densest in the north and northeast portion of the Province. Hangchow, its capital, with 350,000 inhabitants, is the principal city. The cities of Shaohing, Ningpo, and Huchow have more than 100,000 population each, and Lanchi, Kashing, Chuchow, and Kinhwa come next in importance. Hangchow, Ningpo, and Wenchow are treaty ports. The Province is a network of rivers, canals, and creeks, navigable by native craft. The Shanghai-Hangchow-Ningpo Railway gives to the Province a rail mileage of 171 miles.

Chekiang has led all other Provinces in initiating road-building programs, though others have now surpassed it in actual mileage. Preliminary steps taken in 1916 by the provincial governor resulted in the organization of a special office to set up and send out surveying parties. Original plans contemplated the building of six provincial trunk lines by military labor. The plan was duly approved by the provincial assembly but, owing to lack of funds, did not materialize. It was resubmitted in 1920 and indorsed with slight revisions.

The approved plans in 1920 called for a total construction of 1,190 miles (3,580 li) of roads 7 feet wide, to be completed in four periods of 18 months each, at a minimum estimated cost of $9,956,000 Mexican. As no available sources of revenue could be allocated for this purpose, it was decided that the district which the roads were to traverse should be asked to raise a part of the funds on the basis of $40,000 Mexican for first-class districts, $30,000 for second-class districts, and $10,000 for third-class districts. A special yearly appropriation of $70,000 to $80,000 Mexican for road building was also added to the provincial budget. But even these measures were unsuccessful in raising sufficient funds, hence the 1920 plan was temporarily shelved.

Fresh attempts made in 1922 resulted in a preparatory office being created and reorganized the following year into a provincial highway bureau. A proposal to levy a special tax on cigarettes to raise money exclusively for road building was adopted by the provincial authorities, but the yield of several hundred thousand dollars silver a year from this source was found insufficient. In 1927 this tax yielded $1,400,000 Mexican.

To hasten road construction the provincial authorities decided to invite private enterprises to build portions of the roads as commercial undertakings. Several motor-road companies have been organized since 1923 and motor-bus services started on various sections of the six projected provincial trunk lines.

The failure of an attempt in 1927 to float a public loan of $6,000,000 Mexican for road building resulted in the levying of a semiannual land surtax on crops, beginning with the fall harvest of 1927.

The special cigarette consumption tax of the Province, at first entirely devoted to the construction of roads, was later appropriated for other purposes. In February, 1928, however, a new arrangement was made with the National Ministry of Finance at Nanking, whereby $100,000 Mexican was to be set aside from the tax monthly for constructive work within the Province, including road building. A special account was opened in the Hangchow Bank of China, in which the fund was deposited, and although the sum is still too small for any big project, it has enabled the gradual construction of roads. As every road built will furnish funds (in the form of royalties

FIGURE 9.—One of the principal streets in the new business district of Hangchow

derived from motor traffic) for further construction, the prospects of continued road extension are promising.

The provincial budget for 1929-30 called for a $10,000,000 loan for reconstruction purposes, secured against a special land surtax. The sanction of the central Government was received and it was estimated that out of this loan approximately $3,000,000 silver would be available for road construction.

Chekiang's determination to build roads is seen in the above instances of its repeated efforts to raise funds for this purpose.

The plans of the construction bureau of the Chekiang provincial government call for the construction of 10 trunk routes covering 4,800 li (1,600 miles), with 6,693 li (2,231 miles) of branch roads; an aggregate distance of 11,545 li or 3,834 miles, within a 4-year period.

The January, 1927, issue of the Chinese Economic Journal, published by the Chinese Government Bureau of Economic Information, describes in detail Chekiang provincial trunk-line systems projected,

under construction, and constructed. Extracts from that report follow:

Chekiang-Kiangsi principal trunk line.—Starting at Hangchow, the capital of Chekiang Province, a line running for a distance of 197 miles (590 li) through Yuhang, Fuyang, Sinteng, Tunglu, Yenchow, Lanchi, Lungyu, Chuchow, and Changshan to Yushan, in Kiangsi Province, is projected as the Chekiang-Kiangsi principal trunk line. From Lanchi, a branch line of 57 miles (170 li) is intended to run through Kinhwa and Wuyi to Yungkang, constituting the western section of the Kinhwa-Taichow line to link up the Chekiang-Kiangsi and Chekiang-Fukien trunk lines. The combined length of the projected Chekiang-Kiangsi trunk line and the western section of the Kinhwa-Taichow line would be 254 miles (762 li). It is estimated that the total construction cost of this trunk line would reach $2,057,400 Mexican.

In 1920 provincial road plans called for this trunk line to be constructed in the first period, but as the provincial government was not in a position to provide the funds, merchants were given the privilege of building the various sections.

Hangchow-Yuhang section (Hang-Yu road), a distance of 27 miles, was built by the Hangchow-Yuhang Provincial Road Motor Bus Co. (Ltd.), organized by Ku Nai-ing and others, with a capital of $250,000 Mexican. Construction work was started in 1923 and was completed in 1924. Traffic was opened on this line in the winter of 1924, passengers being charged $0.60 Mexican each way, or $5 Mexican per car for each trip.

Attached to this section are two branch roads, one running from Hushih through Kwanyingkiao to Kungshenkiao, with three stations, covering a length of 2 miles (6 li), and the other from Sungmuchang to Kenshanmeu for 2⅓ miles (7 li), with two stations, Wulin and Patzekiao. Both branch lines were opened to traffic in 1925. The Hangchow-Yuhang section is a very important road, as it is the starting point for both the Chekiang-Kiangsi and the Chekiang-Anhwei trunk lines. The receipts of the Hangchow-Yuhang Motor Bus Co. for 1924 amounted to $89,850 Mexican and for 1925, $104,503 Mexican. In 1928, out of 25 motor cars owned by this bus line, 19 were in operation over this 27-mile stretch.

Hangchow-Fuyang section (Hang-Fu road), which was also scheduled to be built in the first period, was actually constructed after the completion of the Hangchow-Yuhang section by merchants with an initial capital of $150,000 Mexican. The charge for each trip is $0.60 Mexican per passenger, over a distance of 38 miles (115 li). Traffic on the whole section was opened in the winter of 1925.

Early in 1926 a branch road of this section was built from Lianghu to Siaoshan (with four stations—Lianghu, Tungwu, Liusia, and Siaoshan), over which traffic has already begun. The capital of the Hangchow-Fuyang Motor Bus Co. has been raised from $150,000 to $300,000 Mexican. The receipts of the company at the end of August, 1926, were $42,435 Mexican.

The original provincial road plan divided the Chekiang-Kiangsi trunk line into two main sections, the northern section and the southern section, with the former running from Hangchow to Lanchi and the latter from Lanchi to Yushan in Kiangsi. A new survey made in 1924 and 1925 by the provincial highway bureau suggested two routes for the northern section, viz, Route A, from Hangchow through Fuyang, Sinteng, Tunglu, and Yenchow to Lanchi; Route B, from Hangchow across the Tsientang River to Siaoshan, through Chuki and Kinhwa to Lanchi. The latter route was originally included in the proposed Chekiang-Fukien subtrunk line; traversing a plain area it would afford fewer construction difficulties than the other route. However, this route could serve as the northern section of both the Chekiang-Kiangsi and the Chekiang-Fukien trunk lines. It is, therefore, likely that Route B will be built first, while Route A, to be known as Hangchow-Lanchi line, will be left for subsequent attention.

Members of the local gentry in 1926 obtained permission from the provincial highway bureau to undertake construction of the Hangchow-Lanchi section, by building a road first from Fuyang through Sinteng to Tunglu. For this purpose the Fuyang-Sinteng-Tunglu Provincial Road Motor Bus Co. (Ltd.) was organized. The promoters in 1926 were in the process of raising funds for the construction of this portion of the road. As to the section between Yenchow and Lanchi, south of Tunglu, nothing has been done either by the Government or the local merchants.

The southern section of the Chekiang-Kiangsi trunk line is known as the Lanchi-Yushan line. An attempt to build this line in 1926 by one of the local merchants met with no success.

Out of the whole length (762 li) of the Chekiang-Kiangsi line, 195 li (65 miles) have been built—that is, the Hangchow-Yuhang and Hangchow-Fuyang sections.

Chekiang-Fukien subtrunk line.—This line is to run from Hangchow through Siaoshan, Chuki, Tungyang, Yungkang, Tsinyun, Chuchow, Yunhwo, Lungchuan, and Kingyuan to Chengho in Fukien Province, a distance of 288 miles (863 li). From Yungkang through Sienku to Taichow will run the eastern section of the Kinhwa-Taichow line, covering an 80-mile (242 li) stretch.

Both lines are scheduled to be built in the second period at an estimated cost of $2,983,500 Mexican. Lack of funds has prevented construction according to schedule. A small section from Kiangkan, Sihing, to Siaoshan City has been completed, forming a part of the Siaoshan-Shaohing section of the Chekiang-

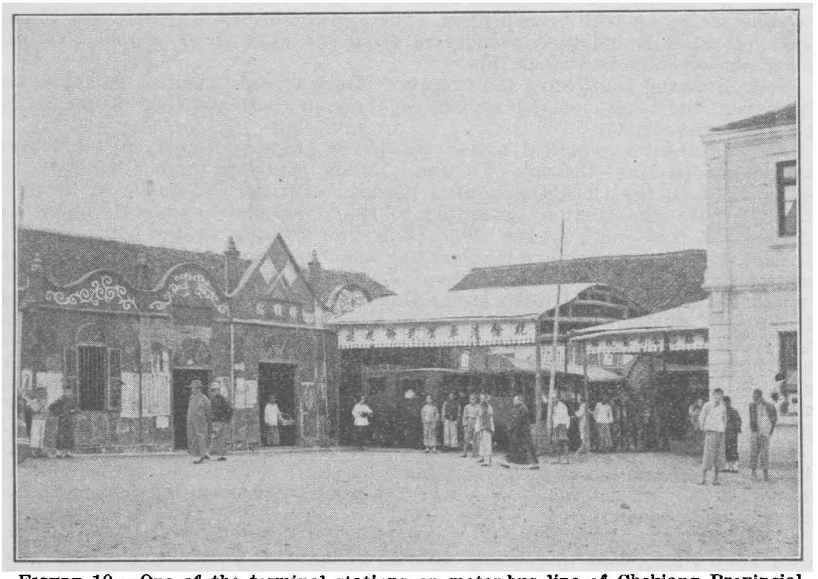

FIGURE 10.—One of the terminal stations on motor-bus line of Chekiang Provincial Highway Bureau

Fukien principal trunk line, also known as Chekiang-Fukien first trunk line. Nothing as yet has been done in regard to the section south of Chuki.

Chekiang-Fukien principal trunk line.—This line is also known as the Chekiang-Fukien first trunk line. According to the plan adopted in 1916, it was to run from Hangchow through Shaohing, Shangyu, Ningpo, Fenghwa, Ninghai, Taichow, Wenchow, Juian, and Pingyang, to Futing in Fukien Province, covering a total length of 338 miles (1,013 li). This being a circuitous route, it was decided to build along the shorter route through Siaoshan, Shaohing, Chenghsien, Sinchang, Tientai, Taichow, Hwangyen, Wenling, Yotsing, Wenchow, Juian, and Pingyang. This line is only 299 miles (897 li) in length. Building was scheduled to start in the third period, an estimated sum of $2,421,900 Mexican being required. Of the total distance, 117 miles (350 li) have been built by the provincial highway bureau.

The section from Kiangkan to Shaohing city, known as the Siaoshan-Shaohing section, 28 miles (83 li) in length, was completed and opened to traffic in 1925, at a total cost of $769,163 Mexican, which was more than double the original estimate. Each passenger is charged $0.84 Mexican, and $1.04 Mexican for a through express trip. This service runs direct from Kiangkan to Shaohing without stopping. Each passenger is allowed to bring with him 30 catties of luggage, for which $0.15 Mexican per 50 catties (this rate is adopted on nearly all motor roads in Chekiang Province) is charged. The hire of a whole car for exclusive service from Kiangkan to Shaohing is $15.95 Mexican per trip. It may also be hired by the hour at $6 Mexican for the first hour and $4.20

Mexican for each succeeding hour. There are at present between 40 and 5 cars in operation on this section, over which there is quite heavy traffic. Kin Ming Kee has obtained the exclusive right from the provincial highway burea to control all goods traffic on this section.

The average daily income amounts to $1,000 Mexican.

The Shaohing to Chenghsien section, 87 miles (200 li) in length, was sur veyed by the provincial highway bureau. Construction work, which wa actually started, was interrupted by shortage of funds after having complete the Chenghsien-Sinchang section, a distance of 8 miles (25 li).

Some prominent members of the local gentry have been planning the con struction of a branch line from Shaohing through Tsao to Chenghsien. Th first branch line is known as Shaoshing-Tsao-Chenghsien branch line, passin through Tsao, Kaofow, Fankiang, Taoyen, Kingkow Tungkwan, Haopa, Wang kiawei, Changkiafow, Sankai, Yunpu, Tsingfeng, and Sienyen to Shashutan, t connect the Changhsien-Shashutan branch. Funds in 1926 were being raised fo the construction of both branch lines. The local public works bureau of Cheng hsien has already obtained permission from the authorities to construct th Chenghsien-Shashutan branch line.

From Sinchang southward the proposed line traverses Tientai, Taichow, an Hwangyen, the length of the various sections in these districts to be 24, 31 and 41 li, respectively.

Chekiang-Anhwei principal trunk line.—This proposed line is to start fron Hangchow, passing through Yuhang, Linan, Yutsien, and Changhwa t Yulinghwan on the Chekiang-Anhwei border, covering a distance of 68 mile (202 li). Its construction, according to the provincial assembly's plan, wa scheduled in the fourth period. The Hangchow-Yuhang section coincides wit the first part of the Chekiang-Kiangsi line and has already been constructed, a mentioned above. The Yuhang-Linan section was completed in 1924 by th Yuhang-Linan Provincial Road Motor Bus Co. (Ltd.), organized with a capita of $250,000 Mexican. Traffic over this route was opened in January, 1925 This section, about 27 miles (90 li), starts from Shansilung, the last station o the Hangchow-Yuhang section, and terminates at Holunchien, Linan. Th fare for a through trip is $1.20 Mexican per passenger and $8 Mexican pe car. The monthly receipts from this service are between $6,000 and $7,00 Mexican.

The extension from Linan to Yutsien and Changhwa, for a distance of an other 27 miles (80 li), is also being built by the Yuhang-Linan Motor Bus Co Survey for this section has been completed, and construction finished to a shor distance from Linan.

As to the section from Changhwa westward to Yulinghwan and farther to a town known as Tunki in Siuning district of Anhwei Province, a company b the name of Tunki-Chenghwa Motor Service Co. is being organized by Wu Chang-jung to undertake construction. A preparatory office has been estab lished at Shihwukweihsiang, Hangchow city. This line is over 67 miles (200 li in length. Surveying and construction work is expected to be started befor long.

Hangchow-Hweichow.—As a result of repeated requests from the Nationa Government, the provincial authorities have decided to utilize 50,000 disbande soldiers in road construction, beginning first upon the construction of th Hangchow-Hweichow (Anhwei) highway. This route is already complete from Hangchow to Holunchien, passing through Yuhang and Linan. Construc tion is under way between this point and Changhwa. From the Anhwei end the line from Hweichow, Anhwei, to Changshan, Chekiang, has been complete and opened to traffic. The central Government has been requested to pay th living expenses of this soldier labor, the provincial treasury not being able t stand the entire expense of both construction and labor.

Chekiang-Anhwei subtrunk line.—This line is proposed to run north of th principal trunk line from Hangchow through Tehtsing, Huchow, Changhing and Szean, to Kwangteh, in Anhwei Province, for a total distance of 88 mile (265 li). At first it was suggested that merchants be invited to undertak construction, but the provincial highway bureau later decided that the Hang chow-Huchow section should be built.

The Hangchow-Huchow section of this line forms the main section of th Hangchow-Nanking highway connecting the provincial capital of Chekian with the national capital of Nanking in Kiangsu Province. Construction o the road has been completed to Changhing, but traffic is held up awaiting th completion of a large bridge a short distance out of Huchow. The Huchow

section of the road was declared officially open on September 28, 1929. Kiangsu authorities have completed the roadbed in their territory from Nanking to the Chekiang border. Surfacing and bridge work are now in process, while the Chekiang authorities are rushing through the last lap of the road from Changhing to meet the Kiangsu portion at the border. Traffic over the entire route is expected to be open by the end of the year.

The section extending from Chashuikiao through Shenfow, Hoping, Meiki, and Szean to Kiehpaikwan is known as the Hangchow-Huchow-Szean line. This is also the Chekiang-Anhwei subtrunk line, a road of great importance both for military and for commercial purposes. It is to be built by the provincial highway bureau. Surveying work has been completed and construction in some sections is now under way.

On the Chekiang-Anhwei line the Yuhang-Wukang section 23 miles (70 li) in length, connecting the principal trunk line and subtrunk line, was constructed by the Yuhang-Wukang Motor Road Co., which was organized by Koo Nai-ping and others, with a capital of $250,000 Mexican. On this section there are nine stations, namely, West Gate (Yuhang), Sienche, Shaomu, Changlo, Panpan, Pengkung, Tunghwang, Shangpeh, and Wukang. The West Gate station at Yuhang is separated from the Shansilung station on the Hangchow-Yuhang section by a creek, the Tiaoki. In order to establish connection between the two roads, the two motor-road companies concerned have built a bridge over the Tiaoki Creek.

The Yuhang-Wukang Motor Road, Co. has recently completed a road from Sanchiaopu to the foot of Mokanshan, a famous summer resort. This branch is about 7 miles (20 li) in length. Another branch road that has already been built by this company is the Changlokiao-Shwangki section. A through ticket on the Yuhang-Wukang road costs $0.80 Mexican for each passenger and $8 Mexican for each car.

From Pingyao, Yuhang, to Hwanghu, Tangfowling, and Schwangki, a road has been built by the Ping-Hu-Shwang Motor Service Co. Traffic was opened early in 1926. It is a branch of the Yuhang-Wukang road. The manager of the company, Lo-Chi-ping, is planning to build an extension from Pingyao to Anki, on the Hangchow-Huchow line, to link the three roads, Yuhang-Wukang, Hangchow-Yuhang, and Hangchow-Huchow.

For the construction of a road from Hwanghu, on the Pingyao-Hwanghu-Shwangki section, through Tipu in Anchi district to Siaofeng city, a distance of more than 33 miles (100 li), a motor service company is being organized by Chang Shin-shu, Yeh Kwei-hsien, and others, with a capital of $120,000 Mexican, and official permission has already been obtained. It is the plan of the company first to build the Hwanghu-Tipu section, a little over 20 miles (60 li). Surveying work has already been undertaken, and construction will soon begin.

Chekiang-Kiangsu line.—This line, according to the original plan, is to run from Hangchow through Tsungteh, formerly known as Shihmen and Kashing, to Wangkiangking on the Chekiang-Kiangsu border, a distance of 78 miles (235 li), and is to be built in the fourth period. Up to the present time, neither the Provincial Government nor the merchants have done anything, as motor roads in these parts are not a necessity, in view of the numerous waterways which afford great communication facilities on the Chekiang-Kiangsu border. However, one proposed motor road between the two Provinces is receiving attention by the Chekiang provincial authorities—the Hankchow-Shanghai, line, which is to start at Hangchow, pass through Haining, Haiyen, and Pinghu in Chekiang Province, Changyen, and Tinglin, Minhang (Minghang) in Kiangsu Province, and reach Shanghai by the already completed Min-Nan (Minhang-Nantao-Shanghai) motor road. At the Hangchow end the Hangchow-Haining motor road is already in existence. The section that needs construction is from Haining through Haiyen and Pinghu to Minhang. In the summer of 1926 a preparatory office was established for the construction of this section, but the execution of the plan was interrupted by the civil war in Central China.

The completion of this route may be stimulated by the recent successful overland run of an American stock-model touring car and a Renault tourer with truck body, made the early part of October. The section from Minhang to Haiyen through paddy and salt fields is an almost impossible terrain, as no semblance of a road exists. The American and the Renault car, the latter carrying bridge-building equipment, were stuck 19 times in the mud near Chapu, making only 6 miles within three days. The pioneer service

which these intrepid and enthusiastic motorists have rendered can not be overestimated. Indications are that provincial officials may shortly rush through the completion of this line, thus linking up for the first time the commercial metropolis of Shanghai with the ancient and beautiful provincial capital of Hangchow. Seven and one-half days were consumed by these contestants to cover a total distance of 110 miles.

Hangchow-Haining road.—On this line traffic has already been opened. The road was built by the Hangchow-Haining Motor Service Co. (Ltd.). In the winter of 1924 it was proposed to build a road from Kenshanmen, Hangchow, to Linping, by organizing the Kenshanmen-Linping Motor Service Co., but the gentry of Hangchow and Haining suggested that the road be extended to Haining, hence the company was reorganized into the Hangchow-Haining Motor Service Co., with a capital of $200,000 Mexican. This road starts from Ken-

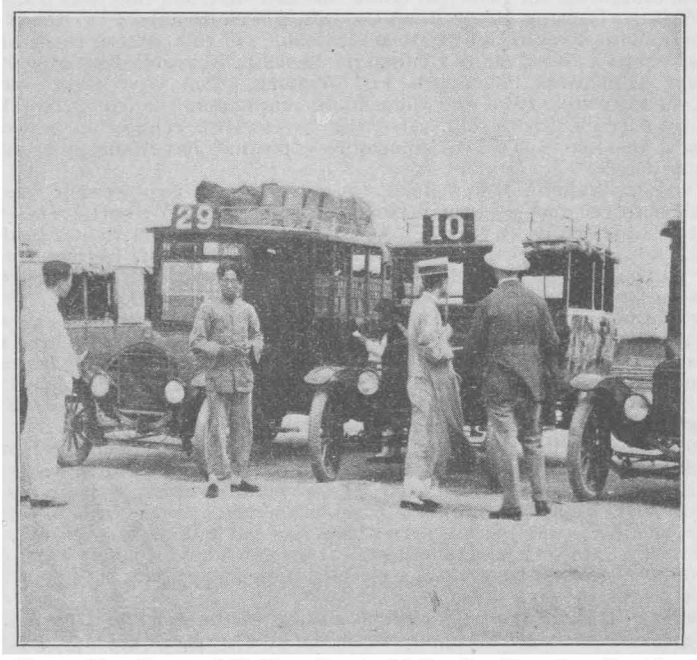

FIGURE 11.—Busses of Chekiang Provincial Bus Co., Hangchow-Shaohing line

shanmen, and is connected with the Wunmuchang-Kenshanmen branch of the Hangchow-Yuhang road running to Haining city, covering a distance of 23 miles (60 to 70 li). Connected with this road there are two branches, one running from Kiaosze to Linping, known as Kenshanmen-Linping branch road, built by the Kenshanmen-Linping Motor Service Co., and the other from Mumakung to Changan, known as Haining-Changan branch road, built by the Haining-Changan Motor Service Co. The Kenshanmen-Linping Motor Service Co. is located at Hangchow, while the Haining-Changan Motor Service Co. is at Haining. The two companies have jointly built the Hangchow-Haining road. On the two branch roads mentioned above, traffic has also been opened; only the construction of the bridge at Nanshih, Changan, remains incomplete.

In addition to the Hangchow-Haining road and their branches, the Haining Highway Association is contemplating the construction of the Yuanhwa-Siashih, Haining-Yuanhwa, Haining-Siakiao, Haining-Chowwangmiao, and Haining-Hsutsun roads. These five roads and the Haining-Changan road are included in a program drawn up by the chairman of the Haining Highway Association. According to the program, all these roads are to terminate at the railway station at Haining, connecting with the Shanghai-Hangchow Railway. Construction of the Haining-Changan road has been completed.

Chekiang-Kiangsu and Chekiang-Anhwei lines.—On the Chekiang-Kiangsu line it seems that the execution of the program adopted by the provincial assembly has been postponed, attention having been turned to the other sections along the coast, as described above.

The Chekiang-Anhwei principal trunk line and subtrunk line and the Chekiang-Kiangsu line were originally scheduled to be built in the fourth period. The total length of the three lines proposed is 234 miles (702 li) and would require $1,895,400 Mexican to construct. As the provincial government is not in a position to provide such a large sum of money and many sections on these lines have already been built by merchants, the original program adopted by the provincial assembly is almost entirely changed. Actual experience has shown that the four periods of 18 months each are much too short, while costs of road building are greatly underestimated. Only that part of the program marking out six trunk lines is being followed.

Foundation line.—Of the six trunk lines described above, the two Chekiang-Anhwei trunk lines and the Chekiang-Kiangsu line both start and end in western Chekiang, and the two Chekiang-Fukien trunk lines start and end in eastern Chekiang. But the Chekiang-Kiangsi line starts in western Chekiang and ends in eastern Chekiang. Western and eastern Chekiang are separated by the Tsientang River, which prevents the junction of the lines. The provincial highway bureau surveyed the line from Kiangkan to Hushih, about 7 miles (20 li) in length. All trunk lines touch some point on this route. The foundation line starts from Kweichinkiao and Hushih, turning south to Wulinmen, passing Sinshihchang, Hupinglu, Tsingpomen, Wansungling, and Nansinkiao, and reaching Sanlangmiao Ferry at Kiangkan, where there are about a dozen free ferry launches. Across the river is located the Kiangkan station of the Siaoshan-Shaohing section, the starting point of the Chekiang-Fukien principal trunk line and subtrunk line. Hushih, on the other end of the foundation line, is the starting point of the Chekiang-Anhwei subtrunk line, and Sungmuchang of the Chekiang-Anhwei principal trunk line and the Chekiang-Kiangsi line. The Sungmuchang station of the Hangchow-Yuhang section extends to Kenshanmen to connect with the starting station of the Chekiang-Kiangsu line.

Thus the foundation line will enable the six trunk lines to connect with one another. The central station of the foundation line is to be established at Wulinmen, Hangchow. The authorities are now pushing on with this scheme. Surveying work has been completed, and construction of the foundation line will begin before long. The road which has been built by the Yung Hwa Co. from Sinshinchang to Linyingsze on West Lake will form a small portion of the foundation line.

On the different roads where traffic has already been opened passenger fares vary from 1 to 1½ cents per li, the Yuhang-Linan road charging 1½ cents and the Siaoshan-Shaohing and Hangchow-Fuyang roads charging about 1 cent; different rates are also charged by different companies for cars hired for exclusive use and for freight transportation. In transporting goods the rates are generally fixed by bargaining. In other cases, as on the Siaoshan-Shaohing section, special agents control all goods transportation business for the motor-service companies. The companies have sufficient cars to make from 17 to over 20 return trips each day.

Motor roads in Chekiang Province are important, both from the military and from the commercial standpoint, but the provincial authorities have not been able to raise the necessary funds for carrying out in its entirety this extensive road-building program. However, the realization of an extensive network of motor roads is considered imperative by provincial officials for the fullest development of the resources of the Province.

Although many sections have been built by local public bodies and companies organized by merchants, their attention is directed to the prosperous business centers for commercial reasons. The completion of the six trunk lines outlined in the road-building pro-

gram can not be effected until the provincial treasury is in a position to meet such financial requirements.

In connection with road building, regulations have been drawn up by the provincial authorities, one set presenting detailed stipulations governing the purchase of land; another governing the construction of roads by local public bodies or merchants; a third covering the organization of motor services by merchants, also containing business rules, traffic rules to be observed by passengers, goods traffic rules, rules to be observed by goods traffic agencies, rules relating to the transportation of silver and copper coins, and rules governing the charge of fees or traffic duties on all kinds of vehicles and animals of burden using the roads.

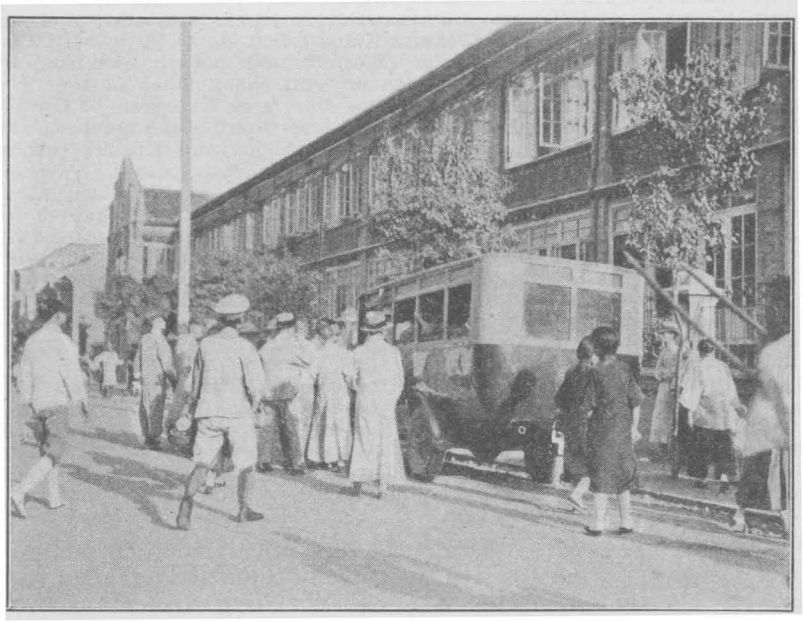

FIGURE 12.—Bus terminal in Hangchow City, provincial capital of Chekiang Province

The 1928 road construction plans published by the department of construction called for the roads described below. Much of this construction was continued through 1929.

1. Roads in the capital (Hangchow).

(*a*) *Fundamental line of the provincial road system.*—The construction of this line was started several years ago but was interrupted by civil war. The department of roads has now been ordered to continue construction, which includes the following already completed roads, costing $31,650: Wu-ling Gate and Chu Ku road, Chin-po Gate road, Kiang-kang to Fung-san Gate road, Wen-tang Bridge to Kung-shen Bridge road. Construction planned to finish in three months at a cost of $42,000 Mexican, includes the Kung-shen Bridge branch road and road south of Hung-tung and other miscellaneous construction.

(*b*) *Road to connect the provincial line with Shaohing district.*—Engineers have been detailed to survey and construct the 8-mile road from Sih-ko Gate in Shao-shin to Wu-yun Gate in four months' time.

(*c*) *Construction of the Chin-Feng line.*—The headquarters of Kiang-kou are planning the construction of the 28-mile Chin-Feng line at an estimated cost of $454,764 Mexican, to be raised by a loan. The initial

expense is to be paid by the cigarette surtax. This road is to be divided into four sections: (1) From Yueh-chen Bridge to Sikou, (2) from Chin-hsien to Yuen-chen Bridge, (3) from Kiang-kou to Feng-wha, (4) from Ting-si-kou to Yu-san-ting.

2. District roads.

The department of construction has caused a commission to be formed for the construction of roads connecting the 75 districts of the Chekiang Province. This line is divided into eight sections as follows: (1) From Hangchow to Ihing, Kiangsu, through Huchow and Changhing; (2) from Haining to Kinsan, Kiangsu; (3) from Whalungchen, Linan, through Yuchien and Changhwa to Sulingkuan; (4) from Sinchang through Tientai, Linghai, and Wenling to Yungkiachang (Wenchow); (5) from Yungkiachang through Tientai and Tsingtien to Lishui; (6) from Siangshan to Ninghai; (7) from Tunglu through Yenchow, Lanchi, Tangki, Lungyu, and Chuhsien to Changshan; (8) from Chuhsien through Kiangshan to Fukien. The above line is more than 665 miles (2,000 li) and work is to start simultaneously in all districts directed by Chinese engineers appointed by the provincial government.

PROVINCIAL HIGHWAY SYSTEMS

The 1930 road-building program of the provincial reconstruction bureau completed four interprovincial highways to facilitate communication between Chekiang and the Provinces of Anhwei, Kiangsi, and Fukien. Construction of the first two highways was started some time past, and a considerable portion has already been completed and opened to traffic, while that on the other two highways is scheduled to be commenced immediately.

Hangchow-Anhwei highway (Hang-Chang highway).—This route is completed from Hangchow to a point beyond Linan, and is in course of construction from this point through to Changwha. The 1930 plans provide for the completion of this section as well as the last section from Changwha to Tengchi, in Anhwei Province.

Ningpo-Fukien highway.—The first section—running from a small village near Ningpo, known as Jinhsien, to Fenghwa—is known as the Jin-Feng road and is now open to traffic, as is also a short spur from a point near Fenghwa to Chikow. The route is proposed to extend ultimately from Fenghwa to the Fukien border, passing through Ninghai, Hwangyen, Yotsing, Wenchow, Juian, Pingyang, and Futing in Fukien. The section from Fenghwa to Ninghai, known as the Jin-Feng-Hai road, is projected for construction in the near future. The portion from Hwangyen to Lotsing, or Yotsing, called the Hwang-Lo line, is already under construction.

Changshan-Yungkiachang (or Yungchia) highway.—Starting in the extreme eastern section of Chekiang it is proposed to pass through Chuchow, Suichang, Sungyang, Yensui, Tsiengtien, terminating at Yungkiachang on the river opposite Wenchow. None of this route is as yet in course of construction, though scheduled for 1930.

Hangchow-Chinning or Kingining highway.—Starting at Hangchow this highway will pass through Siaoshan (which small stretch is already completed, being a short portion of another line) through Chuki, Tungyang, Yungkang, Tsinyun, and Lisui, thence to branch out into two separate routes—one to Kiangsi and the other to Fukien Province. No portion of the route is as yet in construction, though scheduled in the 1930 program.

ROADS CONSTRUCTED

Hangchow to Shaohing (Hang-Shao).—Telford macadam; 41 miles. Built in 1927; open all seasons; well kept; controlled by Chekiang Highway Administration. No private cars allowed. Provincial bus service operates 74 cars.

Shaohing to Tsaongochen (Shao-Tsao line).—Gravel and clay; 25 miles; private construction. Cost $590.000 Mexican. This line is an extension of the Hangchow-Shaohing line running from Shaohing to Tsaongochen, the latter place being on the opposite side of the river at Pokwan, the railhead of the Hangchow-Ningpo Railway. Built in 1927 by private interests; controlled by Shaotsaochen Motor Road Co. Open all seasons. No private cars allowed. Motor-bus service operated by Shaotsaochen Motor Road Co.

Hangchow to Fuyang (Hang-Fu highway).—Gravel; 38 miles; private construction. Cost $615,000 Mexican. Built by private interests in 1926; taken over by the Chekiang Highway Administration in 1928. In very poor state, but recently some repair work has begun by the provincial highway authorities. Bus line formerly operated by private interests discontinued. No bus service operating now owing to poor state of road and scarcity of provincial busses.

Hangchow to Yuhang (Hang-Yu highway).—Clay and cinder; 25 miles. Cost, $140,000 Mexican. Built in 1924 by Hangchow Yuhang Motor Road Co. Poorly maintained. Toll road for private cars. Bus service operated by Hangchow Yuhang Motor Road Co. with antiquated equipment.

Yuhang to Linan (Yu-Lin road).—Gravel, cinder, and yellow mud; 30.5 miles. Cost, $180,000 Mexican. Built in 1926 by Yuhang-Linan Motor Road Co. Poorly maintained. Open all seasons. Toll road for private cars. Bus service operated by Yuhang-Linan Motor Road Co.

Linan to Holunchien.—Cinder and gravel; 5 miles. This is an extension of the Hangchow-Linan Road, which has been built by the Chekiang Highway Administration. The section from Holunchien (or, as it is sometimes called, Hwalungtsun) to Changhwa via Yutsien is in course of construction and should be open to traffic within the near future. Bus service will be operated the entire distance from Linan to Changhwa by the Yuhang-Linan Motor Road Co. under contract.

The entire route from Hangchow to Changhwa has been renamed the Hang-Chang line, but it is still sometimes referred to by the sectional names. Total distance, 48.5 miles.

Hangchow to Futzeling (Kiangsu border), via Bangkung, Shangpeh, Wukang Huchow, and Changhing.—Macadam; 88 miles. The section from Hangchow to Shangpeh, a town 10 miles south of Wukang, was originally built in 1926 by private enterprise under the control of the Yuhang-Wukang Motor Road Co. at a cost of $180,000 Mexican for this 24-mile stretch. In 1928 the Bangkung-Shangteh section was bought by the Chekiang Highway Administration. This section is now in process of being widened and repaired to bring it into alignment with the Wukang-Kiangsu border section which has been built by the Chekiang Highway Administration. The Yuhang Wukang Motor Road Co. operates a bus service over the entire Hangchow-Wukang section, being permitted to run over the Bangkung-Shangpeh section free of charge. Private cars allowed upon payment of toll over the section owned by the Yuhang-Wukang Motor Road Co. Motor-bus service is operated over the entire route from Hangchow to Huchow and Changhing by the Chekiang Highway Administration. Through traffic to Nanking is possible by a change-over to small cars at Huchow.

Hangchow to Pingyao.—Macadam; 12 miles; private construction. Cost, $120,000 Mexican. This is a portion of the Hangchow-Nanking road, the 12-mile section between Siaoho and Pingyao having been built in June, 1929, at a cost of $120,000 Mexican by private enterprise. The road is under the control of the Chekiang Highway Administration, but the Hang-Ping Bus Co. holds a 20-year agreement with the administration for the operation of bus service over this short stretch.

Sanchiaopu to Mokanshan.—Gravel; 4 miles; provincial construction. Cost, $60,000 Mexican. A short spur road built in 1929 off the main Hangchow-Kiangsu border route a little above Wukang, connecting it with the summer resort at Mokanshan. Built by provincial authorities. Motor-bus service maintained by Chekiang Highway Administration direct from Hangchow to Mokanshan. Private cars allowed upon payment of toll fees.

