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**GEOGRAPHIC CONSIDERATIONS IN DEFENDING
NORTHEAST CHINA**

Uzal W. Ent

**Army War College
Carlisle Barracks, Pennsylvania**

4 November 1972

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4 NOVEMBER 1972



GEOGRAPHIC CONSIDERATIONS IN DEFENDING NORTHEAST CHINA

BY

LIEUTENANT COLONEL HZAL W. ENT
INFANTRY

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USAWC RESEARCH ELEMENT
(Essay)

LEOGRAPHIC CONSIDERATIONS
IN
DEFENDING NORTHEAST CHINA.

by

Lieutenant Colonel Uzal W. Ent ,
Infantry "'

**COLOR ILLUSTRATIONS REPRODUCED
IN BLACK AND WHITE**

US Army War College
Carlisle Barracks, Pennsylvania
4 November 1972

AUTHOR: Uzal W. Ent, LTC, INF, PAARNG
TITLE: Geographic Considerations in Defending Northeast China
FORMAT: Essay

The area of China north of 38° 30' North latitude and east of 108° longitude is vital to the survival of China as a nation. It contains important coal and oil deposits, as well as extensive industrial center. It also contributes other necessary natural resources and agricultural products to the nation. I refer to this area as "Northeast China." Northeast China contains a variety of terrain, which poses a number of problems to military operations. The border with the USSR and North Korea is extensive. A number of avenues of invasion enter the region from these two countries. This paper will examine the impact of geographic and weather conditions of the area on Chinese defensive considerations.

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GEOGRAPHIC CONSIDERATIONS IN DEFENDING NORTHEAST CHINA

I. STRATEGIC IMPORTANCE OF THE REGION

From the Chinese standpoint, Northeast China represents over 18% of her gross area, about 15% of her population, and is vital to the survival of the nation for its industrial, mineral, agricultural and power output, and potential.¹ These factors are illustrated by Maps 1 through 4 and Chart 1.

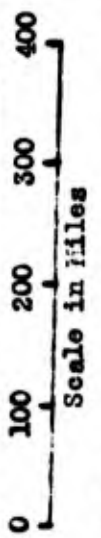
Russia, on the other hand, can recognize Northeast China as a salient into her Far Eastern and East Siberian economic regions, from which the Chinese, operating on interior lines, could launch attacks to the northeast, toward the Irkutsk industrial area, including synthetic rubber, iron and steel production centers; to the north or east, into coal and lignite fields, oil refineries at Komsomol'sk and Khabarovsk; tin, zinc and gold centers; and lumber, locomotive, machine and farm equipment industries; as well as the principal agricultural areas of the Soviet Far East.² Even a relatively shallow penetration of Soviet East Siberia would cut the Trans-Siberian railroad, the only major overland link between the Soviet Union west of the Lena River and the eastern provinces. Such a penetration, moreover, would

¹Central Intelligence Agency, People's Republic of China Atlas (November 1971), extracted from chart on page 37. (except for maps, hereafter referred to as "CIA, China Atlas")

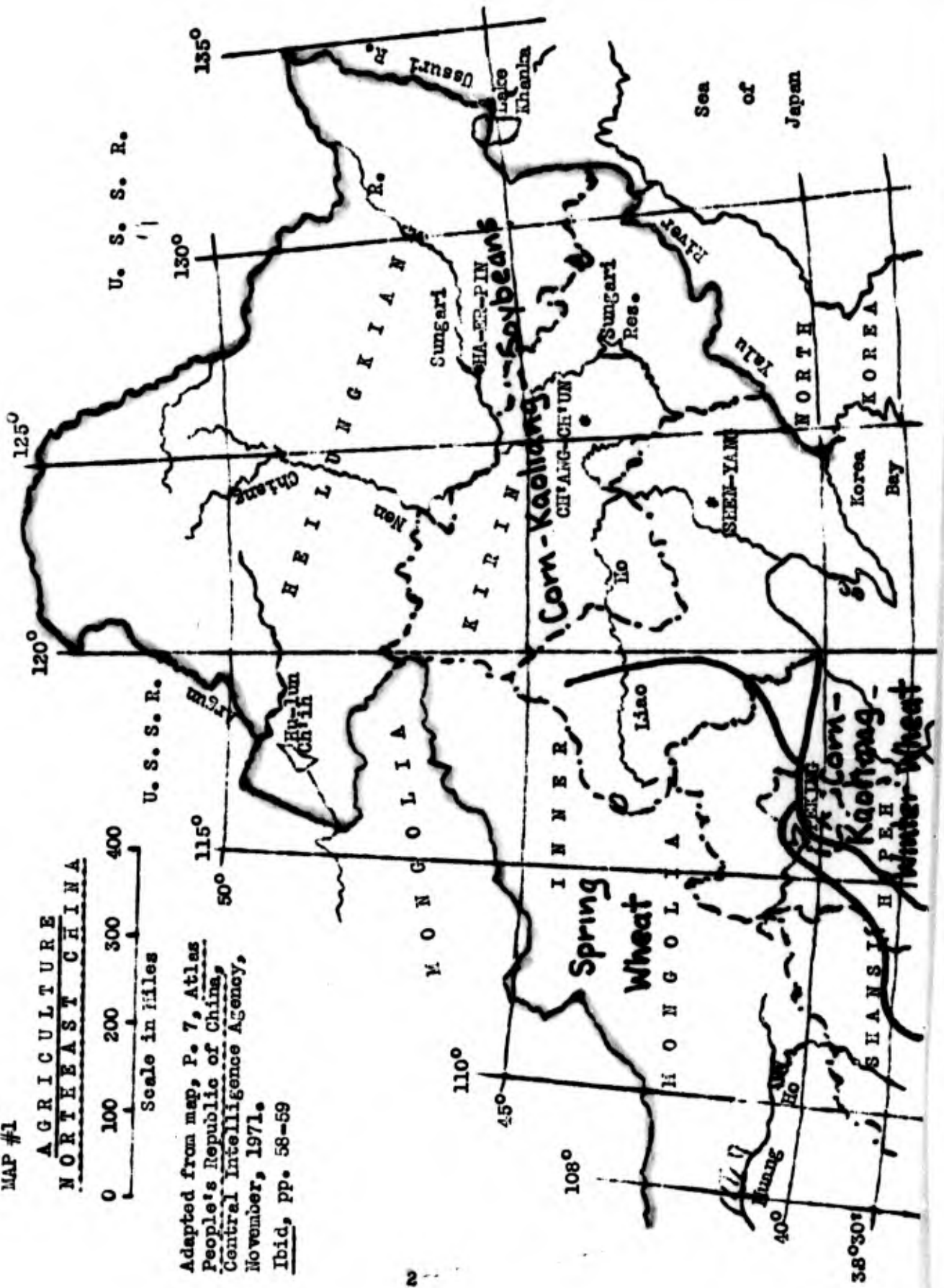
²Uzal W. Ent, "A Brief Economic Atlas of the Soviet Union," an unpublished manuscript (April 1971), pp. 2, 3; 9; 13; 22; 26; 34; 40; 54; 73.

MAP #1

**AGRICULTURE
NORTHEAST CHINA**



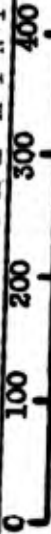
Adapted from map, P. 7, Atlas
People's Republic of China,
Central Intelligence Agency,
November, 1971.
Ibid, pp. 58-59



MAP #2

NORTHEAST CHINA

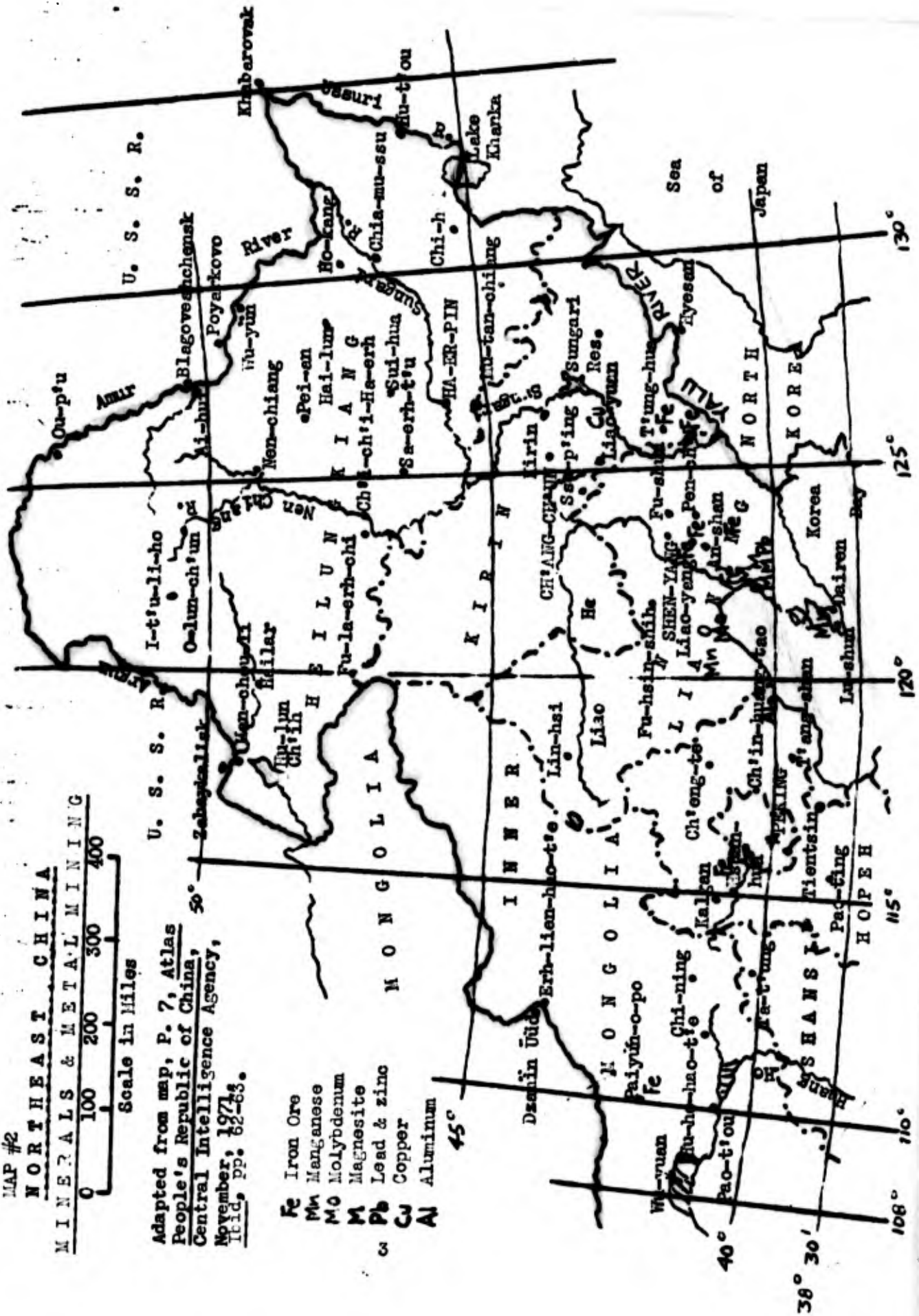
MINERALS & METAL MINING



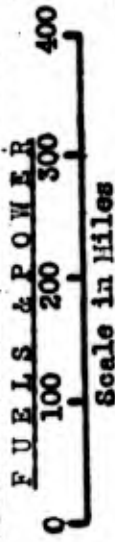
Scale in Miles

Adapted from map, P. 7, Atlas
People's Republic of China,
Central Intelligence Agency,
November, 1974.
Ibid, pp. 62-63.

- Fe Iron Ore
- Mn Manganese
- Mo Molybdenum
- M Magnesite
- Pb Lead & zinc
- Cu Copper
- Al Aluminum



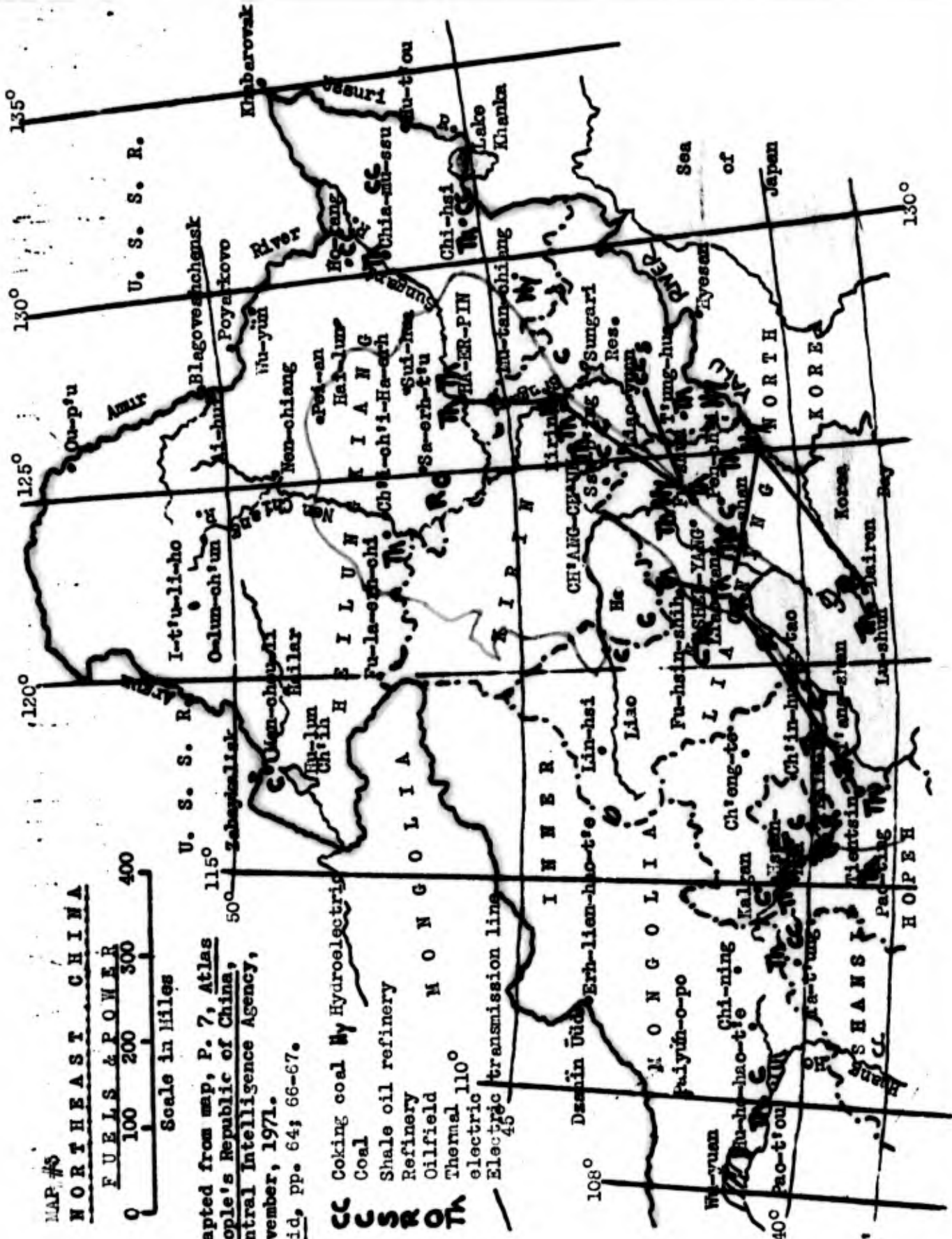
MAP #8
NORTHEAST CHINA



Adapted from map, P. 7, Atlas
People's Republic of China,
Central Intelligence Agency,
November, 1971.
Ibid, pp. 64; 66-67.

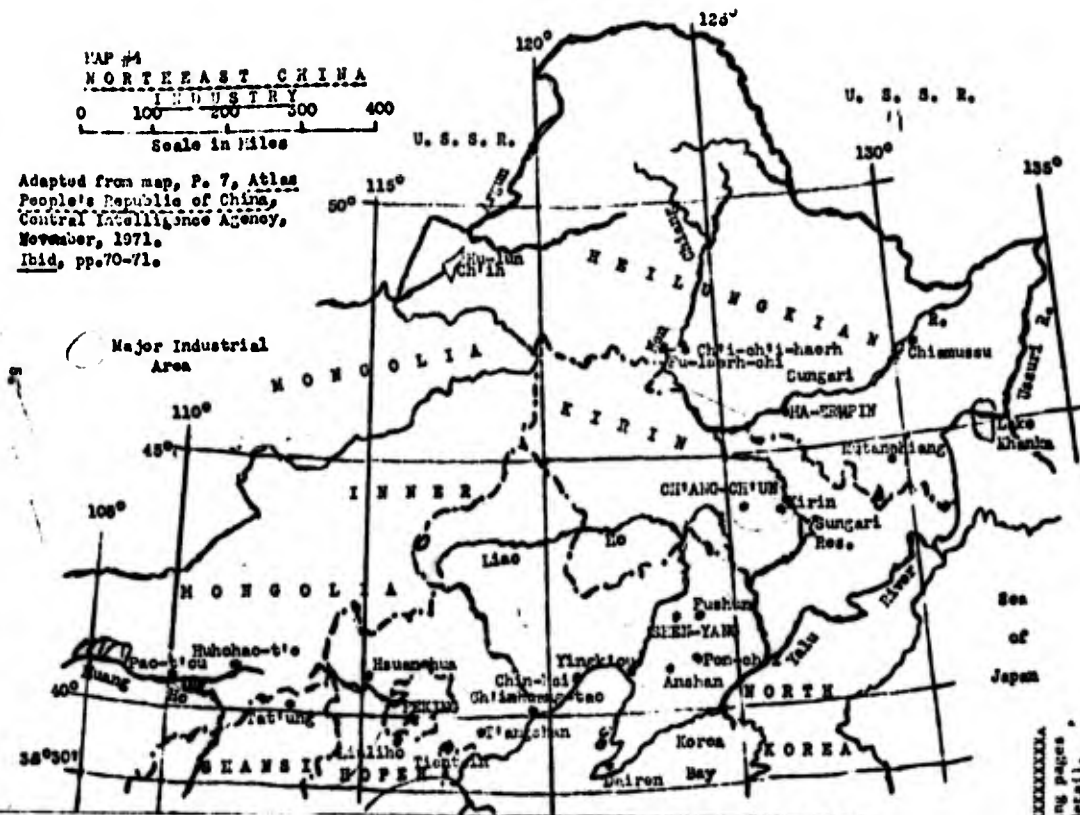
CCSSROTH

- CC Coking coal
- SS Shale
- SR Shale oil refinery
- OT Oilfield
- TH Thermal 110° electric
- RO Electric transmission line



MAP #4
 NORTHEAST CHINA
 INDUSTRY
 0 100 200 300 400
 Scale in Miles

Adapted from map, P. 7, Atlas
 People's Republic of China,
 Central Intelligence Agency,
 November, 1971.
 Ibid, pp.70-71.



LEGEND CITIES AND PRINCIPAL INDUSTRIES OF EACH

- CHI-I-CH'I-'AERN - Railroad cars; machine tools; paper; sugar.
- FU-LAERH-CHI - Heavy machinery; steel.
- HA-ERHPIN - Electrical equipment; bearings; heavy machinery; instruments & cutting tools; cement; fertilizer; chemicals; sugar; tractors.
- CHIAMUSSU - Paper; aluminum; agricultural machinery; sugar.
- MUTANCHIANG - Tires; aluminum.
- CH'ANG-CH'UN - Trucks; railroad cars; tractors; tires; pharmaceuticals
- KIRIN - Fertilizer; chemicals; cement; sugar.
- SHEN-YANG - Machine tools; copper; heavy machinery; steel; tires; electrical equipment; agricultural machinery; chemicals; pharmaceuticals; glass; lead; tractors.
- FUSHUN - Aluminum; steel; heavy machinery; cement; fertilizer; rubber.
- PEN-CH'I - Cement; iron & steel; ANSHAN - Iron & steel; tractors; chemicals.
- YINGK'OU - Machine tools. CHIN-HSI - Cement; chemicals. CH'INIUANG-TAO - Glass.
- PAO-T'OU - Iron & steel; aluminum; sugar. HUNGHAO-T'E - Chemicals; sugar. HSUAN-HUA - Iron.
- PEKING - Machine tools; electronics; agricultural machinery; textiles; chemicals; iron & steel; fertilizer; rubber.
- TAT'UNG - Cement; steam locomotives. LIU-LHO - Cement. T'ANGSHAN - Cement.
- TIENTSIN - Steel; textiles; paper; tractors; electronics; machine tools; heavy machinery; chemicals; tires; trucks.
- DAIKEN - Shipbuilding; railroad cars; diesel locomotives; fertilizer; steel; cement; chemicals; machine tools.

See the following pages for greater detail.

MAP #4

**NORTHEAST CHINA
INDUSTRY**

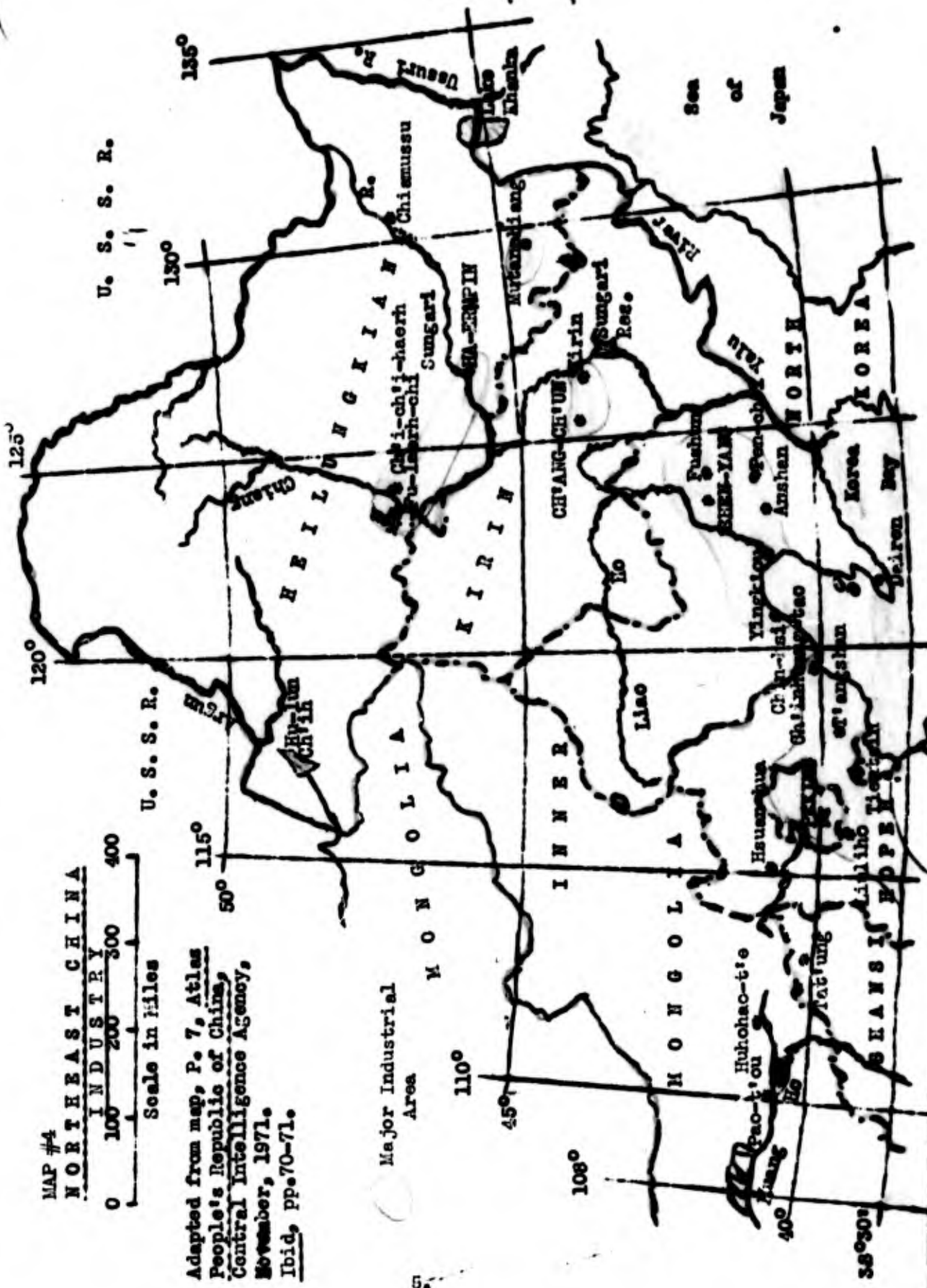
0 100 200 300 400
Scale in Miles

U. S. S. R.

U. S. S. R.

Adapted from map, P. 7, Atlas
People's Republic of China,
Central Intelligence Agency,
November, 1971.
Ibid, pp.70-71.

