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EPIDEMICS IN THE FAR EASTERN USSR

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D O C U M E N T S B R A N C H

T R A N S L A T I O N

Number 80 20 Jun 1947

EPIDEMICS IN THE FAR EASTERN USSR

Number 364

ARMY MEDICAL COLLEGE IMMUNOLOGICAL RESEARCH REPORTS

Prepared by

Documents Branch
CENTRAL INTELLIGENCE GROUP
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SUMMARY OF CONTENTS

Epidemics of the Far Eastern USSR
(Doc No 270440-364)

This is a complete translation of the 28-page Immunological Research Report Number 364, issued by the Army Medical College, Tokyo, 1942, under the supervision of Major General ISHII, in charge of the college immunological classes, and Major TAKAHASHI Tsutou, Army Medical Corps.

The report consists of three chapters: the first briefly attributes Far Eastern USSR epidemics to low standards of living and economic development and notes those diseases requiring particular military precautions; the second describes the weather in the eastern, central, and western sectors of the Far Eastern USSR; and the third, divided into administrative areas of the Soviet Far East, describes particular places in detail (ie, climate, population, number of dwellings, water supply, suitability for garrisons, etc), the prevalent diseases, brief historical data on the places and the epidemics and existing medical facilities. Forty-five tables and two charts, scattered throughout the text, supply statistics on climate and the number of cases of and deaths resulting from the various diseases.

Pages 1 through 33

COMPLETE TRANSLATION

Doc No 270440-364

EPIDEMICS IN THE FAR EASTERN USSR

Army Medical College
Tokyo
1942

TABLE OF CONTENTS

EdN: Names in capital letters followed by an asterisk indicate transliteration from the Japanese.

I. GENERAL REMARKS

The Soviet government has been endeavoring year after year to spread general culture and the amenities of civilization in her Far Eastern territories and at the same time to promote sanitation. The government consequently has been increasing public health facilities, first in the cities and then in the surrounding areas and is carrying out plans to improve and increase the distribution of doctors.

However, the peoples of the Far Eastern USSR have a low standard of living and still-primitive concepts of hygiene and adequate hygienic measures have not been taken to control the environment. These peoples still suffer many outbreaks of various diseases for the want of medical facilities. The general health program has not been so successful as the Government boastfully proclaimed in its recent propaganda.

The particular phenomenon which is now appearing in the present-day Soviet Union and in its economic geography is the eastward migration of economic units; that is, economic units are gradually extending from European USSR to the eastern slopes of the Ural Mountains and to Central Asia, western Siberia, and the Far East. It is anticipated that the economic development of Russia and Asia will amaze the world in the future, if these present trends persist.

However, the present economic strength of the Soviet Union must be viewed as centered in European Russia where it already has reached almost full development. The economic value of European Russia is such that, not only does the Soviet Union itself depend upon European Russia, but it is also the source of existence for the European continent.

Therefore, the economic strength of the Soviet Union has great significance in the Axis' war with England and America. These areas which had been hitherto considered an agricultural treasure house have seen brilliant industrial expansion as a result of three five-year plans under the new economic policy. This remarkable economic development of the Soviet Union in Siberia is, furthermore, thought to be the prime cause of pestilences in these areas.

During military operations in the Russian territories of the Far East, the greatest precautions must be exercised especially against the plague, exanthematous typhus (spotted fever), and winter frostbite, as well as other diseases. These afflictions can cause immediate, large-scale deterioration of fighting strength. The next group of diseases worthy of note are malaria, venereal diseases, undulant fever, and diseases due to vitamin deficiencies; they cause a continual drain on military strength and potential, as was explained in the Introduction (TN: not in this report).

Especially great then is the fear that Soviet Russia will carry out bacteriological warfare. In view of this, it is imperative that immunological measures be perfected, and it is also essential from the point of view of military operations that a geographical study be made of epidemics.