Pingyao to Shwangki via Hwanghu.—Cinder, yellow mud, and gravel; 12 miles; private construction. Cost, $80,000 Mexican. Built in 1925 by Pingyao-Hwanghu-Shwangki Motor Road Co. Kept in good condition. Motor-bus service operated over route by this company, but private cars allowed upon payment of toll fees.

Wukang to Changhing via Huchow.—Crushed stone; 53 miles; provincial construction. This is the middle section of the Chekiang portion of the Hangchow-Nanking highway. Traffic opened between Wukang and Huchow on September 28, 1929. Roadbed from Huchow to Changhing completed, but traffic over this section must await the completion of a large bridge just outside Huchow. A through bus service from Hangchow to Huchow was scheduled to be started on October 1, 1929.

Hangchow to Haining (Hang-Ping line).—Gravel one-half way; 64 miles; private construction. Cost, $400,000 Mexican. Built in 1925 by the Hsieh Kee Co., and the Hangchow Haining Motor Road Co. Poorly maintained; open all

seasons. Route covers Hangchow to Haining, 51 miles; Tangsi to Chaossu, 13 miles; total distance, 64 miles. Private cars allowed upon payment of tolls. Motor-bus service operated by Hangchow Haining Motor Road Co.

Haining to Yuenhwa.—Gravel and clay; 24 miles; private construction. Cost, $100,000 Mexican. Built in 1925 by Haining-Yuenhwa Motor Road Co. Reported that Chekiang Highway Administration expects to purchase road when the section from Haining to Haiyen is completed. This road will then be named the Hangchow-Pinghu road and will ultimately be extended to Shanghai. Motor-bus service operating by Haining-Yuenhwa Motor Road Co.

Konzenchao to Sunlungmiao.—Gravel and clay; 8 miles; provincial construction. Cost, $120,000 Mexican. This route circles West Lake in Hangchow City connecting with several of the famous temples in that district. Under the control of the Chekiang Highway Administration, which operates regular bus service. Private cars allowed without payment of tolls.

Chenghsien to Sinchang (Cheng-Seng road).—Gravel and clay; 10 miles. Cost, $100,000 Mexican. Built in 1925; well maintained; flooded during

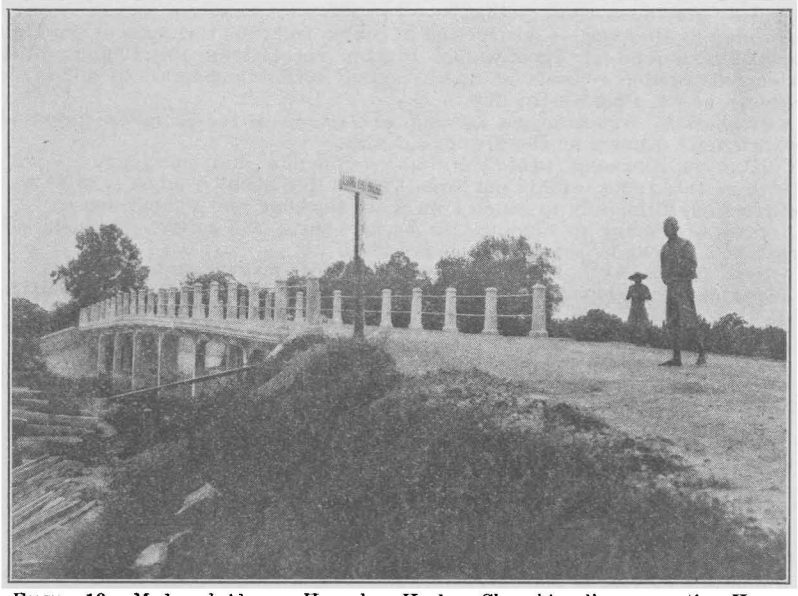

FIGURE 13.—Modern bridge on Hangchow-Huchow-Changhing line connecting Hangchow with national capital, Nanking

August and September. Built by Chekiang Highway Administration but leased to Chensin Motor Road Co., which operates motor-bus service. Private cars not allowed.

Chenghsien to Sanshihtou.—Gravel and clay; private construction. Cost, $60,000 Mexican. Built in 1927; well maintained; controlled by Chensan Motor Road Co., which operates a bus service. Private cars not allowed.

Chenghsien to Changloshih.—Gravel and clay; 13.5 miles; private construction. Cost, $220,000 Mexican. Built in 1925 by Chenchang Motor Road Co., which operates a bus service. No private cars allowed.

Wenchow city district.—Dirt; 7 miles; provincial construction.

Changshan to Yushan, Kiangsi (Chang-Yu line).—Clay; 26.5 miles; private construction. Cost, $80,000 Mexican. Built in 1928; closed April and May during heavy rainfall for a few days at a time; well maintained; controlled by Changshan-Yushan Motor Road Co., which operates passenger and freight service. No private cars allowed.

Ningpo to Fenghwa via Kiangkow (Jin-Feng line).—Macadam and rubble paved; 18 miles; provincial construction. Cost, $600,000 Mexican.

Kiangkow to Chikow.—Macadam and rubble paved; 7 miles; provincial construction. The section from Ningpo to Fenghwa, known as the Jin-Feng

line, is a portion of the highway that is ultimately to connect Ningpo with Wenchow and thence to the Fukien border. Ningpo-Fenghwa portion and the short spur from Kiangkow to Chikow completed in May, 1929. Provincially controlled motor-bus service operating over this route. No private cars allowed. Road from Chikow westward is under construction ultimately to connect from Sinchang.

Tientai to Hwangyen (Tien-Ling-Hwang highway).—Dirt; 32 miles; provincial construction. Completed section of the Hangchow-Wenchow highway. No bus service operating at present.

ROADS UNDER CONSTRUCTION

Linan to Changhwa.—Dirt; 47 miles; provincial construction. (A portion of the Hang-Chang line.)

Chowsiaoho (Hangchow) to Liangchu.—Dirt; 7 miles; provincial construction.

Chaohsing to Kuyungmeng.—Dirt; 2 miles; provincial construction.

Wuhing to Anhwei border (Chekiang-Anhwei accessory highway).—Dirt; 30 miles; provincial construction.

Haining to Minhang.—Construction in course from the terminus of the Hangchow-Haining road at Yuenhwa, to Pinghu, via Haiyen and Chapu. Route under construction consists of approximately 85.8 kilometers (60 miles) and is known as the Ping-Ka-Hu line.

Hwangyen to Wenchow via Lotsing (Yotsing).—Dirt; 72 miles; provincial construction. Known as the Hwang-Lo line.

Chikow to Sinchang (Jin-Feng line).—Concrete and macadam. A short stretch of this route leading out from Chikow for about 5 miles is now under construction, ultimately to connect up with Sinchang and Chenghsien.

Ningpo (Jinhsien) to Shanpei via Tzeki.—Dirt; 28.5 miles; provincial construction. Known as the Jin-Tseun-Tze road.

Ningpo (Jinhsien) to Chinhai.—Dirt; 10 miles; provincial construction.

Kiangshan to Kwangfeng, Kiangsi.—Length, 30 miles; provincial construction.

SURVEYS UNDER WAY

Yungkiachang to Lisui.—Dirt; 90 miles; provincial construction. (Survey reported to have been temporarily supended.)

Chikow to Chating.—Dirt; 8 miles; provincial construction. (A short section of the Kyunghsien-Fenghwa highway, the survey of which is uncompleted.)

Chuki to Lanchi.—Dirt; 80 miles; provincial construction.

PROPOSED HIGHWAY ROUTES

[Of total proposed mileage approximately 385 miles have been constructed]

Hangchow to Ningpo via Siaoshan, Shaoshing, Shangyu, Yuyao, and Tzeki.—Dirt; 123 miles; provincial construction. (Siaoshan-Shaohing-Pokwan section completed.)

Hangchow to Ershchpatu via Fuyang, Sinchang, Fengshua, Shunan, Suianhsien, Kaihwahsien, Changsan, Kaingshan.—Dirt; 268 miles; cost, $2,057,400 Mexican.

Hangchow to Yulinkwan via Yuhang, Linan, Yutsien, and Changhwa.—Dirt; 69 miles; provincial and private construction. (Hangchow-Yuhang-Linan section completed.)

Hangchow to Chapu via Haining and Haiyen.—Dirt; 79 miles; provincial construction. (Hangchow-Haining section completed.)

Chapu to Kiapeh via Pinghu, Kashing, Nanzin, Wuhing, and Changhing.—Dirt; 126 miles.

Ningpo to Chaoping via Fenghwa, Sinchang, Chenghsien, Tungyang, Kinhwa, Lanchi, Chuchow, and Changshan.—Dirt; 175 miles. (Ningpo-Fenghwa section and Sinchang-Chenghsien section completed.)

Yungkiachang to Lungchien via Tsingtien, Chuchow, and Yunhwo.—Dirt; 75 miles.

Ningpo to Futing, Fukien, via Fenghwa, Ninghai, Taichow, Hwangyen, Wenling, Yotsing, Yungkiachang, Juian, and Pingyang.—Dirt; 300 miles. Cost, $2,421,000 Mexican.

Chaongo to Chenghsien.—Dirt; 37 miles. (Also referred to as Tsaongo-Chenghsien and called the Shao-Tsao-Cheng road.)

Shangyu to Ningpo.—Dirt; 31 miles.

Ningpo to Chinhai.—Dirt; 13 miles.
Chinhai to Chuesan.—Dirt; 22 miles.
Tinghai to Sunchiamen.—Dirt; 20 miles.
Lanchi to Showchang.—Dirt; 18 miles.
Yenchow (Kyienteh) to Anhwei border via Showchang and Kaihwansien.—Dirt; 158 miles.
Pukiang to Weiping via Yenchow (Kyienteh) and Shunan.—Dirt; 90 miles; provincial construction.
Yenchow (Kyienteh) to Yutsien via Fengshua.—Dirt; 82 miles; provincial construction.
Changhwa to Shunan.—Dirt; 72 miles; provincial construction.
Tunglu to Fengshua.—Dirt; 23 miles; provincial construction.
Sincheng to Linan.—Dirt; 25 miles; provincial construction.
Fuyang to Yuhang.—Dirt; 17 miles; provincial construction.
Pingyao to Songchih.—Dirt; 14 miles; provincial construction.

FIGURE 14.—Motor-bus station, Hangchow-Huchow-Changhing line

Hangchow to Wuhing via Tehtsing.—Dirt; 43 miles; provincial construction.
Tangki to Linping.—Dirt; 8 miles; provincial construction.
Wuhing to Haining via Shunteh.—Dirt; 45 miles; provincial construction.
Nanzin to Yuanhwa via Tunghiang and Shehsuk.—Dirt; 40 miles; provincial construction.
Haiyen to Wangkiangchin via Kashing.—Dirt; 36 miles; provincial construction.
Pinghu to Seetang via Kiasaey.—Dirt; 22 miles; provincial construction.
Changhing to Siaofeng via Szean.—Dirt; 58 miles; provincial construction.
Kashing to Szean via Tungghiang, Shungteh, and Tehtsing.—Dirt; 99 miles; provincial construction.

RECENTLY PROJECTED ROADS

Tsaongo to Chenghsien (Shao-Tsao-Cheng road).—Length, 41 miles; provincial construction.
Fenghwa to Ninghai (Jin-Feng-Hai road).—Length, 43 miles; provincial construction.
Changhwa to Anhwei border (Hang-Chang road).—Length, 12.5 miles; provincial construction.

Hangchow to Lanchi (Hang-Tse-Lan road).—Length, 85 miles; provincial construction.

Lanchi to Changshan (Lan-Chang road).—Length, 89.5 miles; provincial construction.

Yungka to Lisay (Yung-Li road).—Length, 96 miles; provincial construction.

Chuchow to Kwangfeng, Kiangsi, via Changshan, Chaoping, and Kiangshan (Tzu-Kwang road).—Length, 42 miles; provincial construction. The section from Kiangshan to Kwangfeng, Kiangsi Province, is already under construction.

Pinghu to Kashing and Wooshing or Wuhing (Ping-Ka-Wu road).—Length, 43.5 miles; provincial construction.

The eight proposed routes listed above are understood to be the next group of roads on the projected highway schedule to be undertaken for construction.

DESIGNATION OF ROADS

Highways in Chekiang Province, as elsewhere in China, are usually known by a contraction rather than the full name. To identify them is sometimes quite difficult, hence the legend is given below:

IN OPERATION

Hang-Yu line	Hangchow-Yuhang.
Hang-Chang line	Hangchow-Changhwa, via Yukang, Linan, and Yutsien.
Yu-Wu line	Yuhang-Mokanshan (Sanchiaopu) via Sunchien and Wukang.
Ping-Hwang line	Pingyao to Hwanghu.
Hang-Fu line	Hangchow-Fuyang.
Kung-San line	Konzenchao-Sunlungmiao—around West Lake in Hangchow City.
Hang-Shao line	Hangchow, Siaoshan, and Shaohing.
Shao-Siao line	Siaoshan-Shaohing-Pokwan via Kokiao.
Hang-Ping line	Hangchow-Pingyao.
Jin-Feng line	Ningpo-Fenghwa.
Shao-Tsao line	Shaohing to Tsaongochen.
Cheng-Seng line	Chenghsien to Sinchang.
Cheng-Chang line	Chenghsien to Changloshih.
Hang-Chang line	Hangchow to Kiangsu border.
Jin-Feng line	Ningpo (Jinhsien) to Fenghwa and Chikow.
Hang-Chang line	Hangchow to Changhwa, via Yuhang, Linan and Yutsien.
Hang-Ping line	Hangchow to Haining and Pinghu.
Chang-Yu line	Changshan to Yushan, Kiangsi.
Tien-Ling-Hwang	Tientai to Hwangyen.

UNDER CONSTRUCTION

Jin-Tseun-Tze line	Ningpo (Jinhsien) to Shanpei.
Hwang-Lo line	Hwangyen to Lotsing (Yotsing).
Ping-Ka-Hu road	Pinghu, Kashing, Wuhing. (Section from Chapu to Pinghu in construction.)

PROJECTED

Shao-Tsao-Cheng line	Tsaongochen to Chenghsien.
Jin-Fong-Hai line	Fenghwa to Ninghai.
Hang-Chang line	Changwa to Anhwei border.
Hang-Tse-Lan line	Hangchow to Lanchi.
Lan-Chang line	Lanchi to Changshan.
Yung-Li line	Yungka to Lisay.
Tzu-Kwang line	Chuchow (Tzuchow) to Kwangfeng, Kiangsi.

MOTOR CARS

The number of motor cars in Chekiang Province is shown in the following table:

MOTOR CARS IN CHEKIANG PROVINCE

Class	City of Hangchow	Outside district
Passenger cars	107	16
Motor busses	101	98
Motor trucks	16	20
Motor cycles	30	
Tractors		2
Total	254	136

FUKIEN

Fukien Province, corresponding in latitude to that of the southern half of Lower California, is about the size of the State of Mississippi. Its 46,000 square miles contain a population of 14,000,000—over 300 per square mile—which is densest along the coast and in the Min River Valley. Although a seaboard Province, Fukien is somewhat isolated from other sections of China by mountain ranges. Aside from the Amoy-Changchow Railway, which is but 17½ miles in length, the Province is entirely dependent upon waterways for its transportation. Foochow, its capital, has more than 700,000 inhabitants, while Amoy has about 100,000. Amoy, Foochow, and Santuao are treaty ports.

Highway construction was commenced in 1919 by the building of a short section of motor road from Changchow to Nantsing. Since 1921 approximately 437 miles of roads have been built in southern Fukien, 50 miles of which were completed in December, 1928, and 69 miles during 1929. Travel on these roads, however, is still interrupted in some places by lack of bridges. A total of 154 miles is reported to be now under construction, with 100 miles additional projected.

The road construction in southern Fukien is principally of dirt type, graded and ditched, with no surfacing other than where sand has been mixed with ordinary dirt. Materials from demolished houses have in some instances been used for surfacing purposes. Stone blocks or slabs are used on the principal streets in Tungan, Changchow, and Chuanchow. In the latter city some concrete has been used for surfacing the principal city streets. Portions of the Pukiang-Changchow road are surfaced with crushed rock, while that section of the road running through Shihma has a concrete surface.

Forced hand labor has been utilized by the local authorities. At Tungan and Chuanchow private companies have built sections of the roads.

Recent developments have included the tearing down of the city wall and the widening of streets in Amoy. About 3 miles of city streets have been completed, with construction work now in progress on an additional 5 miles stretching out into the suburban district.

Very few roads have existed in the northern district, as the hinterland is very mountainous. At Foochow, the provincial capital, not

more than 10 miles of its total 60 miles of narrow thoroughfares are passable for motor vehicles. Outside the city about 76 miles of roads have been built. However, since early in 1928 Foochow has been more active with respect to road building. A section of the city wall has been torn down and a 70-foot road 2 miles in length com-

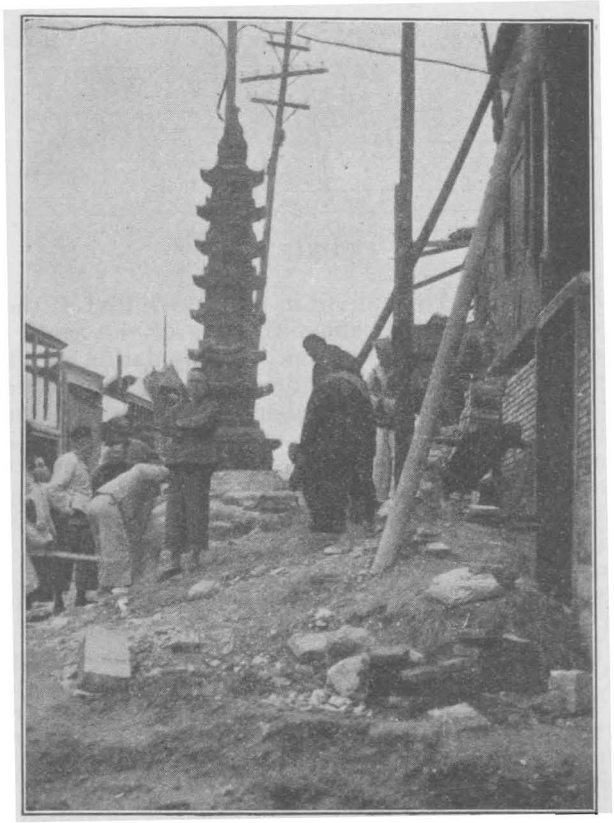

FIGURE 15.—Moving a temple to make way for motor highway in Foochow

menced. Provincial authorities have under way a program for the construction of 485 miles of highways in this district.

The reconstruction department of Fukien Province has proposed the flotation of a loan of $40,000,000 Mexican for the construction of provincial highways and has promulgated regulations governing construction. The essential points of these regulations are as follows: (*a*) All completed and uncompleted highways shall be managed by the provincial government; (*b*) in the event a road is built by private individuals or corporation, a limited period of monopoly is granted, at the expiration of which the road is to be turned back to the provincial government; (*c*) 30 per cent of the net profits from the highways to be used for further extension of roads, and the remaining portion is to go toward repaying the principal and interest on the highway-construction bonds.

In November, 1929, Hsu Hsien-sze, director of the Fukien provincial department of reconstruction recommended to the provincial government committee the floating of a $2,000,000 silver loan for road construction.

ROADS CONSTRUCTED IN FOOCHOW AREA

Foochow, city area.—West Gate to Upper Bridge, 2 miles; West Gate to Yangtoukou, 1 mile; Yangtoukou to West Lake Park, 1 mile; Yangtoukou to Makoa, ½ mile; Fuhsinchieh, 2 miles; Fuhsinchieh to Long Bridge, ½ mile; Foochow city southwestward, 2 miles; Small Bridge to Hsia Fu, 1 mile. Provincial construction. City roads eventually to be surfaced with thin layer of Tientsin cement, but where this has formerly been used, was found serviceable for one year or less.

Sienyu to Fengting.—Length, 22 miles; provincial construction.

Yungchun to Tungkuan.—Length, 10 miles; provincial construction.

Tungkuan to Mayang.—Length, 12 miles; provincial construction.

Fenghu to Tapu.—Length, 5 miles; provincial construction.

Tapu to Yungchun.—Length, 10 miles; provincial construction. (Highway from Tapu to Yungchun continues on to Chuanchow.)

Hinghwa, city, district.—Length, 2 miles; provincial construction.

Foochow to Mintsing.—Length, 15 miles; provincial construction. (Section of Foochow-Yenping Highway.)

Existing motor roads are about 25 feet wide in country sections. All rural roads are eventually to be a uniform width of 28 feet, made of crushed stone laid on earth roadbed.

ROADS CONSTRUCTED IN AMOY AREA, SOUTH FUKIEN

Hinghwa-Yungchun sections.—Hinghwa to Kaibe, 13 miles; Kaibe to Sienyu, 7 miles; Sienyu to Khoekhau, 7 miles; Kaibe to Fengting, 10 miles. The road from Seinyu to Khoekhau is to be extended to Yungchun, a distance of about 27 miles through very mountainous country. Twelve individuals or small companies operate transportation services, with 110 cars, on these four roads.

Yungchun to Tapu.—Length, 6 miles.

Tapu to Pio.—Length, 5 miles.

CHUANCHOW SECTION

Fengting to Chuhanli.—Length, 7 miles.

Fengting to Tangsa.—Length, 5 miles. (Roads completed, but not under operation. Planned to continue road from Tangsa via Ngchio to Nanking. Chuhanli does not appear on any available map, so its location is approximate.)

Fengting to Huian.—Length, 17 miles; not open to traffic owing to dispute over control.

Hweian to Thoche.—Length, 5 miles.

Hweian to Loyang.—Length, 7 miles.

Hengshan to Ahsao.—Length, 5 miles. (This and two preceding roads operated by Hui Lok Hong Motor Road Co. with 4 cars.)

Loyang to Chuanchow.—Length, 7 miles. (Operated by Choan Lok Motor Road Co. with 5 cars.)

Chuanchow to Chautaw.—Length, 6 miles. (Operated by Choan Sui Motor Road Co. with 5 cars.)

Chuanchow to Hunglai.—Length, 15 miles. (Operated by Choan Lok Motor Road Co. with 12 cars.)

Hunglai to Yungchun.—Length, 28 miles. (Operated by Eng Hong Motor Road Co. with 18 cars.)

Chuanchow to Anki.—Length, 7 miles. Of the 30-mile stretch from Tungan to Anki, 16 miles had been completed by the end of 1929.

Chuanchow to Tsingyangshih.—Length, 6 miles.

Tsingyangshih to Anhai.—Length, 12 miles.

Tsingyangshih to Shihshih.—Length, 5 miles. (Above three roads operated by Choan An Motor Truck Co. with 40 cars.)

Shihshih to Huithau.—Length, 15 miles. (Operated by Choan Wei Auto Road Co. with 8 cars.)

Anhai to Sioiania.—Length, 8 miles. (Not open to traffic.)

FIGURE 16.—Demolition of building fronts to make way for modern motor road in Amoy

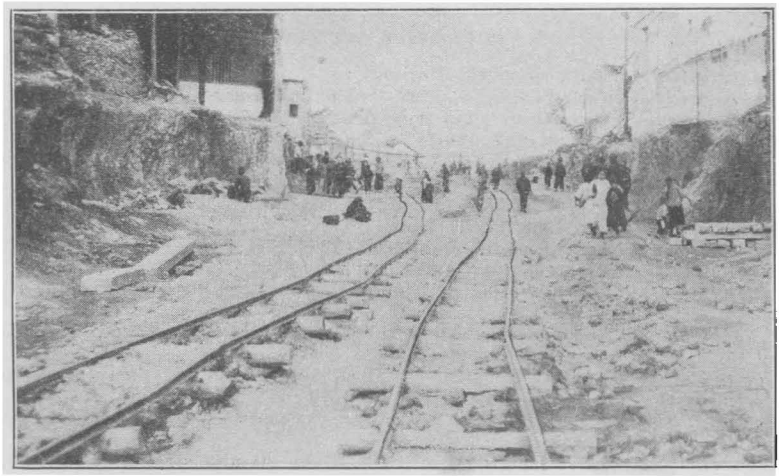

FIGURE 17.—Road construction in Amoy. This cut of about 10 feet was accomplished in two months' time

TUNGAN SECTION

Sioiania to Behang.—Length, 8 miles.

Behang to Tungan.—Length, 7 miles. (Operated by Teng Ma Motor Road Co. with 3 cars; will also operate Sioiania road.)

Behang to Linnutien.—Length, 5 miles. (Operated by Lan Kang Motor Road Co. with 2 cars; passenger ferry service to Gothang.)

Tungan to Tangthaupaw.—Length, 5 miles. (Operated by Teng Khe Motor Road Co. with 7 cars. Connects with passenger launches from Amoy.)

Tungan to Liaohe.—Length 9 miles; to connect with Limtun. Operated by Tonghin People's Motor Road Co. with 3 cars.

Tungan to Chimbe.—Length 13 miles. Operated by Tongbe Motor Road Co. with 7 cars. Passenger ferry service to Kokia.

Tungan to Kuankow.—Length 20 miles; 8 miles completed out of Tungan (operated by Tungkuan Motor Road Co. with 1 car); part of trunk line of roads between Changchow and Hinghwa.

Kiowei to Kwangtangkio.—Length 10 miles, all completed.

AMOY, ISLAND SECTION

Amoy to Kokia and Gothang.—Length 15 miles; branch roads, 7 miles.

Chanchuoa University.—Length 3 miles. Roads operated by Hosan Motor Car Co. with 15 cars.

Amoy, city roads.—Macadam and concrete surfaces, 8 miles; 4 miles additional under construction.

CHANGCHOW SECTION

Kangtangkio to Changchow.—Length 10 miles. Part of the trunk-line roads to Hinghwa.

Changchow to Pukiang.—Crushed rock and cement on Shima section; 20 miles. Ferry service to Amoy.

Changchow to Punam.—Length 10 miles.

Changchow to Lamcheng.—Length 10 miles.

Lamcheng to Beahsoa.—Length 8 miles.

Changchow to Kiuliongnia, with branch to Taikhe (Thiakhihi).—Length 10 miles. (The above six roads are operated by Tze Hsing Long Distance Motor Bus Co. with 55 cars.)

Lamcheng to Punam.—Length 7 miles.

Punam to Changtai.—Length 6 miles.

(These two roads are operated by Tio Thos Road Co. with 2 cars.)

Changtai to Giamkhochi.—Length 10 miles.

Sektiong to Lungyen.—Length 20 miles (operated by Lengna Road Co. with 3 cars). To be connected with the road from Changchow at Chiuthau.

Changpu to Kuitin.—Length 7 miles. Completed but not in operation.

Tangsao Island roads.—Length 20 miles. This island is not shown on road map, but is situated about 22 miles southwest of Changpu.

Lamcheng to Siokhe.—Length 20 miles; 13 miles completed.

ROADS UNDER CONSTRUCTION IN NORTH FUKIEN

Hsiatu to Heitsu.—Dirt; 8 miles; provincial construction.

Foochow to Fuching.—Dirt; 105 miles; provincial construction. Main highway intended to connect Foochow and Amoy.

Heitsu to Sienyu via Hsiangkan, Fuching, and Futien.—Dirt; 80 miles; provincial construction.

Foochow to Yenping via Manping and Mintsing.—Dirt; 133 miles; provincial construction.

Foochow to Putien.—Dirt; 15 miles; provincial construction.

Yenping to Kwangtseh.—Dirt; 135 miles; provincial construction. Some construction work has actually been done on these roads, but possibilities of early completion said to be far from bright, although some progress may be made with the road to Fuching, projected to continue to Sienyu (work on southern

section in Amoy district to connect with northern section is now well under way) and the road from Foochow to Pagoda Anchorage. In December, 1928, surveyors were at work marking out bed of road to Fuching.

ROADS UNDER CONSTRUCTION IN SOUTH FUKIEN

CHUANCHOW SECTION

Chuanchow to Anki.—Length 50 miles; 7 miles completed from Chuanchow.

TUNGAN SECTION

Tungan to Anki.—Length 30 miles; 16 miles completed during 1929.
Tungan to Kuankow.—Length 13 miles; completed for 8 miles out of Tungan; operated by Tungkuan Motor Road Co. with 1 car. Part of trunk line of roads between Changchow and Hinghwa.

CHANGCHOW SECTION

Lamcheng to Siokhe.—Length 20 miles; 13 miles completed.
Giamkhoehi to Limtun.—Length 10 miles; planned to continue to Lianhoe and connect up with road from Tungan.

FIGURE 18.—Rock crusher. This plant is equipped with American machinery and supplies surfacing for Foochow city streets

Beahsoa to Chuithau.—Length 22 miles.
Kiuliongnia to Changpu.—Length 27 miles; almost completed and to be opened to traffic soon.
Kiuliongnia to Haiteng (Bekhaukio).—Length 15 miles.
Kuankow to Kiowei.—10 miles; 8 miles completed during 1929.

PROJECTED ROADS

Limtun to Liaohe.—Length 5 miles; provincial construction. Connecting Changchow and Tungan via Changtai; only a few miles long, but passing over mountainous country.
Sektiong to Chuithau.—Length 15 miles; provincial construction. On the Lungyen-Changchow highway.
Changpu to Yunsiao.—Length 20 miles; provincial construction; 3 miles completed during 1929.

Siokhe to Pingho.—Length 20 miles; provincial construction.
Siokhe to Paonani.—Length 5 miles; provincial construction.
Siokhe to Lamsin.—Length 10 miles; provincial construction.
Chaoan to Yunsiao.—Length 30 miles; provincial construction.

MOTOR VEHICLES

The number of motor vehicles in Fukien Province is shown in the following table:

MOTOR VEHICLES IN FUKIEN PROVINCE

Class	Amoy district		Foochow district	
	City	Outside city	City	Outside city
Passenger cars	40	30	83	----------
Motor busses	11	194	15	250
Motor trucks	7	14	25	----------
Motor cycles	2	8	----------	----------
Tractors	----------	1	----------	----------
Total	60	247	123	250

HAINAN ISLAND

The island of Hainan, which lies to the southeast of Kwangtung Province, has an area of 13,000 square miles. Hoihow is the seaport for the city of Kiungchow, which is 3½ miles inland. The port of Hoihow, although in a favorable geographical position, is unsuited for the development of extensive commercial activities by reason of the fact that vessels are compelled to anchor some 2 miles from the entrance of the creek upon which it is situated. The population of Kiungchow is about 50,000 and that of Hoihow is in the neighborhood of 30,000. A large portion of the island is unexplored, but the small amount of exploration which has been conducted by foreigners leads to the conviction that Hainan is rich in minerals, such as tin, silver, gold, copper, and lead, while the hilly sections of the island are heavily forested. Raw products, such as rubber, coffee, minerals, and hardwoods, are brought to the city of Kiungchow by automobiles and by water transportation.

Considering its backward state of development, the island has a surprising road mileage. A report of the Hainan public roads bureau issued in February, 1929, indicates that 891 miles of roads have already been constructed, 229 miles are in course of construction, and a further 775 miles are projected. A road projected to circle the entire island is already partially constructed. A 4-year road-building program calls for the completion of 650 miles at an expenditure of $1,000,000 Mexican. This sum is expected to be defrayed by license fees and a 20 per cent surtax on motor cars. Motor cars are now taxed as follows (rates in Mexican): Commercial cars, $20; private cars, $10; motor cycles, $1.

ROADS CONSTRUCTED

	Miles
Kiungchow to Hoihow	2
Hoihow to Fengyin	12
Mencheong to Fengyin	20
Mencheong to Limko	15
Limko to Wenlan	13
Limko to Chutu	25
Kiungchow to Yunshing	8
Yunshing to Tungshan and Tingan	17
Kiungchow to Taochung, Chetze, and Mengling	53
Kaicheh to Chetzekao	34
Seku to Tingan	4
Kiungtung to Lungquan	16
Seku to Lungdown	25
Lungdown to Lingmum	38
Tingan to Pinwen	16
Mengling to Ponlay, Zonshing, and Lungmen	46
Chanpu to Zonshing	9
Lingtung to Chanpu	3
Yeeton to Chuling	4
Paosze to Yeeton	3
Chapi to Sechong and Lungputze	6
Yedon to Niehkao	4
Ponlay to Chenkia	18
Neiho to Kaunnan	5
Chanchekon to Kaunnan	2
Funlow to Kaunnan	3
Taichong to Sammen	8
Mencheong to Taichong	7
Mencheong to Kaolung	4
Mencheong to Lungfa	16
Taochung to Jaodoon	9
Kiungchow to Taipu	23
Mencheong to Taitzepu	13
Mencheong to Fanwen	17
Mencheong to Tsinglan	6
Kiunchow to Lungkao	12
Paolu to Jaodoon	11
Futai to Paolu	14
Wenchu to Kungpu	15
Taynieh to Wenchu	15
Nanli to Dunchong	5
Tienchan to Mengling	7
Kiungchow to Nunyupu	10
Tungshan to Dunchong	12
Daywen to Ponlay	15
Tungchow to Wenchu	10
Lunglow to Wenchu	6
Lunglow to Siaoaukiang	6
Kaolung to Lupanchen	1
Lupanchen to Chungsu	4
Chimi to Sakiang	5
Chimi to Paolu	6
Maling to Chimi	7
Mencheong to Chungsu	10
Singchu to Taitzepu	8
Tseteh to Chungsu	5
Pehyee to Vanchong	5
Nodoa to Wushan	10
Lungmen to Lingkoa	7
Limko to Tuwen and Lungpu	4
Kiungtung to Tairo	10
Chungsu to Lunghoapu	3
Tanko to Liangshan	7
Tuanfu to Taynieh	4
Nanyangcheh to Tinchongling	8
Kiungtung to Kaicheh	5
Kaicheh to Lingko	10
Mengchow to Tuanfu	3
Kiungchow to Shihshan	10
Shupa to Taitzepu and Pofong	8
Juting to Ponlay	10
Mengchow Wharf to Tungchow	2
Yeeton to Kiungtung	8
Lohwei to Kaicheh	3
Chungyu to Yangkiang	7
Yatzechu to Kwanlung	4
Sinying to Limko	11
Lungquan to Shinglung	47
Lingshui to Lingmum	7
Lingshui to Singchenkong	7
Yai to Limko	3

ROADS UNDER CONSTRUCTION

	Miles
Taan to Nodoa	30
Shinglung to Fengchai	23
Lingshui to Fengchai	4
Yai to Dunchiao	60
Fungchiapu to Pulusheh	13
Yeeton to Nanchang	10
Yeliang to Yuntungting	7
Pulee to Chiatu	33
Tanli to Dunchang	15
Yunshing to Anching	6
Tuchiao to Maychowpu	10
Chimi to Chingshan	8
Liangsam to Singchingpu	10

ROADS PROJECTED

	Miles
Shinglung to Dunchiao	30
Yai to Kanem	56
Kanem to Pulee	50
Changkiang to Taan	73
Lingmum to Yai	200
Lohan to Kanem	83
Poshaw to Haituan	67
Nanfung to Lingshui	173
Poting to Lingshui	43

MOTOR VEHICLES

Motor vehicles estimated to be in operation on the island on January 1, 1930, totaled 628 (625 motor busses and 3 tractors).

HONAN

Honan, about the size of the State of Washington and corresponding in latitude with South Carolina, is situated in China's "Middle West," north of the Yangtze River. Its 68,000 square miles contain a population of 35,000,000, averaging 510 per square mile. The density of population is slightly greater in the north. Honan, a very fertile agricultural region, is important for its cotton production. The Peking Syndicate, a Sino-British combine, operates extensive coal-mining properties in the Province when conditions permit. Kaifeng, the capital, has a population of over 100,000. Chengchow is also a city of importance in trade and industry.

Road building was begun in the Province in 1921, when the International Famine Relief Commission built 718 miles in 29 different counties at a cost of $280,500 Mexican. The American Red Cross was responsible for the construction of a 39-mile stretch of macadam road at a cost of $100,000 Mexican. In 1927 an additional road-building project was commenced at Kaifeng, on a road running a distance of 110 miles to Kweiteh, at a cost of $33,000 Mexican. Military and provincial authorities have been responsible for provincial road-building programs within recent years. There is now within the Province a network of 2,100 miles of highways, with an additional 1,145 miles projected. Civil war, however, which has once again broken out in this Province will doubtless retard any immediate construction.

ROADS CONSTRUCTED

Chengchow to Kikungshan via Sincheng, Changko, Hsuchow, Linying, Yencheng, Siping, Suiping, Chumatien, Mingkiang, and Sinyang.—Length, 200 miles; provincial and military construction.

Chengchow to Tzechow, Hopeh, via Kwanghokow, Hwokia, Siasiang, Weihwei, Chihsien, Tangyin, and Chanyte.—Length, 150 miles; provincial construction.

Chengchow to Tungkwan, Shensi, via Szeshui, Kunghsien, Siaoyi, Yenshih, Honanfu (Loyang), Sinan, Mienchih, Kwanyintang, Shanchow, Lingpao, and Wensiang.—Length, 200 miles; constructed by International Famine Relief Commission and military authorities.

Chengchow to Tangshan, Kiangsu, via Chungmow, Kaifeng, Lanfeng, Chutsi, Kweiteh, and Mamutsi.—Length, 180 miles. Begun by International Famine Relief Commission and completed by provincial authorities. Cost, $33,000 Mexican.

Sinsiang to Kaichow, Shantung, via Weihwei and Taokow.—Length, 65 miles; provincial construction.

Sinsiang to Tsiyuan via Hwokia, Siuwu, Tsiaotso, and Tsinghwachen.—Length 65 miles. (Section from Tsinghwachen to Tsiyuan, 39 miles, macadamized by American Red Cross at $100,000 Mexican.

