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GEOGRAPHIC INTELLIGENCE REVIEW

CIA/RR MR-43
September 1954

CENTRAL INTELLIGENCE AGENCY

OFFICE OF RESEARCH AND REPORTS

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25X6

Maps

*The individual classification of each article in this Review is given at the end of the article.

THE CHINESE NATIONALIST ISLANDS OFF THE FUKIEN-CHEKIANG COAST

With the Chinese Communist shelling of Quemoy on 3 September 1954, attention has again been focused on the thousands of islands, large and small, that fringe the coast of China opposite Taiwan. Of the 144 most important islands, 59 are Chinese-Communist occupied, 35 are controlled but not actually occupied by the Communists, 24 are Nationalist occupied, 5 are unoccupied and considered neutral, and 21 are of unknown status. The 24 Nationalist-held islands -- stretching from northern Chekiang, scarcely 200 miles south of Shanghai, to Amoy, less than 300 miles northeast of Hong Kong -- serve as outposts for the defense of Taiwan, as advance bases for raids on Communist shipping, as points for observation of mainland troop movements, and as possible springboards for future Nationalist action against the mainland. Although there have been minor clashes between Nationalist and Communist island garrisons since 1950, the Nationalist control of offshore waters has been centered in the past few years on three main groups of island strong points plus several isolated pro-Nationalist guerrilla-held islands.

The three main groupings of Nationalist-held islands are centered on the Ta-ch'en Islands in the north, on Ma-tsu Shan in the middle, and on Chin-men Tao (Quemoy Island) in the south (see CIA 13515).*

*The Pescadores are not considered in this article because they are much closer to Taiwan than to China and consequently do not fall into the category of "offshore islands."

These islands lie along the approaches to three ports -- Hai-men, Foochow, and Amoy -- which also function as terminal points for land communications with the interior and as potential invasion-staging areas. Two other islands, P'i Shan and Nan-chi Shan, are less significant but are in a position to screen the sea lanes to the north and south of Wenchow, the major port of southern Chekiang.

Undoubtedly the biggest fly in the Communists' offshore ointment is Quemoy Island. Quemoy, in fact, is hardly an "offshore island" since it is situated almost squarely in the middle of the approaches to Amoy Harbor. Quemoy commands the 12-mile main southern entrance to Amoy Harbor as well as the less important 8-mile northern entrance. Surrounded by the mainland on three sides, the island is nowhere more than 12 miles from Chinese Communist territory. Hourglass-shaped Quemoy is 12 miles long from east to west and 8.4 miles wide, narrowing to less than 2 miles at the waist. In 1953 the population was about 41,000. 25X6

25X6

25X6

[redacted]

An extensive network of roads, generally motorable, connects the many small towns and villages scattered throughout the intensively cultivated interior. Although some of the terrain is hilly, especially in the east, none of it is over 830 feet in elevation.

A little over 2 miles west of Quemoy and only about 4 miles east of Amoy, is Lieh Hsü (Little Quemoy), a Nationalist-held island about 3-3/4 miles long by 2-1/4 miles wide. Lieh Hsü has many cove-head beaches, generally backed by low terrain. The island is intensively cultivated, and its several villages are connected by a well-maintained system of trails and roads.

The Nationalists also reportedly hold Tung-ting Hsü (Chapel Island), a steep-sided grassy island off the southern entrance to Amoy Harbor. The light tower on its summit serves as a sailing guide for vessels approaching Amoy Harbor from the south.

Recent Chinese Communist attacks on Quemoy have been launched mainly from the port island of Amoy, only about 8 miles west of Quemoy. Amoy is smaller than Quemoy, about 9 miles long and 6 miles wide, and in 1950 the population was over 200,000. Its densely populated and intensively cultivated northwest and southeast portions are separated by a wide indentation, most of which is a tidal flat. The southern part of the island is hilly, with the highest peak over 1,000 feet in elevation. A network of roads connects the city of Amoy with many smaller towns that are scattered over the island.

Quemoy is flanked on the north by three small Communist-held islands. The smallest, Chiao Hsü, is less than 2 miles away. The largest, Ta-teng Tao, is a little more than 3 miles from Quemoy and is about 3 miles long by 2 miles wide. Although all three islands

are inhabited, their offshore waters are extremely shallow or reefy and are unsuitable for amphibious operations.

The middle group of Nationalist-held islands, centered on Ma-tsu Shan, roughly parallels the coast opposite Foochow. The group consists of five main islands and numerous islets and rocks. Ma-tsu Shan is about 3-1/2 miles long and averages 1 mile wide. From its rocky, indented coastline the interior rises to a maximum of 793 feet. 25X6

25X6 [redacted] A system of roads, probably surfaced, links the few villages and closely follows the shoreline in some places.

Other islands in the group include Ch'ang-hsü Shan, Kao-teng Hsü, Pai-ch'üan Lieh Tao (White Dogs), Tung-yin Shan, and Lang Tao (Larne Island). The largest of these, Ch'ang-hsü Shan, is a ridge-backed island with an indented coastline backed by terraced, sloping terrain. Both Ch'ang-hsü Shan and Kao-teng Hsü are inhabited, and networks of roads or trails connect the island villages.

The Ta-ch'en Islands are the main group of Nationalist-held islands in the north. A group of islands occupied by Chinese Communists commands the sea approaches to Hai-men, and another group parallels and dominates the southern coast of T'ai-chou Wan. Bracketed by these two groups are the Ta-ch'ens. The main island, Shang-ta-ch'en Shan, is irregularly shaped. It is about 3 miles long and varies in width from 2-3/4 miles to 100 yards. Like most of the offshore

islands, it has an indented, predominantly cliffy coastline that provides a number of landing places and small beaches. The beaches are backed by moderately sloping or steep terrain that has been extensively terraced and is bare of trees. A crisscross pattern of trails and roads follows the western and southern shores. Hsia-ta-ch'en Shan, the second main island, is about 4 miles long by two-thirds of a mile wide. Its rugged terrain rises to about 750 feet from an indented, rocky coastline with very few landing places. One large and several small towns are backed by terraced hills, which continue over most of the island. Unsurfaced roads connect all significant points on the island.