Major Industrial
Area



LEGEND CITIES AND PRINCIPAL INDUSTRIES OF EACH

CHI-I-CH'I-HAERH - Railroad cars; machine tools; paper; sugar.

FU-LAERH-CHI - Heavy machinery; steel.

HA-ER-PIN - Electrical equipment; bearings; heavy machinery; instruments & cutting tools; cement;



LEGEND CITIES AND PRINCIPAL INDUSTRIES OF EACH

CHI'U-CHI-HAESH - Railroad cars; machine tools; paper; sugar.

FU-LAESH-CHI - Heavy machinery; steels.

HA-KHEPIN - Electrical equipments; bearings; heavy machinery; instruments & cutting tools; cements; fertilizers; chemicals; tractors.

CHIAMUSSU - Paper; aluminas; agricultural machinery; sugar.

MUTACHANG - Tires; aluminas.

CH'ANG-CH'UN - Trucks; railroad cars; tractors; tires; pharmaceuticals.

KIPIA - Fertilizers; chemicals; cements; sugar.

SHEN-YANG - Machine tools; coppers; heavy machinery; steels; tires; electrical equipments; agricultural machinery; chemicals; pharmaceuticals; glass; lead; tractors.

YUSHUN - Aluminas; steels; heavy machinery; cements; fertilizers; rubber.

FOU-CHI - Cements; iron & steel. ANSHAN - Iron & steel; tractors; chemicals.

YIWEI'OU - Machine tools. CH'U-CHI - Cement; chemicals. CH'U-CHANG-CHAO - Glass.

PAO-T'OU - Iron & steel; aluminas; sugar. HUNGHUO-T'U - Chemicals; sugar. HUNGHUO-T'U - Iron.

PEIKI - Machine tools; electronics; agricultural machinery; textiles; chemicals; iron & steel; fertilizer; rubber.

LAI'JING - Cements; steam locomotives. LIULIHO - Cement. T'ANGSHAN - Cement.

T'UITSIN - Steels; textiles; paper; tractors; electronics; machine tools; heavy machinery; chemicals; tires; tractors.

DAIKU - Shipbuilding; railroad cars; diesel locomotives; fertilizers; steels; cements; chemicals; machine tools.

R

CHART #1

THE INDUSTRIAL MIGHT OF NORTHEAST CHINA (1970 Figures)

<u>PRODUCT</u>	<u>% OF NATIONAL OUTPUT</u>	<u>PRODUCTION OF NORTHEAST CHINA</u>
Electric power	80	30 billion kilowatt-hours
Coal	88	168 million metric tons
Crude oil	68	11.7 million metric tons
Crude steel	68	11.25 million metric tons
Aluminum	40	92 thousand metric tons
Cement	45	6.86 million metric tons
Machine tools	36	17.6 thousand units
Trucks	78(+)	56.25 thousand units
Locomotives	70	196 units
Freight cars	75	9 thousand units
Paper, machine made	80	60.9 million metric tons

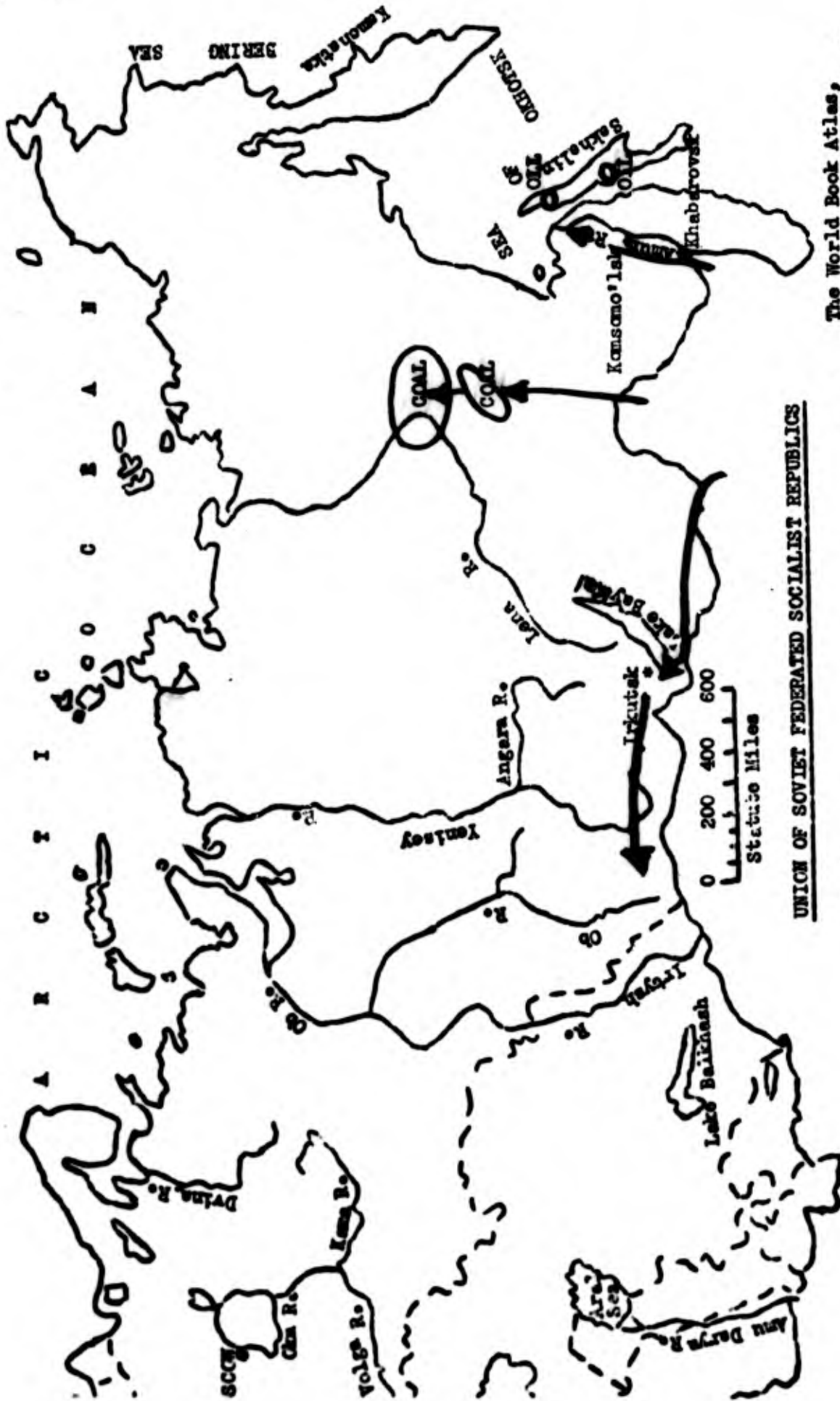
The reference cited below gives a different geographic breakdown for Northeast China than this paper. It was necessary to group figures for both North and Northeast China, as listed in the reference, in order to arrive at the statistics listed. They should therefore be taken as close approximations. Even so, the area of interest is China's largest producer of electric power, coal, iron and steel, aluminum, gold, natural and synthetic petroleum, timber, paper, trucks, and a major producer of steam locomotives, and tractors.

Adapted from Central Intelligence Agency, Atlas People's Republic of China (November 1971), pp. 68-69.

provide a springboard for further attacks deeper into even more vital economic regions west of Lake Baykal and the southern reaches of the Yenisey and Irtysh Rivers in Western Siberia. (See Maps 5 and 6.) This penetration, coupled with an invasion of the USSR north from Sinkiang into the region between those two rivers would endanger the Soviet's forward position in Mongolia, and cut off the Soviet Far East.

Manchuria has long been a child of conflict in Russo-Chinese history. Border questions between Mongolia and China, and Russia and China stem from the Manchu conquest of China in the 17th Century. This conquest, in turn, produced a Chinese Imperial claim to Mongolian lands. Outer Mongolia eventually was freed of Chinese influence, and is now under Soviet domination. Many border regions, however, remain in dispute, as shown on Map 7. In the case of Manchuria, the Chinese may claim that not only the maritime provinces, but also a chunk of over 180,000 square miles of territory north of Manchuria is, in reality, "Chinese." (See Map 7.) Such a claim would date back to the Nerchinsk Treaty of 1689, which followed a period of conflict between the Russians and Chinese. Two subsequent treaties, one concluded at Aigun in 1858, ceded 185,000 square miles to Russia, and the other, completed at Peking in November 1860, forfeited another 133,000 square miles between the Ussuri and the Pacific.

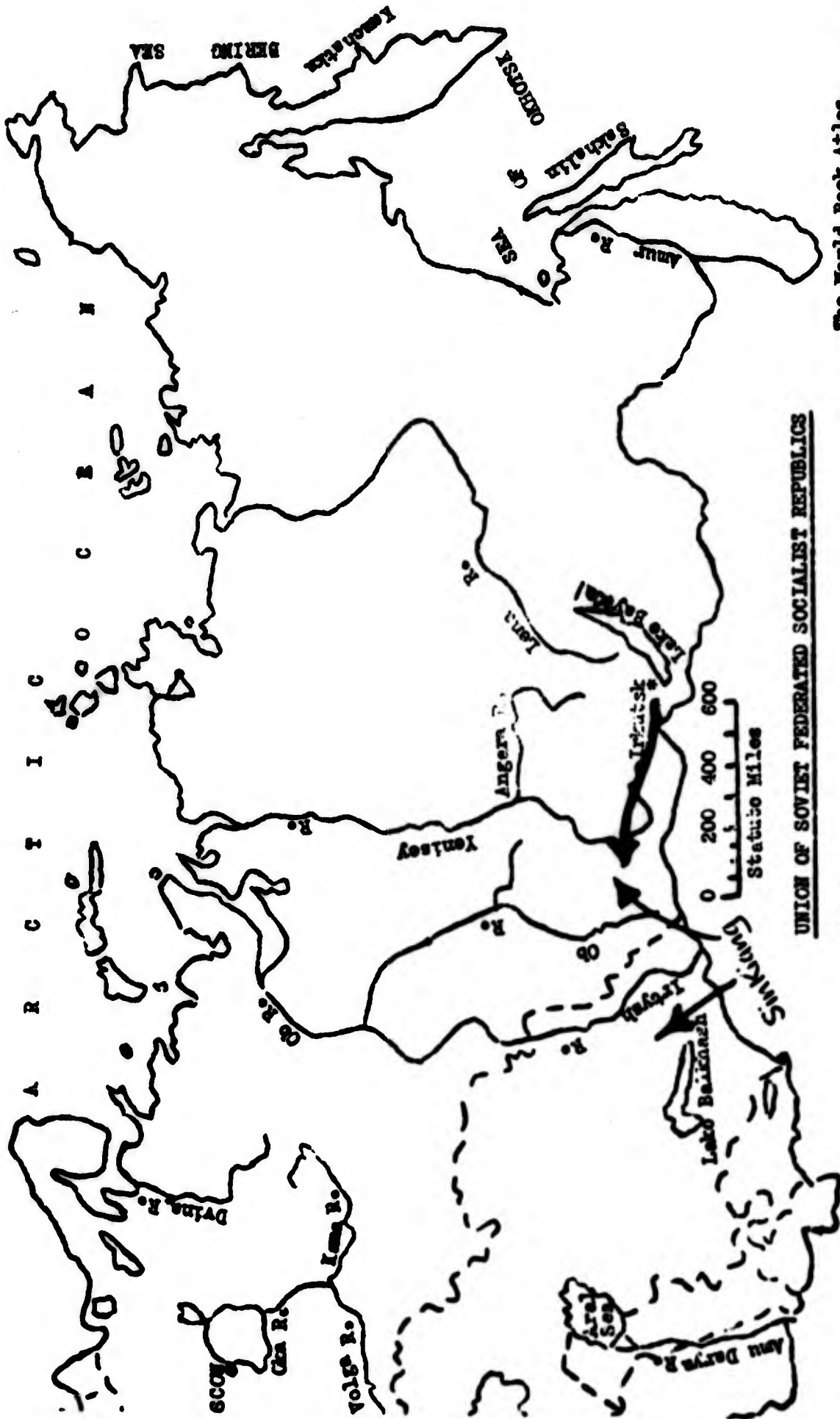
With Chinese acquiescence, Russia gained entry into Manchuria in 1896, ostensibly to build a rail link of the Trans-Siberian Railway



UNION OF SOVIET FEDERATED SOCIALIST REPUBLICS

MAP #6
AVENUES OF ATTACK FROM MANCHURIA

The World Book Atlas,
 Rand McNally & Co., NY, 1962, P. 26.
 Usal W. Ent, "A Brief Economic Atlas
 of the Soviet Union," an unpublished
 manuscript (April 1971), pp. 3; 9;
 13; 22; 26; 40. (hereafter referred
 to as "Ent, 'Atlas of the Soviet'")



UNION OF SOVIET FEDERATED SOCIALIST REPUBLICS

MAP #6

AVENUES OF ATTACK FROM SINKIANG

The World Book Atlas,
 Rand McNally & Co., N.Y., 1962, P. 28.
 Ent, "Atlas of the Soviet," pp. 3; 40.

A R C T I C O C E A N I C

BERING SEA

Kamchatka

OKhotsk

Sachalin

Amur R.

Lena R.

Angara R.

Yenisey

Irkutsk

SINKIANG

Lake Baikal

Aral Sea

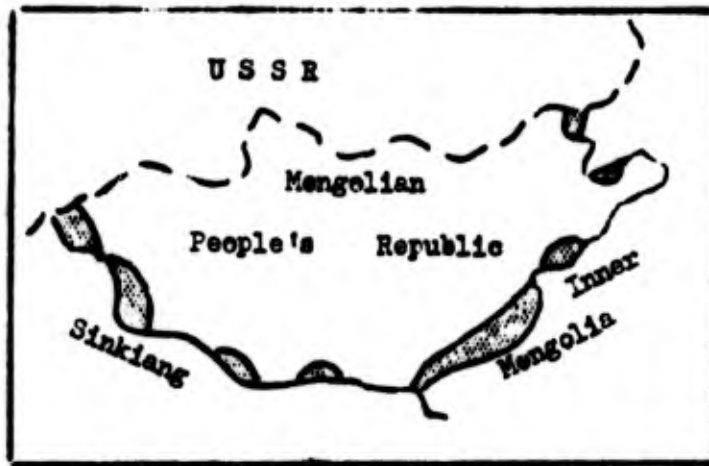
Amu Darya R.

Ural R.

Volga R.

Dvina R.

SCOV



MONGOLIAN AREA



MANCHURIAN AREA

 Disputed Areas

MAP #7

Adapted from Francis Watson,
The Frontiers of China
 (1966), pp. 42 and 47.

across Manchuria to Vladivostok. She followed this by obtaining leases to Port Arthur and Dairen. In 1905, Japan defeated Russia, and secured those rights for herself. Subsequent maneuverings between Moscow and Tokyo further complicated the Chinese northern border situation.

In attacking Japan during the final days of World War II, the Soviet Union invaded both Manchuria and Korea. The last vestiges of Soviet presence did not disappear until 1955.³ In 1969, a series of skirmishes broke out over the possession of Damansky Island (Chen Pao), in the Ussuri River. It can be seen that both the Chinese and Russians, not to mention the Japanese, have long had covetous designs on the northeast region.

Because of these border troubles, the vulnerability of vital resources, industry, agriculture, and population centers near these border regions in both the USSR and China, and last, but not least, the recent ideological rifts, both nations have positioned a large segment of their armed forces in the locale. The Soviets have some 44 divisions located on the border of Northeast China, and in Mongolia. China has deployed some 33 divisions within these northern provinces.⁴ In each case, the force represents about one-fourth of the nation's army.⁵

³Historical background taken from Francis Watson, The Frontiers of China (1966), pp. 42-53.

⁴The International Institute for Strategic Studies, Strategic Survey 1971 (1972), p. 56.

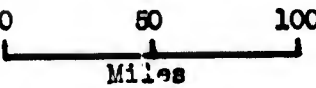
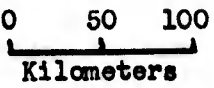
⁵The International Institute for Strategic Studies, The Military Balance 1971-1972 (1972), p. 41.

II. THE GEOGRAPHY OF NORTHEAST CHINA

I have divided Northeast China into eight geographic regions: Northwest Manchurian Mountains and Plateau; Lesser Khingan; Northeast Manchuria; East Manchurian Mountains; Manchurian Plain; Southwest Manchurian Mountains; Inner Mongolia; and the area of Shensi, Shansi and Hopeh provinces north of $38^{\circ} 30'$, plus the Peking and Tientsin Municipalities. The latter region, embracing the segments of provinces and municipalities will be referred to as the "Peking Region."

In order to reduce the narrative, much information is depicted on maps and charts. This includes the location of principal railroads and highways. Except for maps, footnotes in this section will be grouped at the end of each regional description. A master legend for all the maps in this section is provided on the next page.

MASTER MAP LEGEND


SCALES:  
Miles Kilometers


• or * City of place location.

Blue Water

Red Road

 Railroad

 Province boundary

 Peking and Tientsin municipality boundaries

Map series adapted from CIA, China Atlas, pp. 10-11.

A. Geographic Outline

1. Description

The Manchurian portion of Northeast China is composed of vast mountain and hill formations in the west, north, east and south, a large plain in the center, and a considerable area of swampland in the northeast quadrant. As exceptions to this generalization are (1) a large plateau west of the Greater Khingan Mountains in the area bounded by Outer Mongolia and the USSR; (2) the area in the vicinity of Peking and Tientsin south of the Southwest Manchurian Mountains, and east of the northern reaches of the Wu-t'ai Shan; and finally; (3) Inner Mongolia, which is composed mostly of sparsely populated plateau standing about 1,000 meters above sea level.

2. Weather

Except for the extreme western side of the region, summers are hot and humid. A late spring is also typical. Although monsoonal wind conditions play a large part in the climate, shifting depressions also contribute to the weather phenomena of the region. During seasonal transitions, rapid drops in temperature are not unusual. Typhoons, with torrential rainfall, sweep through Manchuria, ranging at times as far as the Amur River.

During the fall, depressions cause temperature reversals and cold weather. As winter sets in, the ground becomes frozen. In northern Manchuria, the ground remains frozen for a considerable time. Near Manchouli permanently frozen ground begins at depths of

from $5\frac{1}{2}$ to $8\frac{1}{2}$ meters, reaching a thickness of from 4 - 5 meters. Even in Dairen, the ground is frozen two months of the year to a depth of one meter. Chart 2 depicts temperature and rainfall conditions in selected parts of Northeast China, and show the variances from the general conditions mentioned above.

3. Major Rivers

A number of major rivers are contained within, or on the border of, Northeast China. The Sungari, Amur, Nen Chiang, and Liao Rivers are perhaps the most significant. Chart 3 depicts selected features of Northeast China's river system. Although many rivers are obstacles in summer, winter freezing eliminates this. Numerous swamplands exist in mountain valleys and in the plains along and near rivers and streams.

C. 442-22 TEMPERATURE AND RAINFALL (Temperature in Centigrades, Rainfall in millimeters. 100 mm = 1")

STATION	REGION	Month												Mean Temp	Total Rain	Days of Rain
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec			
AINCH	Lesser Plain	T R	-25.5 -17.5	-10.4 -3.0	2.5 8.0	10.6 15.0	17.2 20.9	20.8 23.9	19.8 15.3	11.7 12.2	2.5 11.7	-6.1 -11.7	-24.1 -34.1	1.0	1001.0	10
TAN-CHU	E. Manchurian	T R	-0.7 9.9	-1.0 11.2	9.1 24.3	15.3 37.4	20.9 32.3	23.9 37.3	24.5 37.3	19.3 30.0	12.2 64.3	1.5 4.3	7.4 5.7	1001.0	1001.0	10
HOCHU-KU	E. Manchurian	T R	-12.5 1.5	-12.7 1.3	-4.9 11.1	4.8 30.4	10.9 36.4	17.5 41.9	22.4 39.2	16.4 24.0	9.2 14.9	-1.0 1.5	-8.7 -1.5	1001.0	1001.0	10
AIKIN	E. Manchurian	T R	-16.9 0.0	-12.0 0.0	-0.3 2.3	6.4 26.1	13.9 37.4	19.3 39.4	22.7 30.4	18.5 13.9	9.5 37.3	-0.9 2.5	-14.5 -6.0	1001.0	1001.0	10
CHI-CHANG-TAO	Peking	T R	-6.1 2.9	-3.3 3.0	1.4 15.8	9.1 15.8	15.6 21.3	20.4 25.2	23.5 26.9	24.3 20.0	12.7 12.5	3.5 3.5	-1.1 -5.5	1001.0	1001.0	10
PAGTIN	Peking	T R	-4.5 3.5	-2.2 6.2	7.5 10.5	14.0 16.4	21.3 22.7	25.2 22.7	26.9 20.0	20.7 20.0	12.5 8.3	3.5 1.1	-5.5 -1.5	1001.0	1001.0	10
SI-KANG-TZE	Peking	T R	-11.3 2.1	-8.3 2.6	-0.8 7.7	8.8 9.4	15.0 21.7	22.6 22.6	20.4 13.4	6.4 6.4	-4.4 -4.4	-11.2 -11.2	1001.0	1001.0	10	
SI-KANG-SIN	Peking	T R	-4.1 3.5	-1.0 3.4	4.7 10.3	12.7 17.0	19.5 27.8	23.7 27.9	26.1 23.3	20.8 14.4	14.2 16.0	4.5 3.1	-2.5 -3.1	1001.0	1001.0	10
HOCHU-KU-KU	Inner Manchuria	T R	-10.1 0.5	-9.3 3.5	0.0 3.4	5.1 11.1	10.3 16.1	20.4 22.7	20.0 14.3	6.7 14.3	-1.3 1.5	-13.2 -3.2	1001.0	1001.0	10	
HAK-CHU-PI	Manchurian Plain (North)	T R	-17.8 -1.1	-14.5 -8.9	-7.6 -2.3	5.2 13.3	14.0 20.4	18.5 22.0	21.5 14.2	14.2 8.0	8.0 8.0	-0.7 -1.7	-17.6 -17.6	1001.0	1001.0	10
HUAI-TZE	Manchurian Plain (South)	T R	-15.0 -1.0	-12.6 -3.3	-0.4 10.7	9.8 17.3	16.9 22.1	23.1 27.3	23.5 14.4	10.4 6.5	10.4 13.4	0.4 3.8	-11.3 -3.8	1001.0	1001.0	10
SU-KU-TAO	Manchurian Plain (South)	T R	-13.0 -0.0	-10.0 -2.0	-2.0 8.0	13.5 19.5	21.0 24.2	23.2 23.2	16.5 16.5	8.9 8.9	-1.6 -1.6	-10.2 -10.2	1001.0	1001.0	10	
YING-KU-CU	Manchurian Plain (South)	T R	-8.7 -0.5	-6.5 0.1	1.9 9.3	16.3 21.3	24.3 24.3	24.6 19.0	11.4 11.4	1.7 1.7	0.0 0.0	0.0 0.0	1001.0	1001.0	10	

T - Temperature, R - Rainfall. Two asterisks next to a number in one of the last three columns on the right indicates the greatest number; a single asterisk indicates the smallest.

Chart adapted from George B. Cressy, China's Geographic Formations (1934), pp. 76-79.

XXXXXXXXXXXXXXXXXXXX
See the following pages
for greater detail.
XXXXXXXXXXXXXXXXXXXX



A

CHART #2 TEMPERATURE AND RAINFALL

(Temperature in Centigrade; rainfall in millimeters
(0° C = 32° F. 100° C = 212° F.))