Wuan to Hantan, Hopeh.—Length, 18 miles; constructed by International Famine Relief Commission. Cost $67,000 Mexican.

Hsuchow to Honanfu (Loyang) via Yuchow and Tengfeng.—Length 100 miles; International Famine Relief Commission and provincial construction.

Hsuchow to Laohokow, Hupeh, via Yinkaichen, Hiangcheng, Yehsien, Yuhchow, Nanyang, and Tengchow.—Dirt; 150 miles; International Famine Relief Commission and provincial construction.

Chumatien to Nanyang via Shekichen.—Dirt; 90 miles; provincial construction.

Nanyang to Sinyang via Tanghsien and Tungpeh.—Dirt; 125 miles; provincial construction.
Kweiteh to Pochow, Anhwei.—Dirt; 40 miles; provincial construction.
Checheng to Pochow, Anhwei.—Dirt; 35 miles; provincial construction.
Shenkiu to Taiho, Anhwei.—Dirt; 40 miles; provincial construction.
Yencheng to Chowkiakow.—Dirt; 50 miles; provincial construction.
Sinyang to Kwangchow via Loshan and Kwangshan.—Dirt; 42 miles.
Sinan to Shihazechen.—Length 10 miles.
Lushan to Paofeng.—Length 14 miles.
Nanchao to neighboring villages.—Length 6 miles.
Jungyang to Mishien.—Length 40 miles.
Linjuchen (Juchow) to neighboring villages.—Length 12 miles.
Sunghsien to neighboring villages.—Length 12 miles.
Kiochow (Junanfow) to Suiping.—Length 23 miles.
Suiping to Shangshui via Shangtsai.—Length 62 miles.
Loshan to Sihsien.—Length 21 miles.
Kiochow (Junanfow) to Chengyang.—Dirt; 38 miles.
Yungtse to Peking-Hankow Railway.—Dirt; 2 miles.
Kunghsien to neighboring villages.—Length 8 miles.
Luyi to neighboring villages.—Dirt; 12 miles.
Sihwa to Fukow and beyond.—Length 53 miles.
Kihsien to Taikang.—Dirt; 38 miles.
Suichow to Lapatsi on Lung-Hai Railway.—Dirt; 20 miles.
Shenkiu to Wuchiangtsi.—Dirt; 25 miles.
Yucheng to Yungcheng via Siayi.—Dirt; 63 miles.
(Above 19 roads constructed by International Famine Relief Commission.)
Shangshui to Taiho, Anhwei, via Shenkiu and Tungyangtsi.—Length 100 miles; provincial construction.
Kaifeng to Pochow, Anhwei, via Chenliu, Kihsien and Suichow.—Dirt; 100 miles.

PROJECTED ROADS

Tanghsien to Chumatien via Miyang.—Dirt; 60 miles; provincial construction.
Sinyang to Sintsai via Loshan and Sihsien.—Dirt; 125 miles; partially constructed.
Loshan to Kushih via Kwangchow.—Dirt; 75 miles; partially constructed.
Sichwan to Tengchow.—Dirt; 35 miles; provincial construction.
Yuchow to Kiahsien.—Dirt; 20 miles; provincial construction.
Hsuchow to Taikang via Fukow.—Dirt; 70 miles; provincial construction
Fukow to Chowkiakow.—Dirt; 75 miles; provincial construction.
Chowkiakow to Lanfeng via Chenchow, Taikang, and Kihsien.—Length, 45 miles; partially constructed.
Kweiteh to Yungcheng.—Dirt; 45 miles; provincial construction.
Suiping to Chowkiakow via Shangtsai and Shangshui.—Dirt; 90 miles; provincial construction (partially constructed.)
Chumatien to Anhwei border via Juning, Siangcheng and Shenkiu.—Dirt; 125 miles; provincial construction.
Linhsien to Tsuiyangchen, on the Hopeh border, via Suiyehchen, Changte, and Neihwang.—Length, 125 miles; provincial construction.
Tsinghwachen to Honanfu via Hwaiking and Menghsien.—Dirt; 45 miles; provincial construction.
Honanfu to Sunghsien via Yiyang.—Dirt; 45 miles; provincial construction.
Mienchih to Lushih via Yungning.—Dirt; 60 miles; provincial construction.
Nanyang to Juchow via Nanchao, Lushan, and Kiahsien.—Dirt; 75 miles; provincial construction.
Kingtzekwan to Nanyang via Sichwan, Neisiang, Shihfosze and Chenping.—Dirt; 75 miles; provincial construction.

MOTOR VEHICLES

Approximately 275 motor busses are operating in Honan.

HONG KONG

Hong Kong (Chinese name "Hsiang Kang") is a British Crown colony comprising the island of Hong Kong and Kowloon and the

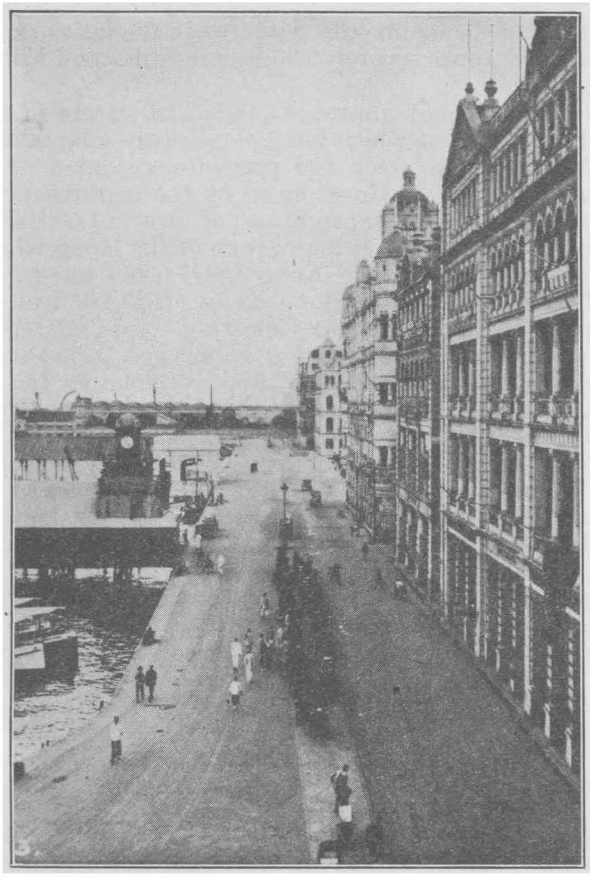

FIGURE 19.—The Praya, Hong Kong

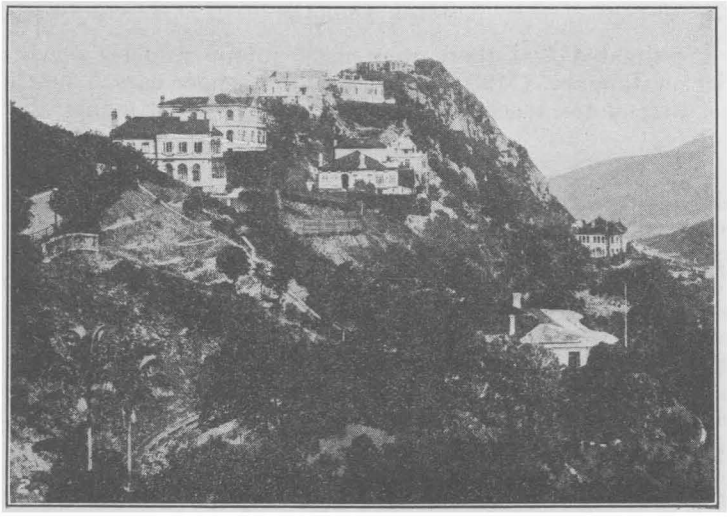

FIGURE 20.—The Peak, Hong Kong

New Territory on the mainland. Situated in the latitude of Cuba, it covers an area of approximately 390 square miles and has a population of 681,000.

There are 250 miles of improved roads and streets in the city of Victoria, Hong Kong, of which but 150 miles are adaptable to motor transportation owing to steep and precipitous grades. Large sums are spent annually by the Government on the maintenance of roads and streets. In 1923 an expenditure of over $1,500,000 (United States) was made, while the 1929 program of the Hong Kong government allotted $1,000,000 Hong Kong ($477,000 United States) for roads. Of this sum $460,000 Hong Kong ($219,420 United States) is to be spent on maintenance of existing roads, and the balance on new construction in both Hong Kong and Kowloon. A new coastal highway running from Kai Tack reclamation for a distance of 26 miles, joining up with the ordinary motor road at Shatin in the New Territory, is planned.

Motor roads in the Hong Kong area may really be termed modern highways, as they compare very favorably with many of the roads in America. They consist chiefly of (1) ordinary macadam, (2) tar-painted macadam, (3) asphalt-sand carpeting laid on macadam, (4) 2-inch asphalt laid on cement-concrete bed.

Highway construction is undertaken by the public works department, though in a few instances contracts have been let to local contractors on the basis of schedules published by the government some years ago. It is usual for contractors to bid a percentage of increase over the scheduled prices. Coolie labor is used both because of its cheapness and because of the mountainous and rocky nature of the land.

No fees or tolls are collected on roads in the Hong Kong territory. Six motor-bus companies and 3 taxicab companies are in operation in Hong Kong, and 3 additional bus lines serve Kowloon and the New Territories. Motor busses are restricted to those of "approved British manufacture."

MOTOR VEHICLES

It is estimated that there were 2,838 motor vehicles serving the district on January 1, 1930, as follows: Passenger cars, 1,696; motor busses, 162; motor trucks, 498; motor cycles, 460; tractors, 22.

HOPEH

Subsequent to the occupation of the Peking district by the Naking national forces, the Province of Chihli was formally renamed "Hopeh," and the name of the former capital, Peking, was changed to "Peiping." The Province, with an area of 116,000 square miles, is about the size of the State of Arizona, and lies in a latitude corresponding to that of Illinois. Its population of 27,809,125, averaging over 235 per square mile, is densest in the great alluvial plain in the southwestern portion of the Province. In Hopeh Province is the important treaty port of Tientsin, on the eastern seaboard, and the ancient capital of China—Peking, now Peiping. Many broad avenues are to be found in the former metropolitan area about Peiping, representing the remnant of Mongol days.

A motor road some 90 miles in length connecting Peiping with Tientsin has been open to traffic for a number of years but has been little used because of its state of disrepair and because of exorbitant toll fees. The roads of the entire Province total approximately 2,400 miles, constructed chiefly by local authorities, the former Peking Ministry of Communications, the American Red Cross, the International Famine Relief Commission, and private interests.

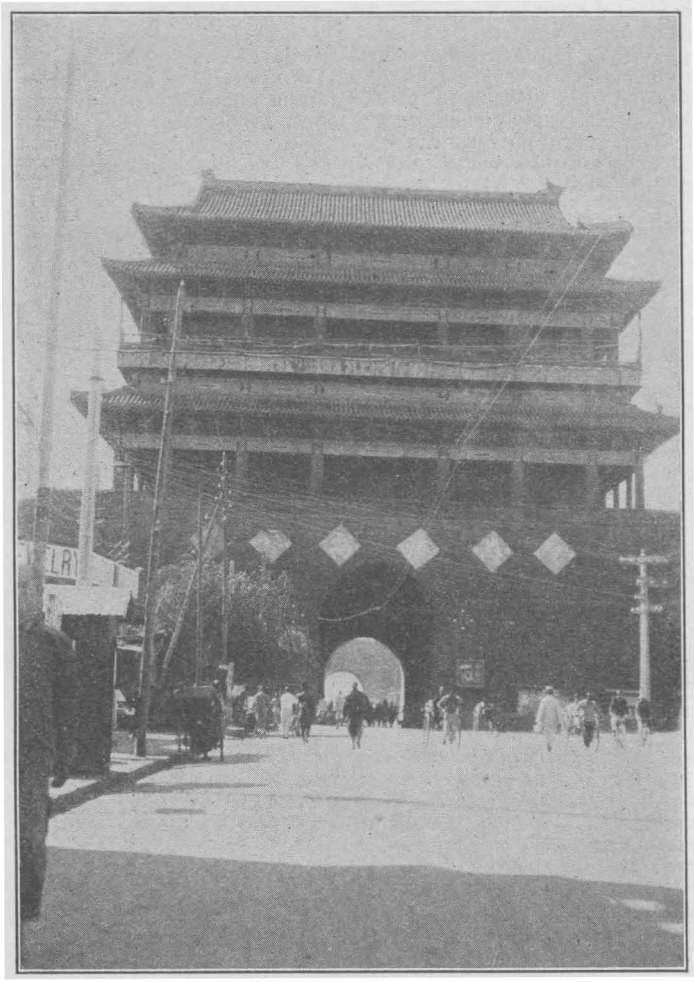

FIGURE 21.—A city gate and street in Peiping

Hopeh provincial authorities decided during January, 1930, to appropriate $80,000 Mexican for road improvement and development. Slowly but steadily streets in Peiping are being improved since the installation of the new mayor, Chang Yin Wu, who assumed office in the summer of 1929. Thick broken-stone foundations are being installed as the base for several main throughfares. Soldier labor and steam rollers are used for carrying out part of the work. The

Peiping municipality has purchased 400 tons of asphalt for paving extension in the city.

ROADS CONSTRUCTED

Peiping, city district (inside city).—Length, 40 miles; local construction.
Peiping, suburban districts:
Hsichihmen Gate to summer palace (Huanmingyuan).—Length, 8 miles; local construction.
Pingchihmen Gate to Hwangtsunchen via Patachu, Siangshan, Wanshousze, and Haitien.—Length, 28 miles: local construction.
Hsipiem Gate to race course.—Dirt; 3 miles; local construction.
Yungtingmen Gate to Nanyuan.—Dirt; 5 miles; local construction.
Antingmen Gate to Peiyuan.—Dirt; 3 miles; local construction.
Wangtu to Chingfengtien.—Dirt; 8 miles; constructed by Peking Ministry of Communications.
Peiping to Mentowkow via Hwangtsunchen and Sankiatien.—Dirt; 30 miles; constructed by Peking Ministry of Communications.

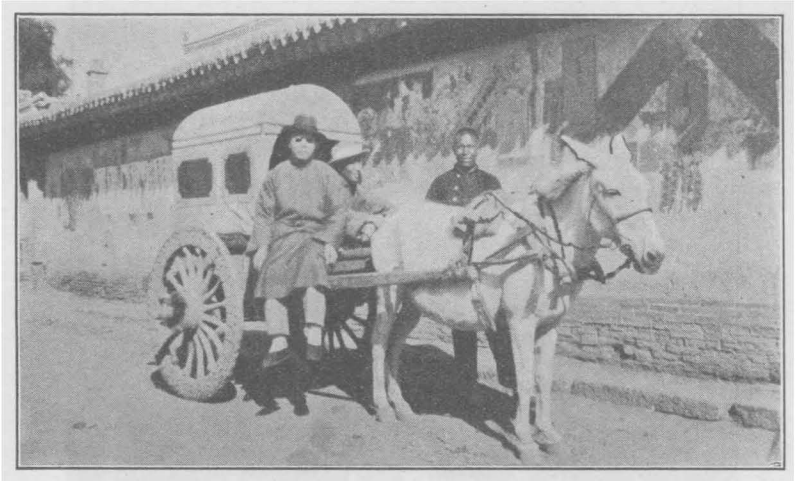

FIGURE 22.—Peking cart, a type of vehicle that plays havoc with motor highways

Peiping to Chahar border via Nankow.—Dirt; 35 miles; constructed by Peking Ministry of Communications (Peiping-Kalgan line).
Peiping to Hsifengko (eastern Monogolia).—Dirt; 260 miles; military construction.
Peiping to Kupehkow, on the Jehol border, via Shunyi and Miyun.—Dirt; 70 miles; military construction.
Peiping to Shihkiachwang via Chochow, Paoting, and Tingchow.—Length, 190 miles; military construction.
Tingchow to Chichow.—Length, 16 miles.
Kuyang to Fowping and Shansi border.—Dirt; 20 miles; constructed by International Famine Relief Commission.
Chenating district.—Length, 50 miles. Constructed by International Famine Relief Commission; $36,000 Mexican spent on repairs.
Tsangchow to Shihkiachwang.—Length, 139 miles; constructed by Peking Ministry of Communications.
Shenchow to Nankung.—Length, 60 miles.
Peiping to Paikowchen.—Length, 60 miles.
Peiping to Shanhaikwan via Tungchow, Yutien, Fengjun, and Yungping.—Length, 210 miles. Constructed by International Famine Relief Commission.
Yungping to Luanchow.—Length, 15 miles.
Changli Railway to Funing.—Length, 15 miles.
Tungchow to Kichow via Sanho.—Length, 50 miles; local construction.
Kichow to Tsunhwu.—Length, 10 miles.

Peiping to Tientsin via Tungchow and Yangtsun.—Dirt; length, 80 miles; constructed by Hopeh government. Closed during July and August owing to heavy rains. Private bus services operating; private cars allowed upon payment of special toll tax; Tientsin to Yangtsun section improved by United States Marines in 1928.

Tientsin to Tangshan via Tungfengtai.—Length, 63 miles.

Tungfengtai to Paoti.—Length, 31 miles.

Tsinglungkiao to Tangshan.—Length, 25 miles; local construction.

Tientsin, city districts.—Length, 90 miles; local construction.

Tientsin to Tangku.—Length, 30 miles; local construction.

Tientsin to Taku.—Length, 30 miles.

Tientsin to Paoting via Pachow, Paikowchen and Sinanchen.—Length, 75 miles; constructed by American Red Cross. Cost, $773 Mexican per unit; total cost, $58,000 Mexican.

Sinanchen to Anping via Jenkiu and Hokien.—Length, 78 miles.

Tientsin to Tehchow, Shantung, via Machang, Tsangchow, Potowchen, and Lienwochen.—Dirt; 100 miles; provincial construction. Closed during July and August owing to heavy rains; private bus services operating; private cars allowed upon payment of toll.

Potowchen to Kiaoho.—Length, 15 miles.

Lienwochen to Hengshui.—Length, 30 miles.

Machang to Paoting.—Length, 80 miles.

Paoting to Hokien via Kaoyang.—Length, 30 miles.

Kaoyang to Chichow.—Length, 25 miles.

Wuan, Honan border, to Shantung border via Hantan, Kwangping, Feisiang, and Taming.—Dirt and lime surfaced; 75 miles; constructed by the American Red Cross but now controlled by Hopeh provincial authorities. Closed during July and August because of heavy rains; private bus company operating 5 to 10 cars over route; private cars allowed upon payment of toll fees.

Hantan to Kwangping.—Dirt; 38 miles. Constructed by International Famine Relief Commission. Cost, $10,000 Mexican on 7-mile new road and $11,000 Mexican on repairs.

Tehchow to Nankung.—Dirt; 60 miles; provincial construction. Closed during July and August on account of heavy rains; controlled by Teh-nan Bus Co., which operates 10 motor busses over route. Bus company has exclusive franchise; private cars ordinarily not allowed on road.

Nankung to Shuntch.—Dirt; 75 miles; private construction.

Tsanhwang to neighboring villages.—Length, 5 miles; private construction.

Tsinghing to neighboring villages.—Length, 18 miles; private construction.

Chaohsien to Yuanshih.—Length, 16 miles; private construction.

MOTOR VEHICLES

The approximate number of motor vehicles in the Province is as follows:

MOTOR VEHICLES IN HOPEH PROVINCE

Class	Peiping (city)	Tientsin (city)	Outside districts
Passenger cars	1,450	2,620	80
Motor busses	243	80	11
Motor trucks	50	153	94
Motor cycles	31	120	30
Tractors	12	9	2
Total	1,786	2,982	217

HUNAN

Hunan, in about the latitude of Florida, corresponds in area to the State of Minnesota. Its 83,000 square miles support a population of 40,000,000 (480 to the square mile), which is densest around Tungting Lake and in the river valleys. Probably no Province surpasses Hunan in agricultural wealth, rice being the main crop. Abundant

in minerals, it produces a large proportion of the world's supply of antimony. Changsha, its capital, is connected by rail and steamer with Hankow. The Province is mountainous in the west and south, with plains to the southeast. Hunan is connected by roads with neighboring Provinces. Changsha, Changteh, and Siangtan have a population of more than 100,000 each. Treaty ports are Changsha and Yochow. The natives, though distinctly provincial, are the most progressive in China.

Road building was begun about 10 years ago when the military authorities built the present Changsha-Siangtan road. This road is about 33 miles in length, 25 feet broad, and properly surfaced. Being built on a proper foundation and generally kept in good repair, it is reported to show little sign of wear; it has been used for car traffic for the past five years. Bridges are well built and solid. The distance from Siangtan to Changsha may be made by motor bus in about 1 hour.

The Hunan committee of the International Famine Relief Commission, being the recipient of a gift of $500,000 Mexican from the American Advisory Board, commenced during 1922 and 1923 a first-class motor road from Siangtan west to Paoking, via Siangsiang and Yungfeng, a total distance of 110 miles. These funds were expended in completing the first 26 miles and grading the next 30 miles. High-grade stone bridges were built and the work in general was first class. It was built as a model road. In subsequent years the provincial officials have extended this work. Bus traffic opened in June, 1928, from Siangtan to Paoking.

Another important road—running from Hengchow to Chenchow, a distance of 100 miles—has been constructed from provincial funds.

A macadamized road around the city of Changsha has replaced the old city wall, and many streets have been widened for motor traffic.

Delegates representing 24 districts of southern Hunan convened in Changsha on September 15, 1925, to discuss a modern highway system for their district. The program adopted at the conference mapped out six roads, comprising a total length of 400 miles (1,200 li). A sum of $3,000,000 Mexican was voted for expenses, the average cost of building 1 li of road being estimated at $2,500 Mexican. The program, which was to be carried out within five years, called for the construction of 80 miles (240 li) of projected roads each year, the cost to be defrayed by raising $600,000 Mexican through provincial surtaxes.

Road construction has until recently been directed by three separate bureaus, each supervising different sections of highways, either projected or in course of construction. In August, 1929, the Central Daily News, Nanking, reported that the Hunan provincial government has approved a special appropriation of $1,500,000 Mexican for road construction, and that two of the highway bureaus were receiving monthly payments of $50,000 Mexican regularly. On September 15, the Kuo Min News Agency reported that at a joint meeting of the Hunan provincial government committee and the provincial party affairs directorate a decision had been reached that there should be a centralization of the administration of long-distance omnibus services on the various provincial highways and that fares

should be considerably reduced and made uniform in order to enable a greater number of people to make use of motor-bus facilities. The proceeds accruing from motor-bus license fees are to be devoted entirely to provincial reconstruction measures. The same agency reported a few days later that a provincial highways bureau was being organized under the direction of the Hunan provincial government to supervise the construction of projected motor roads and the necessary repairs to other dilapidated highways, it being felt that by placing all road construction work under the control of one organization greater efficiency would be obtained and the internal development of the Province thus accelerated. Later dispatches from the provincial capital at Changsha state that the provincial depart-

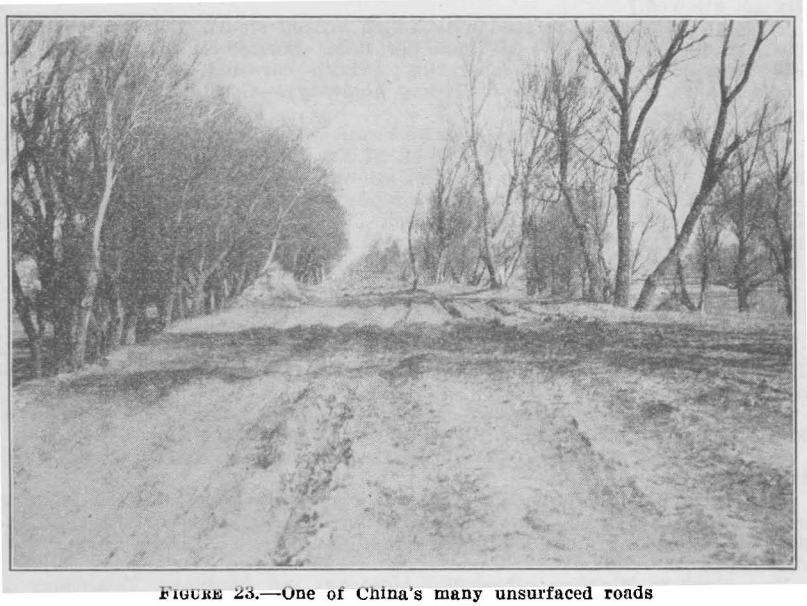

FIGURE 23.—One of China's many unsurfaced roads

ment of reconstruction plans a total mileage of 1,270 miles, at an estimated cost of $13,680,000 Mexican, construction to be completed within four years.

The Hunan provincial government announced the latter part of October, 1929, that all disbanded soldiers in the Province would be employed for the construction of roads and repairs to railways. To facilitate the carrying out of this scheme, the provincial governor recommended to the central disbandment committee and the Ministry of Railways at Nanking that the sum of $400,000 Mexican be provided immediately to defray expenses for the employment of soldiers to start the construction of the Sukang-Suining highway in southern Hunan. To date, 389 miles of motor roads have been constructed, surfaced principally with crushed rock and of a uniform width of 24 feet. A further mileage of 853 is under construction, and an additional 2,419 miles projected.

ROADS CONSTRUCTED

Changsha to Siangtan.—Clay, sand, and gravel; 30 miles; provincial construction. Cost, $1,000 Mexican per mile. (Chang-Tan highway built in 1927; provincial bus service operated; no private cars allowed.)

Siangtan to Siangsiang (Tan-Siang highway).—Crushed stone; 25 miles; provincial and International Famine Relief Commission construction.

Siangsiang to Yungfeng (Sian-Yun highway).—Crushed stone; 27 miles; provincial and International Famine Relief Commission construction.

Yungfeng to Paoking via Tsingshuping.—Crushed stone; 60 miles; provincial and International Famine Relief Commission construction. Cost, $9,000 Mexican per mile. (Yun-Pao highway; Siangtan-Paoking line completed in 1927; provincial bus services operating; no private cars allowed.)

Changsha to Ningsiang.—Clay bed, gravel surface; 30 miles; provincial construction. Cost, $10,000 Mexican per mile. (The first section of the Changsha-Yiyang route, completed in 1929. Provincial bus service operating; private cars not allowed.)

Liling to Yuhsien.—Surfaced with 8-inch broken stone; 60 miles; provincial construction. Cost, $6,600 Mexican per mile. Started 1925, completed May, 1929; provincial bus service operating; private cars not allowed.

Lulintan to Hwangtuling (Li-Hwang highway).—Crushed stone; 30 miles; provincial construction.

Changteh to Taoyuan (Chang-Tao highway).—Crushed stone; 20 miles; built in 1927; provincial construction. Cost, $7,500 Mexician per mile. Provincial bus service operating; private cars not allowed.

Hengchow to Chenchow (Heng-Chen highway) via Leiyang.—Crushed stone; 87 miles; provincial construction. Cost, $10,000 Mexican per mile. Started in 1925, completed 1928; provincial bus service; no private cars allowed.

Shenchow to Chenki.—Crushed stone; 20 miles; provincial construction.

ROADS UNDER CONSTRUCTION

Ningsiang to Yiyang (Chang-Yi highway).—Crushed stone; 30 miles; provincial construction. Changsha-Ningsiang section, 30 miles, completed and open to traffic.

Yuhsien to Chaling.—Crushed stone; 30 miles; provincial construction. Cost, $6,000 Mexican per mile. Part of the Changsha-Chaling highway.

Changsha to Pingkiang (Chang-Ping).—Length, 80 miles; provincial construction.

Paoking to Wukang (Pao-Wu highway) via Taohwaping.—Length, 90 miles; provincial construction. This road will be a continuation of the Changsha-Siangtan-Siangsiang-Yungfeng-Paoking road extending southwest from Paoking to Wukang.

Hungkiang to Wukang (Hung-Wu highway) via Chokiang, Tsingchow and Siuning.—Length, 140 miles; provincial construction.

Siangtan to Hengchow (Tan-Heng highway) via Hengshan.—Length, 90 miles; provincial construction.

Chenchow to Ichang.—Length, 47 miles; provincial construction. Ultimately to be an extension of the Changsha-Hengchow-Chenchow road. (Chen-I highway.)

Changteh to Yiyang (Yi-Chang highway).—Length, 66 miles; provincial construction. Half completed; expected to open in 1930.

Taoyuang to Shenchow (Chang-Shen highway).—Length, 140 miles; provincial construction.

Changsha to Liuyang.—Length, 30 miles; provincial construction.

Pingkiang to Yuankiang.—Length, 80 miles; provincial construction.

Chenchow to Pingshek, Kwangtung.—Length, 30 miles; provincial construction.

PROJECTED ROADS

The following roads have been projected for provincial construction:

	Miles
Lungshan to Lichow (Li-Lung highway)	263
Changteh to Lichow (Chang-Li highway)	70
Yochow to Hwajung (Yo-Hwa highway)	47
Pingkiang to Linsiang (Ping-Ling highway)	100
Shenchow to Liyeh (Shen-Li highway)	100
Chenki to Supu (Chi-Su highway)	40
Supu to Anhwa (Su-An highway)	50
Chenki to Hungkiang (Shen-Hung highway)	213
Wukang to Sinning (Wu-Ning highway)	30
Wukang to Chengpu (Wu-Chen highway)	50
Paoking to Tungan (Pao-Tung highway)	95
Yungchow to Leiyang (Yung-Lei highway)	77
Sinning to Yungchow via Tungan	46
Siangyin to Milo (Ying-Mi highway)	13
Chaling to Kaoshi (Cha-Kao highway)	25
Yuhsien to Anjen	30
Kweihwa to Hwanghsien (Kwei-Hwang highway)	83
Changteh to Sangchih (Chang-Sang highway)	150
Chenki to Mayang (Chi-Ma highway)	53
Hungkiang to Tsinhsien (Hung-Tsin highway)	66
Tsingshih to Nanhsien (Tsin-Nan highway)	40
Yungsui to Chienchen (Sui-Chien highway)	33
Tsingshih to Yangkiatan (Tsin-Yang highway	20
Tungtao to Tsinhsien (Tung-Tsin highway)	23
Suining to Tsingchow (Sui-Tsin highway)	36
Luki to Fenghwang (Lu-Feng highway)	63
Yungshun to Paotsing (Yun-Pao highway)	40
Chenhsien to Tungkiangshih (Chen-Tung highway)	16
Leiyang to Lunghaitang (Lei-Lung highway)	27
Yiyang to Sinhwa via Anhwa	110
Siangsiang to Sinhwa via Tanshih, Kushui, Lowti, Lantien, and Sikwangshan	95
Hengchow to Paoking	80
Paoking to Kiyang	45
Yungchow to Chenchow via Sintien and Kweiyang	110
Hengchow to Yungchow	80

MOTOR VEHICLES

The approximate number of motor vehicles in Hunan Province is as follows: Passenger cars, 9; motor busses, 98; motor trucks, 20; total, 127.

HUPEH

Hupeh Province, situated in the latitude of Louisiana, is about the size of the State of Oklahoma—71,000 square miles. Its population of 28,600,000, which averages over 400 per square mile, is densest on the plains. Hupeh is said to be 3 parts hills, 6 parts water, and 1 part habitable land. The Province, though not mountainous, is very hilly. It is intersected by the Han and Yangtze Rivers and cut by numerous lakes and canals. Its iron and steel production is very important when military conditions permit the operation of the Han-Yeh-Ping Iron and Steel Mills. The Tayeh iron mines of Hupeh are the largest iron mines in China. Hankow is frequently referred to as the "Chicago of China," as it is the great collection and distribution center of Central China. Together with Wuchang and Hanyang, the Wuhan cities have a combined population of 1,500,000. Hankow, Ichang, and Shasi are treaty

ports. Ocean-going steamers reach Hankow eight months in the year. Steamboat traffic between Hankow and Upper Yangtze River points reaches Chungking, in western China. Steamers also ply from Hankow to Changsha in Hunan. Hankow is the terminus for the Peiping-Hankow Railway as well as for the Wuchang-Changsha Railway. Provincial roads are numerous. Most of its mileage has been constructed by private interests, and the remainder by provincial and military authorities.

In Hankow there are about 30 miles of hard-surfaced roads, 15 miles of which are located within the foreign concessions.

Hupeh's road construction program under the supervision of its provincial government is gaining momentum, one report stating that the provincial authorities expected to spend $8,000,000 Mexican on road construction during 1929. Eight hundred and thirty miles of motor roads are reported to be completed and open to motor traffic with an additional 721 miles under construction. Highways are usually 30 feet wide. A 3-year program for widening Hankow city roads and the projection of four important roads in Hanyang was announced in July, 1929.

In a statement to press representatives during September, 1929, the Hupeh provincial department of reconstruction declared that in addition to the two provincial motor highways, one from Siangyang to Hwayuan and the other from Siangyang to Shasi, which have already been opened to traffic, another provincial highway linking up Hankow and Ichang will be immediately constructed. Surveys of other proposed highways in eastern Hupeh are also under way, and construction work will be commenced as soon as funds are available.

Municipal roads encircling the city of Wuchang are now under construction and are expected to be opened shortly.

The Hankow municipal government is reported to have extensive plans for floating a loan of $1,500,000 Mexican for constructive purposes, including road building in the native city. The land tax is to be utilized as security for the loan, while interest is to be paid in monthly installments of $40,000 Mexican by the Hankow Water Works and Electric Light Co.

ROADS CONSTRUCTED

Siangyang to Shasi (Siang-Sha highway) via Icheng, Kingmen, Yukiho, Hojung, and Kingchow.—Crushed-stone surface; 246 miles; provincial construction.

Siangyang to Sinyeh, on the Honan border.—Length, 15 miles; provincial construction.

Laohokow to Tengchow, Honan, via Kwanghwa.—Length, 15 miles; provincial construction.

Laohokow to Hwayuan (Siang-Hwa highway) via Fancheng, Siangyang, Changkiawan, Tsaoyang, Tanghsienchen, and Teian.—Crushed stone; 256 miles; provincial construction.

Laohokow to Yunyang (Siang-Yun highway) via Kwanghwa and Kunchow.—Dirt; 100 miles; provincial construction.

Hankow to Tsaoshih via Changkiangfow and Yingcheng.—Dirt; 65 miles; provincial construction. This is a portion (about one-third) of the Hankow-Ichang highway.

Kingmen to Shayang.—Dirt; 35 miles; provincial construction.

Tienmen to Yokiakow.—Dirt; 10 miles; provincial construction.

A number of short roads radiate from the Wuhan cities, each averaging about 17 miles in length and offering motor-bus transportation services. They are as follows:

Wuchang to Paotzuhai.—Dirt; 17 miles; provincial construction.
Wuchang to Chinkou.—Dirt; 17 miles; provincial construction.
Wuchang to Changtzupu.—Dirt; 17 miles; provincial construction.
Wuchang to Kinkow.—Dirt; 17 miles; provincial construction.
Kiangan to Tsangtzefow.—Dirt; 17 miles; provincial construction.
Puchi to Yanglowtung.—Dirt; 3 miles; municipal construction.

ROADS UNDER CONSTRUCTION

Tsaoshih to Ichang.—Dirt; 180 miles; provincial construction. This is a section of the Han-I highway connecting Hankow and Ichang. Traffic over the first section from Hankow to Tsaoshih, a short distance beyond Yingcheng, is now open.

Yungyang (Siang-Yun) to Paiho, on the Shensi border.—Crushed stone; 50 miles; provincial construction. An uncompleted section of the Siang-Yun highway.

Laohokow to Pingli, Shensi (Siang-Piang highway), via Fanghsien, Chushan, and Shuki.—Length, 250 miles; provincial construction. Survey under way.

Icheng to Paokang via Wuanyen and Nanchang.—Length, 45 miles; provincial construction.

Tcian to Yingcheng.—Length, 33 miles; provincial construction.

Kotien to Hwangshihkang.—Length, 35 miles; provincial construction.

Kinkow to Puchi via Paichow and Kiayu.—Length, 45 miles; provincial construction.

Kwangtsi to Wusuch.—Dirt; 20 miles; municipal construction.

Hwangpei to Lotien (Hwang-Ching highway) via Tsangtzefow and Sinchow.—Crushed stone; 63 miles; provincial construction.

PROJECTED ROADS

Hanyang to Shasi (Han-Sha highway) via Tsaitien and Tsienkiang.—Length, 166 miles; provincial construction.

Wuchang to Sienning (Wu-Sien highway) via Liangtzu, Tayeh, Tungshan, and Yanglowtung.—Length, 200 miles; provincial construction.

Kingmen to Ichang (King-I highway) via Yukiho and Tangyang.—Length, 66 miles; provincial construction.

Ichang to Laifeng via Changyang, Kienshih, and Shihnan.—Length, 266 miles; provincial construction. Cost to be $3,000,000 Mexican.

Itu to Hofeng (I-Ho highway) via Changlo.—Length, 100 miles; provincial construction.

Hwangan to Kiukiang, Kiangsi (Hwang-Hsun highway), via Macheng, Lotien, Kishui, Kwangtsi, and Hwangmei.—Length, 133 miles; provincial construction.

Shasi to Paotachow (Pao-Sha highway) via Kienli and Sinti.—Length, 166 miles; private and provincial construction.

Suichow to Kwangshui via Yingshan.—Dirt; 45 miles; provincial construction.

Hwayuan to Wusuch via Hwangan, Sungfow, Sinchow, Twanfeng, Kishui, and Kichow.—Length, 170 miles; provincial construction.

Wusuch to Hwangmei via Lungping and Kunglung.—Length, 30 miles; provincial construction.