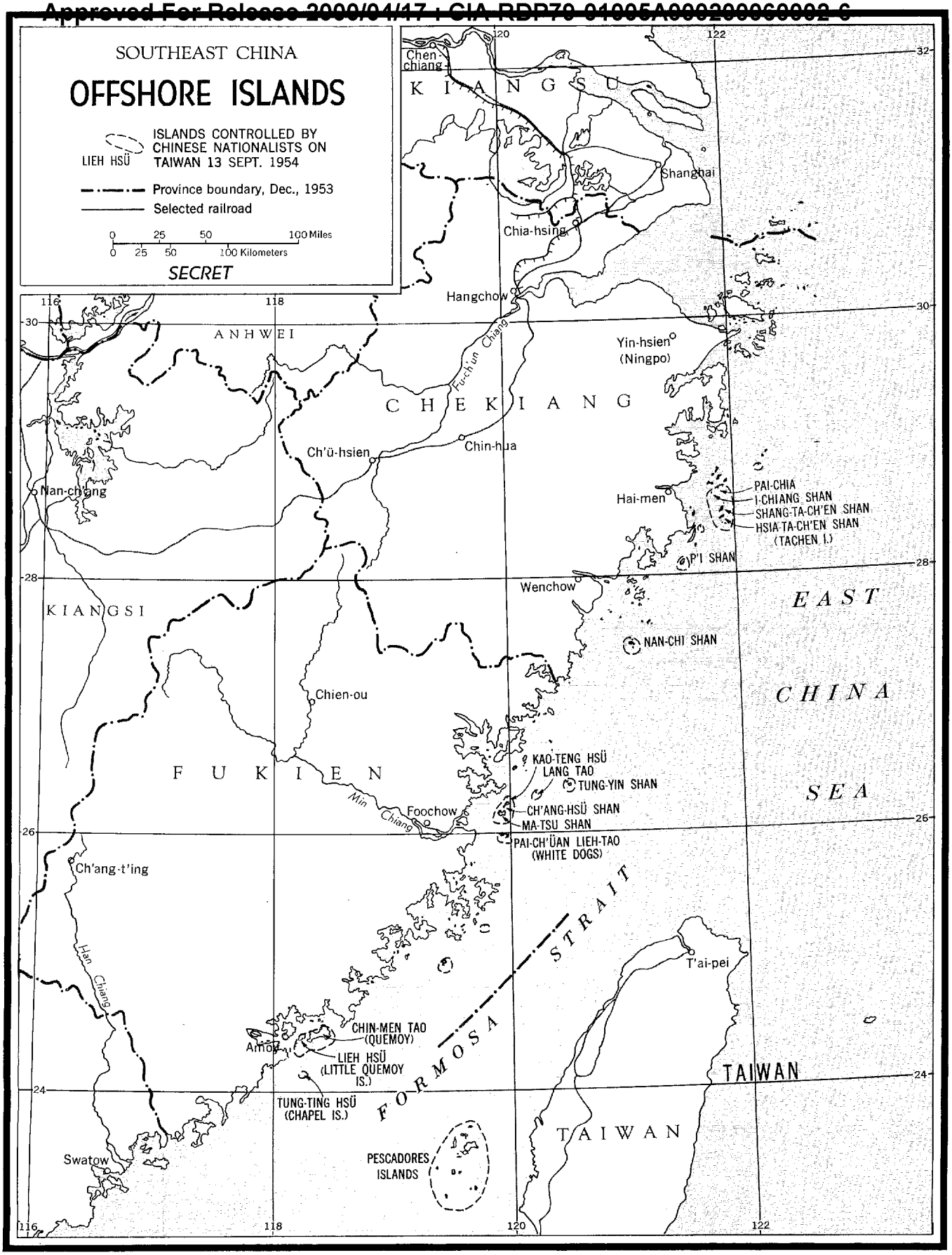
The other islands in the Ta-ch'en group are, in general, pocket editions of the two main islands. All have rocky, irregular coastlines with a few cove-head landing places, backed by rugged, barren terrain with a scattering of terraces.

Another important Nationalist-held island, Nan-chi Shan, lies southeast of Wenchow. Nan-chi Shan is an island about 4-1/4 miles long by approximately 1 mile wide, surrounded by 5 small islets. 25X6

25X6 [redacted] Villages connected by unsurfaced roads rim the island, generally not more than a few hundred yards inland from a cliffy coast.

The small Nationalist-held island of P'i-Shan, which lies on the northeastern sea approaches to Wenchow, is screened from the mainland by a group of Communist-controlled islands. P'i Shan is about 2-1/2 miles long and one-half mile wide and has a rocky, irregular coastline backed by terraced slopes.

The current question of the defensibility of Quemoy, prompted by the island's precarious position within range of Communist coastal guns, should not obscure the fact that the other offshore islands in Nationalist hands are more easily defensible against amphibious attack. Their more rocky, irregular coastlines and rugged terrain are better suited for defense, and most of them lie far enough offshore to permit defensive maneuvers by air and sea forces. None of the islands, however, is invulnerable. (SECRET)



13515 CIA, 9-54

RECENT RAILROAD DEVELOPMENTS IN TROPICAL AFRICA

The production of minerals and other resources in Africa south of the Sahara has increased to such an extent that transportation and port facilities are inadequate to handle the traffic consigned to them. In addition, the discovery and development of new resources, chiefly minerals, is further increasing the need for transport facilities, especially railroads. Most of the mineral areas are located in the interior on the plateau rather than on the coastal plain. The break in terrain between plateau and plain precludes extensive use of rivers for transportation, and sheer distance necessitates long hauls to ports in many cases.

Several railroads have been built from mineral-producing areas of the interior to ports (see map 13325). The "Benguela Railway" extends from Lobito, Angola, to the mineral areas of the Katanga in the Belgian Congo and to Northern Rhodesia. The Katanga region is also connected with Matadi near the mouth of the Congo by a combination rail and water route, using the Congo River and tributaries. The "Salisbury-Beira Railway" taps the chrome, coals, and asbestos areas of Southern Rhodesia and the copper belt of Northern Rhodesia via Umtali, Salisbury, Bulawayo, and Livingstone.

To handle the increasing production, new railroads or extensions to existing railroads are being built in Angola, French West Africa, Mozambique, Southern Rhodesia, Tanganyika, the Belgian Congo, and

Uganda. In addition, a number of railroads are being projected or considered for future construction. Almost all of these will tap areas that are currently being developed. The projected railroads and those under construction will either extend or connect existing rail lines, thereby shortening the length of haul or improving service.