II. WEATHER

Since Siberian topography is flat in the north and mountainous in the south, Siberia cannot avoid the cold winds from the Arctic Ocean and shielded from the south-north warm winds by the Altai Mountains running along the frontier. Furthermore, the temperature is remarkably low in comparison with that in European regions of the same latitude because the Stanovoi Mountain Range blocks the ocean winds blowing from the Pacific Ocean.

The climate of the Soviet Far East is an extremely continental one of the purest type: a minimum of 3 or 4 months a year have temperatures below freezing; spring and fall are very short; and the temperature difference between summer and winter is great.

However, it is recognized that the weather in the Maritime Kray and in Amur Oblast is controlled chiefly by the Asiatic mainland, the Japan Sea, and other regions and seas. That is, the broad plains of the central part of the Asiatic mainland become hot as an oven in summer, and, therefore, the air currents always blow westward from the sea and over the continent: in winter the opposite is true, and the wind blows eastward from the land toward the sea.

Therefore, there are variations in the air movements in late fall, early winter, and early spring, and in the seasons of balmy weather; at the same time, high and low atmospheric pressure intermingle. In general, one sees violent changes in temperature and weather. However, during winter and mid-summer, variations in air movements are comparatively small, and at the time of intense cold, there are continuous days of no wind and clear skies.

A. The Eastern Sector

On the whole the eastern sector has a maritime climate, and its summer humidity is rather high. This description especially fits the Maritime Kray and the coastal regions.

Winds become weaker in summer, and although they are generally west winds, northwest winds prevail in winter. Special precautions must be heeded with regard to frostbite prevention in the eastern part of the Ussuri River basin, because high winds blow during the period of most intense cold there.

The period of river and marsh freezing is generally from mid-November to early April. Snow falls between October and April, and the accumulation in various places is comparatively great. The period of greatest fall is from late February to early March. In the Ussuri River area, snow depths reach 0.4 meters.

The nature of the climate in the lowlands of the Ussuri and Amur River basins is highly conducive to outbreaks of malaria. Malaria is especially bad in the paddy fields and marshy areas of the Ussuri River basin. In our Siberian military expedition, we had 467 cases but, the greatest incidence of malaria was among our garrison troops in the southern part of Ussuri.

In winter one sees hardly any snow fall; the total amount of precipitation between December and March is merely 2 to 5 millimeters.

Most rain falls at the end of summer; therefore, in August the rivers are swollen, and thus extensive marshes are often formed along both sides of the rivers. The dire result of all this is that two large, festering bowls of malaria are perpetually filled between Manchuria and the Soviet Far East.

The anopheles mosquito is rather prevalent in Transbaikal Oblast, Amur Oblast, the Maritime Kray, and Ussuri Oblast; in the areas around Poset, Barabash, and Raz'dolnoye; and in the northern areas of Manchuria.

Serious outbreaks of malaria, therefore, are largely due to climatic influences.

B. The Central Sector

The period of extreme cold is January, even though the temperature has fallen below zero at the end of October. The rivers generally freeze the first of November and begin to thaw in April. The extreme rainy period is from June to August, and there is much rain in August. In the region around Blagoveshchensk, precipitation for the month of July amounts to 140-180 millimeters.

C. The Western Sector

This area is a high plain more than 600 meters above sea level and generally possesses a most violently continental type of climate.

Although the summers are terribly hot, the humidity is low. The average temperature of July is from 16° to 22° C and reaches a maximum of 40°. The variation in insolation is remarkably great.

In winter there is little snow, but the cold is very intense and long-lasting---from early September to mid-May. The average temperature of January, the month of most intense cold, is generally -25° to -29° C the minimum low is -5° C [sic]. The winter snow accumulation, however, is very small, generally 5 to 10 centimeters, so that there is not much use for sleds in the southern regions.