Sientaochen to Sinti via Mienyang.—Length, 50 miles; provincial construction.

Kingmen to Yingcheng via Anlu and Kingshan.—Length, 80 miles; provincial construction.

Hankow to Yunmeng via Kikiawan and Siaokan.—Length, 60 miles; provincial construction.

Chushan to Kingtzekwan, on the Honan border, via Yunyang.—Length, 90 miles; provincial construction.

Paokang to Fanghsien.—Length, 30 miles; provincial construction..

Shasi to Tsingshih, Hunan, via Kungan.—Length, 40 miles; provincial construction.

Tangyang to Yuanan.—Length, 20 miles; provincial construction,

Provincial plans are said to include the construction of 1,100 miles of highways surfaced with stone or crushed rock. When such work will be undertaken or completed has not been announced.

MOTOR VEHICLES

The approximate number of motor vehicles in Hupeh Province is given in the following table:

MOTOR VEHICLES IN HUPEH PROVINCE

Class	Hankow and Wuhan cities	Hankow consular district	Class	Hankow and Wuhan cities	Hankow consular district
Passenger cars	500	180	Airplanes	9	
Motor busses	25	166	Tractors		3
Motor trucks	71	29			
Motor cycles	64		Total	670	378
Electrics	1				

JEHOL

Jehol was until 1928 a special administrative district, but since that time it has ranked as a Province. It is a hilly and sandy desert land given over to agriculture and cattle raising. It extends in area over 90,000 square miles and has a population estimated at 650,000, the majority of whom are Mongols.

Old post or caravan routes, which in ancient days lead to the former capital, Peking, serve the Province for such motor transportation as it has.

ROADS CONSTRUCTED

The total mileage of constructed roads is 440. For this mileage, 205 motor vehicles serve the transportation needs of the Province.

Hopeh (formerly Chihli) border to Pingchuan via Chengteh.—Dirt; 100 miles. Ancient route.

Chengteh to Chaoyang via Chihfeng.—Dirt; 220 miles. Ancient route.

Other roads in the Province.—Dirt; 120 miles. Ancient routes.

KANSU

Kansu Province, in the extreme northwestern part of China, in a latitude corresponding to that of California, covers an area of 125,000 square miles—about equal to that of New Mexico. It is the most sparsely populated Province in China, having a population of but 6,000,000, or an average of 48 per square mile, and possibly not that at present owing to the devastating famines which have occurred there in recent years. A range of mountains crosses the Province from northwest to southwest, the southern section being extremely mountainous. To the east and northeast are fertile loess plateaus of great extent, while in the northern section the country is wild and uninhabitable.

Sheep raising and cattle raising are its principal industries, and Kansu is wholly dependent upon wool and hide production for its existence.

Lanchow, its capital, has a population of 500,000. Other important cities are Tsinchow, Sining, and Liangchow. There are no treaty ports in the Province.

In a Province so poor it is interesting to find that the provincial authorities have nevertheless been awake to the value of highways.

ROADS CONSTRUCTED

Lanchow to Pingfan (Lan-Hwang highway).—Dirt; 63 miles; provincial construction.

Pingfan to Dinghsinhsien (Sitao) (Lan-Su highway).—Dirt; 163 miles; provincial construction.

Lanchow to Chingshui (Tsinghai) (Lan-Ching highway).—Dirt; 250 miles; provincial construction.

Lanchow to Taochow (Lan-Ho highway).—Dirt; 95 miles; provincial construction.

Lanchow to Chungwei on Ningsia border (Lan-Ning highway).—Dirt; 165 miles; provincial construction.

Lanchow to Kingchow, Shensi border, via Tsingning and Pingliang (Lan-Ping highway).—Dirt; 220 miles; provincial construction.

Tsingning to Kuyuan (Lan-Ku highway.)—Dirt; 65 miles; provincial construction.

Chungwei to Pingliang (Ning-Ping highway) via Kuyuan.—Dirt; 179 miles; provincial construction.

The Lanchow-Ningsia-Paotow road links up Kansu and Suiyuan Provinces with Paotowchen on the Peking-Suiyuan Railway, and is approximately 650 miles in its total length. The road between Lanchow and Ningsia passes through somewhat mountainous country and is not suitable for automobile traffic. From Ningsia, however, the road is reported to be fairly well adapted to motor traffic.

KIANGSI

Kiangsi Province is about the size of the State of Missouri and lies in a latitude similar to that of Florida. Its 68,000 square miles contain a population of 27,000,000 (averaging about 400 per square mile), the greatest density being around the Poyang Lake and in the Kan Valley. Except in these two districts the Province is mountainous.

Coal mining and the manufacture of coke and briquets constitute a great industry at Pingsiang, where modern machinery and methods are employed. The porcelain industry of Kiangsi is ancient and far famed. With reorganization along modern lines, it could be made a very important and profitable industry. About one-half of China's production of grass cloth is made in this Province.

Steamers through the Poyang Lake and Kan River connect Nanchang with the Yangtze River traffic. Two railway lines—Kiukiang-Nanchang and Pingsiang-Chuchow—meagerly serve the Province. A line is projected from Nanchang to Santuao or Swatow. Each of the following cities—Nanchang (provincial capital), Kanchow, Kian, and Kingtehchen—has a population over 100,000. Kiukiang is the treaty port for the Province.

Country roads (which are poor) have until recently served the Province. The greater part of the traffic of the Province is water borne.

A comprehensive highway program was adopted in 1927 by the reorganized provincial government in cooperation with the International Famine Relief Committee. The plan called for 30-foot

roads, raised 2 feet 10 inches in the center and 2 feet on the shoulders, made of well-packed clay tamped and later rolled by power roller, gravel from the Fu Ho near by to be used later for surfacing the middle 16 feet to a depth of 6 feet 8 inches.

Surveys were completed and road construction was begun on the first lap of the system in May, 1928, but only the Nanchang-Lientang road was completed. It is understood that a 60-mile stretch from Lientang to Changshu has recently been completed and that bus service is operating over this 60-mile stretch.

Reports in July, 1928, were to the effect that the provincial finance department of Kiangsi had decided to appropriate $100,000 Mexican a month, commencing in August of that year, for the construction of six highways.

A short road in the eastern part of the Province, connecting Yushan with Changshan, in Chekiang, is under construction, the Chekiang portion having already been completed. Another 20-mile stretch from Wuning to Yoshih in the northwestern part of the Province has been constructed by the military.

Considerable street widening is reported to have been completed and some is still in progress at Nanchang. Wheelbarrows are said to have been debarred from using the new streets.

The provincial reconstruction department of Kiangsi was officially reported, on January 25, 1930, to have announced that the surveys for the proposed four main highways of Kiangsi Province radiating from Nanchang had been completed. The total mileage of the four roads, construction of which, it is reported, will be immediately started, is estimated at approximately 630 miles (1,780 li). The roads include the Nanchang-Tayu section of the Kiangsi-Kwangtung highway, Nanchang-Yushan section of the Kiangsi-Chekiang highway, Nanchang-Linchuan section of the Kiangsi-Fukien, and the Chinteh-Hukow motor road.

ROADS CONSTRUCTED

Wuning to Yoshih.—Broken stone; 20 miles; provincial construction. Cost, $5,500 Mexican per mile. Bus service operating; private cars allowed.

Kiukiang to Kuling (Linhwatung).—Broken stone; 8 miles; provincial construction. Cost, $2,500 Mexican per mile. Bus lines operate in summer; private cars allowed.

Hukow district.—Length 10 miles; provincial construction.

Nanchang, city district.—Length, 10 miles; provincial and International Famine Relief Commission construction; cost, $36,000 Mexican.

Nanchang to Lientang.—Crushed stone; 10 miles; provincial construction. Cost, $6,800 Mexican per mile.

Lientang to Changshu.—Crushed stone; 50 miles; provincial construction. Cost, $6,800 Mexican. Bus service operating; private cars may operate by obtaining special permits.

Yushan to Changshan, Chekiang.—Dirt; 10 miles; private construction.

PROJECTED ROADS

The Kiangsi government has a road-building program providing for the construction of 1,150 miles of surfaced highways radiating in five directions from the provincial capital, Nanchang, to connect with the borders of adjacent Provinces. There is, however, no indication as to when this program may be underway. These highways are as follows:

Nanchang to Kwangtung border.—Length, 333 miles; provincial construction. Estimated cost, $6,830,000 Mexican.

Nanchang to Anhwei border.—Dirt; 150 miles; provincial construction. Estimated cost, $3,073,500 Mexican.
Nanchang to Chekiang border.—Dirt; 173 miles; provincial construction. Estimated cost, $3,351,600 Mexican.
Nanchang to Hunan border.—Dirt; 193 miles; provincial construction. Estimated cost, $3,961,400 Mexican.
Nanchang to Fukien border.—Dirt; 147 miles; provincial construction. Estimated cost, $3,005,200 Mexican.
Nanchang to Hupeh border.—Dirt; 153 miles; provincial construction. Estimated cost, $3,141,800 Mexican.

In addition to the above trunk lines the authorities plan to construct branch roads to connect therewith.

The proposed road construction agreed upon in cooperation with the China International Famine Relief Commission in 1928, which has since been postponed, called for the building of a 60-mile stretch running southeast from Nanchang to Fuchow, with a later extension to Kwangteh in Anhwei Province, via Linchwan. Surveys were completed in November, 1927, for additional roads running from Nanchang south to Kanchow, with extension later into Kwangtung Province; Nanchang west to Pingsiang coal mines, with extension later to Hunan Province. These two sections embrace approximately 300 miles.

MOTOR VEHICLES

The approximate number of motor vehicles in Kiangsi Province is as follows: Passenger cars, 3; motor busses, 73; tractors, 3; total, 79.

KIANGSU

Kiangsu Province has always been one of the most important in China because of the great commercial metropolis which has grown up at Shanghai. Its significance has been greatly increased since 1927, because of removal of the national capital to Nanking.

The district, with its area of 38,600 square miles, is about the size of Kentucky, lies in a latitude corresponding to that of Mississippi, and is the most highly industrialized part of China. Through the port of Shanghai, with its population of a million and a half, clears 40 per cent of China's total trade. The Province of Kiangsu has a population of 34,600,000, about 800 per square mile, the density being greatest on Haimen Promontory and Tsungming Island.

There are 58 cotton-spinning mills, representing about 2,000,000 spindles and 15,000 looms, operating at Shanghai and immediate vicinity. Flour mills, electric light and power plants, oil mills, egg-products plants, match factories, paper mills, electric-lamp factories, chemical works, shipbuilding and engineering works, soap and candle factories, cigarette factories, sawmills, printing and publishing houses, cement plants, spinning mills, breweries, brush factories, sugar refineries, aerated-water factories, tanneries, and canning factories are among the industries that make Shanghai the leading manufacturing center of China. The leading industry of Kiangsu is silk manufacture. Wusih, Nanking, and Soochow are the principal centers for the manufacture of silk piece goods.

All rivers are navigable, and, in addition to these natural waterways, the Province is interlaced with canals. Shanghai is the terminus for the Shanghai-Nanking Railway, the Shanghai-Hang-

chow-Ningpo Railway, and the Shanghai-Woosung Railway. From the standpoint of tonnage, Shanghai ranks as one of the great ports of the world.

The treaty ports of the Province are Shanghai, Chinkiang, Nanking, Soochow, and Woosung.

Despite this immense industrial development the Province is one of the poorest in modern road construction, its network of waterways having until recently made roads unnecessary. Within the entire Province there are less than 1,300 miles of motor roads, and, incredible as it may seem, practically one-third of the entire number of motor vehicles in the whole of China (including Hong Kong) are in Shanghai. Within the area of what is termed "Greater

FIGURE 24.—Busy intersection in Shanghai. On these streets stone slabs are set in the macadam for the use of wheelbarrow traffic

Shanghai," the French concession, and the international settlement, there are 302 miles of motor roads. In addition there are four short private toll roads connecting Shanghai with near-by towns, which may at some future time be merged into a provincial system.

The removal of the national capital from Peiping to Nanking has had the beneficial effect of stimulating heretofore belated road-building plans. The outstanding piece of construction in this respect is, without doubt, the building of the Chung-Shan road from the Yangtze River, at Hsiakwan, through Nanking for a distance of 12 miles to Dr. Sun Yat Sen's memorial tomb on Purple Mountain. The building of this road, as might have been expected, brought forth a storm of protest from house and land owners who were dispossessed to make way for its construction. The road, from 60 to 120 feet in width, has a 3-inch flint base surfaced with asphalt sheeting. It was financed by a loan of $1,500,000 Mexican made

from the Overseas Chinese Contribution Fund. In addition to this highway, about 150 miles have been constructed in and about the city and suburban districts.

The National Government has also been responsible for the construction, by provincial authorities, of a highway connecting the national capital, Nanking, with Hangchow, the provincial capital of Chekiang Province. Unfortunately the route which this road traverses does not touch any of the commercial or industrial districts, thus still making it impossible for motorists to run from Shanghai to either Nanking or Hangchow.

The Kiangsu provincial government at Chinkiang has organized a highway bureau within the board of reconstruction. Plans have

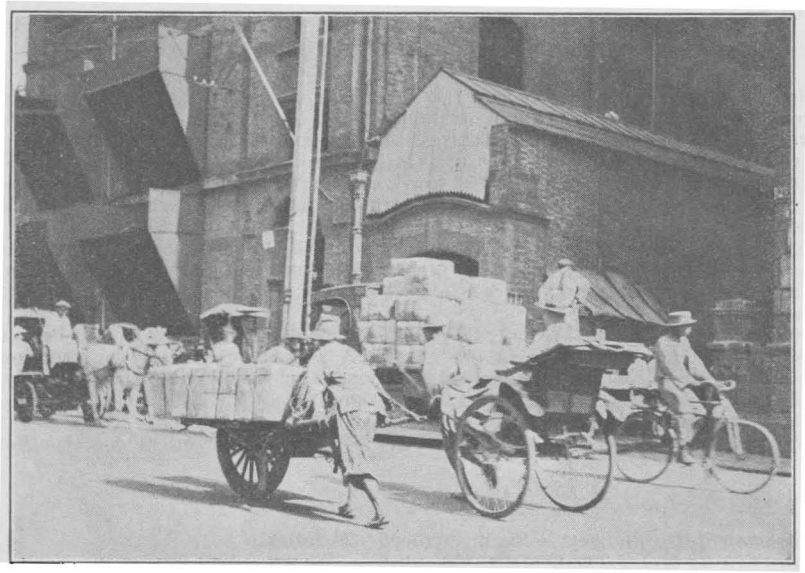

FIGURE 25.—A variety of traffic. Five kinds are shown—motor truck, bicycle, rickshaw, wheelbarrow, and carriage—and there might have been added tram car, trackless trolley, omnibus, motor cycle, and pedestrian

been under way for several months for embarking upon an intensive road-building program with compulsory labor. It was announced that, effective November 1, 1929, able-bodied males between the ages of 18 to 42 years would be obligated to build 1 meter of road 9 meters wide, or pay twice the wage for the same amount of labor. A program of 5,000 miles of highways was scheduled to be completed between November, 1929, and March, 1930, with an additional 5,000 miles from November, 1930 to March, 1931, according to provincial authorities. Practically no financing is involved in this scheme, as such labor is required to furnish its own food and implements.

ROADS CONSTRUCTED

Highways in Kiangsu Province are divided into roads north and south of the Yangtze River. In northern Kiangsu the roads center about the three cities of Suchow (interchangeably called Hsuchow and Nansuchow), Haichow, and Tsingkiangpu. Central Kiangsu

highways radiate from Nanking, Chinkiang, and Tungchow (Nantungchow), while in the south they converge about the industrial districts of Shanghai.

Road building commenced in the Tsingkiangpu district about 15 years ago. Famine relief funds have been responsible for repairing many miles of roads, consisting chiefly of widening to 20 feet, and leveling and ditching the native cart roads. This type of road is suitable for motor-bus traffic, except in extremely rainy weather. In the Haichow district the example furnished by a progressive military general in the building of roads in his territory inspired others to do likewise, with the result that many miles of roads have been built in northern Kiangsu to connect with its principal cities. They are as follows:

SUCHOW DISTRICT

Suchow (Hsuchow or Nansuchow) to Fenghsien via Peihsien.—Clay; 60 miles; provincial construction. A 30-foot public road built some 30 years ago by farmers at behest of local magistrates. At present maintained by a corps of 10 coolies employed by bus company. Open entire year, though 20-mile stretch between Fenghsien and Peihsien is low-lying territory, and after heavy rains may be closed to traffic for one or two months. Bus service operated by Li Hsin Bus Co., of Suchow.

Suchow to Siaohsien.—Clay; 17 miles; provincial construction. A 25-foot ancient cart road; maintained by farmers and bus company; closed during rainy season; public road; all cars allowed. Bus service operated by Li Hsin Bus Co.

Siaohsien to Tangshan.—Clay; 30 miles. Ancient cart road to Honan border.

Suchow to Sutsien via Suining.—Clay; 85 miles; provincial construction. Ancient cart road; annually repaired by farmers; closed during rainy seasons; public road; all cars allowed. Bus service operated by Li Hsin Bus Co.

Sutsien to Shuyang.—Clay; 40 miles; provincial construction.

Shuyang to Kanyu via Fangshan.—Clay; 70 miles; provinical construction.

HAICHOW DISTRICT

Haichow (city district).—Shell surfaced; 30 miles.

Haichow to Hsinanchen.—Dirt; 53 miles.

Haichow to Shuyang.—Dirt; 50 miles.

Haichow to Hsukou.—Dirt; 26 miles.

Haichow to Panpu.—Dirt; 15 miles.

Haichow to Kuanyuin.—Dirt; 30 miles.

Kuanyuin to Shuyang.—Dirt; 28 miles.

Kanyu to Haichow.—Dirt; 30 miles; provincial construction.

Tsingkiangpu to Shuyang.—Dirt; 46 miles.

Tsingkiangpu to Antung.—Dirt; 20 miles; provincial construction.

Tsingkiangpu to Sutsien via Chunghing and Szeyang.—Dirt; 34 miles. An old cart road, enlarged and somewhat improved during 1929. Closed during rainy days. Motor-bus service operating. Private cars allowed without restriction.

Tsingkiangpu to Kaoyu via Huaian, Paoying and Kaishow.—Dirt; 80 miles; provincial construction.

(The above roads are built upon old dikes along canal; closed during rainy season. Bus franchise held by Kiangpeh Motor Bus Co. Private cars allowed upon special permit from provincial construction bureau. Plans under way for cindering these roads within a year.)

TUNGCHOW DISTRICT

Highway construction commenced in the Tungchow region in 1920, since which time there has been built somewhere in the neighborhood of 250 miles of motor roads, of which 18 are reported to be macada-

mized; the remainder consists of graded dirt roads. Average width is over 25 feet, with adequate drainage provided.

Nantungchow (Tungchow) to Kenmusiang.—Dirt; 65 miles; private construction.

Jukao to Hsinshengchang.—Dirt; 20 miles; private construction.

Nantungchow to Haian via Paipu and Jukao.—Clay; 59 miles; provincial construction. Built 1923–34; macadamized for 5-mile stretch between Tungchow and Tangkiacha. Closed during heavy rains. Public road, private cars allowed. Bus services operating.

Tungchow to Langshan.—Dirt; 4 miles; provincial construction.

Tungchow to Tiensenkiang.—Dirt; 6 miles; provincial construction.

Sanshihlipu to Likiakiao.—Dirt; 8 miles; provincial construction.

Tungchow to Haifuchen (Kiulungchen).—Dirt; 63 miles; provincial construction. Built in 1919–20; closed during rainy season; public road, private cars permitted. Bus service is operating.

Lusze to Shihdookiang.—Dirt; 9 miles; provincial construction.

Shihkong to Kingloh.—Dirt; 13 miles; provincial construction.

Szeyangpa to Chuehkiang.—Dirt; 26 miles; provincial construction.

Tungchow to Pehsinchen.—Dirt; 72 miles; provincial construction. Built in 1923–1926; closed in rainy seasons. Public road; private cars permitted. Bus service is operating.

Shihdookiang to Haifuchen.—Dirt; 10 miles; provincial construction.

Haimenting to Sungchikiang.—Dirt; 3 miles; provincial construction.

Pehsinchen to Chuenhungkiang.—Dirt; 3 miles; provincial construction.

Hsinkiangchen to Hweianchen.—Dirt; 12 miles; provincial construction.

Kweilungchen to Tatungchun.—Dirt; 10 miles; provincial construction.

Changlohchen to Szeyangpa.—Dirt; 7 miles; provincial construction.

Kiulungchen to Tsaokachen.—Dirt; 5 miles; provincial construction. Tungchow-Pehsenchen line.

Kinsha to Sanyuchow via Tungshe.—Dirt; 15 miles; provincial construction. Changlohchen-Szeyangpa line.

Nantung to Haimen via Kinsha.—Dirt; 23 miles; private construction.

Tsungming Island.—Dirt; 3 miles; municipal construction.

Chinkiang, city district.—Macadam and asphalt; 2½ miles; provincial construction. Cost, $10,000 Mexican for macadam and $20,000 Mexican for asphalt.

Chinkiang to Kuyung (Chujunghsien).—Length, 28 miles; provincial and International Famine Relief Commission construction. Cost, $60,000 Mexican.

Chinkiang to Pehtu.—Length, 30 miles. Constructed by International Famine Relief Commission.

Kwaichow to Yangchow.—Cinder; 10 miles; private construction. Cost, $100,000 Mexican. A private road controlled by Kiangpeh Motor Bus Co. No private cars allowed.

Taichow to neighboring villages.—Length, 10 miles. Constructed by International Famine Relief Commission. Cost, $100,000 Mexican.

NANKING DISTRICT

A great amount of street widening and road construction has been in progress during the last year and a half in Nanking and environs. The completion of the Chung-Shan road for a distance of 12 miles to Dr. Sun Yat Sen's Memorial Tomb on Purple Mountain has resulted also in the further building and improving of existing roads to the extent of 150 miles.

The entire city of Nanking is scheduled to be rebuilt, which if carried through will mean the construction of 350 miles of streets in the metropolitan area.

Nanking, city district.—Dirt and crushed stone; 36 miles; municipal construction.

Chung-Shan Memorial Highway.—Asphalt; 12 miles; national construction. Cost $1,500,000 Mexican.

Chung-San-Men (Nanking city) to Ho-Pien Men.—Macadam; 13 miles; municipal construction.

Pukow to Puchen.—Macadam; 3 miles; municipal construction. Public road; private cars allowed.

Nanking to Chekiang border via Tangshan and Kuyung.—Partly crushed stone; 140 miles. International Famine Relief Commission and provincial construction. The 20-mile section from Nanking to Tangshan, built in 1921 by famine relief funds, is laid with large broken stones. The Tangshan-Kuyung section is surfaced with crushed rock. Entire length of road formally opened on October 25, 1929, by trial trips being made from Nanking to Hangchow by the provincial governor of Kiangsu.

SHANGHAI DISTRICT (SOUTH KIANGSU)

Foreign concession area.—International settlement: Waterbound macadam, 64 miles; bituminous concrete, 44 miles, sett paved, 16 miles; wood block, 1

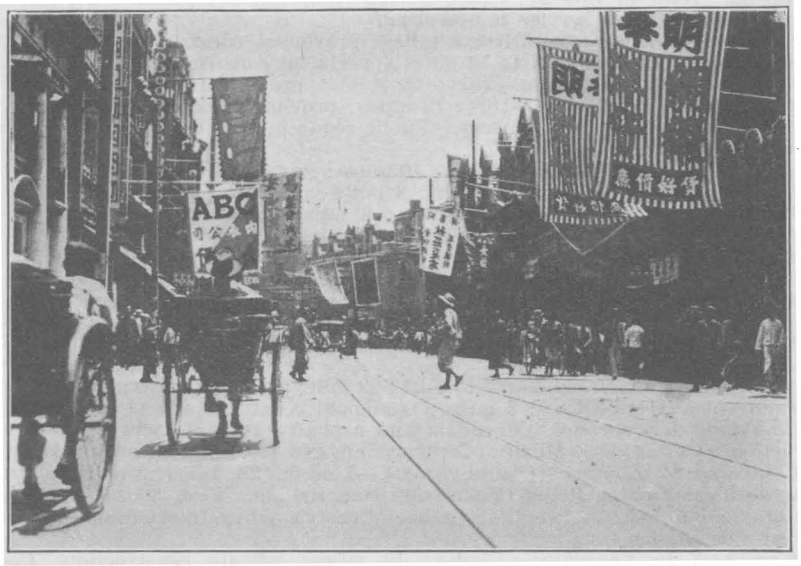

FIGURE 26.—Nanking Road, International Settlement, Shanghai

mile; and unsurfaced, 47 miles; total, 175 miles; municipal construction. French concession: 92 miles; municipal construction. Greater Shanghai Chinese area: Chapei (city district), 50 miles; Nantao (city district), 38 miles; Chinese municipality construction. Grand total, 354 miles.

Shanghai to Minhang.—Cinder and crushed stone; 15 miles; private construction. Cost, $200,000 Mexican. Bus service operated by Shanghai-Minhang Bus Transportation Co.

Shanghai to Chenju.—Dirt; 8 miles; private construction. Bus service operated by Shanghai Motor Bus Co.

Shanghai to Liuho.—Cinder; 24 miles; private construction. This road was built in 1922 by the communication bureau of Paoshan Hsien; later taken over by the construction bureau; recently rented for a 30-year period to the Shanghai Taichong Bus Co. Referred to as the Wu-Tai Motor Bus Road. Road fairly well maintained; 48 bridges, 2 of modern concrete, the remainder of wood construction. Private cars may operate over the road by payment of a toll fee of $2 Mexican.

Liuho to Paoshan.—Dirt; 22 miles; military construction. Cost, $10,000 Mexican.

Kiating to Lotien.—Dirt; 6 miles; military construction. (Branch of the Shanghai-Luiho Road.) Bus service operated by Hu-Tai Motor Bus Co.

Kiating (city district).—Length, 1 mile; muncipal construction.

Shanghai to Woosung.—Cinder; 14 miles; military construction. Until recently private cars were obliged to pay tolls for operating over this road.

Woosung to Paoshan.—Provincial construction; total cost, $200,000 Mexican. Bus services operating regularly.

Pootung to Chwangsha.—Length, 12 miles; private construction. Motor busses operating on a narrow-gage railway.

Pootung to Nanhwei via Chowpu.—Length, 12 miles; private construction. Motor busses operating on a narrow-gage railway.

Shanghai to Lunghwa.—Dirt; 7 miles; military construction.

Shanghai to Sinchang.—Dirt; 20 miles; private construction.

Soochow, city district.—Length, 5 miles; private construction.

Wusih, city district.—Length, 10 miles; private construction.

Kunshan (Quinsan), city district.—Length, 1 mile; private construction.

ROADS UNDER CONSTRUCTION

According to provincial authorities there is now under construction a total of 52 roads in Kiangsu Province aggregating a length

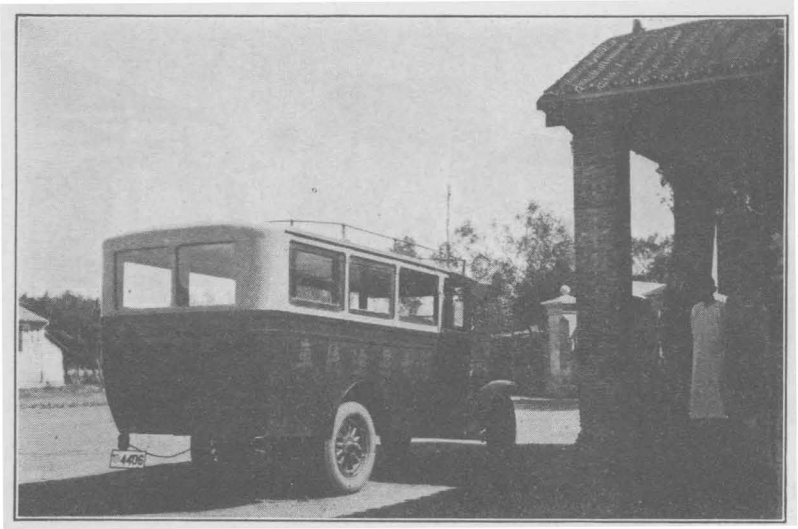

FIGURE 27.—Motor-bus terminal at Liuho, Kiangsu Province

of 1,036 miles. Details regarding this extensive program are not available, and from personal observation it would seem that the majority of these roads are still in the realm of projected highways.

The principal construction work during 1929 was the building of the Kiangsu portion of the Nanking-Hangchow highway. National authorities have repeatedly urged both the Chekiang and Kiangsu provincial authorities to complete this road as early as possible. The roadbed of the Kiangsu section has been completed to the Chekiang border, but some bridge work and surfacing are yet to be finished before regular traffic is possible. Regular traffic was opened on October 25, 1929, between Nanking and Chinkiang via Tangshan and Kuyung, which route covers a portion of the Nanking-Hangchow line. The Chekiang section, from Hangchow to the Kiangsu border, is completed, and regular motor-bus service is maintained from Hangchow to Huchow, near the Kiangsu border. By transference from motor busses to small passenger cars it is now possible to continue on the route from that point to Nanking. The

road was officially opened in October, 1929, when the governor of Kiangsu Province rode from Nanking to Hangchow, Chekiang, the full length of the line. However, as indicated above, the Kiangsu section of the line is still undergoing considerable construction, and until this is completed the section can not be said to be open to regular traffic.

Official announcement was made by the Kiangsu provincial board of construction that, effective November 1, 1929, a 5,000-mile program would be embarked upon with compulsory labor.

At Chinkiang, the provincial capital of Kiangsu, plans are under way for the construction of a number of modern municipal roads

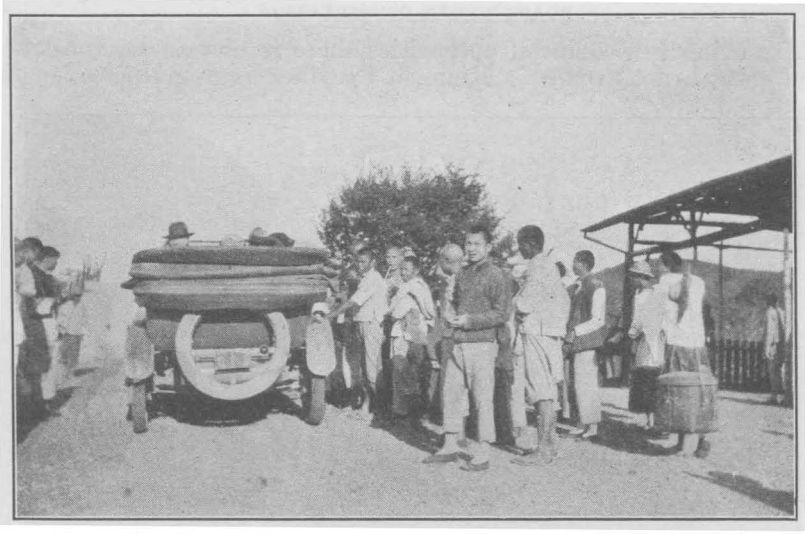

FIGURE 28.—Interested group of village spectators, Shanghai-Liuho Road

with sidewalks. A petition for $300,000 Mexican has been submitted by the provincial commission to cover initial expenses involved.

The mayor of Greater Shanghai, controlling the Chinese-administered areas, announces the construction of three new municipal roads, finances for which will be available from the $3,000,000 Mexican municipal reconstruction loan floated on October 1, 1929.

Nanking to Chekiang border via Tangshan, Kuyung, Lishui, Liyang, and Ihing.—Crushed stone; 140 miles; provincial construction. Cost $1,000,000 Mexican. Roadbed complete, surfacing in process; officially opened October, 1929.

Nanking to Anhwei border to connect with Wuhu, Anhwei.—Dirt; 63 miles; provincial construction.

PROJECTED ROADS

With the establishment of a road-construction bureau at Chinkiang, plans are being projected for the entire Province, some of which are in reality old projects now being revived, modified, or surveyed. Projected plans call for the construction of 10,000 miles of roads for the entire Province. Surveys have been under way in the northern part of the Province. In 1928 a surtax was levied on spring crops to provide road-building funds.

A compulsory labor system provides that each male member 18 to 42 years of age of every family within the 5-li (1⅔ miles) zone on

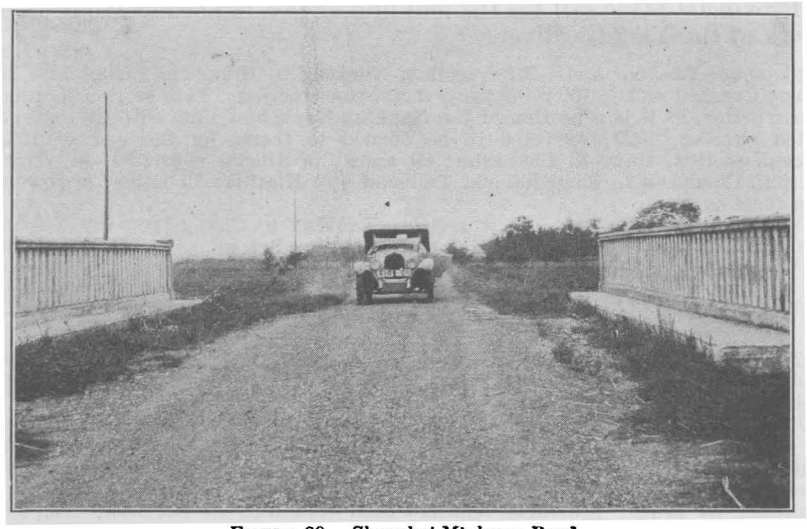

FIGURE 29.—Shanghai-Minhang Road

either side of the projected line is obligated to construct 1 meter of highway 9 meters in width. If inhabitants are unwilling or unable

FIGURE 30.—Maintenance work on the Shanghai-Minhang Road is all done by hand labor

to perform the work themselves they may, as an alternative, make monetary contributions of $0.60 Mexican a day in respect to labor required.

Projected highways are to be of three widths, viz, country roads, 5 meters; district roads, 7 meters; and provincial roads, 9 meters.

Provincial plans call for the building of two important trunk lines south of the Yangtze River.

Shanghai-Nanking line.—First section, Nanking to Ihing via Lishui and Liyang: Crushed stone; 100 miles; provincial construction. This section is under construction, as it is a portion of the Nanking-Hangchow line, officially inaugurated October, 1929; expected to be opened to traffic by the end of 1929. Second section, Ihing to Changshu: 80 miles; provincial construction. Third section, Changshu to Shanghai via Taitsang and Kiating: 75 miles; provincial construction.

Nanking-Changshu line.—First section, Nanking to Changchow via Kuyung and Chiatan: 100 miles; provincial construction. Second section, Changchow to Changshu via Kiangyin: 70 miles; provincial construction.

NORTHERN KIANGSU

Tungchow (Nantungchow)-Haichow line.—Haian to Fowning via Tungtai and Yencheng: 100 miles, provincial construction. Fowning to Kuanan: 30 miles, provincial construction.

Pukow-Haimen line.—Kiangpu to Kwachow via Pukow, Luho, and Icheng: 70 miles; provincial construction. Kwachow to Tsingkiang via Kiangtu and Taihing: Dirt, 85 miles; provincial construction. Tsingkiang to Haimen via Tungchow: Dirt, 75 miles; provincial construction. Pukow to Hanshan, Anhwei: 50 miles; provincial construction. Szeyang to Szechow, Anhwei: Dirt; 60 miles; provincial construction; a section of the Tsingkiangpu-Suchow Highway. Tsingkiangpu to Shuyang: Dirt; 36½ miles; provincial construction. Szeyang to Sutsien: Dirt; 25 miles; provincial construction. Taichow to Szema: Dirt; 16 miles; provincial construction. Taichow to Siennumiao: Dirt; 30 miles; provincial construction. Taichow to Haian via Kiangyen and Kutang: Dirt; 32 miles; provincial construction.

SHANGHAI AREA

Greater Shanghai district.—Chapei to Lunghwa: 8 miles; Chinese municipal construction. Chapei to Paoshan: 20 miles; Chinese municipal construction. Chungshan to Paoshan road: 20 miles; Chinese municipal construction.

These roads have been projected by the mayor of Greater Shanghai for construction within the near future, to be financed by funds from a municipal loan, subscription to which opened to October 1, 1929.

The district government of Greater Shanghai had under consideration in June, 1929, a highway paralleling the Shanghai-Hangchow Railway from Shanghai to Sungkiang.

The public-works bureau of the municipal government of Nantao, Shanghai, in June, 1929, announced plans for a 20-foot road from Sankwantang road to Lohkapang on the Whangpo River. The road has been marked out through waste land strewn with graves, the removal of which has been ordered.

NANKING DISTRICT

The city planning commission's scheme for a new national capital at Nanking provides for 350 miles of city streets and 500 miles of highways.

The public-road department of Nanking has been given special power with respect to road construction. The department is authorized to purchase land for the extension of old roads and the building of new ones. For widening they are empowered to clear 5 feet on each side without compensating the owners. For every 10 square

feet of building on the land $10 Mexican is to be paid for tearing down and removal of first-class houses and $8 Mexican for second-class. Land beyond the limit of 5 feet is to be paid for at half of the estimated price. Graves and monuments may be removed if they obstruct road construction. For every tomb removed, $2 Mexican is to be paid. The use of public land or buildings for road construction without any payment is within the discretion of the roads department. These roads are as follows: Soochow to Wukiang, Soochow to Pingwang, Soochow to Wusih, Soochow to Changshu, Soochow to Kunshan, Wusih to Kiangyin, Changchow to Kiangyin, and Changchow to Ihing.