The Pafuri Railway

One of the railroads currently under construction -- called the "Pafuri Railway" in the Rhodesias and officially known as the "Limpopo Railway" in Mozambique -- will connect Guija, Mozambique, and Bannockburn, Southern Rhodesia. This connection will give the Rhodesias a second outlet to the Indian Ocean through the colony of Mozambique. The new section, which has the same gauge as the lines it connects (3 feet 6 inches or 1.067 meters, the standard African gauge) and is about 400 miles in length, is being built by Rhodesian and Mozambique interests, each responsible for the section within its territorial limits. When the link is completed the Mozambique Railways from Lourenço Marques to the Rhodesia border will be about 322 miles in length, and the section of the Rhodesia Railways from the Mozambique border to Bulawayo will be approximately 338 miles.

The railroad is being constructed because the railroads of the Rhodesias and of Mozambique, which depend on the port of Beira, are currently unable to carry all the traffic consigned to them. This traffic has increased greatly during the last 10 years. Furthermore,

the port of Beira has been so badly congested that it was deemed desirable to develop a new route to divert some of the traffic to a port less crowded. Ports with rail connections, though circuitous, that could possibly be used, are already overcrowded, or the railroads that serve them are already handling capacity loads. Through port improvements, Beira has been able to handle all the traffic that arrived there, but the railroads serving the port are still not capable of taking care of the increasing shipments being supplied them. The increase is in part the result of greater demands by a consuming market that had been curtailed by World War II. To meet these demands, production from mines already in operation has been increased and new mines are being developed.

Studies were recently made to determine how congestion could be eliminated or at least mitigated. Three alternatives proposed by the governments concerned to ease the congestion on the Salisburg-Beira section of the Rhodesia-Mozambique railroads and at the Beira terminal are listed below.

1. Improvement of the existing Salisbury-Beira railroad, with improvements to the port of Beira.

2. Development of a new route between Southern Rhodesia and the port of Lourenço Marques by the construction of a rail connection between West Nicholson on the Rhodesia Railways and Beitbridge on the South African Railways.

3. Development of a new route between Southern Rhodesia and the port of Lourenço Marques by the construction of a rail connection between Bannockburn on the Shabani branch line of the Rhodesia Railways and Guija on the Mozambique Railways, crossing the border near Pafuri.

Alternative No. 3, the Pafuri Railway, was selected as most feasible. This new line would make it possible to direct much of the external trade of Northern Rhodesia, as well as that of the Bulawayo and Midlands area of Southern Rhodesia, to the port of Lourenço Marques, where the port capacity is ample. The line would provide a valuable alternative route, thereby reducing dependence on the Salisburg-Beira Railway, which is vulnerable to interruptions due to flooding in the Pungwe Flats. Shipments of minerals and equipment would no longer be subject to serious delays, and exports from the Rhodesias could be increased. The area served by the new construction is reported to be both heavily mineralized and suitable for agriculture. Exports that are likely to be shipped over the new railroad are (1) cobalt, copper, lead, and zinc from Northern Rhodesia; (2) asbestos, coal, and chromite from Southern Rhodesia; and (3) agricultural products, mainly from Southern Rhodesia and Mozambique. Imports destined for the southern parts of Southern Rhodesia and Mozambique are also likely to be routed over the line.

The new section of railroad offers few difficulties in construction. The first 350 miles from Guija are through sparsely vegetated country with gently rolling terrain. The soil ranges from predominantly

sandy to fairly hard cemented gravel. Very little solid rock is encountered. Along the last 50 miles to Bannockburn the country is fairly rugged, with considerable outcropping of rock. Except at the Limpopo River in Mozambique and the Ngezi River in Southern Rhodesia, however, no great amount of grading and no difficult bridge construction would be involved.

In order to insure both the speed and capacity necessary for efficient operation over this route, it will be necessary to make a number of improvements in existing lines, in addition to the construction of the railroad between Bannockburn and Guija. The improvements consist of changes in grades and alignment and the replacement of sections of light-weight trackage by heavier rails. It would also be desirable to double track the line between Somabula and Bulawayo, a distance of approximately 90 miles.

Construction on the $40,000,000 Pafuri project was started in 1952 at two points. The Rhodesia Railways began buildings at Bannockburn, proceeding in a southeast direction, while the Mozambique Railways began building northwestward from Guija. The two sections are to meet at Border Post No. 14, a short distance from Pafuri on the boundary between Southern Rhodesia and Mozambique. It is expected that the railroad will be completed by the end of 1954 or early in 1955. With the completion of the Pafuri Railway, it is hoped that the congestion on the Rhodesia Railways will be relieved and that the port facilities at Lourenço Marques will be more fully utilized.

The Kamina-Kabalo Railway

The Kamina-Kabalo Railway, now under construction, will connect two important railroad systems of the Belgian Congo: Chemin de Fer du Bas-Congo au Katanga (Lower Congo Railway of Katanga -- BCK), located in southern Belgian Congo, and the Chemin de Fer du Congo Supérieur aux Grands Lacs Africains (Upper Congo Railway of the African Great Lakes -- CFL), located in the eastern part of the colony.

The railroads of the Belgian Congo are of two classes -- isolated local systems and those connecting with transcontinental lines. Originally the railroads were planned to further the use of river transport by providing bypasses where rapids or falls interrupted navigation. Later, the development of the mineral industry in the Katanga formed the basis for the establishment of transcontinental connections to the south with the Rhodesia and South African Railways and to the west with the Lower Congo Railway of Katanga and the Benguela Railway to Lobito, Angola. These railroads and that from Léopoldville to Matadi have 3-foot 6-inch gauge. The remaining railroads of the Belgian Congo are short lines of various gauges, with no through rail connections.

In order to develop a railroad net, plans have been made to construct links between the detached lines. One link, the Kamina-Kabalo line, is currently under construction; others are still in the projected stage. The construction of the Kamina-Kabalo railroad began

in 1952 and is to be completed by 1956. Its completion will permit rail transportation between Lobito on the Atlantic coast and Dar es Salaam on the Indian Ocean, interrupted only by Lake Tanganyika. Here a railroad ferry will transfer cars from Albertville, the lake terminal of the CFL Railway, to Kigoma, the lake terminal of the Central Railway of Tanganyika.

The Kamina-Kabalo line, extending from Kamina on the BCK to Kabalo on the CFL line via Kabongo, will be approximately 275 miles in length and will have the standard African gauage of 3 feet 6 inches. The line will consist of two sections -- a 155-mile section between Kabalo and Kabongo built by the CFL and a 120-mile section between Kabongo and Kamina built by the BCK. Once the Kamina-Kabalo line is constructed, the eastern part of the Belgian Congo will be connected to Sakania in the southern part of the colony and Port Francqui on the Kasaï River to the west. Albertville on the CFL also will be connected directly with the railroad systems of the Rhodesias, the Union of South Africa, and Angola.