Generally speaking, it is natural that the Siberian winter shows considerable variations depending upon place. The most remarkable differences are to be found especially between the winters of western Siberia extending to the right bank of the Yenisei east of the Urals and the winters of eastern Siberia east of there. The

table below shows the differences between these two areas:

Comparison between Eastern and Western Siberia (according to Bunce)

	Locality	Jan Temp	Jul Temp	Annual Precipitation (mm)
Western Siberia	Tobolsk	(-) 19.0	19.1	44.7
	Tomsk	(-) 19.6	18.7	50.6
	Semipalatinsk	(-) 17.5	22.2	18.1
Eastern Siberia	Verkhoyansk	(-) 50.5	15.4	12.6
	Yakutsk	(-) 43.3	19.0	30.0
	Petropavlovsk (Kamchatka)	(-) 20.8	18.4	119.4
	Vladivostok	(-) 15.1	20.8	37.2
	Alexandrovsk	(-) 18.1	16.7	56.3

("Siberia," World Geography, Vol 8)

The whole of Russia is divided climatically into polar, frigid, and temperate zones. Siberia possesses no warmer zone than these. The table below subdivides these three kinds of climate further on the bases of temperature and precipitation:

Explanation of Koppen's Climate Symbols

Climate Classification	Temperature: Max Mo Avg	Temperature: Min Mo Avg	No Mo of Mean Temp Above 10°	Climate Classification: Limited Winter Precipitation	Climate Classification: Steppes	Climate Classification: Desert
I Polar Climate						
Permanently Frozen EF	<0					
Tundra ET	<10					
II Frigid-Zone Climate						
Dd	>10	<-38	>1	Ddw		
Dc	>10	>-38	<4	Dcw	DBSc	DBWc
Db	≥10<22	<-3	>4	Dbw	DBSb	DBWb
Da	>22	<-3	>4	Daw	DBSa	DBWa

III Temperate-Zone Climate (TN: omitted in original.)

("Siberia," World Geography, Vol 8)

In order to clarify the natures of the various kinds of climates in Russia, the following table is given showing the statistics for temperature and precipitation as measured at 23 observation stations within the country:

Climatic Table of Various Siberian Localities

Weather Stations	Lat N	Long E	Elev (m)	Type Climate	No Cont Yrs Ob	Upper figures show temp in C°; lower figures, precipitation in (mm)	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
1. Yugorski Shar	69°49	60°45	13	ET	--		-20.3	-20.6	-18.4	-11.9	-3.9	2.0	5.8	6.6	2.1	-3.7	-12.2	-17.2	-7.6
					5		5	11	6	3	15	30	35	41	35	18	6	6	211
2. Verkhoyansk	67 33	133 24	100	Dd	38		-50.1	-44.5	-31.0	-12.6	2.4	13.4	15.5	10.9	2.3	-14.6	-36.7	-46.3	-15.9
					31		4	3	3	4	7	22	27	26	13	8	7	4	128
3. Yakutsk	62 01	129 43	108	Dd	71		-43.3	-26.2	-22.9	-8.5	5.2	15.3	18.1	14.9	5.9	-8.5	-28.9	-40.2	-10.7
					35		6	5	3	6	13	27	34	42	22	12	10	7	187
4. Dudinka	69 24	86 04	17	Dc	17		-29.3	-26.0	-23.7	-15.6	-5.8	5.4	13.5	11.7	3.7	-8.8	-21.1	-26.9	-10.5
					17		5	6	5	7	11	30	32	43	42	18	8	6	213
5. Markovo	64 45	170 50	20	Dc	21		-28.8	-25.5	-23.0	-14.9	-.10	10.5	14.5	10.4	3.2	-9.0	-19.5	-26.3	-9.1
					21		8	7	8	4	8	20	37	48	27	12	12	9	200
6. Turukhansk	65 55	87 37	40	Dc	46		-27.7	-23.4	-16.5	-9.6	-0.5	9.1	16.3	12.8	5.1	-6.5	-20.2	-27.3	-7.4
					40		12	10	11	15	26	41	50	58	51	29	20	14	337
7. Yeniseisk	58 27	92 06	80	Dc	--		-22.5	-18.2	-9.5	-1.2	7.4	15.8	19.6	16.1	8.5	-0.9	-12.0	-20.2	-1.4
					39		21	14	12	19	33	61	61	68	41	40	31	28	429
8. Berezovo	63 56	65 04	41	Dc	--		-23.7	-18.1	-12.7	-5.3	2.5	10.2	15.8	13.1	6.2	-3.2	-14.7	-20.3	-4.2
					27		16	10	13	15	34	51	58	59	39	24	18	14	351
9. Ust Tsilma	65 27	52 10	25	Dc	--		-18.2	-15.8	-10.8	-3.0	3.1	9.7	14.4	11.6	5.9	-1.8	-10.1	-15.6	-2.6
					--		19	15	16	14	28	48	70	57	54	35	2	20	401
10. Cherdyn	60 24	56 31	177	Dc	--		-17.8	-14.8	-7.9	0.6	8.0	13.6	17.0	13.9	7.6	-0.7	-9.5	-15.4	-0.4
					--		40	32	29	23	48	51	58	76	65	49	54	42	567
11. Sverdlovsk	56 50	60 38	281	Dc	--		-16.2	-13.1	-7.4	1.6	9.9	14.8	17.2	14.6	8.8	0.4	-7.8	-13.5	0.8
					--		17	12	12	22	48	65	74	69	36	29	28	27	439
12. Kholmogory	64°13	41°42	10	Dc	--		-13.7	-12.6	-7.8	-0.4	6.0	12.2	15.7	13.0	7.3	0.4	-6.5	-11.6	0.2
					--		20	19	19	20	36	52	71	68	53	25	30	25	458