MOTOR VEHICLES

Approximately 14,000 motor vehicles are serving the Province of Kiangsu, 11,290 of which are in the Shanghai area alone, which represents 30 per cent of the total motor vehicle registrations in the whole of China.

MOTOR VEHICLES IN KIANGSU PROVINCE

Class	Shanghai area	Nanking area	Provincial area
Passenger cars	8,533	1,135	340
Busses	174	39	127
Trucks	1,731	775	6
Motor cycles	852	8	----
Total	11,290	1,957	473

KWANGCHOW-WAN

The French leased territory of Kwangchow-wan is situated on the extreme southwestern coast of Kwangtung Province, some 230 miles west of and 24 hours' sailing distance from Hong Kong. This territory, which came under French jurisdiction in 1898 on a 99-year lease, is approximately 1,000 square miles in area, one-half of which is water. It has an aggregate population of 150,000 to 200,000, with about 25,000 inhabitants in the port city itself.

Practically no development has taken place during the 30 years of French occupation. No docks or piers have been installed, ships discharging their cargo to lighters at Fort Bayard and Kwangchow-wan. A branch of the Banque de l'Indo-Chine is located at Fort Bayard, but most commercial transactions are conducted through Chinese native banks. An electric light plant under construction was expected to be completed by the end of 1929. Trade, which is in the hands of Cantonese Chinese, is conducted through Hong Kong. Exports of cattle, pork, poultry, fish, and sugar aggregate $5,000,000 Mexican annually while imports, consisting largely of cotton yarn, piece goods, kerosene, flour, cigarettes, motor vehicles, gasoline, condensed milk, canned goods, fresh fruits, flashlights, medicines, and toilet preparations, total $6,000,000 Mexican annually.

Despite its backwardness in many respects, the territory has a well-developed system of roads aggregating 100 miles, constructed

within the past four years. Sixty-five motor cars are operating in the territory.

Two American oil companies, two American motor-car manufacturers, and an American sewing-machine company maintain Chinese agents at Kwangchow-wan. Kwangchow-wan would seem to have some possibility of developing further as a port of entry for the inland Provinces of Kwangsi and Kweichow. Even now the construction of a 30-mile stretch of highway from Fachow or Kochow, Kwangtung, to Luchwan, Kwangsi, would make it possible to motor from Kwangchow-wan through the Province of Kwangsi to its northwestern border, connecting with Kweichow. This would afford a much more direct route than the present commercial route through Canton and up the West River to Wuchow.

KWANGSI

Kwangsi has made more progress in roadbuilding during the past two years than any other single Province in China. Since the beginning of its program early in 1925, 1,500 miles of highways have been constructed and opened to traffic. Unfortunately the construction plans of the former progressive leaders, which came to an abrupt halt in May, 1929, when the Kwangsi-Kwangtung military clash occurred, have not been resumed.

The Province, about the size of Nebraska, is 77,000 square miles in area, has no railways, and until 1927 depended almost entirely upon the water facilities offered by its four rivers, the exception being a few ancient caravan routes overland to Hunan and Yunnan Provinces. Its population of 12,250,000, averaging 160 per square mile, is relatively sparse contrasted with the densely populated districts of the adjoining Province of Kwangtung.

Kwangsi produces the world's supply of star-anise. It is also noted for its mineral resources, but lack of proper transportation and of large capital has rendered full development impossible.

Wuchow, the principal industrial city, has a hosiery factory, a silk filature, and a glass factory. In 1929 a Sino-American concern, with headquarters at Hong Kong, opened a motor-car showroom in Wuchow—a distinct departure from the recognized trade channels of the motor industry.

Kwangsi had up until August, 1928, spent $5,246,000 Mexican in road construction (according to a statement made by the foreign secretary of the Kwangsi Exposition in May, 1929), which sum did not include local contribution of labor and funds in different districts, nor the Kweihsien-Watlam road built by merchants.

A report of the bureau of reconstruction of Kwangsi issued in May, 1929, states that 25 roads of the public highway system, covering an extent of more than 5,000 li (1,500 miles) were then open to traffic. Forty motor-bus transportation companies were then operating over this system of roads, with upward of 550 motor cars and trucks in the Province.

The roads constructed are of the graded-earth type, ditched for drainage, with the exception of 90 miles (in and near the principal cities) which have been macadamized. Side ditches have been used instead of underground drainage. Limestone, which abounds in the

Province, has been used in many instances for surfacing. All highways are 30 feet wide.

In January, 1929, there were 51,000 coolie laborers, recruited from the peasantry, engaged in road building in Kwangsi at a daily wage of approximately 12½ cents (United States). Dirt-road construction was averaging a cost of $2,000 (United States) per mile, with 10 days required to build 1 mile.

Numerous schemes devised for the financing of highway construction in Kwangsi have included:

(*a*) Three-year surtax on land which highways traverse. It is understood that $1,708,779.22 in Kwangsi currency ($529,721 United States) has been raised in this manner.

(*b*) Levying miscellaneous taxes, including those on the wages of laborers, on the properties of the rich, and on native drugs transported on public highways, by which $825,234.84 Kwangsi currency ($255,822 United States) has been secured.

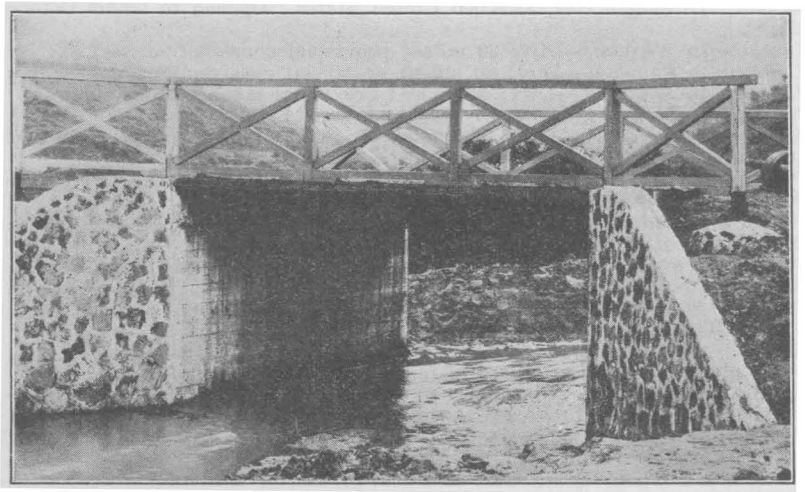

FIGURE 31.—Wooden bridge on Yung Tsang motor road in Kwangsi Province. American Douglas fir is being used in such construction

(*c*) Contributions from citizens. The sum of $24,759.40 ($7,675 United States) is said to have been appropriated by the district government of Tienpao Hsien as the profit from the sale of government lands.

(d) Bank loans. Provincial banks were requested to assist in highway building by extending loans to the provincial highway bureau at any time that such aid was necessary.

The road from Kweihsien to Watlam was built by a private company with a nominal capital of $1,000,000 Kwangsi currency (about $310,000 United States). All other highways are reported to have been financed by the provincial government.

Fare for bus passengers traveling over provincial highways is fixed by the government at 2 cents Kwangsi currency per li (approximately $0.02 per mile United States currency), 40 per cent of the receipts from this toll system being used by the government for road maintenance.

Very few private individuals own cars, most of the passenger cars belonging to the military or civil departments of the government. The bureau of reconstruction has built a number of stations and

garages on the more popular highways. Private cars pay heavy tolls when operating over provincial roads.

The government maintains a motor-car service for the transportation of mails.

ROADS CONSTRUCTED

Siukow to Lungchow.—Length, 13 miles.

Lungchow to Mingkiang.—Dirt; 60 miles; provincial construction. Estimated cost, $120,000 United States. Opened to traffic October, 1927.

Suilo to Nanning.—Dirt; 60 miles; provincial construction. Estimated cost, $200,000 United States. Opened to traffic October, 1928.

Nanning to Woming.—Dirt; 40 miles; provincial construction. Estimated cost, $80,000 United States. Opened to traffic March, 1928.

Nanning to Pingyang.—Dirt; 60 miles; provincial construction. Estimated cost, $160,000 United States. Opened to traffic October, 1927.

Pingyang to Liuchow via Tsinkong.—Dirt; 82 miles; provincial construction. Estimated cost, $160,000 United States. Opened to traffic August, 1928.

Silam to Ishan (Hochih-Liuchow route).—Dirt; 127 miles; provincial construction. Estimated cost, $254,000 United States. Opened to traffic October, 1927.

Liuchow to Wusuan.—Dirt; 30 miles; provincial construction.

Liuchow to Chongon.—Dirt; 60 miles; provincial construction.

Liuchow to Shihlung.—Dirt; 33 miles; provincial construction.

Liuchow to Liukiang.—Dirt; 37 miles; provincial construction.

Laipo to Chuandhow.—Dirt; 184 miles; provincial construction. Estimated cost, $368,000 United States. Opened to traffic August, 1928.

Pinglo to Luchai.—Dirt; 150 miles; provincial construction. Estimated cost, $300,000 United States. Opened to traffic August, 1928.

Pinglo to Kweilin.—Dirt; 60 miles; provincial construction. Estimated cost, $120,000 United States. Opened to traffic October, 1928.

Pinglo to Tatong.—Dirt; 90 miles; provincial construction. Estimated cost, $180,000 United States. Opened to traffic October, 1927.

Pinglo to Hohsien.—Dirt; 73 miles; provincial construction. Estimated cost, $146,000 United States. Opened to traffic March, 1928.

Yangsing to Pingyang.—Dirt; 85 miles; provincial construction.

Pingyang to Kweihsien.—Dirt; 77 miles; provincial construction.

Kweihsien to Watlam.—Macadam; 67 miles; private construction. Estimated cost, $200,000 United States. Opened to traffic January, 1928.

Watlam to Luchwan.—Macadam; 77 miles; provincial construction. Estimated cost, $225,000 United States. Opened to traffic January, 1928.

Watlam to Pokpak.—Macadam; 30 miles; provincial construction. Estimated cost, $100,000 United States. Opened to traffic January, 1928.

Paklow to Junghsien.—Dirt; 15 miles; provincial construction.

Junghsien to Wulin.—Dirt; 35 miles; provincial construction.

Junghsien to Wuchow.—Dirt; 83 miles; provincial construction.

Patpo to Kunghwei.—Dirt; 25 miles; provincial construction.

ROADS UNDER CONSTRUCTION

Mingkiang to Suilo.—Dirt; 50 miles; provincial construction. Estimated cost, $150,000 United States.

Wuchow to Hohsien.—Dirt; 95 miles; provincial construction. Estimated cost, $485,000 United States.

Hochih to Kweichow border.—Dirt; 90 miles; provincial construction. Estimated cost, $300,000 United States.

ROADS PROJECTED

Yunnan border to Kwangtung border via Silin, Poseh, Tunglan, Hochih, Ishan (Yishan), Maping, Loyung, Lowkiang, Siujen, Laipo, Pinglo, Fuchwan, Chungshan, Hohsien, Hsintu, and Waitsap.—Intended to connect up with the Canton-Hankow Railway at Yingtak, Kwangtung. The section from Hochih to Pinglo had been completed up to the end of 1928, with a regular bus service operating from Maping, Liuchow, Ishan, and Laipo.

Lungchow to Wuchow via Pingkian, Nankwan, Ningming, Mingkiang, Szelo, Suilo, Nanning, Pingyang, Kweihsien, Sinyeh, Watlam, Paklow, Junghsien, and

Tsenki, with branch lines from Lungchow to Shuikowkwan and from Lungchow to Chennankwan. This trunk line is about 90 per cent completed. (See under Roads Constructed.)

Other roads projected.—Other roads planned for construction are from Kweichow border to Nanning via Nantan, Hochih, Tuan, Lungshan, Moming and Szeen; Samkong, Kwangtung, to Luchwan via Chongon, Shihlung, Mosun, Konghow, Junghsien, and Watlam; Kweilin to Ningning, Hunan, via Chuancho, Kweilin, Yangso, Pinglo, Fuchwan, Chungsan, Hohsien, Hsintu, and Wuchow—partly constructed; Poseh to Liuchow; Poseh to Wuyuan; Poseh to Nanning; Poseh to Lungchow; Suikou to Nanning; Liuchow to Kweilin; Liuchow to Wuchow; and Lungchow to Wuchow via Nanning.

KWANGTUNG

Kwangtung, in which is situated the treaty port of Canton, opened to the first foreign trade with China in the eighteenth century, is reputed to be the wealthiest Province in China. Under ordinary circumstances it produces $60,000,000 (silver) in tax revenues. Roughly, the Province is about the size of Oregon, but lies in a latitude corresponding to that of south-central Mexico. It covers an area of 100,000 square miles and has a population of 37,000,000—or more than 370 to the square mile. The greatest density is in the West River Delta about Canton and along the coast. Kwangtung is a large producer of raw silk, yielding as many as seven and eight crops a year, in comparison with two in Chekiang Province. Its silk differs from that of Kiangsu or Chekiang in that it is soft and spongy. The Cantonese are noted for their progressiveness and industrious habits. With the exception of the student class, practically all the Chinese who emigrated to America were Cantonese.

Canton's estimated population is 1,500,000. Canton, Swatow, Kongmoon, Kowloon, Lappa, Pakhoi, Samshui, Hong Kong (ceded to Great Britain), Macao (ceded to Portugal), and Kwangchow-wan (leased to France) constitute the treaty ports in the Province.

Steamer service connects with all coast ports, and a splendid launch service serves the delta region. Waterways connect adjacent Provinces. Railways include the Canton-Samshui, Canton-Shiuchow, Canton-Kowloon (Hong Kong), Kongmoon-Taishan, and Swatow-Chaochow. A line is proposed from Canton to Hankow.

The network of rivers and waterways formed by the Canton delta has served the Province with such splendid means of communication that the necessity for good roads has not been a paramount issue.

The first public road bureau was organized in 1920, but owing to civil disturbances and consequent lack of funds did not get under way until 1925. Plans projected in 1926 likewise suffered postponement. Latest reports indicate that out of the 6,374 miles of projected highways, 1,779 miles have been completed, compared with 1,523 miles at the end of 1927 (1,242 miles of which were open to traffic at the end of 1928). These figures include highways in Hainan Island, which is administratively a part of Kwangtung Province but which has been treated separately in this report. Of the 865 miles said to be under construction, 570 miles are in Kwangtung proper. No paved roads exist outside of the city of Canton. All rural highways are of the usual type of earth construction, with possibly a little crushed rock in some districts. Such highways as have been completed lack bridges and are not connected up into any regular

system. It is not possible, therefore, to make a continuous journey from any given part of the Province to another.

In the Swatow district provincial authorities proposed a road-building scheme of 300 miles for 1929.

Provincial officials estimated that $84,000,000, Canton currency, was needed for provincial and district highways. Knowing the impossibility of securing this huge sum, a list of the most important roads was made and estimated upon. It was found that the cost of financing these highways would exceed $6,000,000. The state of the provincial treasury making it impossible to stand this strain, various financing methods were devised. Accordingly, regulations including the following points were promulgated:

(*a*) All persons dwelling within 10 li (3 miles) of either side of the highway shall take up a road bond of $5. Those who are too poor to pay will render labor service in an equivalent sum.

FIGURE 32.—A new street in Canton

(*b*) Local magistrates instructed to make a census of rick owners or families on either side of a defined highway; to report the same to the highway bureau, which in turn would evaluate the property and demand 1 per cent of the assessed value as payment for highway bonds. If the funds thus raised were to be found insufficient, the provincial treasury would make up the difference.

(*c*) Highways constructed by private companies organized by gentry or merchants shall be classified as "mercantile motor bus roads" and, in accordance with the regulations, a franchise to operate motor busses for 30 years will be granted.

Motor bus companies, instead of paying a license fee, are usually permitted to collect tolls from persons and vehicles using the roads, a certain proportion of which goes back to the government. In one instance cited, on a road 70 miles in length, where a car averages $70

(Canton currency) a day, half of this amount was taken by the government. The average rate per mile for passengers is approximately 5 cents. Each passenger is allowed to carry as much baggage as can be piled onto the bus.

The reconstruction department of Kwangtung, at Canton, announced during November, 1929, that it had decided upon the completion of the main eastern and southern highways. To accomplish this road-building program an expenditure of $1,000,000 Mexican was estimated to be necessary, which figure included bridges, culverts, foundations, and asphalt surfacing.

ROADS CONSTRUCTED

In Kwangtung (excluding Hainan Island), 1,133 miles of interior highways have been completed, of which 773 are reported to be open to traffic. On January 1, 1929, Canton had a mileage of 49.5, with 2.5 miles under construction and 3.5 miles to be built during 1929. Twenty-seven miles of Canton's streets are paved with macadam, 5.5 miles with asphalt, 5 miles with concrete, and the remaining 12 miles are of dirt. White Cloud Road in Canton is 150 feet wide, in marked contrast to the narrow alleys of former days. A greater tendency toward proper maintenance of highways has been noticeable on the part of local authorities. Regulations have been passed restricting the use of heavy busses to certain well-paved streets and diverting lighter bus traffic to narrower streets.

Interior roads are said to be fairly well constructed earth highways, properly crowned and ditched. Frost is not a factor. These dirt roads are reported to have stood up under the heavy rainfalls in this section of the country.

Lacking exact details as to the cities which the completed mileage covers, the following list has been compiled from such fragmentary data as have been received:

Canton, city district.—Dirt, 12 miles; macadam, 27 miles; asphalt, 5.5 miles; concrete, 5 miles; total, 49.5 miles; local construction.

Canton to Whampao.—Dirt; 10 miles; local construction.

Swatow, city district.—Sand clay; 5 miles; local construction.

Chaochow.—Sand clay; 2 miles; local construction.

Canton to Kiangsi border, via Tsenghing, Poklo, Hoyun, Lungchun, Chonglok, and Hingning.—Length, 1.5 miles constructed at Lungchun out of a 350-mile stretch.

Canton to Ungkung, Fukien border, via Changmutow, Waichow, Pingshanhu, Haifung, Lukiung, Hweilai, Kityang, and Chaochow.—A total of 150 miles constructed from Tongtowha, on Canton-Kowloon Railway, to Likfung, out of a 265-mile stretch.

Samshui to Moncay, Annam, via Shiuhing, Hoiping, Yeungkong, Tinpak, Kochow, Fachow, Limchow, Yamchow, and Pangcheng.—A total of 376.5 miles constructed out of a 600-mile stretch.

Pakhoi to Limchow.—Dirt; 28 miles; local construction.

Canton to Waitsap via Tsingyun.—Dirt; 1.5 miles constructed out of 220. Provincial construction.

Tungon to Sunhing.—Dirt; 30 miles; local construction.

Loting to Saining.—Dirt; 40 miles; local construction.

Tsuimun to Suikai via Seman, Yinki, and Liuchow.—Dirt; 25 miles; provincial construction.

Towshan, local district.—Dirt; 24 miles; local construction.

Chunshan, city district.—Dirt; 10.2 miles; provincial construction.

Hokshan to Sunwui.—Dirt; 10 miles; local construction.

Hokshan to Wukow.—Dirt; 3 miles; local construction.

Weichow, city district.—Dirt; 7 miles; local construction.

ROADS UNDER CONSTRUCTION

Although highways totaling a length of 565 miles are said to be under construction details are not available, other than the mileage in each of the districts as given in the following list of projected roads.

PROJECTED ROADS

In 1926 public road-building plans included provincial, district, and town roads. Provincial roads were planned to connect Canton with the capital cities of neighboring Provinces, the capital cities of the provincial prefectures, railway terminals, important mines, factories, military roads, and commercial ports; district roads were to be branches of the provincial roads. The roadbeds of all provincial roads were set at 30 feet, of district roads at 24 feet, and of town roads at 20 feet, while the surface of the roads was to be 24, 18, and 16 feet wide, respectively.

The Province was to be divided into four sections—eastern, western, southern, and northern—in each of which a number of trunk lines were to radiate from Canton.

	Miles
Southern district:	
Canton to Mocay, Annam	389
Hwahsien to Chiungchow	106
Kaoming to Chikkai	93
Fatshan to Taishan	75
Shunteh to Macao	47
Around island of Hainan	378
Northern district:	
Canton to Tayuling	189
Ungyuan to Yichang, Hunan	90
Fatkong to Lingwu, Hunan	124
Szechwei to Yingteh	66
Eastern district:	
Canton to Changchow, Fukien	283
Tsenghing to Hoping	288
Kweiyang to Kowloon	114
Chiehyang to Meihsien	49
Meihsien to Kiangsi border	47
Western district:	
Canton to Wuchow, Kwangsi	142
Samshui to Waitsap, Kwangsi	69

Of these projected roads 1,133 miles have been completed, 99 in the eastern district, 789 in the southern, 127 in the western, 40 in the northern, and 78 in the central district, but no specific details are available to record accurately what cities this mileage covers.

In the Canton city district a road is projected to extend from Taishatau to Tungshan suburb. This road, 1 mile in length, 30 feet wide, bituminous surfaced, is estimated to cost $29,000 Mexican.

A reconstruction program drawn up during March, 1928 by Wu Tehching, commissioner of reconstruction for Kwangtung Province, and approved by the provincial administration, described highway projects as follows:

> The provincial highways, particularly the Chungshan highway connecting Whampoa and Canton, are in sore need of improvement. The estimated cost of repairing this road is $159,000 Mexican. All this money should be drawn from the provincial treasury in monthly installments.
>
> The following highways should be constructed: The Kuong-Far highway, estimated cost $369,000 Mexican; the Canton-Tsengshin highway, estimated cost $525,000 Mexican; the Lungngan-Tungtai-Woshi highway, estimated cost $150,-

000 Mexican; the projected completion of the highways in eastern Kwangtung, estimated cost $2,700,000 Mexican; and the projected completion of the highways in the southern part of the Province, estimated cost $3,600,000 Mexican.

The construction of public highways in the western and northern regions of Kwangtung could be postponed, as the West River and the Canton-Hankow Railway can be conveniently used for transportation purposes.

The taxes for the upkeep and maintenance of public highways throughout the Province in the past have been about $800,000 Mexican per annum. As this amount is far from enough to meet the needs of the projected plan, all magistrates and road superintendents should be asked to raise a certain amount of the necessary funds from their respective localities.

The city of Canton has an elaborate 3-year road-building program calling for the construction of 241,000 feet of city highways. This work is divided into three stages, viz: The first stage to cover 22 new roads, 90,090 feet, estimated cost $3,600,000 Mexican; second stage, 20 roads, 72,300 feet, estimated cost $2,890,000 Mexican; third stage, 19 roads, 79,300 feet, estimated cost $3,170,000 Mexican. How much of this scheme will come to fruition is problematical, especially when it is considered that a total of but 190,000 feet of motor roads was constructed from 1912 to 1928 inclusive.

ROAD MILEAGE IN KWANGTUNG PROVINCE JANUARY 1, 1929

[Exclusive of Canton City]

District	Projected	Completed	Open to traffic	Under construction	Total [1]
Eastern	517	99	53	80	179
Southern	1,255	789	539	81	870
Western	928	127	76	137	264
Northern	241	40	37	201	241
Central	272	78	68	66	144
Kwangtung proper	3,213	1,133	773	565	1,698
Hainan Island	3,161	646	469	297	943
Grand total	6,374	1,779	1,242	862	2,641

[1] Includes only roads completed and under construction.

MOTOR VEHICLES

There are estimated to be in the city of Canton 719 passenger cars, 77 busses, 142 trucks, and 91 motor cycles, and in the Province outside Canton, 300 busses—a total of 1,329 motor vehicles.

KWANTUNG LEASED TERRITORY

The Kwantung Leased Territory, comprising Port Arthur and Dairen, is under Japanese control. It has an area of 1,302 square miles, with a population of approximately 766,000—an average density of 553 per square mile. Dairen, located on a fine and well-equipped harbor, is the main port of entry, not only for the territory but for Manchuria as well. The city has a population of about 202,000.

In 1921 the Kwantung government drew up for the entire leased territory a general road-building plan, which has been steadily followed. The government's plans include the gradual macadamizing of dirt roads. During 1928–29 the old dirt road from Dairen to Chinchow, a distance of 20 miles, was completely dug up and macadamized.

According to the 1928 Statistical Abstract of the Kwantung Leased Territory there is a total mileage of 874 miles, divided as follows: 18 to 36 feet wide, 778 miles; 36 to 48 feet wide, 22 miles; 48 to 60 feet wide, 32 miles; 60 to 84 feet wide, 32 miles; 84 to 108 feet wide, 8 miles; and 108 to 150 feet wide, 2 miles. Of the above mileage 110 miles consist of tar macadamized roads. The streets in Dairen and Port Arthur and in the residential suburbs of Dairen are, almost without exception, well macadamized. Granite blocks for cart traffic have been placed in the middle of the macadamized road from Dairen to Chinchow. Country roads are principally dirt, graded and drained.

All expenses incident to construction and maintenance of roads are financed by the territorial government.

PRINCIPAL HIGHWAYS

Dairen to Port Arthur.—Macadam, 36 feet wide; 32 miles; territorial government construction.

Dairen.—City and suburban streets: Macadam, 60 to 150 feet wide; 114 miles; Dairen district roads: Macadam, 24 to 36 feet wide; 73 miles.

Port Arthur streets.—Macadam, 20 to 90 feet wide; 64 miles.

Dairen to Port Arthur via Yingchingtze.—Macadam, 18 feet wide; 35 miles.

Pulantien to Pitsuwo.—Macadam, 24 feet wide; 36 miles.

Pulantien, city district.—Macadam; 6 miles.

Pitsuwo, city district.—Macadam; 5 miles.

Pulantien to Kyokahoshi.—Macadam; 14 miles.

Dairen to Chinchow.—Macadam, 60 feet wide; 21 miles.

Chinchow, city district, Port Arthur to Nanshanli.—Macadam, 18 feet wide; 9 miles.

Dairen to Port Arthur.—Asphalt and crushed stone; 25 miles. Cost, 500,000 yen ($249,000 United States). Built in 1918; 12 busses operated by South Manuchuria Electric Co. Private cars allowed with Dairen city license.

Pulantien to Pitsuwo.—Crushed stone and dirt; 55 miles; Kwantung government construction. Built 1921–1923; four bus companies operate motor service over the route.

Dairen to Chinchow.—Crushed stone and some asphalt; 20 miles; Kwantung government construction. Cost, 250,000 gold yen ($124,500 United States). Built in 1929. Six busses operated by South Manchuria Electric Co. Private cars allowed with Dairen city license plates.

Chinchow to Pulantien.—Dirt; 30 miles; under construction by Kwantung government.

MOTOR VEHICLES

The district is served by 1,203 motor vehicles. In the city of Dairen there are 526 passenger cars, 30 busses, 166 trucks, and 305 motor cycles. In outside areas there are 73 passenger cars, 9 busses, 44 trucks, and 50 motor cycles.

KWEICHOW

Kweichow, one of the inland Provinces of southwest China, covers an area of 67,000 square miles and has an estimated population of 11,000,000, or about 180 per square mile. The population centers in the south and southeast. The Province consists of a great arid tableland with mean altitude of over 4,000 feet. Mining is the most important industry. No other Province in China is so inaccessible from the coast. Kweichow lies back from all railways and all navigable streams except a branch of the Yangtze River, upon which small power launches from Chungking go up and touch the

northwest tip of the Province at Chihshui. Not a mile of railway exists. Four chief courier roads, all very narrow, radiating from the capital, Kweiyang, and connecting with Yunnan, Szechwan, Hunan, and Kwangsi, have served the Province as transportation lanes for centuries.

In 1926 Chow Hsi-cheng, a very progressive provincial governor (since deceased), saw the wisdom of modern roads and lent energetic support to a good-roads movement started in the Province by the China International Famine Relief Commission. With the allocation of a generous portion of the famine surtax to the Kweichow committee of the China International Famine Relief Commission immediately following the 1925 drought famine and typhus epidemic, it became possible for this commission to take a leading part in furthering a good-roads movement. All classes of people joined with the officials in supporting a progressive policy of motor-road building as the most effective means of preventing famine in this isolated Province.

In the summer of 1926 a beginning was made in the construction of a modern motor road around the capital city, Kweiyang, by the Kweichow committee of the China International Famine Relief Commission in conjunction with the provincial government, the latter contributing the services of 1,000 soldiers and as many schoolboys and schoolgirls for many weeks.

In the spring of 1927, 50,000 farmers and townspeople worked more than two months in grading a stretch of new motor road from Anshun to Kweiyang and then north to Tsunyi and Tungtze—a distance of over 200 miles. In September, 1927, half the grading was completed. During October, a force of 150,000 men was recruited by the governor to carry on this grading work through November and December, and was increased to 200,000 in January, 1928.

The first road-building plans called for a highway running from Anshun through Kweiyang, and thence north to Chihshui, giving an outlet to water communication on the Yangtze River. This road of 350 miles was estimated to cost $1,000,000 Mexican for grading, and macadamizing would require an additional $2,500,000 Mexican.

Twenty per cent of the first amount was pledged by the China International Famine Relief Commission for salaries of engineering staff and for surveys and construction. The commission also undertook to pay for special structures, such as that for crossing the Wukiang Ho, where a steel cable on towers is necessary to act as a guide for large ferries carrying motor cars in flood time. A bridge at this point would be too expensive for the present time. Common labor for this project was furnished by the provincial government. As the road runs through rough country where limestone is plentiful, macadamizing is to be done as fast as funds can be provided. The completion of this first road gave to Kweiyang, hitherto weeks and months from the outside world, a comparatively quick and easy outlet to navigation on the Yangtze for both freight and passenger service.

Upon the completion of this Anshun-Kweiyang-Chihshui highway, a trunk line running to the southwestern corner of the Province west

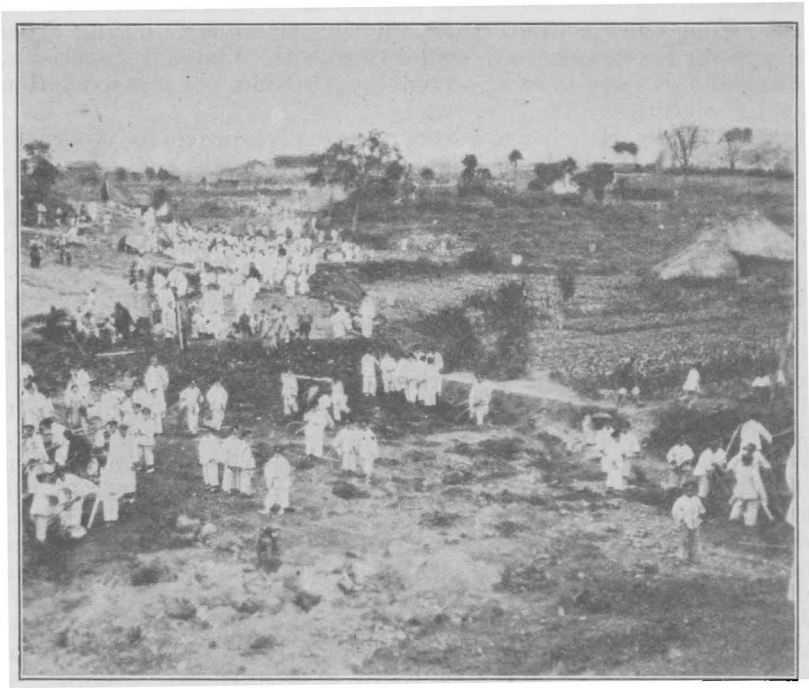

FIGURE 33.—School children as well as soldiers help to build highways in Kweichow Province

FIGURE 34.—Farmers and townspeople of Kweichow Province assisting in road building

to the railway line in Yunnan Province was undertaken, as well as other roads to the southeast and east of the capital city, Kweiyang. Surveys for the Kweiyang-Lipo stretch were completed in 1928, the entire distance from Kweiyang to Nantan, Kwangsi, now being completed and open to traffic. The extension of the Anshun line is under construction as far as Puanhsien. It will eventually connect with a branch of the West River to the railway in Yunnan Province at Iliang. The western portion of this road will be far less difficult to construct than that part lying in Kweichow. Another branch of the Anshun (Kwansuling) road through Singyi to the Kwangsi border is likewise under construction.

Existing roads are 30 feet wide and are crowned a foot in the center. Surfacing is 12 feet wide at first, to be later extended to 20 feet throughout. Lime mortar will be eventually used for surfacing as limestone is at hand all along the routes, whereas cement is unknown in the Province. Despite the availability of limestone, it is estimated that it will require two years to complete the surfacing.

The provincial road-building program consists of five trunk routes and seven branch lines as follows: First trunk line, Kweiyang to Tungjen; second trunk line, Kweiyang to Nantan, Kwangsi; third trunk line, Kweiyang to Anshun; fourth trunk line, Anshun to Yunnan border, and Anshun to Silung, Kwangsi border; fifth trunk line, Kweiyang to Chihshui. Branch lines are as follows: Kweiyang to Pichieh, Sankiang to Tuyun, Loho to Tuhshan, Chengan to Laohangping, Chenyuan to fifth trunk line, Tsekiang to Shifung, and Tungtze to Sungkan.

Approximately 750 miles of highways have been constructed and opened to traffic, and 600 miles additional are under course of construction.

ROADS CONSTRUCTED

Kweiyang, city district.—Macadamized; 8 miles; provincial construction.

Kweiyang to Pingyueh.—Dirt; 65 miles; provincial construction. This is a portion of the Kweiyang-Tungjen first trunk line (Tung-yueh road). The second section from Pingyueh to Chenyuan is now in course of construction.

Kweiyang to Nantan, Kwangsi, via Kweitung, Machingping, Tuyun, and Tuhshan.—Dirt; 193 miles; provincial construction. This is the second trunk line, known as the Kwei-Nan road. Entire route is completed but not yet open to traffic, awaiting the completion of a large bridge at Lintanho.

Kweiyang to Anshun.—Dirt; 100 miles; provincial and International Famine Relief Commission construction. Completed and open to traffic. Known as the third trunk line.

Kweiyang to Chihshui via Tsunyi and Tungtsze.—Dirt; 167 miles. International Famine Relief Commission and provincial construction. Cost, $1,000,000 Mexican, 20 per cent paid by International Famine Relief Commission. A 100-mile section of this route between Shihsien and Chihsien through an extremely mountainous district is under construction, but traffic is otherwise operating over the entire section.

Kweiyang to Kiensi.—Dirt; 87 miles; provincial construction. A part of the Kweiyang-Pichieh (Kwei-Pi road) branch line.

Tsekiang to Shifung.—Dirt; 30 miles; provincial construction.

Sankiang to Tuyun.—Dirt; 93 miles; provincial construction. A branch line known as the San-Tu road, one end of which touches the second trunk line and the other connects with the projected road to Liuchow, Kwangsi.

ROADS UNDER CONSTRUCTION

Pingyueh to Chenyuan (Tung-Yueh road).—Dirt; 60 miles. This is the second section of the first trunk line from Kweiyang to Tungjen, the first section, from Kweiyang to Pingyueh, being completed and open to traffic.

FIGURE 35.—Motor road between Kweiyang and Anyuan, Kweichow Province

FIGURE 36.—The first motor car to reach Kweichow Province. This car, of American make, was knocked down and parts were carried on coolies' backs over mountains between Kweichow and Kwangsi Provinces, taking 50 days en route

Anshun to Yunnan border.—Dirt; 133 miles; provincial construction. A section of the fourth trunk line, now under construction from Kwansuling, a short distance from Anshun, to the Yunnan border, via Puan.

Anshun to Silin, Kwangsi, via Singyi, Anloon, and Nantung.—Dirt; 133 miles; provincial construction. A branch of the fourth trunk line, now under construction from Kwansuling, a short distance from Anshun to Silin in Kwangsi Province.

Shihsien to Chihsien.—Dirt; 100 miles; provincial construction. A mountainous stretch on the Kweiyang-Chihshui fifth trunk line, now in course of construction.

Loho to Tuhshan.—Dirt; 20 miles; provincial construction. A branch line known as the Loh-sha road, connecting with the second trunk line.

Chengan to Laohwangping.—Dirt; 120 miles; provincial construction. A branch line to connect the first and fifth trunk lines.

Chenyuan to fifth trunk line.—This 100-mile road extends from Chenyuan to a point on the fifth trunk line, known as the Cheng-Chien road.

Tungtszê to Sungkan.—Dirt; 47 miles; provincial construction. A branch line of the fifth trunk line; two-thirds completed.

ROADS PROJECTED

Kweiyang to Tungjen via Pingyueh and Chenyuan.—Dirt; 267 miles; the entire route is known as the Tung-Yueh road. The first section, from Kweiyang to Pingyueh, is completed and open to traffic; the second section, from Pingyueh to Chenyuan, is now in course of construction. The third section, from Chenyuan to Tungjen, is to be constructed at a later date.

Kiensi to Pichieh.—Dirt; 80 miles; this is the last section of the Kweiyang-Pichieh (Kwei-Pi road), the first section of which, from Kweiyang to Kiensi, is completed and open to traffic. Both of these roads are to be provincial construction.

MOTOR VEHICLES

The first motor car arrived in Kweiyang in August, 1927. It is difficult for one living in Peiping, Shanghai, or New York to realize just what this means, for Kweichow is perhaps the most difficult Province in China into which to transport a motor car. No roads link it up with any railway or river. The first automobile to arrive in the Province had a 50-day journey from Canton by boat and trail. It was transported in pieces, at some places on coolie backs, at others on bamboo litters, and finally assembled upon arrival at Kweiyang. There are now upward of 35 cars within the Province.