STATION	REGION		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct
AIHUN	Lesser Khingan	T*	-25.5	-17.5	-10.4	2.8	10.6	17.2	20.8	19.5	11.7	2.6
		R*	**	N	0	**	**	I	N	F	0	R
TANTUNG	E. Manchurian Mountains	T	-8.7	-4.0	1.2	9.1	15.3	20.9	23.9	24.5	19.3	12.2
		R	9.9	11.2	24.3	37.4	90.1	100.4	272.3	214.5	180.0	64.3
HUNCH'UN	E. Manchurian Mountains	T	-12.5	-12.7	-4.9	4.8	10.9	17.6	21.4	22.4	16.4	9.2
		R	1.6	1.3	11.1	30.4	78.7	92.4	111.9	108.0	39.2	24.0
KIRIN	E. Manchurian Mountains	T	-16.9	-12.0	-5.3	6.4	13.9	19.3	22.7	22.4	16.3	5.4
		R	0.0	0.0	2.3	28.1	87.4	137.7	208.4	130.9	37.3	35.0
CHI'NHUANGTAO	Peking	T	-6.1	-3.3	1.4	9.1	15.6	20.4	23.8	24.3	19.4	12.7
		R	2.9	3.0	15.8	15.8	61.3	71.3	193.1	187.7	79.7	26.7
PAOTING	Peking	T	-4.5	-1.2	7.5	14.0	21.3	25.2	26.9	24.8	20.7	12.9
		R	0.5	6.2	10.5	6.4	27.2	19.2	162.7	109.0	30.0	5.3
SIWANTZE	Peking	T	-11.3	-9.3	-0.8	8.8	16.0	21.7	22.6	20.4	15.4	8.4
		R	2.1	2.6	7.7	9.4	65.1	60.0	87.4	41.5	36.6	15.9
TIENTSIN	Peking	T	-4.1	-1.8	4.7	12.7	19.5	23.7	26.1	25.9	20.8	14.2
		R	3.5	2.4	10.3	17.0	27.3	64.2	173.9	133.3	48.4	16.0
ERHSIHSZEKINGTI	Inner Mongolia	T	-15.1	-9.3	0.0	8.1	15.3	20.4	22.7	20.9	14.3	6.7
		R	0.3	3.3	3.4	5.2	14.1	61.1	101.9	78.0	47.3	14.9
HAERHPIN	Manchurian Plain (North)	T	-17.8	-14.6	-7.6	5.2	13.0	18.8	22.0	21.5	14.2	5.0
		R	4.1	5.9	8.4	23.5	40.7	104.8	147.6	104.0	53.9	30.0
HUAITE	Manchurian Plain (South)	T	-15.6	-12.6	-0.4	8.8	16.9	24.2	25.1	23.3	17.4	10.8
		R	5.3	3.3	10.7	17.5	53.1	87.5	172.8	144.4	67.5	38.7
SHENYANG	Manchurian Plain (South)	T	-13.0	-10.0	-2.0	8.0	13.5	21.0	24.2	23.2	16.5	8.9
		R	4.2	6.4	19.3	27.6	57.1	85.7	159.1	156.0	83.7	40.3
YINGK'OU	Manchurian Plain (South)	T	-5.7	-5.6	0.1	9.3	16.3	21.8	24.9	24.5	19.0	11.8
		R	5.2	4.9	26.2	26.8	53.2	64.1	157.5	156.0	74.8	39.2

T* - Temperature. R* - Rainfall. Two asterisks next to a number in one of the last three columns or a single asterisk indicates the smallest.

Chart adapted from George B. Cressey, China's Geographic Foundations (1934), pp. 76-79.

(Temperature in Centigrade; rainfall in millimeters. 100 mm = 1")
 (0° C = 32° F. 100° C = 212° F.)

Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean Temp	Total Rain	Days of rain	Temp Variate
-10.4	2.8	10.6	17.2	20.8	19.5	11.7	2.5	-11.7	-24.1	-0.16			46.3**
0	**	**	I	N	F	O	R	M	A	T	I	8	N
1.2	9.1	15.3	20.9	23.9	24.5	19.3	12.2	1.9	7.4	9.30			33.2
24.3	37.4	90.1	100.4	272.3	214.5	130.0	64.3	41.2	5.7		1001.3**	79.3	35.1
-4.9	4.8	10.9	17.5	21.4	22.4	16.4	9.2	-1.0	-6.7		574.2	71.6	39.6
11.1	30.4	78.7	92.4	111.9	108.0	39.2	24.0	1.9		4.39	669.6	65.8	30.4
-5.3	6.4	13.9	19.3	22.7	22.4	15.3	5.4	-3.5	-14.5	9.76			31.4
2.3	28.1	87.4	137.7	208.4	130.9	37.3	35.0	2.5	0.0	12.2	381.4	26.4*	33.9
1.4	9.1	15.5	20.4	23.8	24.3	19.4	12.7	3.6	-4.1		337.9	89.8	30.2*
15.8	15.8	61.3	71.3	193.1	187.7	79.7	26.7	13.8	2.1		509.2	44.1	37.9
7.5	14.0	21.3	25.2	26.0	24.8	20.7	12.9	3.8	-4.3	5.36	335.0*	31.3	39.8
10.5	6.4	27.2	19.2	162.7	109.0	30.0	5.3	1.1	1.3	2.85	536.6	109.2	40.7
-0.8	8.8	16.0	21.7	22.6	20.4	15.4	8.4	-4.4	-11.2	7.2	618.0	101.6	37.2
7.7	9.4	65.1	60.0	87.4	41.5	36.3	15.9	6.7	2.8		672.2	121.2**	33.6
4.7	12.7	19.5	23.7	26.1	25.9	20.3	14.2	4.5	-2.4				
10.3	17.0	27.3	64.2	173.9	133.3	48.4	16.0	9.8	3.1	8.74	639.0	77.5	
0.0	8.1	15.3	20.4	22.7	20.9	14.3	6.7	-4.3	-15.2				
3.4	5.2	14.1	61.1	101.9	78.0	47.3	14.9	1.8	3.2				
-7.6	5.2	13.0	18.9	22.0	21.5	14.2	5.0	-6.7	-17.6				
8.4	23.5	40.7	104.8	147.6	104.0	53.9	30.0	8.4	5.3				
-0.4	8.8	16.9	24.2	25.1	23.3	17.4	10.5	0.4	-11.3				
10.7	17.5	53.1	87.5	172.8	144.4	67.5	38.7	13.4	3.6				
-2.0	8.0	13.5	21.0	24.2	23.2	16.5	8.9	-1.6	-10.2				
19.3	27.6	57.1	85.7	159.1	156.0	83.7	40.3	26.7	6.1				
0.1	9.3	16.3	21.8	24.9	24.5	19.0	11.5	1.7	-5.0				
26.2	26.3	53.2	64.1	187.5	136.0	74.5	39.2	24.5	6.3				

isks next to a number in one of the last three columns on the right indicates the greatest number; asterisk indicates the smallest.

Geographic Foundations (1934), pp. 76-79.

CHART #8 RIVER SYSTEM

RIVER	Area Drained w/in Manchuria (Sq km)	Approx % of Area	REMARKS
ARGUN	180,000	12.5	Near its confluence with Han Ho, Argun freezes about Nov 4; thaws about May 8 80-100 m wide, 4-6 m deep.
AREN	-	-	At confluence with Argun freezes about Nov 6; thaws about May 10. Freezes & thaws dates at Aihun are Nov 11 & May 11; at Khabarovsk Nov 11 & May 2. Width varies from less than 1 km in upper reaches to 7-8 km in lower. 2-15 m deep. Flows at 1 m to 2.5 m/sec. Not navigable for 1 wk before freeze & thaws. Numerous sand bars & channels. No obstacles in winter.
See the following pages for greater detail.			
Tributaries: Area between Argun & Sungari	180,000	9.5	
HEI CHIANG	244,000	16.5	Ice covered between early Apr. 100-200 m wide in north to 2000 m in south 1-2 m deep. Major obstacle summer same than freeze.
SUNGARI	200,000	11.5	Freezes late Oct to late Mar. Widths 1-2 km above Ilan; 1-2 km Ilan-Chang-an; 2-4 km below Chienmen. Depths .5 m at low water. 2 m below Kuryung; 2-4 m some places. 2000 km long. Not navigable for 10 days before freeze & thaws. This river is also an obstacle in summer, but not during the winter.
HEIHEI	60,000	4.5	Freezes at Hean about Nov 10; thaws about May 2. Width varies from 200 m to 4 km. This river & Heilong flood during spring thaws.
LIHO	225,000	17.5	Width varies from 200 m in the north to between .5 & 1.5 km south. 1.5 m deep, except in rainy season, then 2-3.5 m. 6 m deep at mouth. 1200 km long. River is defensible.
TUMEN	24,000	2.5	Freezes about Nov 20; thaws about Apr 7 along border with USSR.
YALU	22,000	2.4	At Yantung freeze starts about Dec 7; thaws Mar 10. 200 km long. Swift, uncertain currents & shoals make crossing difficult, except when frozen.
YULU	22,000	2.5	
TA-LING	22,000	2.4	Defensible against advances from Liaoting Wan.
ALL OTHERS	22,000	2.5	

Chart compiled from Dr. Gustav Fischer-Hanke, Manchuria -- A Geographical-Cerographical Treatise on the Country (1941), pp. 11; 20; 22-23 (hereafter referred to as "Fischer-Hanke, Manchuria"); HQ, US Army Forces, Far East, Military History Section, Japanese Studies on Manchuria, Vol III, Strategic Study of Manchuria Military Topography and Geography, Part 2, "Regional Terrain Analyses," (17 November 1945), pp. 25; 26-27; 29; 30-31; 32; 33; Part 3, "Regional Terrain Analyses," (2 February 1946), pp. 104; 110; 142-143; Part 4, "Regional Terrain Analyses," (9 March 1946), pp. 22-27 (hereafter referred to as "Japanese Studies, Vol III," and citing the appropriate part and p. no. of each).

CHART #8 RIVER SYSTEM

RIVER	Area Drained w/in Marchuria (Sq km)	Approx % of Area	REMARKS
ARGUN	159,000	12.5	Near its confluence with Ken Ho, ARGUN freezes about Nov 4; thaws about May 8 80-100 m wide, 4-6 m deep.
AMUR	-	-	At confluence with ARGUN freezes about Nov 6; thaws about May 20. Freeze & thaw dates at Aihun are Nov 11 & May 11; at Khabarovsk Nov 11 & May 2. Width varies from less than 1 km in upper reaches to 7-8 km in lower. 5-15 m deep. Flows at from 1.6 to 2.4 m/sec. Not navigable for 1 wk before freeze & thaw. Numerous sand bars & channels. No obstacles in winter.
Tributaries:			
Amur between ARGUN & Sungari	120,000	9.5	
ZEN CHIANG	244,000	18.5	Ice covered between early Apr. 150-600 m wide in north to 1000 m in south 1-2 m deep. Major obstacle summer; none when frozen.
SUNGARI	280,000	21.5	Frozen late Oct to late Mar. Widths: 1-3 km above Ilen; 1-2 km Ilen-Chai-nusui; 3-4 km below Chikusaen. Depths: .5 m at low water. 2 m below Hsarping; 3-4 m same places. 2000 km long. Not navigable for 10 days before freeze & thaw. This river is also an obstacle in summer, but not during the winter.
UBSURI	60,000	4.5	Freezes at Ilen about Nov 16; thaws about May 2. Width varies from 300 m to 4 km. This river & Maleng flood during spring thaws.
LIAO	225,000	17.5	Width varies from 200 m in the north to between .5 & 1.5 km south. 1.5 m deep, except in rainy season, then 3-3.5 m. 6 m deep at mouth. 1500 km long. River is defensible.

SUNGARI	280,000	21.6	1-2 m deep. Major obstacle summary none when frozen. Frozen late Oct to late Mar. Widths: 1-3 km above Ilan; 1-2 km Ilan-Chal-mussu; 3-4 km below Chimusso. Depths: .6 m at low water. 2 m below Hserpin; 3-4 m some places. 2000 km long. Not navigable for 10 days before freeze & thaw. This river is also an obstacle in summer but not during the winter.
USSURI	60,000	4.6	Freezes at km about Nov 16; thaws about May 2. Width varies from 300 m to 4 km. This river & Muleng flood during spring thaws.
LIAO	225,000	17.5	Width varies from 200 m in the north to between .6 & 1.6 km south. 1.3 m deep, except in rainy season, then 3-3.6 m. 6 m deep at mouth. 1300 km long. River is defensible.
TUMEN	34,000	2.6	Freezes about Nov 26; thaws about Apr 7 along border with USSR
YALU	32,000	2.4	At Tantung freeze starts about Dec 7; thaws Mar 16. 500 km long. Swift; uncertain currents & shoals make crossing difficult, except when frozen.
LUAN	35,000	2.6	
TA-LING	32,000	2.4	Defensible against advances from Liaotung Wan.
ALL OTHERS	82,000	6.0	

Chart compiled from Dr. Gustav Fochler-Heske, Manchuria -- A Geographical-Geopolitical Treatise on the Country (1941), pp. 11; 20; 53-20 (hereafter referred to as "Fochler-Heske, Manchuria"); Hq. US Army Forces, Far East, Military History Section, Japanese Studies on Manchuria, Vol III, Strategic Study of Manchuria Military Topography and Geography, Part 2, "Regional Terrain Analyses," (17 November 1955), pp. 26; 28-29; 39; 38-59; 88; 90; Part 3, "Regional Terrain Analyses," (6 February 1956), pp. 104; 110; 145-146; Part 4, "Regional Terrain Analyses," (9 March 1956), pp. 36-37 (hereafter referred to as "Japanese Studies, Vol III," and citing the appropriate part and date of each.)

6

B. Northwest Manchurian Mountains and Plateau

The bulk of this region is composed of the Greater Khingan Mountains, a north-south chain, which connects with the hills of Liaoning Province in the south, and whose foothills in the north trend toward those of the Lesser Khingan and the Argun and Amur Rivers. These mountains are generally higher in the south than in the north, averaging 1,100 to 1,400 meters. The highest peak of the Chilikhsien Mountain in the south rises to 1,740 meters, while that of the Ch'ih-chi-ch'ang Mountain in the north reaches 1,530 meters. The mountains are generally wider in the north than in the south.

Many of the mountain summits are flat. The valleys in the upper reaches of rivers and streams are generally U-shaped, but there are also areas of cliffs, saw-toothed ridges, and glacial drifts. Weather has worn off some peaks, and as a result, many completely round mountains can be found. Viewed from the Manchurian Plain, the Greater Khingan is precipitous. The western slopes opening onto the plateau, however, seem gentler. The difference in altitude of the eastern slopes to the Manchurian Plain is over 700 meters, while that of the western slopes to the plateau is but 300 meters. Chart 4 shows these differences. The Greater Khingan is crossed by four highways and three rail lines, otherwise, there are few good routes of communication.

These highlands are drained by rivers and streams which flow toward or into the Nen Chiang Ho to the east, the Argun on the west, and the

Amur in the north. Rivers and streams coming from the old U-shaped glacial valleys contain little water, and have narrow beds. Along the upper Nonin River, the valley is up to four kilometers wide, but widens to over ten kilometers in its lower reaches. The river winds through the wide valley, the water forming large marshes along both banks.

Along its eastern side, the Greater Khingan contains many rivers and numerous low hills of from 200 to 650 meters. There is about 60 meters difference in height between the hills and valleys near the plain.

Extensive forests cover the Greater Khingan. Both east and west slopes contain woodland, but the east has more lush undergrowth. Relatively small wooded areas are also found adjacent to many rivers.

Swamps frequently cover the valley bottoms along the middle and upper courses of the rivers, often extending completely across the valley. Swamplands are more extensive in the west, impeding cross country mobility.

The plateau stretching to the west of the Greater Khingan is a steppe region, varying between flat and gently rolling ground, commencing with the grasslands footing the mountain, and extending westward into the desert toward Halun Ch'ih. River basin swamps restrict vehicular movement.⁶

⁶US Joint Publications Research Service, Topographic Geography of the Hsi-lun-pai-shan (Khangai) League (21 November 1961), pp. 6-10; Fochler-Hauke, Mongolia, pp. 190-196; Japanese Studies, Vol III, Part 4, (9 March 1956), pp. 12; 17; 22-23; 33.

Mount Fuji - (1911-1912) - H. S. G. S.

1912/13

Height in meters. Distance in kilometers

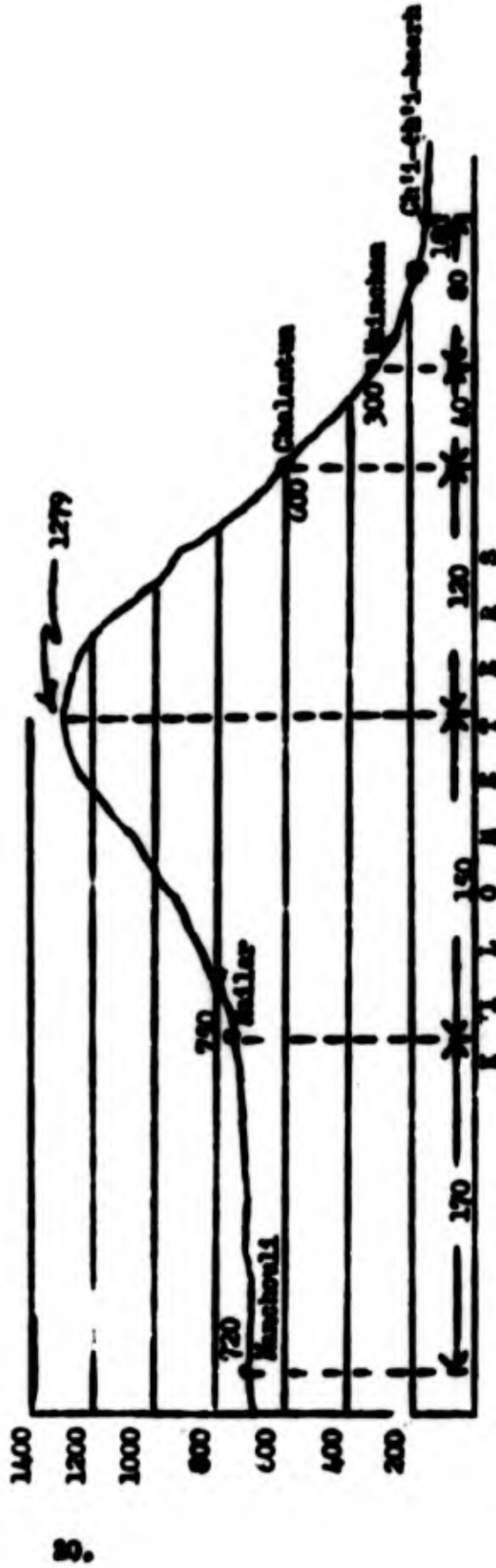
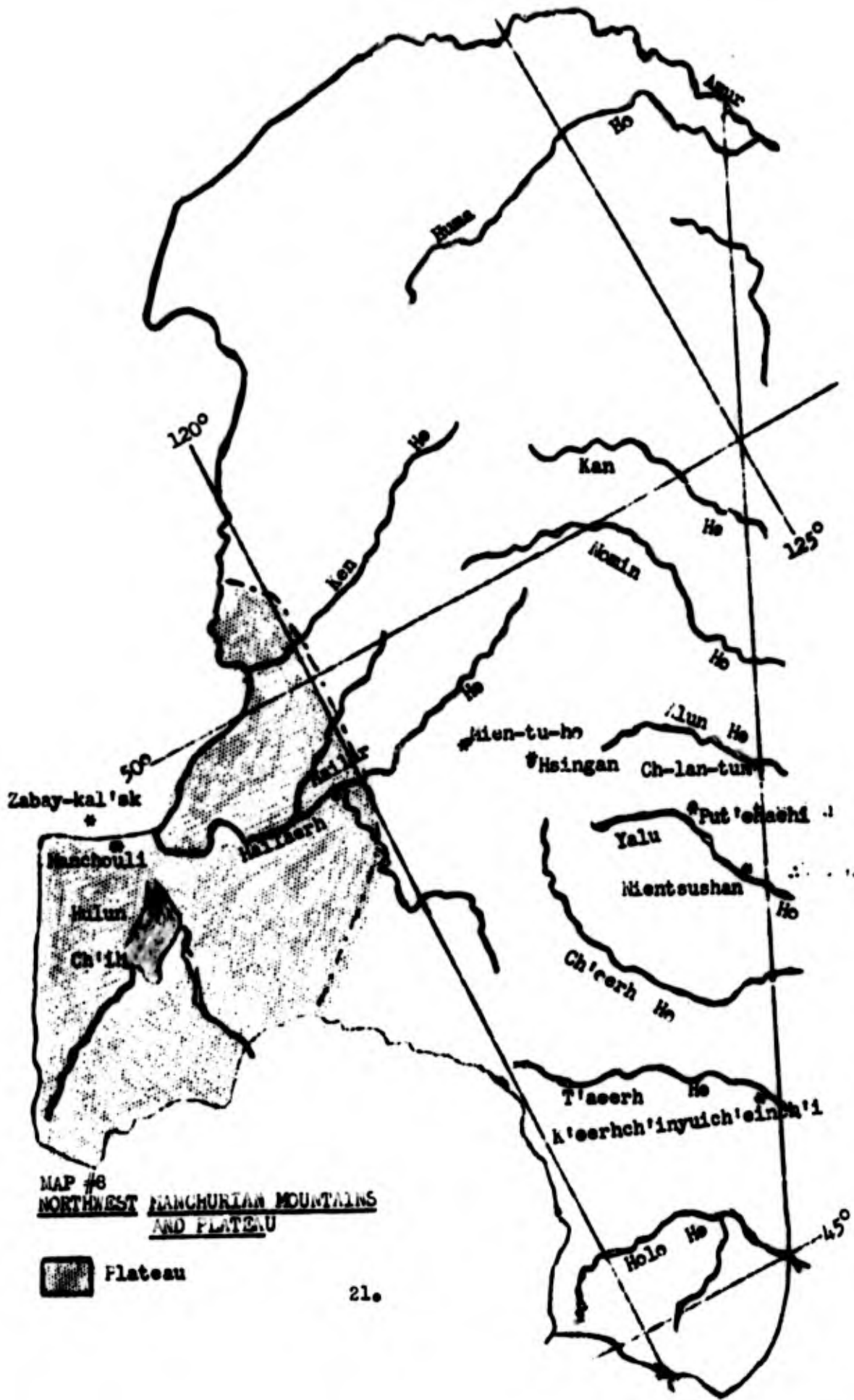


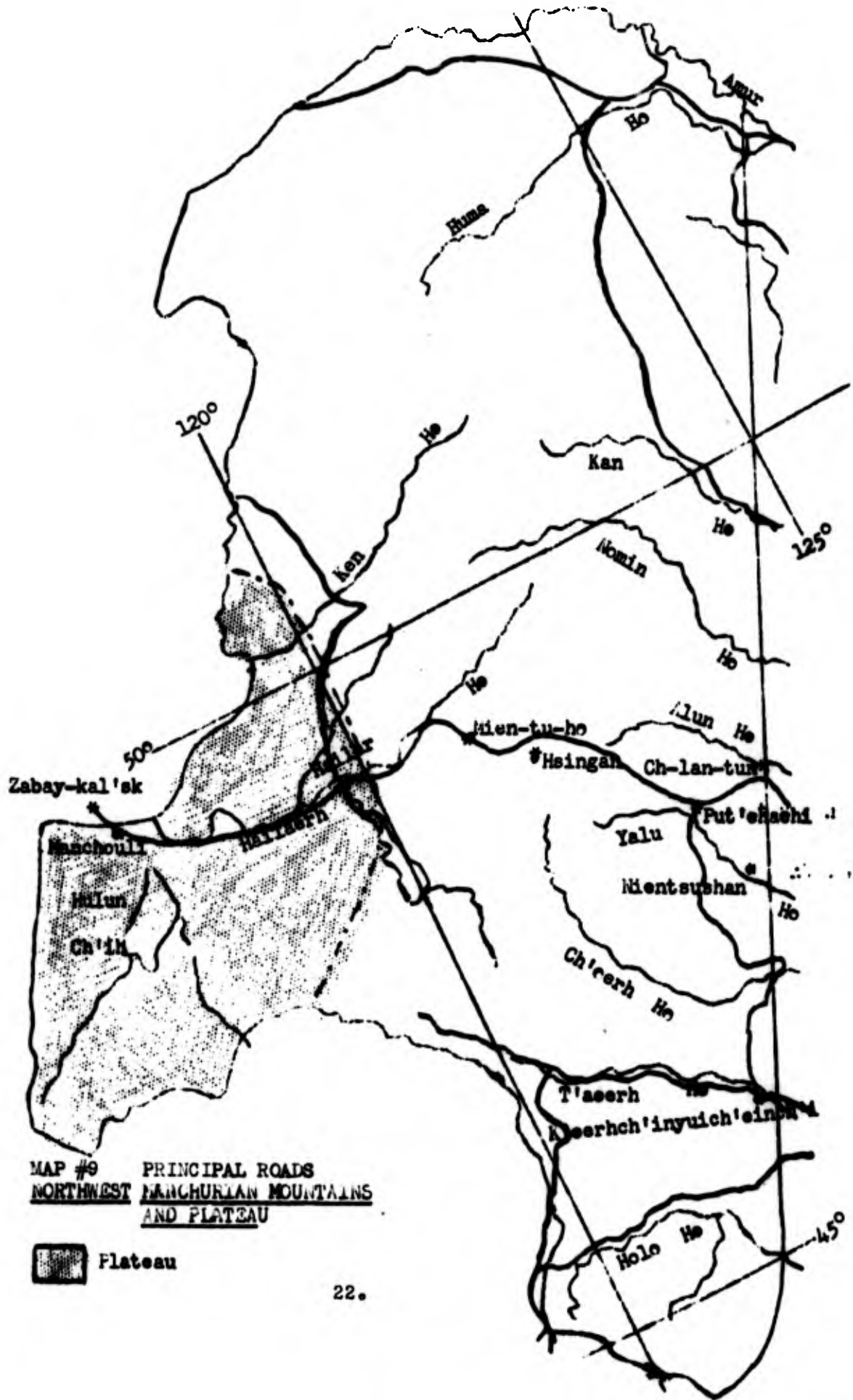
CHART A.