Several technical problems are involved in connecting the CFL and BCK systems. The CFL system has a 3-foot 3-3/8-inch (1-meter) gauge like the railroads in British East Africa, whereas the BCK, which is connected with the Rhodesia Railways and the Benguela Railway of Angola, has a 3-foot 6-inch gauge. Another difficulty involved is the use of heavier equipment on the BCK than on the CFL. The CFL rails weigh about 23 kilograms per meter (approximately 50 pounds per

yard), permitting a maximum load of approximately 12 tons per axle; the BCK uses rails weighing 30 to 33 kilograms per meter (approximately 60 to 65 pounds per yard), with a maximum load rating of 16 tons per axle. The heavier BCK locomotives will not be able to run on the CFL system until some reinforcement has been completed. It has been decided, however, not to undertake the reinforcement until the volume of traffic and other economic considerations justify the expense.

A major engineering problem that will be encountered is the construction of a bridge across the Lualaba River, the main course of the Congo River above Stanleyville. The bridge will be located at the village of Zofu, about 11 kilometers south of Kabalo and will be 1,700 feet long from one abutment to the other. No other large bridge will be required along the line.

When completed the Kamina-Kabalo Railway will not only provide a link between two important railroad systems of the Belgian Congo but also connect these systems with those of neighboring territories, thus insuring more direct and faster transportation for the products of eastern Belgian Congo.

The Uganda Railway

An extension of a railroad from Kampala to the western borders of Uganda has been proposed a number of times and surveys have been made for possible routes, but not until 1950 was anything definite

done to assure construction. The discovery of minerals, especially copper and cobalt, in payload quantities in Western Uganda approximately 200 miles from a railhead indicated the need for improvements in transportation. In 1950 the Protectorate Government, convinced that a practical solution to the problem could be delayed no longer, gave the East African Railways and Harbours Administration the necessary guarantee against loss in operating a 50-mile extension of the line from Kampala to Mityana and requested that construction start as soon as possible.

The surveys, all made prior to 1950, were centered on Lake Albert, Mubende (south Toro), or the Katonga Valley. The Katonga route from Mityana to the Lake George area, with Kasese as the western terminal, was finally selected because it is shorter, cheaper to construct, and serves a larger territory than the others, and provides the most convenient link with the Belgian Congo.

The first 50 miles of the route will cross a densely populated and highly productive area, one of the most prosperous regions of Uganda. The middle section of the line will run along the valleys of the Nabakazi and Katonga Rivers. This is a sparsely inhabited country of short-grass and scrub-bush savanna, but at present water supplies are inadequate. The last section of the railroad will open up the western highlands, which is one of the most fertile areas in Africa and has abundant and well-distributed rainfall.

At present approximately 50 miles of line, from Kampala to Mityana, have been completed and are in use. The remainder of the route has been surveyed, and the grading and track laying is progressing as rapidly as possible. It is expected that the entire extension will be completed and in use in 1955.

The construction of the Uganda railroad will aid in the development of mining, agriculture, and, to a lesser degree, forestry. The presence of copper and cobalt was a leading factor in promoting the building of the railroad. In addition, wolfram, lead, and tin have been produced in this region, and adequate transportation will provide an incentive for further prospecting that may reveal other minerals in paying quantities.

Possibly the greatest contribution of this new line to Uganda will be the opening up of large areas of new country. The line passes through a number of climatic and vegetation zones. The population density is generally light, but the improvement of water supplies, the eradication of the tsetse fly, and the restriction of game to reserves are slowly taking place. Among the products that could be grown are vegetables (especially near towns), coffee, cotton, bananas, tobacco, and peanuts; with the eradication of the tsetse fly, cattle raising might become important.

In the past, lack of transportation facilities has hampered the exploitation of the natural timber resources in the western part of Uganda. Some of the forests have never been adequately surveyed to

determine their possibilities for timber production, and only a small quantity of wood is now being cut, mainly for local needs. With the advent of a railroad, sawmills in this region could increase their production for export.

The Mossi Railway

Currently railroad construction in French West Africa is limited almost entirely to the extension known as the Mossi section of the Abidjan-Niger Railway. It will connect Bobo-Dioulasso with Ouagadougou, the capital of the Haute Volta -- a distance of approximately 220 miles. The Abidjan-Niger railroad, begun at Abidjan in 1904, was extended by stages into the interior of the colony and finally reached Bobo-Dioulasso, 497 miles from Abidjan, in 1934. The original object of the railway was to provide a route to the interior; eventually the idea of extending it to the Niger River developed.

The construction of the extension was decided upon in 1937 for the the purpose of draining southward the resources of the region, including its considerable reserve of native labor. The choice of a route presented no great problem because of the uniformity of the terrain crossed and the consequent lack of serious construction problems. The only sizable river to be crossed is the Black Volta, requiring a bridge approximately 197 feet in length. A number of small rivers and streams, however, will require bridges or culverts. The most serious problem is the rainy season, which hinders or stops work; in some cases the rains may even wash away the newly built fills. The railroad, like

the line from Abidjan to Bobo-Dioulasso, has a 3-foot 3-3/8-inch gauge.

Work on the Mossi extension was begun in 1939, with the hope that it would be completed by 1943. Only 25 miles of rail, however, had been laid by 1940, when the work was interrupted by World War II. Because of the postwar scarcity of imported materials, especially rails and cement, and the general austerity in France, work was not resumed until some time after the end of the war.

The first section of the railroad, from Bobo-Dioulasso to Dorossiamenso (30 miles), was completed in 1945. By March 1953 the roadbed had been prepared as far as Koudougou, and track has now been laid to a point about 10 miles from that city. According to present plans the rail terminal will remain at Ouagadougou, where an imposing railroad station has been constructed. The town is now in the strange position of having a railroad station but no railroad.

Thought is being given in some quarters to extending the line eventually to the Niger River, as suggested by the name of the railroad. At present Ansongo in French Sudan seems most likely to be the terminal, which would permit the exploitation of large nearby deposits of readily minable manganese. The presence of manganese, however, does not assure the extension, as at least two other routes of transport are available if the deposits are developed.

The Southern Province Railway

The Southern Province Railway was originally started as an adjunct to the British scheme for growing groundnuts (peanuts) in Tanganyika to increase the amount of vegetable oil available to England during and after World War II.