MACAO

Macao is the oldest European colony in the Far East. As a direct result of the reclaimed lands of the port works in the inner and outer harbors, its area, which in 1920 was 1,250 acres, has been increased to 1,750. Macao lies west of the estuary of the Sikiang River in South China, about 40 miles from Canton. Established in 1557, this Portuguese colony has existed for the past 371 years. The Portuguese administration covers the territories of Macao, Taipa, and Coloane. During 1927 the population is said to have practically doubled, reaching 160,000 at the close of the year. During the past few years, Macao has been making a strong bid for rehabilitation of its industrial life, and toward this end $10,000,000 has been spent on dredging a suitable harbor. The present director of port works, a civil and industrial engineer, is particularly interested in road building, having taught the subject in the Institute Superior Tecnico de Lisboa, Portugal.

An important 35-mile road has been constructed, connecting Macao with Shekki City, the capital of a thriving trade center in the Heungshan (Chungshang) district of Kwangtung Province, and tapping a wide agricultural area. The first section of this road, 9 miles between Macao Barrier Gate and Choi Mey, was completed early in 1928. The road was built by a Chinese company holding a franchise to conduct a bus and truck service upon it. The journey by motor bus from Macao to Shekki requires from 2½ to 3 hours, allowing for halts en route, in comparison with 12 hours or more by junk or by boat.

ROADS CONSTRUCTED

Macao to Shekki.—Dirt; 35 miles; private construction. This mileage, however, is credited to Kwangtung Province, as very little of it is within Macao proper. Considerable road improvement work has been done in Macao City and on the two small islands within the Portuguese colony.

MOTOR VEHICLES

In the Portuguese colony of Macao 158 motor vehicles are operating as follows: Passenger cars, 107; busses, 26; trucks, 3; and motorcycles, 22.

MANCHURIA

Manchuria, comprising the "three eastern Provinces"—Heilungkiang, Kirin, and Fengtien (Shengking), lately renamed Liaoning—covers an area of 382,627 square miles (about equal to the combined area of California, Oregon, Washington, and Ohio), in a latitude corresponding to that of northern United States and southern Canada. Its population of 27,512,800 averages about 72 to the square mile, being densest in the Liao Plain. Most of the residents of Manchuria are Chinese. The remainder is reported to be made up of 768,260 Koreans, 240,108 Japanese, 140,554 Russians, 529 British, 384 Germans, 322 French, 190 Americans, and 1,733 of other nationalities.

Manchuria contains some of the finest agricultural land in the world. A great migration of Chinese population from such famine-stricken and war-ridden Provinces as Shantung, Hopeh (Chihli), and Honan has been in progress during recent years, during which time upward of 1,000,000 immigrants have entered Manchuria annually. Manchuria, which for years has represented the most peaceful section of China, is developing far ahead of any other part of that country.

Its principal cities are Harbin and Dairen. Harbin, with 100,000 foreigners, mostly Russians, has a larger white population than any other city in Asia; in addition there are about 200,000 Chinese. Dairen, in the Japanese-controlled territory of Kwantung Peninsula, has a population of 186,000. Mukden has a population of 200,000 Chinese and Kirin about 100,000. Changchun, Aigun, and Newchwang are other important cities. Principal treaty ports are Antung, Dairen, Harbin, and Mukden, although a number of other cities are included under this designation.

NORTH MANCHURIA

Roads in north Manchuria consist principally of overland caravan routes, and during the winter season (November to April) it is pos-

sible for motor traffic to operate over the frozen trails. Approximately 6,000 miles of such routes are suitable for motor traffic during the winter months. Thaws or rains make such communication practically impossible, therefore transportation in north Manchuria depends largely upon the seasons.

The roads in north Manchuria may be grouped under four categories: (1) Those radiating from the Chinese Eastern Railway, (2)

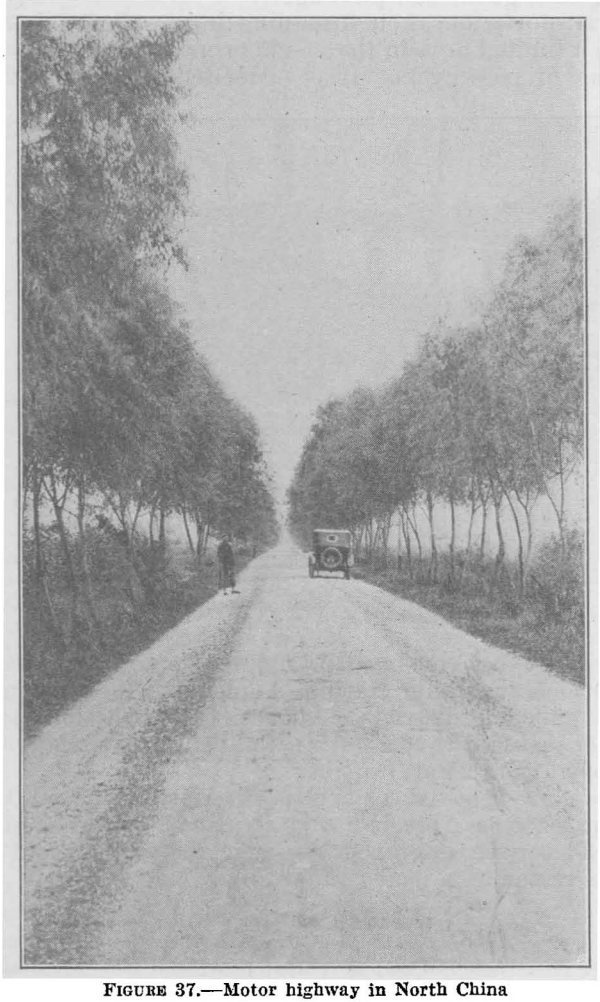

FIGURE 37.—Motor highway in North China

those running parallel to the railway, (3) those lying in valleys of the Sungari River, and (4) those constituting the arteries of interdistrict commerce. Those in the first category are by far the most important, as they serve a rich agricultural hinterland. From Tsitsihar, for instance, radiate half a dozen roads. Roads connecting with Antachan station embrace a system covering a total length of about 450 miles. Harbin is the most important junction of such cart routes. Shipments of soybeans produced in the neighborhood reach

the Harbin market by these cart routes, whose importance as feeders to the Chinese Eastern Railway can hardly be overestimated.

Roads paralleling the railway rival the railway for the carrying of foods. Of such roads, the two principal ones both run from Changchun to Harbin, but over different routes.

Since overland routes constitute the only artery of communication in the interior of north Manchuria, carts play a very important part in carrying both goods and passengers.

Motor transportation, though gaining in popularity, is at present confined to a limited area in the neighborhood of the railway and to the carrying of passengers. It is estimated that about 220 motor

FIGURE 38.—Motor-bus transportation is making inroads on the field of the droshky in North Manchuria

cars of different types are engaged in passenger traffic between certain railway stations, including Harbin, Antachan, Tientsaokang, Tsitsihar, and neighboring districts. About 100 cars are on regular runs in the winter season between Harbin and neighboring districts, about 40 at Antachan, and 25 at Tsitsihar.

There are no well-paved roads in north Manchuria with the exception of that between Antachan and Paichuan, about 80 miles long. On this road certain improvements have been made, and the road more or less resembles a modern highway.

ROADS CONSTRUCTED IN NORTH MANCHURIA

Tailaichi to Tatzecheng.—Dirt; 30 miles; provincial construction.

Tailaichi to Talaiting.—Dirt; 40 miles; provincial construction. Winter traffic; Shan Ho Lu Kwan Bus Co. and Yueh Lai Chan Bus Co. operating.

Sincheng to Shwangcheng via Changchunling.—Dirt; 70 miles; provincial construction. Motor service operating.

Changchunling to Wukiachan.—Dirt; 25 miles; provincial construction. Motor service operating.

Tasinlitun to Sanchaho.—Dirt; 35 miles; provincial construction. Motor service operating.

Hailin to Ninguta.—Dirt; 15 miles; private construction. Cost, Harbin $12,000 (about $1,800 United States). Built summer of 1929 for winter traffic only; controlled by Ninguta merchants. No private cars allowed. Motor-bus service operates 11 busses.

Nungan to Fulungchuan.—Dirt; 30 miles; provincial construction. Old cart road; winter traffic; private cars allowed; bus service operating.

Nungan to Changkiawan.—Dirt; 25 miles; provincial construction. Motor-bus service operating.

Changkiawan to Tehhwei.—Dirt; 15 miles; provincial construction. Motor-bus service operating.

Nungan to Kwanchengtze (Changchun).—Dirt; 40 miles; provincial construction. Old cart road; winter traffic; private cars allowed; bus service operated by the Hsing Yieh Bus Co.

Nungan to Sincheng.—Dirt; 60 miles; provincial construction. Old cart road; winter traffic; private cars allowed; bus service operated by Hsing Yieh Bus Co.

Sincheng to Talai.—Dirt; 40 miles; provincial construction. Old cart road; private cars allowed; motor-bus service operated by Hsing Yieh Bus Co.

Schwangcheng to Wuchang via Lalincheng.—Dirt; 80 miles; provincial construction. Motor-bus service operated by Yi Hsing Yuan Co. and Ming Yuen Co.

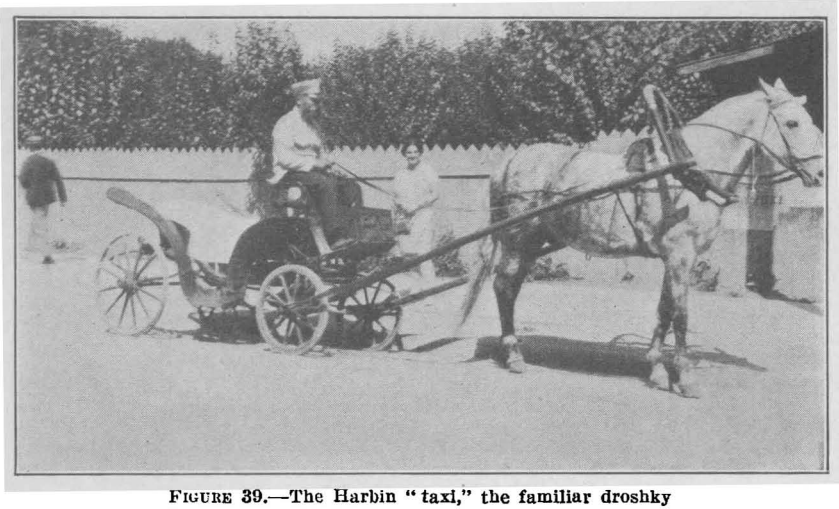

FIGURE 39.—The Harbin "taxi," the familiar droshky

Lalincheng to Ashiho.—Dirt; 30 miles; provincial construction.

Lalincheng to Pakiatze.—Dirt; 10 miles; provincial construction. Irregular motor service during winter.

Wuchang to Shanhotun.—Dirt; 17 miles; provincial construction.

Yushu to Wuchang.—Dirt; 25 miles; provincial construction. Motor service operating.

Sanchaho to Shanhotun via Kungpengtze and Yushu.—Dirt; 75 miles; provincial construction. Motor service operated by Tung Pin Chan and Tung Hsing Chan companies.

Sanchaho to Wukershu.—Dirt; 20 miles; provincial construction.

Taolaichao to Shanhotun via Wukershu and Yushu.—Dirt; 90 miles; provincial construction.

Taolaichao to Sincheng via Wukiachan.—Dirt; 80 miles; provincial construction. Cart roads; winter traffic; motor services operating.

Tasinlitun to Sanchaho.—Dirt; 55 miles; provincial construction.

Chaochow to Tientsaokang.—Dirt; 80 miles; provincial construction. Motor-bus service operated by Hwei Tung Yuan Co.

Tientsaokang to Lansi.—Dirt; 20 miles. Motor-bus service operated by Yung Ho Tung.

Lansi to Tsingkang.—Dirt; 40 miles. Motor-bus service operated by Yi Feng Yuan.

Harbin to Pehtwanlintze (Suihwa) via Hulan and Shihsenchengtze.—Length, 80 miles; provincial construction.

Tawutsingtze to Pehtwanlintze (Suihwa).—Dirt; 30 miles; provincial construction. Motor-bus service.

Tawutsingtze to Paichuan.—Dirt; 70 miles; provincial construction.

Pehtwanlintze (Suihwa) to Yuching.—Dirt; 35 miles; provincial construction.

Antachan to Paichuan via Anta and Hinglungchen.—Well paved; 120 miles; provincial construction. Motor-bus services operated by 15 companies.

Siaohaotze to Hinglungchen.—Dirt; 77 miles; provincial construction. Motor-bus services operated.

Paichuan to Hailun.—Dirt; 60 miles; provincial construction. Motor-bus service operating.

Hailun to Tungpei.—Dirt; 60 miles; provincial construction.

Sanchan (Koshan) to Paichuan via Erhkeshan.—Length, 40 miles; provincial construction.

Sanchan (Koshan) to Paichuan.—Dirt; 38 miles; provincial construction.

Sanchan (Koshan) to Noho.—Dirt; 63 miles; provincial construction.

Angangki to Fularki.—Dirt; 6 miles. Traffic all year.

Fularki to Chinghsenchen.—Dirt; 30 miles. Traffic all year.

Angangki to Tsitsihar.—Dirt; 15 miles. Traffic all year round.

Tsitsihar to railway station.—Concrete; 1½ miles; municipal construction. Cost, Harbin $300,000 (about $45,000 United States).

Tsitsihar to Taheiho via Noho, Nunkiang (Mergen), and Aigun.—Dirt; 350 miles. Winter traffic only; five motor-bus services operating, including a provincial one from Nunkiang to Aigun.

Hailar to Three Rivers.—Dirt; 207 miles; provincial construction. Old wagon trail; motor service operated by various trading firms during spring and fall.

Hailar to Arshan.—Dirt; 167 miles; provincial construction. Old wagon trail across uncultivated grass plains. Irregular motor service during spring and fall.

Hulan to Payen via Sitsichang.—Dirt; 46 miles; provincial construction. Motor-bus service operating.

Hulan to Lansi.—Dirt; 35 miles; provincial construction.

Payen to Shihjenchengtze.—Dirt; 40 miles; provincial construction. Motor-bus service operating.

Harbin.—Several miles of paved roads (asphalt and crushed stone) in Harbin.

Harbin to Pinchow.—Dirt; 50 miles; provincial construction. Motor-bus service operating.

Ashiho to Pinchow.—Dirt; 25 miles; provincial construction. Motor-bus service operating.

Pinchow to Sintien.—Dirt; 30 miles; provincial construction.

Pinchow to Mulan.—Dirt; 43 miles; provincial construction.

Mulan to Tungho.—Dirt; 38 miles; provincial construction.

Wukimiho to Changshow (Tungbin).—Dirt; 33 miles; provincial construction.

Changshow to Fangcheng.—Dirt; 47 miles; provincial construction.

Fangcheng to Tungho.—Dirt; 17 miles; provincial construction.

Tungho to Sansing.—Dirt; 53 miles; provincial construction.

Sansing to Lishu via Poli.—Dirt; 143 miles; provincial construction. Motor-bus service operating.

Lishu to Mishan via Pingyuan.—Dirt; 99 miles; provincial construction. Motor-bus service operating.

Tungho to Fuchin via Sansing, Kiamusze, and Hwachwan.—Dirt; 400 miles; provincial construction.

SOUTH MANCHURIA

Three overland caravan routes touch Mukden (Shenyang), one running to Kirin and thence to north Manchuria, one to the southwest to Peiping (Peking) through Jehol Province, and the other south to Shanhaikwan. With the exception of these trails, which are used to some extent by motor traffic during the winter months when the ground is frozen, few roads have been constructed. Roads around large trade centers, such as Mukden, Changchun (Kwanchengtze), Tiehling, Kirin, and Newchwang, are adaptable to motor transportation for short hauls during winter months when the

ground is frozen, and there is a tendency to appreciate the value of such transportation. Such development as has occurred has been almost wholly initiated by private bus-line interests, which, in addition to utilizing the caravan routes, operated over rough, grassy plains, where no roads existed. Provincial authorities being unwilling to develop highways, motor-bus interests made such improvements upon these routes, from time to time, as would keep them passsable. In many instances bus companies have actually built their roads and thereby hold a monopoly franchise which prohibits private vehicles from operating except upon special permission and the payment of tolls.

The Mukden government during 1928 spent $300,000 Mexican on improving streets within Mukden proper. Practically all the main

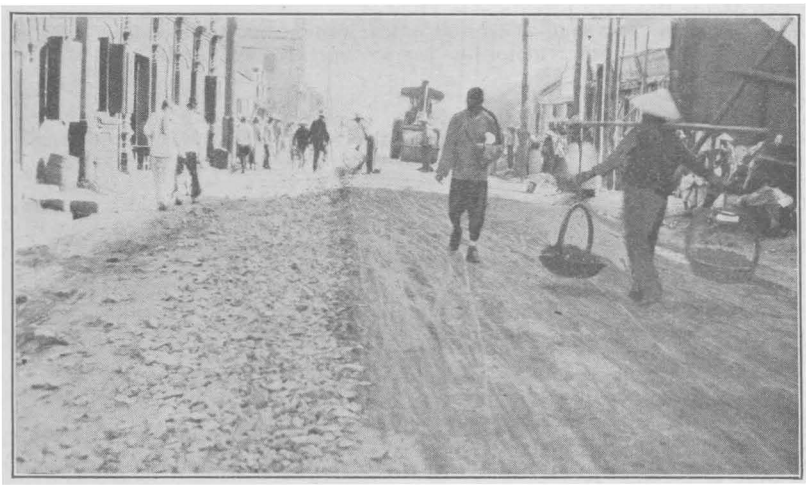

FIGURE 40.—New construction in Mukden, Manchuria

streets are now dirt and stone, covered with coal tar. Several asphalt streets are to be found in Mukden, Harbin, Changchun, and Dairen. Oil companies have demonstrated the economy of asphalt as a road-surfacing material over the local coal-tar product produced at Fushan. In 1929 the first road-construction equipment was purchased by the Mukden government, and a highway commissioner was appointed to investigate highway routes.

ROADS CONSTRUCTED

Mukden (also known as Shenyang), city district.—Chinese city and commercial settlement: Macadam, 20 miles. Japanese railway settlement: Macadam, 15 miles; cost $300,000 Mexican. Roads are chiefly constructed of crushed stone, rolled, and covered with a thin coat of fine sand. In some instances a local coal-tar product is used. A few streets are surfaced with asphaltum.

Mukden (Shenyang) to Liaochung.—Dirt; 50 miles; private construction. Cost, $25,000 Mexican. Built in 1925; slight repairs now and then, but generally in poor condition; no traffic during summer; private cars not permitted without special permit. Road controlled by Sheng Liao Bus Co., which operates bus service over route.

Mukden (Shenyang) to Faku.—Dirt; 53 miles; provincial construction. Cost, $30,000 Mexican. Built in 1925; slight repairs now and then; no traffic during summer; provincial control; bus service operated by Sheng Pen Bus Co. Private cars allowed without restriction.

Faku to Tiehling.—Dirt; 30 miles. Motor-bus service operated by Sheng Peh Bus. Co.

Mukden (Shenyang) to Tunghwa via Fushun, Yungling, and Hingking.—Dirt; 238 miles; provincial construction. Motor-bus service operated by Tung-Sheng Motor Bus. Co.

Mukden to Sinmin.—Dirt; 30 miles; provincial construction. Motor-bus service operated by Tung-Kee Motor Bus. Co.

Liaoyang to Siaopehho via Liuerupu.—Dirt; 35 miles; provincial construction, Motor-bus service operated by Dah Kee Motor Bus. Co.

Mayitun to Liaoyang via Tengaopu and Shaho.—Dirt; 50 miles; provincial construction. Motor-bus service operated by North Eastern Motor Bus Co.

Chenan to Tahushan.—Dirt; 7 miles.

Kwangning to Chenan.—Dirt cart road; 17 miles: provincial construction. Winter traffic; motor-bus service operated by Kwangning Bus Co.; private cars allowed.

Kwangning (Pehcheng) to Kowpangtze.—Dirt; 17 miles; provincial construction. Old cart road; winter traffic only; motor-bus service operated by Ke Peh Motor Bus Co.; private cars allowed.

Kwangning to Luyangyi.—Dirt; 20 miles; provincial construction. Old cart road; winter traffic only; motor-bus service operated by Kwangning Bus Co.; private cars allowed.

Ichow to Tsinghomen.—Dirt; provincial construction. Old cart road; winter traffic; private cars allowed; bus service operated by Tung Chang Co.

Chinchow to Kinsi via Hungleihsien.—Dirt; 40 miles; private construction. Old cart road; closed during bad weather; controlled by two private bus companies; private cars allowed.

Chinchow to Chaoyang (Jehol) via Peipiao.—Length, 30 miles; provincial construction. Old cart road used by military from Chinchow to Chaoyang, Jehol Province (formerly a part of Chihli Province). Bus service operated by military. Private cars allowed.

Newchwangcheng (Old Newchwang) to Haicheng.—Dirt; 12 miles; provincial construction. Road in bad condition and can not be used at present. Formerly bus service maintained by Haicheng Lee Tung Motor Bus Co. Private cars allowed.

Haicheng to Siuyuen.—Dirt; 60 miles; provincial construction. Dirt road in bad condition, not in use at present; Siuyen Bus Co. operates service when conditions permit. Private cars allowed.

Newchang (Yingkow) to Kaiping and Haicheng.—Dirt; 75 miles; provincial construction. Motor-bus services operated by San Yee Hsin Motor Bus Co. and Kai Ying Motor Bus Co.

Antung to Kiuliencheng.—Dirt; 7 miles; private construction. Motor-bus service operated by An-Chin-Cheng-Ya Motor Bus Co.

Antung to Takushan via Santaolangtow, Tatungkow, and Hwangtukan.—Dirt; 67 miles; provincial construction. Old cart road used except in bad weather; private cars allowed; motor-bus service operated by six bus companies, which more or less control the road. These companies are An Chwana Cheng Hsin Bus Co., Chow Tao Motor Bus Co., Cheng Bien Motor Bus Co., An Chwang Pao Tai Bus Co., An-Cheng Chung Shan Bus Co., Chiao Tung Motor Bus Co., and Chwang Fu Motor Bus Co.

Hiungyao to Chwangho.—Dirt; 60 miles; provincial construction. Motor-bus service operated by Teh Shun Motor Bus Co.

Fenghwangcheng to Antung.—Dirt; 40 miles; provincial construction. Motor-bus service operated by Fengchen Chi Chiang Bus Co.

Szepingkai to Sian via Heierhsu.—Dirt; 40 miles; provincial construction. Motor-bus service operated by Yung Sheng Co.

Szepingkai to Yushutai via Lishu and Fenghwa.—Dirt; 110 miles; provincial construction. Motor-bus service between Szepingkai and Lishu operated by Shih-li Co. over a 35-mile stretch. Lishu to Yushutai section operated by Ping Tai Motor Bus Co.

Tungliaochen to Kailu (Jehol).—Dirt; 60 miles; provincial construction. Motor-bus service operated by Yun Lung & Co., Yin An & Co., Fei Yun & Co., and Tung Dah Motor Bus Co.

Liaoyuan to Hwaite via Shwangshanchen and Yangtzchengtze.—Dirt; 70 miles; provincial construction. Motor-bus service operating from Liaoyun to Yangtzchengtze and from Yangtzchengtze to Kungchuling; Liao-Shwang Motor Bus Co.

Hwaite to Fankiatun.—Dirt; 20 miles; provincial construction. Bus service operated by Hung Ho Republican Bus Co.

Takushan to Chwangho via Tsingtuitze.—Dirt; 35 miles; provincial construction. Old cart road used except in bad weather; private cars permitted; bus service operated by three companies, viz; Ta An Bus Co., Chwangho Bus Co., and the Takushan Motor Car Co.

Chwangho to Chengtzutung.—Dirt; 40 miles; provincial construction. Old cart road used except in bad weather; private cars allowed; bus service operated by three companies that operate over the Takushan-Chwangho stretch.

Chengtzutung to Wafangtien.—Dirt; 36 miles; provincial construction. Motor-bus service operated by Fu Tung Bus Co., and Lee Fu Bus Co.

Pitzuwo to Wafangtien.—Dirt; 17 miles; provincial construction.

Wafangtien to Fuchow.—Dirt; 25 miles; provincial construction. Old cart road running from Chengtzutun to Fuchow via Wafangtien; generally in poor condition; closed during bad weather; private cars allowed. Bus services operating are Fu-Tung Bus Co., Tung Fang Bus Co., Tungya Bus Co., and Lee Tah Motor Bus Co.

Wafangtien to Niangniangkung.—Length 27 miles; provincial construction. Motor-bus service operated by Hsin Fu Motor Bus Co., and Fu-Tung Bus Co.

Fuchow to Niangniangkung.—Length 17 miles; provincial construction. Motor-bus service operated by Cheng Tai Motor Bus Co.

Niangniangkung to Wuhutsu.—Length 13 miles; provincial construction. Motor-bus service operated by Hsin Fu Motor Bus Co., and Fu-Tung Bus Co.

Kaiyuan to Sifeng.—Dirt; 46 miles; provincial construction. Motor-bus service operated by Kai-Feng Motor Raliway Co., (Ltd.)

Kaiyuan to Tungkiangtze via Changtu.—Dirt: 30 miles; provincial construction. Bus service operated by Tung Kai Motor Bus Co.

Kungchuling to Hwaite.—Dirt; Tung Yi Co. and Ta Man Co. operating bus service from Kungchuling to Yangtzchengtze via Hwaite.

Hwaite to Siaoshwangchengpu.—Dirt; 20 miles; provincial construction.

Taipingchwan to Pehchengchen.—Dirt; 20 miles; provincial construction. Old cart road; winter traffic only; private cars permitted; bus service operated by Chan Tai Kung Ssu.

Taipingchwan to Chanyu.—Dirt; 30 miles; provincial construction. Old cart road; winter traffic only; private cars allowed; bus service operated by Chan Tai Motor Bus Co.

Chanyu to Taonan via Kaitung.—Dirt; 80 miles; provincial construction. Motor-bus service operated by Kung Yi Co.

Kaitung to Chienan.—Dirt; 50 miles; provincial construction. Old cart road; winter traffic only; private cars allowed; motor-bus service operated by Yu Hsing Kung Ssu and Yung Yuan Hsing.

Taonan to Ankwang.—Dirt; 56 miles; provincial construction. Bus service operated by Hsing Hwa Co.

Ankwang to Talai.—Dirt; 40 miles; provincial construction. Entire route from Taonan to Talai via Ankwang consists of dirt roads open only for winter traffic; three bus companies operate motor-bus services over the line. Private cars allowed.

Taonan to Chentung.—Dirt; 47 miles; provincial construction. Bus service operated by Li Min Co. from Taonan to Tao-an; and by Chen Sheng Co. from Tao-an to Chentung.

Taonan to Tuchuan.—Dirt; 75 miles; provincial construction. Motor-bus service operated by Shih Yeih Co.

Taonan to Wafang.—Dirt; 40 miles; provincial construction. Motor-bus service operating.

Kwanchengtze (Changchun) to Changling via Siaoshwangchengpu.—Dirt; 125 miles; provincial construction. Motor-bus service operated by Hsing Yieh Bus Co.

Changling to Fulungchuan.—Dirt; 20 miles; provincial construction.

Fulungchuan to Kwanchengtze (Changchun).—Dirt; 60 miles; provincial construction.

Kwanchengtze (Changchun) to Itung.—Dirt; 50 miles; provincial construction. Motor-bus service operated by Hsing Fu Hong Co.

Itung to Panshih.—Dirt; 67 miles; provincial construction. Motor-bus service operated by Hsing Fu Hong Co.

Itung to Shwangyangho.—Dirt; 28 miles; provincial construction.

Itung to Kungchuling.—Dirt; 25 miles; provincial construction.

Kwanchengtze (Changchun) to Shwangyangho.—Dirt; 35 miles; provincial construction. Motor-bus service operated by Hsing Fu Co.

Shwangyangho to Panshih.—Dirt; provincial construction. Motor-bus service operated by Shang Ho Chen Bus Co.

Shwangyangho to Yentungshan.—Dirt; 35 miles; provincial construction. Motor-bus service operated by Hsing Yen Co.

Kwanchengtze to Yentungshan via Chaluho.—Dirt; 55 miles; provincial construction.

Panshih to Heishihchen.—Dirt; 15 miles; provincial construction.

Kwankai (Hwatien) to Chaoyangchen via Heishihchen.—Dirt; 50 miles; provincial construction. Bus service operating.

Kirin to Kwankai (Hwatien).—Dirt; 100 miles; provincial construction. Motor-bus service operated by Hsing Ki, Ki Hwa, Li Dah, and Kin Hwa companies. Private cars allowed.

Kirin to Shulan via Wulakai.—Dirt; 50 miles; provincial construction.

Kiuchan to Wulakai.—Dirt; 22 miles; provincial construction. Motor-bus service operating. Private cars allowed.

Tunhwa to Yenki.—Dirt; 107 miles; provincial construction. Motor-bus services operated by Teng Hsien Co. and Tien Teh Chan Co.

Yenki to Lungchingtsin.—Dirt; 10 miles; provincial construction. Motor-bus service operated by Lung Yang Kung Ssu.

Chaoyangchen to Hweinan.—Dirt; 15 miles; provincial construction. Motor-bus service operated by Dah Tung Motor Bus Co. and Chao Chuan Motor Bus Co. Private cars allowed.

Hweinan to Yangtzeshao.—Dirt; 25 miles; provincial construction. Motor-bus service operating; private cars allowed.

Siakiutai to Mushiho.—Dirt; 23 miles; provincial construction. Motor-bus service operating; private cars alowed.

Mushiho to Shanghowan.—Dirt; 10 miles; provincial construction. Motor-bus service operating; private cars allowed.

Dairen area.—Highways of the Dairen area are discussed under the section of this report headed "Kwantung leased territory."

ROADS UNDER CONSTRUCTION OR PROJECTED

There are no roads now under construction. Roads projected are Faku to Kangping (dirt, 20 miles) and Kangping to Liaoyuan (dirt, 60 miles), both of private construction.

MOTOR VEHICLES

There are in the Harbin area (including Tsitsihar) 1,870 passenger cars, 1,535 busses, 145 trucks, 35 motor cycles, and 198 tractors—a total of 3,783. In the Mukden area there are 1,704 passenger cars, 253 busses, 726 trucks, 119 motor cycles, and 20 tractors—a total of 2,814.

For motor vehicles in Dairen see section headed "Kwantung Leased Territory."

MONGOLIA

Mongolia comprises an area of 1,300,000 square miles (about one and one-half times the area of that portion of the United States lying east of the Mississippi), in a latitude similar to that of northern United States and southern Canada. The population of Mongolia is 676,000, being densest in the north and west along the Siberian frontier and in regions lying close to Manchuria and China proper. Of this number 579,000 are Mongols, 7,000 Chinese, and 90,000 Russian. The southern part of the country is a desert; the northern part consists of rolling plateaus.

The country is pastoral and the people are nomadic. The leading occupations are cattle raising and sheep raising, but agriculture is carried on in certain favored regions. The principal crops are grass, wheat, and millet. Gold has been mined for years. The mineral wealth is subject to investigation, but the region is reputed to be rich in coal, iron, copper, gold, silver, lead, and zinc. Cattle and sheep, hides, wool (sheep and camel), licorice, and drugs seem to constitute the leading items of production.

Canals and rivers are little used for transportation, as they are off the trade routes. There are no railways, though one has long been projected to connect Urga, the capital, with the Peiping (Peking)-Kalgan line.

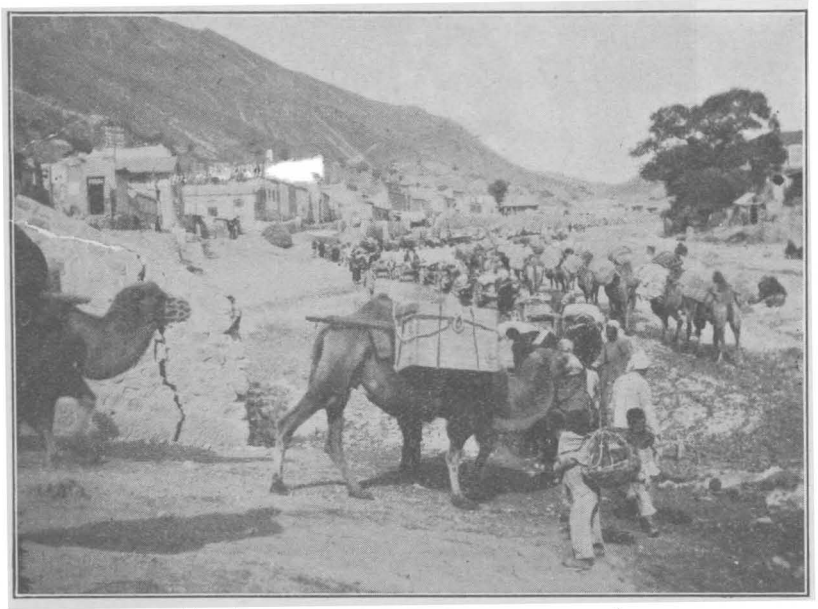

FIGURE 41.—American products leaving by camel back for Urga

Ten or twelve foreign Chinese companies are engaged in motor-car transportation service between Kalgan and Urga, making the trip in four days and using, in the main, American cars. The trip by camel caravan from Kalgan to Urga ordinarily takes 30 days. Roads are poor and not well marked. A main highway leads from Kalgan to Kiakhta via Urga. Caravan routes lead to Siberia, with camel and bullock wagon trains.

Kalgan, although in Chahar Province, is by virtue of its geographic position and its rail connections the gateway to the vast territory of Outer Mongolia. Fully 80 per cent of the furs, hides, skins, and other raw products of Mongolia pass through Kalgan on their way to China and abroad.

Urga, the capital of Mongolia, with a population of 60,000 inhabitants, is approximately 700 miles north of Kalgan. Practically the whole of Mongolia is commercially tributary to this city. From Urga radiate caravan routes to Kiakhta on the north, to Uliassutai

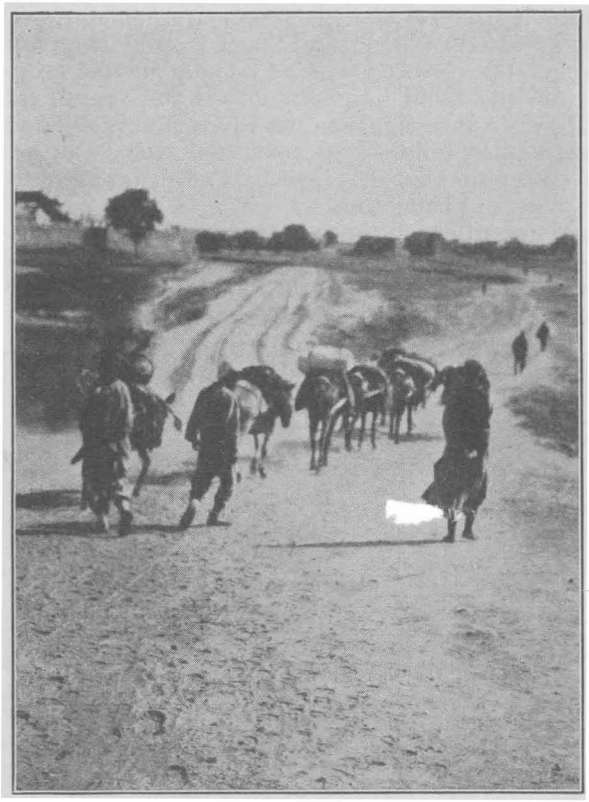

FIGURE 42.—Trail to Mongolia from Kalgan

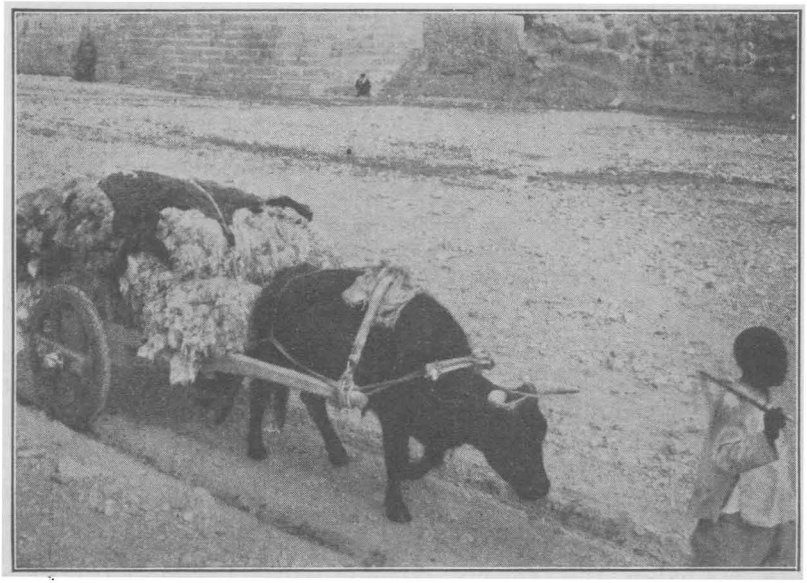

FIGURE 43.—Bull cart loaded with wool, North Pass, Kalgan. Note deep ruts made by this type of vehicle

and Kobdo in the far west, and to Kalgan in the south. Urga and Kiakhta are treaty ports of Outer Mongolia.