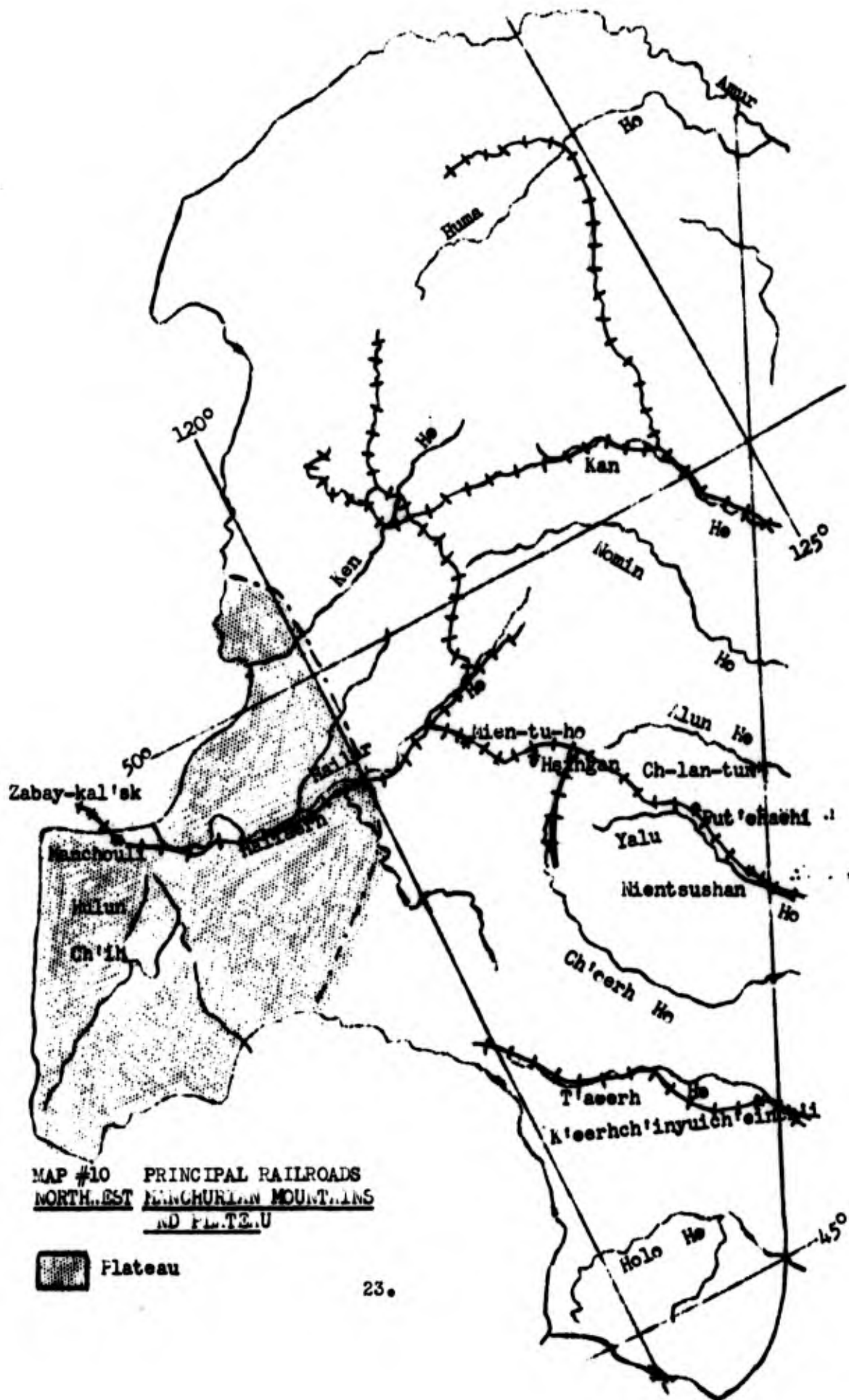
Chart adapted from Japanese Studies, Vol. III,
Part 4, (9 March 1956), p. 33.



MAP #8
NORTHWEST MANCHURIAN MOUNTAINS
AND PLATEAU

 Plateau





MAP #10 PRINCIPAL RAILROADS
 NORTH-EAST MANCHURIAN MOUNTAINS
 AND PLATEAU

 Plateau

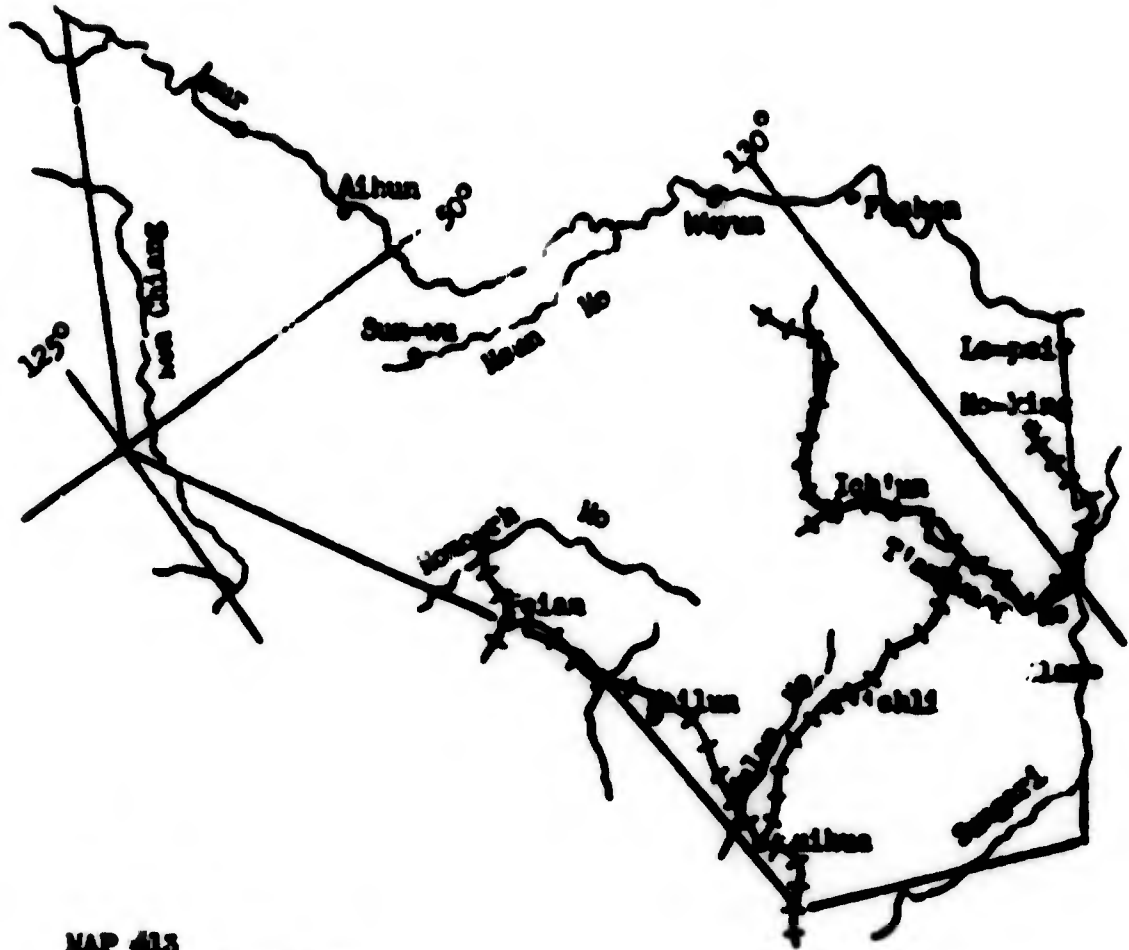
C. Lesser Khingan

This area is bounded on the west by the valley of the Nen Chiang Ho, on the north by the Amur River (Heilung Chiang Ho), on the east by the Sungari River south from about Chiamussu to just north of Haerhpin (Harbin), and a line north from Chiamussu to the Amur. Its southern border is formed by the northern edge of the Manchurian Plain.

This, too, is a wild and desolate area. The Lesser Khingan is drained to the north by the Hsun Ho and other minor streams, and toward the south by tributaries leading to the Nen Chiang, the Nemoerh, the T'ungk'en, and Hulan. On the east, the T'angwang Ho flows into the Sungari.

These mountains also contain considerable stands of forest, except for a small plain between Aihun and Sun-wu along the Amur. One avenue exists through the area. It is the wide saddle leading south from Aihun to Peian. Another route skirts the mountains along the valley of the Sungari to Haerhpin.⁷

⁷Fochler-Hauke, Manchuria, p. 185; Japanese Studies, Vol III, Part 2 (17 November 1955), pp. 73-75.



MAP #13
PRINCIPAL RAILROADS
LESSER KHINGAN

D. Northeast Manchuria

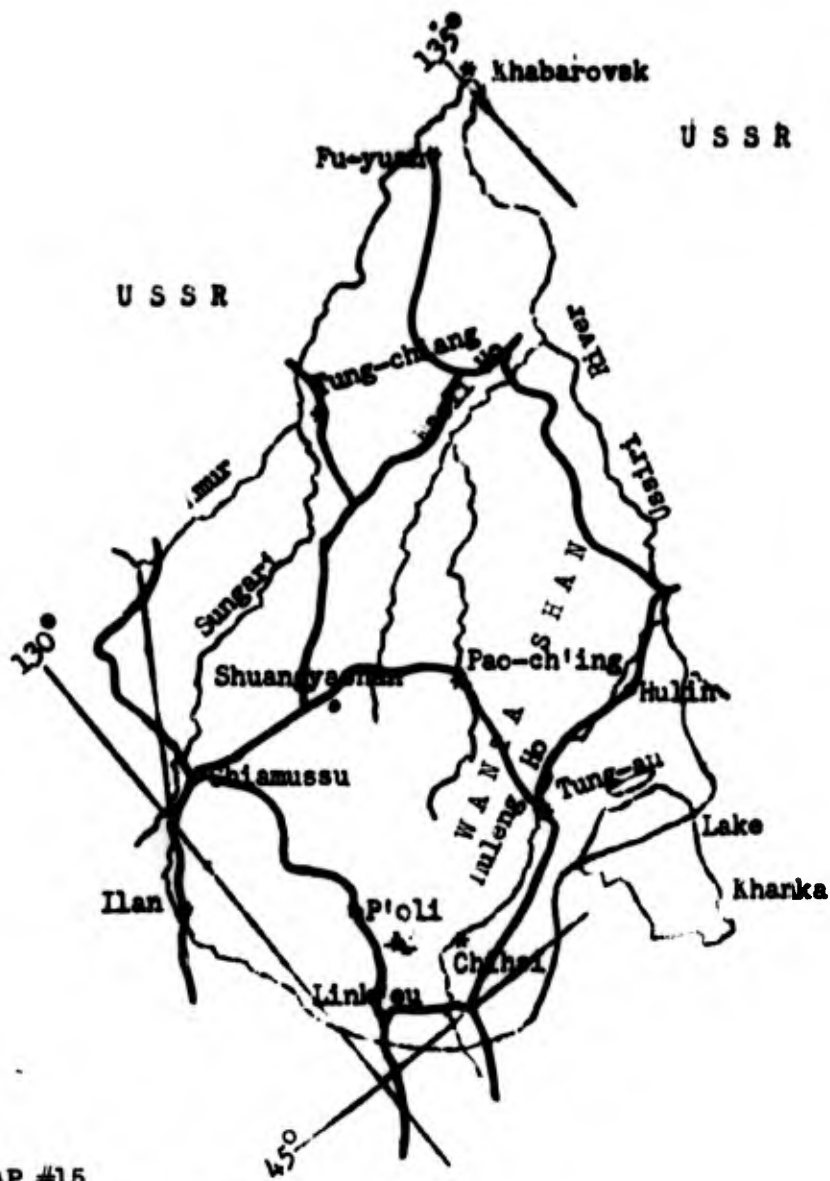
Although swamps of varying sizes and types exist at a number of places throughout Northeast China, nowhere are they concentrated in such vast extents as in Northeast Manchuria. Except for the Wan-ta Shan, most of the remainder of the area is taken up by swampland and myriad streams.

There are two large swamplands. One is 100 by 300 kilometers, and lies north of the Wan-ta Shan, and northeast of Chiamussu. It is bounded by the Amur River to its north, and the Ussuri on the east. The other swamp lies between the Wan-ta Shan and Lake Khanka east of Tung-an. This triangular-shaped swamp measures some 120 kilometers to a side. In addition, many other vast areas become flooded each year when the Amur, Ussuri, and Sungari Rivers, and their tributaries thaw.

These vast swamps are open and flat, overgrown by sedge vegetation. Visual bearings are difficult to secure because of sedge tussocks, which sometimes grow to three meters in height.

Cutting through Northeast Manchuria from southwest to northeast is the Wan-ta Shan, which rises to little over 600 meters, and contains few roads. At its eastern end, it is joined by a lesser range, called the Talatsu. In comparison to the Greater Khingan, the Wan-ta and Talatsu ranges are low, much gentler in gradient, and offer little obstacle to movement.⁵

⁵ Japanese Studies, Vol III, Part 1 (7 October 1955), pp. 69; 71; 75; 77; Part 3 (8 February 1956), p. 87.



MAP #15
 PRINCIPAL ROADS
 NORTHEAST MANCHURIA

E. East Manchurian Mountains

These mountains are bounded on the north generally by the Sungari from Haerpin to ilan, and a line from that city through Link'ou and Chihsi; by the Manchurian Plain and the Liaotung Wan on the west; by the Soviet border on the east; and on the south by the Tumen and Yalu Rivers and the Korea Bay.

The hills nearest the Manchuria Plain are rounded, with open valleys which pass into high mountains farther east. Principal ranges are the Tienpao Shan and Changpai Shan. The Changpai Shan rises to 2,400 meters. These ranges are characterized by rugged peaks and steep cliffs. The highest peak of the Changpai is the volcanic Paitou Shan, which contains a crater lake. Extensive forests are also to be found on the Changpai.

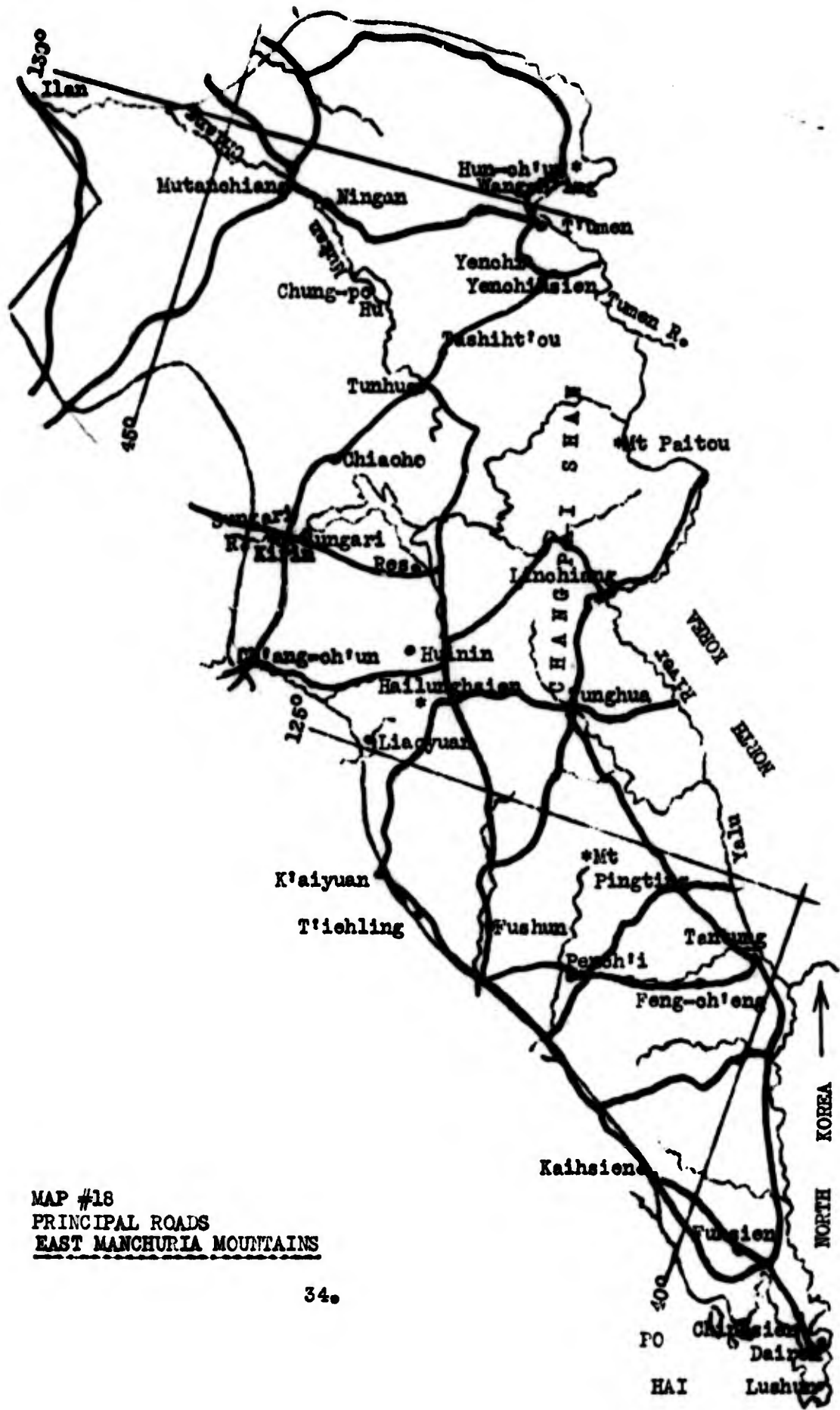
The vast Sungari Reservoir and the much smaller Ching-po Hu lie in the middle of the mountain mass. Drainage of East Manchuria is provided by the Yalu and Tumen Rivers in the south, and the Sungari to the northwest.

The Liaotung Peninsula is largely an extension of the mountains of East Manchuria. Elevations average 200 to 300 meters in the south, and some 700 meters in the center and north of the peninsula. Erosion has filled the shoreline to the point that former islands are now several kilometers inland.⁹

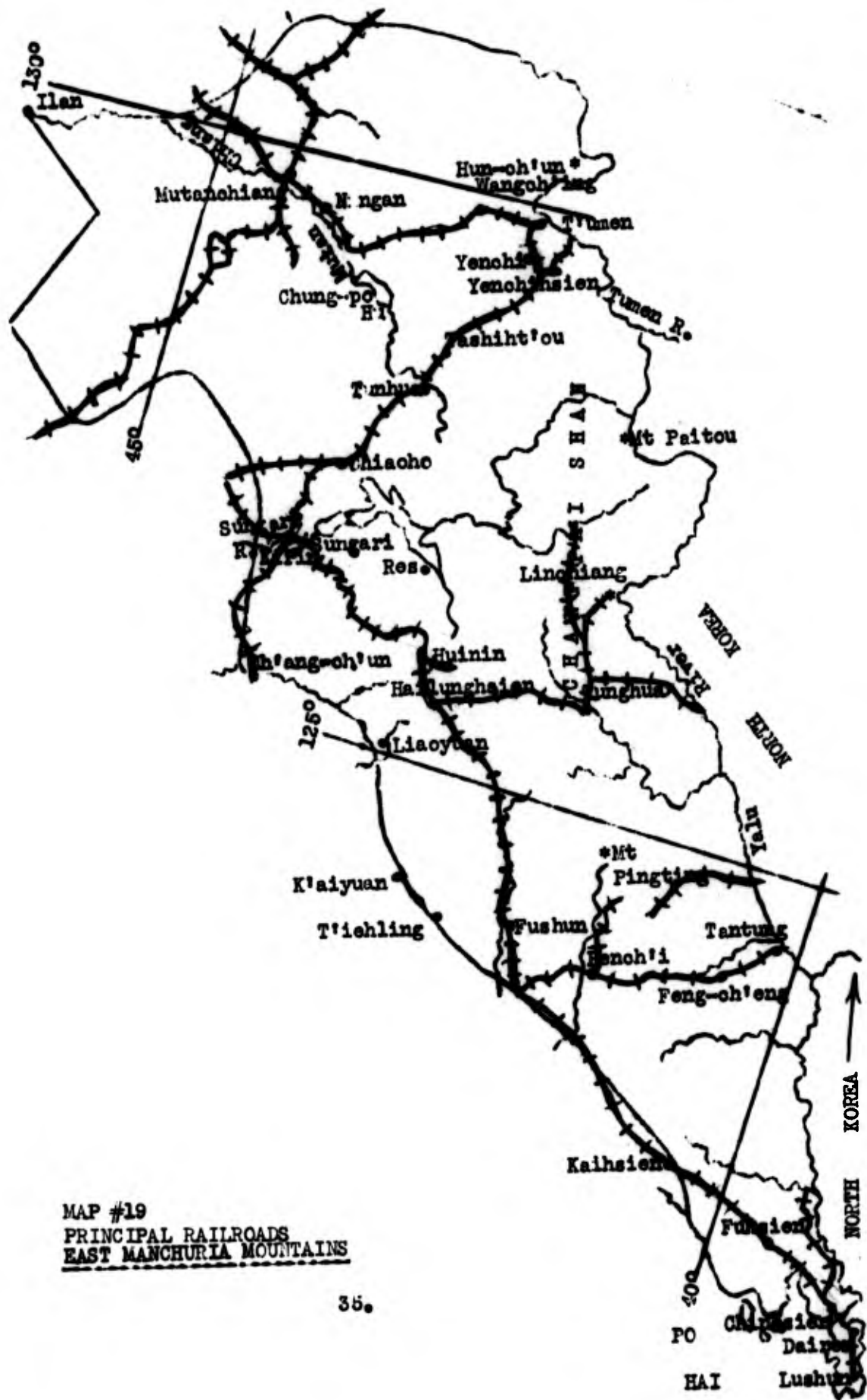
⁹ George B. Cressey, China's Geographic Foundations (1934), p. 235. (hereafter referred to as "Cressey, Foundations"); Jen Yu-ti, A Concise Geography of China (1964), p. 104. (hereafter referred to as "Jen Yu-ti, Concise Geography"); Fochler-Hauke, Manchuria, pp. 275-276.



MAP #17
EAST MANCHURIA MOUNTAINS



MAP #18
 PRINCIPAL ROADS
 EAST MANCHURIA MOUNTAINS



MAP #19
 PRINCIPAL RAILROADS
 EAST MANCHURIA MOUNTAINS

F. Manchurian Plain

The Plain is the heartland of the Northeast, containing most of the industry and power installations. The region is located in the middle of Manchuria, bounded by all the other geographic regions of the Northeast, except Peking. A narrow neck of the plain opens onto the Liaotung Wan. The plain covers an area of more than 300,000 square kilometers.

South of K'aiyuan the plain is usually less than 100 meters above sea level. North of the town, the average height is from 120 to 300 meters. A barely noticeable, gently undulating, low hill mass between T'aoan and Ch'angoh'un divides the plain. Leoss-like deposits up to 12 meters deep are found on the slopes of these hills. The plain also contains remnants of many small volcanic cones, some of which rise about 100 meters above the surrounding land.