One of the areas selected in Tanganyika was near Nachingwea, approximately 80 miles from the small port of Lindi. In order to develop the groundnut area, it was necessary to get supplies and equipment to it, and get the crop out. Because the port of Lindi is small, a new port was to be built at Mtwara. Improved means of transportation, however, had to be provided since the Lukeledi road, the only route to the interior, was poor, being blocked by sand in dry weather and by bogs during the wet season. It was therefore decided to build a meter-gauge railroad from the port Mtwara to Nachingwea.

In 1947, work on the Southern Province Railway was started. Its route followed the Lukeledi Valley from Mkwaya at the head of Lindi Creek to Ruo in the groundnut area. Construction proceeded slowly because of the difficult terrain, the problem of transporting supplies, and the extensive use of hand labor during the early period of construction. Later, however, mechancial equipment was introduced. The last section of the railroad from Ruo to Mtwara has been completed and the entire line from Mtwara to Nachingwea is now open.

During the progress of construction, it became clear that the reduced scope of groundnut cultivation in the Southern Province would not justify the completion of the railroad and the port of Mtwara. Nevertheless, the Government considered that the stoppage of construction on these projects would hamper the economic development of the province. Since it was evident that the railroad from Mtwara to Nachingwea tapped too small an area to be economically sound, it was thought wise to extend the railroad as soon as possible to Lumesule Juu, approximately 70 miles to the west. The Government and the Overseas Food Corporation have jointly agreed to guarantee against any losses in the operation of the railroad and the port of Mtwara and also to assist in financing the extension beyond Nachingwea, which is currently being constructed. The line runs along or near a watershed, in places following a straight line for many miles at a stretch. Exceptionally little grading and bridgework are required, and the construction involves no difficult engineering problems.

The extension of the Southern Province Railway is regarded as the first stage of a rail route to Lake Nyasa through the Songea district, a potential coal-producing area. In the meantime, plans are under consideration for building a connecting road between the new railhead at Lumesule Juu and the Masai-Tunduru road.

The Mossâmedes Railway

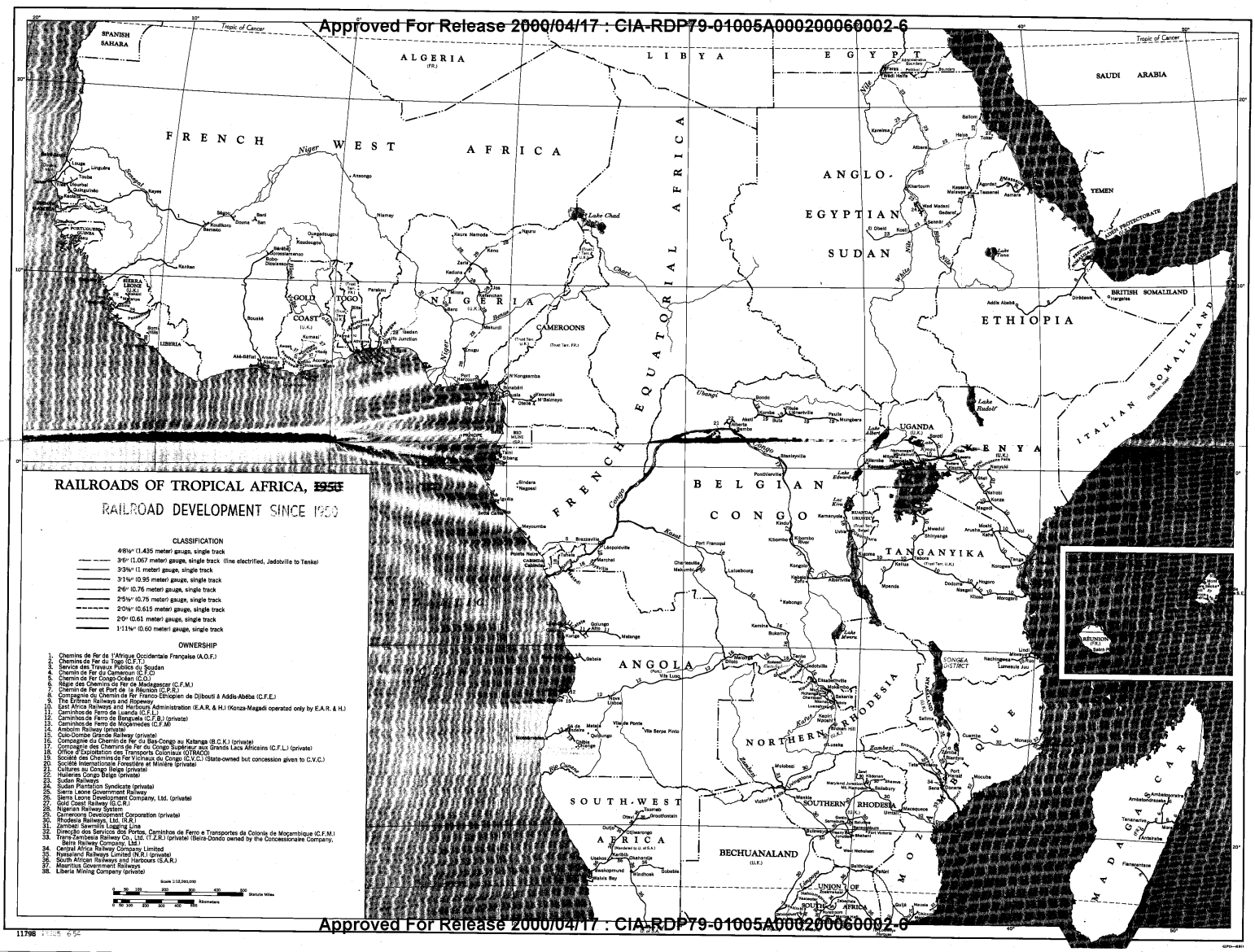
The Mossâmedes Railway in southern Angola extends inland from the port of Mossâmedes, crosses the barren coastal belt, and climbs

the scarp of the Chela Mountains (5,000-6,000 feet) to the fertile uplands (3,300 feet), an important agricultural area favorable for European settlement. The construction of this railroad was delayed by difficulties encountered in crossing the Chela Mountains, and not until 1925 did the line reach Sá da Bandeira on the plateau.