TRADE ROUTES AND MAINTENANCE

The main trade routes in the district possible for the use of motor traffic are as follows:

Kalgan to Urga via Wuteh (Ude).—Dirt; 320 miles. (Within Mongolia.)
Kalgan to Urga via Sairussu.—Length, 290 miles.
Kalgan to Uliassutai via Dashegogan.—Length, 750 miles.
Urga to Hailar via Sambaze.—Length, 520 miles.
Urga to Saienshaby.—Length, 250 miles.
Urga to Utsenwan.—Length, 260 miles.
Urga to Kiakhta.—Length, 310 miles.
Utsenwan to Hantawan via Saienshaby.—Length, 400 miles.
Uliassutai to Kiakhta via Kahkhyl and Hantawan.—Length, 680 miles.
Uliassutai to Kobdo via Ulankom.—Length, 470 miles.
Uliassutai to Biisk via Dachenway and Kobdo.—Length, 610 miles.
All other roads in the territory, 780 miles. Total, 5,640 miles. The mileage given above represents only that portion of the highways that lie in Outer Mongolia.

Numerous motor-bus transportation lines operate over these various routes. It is estimated that there are 360 motor cars in Mongolia, including Chahar, Suiyuan, and Ningsia Provinces.

More than 90 per cent of all merchandise, furs, wool, and skins exported from Outer Mongolia is carried by camels. A number of motor-car companies have recently been operated by Soviet Russians between Urga and Russian border towns. The transportation of goods between Kalgan and Urga by camel caravan commences about September 1 and ends about March 30 every year. From April 1 to the end of August transportation by camel caravan practically ceases, as the camels are put out on pasture during the summer. Motor cars, however, can be operated throughout the year. The cost of carrying cargo between Kalgan and Urga is quoted at 24 taels per camel load of 480 pounds, not including any intermediate tax on the way. At the present rate of exchange, the cost of transportation of freight by camel caravan in Outer Mongolia is equivalent to 8½ cents (United States) per ton-mile. The motor car does not cut the transportation cost much between Kalgan and Urga as compared with the camel caravan, but it takes only one-seventh of the time required to cover the 700 miles by the old methods of conveyance.

Certain taxes are levied to maintain some of the roads mentioned. The authorities of Chahar impose a tax of $25 Mexican on private cars or cars not engaged in a general passenger and transportation business (in which category all foreign-owned cars are included), and a tax of $50 Mexican on all Chinese-owned cars, the activities of which are almost wholly confined to the transportation of passengers and cargo. These charges are collected every time a car, either Chinese or foreign, leaves Kalgan for Urga or Dolonnor. Payment is acknowledged by the issuance of a pass indicating that the road tax has been paid. These charges are levied for the upkeep of the Kalgan-Urga road, or rather the Chinese section of it from Kalgan to Wuteh (Ude), a small telegraph station about midway between Kalgan and Urga. In addition to this a tax of $100 Mexican is collected by the Mongolian government on every Chinese-owned motor car before entering or leaving Urga. Only three or four

vehicles are released every 8 or 10 days. There are at present about 90 Chinese-owned motor cars and 370 carts on the Kalgan-Urga run, according to Chinese press reports.

NINGSIA

Ningsia was made a Province by the Nanking Government in the autumn of 1929. It is composed of eight hsien (districts), including the pasture lands of the two Mongolian tribes known as Alashan and Urchia wings and the cities of the Ningsia Tao of Kansu Province. This section of China was formerly known as the special military district of Sitao. The name was given to the district because it is "si" (west) of Hotao (River Bend), that portion of Suiyuan Province which is inclosed on the north, east, and west by the Yellow River.

This Province covers an area of approximately 100,000 square miles and has a total population of less than 1,000,000 people. The leading business centers of Ningsia are Huanshanpao, Shihchuitze, and Dingyuanyin. Huanshanpao is the commercial section of the capital city of Ningsia, situated on the bank of the Yellow River, whence the best of China's wool is shipped by shallow boats upstream to Paotowchen, Suiyuan, for export by the Peiping-Suiyuan Railway to the outside world. Shihchuitze, situated also on the bank of the Yellow River north of Ningsia City, is the most important city on the border of Ningsia and Suiyuan both for commerci[illegible] and for military purposes. Mongolian furs, hides, skins, and w[illegible] are concentrated at this point for shipment to Peiping and Tien[illegible] via the Yellow River and the Peiping-Suiyuan Railway. Dingy[illegible] yin is known to the Mongolians as Wang-Yieh-Fu, or "the se[illegible] the Mongolian prince." The largest source of revenue of this trict of Ningsia is its high-grade natural salt, produced by e[illegible] poration of the water of the Gilantai Lake.

The only motor road in the Province is that section of the Paotowchen-Ningsia motor road lying west of the Yellow River (about 200 miles) and that section of the Ningsia-Lanchow motor road lying north of the Yellow River between Ningsia City and Shapo (150 miles). Motor cars have also been operated between Ningsia City and Pingliang, of Kansu Province. One-third of the 270 miles of this improved caravan road lies within Ningsia Province. Altogether there are about 440 miles of motor roads in Ningsia Province, though motor vehicles may be operated along a number of ancient trade routes of the Sitao district of Mongolia without difficulty.

ROADS CONSTRUCTED

Ningsia to Gearchao via Shihchuitze (section of Paotouchen-Ningsia road).—Dirt; 200 miles; built by General Feng Yu-hsiang's troops.

Ningsia to Shapo via Kwangwu (section of Ningsia-Lanchowfu road).—Dirt; 150 miles. Built by General Feng Yu-hsiang's troops.

Ningsia to Tunghsinchen via Lingwu (section of Ningsia-Pingliang road).—Dirt; 90 miles. Built by General Feng Yu-hsiang's troops.

There are, in addition to the above, caravan routes connecting Ningsia City with Urga to the north and with Sining to the south, both passing through Dingyuanyin, northwest of Ningsia City.

SHANSI

Shansi, with an area of 82,000 square miles, is about the size of the State of Kansas and lies in a latitude approximating that of central California. It has a population of 12,100,000, or an average of over 135 to the square mile. Shansi is reputed to be the richest Province in China in anthracite coal deposits and is also rich in iron. Agriculture and coal mining form the principal industries. Shansi is noted for its numerous native iron furnaces, but there is very little evidence of the development of modern industry. The Province needs railways.

Cart roads traverse the fertile plains. These roads have often been worn so far below the surface of the surrounding country that they form veritable canyons. During the past few years 1,165 miles of graded dirt motor roads have been constructed.

The provincial capital, Taiyuan, with a population of 700,000, is connected with Peiping-Hankow Railway by a narrow-gage line. The Peiping-Kalgan line passes through the northern part of the Province. There are no treaty ports.

Both the American Red Cross and the International Famine Relief Commission have undertaken large road-building projects in Shansi Province as a means of alleviating and preventing famines. The former organization has been responsible for building 193 miles of roads at a total cost of $1,267,000 Mexican, while the latter organization has spent $190,200 Mexican on 168 miles. The pace set by the American Red Cross and the China International Famine Relief Commission gave impetus to the undertaking of a provincial road-building program which to date has resulted in the building of some 1,300 miles within the Province.

Original plans formulated in 1919 classified highway construction into three stages—(1) provincial or state highways and their branches; (2) district highways, connecting two districts; and (3) highways connecting a city and its suburbs. Expenses of construction were to be borne respectively by the provincial, district, and municipal governments. In the first two years following the famine of 1921 a total of $190,000 Mexican was spent in road construction.

In 1927 the management of highways was transferred by the provincial government to the reconstruction department. It was not, however, until the beginning of 1929 that definite plans were launched for a progressive highway program.

The policy of the provincial government operating motor-bus transportation services as a monopoly proving unprofitable, this system was abolished in January, 1929, when regulations for private ownership and licensing were promulgated. It is reported that 112 motor-bus companies owning from one to six busses each, operate out of Taiyuan, the provincial capital. Prior to June 30, 1927, the annual revenues from highways operated under provincial monopoly amounted to only $30,000 Mexican. Yearly revenues have been increased to $200,000 Mexican under the new system of taxation.

The highway department spent $300,000 Mexican on new road construction and $100,000 Mexican for maintenance and repairs, including bridges, during the fiscal year ended June.30, 1929. A minimum sum of $200,000 Mexican was expected to be available for new construction during the fiscal year 1929–30.

No road tolls are in force. Private motor-car owners are taxed $5 Mexican a month. Trucks for commercial transportation pay $40 Mexican a month for all sizes up to 1½ tons; $60 Mexican a month for larger sizes, 3 tons being the maximum size allowed on the roads. Passenger cars and busses are taxed at rates ranging from $30 to $100 Mexican a month, a 5-passenger car being assessed $30, 6 to 8 passenger busses $60, 10-passenger busses $80, and 15-passenger busses $100 a month. No busses carrying more than 15 passengers are allowed, although there is evidence of much overloading.

Passenger fares on busses average 4 to 6 cents Mexican per mile per passenger on long-distance routes in new busses. Certain other routes have fares as low as 2½ to 3 cents Mexican per mile per passenger. Long-distance lines operate from Taiyuan, the provin-

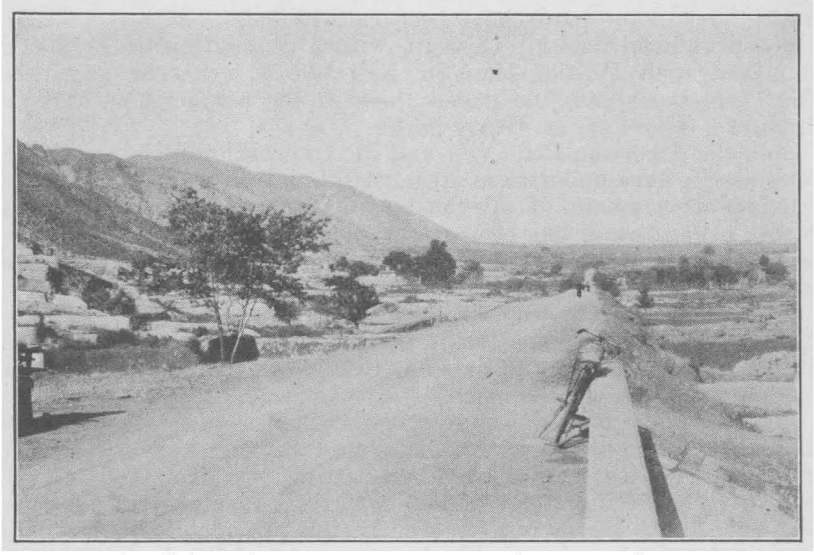

FIGURE 44.—Section of road between Taiyuanfu and Fengchow, Shansi Province

cial capital, southward to Tungkwan on the Shensi border, 300 miles distant, a 2-day journey; also from Taiyuan north to Tatung, a distance of 193 miles, is usually made within 12 hours.

Highways have generally been raised 4 to 6 feet above the surrounding country to assure drainage during summer rains. As no modern road-building equipment has been used, this method of construction is obviously expensive. Unassorted broken stone has been rolled into the roadbeds to provide some sort of a surfacing. All roads are reported to be badly in need of scarifying, scraping, and rolling.

ROADS CONSTRUCTED

Taiyuan to Tungkwan, on the Shensi border, via Taiku, Kihsien, Pingyao, Kiehsui, Hungtung, Pingyang, Yuncheng and Puchow.—Dirt; 412 miles; provincial construction. This route connecting with Sian, Shensi, is known as the southern main trunk line. Busses are operated over the entire route (in fact, from Tatung to Tungkwan, Shensi, a distance of 600 miles) from September to April. Traffic over certain sections in rainy weather is prohibited. Trip by bus from Taiyuan to Tungkwan, 412 miles, in fair weather consumes two days.

Yuncheng to Maotsingtu.—Dirt; 18 miles; International Famine Relief Commission construction. Estimated cost $110,000 Mexican.

Yungcheng to Tsingchengchen.—Dirt; 18 miles; constructed by International Famine Relief Commission. Repairs cost $3,700 Mexican.

Pingyang (Linfen) to Pusien.—Dirt; 72 miles; constructed by International Famine Relief Commission. Repairs cost $6,500 Mexican.

Pingyao district.—Dirt; 30 miles; constructed by American Red Cross. Cost, $62,000 Mexican.

Yellow River Road.—Gravel surface; 83 miles; constructed by American Red Cross. Cost, $645,000 Mexican.

Taiyuan to Chungtu via Fenchow, Wucheng, Yungning and Liulin.—Dirt; 166 miles; provincial construction. The western main trunk line, following a part of a postal route to Kansu Province.

Taiku (Peikueicheng) to Tsehchow (Chincheng) via Tsinchow, Tungliu, Luan, Yingchengchen, and Kaoping.—Dirt; 200 miles; provincial construction.

Yangchuan to Liaochow (Ping-Liao road) via Pingting, Lopingsian, and Hoshun.—Dirt; 70 miles; provincial construction.

Howma to Hotsin via Kiangchow and Tsishan.—Dirt; 60 miles; provincial construction.

Pingyao to Fenchow.—Dirt; 25 miles; provincial construction.

Taiyuan to Tatung via Sinchow, Yuanping, Taichow, and Shanyin.—Dirt; 193 miles; provincial construction. This route is known as the northern main trunk highway. Motor busses operating over this route make the distance in 10 to 12 hours, stopping at stations en route. Fares charged in overcrowded 15-passenger busses are $9 to $12 Mexican for each person. Better accommodations in first-class busses cost more.

Sinchow to Hopientsun via Tingsiang.—Dirt; 66 miles; provincial construction.

Taichow (Taihsien) to Taying.—Dirt; 113 miles; provincial construction. First section of Taichow (Taihsien)-Kwanling road. Remainder of route now under construction.

Taying to Kwangling.—Dirt; 37 miles; provincial construction. The last section of the Taichow-Kwangling road, the first section from Taichow to Taying being completed and open to traffic.

PROJECTED ROADS

Under date of January 10, 1929, the highway authorities announced plans for the construction of 1,260 miles (3,780 li) of roads. Of these proposed routes some are actually under construction, but information regarding construction work is not available.

Tatung to Yuyu via Tsuyun.—Length, 70 miles; about 17 miles through a mountainous district.

Yuyu to Ningwa via Pinglu and Shohchow.—Length, 103 miles; 17 miles through mountainous district.

Taiyoh to Hunyuan.—Length 60 miles; 27 miles through mountainous region.

Shenchih to Paoteh.—Length, 65 miles.

Yuanping to Hoku via Ningwu and Shenchih.—Length, 76 miles; 50 miles mountainous.

Shenchih to Paotch.—Length, 136 miles; 50 miles mountainous.

Taiyuan to Hinghsien via Tsinglo and Lanhsien.—Length, 136 miles; 17 miles mountainous.

Hopientsun to Taihwacheng via Wutai.—Length, 42 miles.

Pingting to Yuhsien.—Length, 26 miles; 10 miles mountainous.

Taiku to Liaochow via Yushe.—Length 76 miles.

Siaotingchen (Tutungyi) to Licheng.—Length, 53 miles.

Kuwo to Tsehchow (Chincheng) via Yangcheng, Chinshui and Yicheng.—Length 113 miles; 16 miles through difficult mountainous country.

Tungcheng (near Wensi) to Yuanku.—Length, 70 miles; through level country.

Pingyang (Lingfeng) to Kichow via Siangning.—Length, 80 miles; 17 miles through mountainous country; balance fairly level.

Hwochow to Taning via Fensi, Sichow, and Yungho.—Length, 136 miles; 33 miles mountainous; remainder flat country.

Sichow to Shihlow.—Length, 26 miles; 10 miles mountainous district.

All these projected roads are to be constructed of dirt by provincial construction. The total construction costs of these projected lines are estimated at $4,739,800 Mexican, including $810,000 for the construction of mountainous roads, $864,000 for level roads, $756,000 for purchasing land, $37,800 for building stations, $75,600 for building culverts, $75,600 for small bridges, and $760,000 for building numerous large wooden bridges.

MOTOR VEHICLES

On January 1, 1929, there were estimated to be 215 motor vehicles in Shansi Province. Figures received in November, 1929, indicate that 407 motor busses are in operation, in addition to which the Shansi government operates from 300 to 400 trucks for troop transportation service. Eighty cars are reported to be in operation over the Taiyuan-Tatung line alone. On January 1, 1930, there were estimated to be 55 passenger cars, 439 busses, 120 trucks, and 15 motor cycles in operation.

SHANTUNG

Shantung, with an area of 56,000 square miles, is about the size of Illinois, in a latitude corresponding to that of southern California. It is one of the most densely populated Provinces of China, having over 600 inhabitants to the square mile, and a total population of 34,000,000. Shantung is rich in agriculture when not overrun by floods, bandits, or militarists. About 250,000 tons of peanuts are produced annually, mostly for export. A fine quality of tobacco from American seed is grown. Two good harbors, Tsingtao and Chefoo, are located on its seaboard.

The Tientsin-Pukow Railway traverses the Province from north to south, and the Kiaochow-Tsinan Railway line runs from east to west. The Province contains several important treaty ports—Chefoo, Tsingtao, Tsinan, Lungkow, and Weihaiwei. Its capital, Tsinan, has a population of 300,000.

Country roads are used extensively throughout the Province for carts, wheelbarrows, and pack animals.

Early in 1920 a proposal was made to build some 1,600 miles of motor roads connecting all the important cities in the Province. Owing to the state of the provincial treasury, nothing was done toward carrying out the project until the autumn of 1920, when the Chinese Government at Peking undertook, with funds derived from famine surtaxes on railway fares and freight rates, the construction of the highway from Weihsien to Chefoo. The highway follows the route of the proposed Weihsien-Chefoo Railway and was built in a manner to form the roadbed for such railway. According to the report of the Government, $670,000 Mexican was expended in building this road.

Since the 1920 famine the American Red Cross and the China International Famine Relief Commission have spent upward of $1,130,000 Mexican on road building throughout the Province to alleviate famine conditions. The 485 miles of dirt roads constructed by the American Red Cross funds in the western and northern section of the Province were turned over to the provincial government in 1921.

In October, 1926, the military authorities of Shantung and Chihli (now Hopeh) Provinces are reported to have issued orders to district magistrates to hasten the construction of motor roads in several districts. During 1928 and 1929, while Feng Yu-Hsiang's troops were in command in the Tsinan district, a number of the old cart roads were put into repair by soldier labor. The present highway bureau has been responsible for a certain amount of construction work, but very little new construction is now under way, owing to military upheavals which the Province has undergone and its consequent poverty-stricken condition.

A 7-year program has been mapped out by the provincial highway bureau for the extension of roads in Shantung, but the fulfillment of this plan must be slow, owing to prevailing economic and political conditions. Private interests are throttled by the present attitude of the highway authorities, who desire to treat motor-bus transpor-

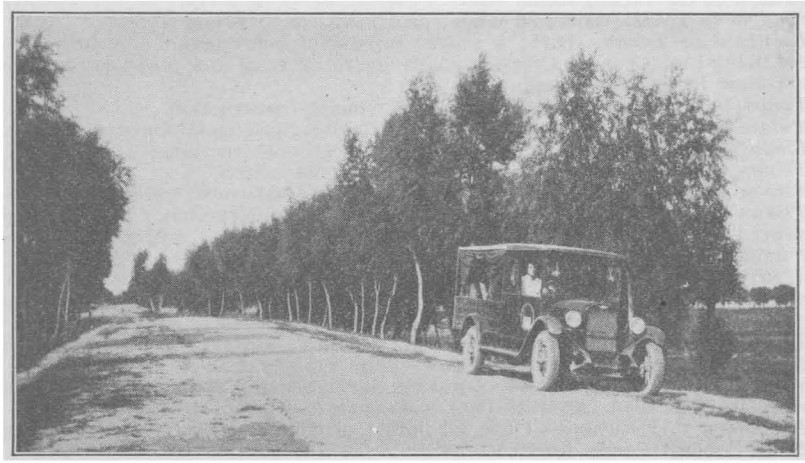

FIGURE 45.—Standard Oil truck on Li-Ho motor road, on Yellow River dike near Lokow, about 3 miles from Tsinan. While the illustration does not show the elevation, the road is 15 to 20 feet above the surrounding country

tation as a Government monopoly. In the Tsinan district during September, 1929, 60 motor busses were standing idle as a result of local companies being forbidden by highway officials to operate over existing roads. The highway bureau seems to have adopted the system of reserving all good roads for the operation of provincial government bus services, leaving nothing but unimproved cart roads for private interests to operate upon. Even then, the franchise terms are so exorbitant that private bus lines find it scarcely profitable to accept the conditions, one of which is that such private bus operators must maintain and repair, at their own expense, the roads over which they operate. The shortsightedness of such a policy makes no appreciable impression upon those in command.

It is reported that provincial authorities expected $1,500,000 Mexican from the Nanking Government for road construction, but obviously such an amount has not been forthcoming, especially in view of the military situation with which the Nanking Government is faced in Central China. Such revenue as the highway bureau is deriving from the bus-transportation services operated by it as a

monopoly is being utilized for the purchase of new rolling stock rather than for the construction or maintenance of highways.

ROADS CONSTRUCTED

Litsing to Liuho (Honan) via Putai, Tsingcheng, Tsitung, Lokow, Acheng, Showchang, Fanhsien, Puchow, Linputsi, Tsaochow, Tingtao, Tsaohsien, and Kungchwang.—Dirt; 355 miles; provincial construction. Known as the Li-Ho road, deriving its name from the first syllable of the two terminals of the road. Constructed in 1925–1927 along the Yellow River dike; maintained and controlled by the provincial highway bureau; ferries used to cross Yellow River at various points. This is the longest and best road in the Tsinan territory, the surface being unusually good over most of route. The provincial government operates 14 motor busses over the route and claims to receive a yield of $10,000 Mexican in revenues per month. Private busses not allowed, although private cars may operate over the road upon payment of $5 Mexican as a toll tax, permit being good for five days.

North bank Yellow River to Pingyin.—Dirt; 5 miles; provincial construction. A branch of the Litsing-Liuho road. Crossing made by ferry.

Pingyin to Taian.—Dirt; 30 miles; provincial construction.

Kiankow to Tunga.—Dirt; 5 miles; provincial construction. A branch of the Litsing-Liuho road. Crossing made by ferry from the northern bank of the Yellow River near Kiankow.

Tunga to Pingyin.—Dirt; 15 miles; provincial construction.

Tunga to Tsining via Tungping.—Dirt; 60 miles; provincial construction.

Linputsi to Acheng.—Dirt; 47 miles; provincial construction.

Tsinan to Lokow.—Dirt; 6 miles; private construction.

Tsinan (city district).—Length, 18 miles; municipal construction.

Tsinan to Taian.—Dirt; 48 miles; provincial construction. An old road improved in 1928, maintained and controlled by provincial authorities. Used throughout year; heavy rains occasionally prevent traffic for a few days. A few private cars operating under temporary permit from provincial government. A tax of $3 Mexican per trip for five passengers or less, and $5 Mexican for more than five passengers formerly levied was abolished in May, 1929.

Taian to Tsining via Ningyang.—Dirt; 70 miles; built in January–February, 1929, by forced farm labor at behest of Feng Yu-hsiang, now under provincial control. A few private busses operating under control of government. Comparatively good road. Private cars may operate without restriction.

Tunghsien to Tungping.—Dirt; 33 miles; provincial construction. Built in 1929 by General Feng's forces.

Taian to Poshan via Liawu.—Dirt; 38 miles; provincial construction.

Taian to Tsining via Tawenkow and Yenchow.—Dirt; 73 miles; provincial construction. An unimproved dirt road built in 1925–1927 passable for motor cars. Projected to be extended from Tsining to Tsowhsien, hence spoken of as the Taian-Tsowhsien road. Very few cars operate at present. Private cars permitted without restriction.

Yenchow to Kufow.—Dirt; 15 miles; provincial construction.

Tsining to Tsaochow via Kuyeh.—Dirt; 80 miles. Cost, $150,000 Mexican. Built in 1922 with famine relief funds by the American Red Cross; maintained by farmers along route; open through year; under provincial control. Several private bus companies operating temporarily under a franchise from the Shantung provincial government. Private cars permitted to operate without restriction.

Kiasiang to Kuyeh via Yuncheng.—Dirt; 75 miles; provincial construction.

Tsining to Tsaohsien via Kinsiang and Chengwu.—Dirt; 90 miles; provincial construction. Cost $20,000 Mexican. Built in 1928 by forced labor under Feng Yu-hsiang. Section between Tsining and Shanhsien known as the Shan-Tsi motor road. Route used throughout year though heavy rains may interrupt traffic at times. Under provincial control. Private busses operating over route under temporary franchise from provincial government. Private cars may operate without restriction.

Kinsiang to Tsaohsien via Shanhsien.—Dirt; 90 miles; provincial construction.

Chengwu to Maliangchih via Shanhsien.—Dirt; 10 miles; provincial construction.

Shanhsien to Tengwan.—Dirt; 10 miles; provincial construction.

Kinsiang to Yutai.—Dirt; 15 miles; provincial construction.

Kutingcheng to Tienchi via Yutai.—Dirt; 18 miles; provincial construction.

Yenchow to Kiangsu border via Tsouhsien, Tenghsien, Lincheng, and Siachen.—Dirt; 65 miles; provincial construction. Courier route.

Szeshui to Taipienchiao.—Dirt; 15 miles; provincial construction.

Szeshui to Siaopekow.—Dirt; 15 miles; provincial construction.

Tsinan to Yencheng via Tsiho.—Dirt; 30 miles; private construction. Built in 1928; maintained by private interests; open all year; controlled by Shantung provincial government. No bus service operating. Private cars may operate without restriction. After the Yellow River railway bridge at Lokow was blown up, road was built to permit busses to carry passengers making connections with Tientsin-Pukow trains. Road has had little use since resumption of through train service in May, 1929.

Yencheng to Changtsing.—Dirt; 30 miles; provincial construction.

Tsiho to railway.—Dirt; 30 miles; provincial construction.

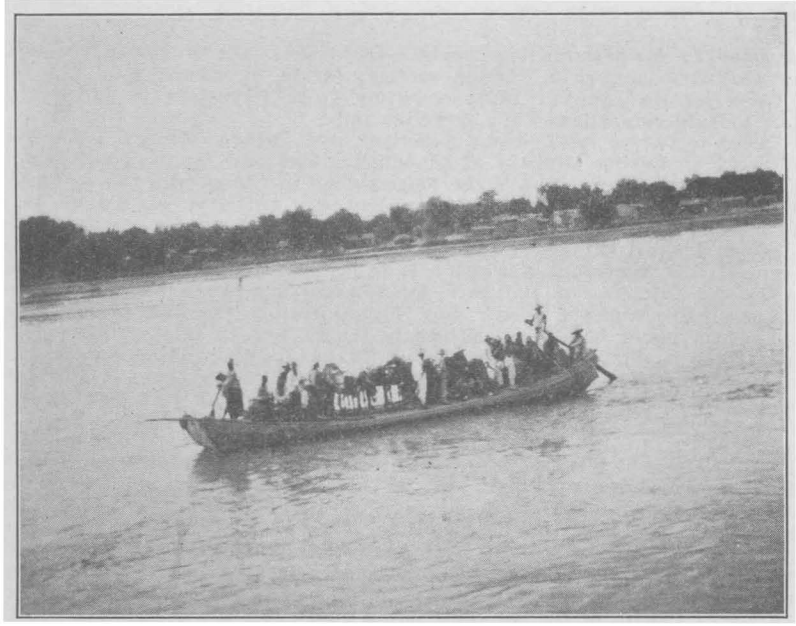

FIGURE 46.—Mules, carts, and passengers, crossing Yellow River at Lokow, near Tsinan. There are no cable arrangements to keep the ferries from drifting, and the current is so swift that they may land a mile below the point where they attempt to cross

Tehchow to Linyi (the Li Road) via Linghsien.—Dirt; 70 miles; constructed by the American Red Cross. Connects at Linyi with the Siawa-Tungchang Road.

Chengtzekow to Yangku via Yangsin, Wuting, Linyi, Yucheng, Kaotang, and Tungchang.—Dirt; 100 miles; constructed by the American Red Cross. Constructed in 1924; no maintenance work at present; used year round; under provincial control; no regular passenger cars or busses operating, although private cars are permitted to operate without restrictions. A few military cars are reported to be using the route at present. Little traffic has passed over this route since April, 1928.

Yangsin to Siawa.—Dirt; 18 miles; provincial construction.

Yellow River to Chaofeng via Yangku.—Dirt; 30 miles; provincial construction.

Tungchang to Yellow River bank.—Dirt; 18 miles; provincial construction.

Tungchang to Kwanhsien via Tangyi.—Dirt; 33 miles; provincial construction.

Yangku to Yuwangmiao.—Dirt; 5 miles; provincial construction.

Fanhsien to Kwancheng.—Dirt; 10 miles; provincial construction.

Kwancheng to Chaocheng.—Dirt; 30 miles; private construction.

Sinhsien to Yangchun.—Dirt; 5 miles; provincial construction.

Tehchow to Taming, Hopeh, via Enhsien, Siatsing, Lintsing, Kwantao and Kwanhsien.—Dirt; 100 miles; constructed by the American Red Cross. This section, lying in Shantung Province, connects Tehchow, Shantung, with Taming, Hopeh, from whence it continues on to Hantan and Wuan, in the extreme northern tip of Honan Province.

Enhsien to Wucheng, on the Hopeh border.—Dirt; 18 miles; constructed by American Red Cross. This short section of road connects Tehchow, Shantung, with Nankung, Hopeh.

Enhsien to Kaotang.—Dirt; 25 miles; constructed by American Red Cross.

Lintsing to Tsiho via Kaotang.—Dirt; 60 miles. Constructed by American Red Cross.

Tsingcheng to Chowtsun via Tsowping.—Dirt; 37 miles. Constructed by International Famine Relief Commission. Cost, $60,000 Mexican.

Loan to Shihtsung.—Dirt; 24 miles; provincial construction. Cart road impassable during rainy season; bus service operating; private cars not allowed.

Tingchow to Mulingkwan via Linchu.—Dirt; 35 miles; provincial construction. Ordinary cart road. Motor service started by Chung San Yih Lin Motor Service Co., August, 1929; operating from Tsingchow to Linchu, 15 miles. Private cars allowed for traveling only.

Weihsien to Chefoo via Laichow, Lungkow, and Fushan.—Length 193 miles; constructed by Peking Ministry of Communications and famine relief funds. Cost, $670,000 Mexican. This is the longest road in China with the exception of the Kalgan-Urga route. The latter, however, traverses an old caravan route. Built in 1919 over a roadbed originally laid down for a railway by the former Peking Ministry of Communications. The road now belongs to the central Government at Nanking. It is leased to a private bus line company by the Ministry of Railways for $72,000 Mexican a year. Prior to 1927 the Chefoo-Weihsien Motor Bus Transportation Co. had in operation 150 passenger motor busses and 50 freight trucks, but all this equipment was seized by the bandit chief, Chang Chung Chang, together with other stocks, thereby causing a loss of over $3,000,000 silver to the company. This loss included a large amount of gasoline which the company had just cleared through customs. Very little of the rolling stock has been repossessed by the company. Prior to its seizure by the military, the company claimed to have paid a 10 per cent dividend to preferred directors, and in addition to have made a 56 per cent net profit. In 1929 only 30 cars were operating over the entire route. Short trips between various stations, particularly from Chefoo to Lungkow, are made, sometimes as many as seven or eight trips per day being run. Bus fare from Chefoo to Weihsien is $14 Mexican. Freight charges average about $35 Mexican per ton. Private cars are allowed on the road by the payment of $5 Mexican yearly for a special license, in addition to which each occupant of the car must pay a sum equal to one-half the charge of a bus ticket. The road is now operated by the provincial bureau of reconstruction. It is used during the entire year unless exceptionally heavy rains are encountered, when it may be closed for several days awaiting more favorable weather.

Weihsien to Chucheng via Ankiu.—Dirt; 60 miles; provincial construction.

Weihsien to Ninliu.—Dirt; 20 miles; provincial construction. Known as the Weihsien-Meitsun-Ninliu road. An ordinary cart road built in October, 1929, paved with clay. Can not be used in rainy season. Motor-bus service operated by Liu Hwei King. Private cars allowed.

Weihsien to Kingchih via Ankiu.—Dirt; 38 miles; provincial construction. Cost, $30,000 Mexican. Ordinary cart road, paved with clay, built in 1926; not serviceable in wet weather. Under control of military, who operate motor-bus service over it. Private cars allowed.

Kaomi to Tancheng via Chucheng, Chuchow, and Ichow.—Dirt; 200 miles; provincial construction. Known as the Kao-Tang road. An ordinary cart road; not serviceable during rains; road controlled by Kaomi Tancheng Motor Service Co. Bus service operating only from Kaomi to Chuchow, a 40-mile stretch, the rest of the route not yet open for traffic. Private cars not allowed on the road unless a special permit is secured from the government.

Ichow to Tsaochwang via Yihsien.—Dirt; 70 miles; provincial construction. Cart road; impassable during heavy rains; public road; private cars allowed without restriction. Motor-bus service operated by I Chi Motor Co. Tsao-

chwang is a point on the Lincheng-Taierhchwang branch line of the Tientsin-Pukow Railway.

Chefoo, city district.—Asphalt, chipped stone, and macadam; 10 miles; municipal construction. Cost, $152,849 Mexican, spent during 1929.

Chefoo to Ninghai (Muping).—Dirt; 20 miles; provincial construction. Built by soldier labor in 1929 for strategic purposes. Motor-bus service on road is controlled by military. Private cars allowed on this road when a special permit is secured from the government.

Ninghai (Muping) to Weihaiwei.—Dirt; 40 miles. This road was formerly an old narrow dirt cart road which has since been widened, rebuilt of clay and partially surfaced with chipped stone. The work was done by the Ning-Wei-Yiu-Li Motor Car Co. (private) which now maintains a motor-bus service over this route.

Weihaiwei, city district.—Dirt; 10 miles; British concession. Cost, $25,000 Mexican.

Weihaiwei to Jungcheng.—Dirt; 36 miles. Cart road partly controlled by British Government and partly by Shantung provincial government. Motor-bus service operating. Private cars allowed.

Weihaiwei to Shihtao via Wenteng.—Dirt; 30 miles. Cart road partially surfaced with clay and stone; built 20 years ago; repairs made yearly; controlled by British Government and Shantung provincial government. Motor-bus services operating. Private cars allowed.

Tsingtao to Tsimo.—Dirt; 30 miles; provincial construction. Ordinary cart road; impassable during heavy rains; motor-bus service started in 1927; two private bus companies operating over route holding franchise from Tsimo road administration. Private cars not allowed without special license from motor-bus companies and upon payment of commissions to them.

Tsimo to Kinkiakow.—Dirt; 30 miles; provincial construction. Cart road passable only in good weather. Two private motor-bus services operating. Private cars allowed by securing special license from bus services.

Tsimo to Shaho via Pingtu.—Dirt; 50 miles; provincial construction. Cart road; impassable during rainy season; two motor-bus services operating. Private cars allowed by securing permit from private bus companies.

Lantsun to Laichow (Yehhsien).—Dirt; 70 miles; provincial construction. Cart road; impassable during rains. Private motor-bus service operating. Motor busses, however, usually run only from Lantsun to Tientze or to Pingtu, seldom reaching Laichow for lack of passengers. Private cars not allowed.

Laichow to Sansantao.—Dirt; 15 miles; provincial construction. No motor-bus service operating as yet.

Pingtu to Laiyang.—Dirt; 50 miles; provincial construction.

Waihaiwei to Shihtao.—Ordinary cart road paved with clay; 55 miles; local government construction. Ordinary cart road rebuilt and widened in June, 1929. Motor-bus service operated and controlled by Yuan Ho Garage and Shantung Garage in Weihaiwei. Private cars not allowed.

Kiaochow to Lantsun.—Dirt; 30 miles; provincial construction. A section connecting with the Shaho road. Motor-bus service operates over 55-mile stretch from Kiaochow to Shaho. Private cars not allowed without permit from the government.

Kiaochow to Chucheng.—Dirt; 45 miles; provincial construction. Cart road; impassable during rains. Motor-bus service operating. Private cars not allowed without government permit.

Kiaochow to Hungshiyai.—Dirt; 22 miles; provincial construction. Cart road; impassable during rains; motor-bus service operating. Private cars not allowed without motor license from government.

Poerh to Hsichkiatao.—Dirt; 35 miles; provincial construction. Ordinary cart road, paved with clay. Rebuilt in September, 1929; $300 to $500 Mexican being spent in repairs. Closed during heavy rains. Private cars not allowed. Motor-bus service operated by Yih Wei Motor Service Co.

Poerh to Jihchao.—Dirt; 28 miles; provincial construction. Ordinary cart road rebuilt during fall of 1929; paved with clay. Closed during rainy season. Motor-bus service operated by Jih-Wei Long Distance Motor Service Co. No private cars allowed.

Tsingtao district.—In the commercial port of Tsingtao 189 miles of motor roads have been constructed, but this excellent system of roads was originally laid out by the Germans, who controlled the port prior to 1914, and latterly by the Japanese. Since the Washington Conference in 1922, Tsingtao has

been under Chinese administration, and while highways have been maintained to a certain degree, little or no new construction has gone on. Roads are classified as follows: Macadam, 144 miles; stone, square-cut, 1.34 miles; metaled asphalt, 16.33 miles; and dirt, 28 miles; a total of 189.67 miles.

About 25 miles of the above roadway extends from Tsingtao into the Lao Mountains; the remainder is in and immediately about the city. There are two bus lines running on schedule between Tsingtao and Tsangkow, a distance of about 10 miles. The motor-bus fare for the full distance is $0.50 Yuan.

ROADS UNDER CONSTRUCTION

Repair work is under way on some of the old roads and some new bits of construction are being undertaken. Forced labor is used, each village being required to construct a certain number of li, depending on its size and its able-bodied population. No compensation is paid to the villagers, either for their actual labor or for land requisitioned for the construction of new roads. All construction work is under the direction of the provincial bureau of construction or military men of the pioneer or engineer corps.