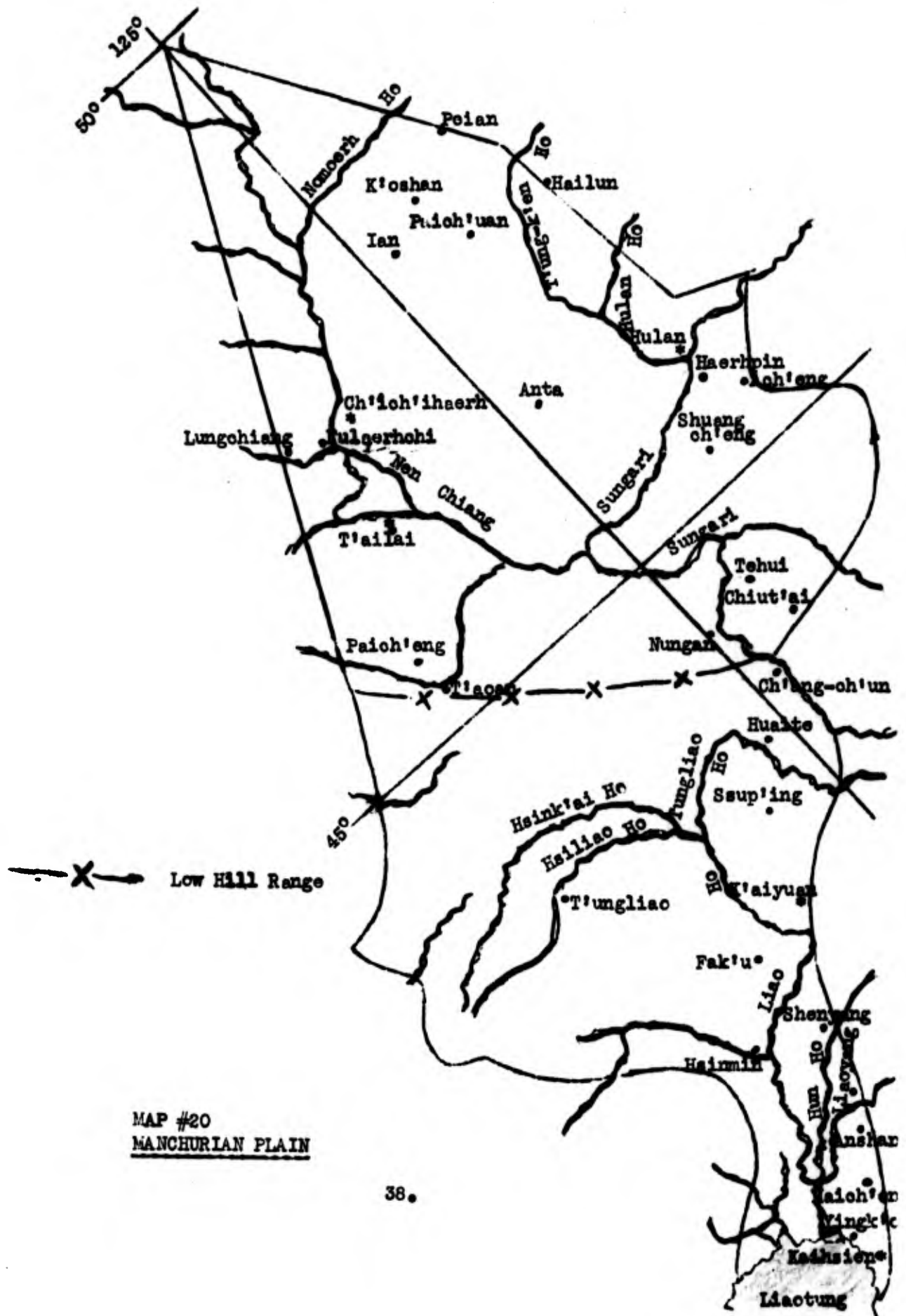
North of the divide are the Nen Chiang, Sungari, Hulan, Nomoerh, and T'ung-k'ien Rivers. The Hsink'ai, Hsiliao, Tungliao and Liao Rivers drain the south.

The south is primarily alluvial, and the earth for some 10 kilometers inland from the sea is saturated with salt, and salty swampland. There are no woods nor forests. Sand dunes adjoin a similar belt of dunes in the Southwest Manchurian Mountains.

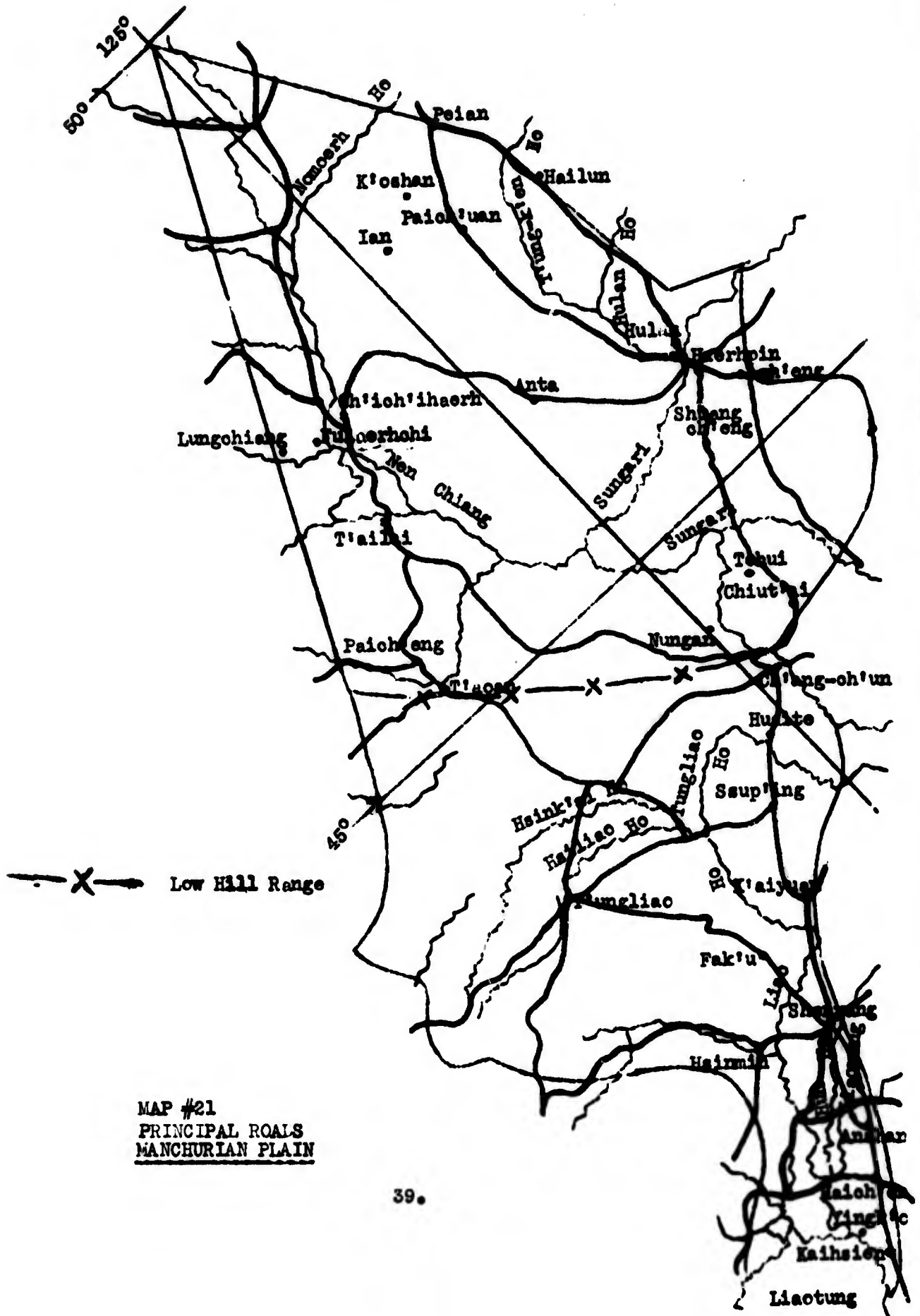
North of the divide the land is flat to gently rolling. Further north, only the river bottoms are level. Rolling hills, varying in

width from a few hundred meters to several kilometers, predominate. Swampland is found along the Nen Chiang south of Ch'ich'ihærh, and the Sungari south of Hærhpín.¹⁰

¹⁰Cressey, Foundations, p. 214; Fochler-Hauke, Manchuria, pp. 43-45; 52.



MAP #20
MANCHURIAN PLAIN



MAP #21
 PRINCIPAL ROADS
 MANCHURIAN PLAIN

Liaotung

Wan

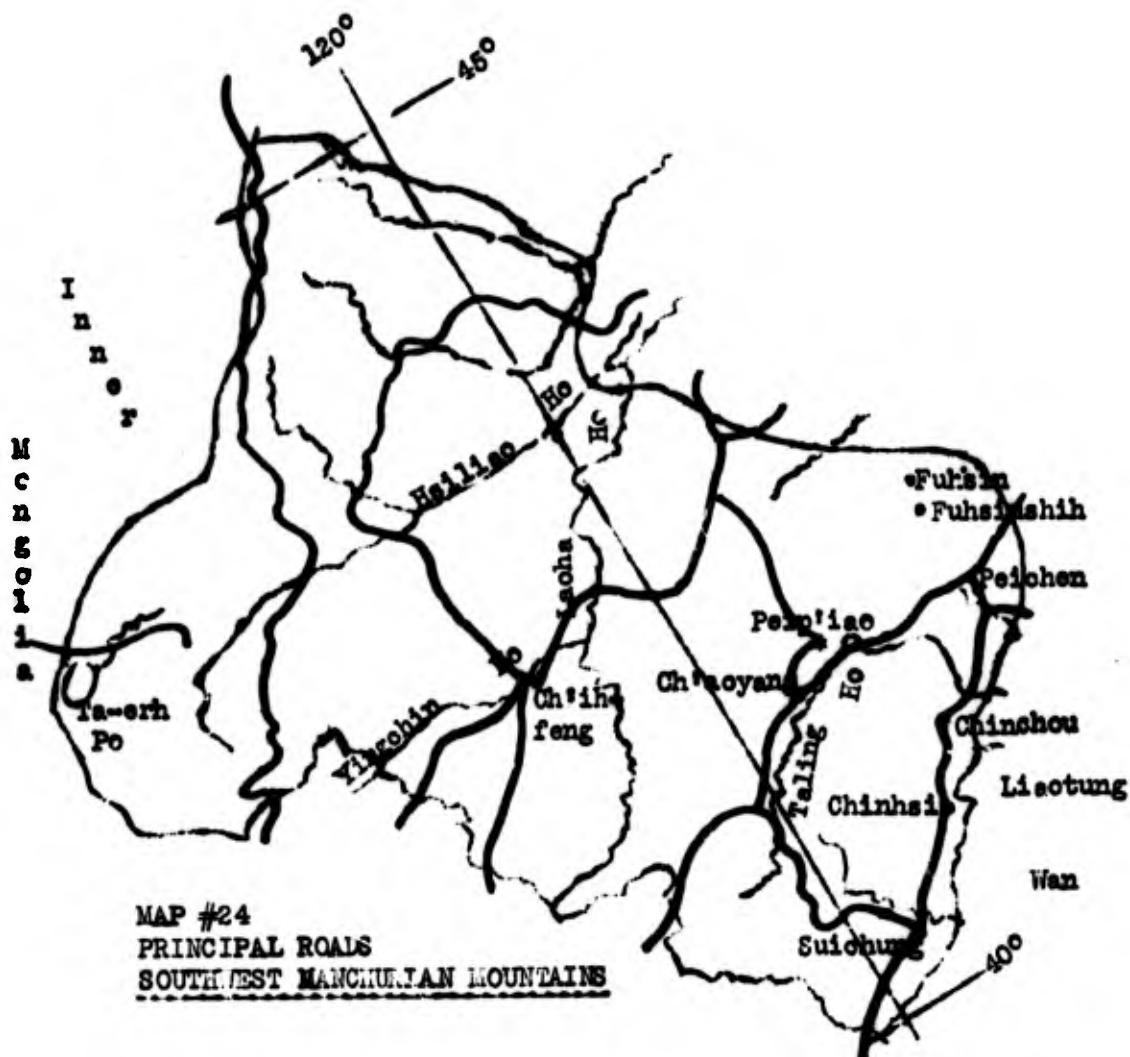
G. Southwest Manchurian Mountains

This region is bounded on the north by the southern reaches of the Greater Khingan, on the northeast and east by the Manchurian Plain and the Liaotung Wan. The western and southern boundaries consist of Inner Mongolia and the Peking Regions, respectively.

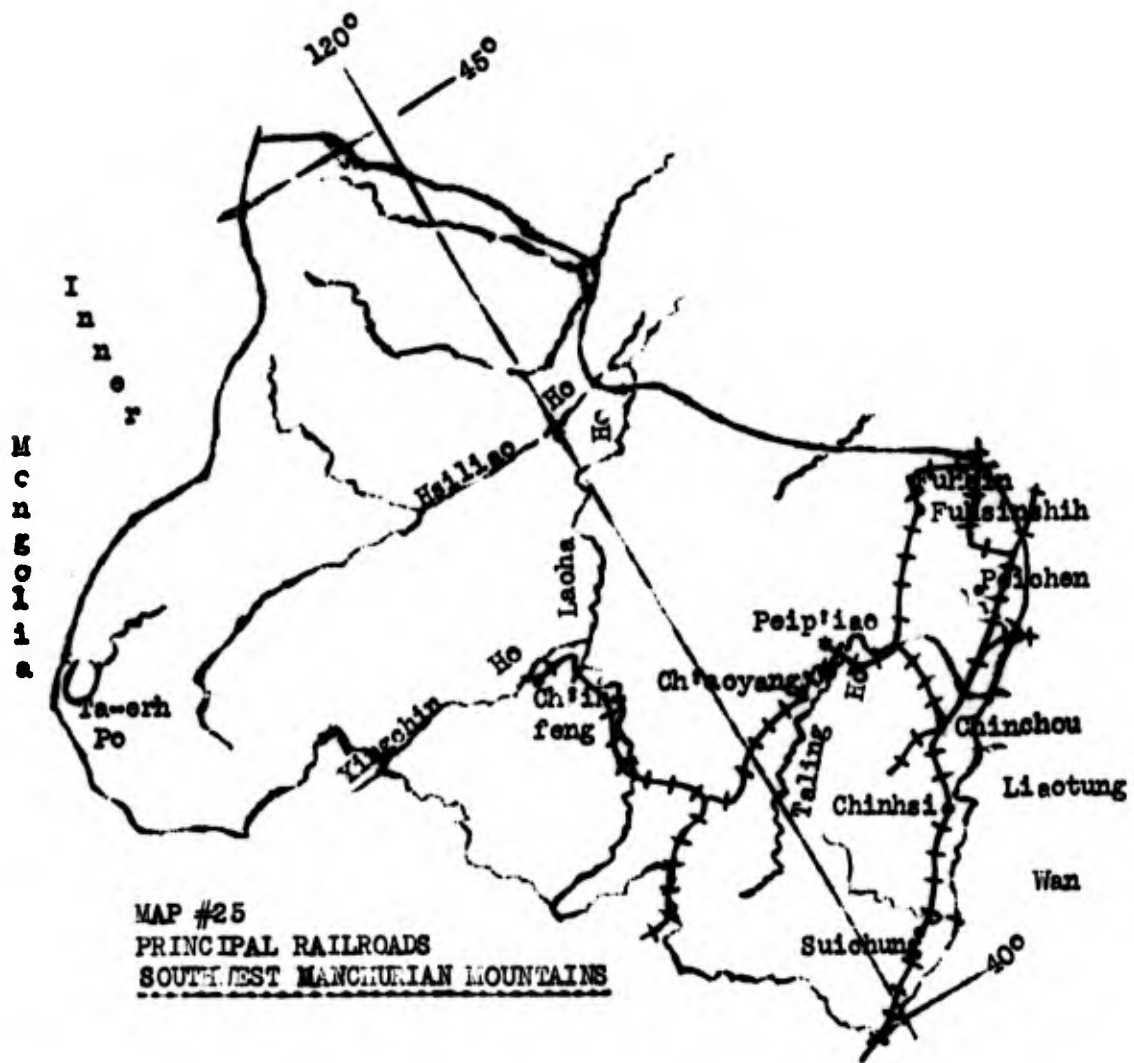
The mountains of this region are highest near the border with Inner Mongolia, rising to over 1,800 meters. The land is very rugged, characterized by ridges and peaks cut up by deep valleys. Many of these valleys are oriented southeast toward the sea, while others, farther to the north, trend to the northeast. A cover of loess, deepest in the northwest, extends into the plain, in strips of differing widths, and becoming ever thinner in depth. The land slopes generally toward the Po Hai and the Manchurian Plain. A narrow plain, generally 10 kilometers wide, lies along the coast of the Po Hai. This is the Liao-hai Corridor, which gives passage through the Great Wall.

Drainage in the east is directly to the coast, principally by the Ta-ling Ho. In the west, drainage is provided by the Liao Ho and subsidiary streams, flowing east into the Manchurian Plain.¹¹

¹¹Fochler-Hauke, Manchuria, pp. 74;75; Jen Yu-ti, Concise Geography, p. 106.



MAP #24
 PRINCIPAL ROADS
 SOUTHWEST MANCHURIAN MOUNTAINS



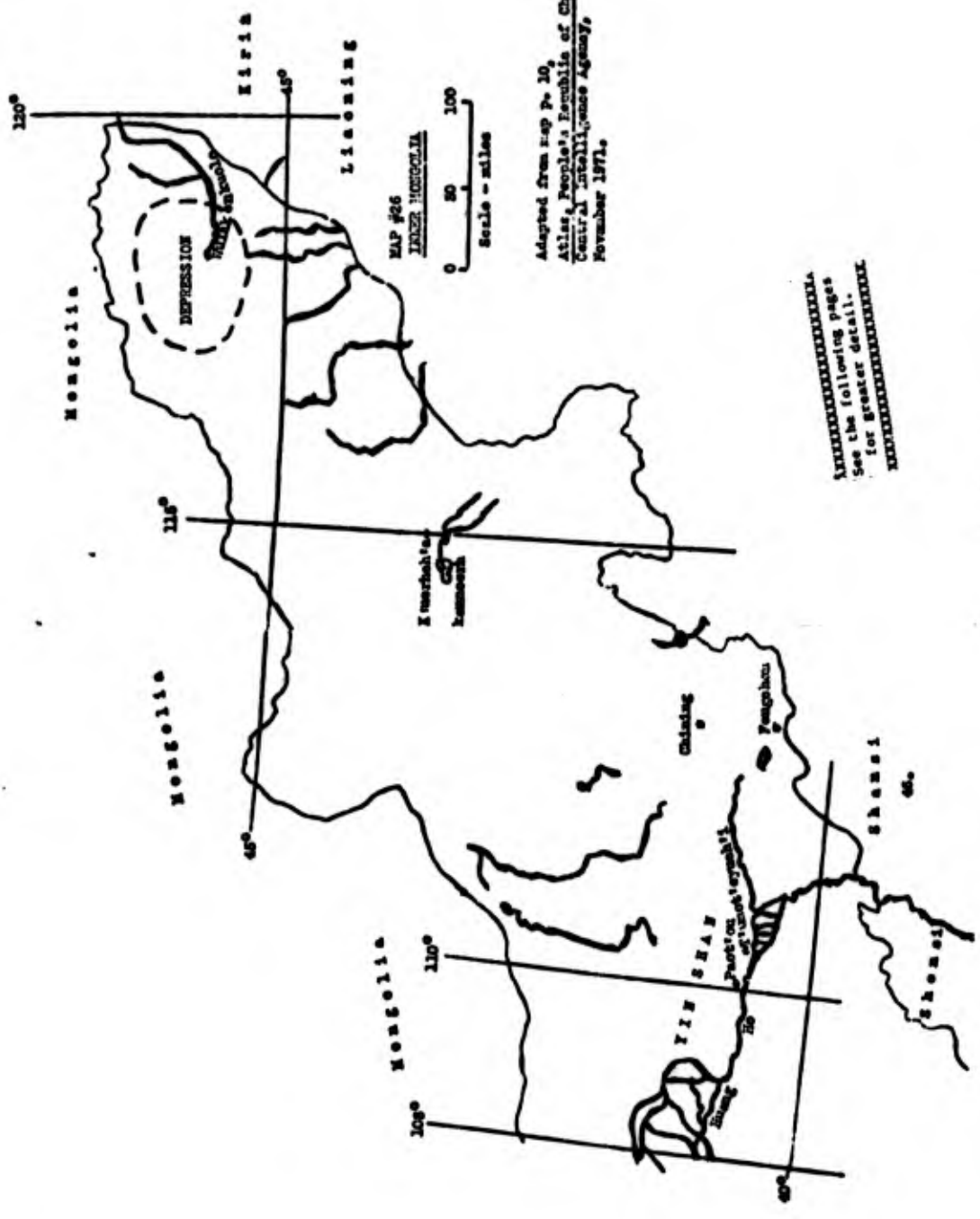
MAP #25
 PRINCIPAL RAILROADS
 SOUTH WEST MANCHURIAN MOUNTAINS

H. Inner Mongolia

Inner Mongolia lies generally south of the People's Republic of Mongolia. The region is composed of plateau about 1,000 meters above sea level. (This study deals only with that portion of Inner Mongolia north of 38° 30' north latitude.) It is wild and desolate, containing few roads, cities or trees, and a sparse population. Just north of the Huang Ho lies the Yin Shan, which contains some of the higher elevations of Inner Mongolia north of 38° 30'. Just south of that river lies the Ordos Desert. Further north, in the valley of the Wulakenkuolo, is found a large depression, averaging over 250 meters below the surrounding plateaus. This depression, which measures some 100 kilometers wide, from north to south, and over 150 kilometers long, contains extensive swampland.

A number of lakes dot the region, but they dry up in summer. Most grassland which does exist in Inner Mongolia is steppe grass, which grows 7 to 8 feet high.¹²

¹² Jen Yu-ti, Concise Geography, p. 202; Wang Chun-heng, A Simple Geography of China (1958), pp. 223, 225: (hereafter referred to as "Wang Chun-heng, A Simple Geography"); Thomas R. Tregear, A Geography of China (1965), p. 295.