Currently, two types of construction projects are underway by the Caminhos de Ferro de Moçamdes (CFM): the extension of the existing line, and the conversion of the gauge from 1 foot 11-5/8 inches (60 centimeters) to 3 feet 6 inches. The first extension was southward from Sá da Bandeira to Chibia, a distance of 32 miles. A further extension of 45 miles, carrying the railhead to Chiange, was opened in 1953. The present plan is to extend the railroad to the Cunene River at the border of South-West Africa. The purpose of the extension is less to tie in with transport facilities of South-West Africa than to open up an unsettled area that has possibilities for cattle production. Coincident with the southward extension, grading is in progress for a continuation of the line eastward from Sá da Bandeira towards Northern Rhodesia through Quipungo, Matala, Vila da Ponte, and Serpa Pinto. Although preparations are being made to widen the gauge on the previously built sections of the line, the extensions are being laid at the narrow gauge. The rails, however, are heavy enough so that the gauge can be widened to the African standard of 3 feet 6 inches.

Preliminary work on the widening project was to have been started in 1939, but little progress was made until the Development Fund took over the work in 1949. Since then the roadbed has been widened throughout almost the entire length of the line, new cuts have been made, and the laying of new crossties is proceeding, but slowly.

The extensions and improvements being made on the Mossâmedes Railway are largely in response to an increased interest in the development of the interior uplands, which are favorable for European settlement. There is also the hope that the eastern extension may eventually reach the frontier of Northern Rhodesia, thus providing an outlet to the Atlantic for products from the protectorate. (CONFIDENTIAL)



RAILROADS OF TROPICAL AFRICA, ~~1950~~

RAILROAD DEVELOPMENT SINCE 1950

CLASSIFICATION

- 4'8½" (1.435 meter) gauge, single track
- 3'6" (1.067 meter) gauge, single track (line electrified, Jadotville to Tenke)
- 3'3⅜" (1 meter) gauge, single track
- 3'1½" (0.95 meter) gauge, single track
- 2'6" (0.76 meter) gauge, single track
- 2'5½" (0.75 meter) gauge, single track
- 2'0⅛" (0.615 meter) gauge, single track
- 2'0" (0.61 meter) gauge, single track
- 1'11¾" (0.60 meter) gauge, single track

OWNERSHIP

1. Chemins de Fer de l'Afrique Occidentale Française (A.O.F.)
2. Chemins de Fer du Togo (C.F.T.)
3. Service des Travaux Publics du Soudan
4. Chemin de Fer du Cameroun (C.F.C)
5. Chemin de Fer Congo-Océan (C.O.)
6. Régie des Chemins de Fer de Madagascar (C.F.M.)
7. Chemin de Fer et Port de la Réunion (C.F.R.)
8. Compagnie du Chemin de Fer Franco-Ethiopien de Djibouti à Addis-Abéba (C.F.E.)
9. The Eritrean Railways and Ropeway
10. East Africa Railways and Harbours Administration (E.A.R. & H.) (Konza-Magadi operated only by E.A.R. & H.)
11. Caminhos de Ferro de Luanda (C.F.L.)
12. Caminhos de Ferro de Benguela (C.F.B.) (private)
13. Caminhos de Ferro de Moçambiques (C.F.M)
14. Amboim Railway (private)
15. Cubo-Dombe Grande Railway (private)
16. Compagnie du Chemin de Fer du Bas-Congo au Katanga (B.C.K.) (private)
17. Compagnie des Chemins de Fer du Congo Supérieur aux Grands Lacs Africains (C.F.L.) (private)
18. Office d'Exploitation des Transports Coloniaux (OTRACO)
19. Société des Chemins de Fer Vicinaux du Congo (C.V.C.) (State-owned but concession given to C.V.C.)
20. Société Internationale Forestière et Minière (private)
21. Cultures au Congo Belge (private)
22. Huileries Congo Belge (private)
23. Sudan Railways
24. Sudan Plantation Syndicate (private)
25. Sierra Leone Government Railway
26. Sierra Leone Development Company, Ltd. (private)
27. Gold Coast Railway (G.C.R.)
28. Nigerian Railway System
29. Cameroons Development Corporation (private)
30. Rhodesia Railways, Ltd. (R.R.)
31. Zambezi Sawmills Logging Line
32. Direcção dos Servicos dos Portos, Caminhos de Ferro e Transportes da Colonia de Moçambique (C.F.M.)
33. Trans-Zambesia Railway Co., Ltd. (T.Z.R.) (private) (Beira-Dondo owned by the Concessionaire Company, Beira Railway Company, Ltd.)
34. Central Africa Railway Company Limited
35. Nyasaland Railways Limited (N.R.) (private)
36. South African Railways and Harbours (S.A.R.)
37. Mauritius Government Railways
38. Liberia Mining Company (private)

Scale 1:12,000,000

0 50 100 200 300 400 500 Statute Miles

0 80 160 320 480 640 800 Kilometers

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MAPPING IN THE PHILIPPINES

Almost all maps of the Philippines are produced by five organizations -- four Philippine National Government bureaus and one United States agency. The Philippine Bureau of Forestry maps the land in two large categories, "forest land," to be kept permanently in forest, and "disposable land," which private individuals can legally own. The Philippine Bureau of Lands then makes cadastral surveys of the "disposable land" to make it available for settlement. The Division of Highways of the Bureau of Public Works publishes detailed road maps of all the provinces and cities; and the Philippine Coast and Geodetic Survey has the responsibility for preparing hydrographic charts of Philippine waters. The U.S. Army Corps of Engineers produces topographic maps of the Philippines at the scale of 1:50,000.

Maps are occasionally published by a few other organizations, none of them major producers of Philippine maps. The U.S. Geological Survey, in cooperation with the Philippine Bureau of Mines, publishes geological and mineral maps. Each of the various power companies produces maps and engineering drawings of its own power plants and systems. Although there are many small power companies, practically all of the larger power plants of the country are owned by the Manila Electric Company, the National Power Corporation, or the Visayan Electric Company. Maps and engineering drawings of water-supply systems are published by the various municipal water companies and

are available only locally. A few population maps have been included in the recent census publications (1948 data) of the Philippine Bureau of Census and Statistics.

Bureau of Forestry

The Bureau of Forestry seldom publishes a map in printed form, yet it prepares hundreds of large-scale manuscript maps and is an important mapping agency. No land in the Philippines is legally available for private ownership unless it has been mapped by the Bureau of Forestry and declared to be "disposable land." To date, only slightly over 40 percent of the land in the country has been mapped by the Bureau of Forestry. The Bureau had 43 field parties (3 surveyors per party) at work during 1953, but with their present techniques and at the present rate of progress, another 40 or 50 years will be required to finish the job. The surveys are made at the scale of 1:20,000.