13. Vytegra	61	00	36	37	40	Dc	--	-11.0	-10.2	-6.0	1.9	8.7	13.7	16.9	14.4	9.1	2.8	-3.4	-8.6	2.3
							--	24	30	21	21	45	50	79	72	60	49	49	25	495
14. Barnaul	53	20	83	23	215	Db	--	-18.1	-16.5	-9.5	0.9	11.3	17.6	20.0	17.2	11.0	2.1	-8.4	-15.0	1.1
							70	19	12	12	15	33	42	51	45	28	30	26	24	337
15. Vyatka	58	36	49	40	164	Db	--	-15.1	-12.3	-7.0	1.6	9.9	14.9	18.1	14.9	8.6	1.1	-6.8	-12.3	1.3
							--	33	32	26	27	49	63	62	71	53	52	45	37	555
16. Moscow	55	46	37	40	160	Db	--	-10.2	-9.4	-4.9	4.2	13.4	17.4	19.7	17.5	11.4	4.6	-2.4	-7.8	4.4
							--	37	34	35	41	50	66	80	73	55	60	44	38	613
17. Nerchinski Zavod	51	19	119	37	629	Dcw	--	-29.2	-21.1	-13.5	-0.1	8.7	14.0	19.6	16.0	8.9	-1.5	-15.0	25.5	-3.3
							69	2	2	5	14	29	60	112	108	46	13	7	4	402
18. Bomnak	54	43	128	52	373	Dcw	--	-31.8	-22.1	-13.9	2.1	7.4	18.8	18.0	15.8	7.7	-3.1	-19.0	-30.5	-5.1
							8	6	5	6	25	47	65	76	106	56	19	14	6	431
19. Chita	52	02	113	30	674	DBScw	--	-27.7	-22.6	-12.2	-0.1	8.1	16.1	19.0	15.5	8.2	-1.6	-14.1	-23.6	-2.9
							22	2	2	3	8	8	46	90	84	33	13	5	5	319
20. Otsk	59	21	143	14	6	Dcw	--	-23.6	-21.8	-14.2	-6.1	1.6	6.9	12.4	12.8	8.6	-3.0	-14.8	-21.9	5.3
							23	2	2	4	9	20	43	59	62	51	24	4	3	383
21. Kurgan	55	27	65	19	88	DBSb	--	-18.3	-16.2	-10.3	1.2	11.2	16.2	18.3	15.8	9.6	1.0	-8.3	-14.5	0.5
							18	15	10	12	16	34	56	53	44	25	18	20	13	316
22. Khabarovsk	48	28	135	07	75	Dbw	--	-22.9	-17.5	-8.1	3.4	11.3	17.4	20.7	19.4	13.8	4.1	-8.7	19.2	1.1
							9	5	5	7	24	65	98	22	125	49	34	15	8	564
23. Blagoveshchensk	50	15	127	38	150	Daw	25	-23.5	-18.0	-9.1	2.4	10.4	18.2	22.0	19.2	12.7	1.4	-10.9	21.1	0.3
							25	3	1	12	26	39	78	130	138	73	19	5	1	523