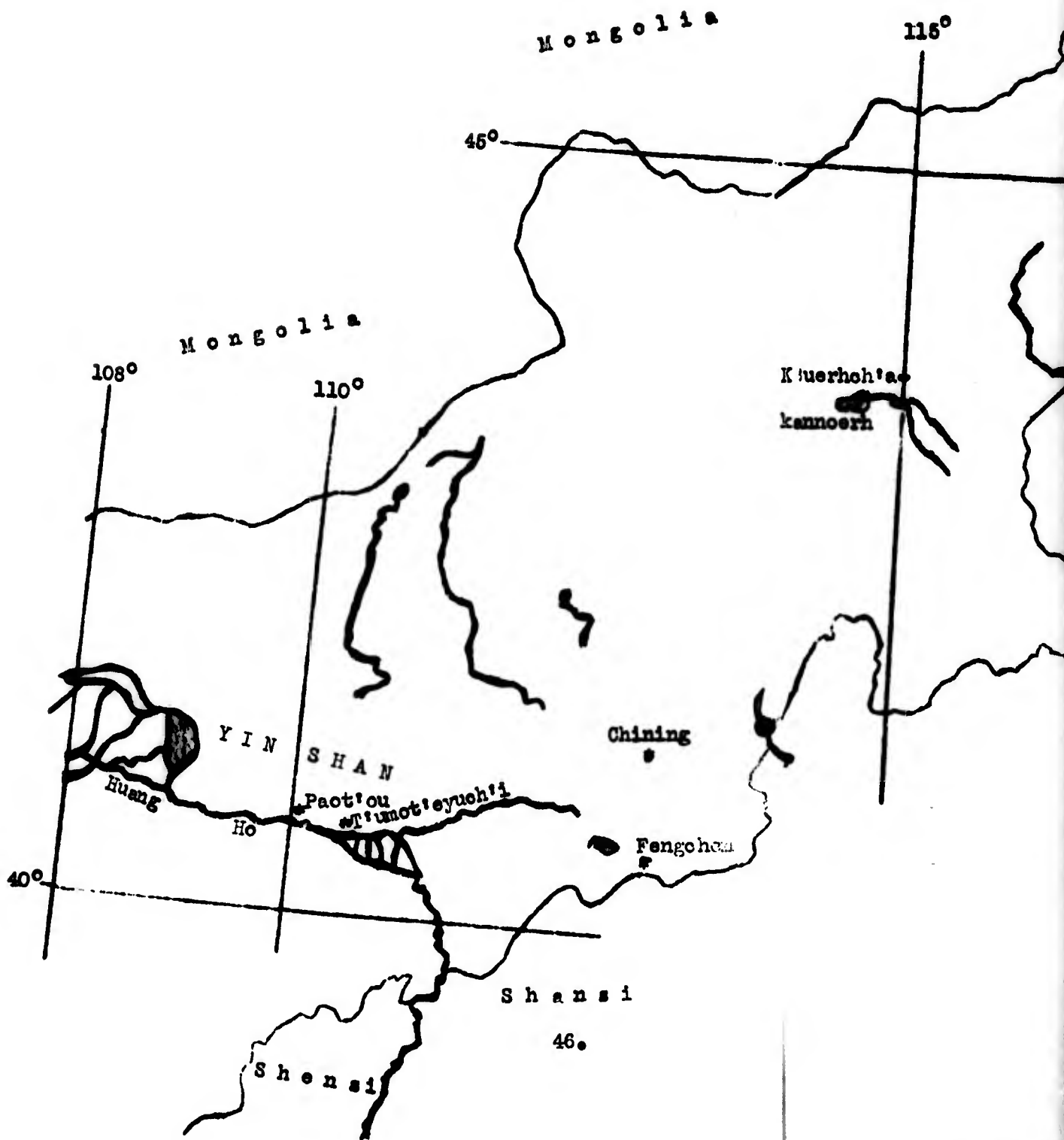


MAP #26
INNER MONGOLIA
Scale - miles
0 50 100

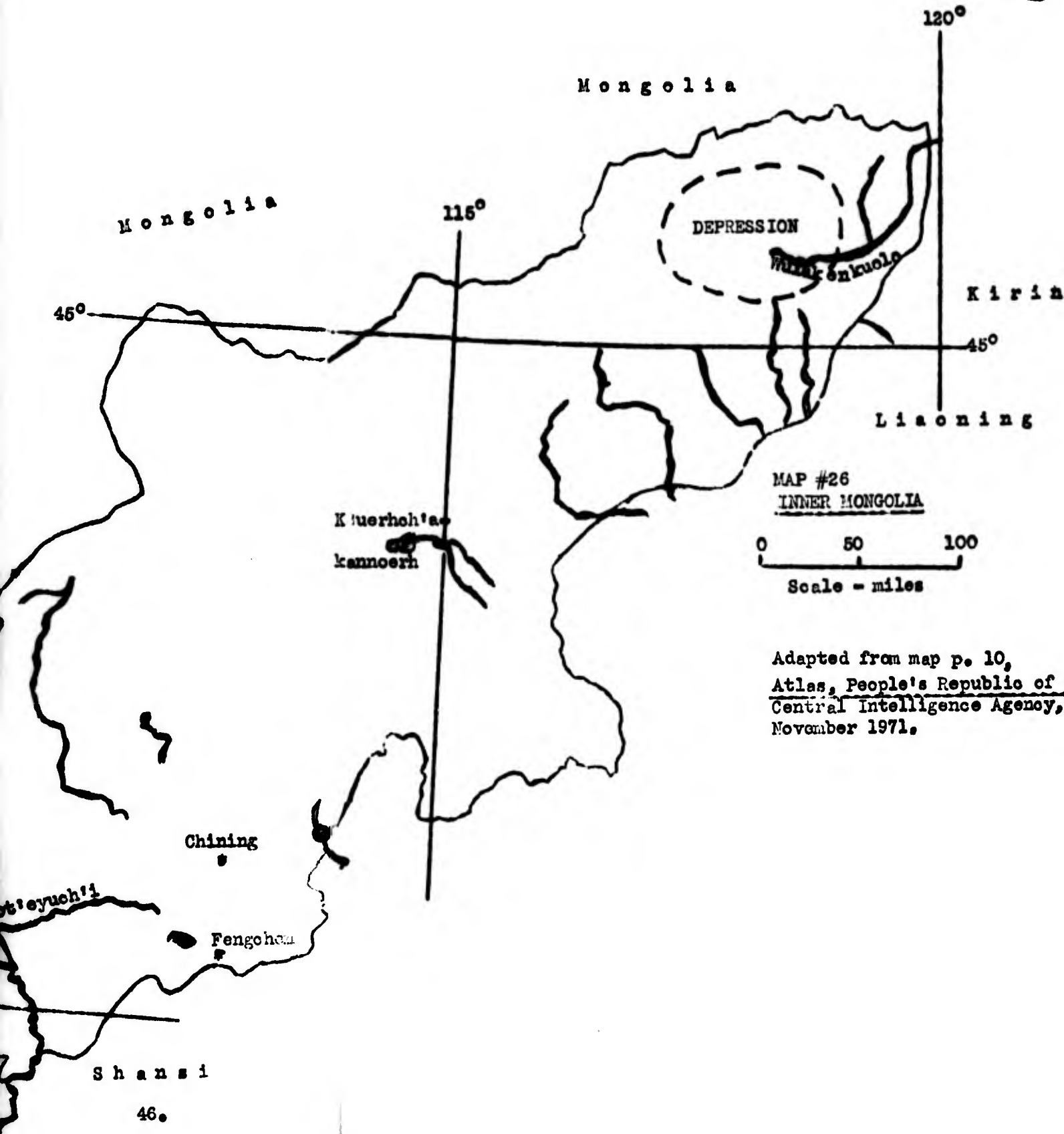
Adapted from map P. 10,
Atlas, People's Republic of China,
Central Intelligence Agency,
November 1971.

See the following pages
for greater detail.

A



B

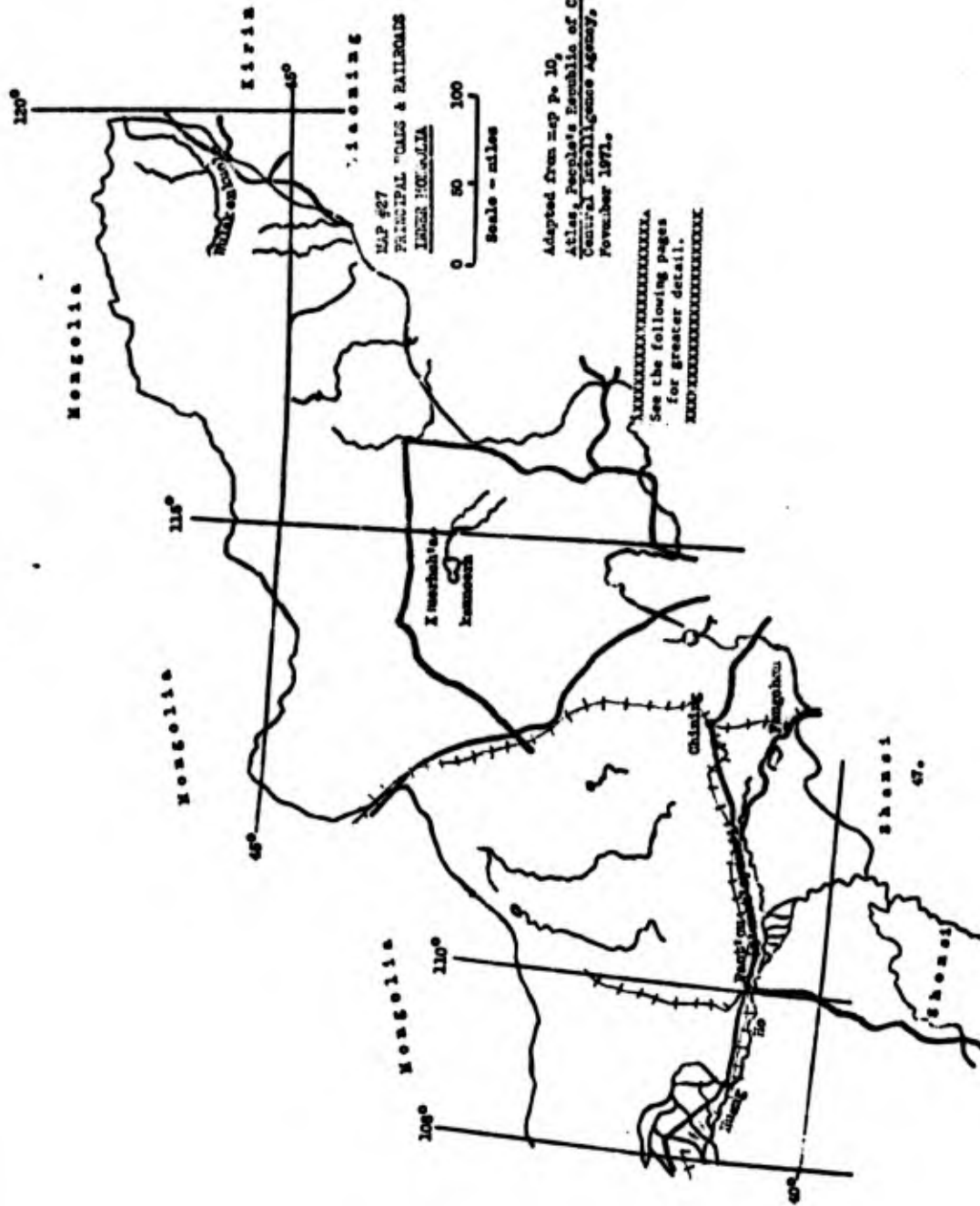


MAP #26
INNER MONGOLIA

0 50 100
Scale - miles

Adapted from map p. 10,
Atlas, People's Republic of China
Central Intelligence Agency,
November 1971.

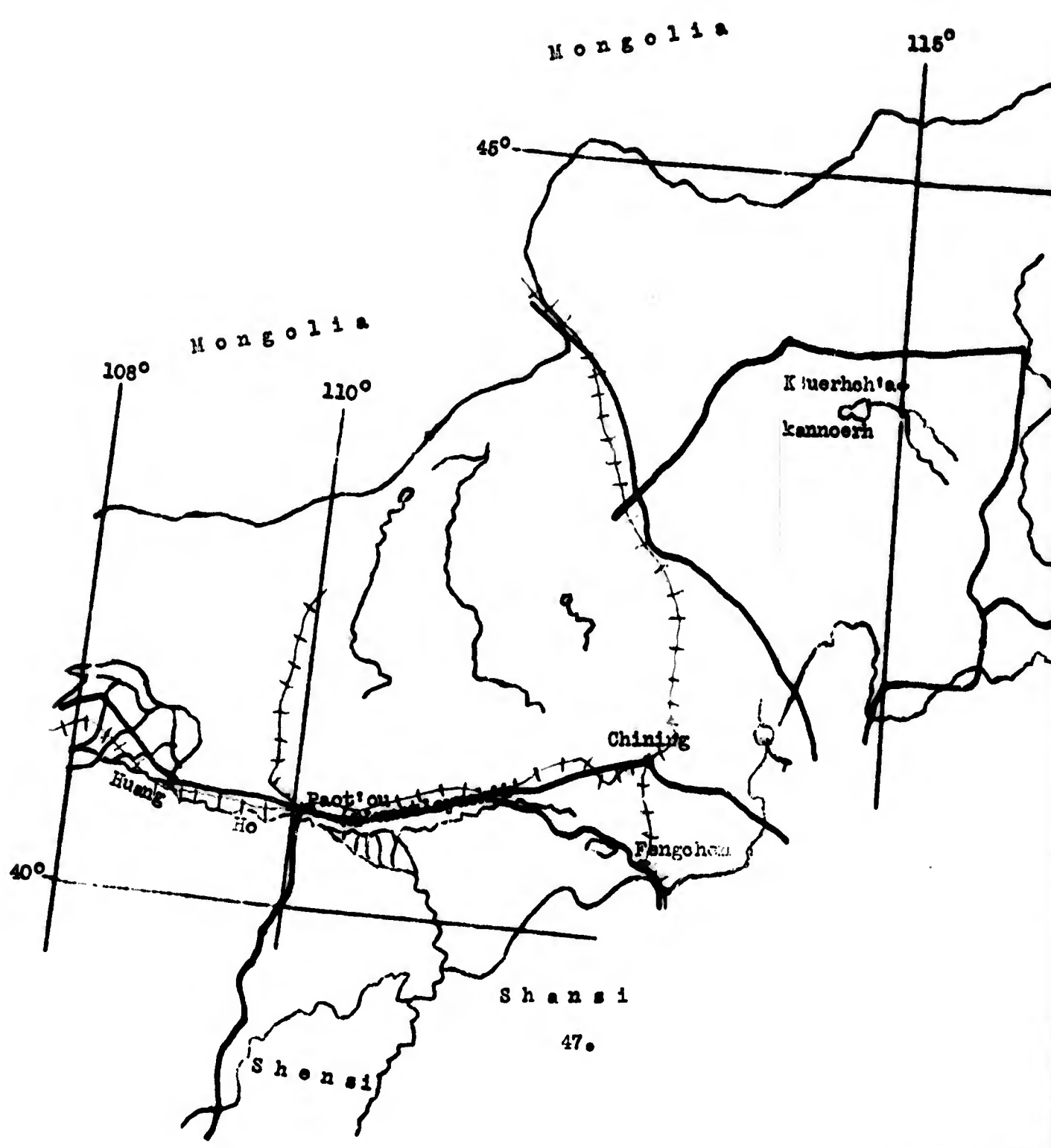
Shansi



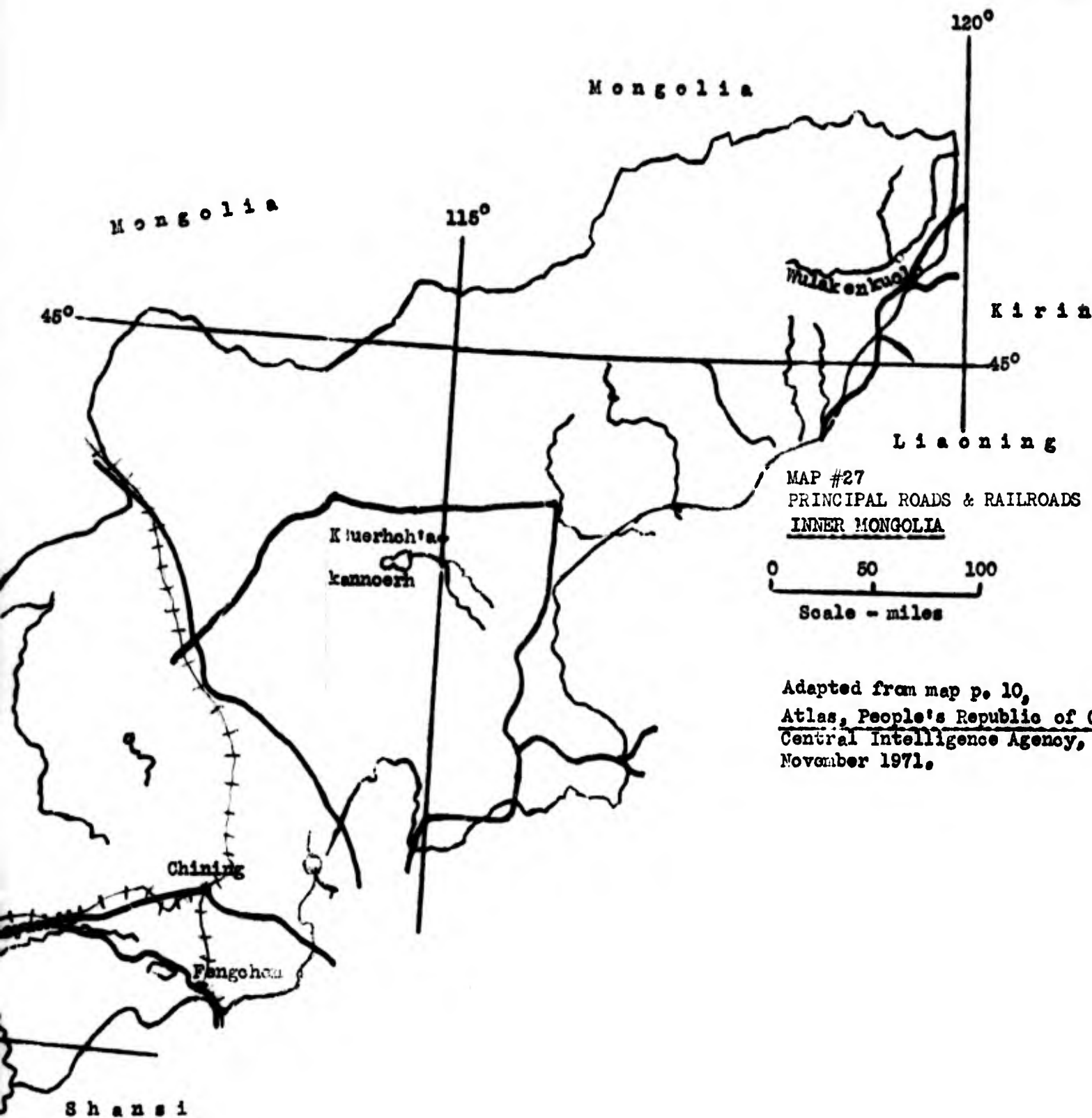
Adapted from Map P. 10,
Atlas, People's Republic of China,
Central Intelligence Agency,
November 1971.

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See the following pages
for greater detail.
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A



B



Adapted from map p. 10,
Atlas, People's Republic of China,
Central Intelligence Agency,
November 1971.

I. The Peking Region

This area is bounded on its western periphery by Inner Mongolia, on the north by the Southwest Manchurian Mountains, the Po Hai to the east, and $38^{\circ} 30'$ north latitude in the south. It contains the Peking and Tientsin Municipalities, both of which are industrial and population centers of some magnitude.

The Great Wall of China passes through this region, commencing on the coast near the border with Liaoning Province, to the north. It meanders west to an area near the juncture of the Inner Mongolia, Hopeh and Shansi borders, then turns southwesterly, following the Shansi- Inner Mongolian border into Shensi Province.

The northern portions of Shensi, Shansi, and Hopeh Provinces form the bulk of this region. Those parts of the former two provinces within the region are mountainous. The Heng Shan and Wu-t'ai Shan sprawl northeasterly from Shansi into Hopeh. The foothills of the latter range intrude to within a few miles of Peking, while those of the former enter the Peking Municipality north of that city. Further north lie the Yen Shan, drained by the Luan Ho, which empties into the Po Hai.

Peking lies at the doorway to the North China Plain, which spreads out east and south of the city through Hopeh and on into Anhwei and Kansu Provinces, over 500 miles farther south.

Numerous rivers and streams flow out of the mountains, across the plain, and empty into the Po Hai Wan. A notable exception to this is the Huang Ho (Yellow River), which crosses from Inner Mongolia and forms

the boundary between Shensi and Shansi Provinces. A large valley commences in the vicinity of Kalgan, and runs southeast to Peking.

The Chinese have recently completed an artificial harbor for Tientsin, one of China's principal industrial and commercial cities, at Hsinkang. Another good harbor is located at Ch'inhuangtao, 200 kilometers northeast of Tientsin.

Extensive tidal swamps exist along the coast south Pai-ko-chuang, and south of Taku. Large swamps are also found west and south of Tientsin.¹³

¹³ Jen Yu-ti, Concise Geography, pp. 65; 75-77; Wang Chun-heng, A Simple Geography, p. 94.

III. AVENUES OF INVASION

Map 31 depicts routes of invasion, as envisioned by the Japanese, in their strategic study of Manchuria. Japanese assumptions remain valid. These avenues are: (1) The route from Mongolia to Peking and Tientsin. (2) The route from Mongolia into Liaoning on to the Liaotung Wan. Either route cuts Manchuria off from the rest of China.¹⁴ (3) A seaborne invasion near Ch'in-huang-tao would compliment route number 2.¹⁵ (4) Several routes start near Zabaykal'isk in the USSR. One proceeds via Hailar to Ch'i-ch'i-haerh. Another variation swings south into northern Mongolia then east to the same city. A second alternate splits south of Ch'i-ch'i-haerh, and attacks toward Kirin and Ssup'ing. (5) Also originating near Zabay-kal'isk, and proceeding into Mongolia, another two-pronged attack moves south into Inner Mongolia, thence southeast to Shenyang and south to Dairen.¹⁶ (6) Seaborne invasions along the Korea Bay could assist this thrust in its latter stages.¹⁷ (7) A route from Aihun, via the Nen Chiang valley to Ch'i-ch'i-haerh. This route would be particularly important, if coupled with the thrust from the west from Hailar, for it would isolate

¹⁴Japanese Studies, Vol III, Part 4 (9 March 1956), p. 51.

¹⁵Ibid, Part 2 (17 November 1955), p. 23.

¹⁶Ibid, Part 4, p. 51.

¹⁷Ibid, Part 2, p. 27.

the entire northwest corner of Heilungchiang Province. (8) Another attack, isolating the bulk of Heilungchiang, would be an advance down the Sungari to Haerhpia then on to link with forces moving toward Kirin from the west, or a western thrust from Ch'i-ch'i-haerh.¹⁸ (9) A number of attacks across the Amur and Ussuri Rivers in the east would isolate eastern Manchuria north of the Wan-ta Shan, while (10) an auxiliary attack from Vladivostok north to Mutanchiang outflanks the hill mass southwest of the Lake Khanka region. (11) This attack comes from the northeast corner of North Korea, with Kirin as its objective, and to meet the eastern attack on that city.¹⁹

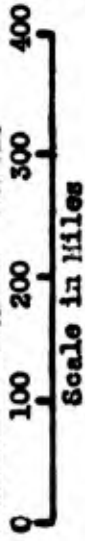
¹⁸Ibid, p. 75.

¹⁹Ibid, Part 3, pp. 25 and 127.

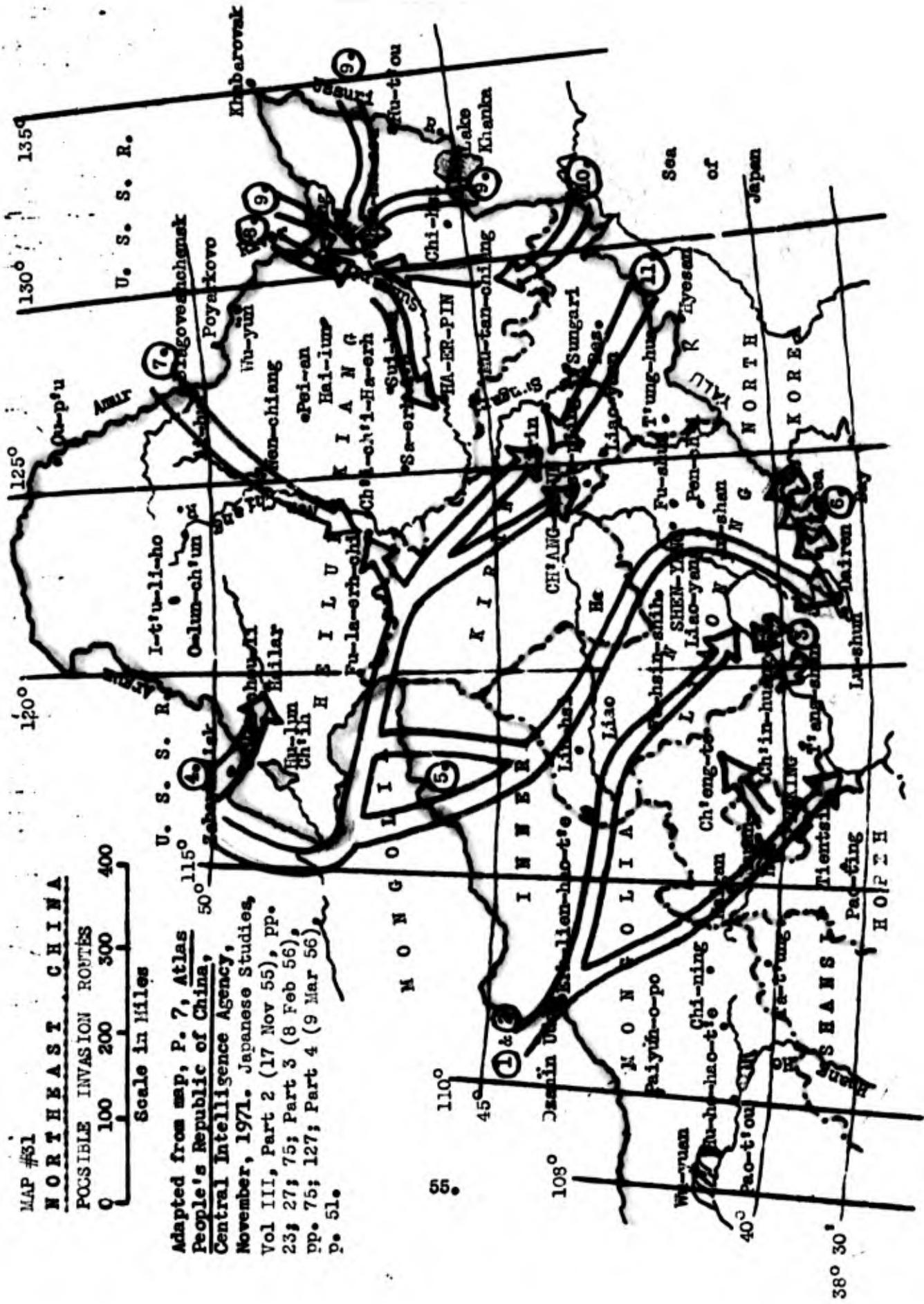
MAP #31

NORTHEAST CHINA

POSSIBLE INVASION ROUTES



Adapted from map, P. 7, Atlas
 People's Republic of China,
 Central Intelligence Agency,
 November, 1971. Japanese Studies,
 Vol III, Part 2 (17 Nov 55), pp.
 23; 27; 75; Part 3 (8 Feb 56),
 pp. 75; 127; Part 4 (9 Mar 56),
 p. 51.