Bureau of Lands

After classification, the Bureau of Lands surveys the public lands and makes cadastral (property-line) surveys of private lands. No claim to ownership of land can be valid unless based on a survey made or approved by the Bureau of Lands. The surveys are ordinarily at the scale of 1:2,000 or 1:4,000.

The job of the Bureau has been complicated by the destruction during World War II of most of the records and maps that the Bureau of Lands had accumulated since its initiation in 1901. The Bureau

was reorganized on 8 May 1945, gradually most of the old personnel returned, and by 1947 the field offices, as well as the central office in Manila, were again active. Up to 1954, only a small percentage of the resurveys and reconstruction of old records had been completed. At present the Bureau has a staff of about 3,500, and its goal is to survey and approve for settlement almost a million acres a year, mostly on the island of Mindanao -- "the new frontier land." Meanwhile the backlog of court litigation on land already settled has assumed such proportions that the present legal system of the Philippines would require an estimated 60 years to clean it up.

Large amounts of American aid have been applied to the surveying of public lands for settlement under the Foreign Operations Administration-Philippine Council for U.S. Aid (FOA-PHILCUSA Counterpart Program). This program operates under the supervision of the Bureau of Lands, but as a separate organization because of the need for separate accountability of its funds. The higher pay scale of the FOA-PHILCUSA program has drawn many of the best technicians away from the Bureau of Lands. Temporarily, much of the public lands survey work is being done by private survey teams under contract to the FOA-PHILCUSA Counterpart Program, thus providing an important supplement to the accomplishments of the Bureau of Lands. In addition the Bureau of Lands is being studied by the Chicago firm of Booz, Allen, and Hamilton with a view to completely

modernizing and mechanizing the organization so that it can operate more rapidly and efficiently on its own funds in the future.

Bureau of Public Works

The Philippine Bureau of Public Works (BPW) ranks as a major mapping agency through the work of its Programming and Planning Service, Division of Highways. Three map series and a set of road logs are maintained by this Division. Individual road maps for each province and chartered city are revised semiannually, as of 30 June and 31 December. A smaller scale series of road maps is revised annually, as of 30 June, and is issued as a 16-sheet atlas that covers all of the Philippines. Each year, traffic-flow maps summarizing traffic-flow data for the preceding calendar year are prepared for all of the provinces and chartered cities. A set of Road Inventory Log Records, covering provincial and national roads, was compiled in 1949. Although the books of this set have not been kept up to date by the Bureau, a new program instituted 31 January 1954 provides for quarterly revisions of the log books.

Data for revision of maps and log books are supplied by the field staff of the BPW. Each province has a "district engineer" assigned from the BPW and each chartered city is assigned a "city engineer." These engineers are in charge of the public works programs of their territories and report monthly, quarterly, semiannually, and annually to the BPW office in Manila. On 10 January and 10 July, each engineer must submit a complete revision of the road

map of his city or province. Starting 31 January 1954, he must also submit quarterly revised sheets of the Road Inventory Log Records. Each engineer maintains in his office an up-to-date copy of the road map and log book for his province or city.

The BPW and the district and city engineers have not kept data on roads other than those maintained by chartered city, province, or national government. However, a new Philippine law requires that, as of 31 January 1954, the BPW maintain up-to-date records on these "municipal" roads also. These data will not be placed on the standard BPW maps, and no provision has been made for putting them in map form. It will probably be several years before the data are complete and accurate.

Coast and Geodetic Survey

The Philippine Coast and Geodetic Survey publishes hydrographic charts and other nautical aids for the Philippines area and also an out-of-date topographic series of the Philippines at 1:200,000. Most of the mapping materials were destroyed during World War II, but by 1951 the Survey had obtained vinylite plates of all 166 of their prewar hydrographic charts. Since 1951, minor corrections have been added to these charts, and all of them will probably be reprinted by the end of 1954. The topographic mapping program of the Survey has been hindered by the wartime destruction of all triangulation data completed since 1927. The Survey has recently received copies of the field data of the 29th Engineer Battalion, U.S.

Army, and in the future would like to take over the responsibility for topographic mapping of the Philippines.

29th Engineer Battalion, U.S. Army

The 29th Engineer Base Topographic Battalion in 1954 completed the field revision surveys for the 1:50,000 topographic series of the Philippines. All field data have been forwarded to Tokyo to the 64th Engineer Base Topographic Battalion. These data include the following: detailed classification books, recovered and extended control books, computations, annotated aerial-photography coverage, regional field books, a field-edited set of the old 1:50,000 maps, miscellaneous local maps, and ground photographs. In addition to their destined use as revision data for the 1:50,000 maps, these materials are extremely valuable sources of geographic information on the Philippines. Some of the materials have been forwarded from Tokyo to the Army Map Service, Washington, and all should eventually be available there. (CONFIDENTIAL)

MAPPING IN TAIWAN

The only significant mapping agency in Taiwan is the Department of Survey, Ministry of National Defense, of the Chinese Nationalist Government, but a few maps have been produced by offices of the provincial government of Taiwan. The only private map producers are the Taiwan Tourist Bureau and Prof. C.S. Chen's Institute of Agricultural Geography at National Taiwan University. Private publishers on Taiwan have a difficult censorship problem, as governmental authorities tend to consider any accurate data pertaining to the island as "Confidential." Maps are regarded with especial caution.

Department of Survey

The Department of Survey is responsible for conducting any land surveys needed by agencies of the Nationalist Government and for the production of all required topographic maps. The present officer personnel came to Taiwan from China in 1949, when the Nationalist Government moved from the mainland. On the mainland the Survey had 14 survey parties, 3 map reproduction plants, 1 instrument repair shop, 1 map depot and 6 subdepots, and 1 survey college. The only units reestablished on Taiwan were 2 survey parties, 1 map reproduction plant, 1 instrument repair shop, 1 map depot, and 1 survey college. All of these had only skeleton strength, and most of their data and equipment were left on the mainland. The present personnel of the Survey numbers slightly over 1,000.

Modern equipment has recently been obtained through the American aid program and through capture of equipment en route to Communist China. Ample quantities of modern equipment for field surveying are now on hand, and new Japanese printing presses have been received under the American aid program. The only major deficiency is in photogrammetric equipment. Other mapping equipment is in ample supply; the major problem is to train enough technicians in its use.