"Siberia," World Geography, Vol 8

III. REGIONAL DESCRIPTION

The so-called Soviet Far East includes the following administrative areas of recent date: Maritime Kray (rayons directly subordinate to the kray executive committee), Khabarovsk Kray (the Khabarovsk, Jewish Autonomous, Amur, Lower Amur, and Kamchatka Oblast and the Baikal area [sic], Chita Oblast and the Buryat-Mongol ASSR, part of Irkutsk Oblast, and the Yakut ASSR.

A. MARITIME KRAY

1. Rayons directly Subordinate to the Kray Executive Committee

Dysentery, typhoid (enteric) fever, and other diseases usually break out every year. The following table shows the month-by-month number of dysentery cases in the rayons directly subordinate to the kray executive committee. It is noticed from the table that there are outbreaks throughout the four seasons of the year. All the rayons are almost similar with respect to these outbreaks.

Monthly List of Dysentery Patients in Maritime Rayons

Mon Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
1907	15	7	22	43	150	665	888	604	203	79	58	33	2,768
1908	79	61	82	96	159	368	636	504	173	65	61	28	3,322
1909	56	60	87	721	117	797	521	434	317	195	173	108	2,539
1910	70	48	67	73	100	251	479	831	339	124	78	38	2,498
1911	81	58	104	113	170	273	1042	1047	330	103	79	54	3,554
1912			Unknown										4,384
1913	33	56	70	81	177	404	739	702	267	102	63	61	2,755
1914	41	46	52	78	104	484	1069	522	241	72	49	49	2,810

The following table shows the statistics on recurrent fever in the rayons directly subordinate to the kray executive committee from 1907 to 1914; the epidemic of 1907-1908 was most violent and began to abate after 1909.

Yr of Epidemic	1907	1908	1909	1910	1911	1912	1913	1914	Tot
No of Patients	3,766	1,576	97	25	2	13	6	5	5,49

Exanthematous (eruptive) typhus between 1924 and 1927 showed the following cases:

Mo Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1924 Patients	25	63	59	93	48	47	11	3	10	2	4	1	366
1926 Patients	7	3	17	4	2	1	1	1	1	1	1	3	38

Outbreaks of malaria in the Far East occur in the eastern part, especially in the whole area of the Maritime Kray and in the damp zones around Lake Khanka. Malarial areas suffering continual outbreaks are: Maritime Kray, the Vladivostok area, the whole river area of Lake Khanka and Sui-fen Ho, the Korean villages in the Mo River basin, and Voroshilov (Nikolsk-Ussuriskiy) Rayon. The malaria of these areas is generally 3-day fever (pappataci fever or sand-fly fever), but it is said that, during the Siberian campaign, three cases of 4-day fever occurred.

The following table shows the monthly occurrence of this disease; generally the period of greatest occurrence is from April to September.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec
Maritime Rayons	9	43	12	90	130	67	225	208	157	74	70	29

a. Sovetskaya Gavan

Cholera, which raged in China, spread in 1923, by sea to the Maritime Kray and became rampant there too. The city of Sovetskaya Gavan lies at 49° north latitude. It is a port facing the Straits of Tartary and has the special characteristic of being ice-free in winter, like the neighboring seas. It is an important gateway to Siberia, since it will be the terminal point of the BAM (Baikal-Amur) Railroad. Sovetskaya Gavan also possesses great significance from the standpoint of epidemical studies.

b. Vladivostok

This city is the terminal point of the Chinese Eastern Railroad and occupies a key position in the transportation scheme. Therefore, Vladivostok has often suffered from epidemics because of the invasion of plague victims and disease carriers brought by rail transit.