IV. THE DEFENSE OF NORTHEAST CHINA

The major industrial areas of Northeast China are located in (1) the Peking - T'angshan - Tientsin triangle; (2) the area southwest of the Shenyang - Fushun - Pench'i triangle and to the Liaotung Wan; (3) Ch'ang-ch'un - Kirin area; (4) Ch'i-ch'i-haerh - Haerhpin zone; (5) vicinity of Mutanchiang, and; (6) the southern tip of the Liaotung Peninsula in and around Dairen. The central zone from a line from Ch'i-ch'i-haerh to Haerhpin south to the Liaotung Wan, and the Peking - T'angshan - Tientsin triangle are vital industrial, power and fuel areas, which must be retained by the Chinese for the survival of the country as a viable nation.

The vast size of Northeast China, the sprawling character of its industrial centers, fuel and power resources, coupled with the lack of a geography which affords any continuous defensive line(s) on the border with the USSR presents the Chinese with a very difficult defensive task.

The most feasible invasion routes were outlined in Part III. During their invasion of Manchuria in 1945, the Russians used the routes originating near Zabaykal'sk.²⁰

The Japanese, in their study, aver that the best defense of eastern and southern Manchuria rests with occupation and control of as much of North Korea as possible.²¹

²⁰Japanese Studies, Vol III, Part 4 (9 Mar 56), pp. 51; 54.

²¹Ibid, Part 2 (17 Nov 55), p. 5.

If the defender is driven from North Korea, or denied entrance altogether, he can defend the Yalu line from Mt. Paitou to the Korea Bay. Successive defensive lines, also anchored on Mt. Paitou, run successively through (1) Tunghua, Mt. Pingting, to just east of Hai-ch'eng; (2) eastward to T'iehling and Fak'u; (3) Hailunghsien - Ssu-p'ing - T'ungliao. Once the latter two lines are reached, however, the invader can turn west. The defender will have to depend on the series of north-south rivers west of the Liao Ho for defensive positions. The principal line here is along the Taling Ho, facing northeast and northwest. A strongly defended bastion on Mt. Paitou would frustrate the potential avenue through the Changpai Shan to Ch'ang-ch'un. The mountains of Liaoning Province are defensible from the west, but not the north.²²

Most likely points for amphibious invasion are at Ch'in-huang-tao and at the neck of the Liaotung Peninsula. Airborne or helicopter attacks can be expected to accompany such invasions. If an invasion of the south is undertaken, Dairen is strategically important as a port and forward logistical base.²³

The Shanhaikuan-Ch'in-huang-tao zone provides a good beach area. Transports can come within two miles of the shore, and the sand footing of the beach is solid, with a slope of 25 degrees. Landing craft can be employed safely at both low and high tides. Low hills, which

²²Ibid, Part 2 (17 Nov 55), pp. 35; 37; 39.

²³Ibid, Part 1 (7 Oct 55), p. 46.

can be seized by helicopter or airborne assault, border potential landing beaches. The wide frontage of the beach east of Shanhaikuan affords virtually unlimited debarkation capabilities.²⁴ Major rail and highway links between the Northeast and the remainder of China pass through Shanhaikuan. The principal defense against an amphibious assault in this locale would best be vested in air and sea attacks on the invading fleet, and interdiction of his sea lines of communication.

Any invasion launched from the Korea Bay would be less favored by terrain and sea, for the mountains reach virtually to the water, and the few good beaches can be dominated by artillery and rocket fire, plus air and sea attack. Any landings in southern Manchuria would probably take place between May and October. Violent north winds and freezing weather in winter preclude amphibious operations.²⁵

Northeast Manchuria, consisting of swampland and the Wanta Range, is not strategically important, and operations would be canalized by the few existing road and rail lines. Delaying actions by relatively few troops, along with air attacks, and guerrilla operations should deny this region to an invader for a considerable time. Only the pursuit of the avenue into the heart of Manchuria from Chiamussu to Haerhpin would make a major Soviet strike in this area potentially worth the

²⁴Ibid, pp. 50-51.

²⁵Ibid, Part 2 (17 Nov 55), pp. 23; 35.

effort and losses.²⁶

The Amur is no barrier during the winter, and although the Greater Khingan is broad and desolate, its central saddle is no barrier. Since a defensive line, as such, would be weak, a mobile defense, coupled with guerrilla action and air interdiction seems best in this area. The enemy should be kept within the mountains and not be permitted to break into the Manchurian Plain.

Only the region of the Greater Khingans in Kirin Province constitute an obstacle. The Lesser Khingans dominate the roads running through them, and a defender can utilize this factor to defend and delay an invader from the north.²⁷

The mountains of Southwest Manchuria and the northern Peking region are rugged and difficult to traverse. A defensive arc runs northeast from Shanhaikuan into these mountains.²⁸ This area is vital to the security of Northeast China. Whoever secures these ranges controls the Northeast. The Chinese can use this area as a base for counterattacks against Soviet thrusts from Mongolia into Manchuria or Peking. Ch'eng-te is the key communications center of the region.²⁹

²⁶Ibid, Part 3 (8 Feb 56), pp. 117-119; 125-126.

²⁷Ibid, Part 4 (9 Mar 56), pp. 17; 35; 54.

²⁸Ibid, Part 2 (17 Nov 55), p. 40; Part 4, p. 54.

²⁹Ibid, Part 4, pp. 78; 80; 97.

The Manchuria Plain is particularly suited for armored warfare. Except for the Sungari, few obstacles exist to impede movement or to facilitate defense. Only isolated swamplands canalize operations. Further, helicopter and/or airborne attacks are possible virtually anywhere.³⁰

The defense of Northeast China requires that the invader be held within the mountainous zones of the north, east, and west, the swamps of the northeast; defeating amphibious landings in the south, and keeping him out of the Southwest Manchurian Mountains. Basically infantry formations can be employed in the mountains of the east and southwest, mechanized infantry and armor in the Khingans and the Wanta Range, and infantry in the swamps of the northeast. Several multiple-division tank-mechanized infantry forces should be employed in the Manchurian Plain to defend vital cities, industries, and power facilities, and to counterattack, if necessary. Likewise, armored forces should be deployed in the Peking -Tientsin region, both to defend, to attack toward Mongolia, or to cooperate with forces operating in the Southwest Manchurian Mountains in attacking the enemy, including against any amphibious thrust from the Po Hai. At least air parity must be maintained. Local superiority must be attained at critical times and points during the conduct of the defense.

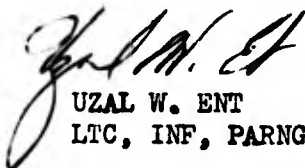
Thirty-three divisions are little enough with which to defend Northeast China, even if joined with "trip-wire" border formations.

³⁰ Ibid, Part 2 (17 Nov 55), pp. 69; 71.

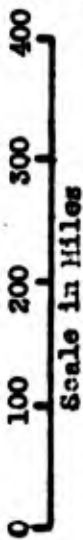
The primary advantages which the Chinese enjoy in their otherwise vulnerable Northeast is that of operating on interior, and shorter lines, and the traditional Chinese patience and determination to wear down and defeat her enemies.

Uzal W. Ent
UZAL W. ENT
LTC, INF, PARNG

The primary advantages which the Chinese enjoy in their otherwise vulnerable Northeast is that of operating on interior, and shorter lines, and the traditional Chinese patience and determination to wear down and defeat her enemies.

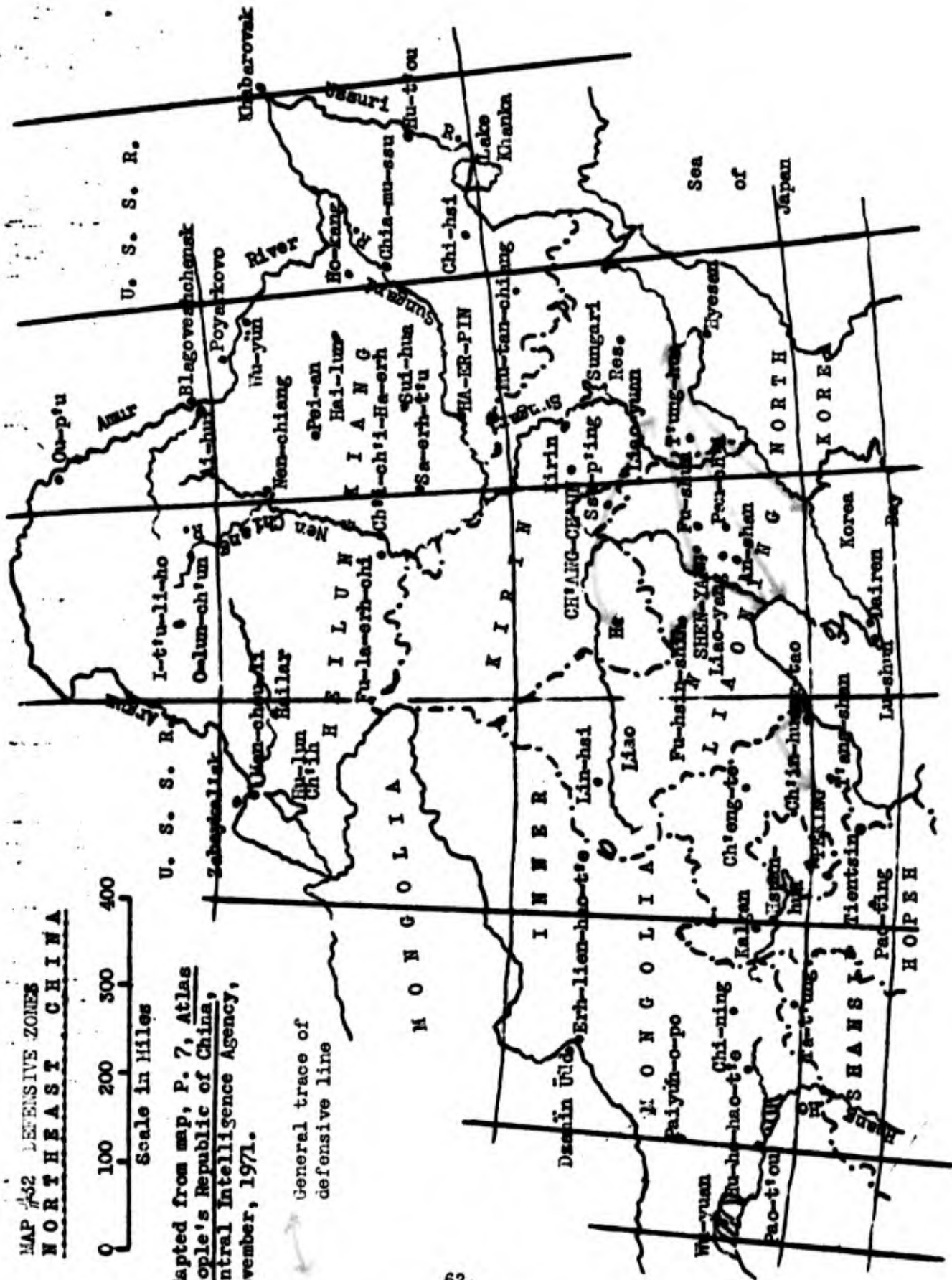

UZAL W. ENT
LTC, INF, PARNG

MAP #42 DEFENSIVE ZONES
NORTHEAST CHINA



Adapted from map, P. 7, Atlas
People's Republic of China,
Central Intelligence Agency,
November, 1971.

General trace of
defensive line



APPENDIX I SET OF PROVINCE MAPS

MAP #33 - Peking

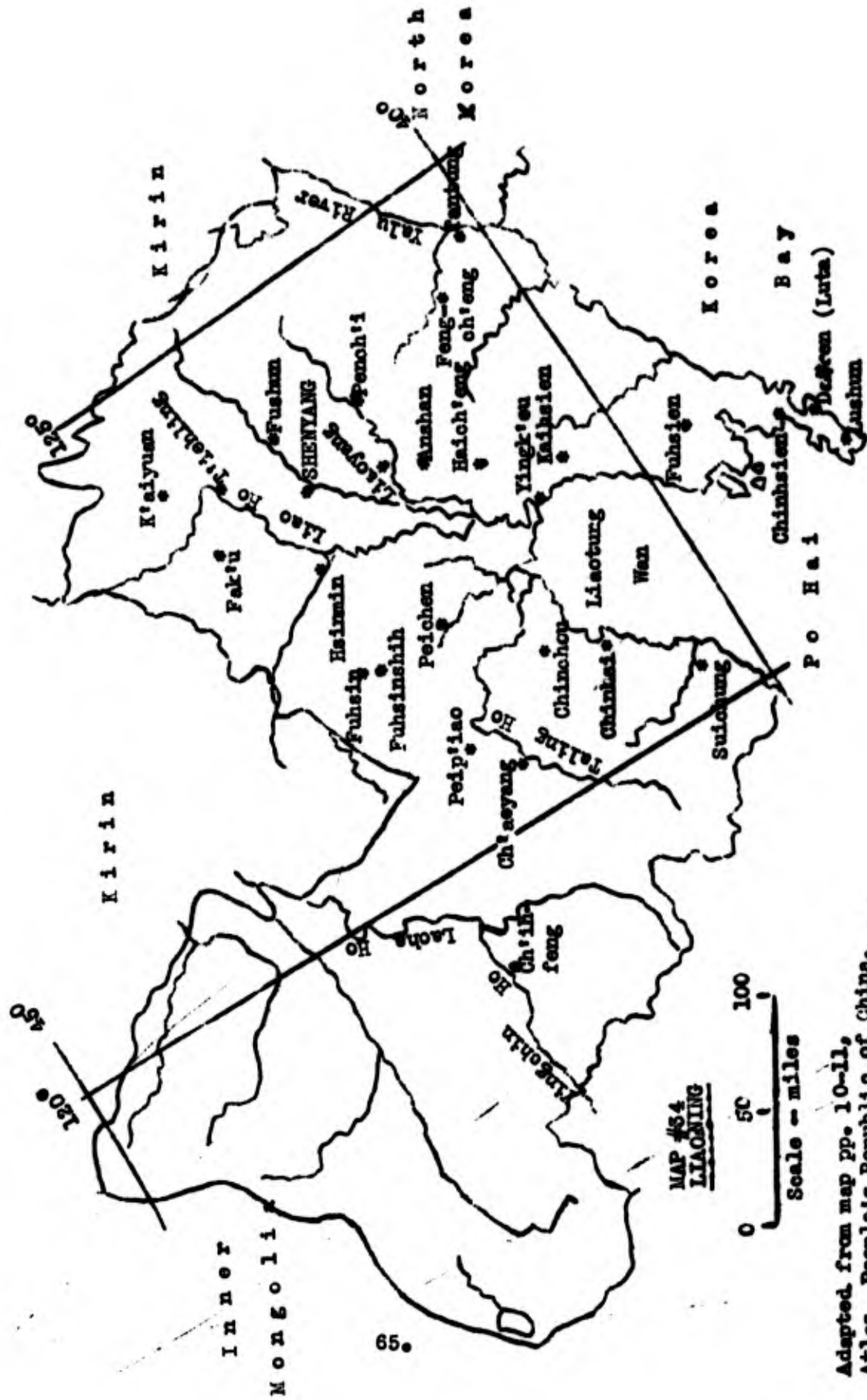
MAP #34 - Liaoning

MAP #35 - Kirin

MAP #36 - Heilungkiang

MAP #37 - Inner Mongolia

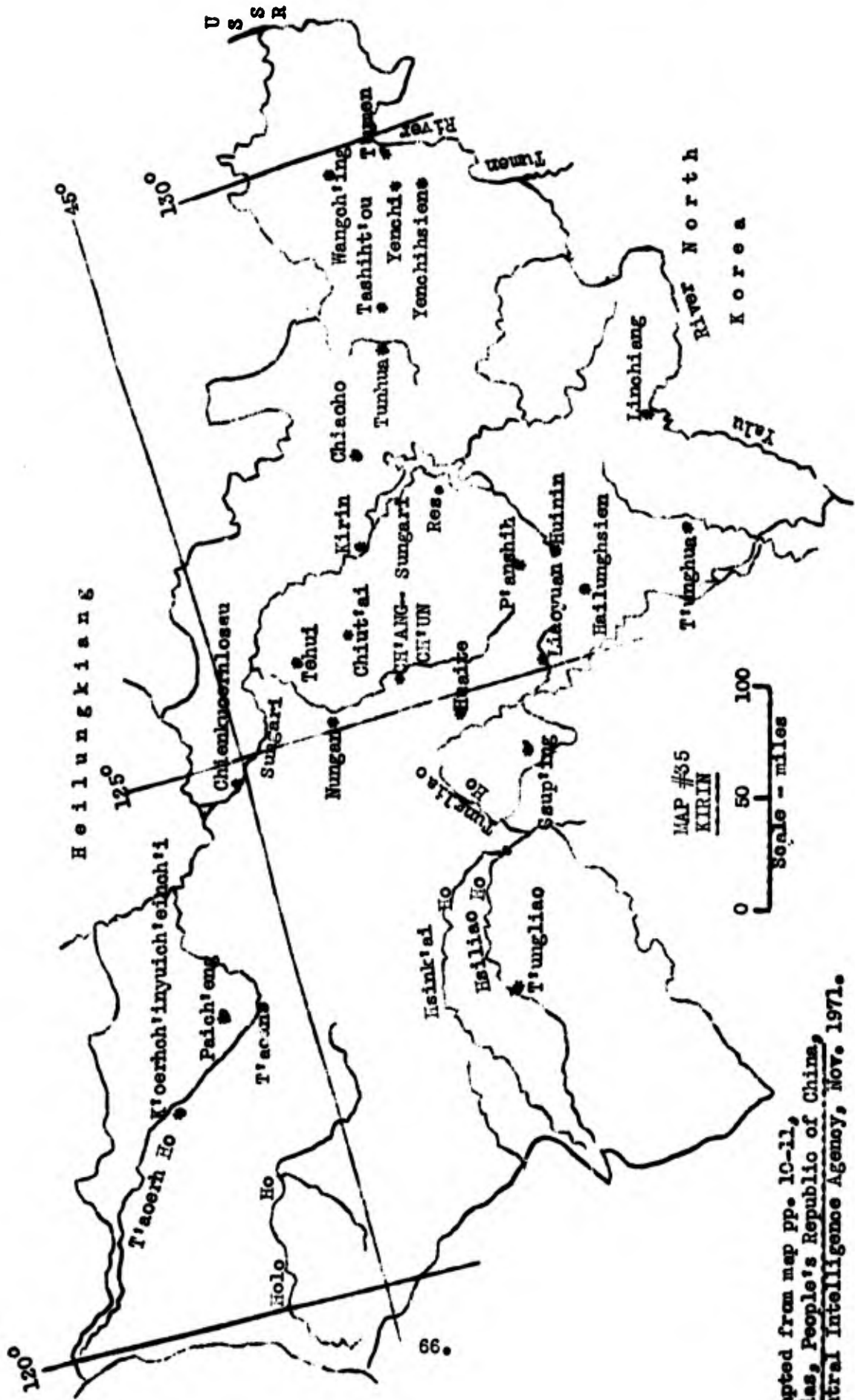
Appendix I



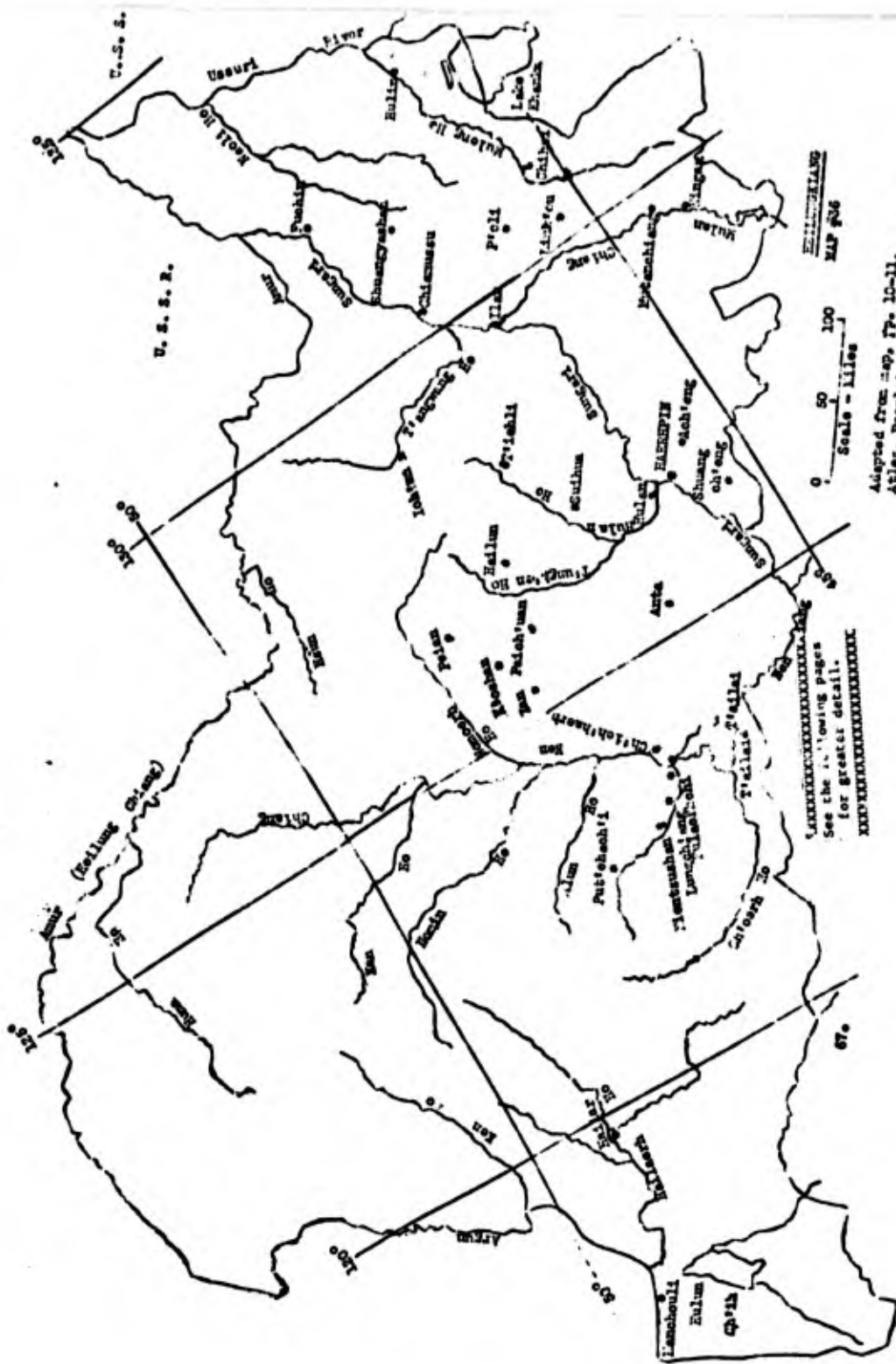
MAP #34
LIAONING

Scale - miles
0 50 100

Adapted from map pp. 10-11,
Atlas, People's Republic of China,
Central Intelligence Agency, Nov. 1971.



Adapted from map pp. 10-11,
 Atlas, People's Republic of China,
 Central Intelligence Agency, Nov. 1971.