PROJECTED ROADS

The plans of the provincial highway bureau cover a 7-year program of road building of approximately 3,000 miles. The principal routes planned are as listed below. All roads are to be of dirt and constructed by provincial authorities.

	Miles
Tehchow to Tsinan via Pingyuan and Yucheng	65
Kiuhsien to Sinhsien via Kwantao and Kwanhsien	48
Tsaochow to Tungming, Hopeh	15
Yangku to Yuncheng via Showchang	40
Piefutu to Shanhsien	15
Wenshang to railway line via Ningyang	25
Linghsien to Yangsin via Tehping and Loling	65
Tehping to Tsinan via Tsiyang and Lokow	65
Wuting to Litsing via Pinghsien	45
Litsing to Lochwang	30
Wuting to Tsingcheng	20
Siawa to Putai via Pinghsien	20
Tsingcheng to Putai	30
Putai to Pohsing	18
Tsinan to Tsowping via Changkiu	45
Pohsing to Yangkiokow via Shihtsui	45
Tsingcheng to Weihsien via Pohsing, Loan, and Showkwang	95
Tsingchow to Yangkiokow via Showkwang	45
Loan to Lintze	15
Taian to Ichow via Sintai, Mengyin, and Chiehpei	130
Yenchow to Ichow via Szeshui and Feihsien	95
Lincheng to Tsaochwang	20
Yihsien to Tancheng	45
Tancheng to Tsingkow, Kiangsu	15
Chiehpei to Jihchao via Suchunchih and Chuchow	90
Mulingkwan to Ichow via Ishui and Suchunchih	95
Chucheng to Kanyu, Kiangsu, via Jihchao and Shihkiuso	95
Changi to Kaomi via Pingtu	45
Laichow to Hutowyai (Sansantao)	15
Pingtu to Laiyang	50
Laiyang to Hwangshankwan via Chaoyuan	45
Laiyang to Chefoo via Chilou	45
Laiyang to Ninghai (Mouping)	40
Laiyang to Haiyang	30
Laiyang to Lantsun via Tsimo	60
Ninghai (Mouping) to Wenteng	25
Wenteng to Jungcheng	30

An official announcement made on December 4, 1929, indicated that a project to construct five main highways in Shangtung had been drafted by Mr. Kung Fan-Wei, provincial commissioner of reconstruction. This scheme provides for the building of the Litsinghsien-Tsinan, the Tsaochow-Tsinan, the Tehchow-Lincheng, the Weihsien-Taierhchwang, and the Ichow-Haichow (Kiangsu) highways in the shortest possible time.

Work on the Weihsien-Taierhchwang and the Ichow-Haichow roads is to be started first, as their early completion will greatly facilitate communication in southern Shantung and northern Kiangsu. The total cost of construction of the two roads is estimated at $1,850,000 Mexican.

MOTOR VEHICLES

Motor vehicles operating in Shantung Province on January 1, 1930, were estimated to number as follows:

MOTOR VEHICLES OPERATING IN SHANTUNG PROVINCE, JANUARY 1, 1930

Class	Chefoo	Weihaiwei	Tsinan	Tsingtao
Passenger cars	78	2	55	560
Motor busses	4	6	184	71
Motor trucks	21	2	15	84
Motor cycles	20		1	40
Total	109	10	255	755

The Chinese authorities at Tsingtao have levied, over and above the regular import tariff, a " goods tax " on all motor vehicles on the following basis: Passenger cars, 10 per cent; trucks and busses, 6 per cent; motor cycles, 10 per cent. This exorbitant tax is necessarily reacting upon the normal expansion of motor service within that territory.

At Chefoo the Chinese authorities have levied, over and above the regular import tariff, a local goods tax of 12½ per cent ad valorem on all motor vehicles.

SHENSI

Shensi Province produces the finest quality of cotton grown in China. The Province is some 75,200 square miles in area—about the size of Nebraska—and lies in the latitude of Arizona. Its population of 17,220,000 is densest in the Han and Wei River Valleys, the Wei Basin being known as the " cradle of China." It is one of the richest areas in China. A high mountain range divides the two important valleys. Ranges also extend across the northern and southern ends of the Province. Shensi was once noted for its forests, but its hills are now denuded of trees. It is supposedly rich in coal and petroleum, but its mineral wealth remains yet to be exploited. Lack of railways and good roads has retarded development to a considerable extent.

There are no railways. An old post road crossing from Shansi over the Wei Basin into central Asia carries a heavy traffic of carts and pack animals. A road also passes through this basin from Peiping (Peking) to Chengtu, in Szechwan Province, following also the

Han River Valley but crossing over mountain passes 8,000 feet high. Coolies and pack animals by the thousands may be seen on this great highway.

There are no treaty ports. The capital, Sian, has a population of 200,000. The ancient highway from Sian in Shensi Province to Lanchow in Kansu Province, a total distance of 425 miles, has through the cooperation of officials in both Provinces been turned into a motor road. The opening of this motor-transportation route during April, 1928, brought Lanchow and a number of important towns in western Shensi and Kansu within a few day's journey of the Lung-Hai railhead on the border between Honan and Shensi. A motor service has been in operation for several years between Sian, Shensi, and Tungkwan on the Honan border.

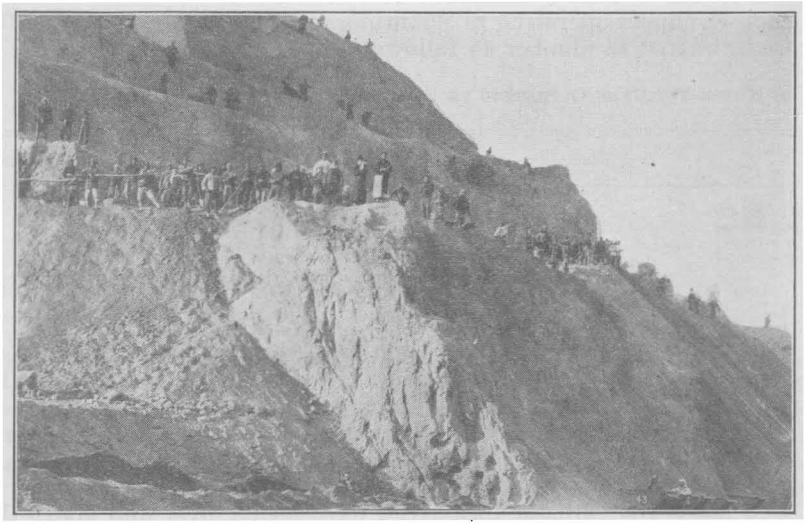

FIGURE 47.—Cutting road through mountains at Tungkwan, on border between Shensi and Honan Provinces. The road building "machinery" consists of baskets carried by coolies with bamboo poles, and whatever other equipment the farm laborers possess

Military activities and a severe famine have seriously disrupted road building operations throughout the Province during the past year.

ROADS CONSTRUCTED

Sian to Tungkwan, on the Honan border, via Lintung, Weinan, Chihshiuchen, Hwachow and Hwayinhsien.—Dirt, 60 to 90 feet wide; 100 miles; provincial construction.

Sian to Tungkwan via Sanyuan.—Dirt; 30 miles; provincial construction.

Sian to Shangwu via Sienyang and Pinchow.—Dirt and stone, 60 to 90 feet wide; 140 miles; provincial construction.

Other routes.—Sienyang to Lungchow via Wukung, Fufeng, Kishan and Fengsiang; Sanyuan to Chaoyi via Tungchow; Tungchow to Hwachow.

PROJECTED ROADS

Sian to Yulin via Fuchow and Yenan.—Dirt and stone; 458 miles; International Famine Relief Commission conducted surveys at a cost of $500,000 Mexican from Sanyuan to Yenan.

Fengsiang to Hanchung (Nancheng) via Paoki, Fenghsien and Chengku.—Dirt and stone; 366 miles. To be of provincial construction.

SIKANG

The Province of Sikang is composed of former parts of Szechwan, Yunnan, and Tibet. During the last days of the Manchu government a special Chuan (Szechwan) Dien (Yunnan) frontier defense commissioner was appointed for the administration of that section of the country against aggression by way of India. A movement then afoot for the promotion of this border land to the status of a regular Province was held in abeyance owing to the revolution of 1911. Sikang was made a special administrative district by the republican Government of China in June, 1914, and placed under the jurisdiction of the Chuan Bien (Szechwan border) defense commissioner. When the Government of China rearranged China's political divisions in 1928, Sikang was made a Province, with its capital city at Kangtieng, popularly known as Tatsienlu.

The name "Sikang," which in the Chinese language means "western land of prosperity," was given to this new western Province. Sikang covers an area of 150,000 square miles and has approximately 6,000,000 inhabitants, of whom 30 per cent are Chinese and the remaining 70 per cent Tibetan tribesmen. A network of rivers, mostly branches of the Yangtze, the Mekong, and the Brahmaputra, spreads over this humid and fertile land some 15,000 feet above sea level. Minerals are abundant, but, on account of a total lack of means of transportation, are inaccessible.

There is no modern motor road in Sikang. Traveling west of Tatsienlu is very difficult, if not impossible. The old courier road from Tatsienlu to Giamda via Litang, Batang, Chiamdo, and Lhari, a distance of 1,800 li or 600 miles, is still followed by adventurous merchants, who have to depend on a Tibetan escort. There are two ancient trade routes, one leading north from Tatsienlu to Kantze and Dengkou, thence to Tibet, joining the old courier road at Chiamdo, the most important trade center near Kokonor, now Tsinghai. It was at first planned to make Chiamdo the capital city of Sikang, but under present circumstances, when Chinese jurisdiction does not extend beyond Batang, the chairman of Sikang Province, Gen. Liu Wen-hwei, commander of the Twenty-fourth Army Corps of the National Government of China, prefers to govern his Province from Tatsienlu, which is 800 li or 270 miles nearer to China proper.

The National Government highway plans call for the building of a motor highway from Nanking, the national capital, to Lhasa, the capital of Tibet, taking the course of the old courier road via Tatsienlu, Litang, Batang, Garthok, Chiamdo, Lhari, and Giamda. It is questionable, however, as to when this projected national highway of China will be built, as it is reported that the Dalai Lama will not permit any Chinese national to enter his territory. The directorate general of posts of the Chinese Government Ministry of Communications has recently received a report from the Chinese postal commissioners of Szechwan and Kansu informing the administration in Nanking to the above effect and stating that there is no possibility of reopening Chinese postal services in Tibet for the time being.

SINKIANG

Sinkiang, meaning in the Chinese language "new territory," is the largest of the 30 political divisions of China. It has an area of 550,000 square miles, with an estimated population of 2,500,000—4 to the square mile. It covers a large portion of Turkish territory of central Asia conquered by the Chinese in the Han dynasty, but frequently separated from China proper until retaken by the Mongolian rulers of China. The Russians took possession of part of this territory during the Mohammedan revolt in the days of the Manchu Emperors, Tungchi and Kuangshu, in the last days of the Tsing dynasty, but Viceroy Tso Chung-tang took back the lost territory from the Russians in the tenth year of Kuangshu, 1885, and made Chinese Turkestan a regular Province of China, with the Altai district of Mongolia added to it by the republican Government in 1919.

For the most part Sinkiang is an immense desert surrounded by mountains of great height. Fertile spots occur only here and there. Where irrigation is possible, splendid crops are produced. The famous oasis of Hami is exceptionally fertile, producing barley, oats, millet, and wheat. Its melons are famous throughout China, for in former years many were sent to the Peking court. Horses, camels, donkeys, sheep, and goats are raised. Carpets, jade, furs, skins, and silk fabrics are among the articles produced. Kashgar (Shufu), the largest city, has 60,000 inhabitants. Tihwa—or Urumtsi, as it is known in Mongolian dialect—is the capital city of Sinkiang, where Gen. Chin Shu-jen governs the Province on behalf of the National Government of China.

Sinkiang merchants forward their goods on camel back all the way from Tihwa (Urumtsi) across the southern part of the Gobi Desert of Inner Mongolia to Kalgan, or by way of Kobdo and Uliassutai from Urumtsi to Urga, the capital city of Outer Mongolia. Another trade route between Urumtsi and China proper is known as the southern road, via Ansi, Yumen, Kiayukwan, Kanchow, Yungchang, Lanchow, Pingliang, in Kansu Province, to Sian of Shensi Province, connecting with the railway head in western Honan. In each case the trip requires from 75 to 90 days, whether by camel caravan or by carts through Kansu and Shensi Provinces. None of these routes, however, are now used for sending merchandise between Sinkiang and China proper on account of bandit activities, which make it very dangerous for merchants to travel. Mail and valuable cargoes were, up to the recent breach between China and Soviet Russia over the Chinese Eastern Railway in north Manchuria, forwarded through Siberia.

The former governor of Sinkiang purchased 21 motor cars from an American firm in Tientsin in the winter of 1927 for service in his Province. A motor road some 350 miles long was built by him with soldier labor to link up the capital of Sinkiang with Tahcheng (Chuguchak) on the Siberian border. Six of these motor vehicles have since been kept in operation on the Urumtsi-Chuguchak (Tihwa-Tahcheng) motor road. The other 15 motor cars have been used locally in the provincial capital, though they are sometimes also run on the old courier road between Urumtsi and Kashgar.

SUIYUAN

Suiyuan is a part of Inner Mongolia made by the Peking Government in the third year of the Republic of China into a special administrative district with a "Tutung" (governor of all) stationed at its capital city, Kweihwating, popularly known as the City of Suiyuan. At the suggestion of General Yen Hsi-san, this special administrative area was promoted to the status of a regular Province of China in September, 1928, under the old name "Suiyuan," meaning in Chinese, Sui, "pacification," and "yuan," remote, or "pacification of the distant territory." It covers an area of 100,000 square miles and contains an estimated population of 1,800,000.

Pingtichuan, Suiyuan, Saratsi, Paotowchen, and Wuyuan are the principal cities or trade centers of Suiyuan. The chief means of transportation in this Province are the western section of the Peiping-Suiyuan Railway, the Yellow River, and the old courier roads which connect Kalgan in Chahar Province with Uliassutai and Kobdo or Outer Mongolia and with Tihwa (Urumtsi) in Sinkiang Province. The only motor roads built in this Province are 350 miles of the 500 miles of road built by Gen. Feng Yuh-siang's soldiers between Paotowchen and Ningsia, 100 miles of the Pingtichuan-Pangkiang motor road, and 50 miles of the Kalgan-Pingtichuan motor road. Old caravan routes in Suiyuan Province that can be traveled by motor cars are estimated to total 930 miles.

As a means of providing employment for the large number of able-bodied adult famine refugees in the northwest, as well as the facilitating of communication, the Suiyuan provincial department of reconstruction announced on January 24, 1930, plans for the construction of a network of 13 motor roads, involving a total of 2,807 miles. The total construction cost is estimated at $700,000 Mexican, which, it is hoped, will be appropriated by the central Government in response to a petition of the Suiyuan provincial authorities. It is problematical—if, indeed, not unlikely—that the hopes of the Suiyuan officials will be realized in the matter of a grant from the central treasury at this time.

ROADS CONSTRUCTED

Paotowchen to Gearchao (Ningsia border).—Dirt; 350 miles; soldier-labor construction.

Pingtichuan to Pangkiang.—Dirt; 100 miles; soldier-labor construction.

Pingtichuan to Kalgan.—Dirt; 50 miles; soldier-labor construction.

All other routes.—The combined length of all other roads is 930 miles.

PROPOSED ROADS

The total length of proposed roads is 935 miles, as indicated in the following list. The total estimated cost of this construction is $665,352 Mexican.

	Miles		Miles
Paoning Highway	173	Lungwu Highway	117
Suihsin Highway	180	Suijen Highway	42
Suitsing Highway	80	Tsohliang Highway	56
Paokeh Highway	117	Kupao Highway	46
Tungtien Highway	7	Wuku Highway	47
Kweiwu Highway	30	Wuniao Highway	17
Taotsoh Highway	23		

SZECHWAN

The Province of Szechwan is the "Texas of China" in size, though its 150,000 square miles represent only about 60 per cent of the area of Texas. The latitude of Szechwan is similar to that of Texas. With a population of 52,000,000, the Province still has no railways, and until very recent years has had not a single road or motor car. Its population, while averaging about 346 to the square mile, is extremely dense on the Chengtu plain, where it is estimated at 2,000 per square mile. Most of the Province consists of a high plateau with mountains reaching 18,000 feet in altitude.

Owing to its difficult river passages, it has remained as a self-contained and isolated territory.

Szechwan claims to produce everything raised elsewhere in China. The Chengtu plain is perfectly irrigated by an artificial system 2,000

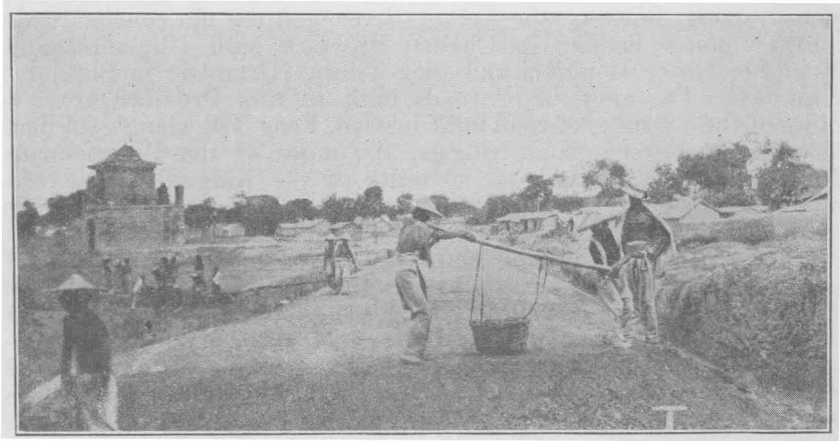

FIGURE 48.—Highway building in Szechwan Province

years old and is probably the most fertile spot for its size in China. Salt wells bored to a depth of 3,000 feet have disclosed the presence of petroleum and gas in considerable quantity. Szechwan, 1,500 miles from the sea coast, has but one outlet that can be advantageously used—the Yangtze River. As navigation on the dangerous Upper Yangtze has up until recent times been confined to junks, the Province has always been self-supporting. During the past few years, however, steam navigation has rapidly developed and is gradually affecting its industrial situation. There are now more than 30 steamers plying above Ichang during the summer and one-third of this number in the winter. Steam traffic operates on the Yangtze as far as Suifu, and in the summer as far as Kiating on the Min River.

Silk raising is probably Szechwan's leading industry, with the production of salt and wood oil next in importance.

There are practically no cart roads. Until recent years travel was either by foot, horseback, or by chair.

Chungking, on the Yangtze River, is the largest city in the Province, having an estimated population of 800,000. Chengtu, the provincial capital, with a population of 400,000, is situated in the central

part of the Province. Until 1928 it required 10 days of overland travel by sedan chair to reach Chengtu from Chungking.

ROAD BUILDING

The China International Famine Relief Commission a few years ago made an investigation and survey of a road from Chungking to Chengtu. It was estimated that the cost of this 300-mile project would be at least $4,000,000 Mexican.

In 1923 General Yang Seng, then overlord of all Szechwan, began the widening of the streets in the provincial capital, Chengtu, starting with the "East Great Road." The improvement of this street aroused the bitterest opposition, even to threats against Yang's life, yet when the widening had been completed business flocked to it to such an extent that merchants holding property on other streets widened them upon their own initiative. This resulted in such commercial rivalry that the merchants of "East Great Road" again (though this time voluntarily) widened their street that it might retain its preeminence.

By 1926 most of the streets in Chengtu had been broadened at the householders' expense.

At that time there was practically no traffic except foot traffic on any of the 80-odd miles of roads built in Chengtu. Heavy busses were not allowed within the city.

A network of roads radiating from Chengtu has since been under construction, the most important of which is that between Chengtu and Chungking. When this road is completed, travelers from the Yengtze Valley destined to Chengtu will be able to make the trip from Chunking to Chengtu by motor bus in a day. There is no indication at present as to when this stretch of some 300 miles may be completed, although some construction activities have been under way since the summer of 1928. Road construction work began in Chunking city during 1928.

In the Hochow-Suining district streets have been widened to 30 feet, stone curbing put in, and streets surfaced with lime concrete. These improvements apply to the main streets and in some instances the cross and side streets in such towns as Hochow, Wito, Tahopa, Yimochi, Tungan, Machi, Lungfengchang, and Suining. Kienchow has a very fine wide street, and buildings have been improved, giving to the place an atmosphere of prosperity.

The interests of the militarists in such work is purely a pecuniary one, as the people are not only forced to cut down their houses for street widening, but are obliged to pay the military for improving the streets. The military do the work at the lowest possible cost, retaining the balance for their war chests. But with all their rapaciousness the militarists have given to China a new means of communication which would be slow to come without such force.

Approximately 1,200 miles of motor roads have been completed in Szechwan. These new roads usually measure from 25 to 30 feet in width. They are, for the most part, graded thoroughfares with dirt surface but are ultimately to be replaced by macadamized roads. One of the military generals is reported to be surfacing the roads in his district with crushed rock and to have ordered a rock crusher and a steam roller from Shanghai for this work.

ROADS CONSTRUCTED

Chengtu to Penghsien via Sinfan.—Dirt; 28 miles; provincial construction. Built in 1929; impassable in rainy season; controlled by military; private cars used by military or those connected therewith.

Chengtu to Kwanhsien via Pihsien.—Dirt; 35 miles; private construction. Built in 1924; closed during August and September in rainy season. Road cut by numerous irrigation ditches. Controlled by Chen Kwan Motor Bus Co. Private cars allowed when used by military or those connected therewith.

Chengtu to Chungking west.—Dirt; 28 miles; provincial construction. Built in 1928; closed during rains; controlled by military; private cars used by military or those connected therewith.

Chengtu to Yachow via Sintsing and Kiungchow.—Dirt; 102 miles; private and provincial construction. Chengtu-Sintsing section of 28 miles completed in 1925; Sintsing-Yachow section completed in 1928. Entire route closed during rainy season. Controlled by military. Private cars allowed to operate when used by military or those connected therewith.

Sintsing to Kiating via Pengshan, Meichow and Kiakiang.—Dirt; 50 miles; provincial construction. Built 1927; closed in rainy season; controlled by military; motor-bus service operated by Ming Shen Bus Co.

Chengtu to Kienchownan.—Dirt; 45 miles; provincial construction. Completed with the exception of a 10-mile stretch now under construction. Closed in rainy season. Controlled by Chen-Kien Motor Bus Co. Private cars allowed ordinarily. Expected to be completed in January, 1930.

Kienchownan to Tzeliutsing via Tzeyang, Tzechow, Neikiang, and Peimuchen.—Dirt; 143 miles; provincial construction. Built during 1928–29; closed during rains; controlled by military; private cars allowed when used by military.

Lungchang to Jungchang.—Dirt; 17 miles; private construction.

Kienchownan to Suining via Lochih.—Dirt; 101 miles; provincial construction. Built in 1927; closed in rainy season; controlled by military; bus service operated by Sui Kien Bus Co. Private cars used by military. Surfacing planned for near future.

Suining to Anyo.—Dirt; 33 miles; provincial construction. Built in 1927; closed in rainy season; bus service operated by Sui Kien Bus Co.

Suining to Pengki.—Dirt; 30 miles; provincial construction. Built in 1927; closed in rainy season; bus service operated by Sui Kien Bus Co.

Suining to Tungan.—Dirt; 35 miles; provincial construction. Built in 1928; closed in rainy season; bus service operated by Sui Kien Bus Co. Private cars allowed when used by military.

Chengtu to Chaokiatu via Sintu.—Dirt; 30 miles; provincial construction. Built in 1925; closed during rainy season; controlled by military. Private cars used by military.

Chengtu to Hanchow.—Dirt; 28 miles; provincial construction. Built in 1925; closed during rains; several different bus companies operating.

Hanchow to Chaokiatu via Kintang.—Dirt; 18 miles; provincial construction. Built in 1927; closed during rains. Bus service operating controlled by military.

Tehyang to Mienchu.—Dirt; 20 miles; provincial construction. Built in 1928; closed during rains; bus service operated by Ta Chien Co.

Tehyang to Chungpa via Lokiang and Mienchow.—Dirt; 65 miles; provincial construction. Built in 1929; closed during rains; bus service operated by Ta Chien Co. Private cars allowed when used by military.

Hanchow to Tungchwan via Chungkiang.—Dirt; 70 miles; provincial construction. Built in 1928; closed during rains; controlled by military; private cars used by military.

Shunking to Chuhsien via Yochih and Kwangan.—Dirt; 218 miles; provincial construction. Shunking-Kwangan section via Yochih completed in 1926; Kwangan-Chuhsien stretch built in 1928. Closed during rains. No bus services are operating over this route but private cars allowed when operators are on friendly terms with the military.

Tungliang to Tatsu.—Dirt; 25 miles; provincial construction. Built in 1926; closed during rains. No cars operating over route.

Chungking to Tachikow.—Crushed stone; 5 miles; provincial construction. Built in 1929. Usable year around. Said to be best constructed road in Province. Private cars allowed when used by military.

City mileage (macadam surface) suitable for motor vehicles.—Chengtu, 30 miles; Kiating, 15 miles; Suining, 10 miles; Meinchow, 5 miles; and Hochow, 2 miles.

ROADS UNDER CONSTRUCTION

Chengtu to Kienchownan.—Dirt; 10 miles; provincial construction. An uncompleted 10-mile stretch of this 45-mile road is now under construction and expected to be completed by Jan. 1, 1930.

Tzeliutsing to Fushan.—Dirt; 30 miles; provincial construction. Expected to be completed during January, 1930.

Tsungning to Wenkiang.—Dirt; 20 miles; provincial construction. To be completed by end of 1929.

ROADS PROJECTED

The following construction of roads is projected. All are to be dirt roads, constructed by provincial authorities.

	Miles		Miles
Chuhsien to Wanhsien	100	Chungpa to Kienchowpeh	50
Shunking to Sichung	23	Kiating to Suifu (Suchow)	100
Chungking to Kikiang	55	Tungchwan to Suining	60
Tachikow to Tungliang	55	Shunking to Yingshan	45
Tungan to Hochow	40	Changshow to Tienkiang	60
Tungchwan to Paoning	75	Fushun to Luchow	40
Tungchwan to Mienchow	40		

MOTOR VEHICLES

It is estimated that there are approximately 250 motor cars in the Province, the majority of which are controlled by the military authorities, although operating as bus services.

Between Chungking and Wanhsien there are 2 passenger cars and 6 busses operating, and between Chengtu and Suining, 58 passenger cars, 144 busses, 20 trucks and 20 motor cycles.

TIBET

The name "Tibet" is not known either to the inhabitants or to the Chinese. The former call it "Bodyul," and the latter "Si Tsand," which means "the western treasury."

Tibet is in many ways a most remarkable country, covering an area of 465,000 square miles and containing a population of 2,500,000. It has a greater average elevation than any other similar area in the world and on account of the marginal mountain ranges, is almost inaccessible. It is dominated by a unique form of Buddhism and in Europe enjoys a peculiar reputation as the abode of certain "masters" of unequaled wisdom. The Province produces gold in considerable quantities, and is doubtless rich in other minerals.

On the west and south Tibet is bounded by India, on the north by Sinkiang (Chinese Turkestan) and Kansu, and on the east by Tsinghai and Sikang. Three great Indian rivers—the Indus, the Sutlej, and the Brahmaputra—find their sources in the central part of Tibet.

The communications of Tibet are primitive in the extreme, the roads being few and bad, with nothing but rope bridges for crossing rivers and torrents. The main road from China into Tibet is the official route from Tatsienlu by way of Yachow, Batang, and Chamdo, of Szechwan and Sikang. Chinese Government postal couriers formerly traveled this route by day and night with relays

of horses and, while usually taking somewhat under two months for the journey, could reach Peking from Lhasa within a month's time. No Chinese national, however, is at present allowed to travel or trade in Tibet so long as the Dalai Lama is in control of that part of the country, and no foreigner can travel in Tibet without a Tibetan escort, because it is too dangerous.

Lhasa, the capital of Tibet, has been described as "the only real town in Tibet." It lies on a plain surrounded by mountains dotted over with large monasteries. The name of the city means "Throne of God," and the fact that the head of the Buddhist religion has his seat here makes it an exceedingly holy place. The population of Lhasa is about 40,000 of whom half are priests, but the resident population is constantly swollen by crowds of pilgrims from all regions in which Lamaism holds sway. The Dalai Lama's palace, known as the Potala, forms a group of fortifications, temples, and monasteries. It was built by Emperor Kang Hi, the second Manchurian ruler of China, during the Tsing dynasty, and filled with treasures from every part of Tibet, Mongolia, and China, to take the place of a former palace destroyed by the Sungarians in the beginning of the eighteenth century. The streets are broad and regular, but by no means clean. Houses are substantially built.

Aside from Lhasa, none of the towns of Tibet are large, the number of inhabitants in most cases being limited to a few hundred. Chetang, situated southeast of Lhasa, is a city of some importance, where salt, wood, and borax are exchanged for coarse woven goods, rice, fruits, spices, and dyes. From west to east, the most important towns are Chuprang, Taklakot, Rudok, Garthok, Shigatze, Gyantze, Yatung, and Phari.

TSINGHAI

Tsinghai and Kokonor are the Chinese and Mongolian names given to the vast territory bounded by Kansu Province on the north and east, by Sinkiang on the west, and by Tibet and Sikang on the south. The territory covers an area of over 800,000 square miles of fertile pasturage and has about 1,000,000 inhabitants. It was a part of China before Christ was born and was inhabited only by Chinese up until the Yuan dynasty. The Mongols invaded this remote country during the Mongol rule of China.

Tsinghai was governed by the Chinese Government through the viceroy at Lanchow, in Kansu Province. During the first year of the Chinese Republic, it was made a special administrative area with a high military commissioner stationed at Sining, Kansu Province. In September, 1928, when the Nanking Government rearranged the political divisions of China, Tsinghai was promoted to the status of a Province, with Gen. Sun Lien-chung as chairman of the Province, assisted by a commissioner of civil affairs, a commissioner of finance, and a commissioner of education. The former Sining prefecture of Kansu Province has been annexed by Tsinghai, with the city of Sining as its capital. It is the gateway from Kansu to Tibet and has been known to the world as the place for the best wool available for export from China.

There is no constructed motor road in Tsinghai, except that part of the ancient courier route between Lanchow, in Kansu, and Sining. Motor cars are sometimes operated by merchants and Chinese Gov-

ernment officials from Kansu to the capital city of Tsinghai over these trails, covering a distance of approximately 150 miles. There are thousands of miles of trade routes which could be traveled with an automobile if desired. These lead from Sining to Outer Mongolia and Sinkiang in the north and west, to Tibet in the southwest, and to Sikang and Szechwan Provinces in the south and southeast. Both the Yellow River and the great Yangtze River of China proper have their origins in Tsinghai, but neither of them can be navigated within this Province.

YUNNAN

Yunnan, situated in the extreme southwestern part of China on the border of Burma, is reached by railway from Haifong, French Indo-China, to Yunnanfu, the provincial capital. The Province is about the size of Montana, has an area of 146,700 square miles, and lies in a latitude corresponding to that of Cuba and southern Florida. Its population of 11,000,000 averages about 75 to the square mile, being densest on the tableland. Yunnan, being mountainous throughout, is oftentimes called "the Switzerland of China." Yunnanfu, the capital, lies at an elevation of 6,200 feet, and has a population of 170,000, of whom 200 are foreigners. It is the chief commercial center and, although not a treaty port, foreign firms are located there. The Haifong-Yunnan Railway (French) a meter-gauge line, connects the port of Haifong, French Indo-China, with Yunnanfu, the provincial capital. The Kochiu tin-mining section and the town of Linan are connected with Mengtsz and in turn with the Haifong-Yunnanfu line at Pishihchai by the Kopi Railway. This latter line, which is Chinese-owned and operated, has a total length of approximately 90 miles of track of 60-centimeter gauge. Regular steamship service is maintained between Hong Kong and Haifong, French Indo-China. Transportation otherwise is by pack animals.

ROAD BUILDING

In 1927–28 engineers of the China International Famine Relief Commission surveyed a route from Yunnanfu to Yangkai and north—a distance of 60 miles—and decided to spend $250,000 Mexican for building a well-crowned 24-foot motor road without macadam surface. The road was to be used in dry weather by automobiles and wide-tired carts. None of the crude native carts were to be permitted on it. Grades were not to exceed 7 per cent. However, the almost continuous civil warfare during 1927 to 1929 has seriously interfered with the road-building plans for this Province. The work of the provincial road bureau on the motor road west of Yunnanfu was suspended early in 1927. The Yunnan committee of the International Famine Relief Commission had on hand the funds for constructing at least 50 miles of additional earth motor roads with bridges and culverts, but was proceeding slowly owing to disturbed conditions. The section from Yunnanfu to Tapankiao to the east, a distance of 15 miles, was completed at a cost of $60,000 Mexican.

A road from Yunnan to Anning about 20 miles in length was completed in 1928, upon which motor-bus transportation has been established.

ROADS CONSTRUCTED

Yunnanfu to Tapankiao.—Dirt; 15 miles; constructed by International Famine Relief Commission. Cost, $60,000 Mexican.

Yunnanfu to Anning.—Dirt; 20 miles; provincial construction. Cost, Yunnan, $90,000 ($240,000 United States).

ROADS PROJECTED

Although less than 50 miles of highways exist in the entire Province, the provincial bureau of reconstruction has ambitious plans for a system embracing more than 500 miles. The first section of these plans is that between Yunnanfu and Tali, a distance of 300 miles. In 1924 the provincial authorities estimated the cost of building this road at Yunnan $9,650 ($3,618 United States) per mile. On this basis the road to Tali would cost Yunnan $3,000,000 ($1,125,000 United States). For financing the construction of projected roads the Government at that time allotted certain funds, presumably from the wine and tobacco tax revenue, together with additional funds said to have been raised locally during the latter days of the Manchu régime for railway construction.

Political upheavals since 1924 have prevented the realization of these plans. A powder explosion which wrecked a large portion of the city of Yunnanfu in July, 1929, causing a heavy loss of life, has absorbed the attention of officials to the exclusion of all else. All efforts toward road construction have ceased and it is unlikely that they will be resumed until the effects of this disaster have been fully remedied.

A private enterprise fostered by the Yunnan Kotchiu Tin Trading Co. is seriously under consideration for the building of a 25-mile stretch of road from the tin mining and smelting center of Kokiuchang to Mengtsz and Pishihkai on the Haifong-Yunnan Railway. A section 7 meters (23 feet) wide having a maximum grade of 5 per cent and covering a distance of 10 miles was to be completed by the end of 1929, to connect the mines with a lake about halfway between Kokiuchang and Mengtsz. With this section of the road completed, the company then contemplates the operation of heavy 5 or 10 ton tractors with trailer trains over the mountain grades to the railway point. A small fleet of light American tractors is already in use at the mines, but these tractors are unsuitable for the longer haul.

Road-construction projects in Yunnan Province include the following, all of which are to be simple dirt roads:

Yunnanfu to Tali.—Length, 300 miles; provincial construction. Estimated cost, Yunnan $9,650 ($3,618 United States) per mile.

Yunnanfu to Puan, Kweichow border.—Length, 95 miles; provincial construction.

Yunnanfu to Kwangnan, Kwangsi border.—Length 150 miles; provincial construction.

Yunnanfu to Yuankiang.—Length, 60 miles. To be constructed by the International Famine Relief Commission. Cost, about $250,000 Mexican.

Linan to Pishihchai.—Length, 25 miles; private construction.

Kokiuchang to Mengtsz.—Length, 25 miles; private construction.

MOTOR VEHICLES

There are 31 motor vehicles in the Province—6 passenger cars, 1 bus, 11 trucks, 3 motor cycles, and 10 tractors and trailers.

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Appreciative acknowledgment is made of the following sources of information, which have been invaluable in the preparation of this report:

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- A. Bland Calder, acting commercial attaché, Peiping.
- John R. Putnam, consul, Amoy.
- Frederick W. Hinke, vice consul, Canton.
- Leroy Webber, consul, Chefoo.
- William R. Langdon, consul, Dairen.
- George Atcheson, jr., consul, Foochow.
- Russell B. Jordan, vice consul, Hankow.
- T. Leonard Lilliestrom, vice consul, Harbin.
- Harold Shantz, consul, Hong Kong.
- M. S. Myers, consul general, Mukden.
- J. Hall Paxton, vice consul, Nanking.
- David C. Berger, consul, Swatow.
- J. C. Huston, consul, Shanghai.
- Angus I. Ward, consul, Tientsin.
- Ernest Price, consul, Tsinan.
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- Culver B. Chamberlain, consul, Yunnanfu.
- Harold D. Robison, assistant trade commissioner (photographs).

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- Chen Cheng-chun, commissioner of reconstruction, Hangchow, Chekiang.
- Chen Wen-hsuen, director, Chekiang highway administration.
- S. C. Kang, chief, first division, Kiangsu board of construction.
- Woo Tang-ping, Kiangsu bureau of reconstruction, Chinkiang.
- Him Wong, foreign secretary, Kwangsi.
- Woo Tso-tze, director, Hangchow-Shaohing motor highway bureau.
- Hung Yu-nan, secretary, special municipality of Nanking.
- L. H. Wang, chief, bureau of construction, Shansi.
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- Lu Tan-ling, chief editor, Good Roads Monthly.
- Liu Yueh-ying, assistant editor, Good Roads Monthly.
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CHINA AND JAPAN

SCALE 1:8,744,000

1 Inch = 138 Statute Miles

1 Centimeter = 87.4 Kilometers

Statute Miles

Kilometers

Railroads ——— Canals ———

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