This city, however, is equipped with the best medical facilities in the Soviet Far East. In 1938 the city possessed nine government hospitals of modern construction; and there are some magnificent structures of three or four stories which are eminently suitable for wartime conversion into hospitals. There is also a bacteriological laboratory here. Red Army medical troops stationed in Vladivostok are attached to the municipal health department and, when required, will give medical examinations to the general civilian population.

A study of epidemics here shows that dysentery usually breaks out every year. Mortality statistics for the period 1907-1914 are shown in the table below:

Yr of Epidemic	1907	1908	1909	1910	1911	1912	1913	1914	Total
Deaths	17	5	12	10	14	11	20	5	94

It is reported that there were 133 cases of enteric typhoid in our expeditionary force of 1918-1920.

Furthermore in 1921, the plague which was raging in the northern areas of Manchuria broke through the sanitary cordon of Russians trying to protect the Maritime Kray and invaded the city of Vladivostok; and on 10 Apr 1921 the first plague victims were seen. Thereafter, the dreaded plague spread and became more and more violent throughout the city, and there seemed to be almost no end to its baleful presence. The total number of victims reached 470.

There also was a great epidemic of recurrent fever in 1907. A recurrence of this epidemic was again seen in 1908, and, thereafter, there were sporadic outbreaks. Recurrent fever which broke out in the Irkutsk area in 1916 finally invaded Vladivostok; the table below shows the number of cases in the city month by month:

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
Patients	5	61	95	44	19	21	1	1	1	0	0	0	248

There were few cases in 1917 and 1918, but a sudden increase was seen in Feb 1919 when 86 cases broke out. Thereafter, the number gradually decreased. In Nov 1919, however, another violent outbreak of recurrent fever visited Vladivostok with 144 cases.

The table below shows the mortality figures for the principal pestilences which struck the city in 1924 and 1925. From these statistics one can surmise pertinent information regarding the outbreak of the various diseases.

Year	1924			1925		
Sex			Total			Total
Disease	Male	Female		Male	Female	
Typhoid and paratyphoid	9	5	14	11	5	16
Exanthematous Typhus	29	2	31	--	-	--
Smallpox	1	2	3	1	-	1
Scarlet Fever	6	10	16	20	26	46
Diphtheria	6	5	11	12	5	17
Dysentery	9	7	16	8	2	10
Diarrhea and Enteritis	67	58	125	43	36	79

The city today is in a frenzied state and is hastily setting up defense installations on all the streets. There can be seen now increasing numbers of helmeted Soviet military personnel, and there is a feeling of tension hitherto unnoticed in the city. Although almost crushed by the German blitzkrieg, the Russians are working with might and main to build up this vital city of the Far East.

Everywhere in the city there are air-raid trenches. Women and children are being evacuated; while available people of the city are being mobilized for its defense. Everywhere antiaircraft installations have been set up, and almost every night the city goes through practice air-raid maneuvers. Several thousand searchlights can be seen.

Furthermore, even in the acquisition of foreign goods which pass through the city one can observe a desperate picture. Goods intended for Soviet aid come streaming up from Manila, Shanghai, Batavia, Australia, etc, and, if epidemics should break out in these areas, Vladivostok itself would probably be affected.

The population, as of Jan 1939, was 206,000.

2. Ussuri Oblast

a. Voroshilov

This city was formerly known as Nikolsk-Ussuriiskiy, or simply as Nikolsk. The population is calculated to be 70,000 and the number of dwellings is about 3,600. The water supply depends upon 1,500 wells. The city is suitable as a garrison for many troops.

The surrounding areas enjoy a rather warm climate and are the most densely populated farm lands of all the Far East. The city is the economic and financial heart of this rich land surrounding it and is the most important city on the railroad lines. For this reason, Voroshilov has often been invaded by epidemics of cholera, plague, recurrent fever, typhoid (enteric) fever, dysentery, and other diseases.