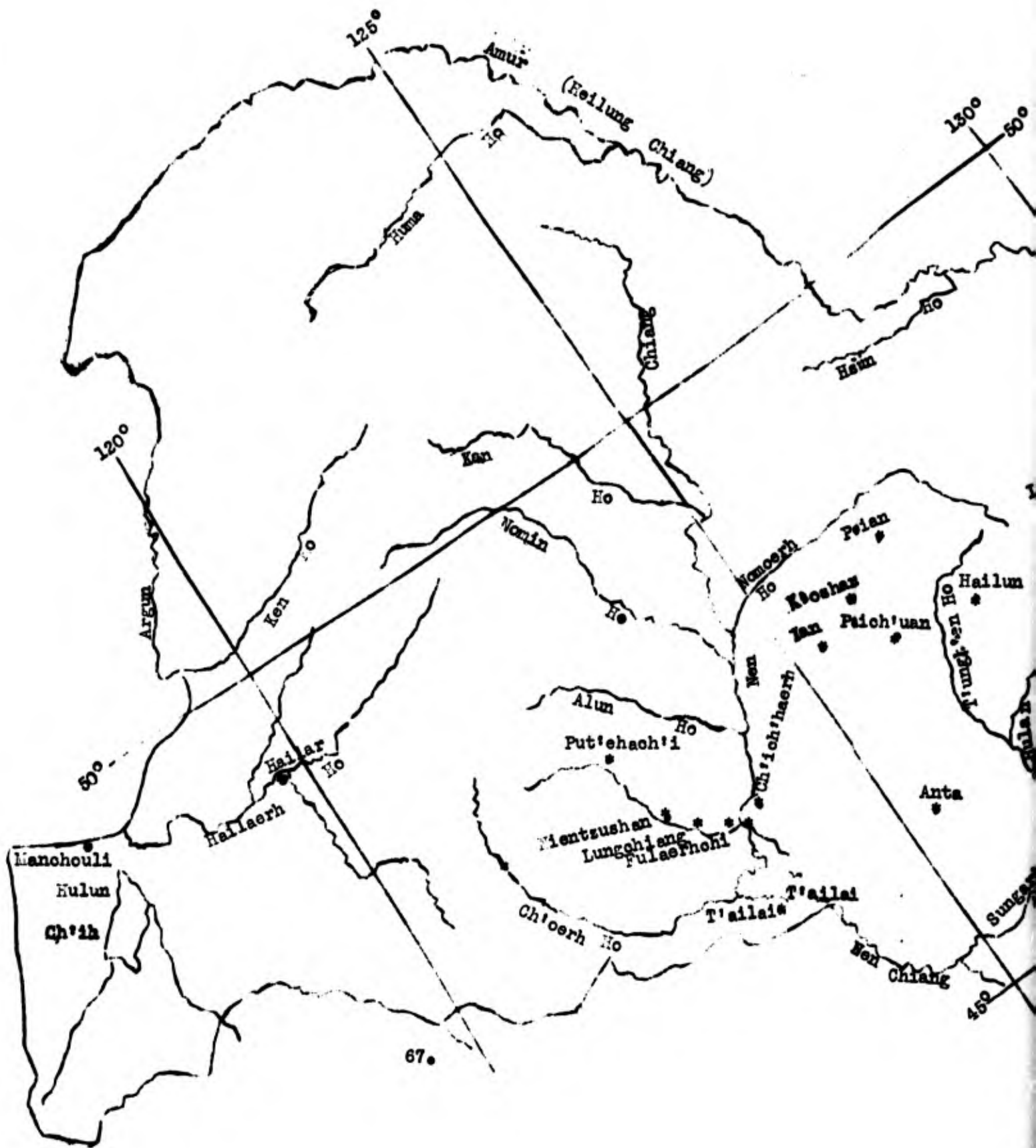


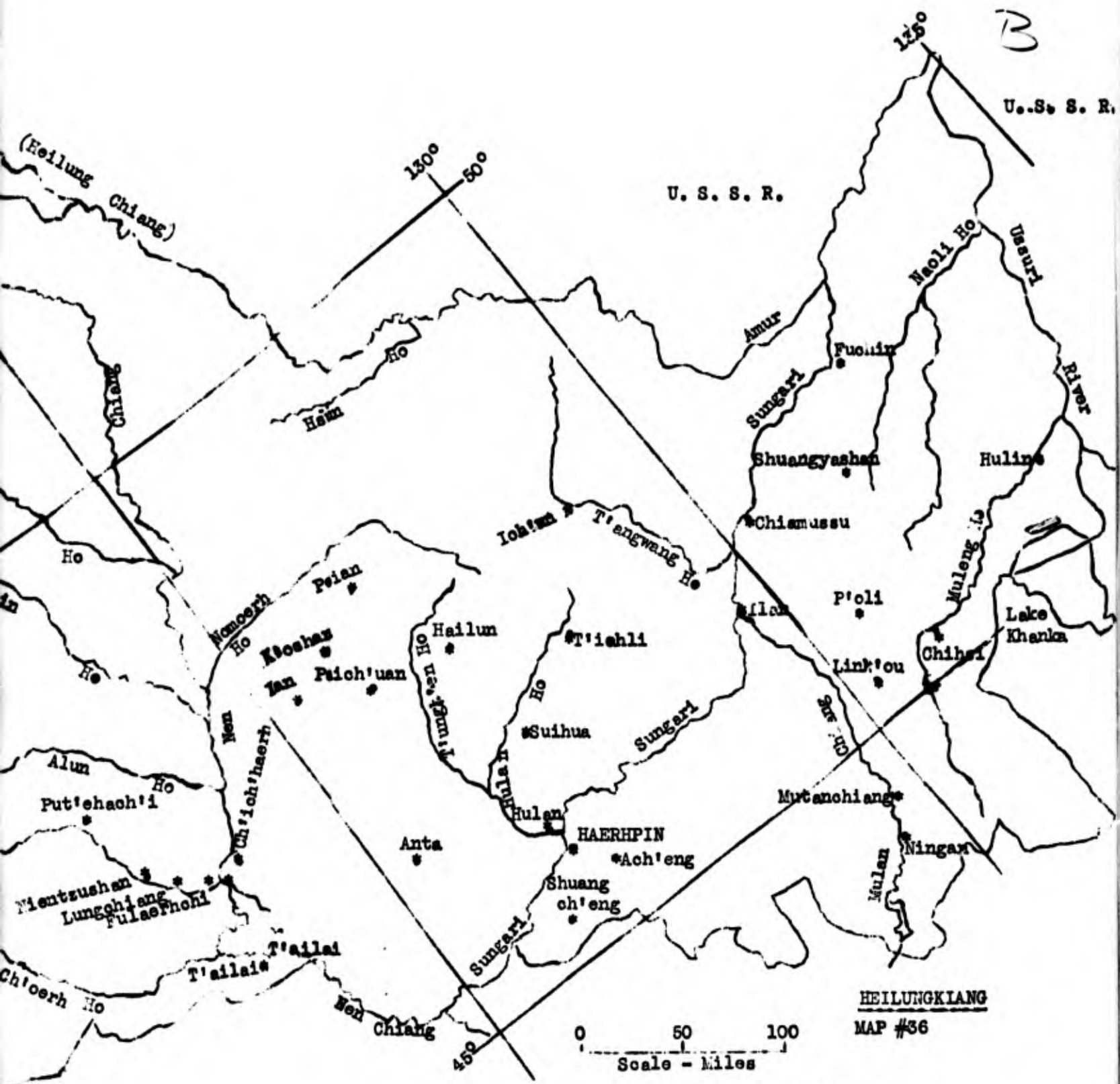
Scale - Miles
 0 50 100
 MAP #06

Adapted from: Map, TP, 10-11,
 Atlas, People's Republic of China,
 Central Intelligence Agency, Nov. 1971.

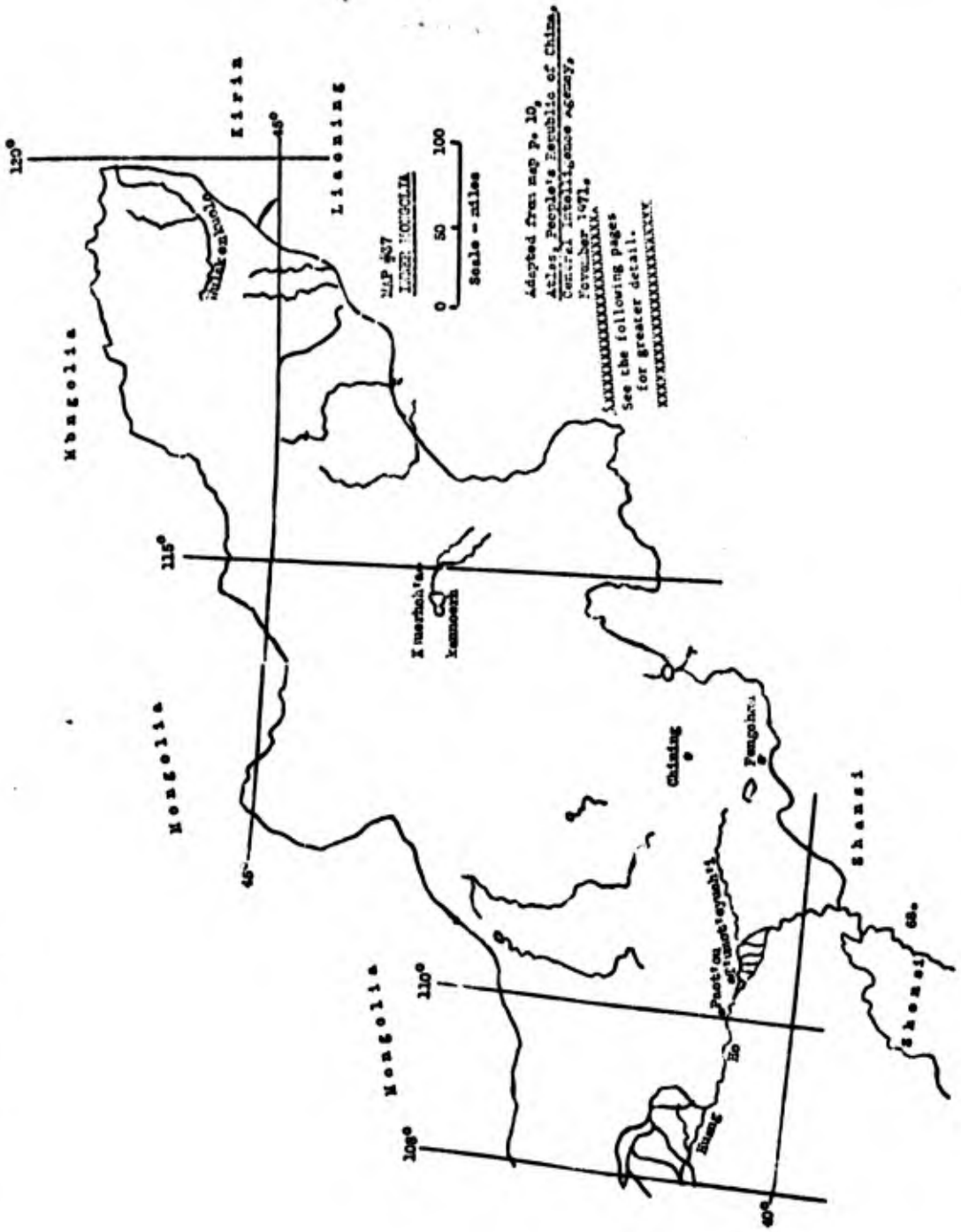
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Adapted from map, pp. 10-11,
Atlas, People's Republic of China,
 Central Intelligence Agency, Nov. 1971.

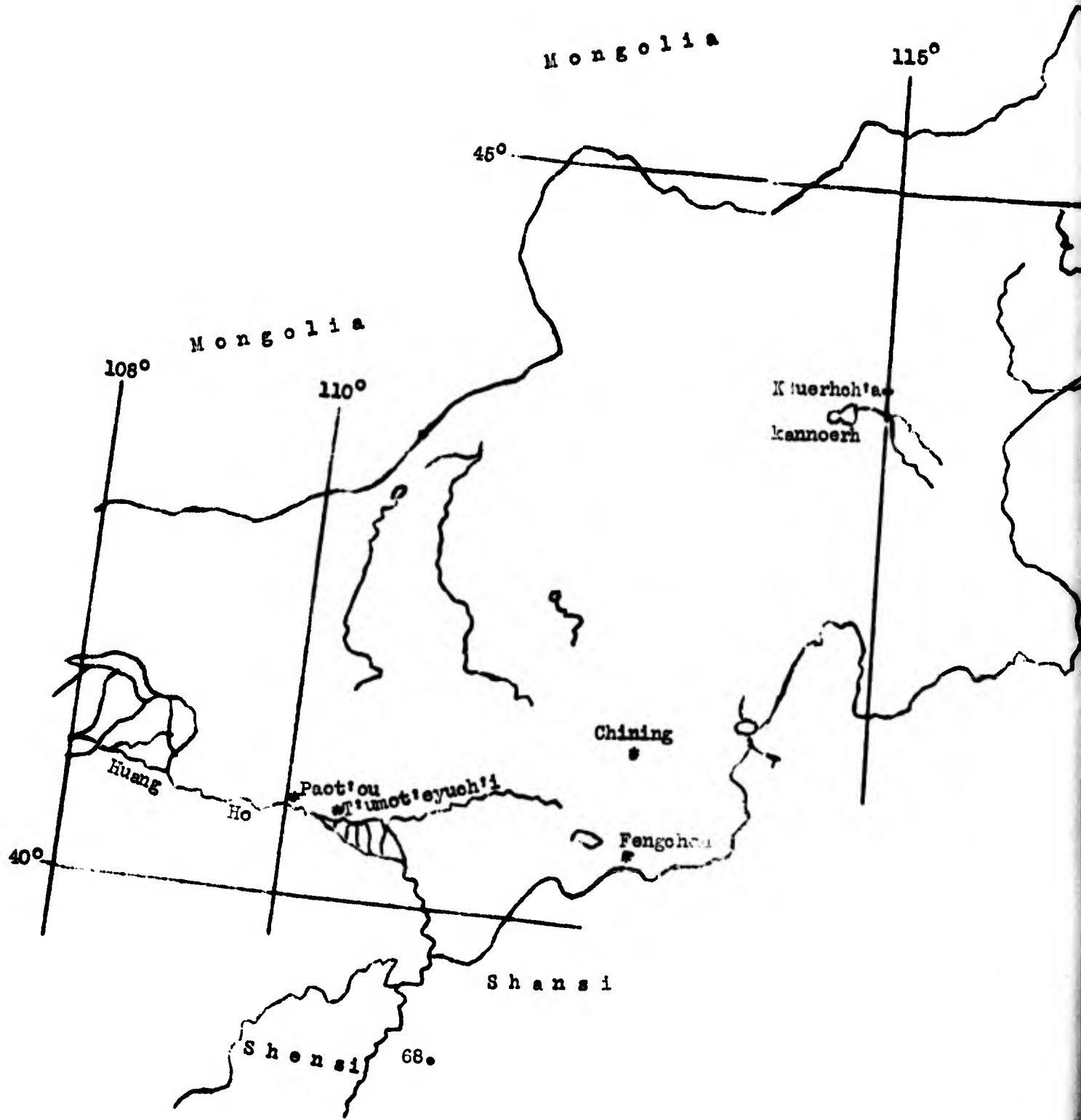


MAP #37
 UPPER MONGOLIA
 Scale - miles
 0 50 100

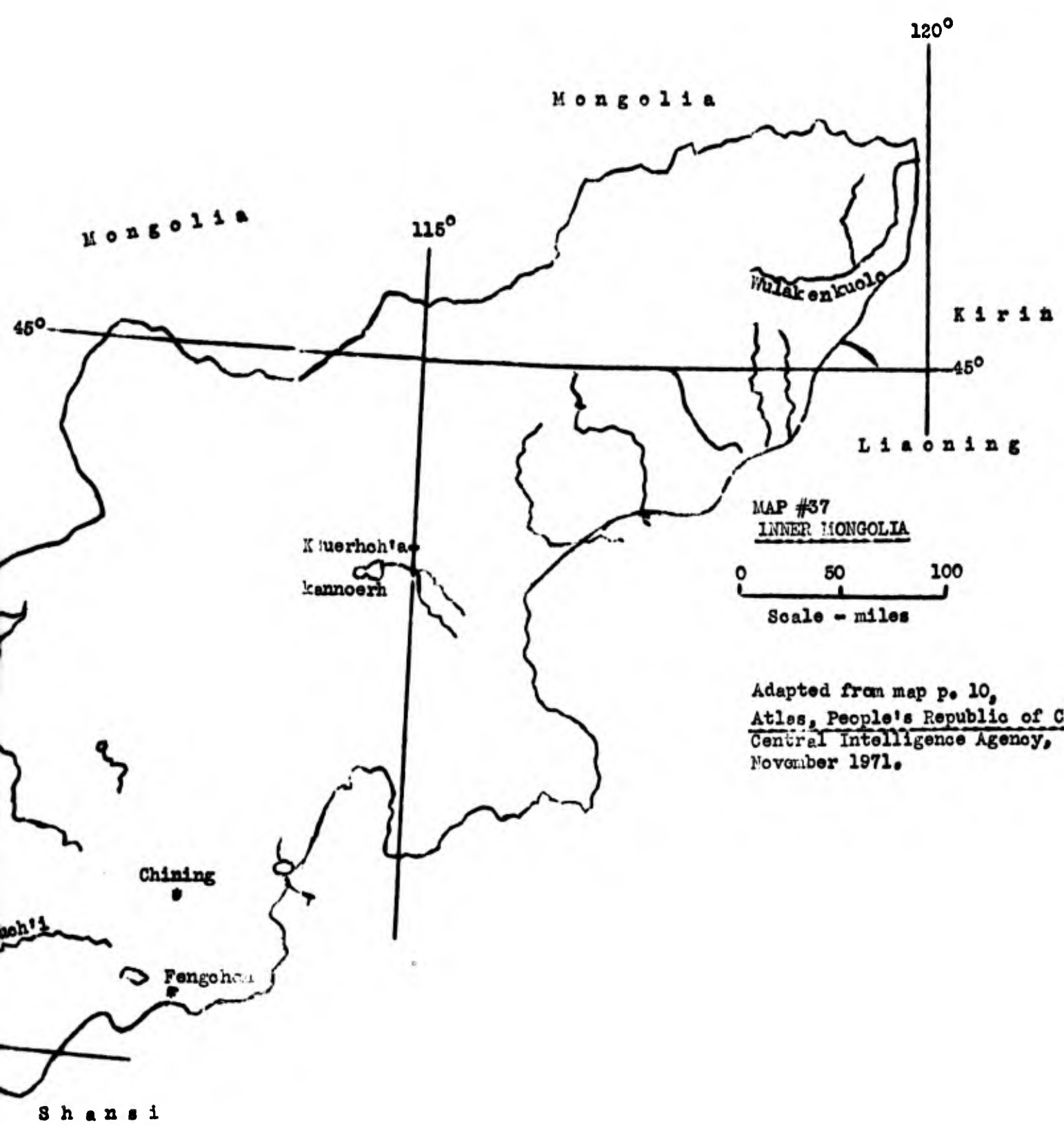
Adapted from map P. 10,
 Atlas, People's Republic of China,
 Central Intelligence Agency,
 February 1971.
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 for greater detail.
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M o



5)



MAP #37
INNER MONGOLIA

0 50 100
Scale - miles

Adapted from map p. 10,
Atlas, People's Republic of China,
Central Intelligence Agency,
November 1971.

APPENDIX II LENGTHS OF RAILROADS, HIGHWAYS AND WATERWAYS

<u>PROVINCE</u>	<u>RR LENGTH</u> <u>(Km) 1963</u>	<u>HWY LENGTH</u> <u>(Km) 1960</u>	<u>WATERWAY LENGTH</u> <u>(Km) 1950</u>
LIAONING	3,096	39,314	4,990
KIRIN	2,749		
HEILUNGKIANG	4,132		
INNER MONGOLIA (All)	2,764		

NOTE: According to a dispatch from Tokyo, dated October 2, 1972, China now has four times the railway mileage, eight times the highway mileage and twice the inland waterway mileage which she had when the Communists came to power. If this is so, she now has 88,000 km of railways, 464,600 km in highways, and 111,204 km of inland waterways.

Chart adapted from Yuan-li Wu, The Spatial Economy of Communist China (1967), pp. 116; 128; 137; 159; 251. The note is from Patriot News, "Progress in China," 2 October 1972.

APPENDIX III GLOSSARY OF SELECTED PLACE NAMES AND GENERIC PARTS OF NAMES

This glossary covers only certain place names and generic parts of names mentioned in the text or shown on maps. Pronunciation makes no attempt to follow the Wade-Giles, Yale, or any other system. Rather, it is designed to approximate the Mandarin pronunciation without relying on diacritical marks.

<u>NAME</u>	<u>MEANING</u>	<u>PRONUNCIATION</u>
an	peace	ahn
ch'eng	wall	chung
ch'i	Second Order Administrative Division (Banner)	chee
chia	cape	jee-ah
chiang	bay, harbor, inlet, lagoon, stream, channel	jee-ahng
chien	mountain, island	jee-en
ch'ih	lake, pool	chur
chou	head of district; county; island, islet	joe
ch'uan	stream	chewahn
chung	central	joong
feng	Second Order Administrative Division (Administrative town); wind; seal up, blockade	feng
hai	lake(s), bay, gulf, sea	hi
Heilung	Black Dragon	Hay-loong
Heilungkiang	Black Dragon River	Hay-loong-jeeahng
ho	stream	huh
Hopei	North of the River	Ho-bay
hsi	west	she
hsien	Second Order Administrative District or County	shee-en

<u>NAME</u>	<u>MEANING</u>	<u>PRONUNCIATION</u>
hu	lake, section of lake, lagoon	who
huang	yellow	whahng
Huang Ho	Yellow River	Whahng huh
k'ai	open	ki
kiang (chiang)	river	jee-ahng
king	capitol	jing
Kirin	Magic Forest	jeelin
k'ou	mouth	ko
kuan	pass	gwahn
liao	distant	lee-ow
Liaoning	Distant Peace	lee-owning
Liaotung Wan	Bay East of the Liao River	lee-owdoong wahn
ling	mountains, range, hill, pass	ling
lung	dragon	loong
Peking	Northern Capitol	bay-jing
p'ing	peaceful; level	ping
po	lake	bwaw
shan	mountain(s); mountain range, hill(s), peak	shahn
Shensi	West of the Mountains	shahn-shee
Shensi	West of the Pass	shun-shee
shih	administrative division; municipality; rock(s)	shur
ssu	monastery	suh
t'ai	very; excessive	tie

<u>NAME</u>	<u>MEANING</u>	<u>PRONUNCIATION</u>
tan	lake	dahn
t'ang	lake	tahng
tao	island(s), islet(s); peninsula, point	dow
t'ao	bay	t-ow
t'ien	heaven	tee-en
T'ientsin	Heavenly Ford	Tee-en-jing
tien	lake	dee-en
ting	mountain, hill	ding
t'ou	headland, point, cape	tow
tung	east; mountain	doong
wan	bay, gulf, inlet, cove	wahn
yang	channel	yahng
yuan	stream	ywahn

Glossary compiled from the following sources:
 Central Intelligence Agency, People's Republic of China Atlas (November 1971), pp. 33 and 80; T. R. Tregear, A Geography of China (1965), pp. 333-334; George B. Cressey, Land of the 500 Million (1955), pp. 32-35; US Department of the Interior, Office of Geography, Board of Geographic Names, China, Volume 1: A-L, Gazetteer No. 22 (1956), pp. i-iv.

15. US Corps of Engineers, Army Map Service. Manchurian Road Map
AMS L201, 1:2,000,000, 1952.
- _____ . Pacific 110 edition 9-AMS, Sheet 5, 1964.
- _____ . Eurasia Planning Maps Edition 1, 1:5,000,000. Sheets
13, 14; 17, 18. 1955.
- _____ . Army Air Forces Aeronautical Charts 1:1,000,000.
Sheets 282-285; 288-290; 380-382.
16. US Department of the Interior, Office of Geography, Board of
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Washington, D.C. 1956.
17. US Joint Publications Research Service. Economic Geography of
the Hu-lun-pei-erh (Mongol) League. Washington D.C. 1961.
This publication is invaluable in any study of Mongolia and
the western part of Northeast China.
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- _____ . "Food and Agriculture in Mainland China." Current
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