The Survey College is attempting to fill the need for trained personnel. By 1953, it had turned out on Taiwan 83 technicians with 6 months' training and 103 officers with 4 years' training at engineering school. All of these students were Nationalist Chinese, not Taiwanese.

The major accomplishment of the Survey since coming to Taiwan has been the 1:25,000 field survey of the east coast of Taiwan, and all planned coverage has been completed and printed. Town plans at 1:10,000 have been produced for T'ai-pei and T'ai-chung. Topographic maps of the southeastern coast of China, based on old data, have been compiled or reprinted. Other map production has been based primarily on AMS maps, with legends and place names translated into Chinese.

Other Mapping

Several offices of the Taiwan provincial government have produced maps dealing with their fields of responsibility, but none of them are significant map-producing agencies. In 1953 the Taiwan Highway Bureau published a 21-sheet highway map of the island at the

scale of 1:100,000; the Railway Administration published a 1:500,000 railway map in 1950; and the Postal Office of Taiwan printed a 1:300,000 postal map -- probably in 1953, though the map carries no date. The Water Conservancy Bureau of Taiwan includes in its yearbook a number of maps and diagrams of irrigation, flood-control, and power projects. The Taiwan Tourist Bureau has published general tourist maps of the island at 1:500,000 and 1:600,000. The Bureau's guide map of Kao-hsiung at 1:12,500 is now out of print, but the guide map of T'ai-pei at 1:10,000 is still available.

Dr. C.S. Chen, professor of geography at National Taiwan University, directs the Institute of Agricultural Geography, which publishes geographic reports and maps. This institute is financially independent of the university and is reportedly backed by the large sugar, pineapple, tea, and fertilizer corporations and by the Bank of Taiwan. Dr. Chen has been able to produce an impressive number of geographic studies of Taiwan, based on the research of about 30 students. Currently the major mapping project of the institute is the preparation of a land-use map of Taiwan. This will be published at 1:100,000, with special sheets at 1:10,000 for the seven largest cities. (CONFIDENTIAL)

CITY PLANS OF EAST GERMANY

The production and publication of city plans of East Germany (Deutsche Demokratische Republik -- DDR) have been increasingly controlled since May 1951. Regulations issued by the Ministry of the Interior of the DDR restrict the production, compilation, printing, reproduction, and issuance of all town maps and plans to publishers licensed by the Ministry. The licensed publishing companies are required to file quarterly reports of anticipated production in order to obtain preliminary approval. The publisher must furnish detailed notes on the contents and rough sketches in duplicate, and must state the exact number and size of sheets in the issue, as well as the purpose of the maps and plans.

Licenses will not be granted for the printing of city plans if they contain "military information." Because most city plans contain some information considered to be of intelligence value, several former producers have said that it is almost impossible to obtain licenses. As a result, many map producers have gone out of business, among them Berger Verlag of Erfurt, formerly one of the largest and most productive publishers of city plans in the Soviet Zone. This does not mean that production of city plans has ceased; in many cases the firms have been taken over by the government and are used for the production of items for "official use only."

It is extremely difficult to purchase even old plans of cities in East Germany because dealers are reluctant to sell their last

25X1C stock copies. [redacted]

This arrangement should add to the already large number of city plans available at the CIA Map Library and other U.S. Government libraries.

Some of the newly acquired town plans are completely new coverage, some are the work of publishers not previously represented, and others are new editions of older maps. The towns covered are as follows:

Ahlbeck
Aschersleben
Bad Schandau
Bautzen
Bernau
Brandenburg
Burg
Chemnitz
Cottbus
Dessau
Dresden
Eberswalde
Erfurt
Falkensee
Finsterwalde
Forst/Lausitz
Frankfurt/Oder
Gehren
Göhren a. Rügen
Genthin
Gera
Görlitz
Grimma
Halle
Ilmenau
Ilsenburg
Jüterbog
Keethen
Ketzin
Köthen
Lauscha
Leipzig
Magdeburg
Meiningen
Merseburg und Leuna
Mühlhausen
Naumburg
Naunhof/Sachsen
Neubrandenburg
Neuruppin
Oranienburg
Oscherleben
Ostseebad Kühlungsborn
Potsdam
Pössneck
Prerow
Radeberg
Rathenow
Rosslau
Schierke und Umgebung
Schwerin
Seebad Heringsdorf
Senftenberg
Spremberg
Weida
Wernigerode
Wittenberg
Zeitz
Zella-Mehlis
Zerbert
Zittau

Several of the maps listed are official publications of City Survey Offices and are dated 1952 or 1953. A notice in Vermessungstechnik, No. 6, 1953, reports that the City Survey Offices have now been incorporated into the Vermessungsdienst (Official Survey Office) of the Ministry of Interior. This probably means that future editions of city plans will be both limited and classified.

The files of the CIA Industrial Register contain many sketch maps and overlays of towns and cities. Many of these are detailed, annotated plans of a relatively small part of a city or its surrounding area, with particular emphasis on items of intelligence value. The maps and plans are filed alphabetically by city, and the areal coverage available for a particular city or even for a particular installation can be quickly determined. The plans are important not only because of the restrictions on map production but also because in most cases they show both the names of individual installations and the uses to which they are being put. (CONFIDENTIAL)

NEW TELECOMMUNICATIONS ATLAS

A new Atlas Showing European International Cable Circuits, 1953, which offers a wealth of detailed information on the telephone cables of Europe and nearby areas, recently became available.* The data were reported to the International Telecommunications Union -- the publisher of the atlas -- by official agencies of member countries and are believed to be reliable. Some of the information has not been presented previously in map form.

All European countries except the USSR and Soviet Zone of Germany are covered by maps at scales ranging from 1:1,350,000 to 1:5,000,000. Maps are also included for Morocco, Algeria, Tunisia, Israel, and Turkey. The principal telephone cables are portrayed schematically, as are land lines that connect two cables or extend the cable network. Each cable shown on a map is keyed by number to an accompanying table that gives the number of quads, diameter of the conductors, type of loading, and other technical details. The locations of selected telephone exchanges and repeater stations are indicated by symbol. In addition the volume includes three maps at 1:5,000,000 that show schematically the international broadcast relay circuits of Europe. The atlas, which is in portfolio form, includes a pamphlet containing explanatory data and a key to symbols used on the maps. The pamphlet and all other textual material are in English, French, and Spanish;

*Two copies are in the CIA Map Library, Call No. aF00-29. 15.

the English version of the text is clear, for the most part, despite a certain Gallic quaintness. (UNCLASSIFIED)