Cholera which was raging in northern Manchuria in 1919 invaded Voroshilov through Harbin and Pogranichnaya. The next year, 1920, another epidemic swept over the city, having come again over the same invasion route from the Harbin area. At the time of the great plague epidemic in 1920-1921 in the Soviet Far East, Voroshilov was again invaded from the east by carriers from pestilential Tsitsihar and Harbin; by 31 May 1921 when the plague finally subsided, it had suffered 16 cases [sic].

Every year there is an epidemic of dysentery, small or large. The following table shows the dysentery mortality figures for the period 1907-1914:

Yr of Epidemic	1907	1908	1909	1910	1911	1912	1913	1914	Total
Deaths	10	8	6	5	14	2	6	6	57

The table below shows that malaria and dysentery are decidedly

more prevalent than all the other diseases. The figures are taken from records of our medical troops who, at the time of the 1919 expedition treated Russians, Chinese, and Koreans, between April and September.

Monthly Table of Russian, Chinese, and Korean Patients Treated in Southern Ussuri Oblast from Apr to Sep 1919 ("History of Military Sanitation in Siberia," Chap 6)

Mo	Apr	May	Jun	Jul	Aug	Sep	Total
Disease							
Malaria	-	1	-	10	28	8	47
Cholera	-	-	-	-	-	1	1
Exanthematous Typhus	3	1	-	-	-	-	4
Dysentery	8	2	3	5	17	9	44
Smallpox	-	1	3	1	-	-	5
Measles	5	4	1	-	-	-	10

The table below shows mortality figures for the year 1924 versus disease type, sex of victims, and their ages. In that year, typhoid fever, next to diarrhea and enteritis, was the most prevalent.

(See Table on following page.)

Fatalities Due to Principal Diseases in Voroshilov (1924)

Age	Under 1 Yr Old		1-4		5-9		10-19		20-29		30-39		40-49		50-59		Over 60		Unknown age		Sub-total		Total
Disease	Male	Female	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
Typhoid	2	-	-	-	-	1	2	2	3	-	2	2	3	1	3	1	2	-	-	-	17	7	24
Exanthematous Typhus	-	-	-	-	-	-	2	-	-	-	-	-	1	-	-	-	-	-	-	-	3	-	3
Scarlet Fever	1	-	1	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	6	9
Dysentery	2	-	3	1	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	6	3	9
Diarrhea and Enteritis	20	24	1	2	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	22	26	48

The number of Japanese nationals now resident in Voroshilov is very small, but in the city there are large government and industrial establishments. Sanitary installations, therefore, have been set up without much trouble. There are also bacteriological laboratories in the city, as well as factories manufacturing bacteriological products. Although no therapeutical or other medical equipment has been installed yet, the Red Army has recently expanded it army hospitals. Furthermore, the Red Army plans to establis health agencies in the rayons along the borders and is now moving gradually towards the execution of this plan.

b. Spaskdal'niy

Spaskdal'niy is 130 kilometers northeast of Voroshilov and had a population of 11,000 as of 1931. In 1919 there was an epidemic of A-type paratyphoid here and even our expeditionary force had 113 cases.

B. Khabarovsk Kray

Sporadic outbreaks of dysentery and haematocolonitis are known throughout the year in Khabarovsk Kray, as found by recent investigations, as late as 1939.

Monthly Rate of Spread of Various [Types of] Dysentery in 1939 (%)

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Entire Yr
	4	3	3	3	4	5	23	48	7	100

The acute intestinal diseases possess seasonal characteristics. That is, the greatest number of cases occur in the period June to August.

Monthly Rate of Spread of Intestinal Diseases on 100% Basis (The month with the highest number of patients has a percentage of 100.)

Month / Locality	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Khabarovsk Kray (1938)	4.4	2.9	4.8	7.5	28.8	28.1	100	68.8	28.6	19.6	31.5	5.9

The following table will show the peculiarities of dysentery in Khabarovsk Kray:

Rate of Spread of Various Dysentery Bacilli

Inhabited Area	Bacillus Shigella	Flexner	His', Strong's, etc.	Proteus Morganii
Khabarovsk	-	84	8	8
Blagoveshchensk	4	83	5	8
Birobidzhan	12	49	32	10
	1	99	-	-

NOTE: From this table it is clearly seen that in Khabarovsk Kray the Flexner bacillus is most common.

(Far Eastern USSR Military Sanitation Journal)

1. Khabarovsk Oblast

a. Khabarovsk lies near the junction of Amur and the Ussuri Rivers. It is situated on a slightly rising area directly downstream from the junction.

The city had a population of 199,000 as of Jan 1939. It is the headquarters of a Far Eastern command and is strategically important. Large quantities of weapons and other military supplies for the Far Eastern Red Army are manufactured here. Khabarovsk is also extremely important from the standpoint of communications. It has, therefore, seen frequent epidemic invasions. The chief epidemics are cholera, dysentery, recurrent fever, and malaria.

It is worthy of note here that among important establishments at Khabarovsk are the biological laboratory of the Oriental Infectious-Diseases Research Institute and the Khabarovsk Army Health Examination Station.

In 1919 a cholera epidemic was prevalent.

The table below reports the mortality figures for dysentery for the period 1907-1914 as determined by investigations of our expeditionary force:

Yr	1907	1908	1909	1910	1911	1912	1913	1914	Total
Deaths	32	19	5	10	16	6	6	9	103

Furthermore, there was an epidemic of recurrent fever in 1919. March and December show the greatest incidence, and the summer season, July to September, has the smallest according to studies made of the number of recurrent fever patients who entered the city hospitals. The monthly rate of hospitalized patients is given below:

Relapsing-Fever Patients Entering Khabarovsk City Hospital in 1919

Mo Sex	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Male	2	28	12	2	5	3	-	2	-	3	3	15	75
Female	-	1	1	-	4	-	-	-	-	-	-	-	6
Total	2	29	13	2	9	3	-	2	-	3	3	15	81

There is a perpetual malarial bowl near the entrance of the tributary Sungari River into the Amur River southwest of Khabarovsk. Khabarovsk Rayon suffers frequent outbreaks of malaria; it is reported that 10 percent of the people who live in the river basin of the Bir River (a tributary of the Tungus River northwest of Khabarovsk) have malaria.

Therefore, the city of Khabarovsk also suffers frequently from malaria. The following table gives information on the number of malaria patients found in statistics of the national hospitals of Khabarovsk:

Year	Hospitalized	Not Hospitalized
1917	48	110
1918	2	62
1919	10	136

The table below shows the mortality figures for the principal diseases that have broken out in Khabarovsk in 1924 and 1925:

No Fatalities Caused by Major Diseases in Khabarovsk

Yr	1924			1925		
Sex / Disease	Male	Female	Total	Male	Female	Total
Typhoid and Paratyphoid	18	7	25	7	9	16
Exanthematous Typhus	1	1	2	-	-	-
Dysentery	9	6	15	1	5	6
Anthrax	1	-	1	-	-	-
Diarrhea and Enteritis	34	22	56	44	28	72

There is no detailed information on typhoid fever and paratyphoid incidence rates in this area, since we possess no Soviet data. However, according to data obtained from our own experiences at the time of the Siberian campaign, our troops suffered 272 cases of paratyphoid, as compared with 103 cases of typhoid fever--more than double. Moreover, of the paratyphoid cases, 23 were A-type (85 percent) and 40 were B-type (15 percent) /sic/; this is completely different from the situation in Japan.

b. Kazakevichek

Kazakevichek is situated along that part of the Ussuri River where the current flows swiftly, near the Fu-yuan Channel south of Khabarovsk. It serves as an advance guard for Khabarovsk, headquarters of the Far Eastern command. It has ten army barracks, there are always two or three river warships at anchor nearby.

c. Komsomolsk

Komsomolsk, a new industrial city, manufacturing munitions is situated on the left bank of the Amur River about 400 kilometers north of Khabarovsk. The present population is 60,000.

Between Komsomolsk and Khabarovsk is a regular air route, besides a branch line of the BAM (Baikal-Amur Railroad) and a water route on the Amur River.

In order to strengthen Far Eastern defenses, particularly against Japan, the Soviet government in 1932 sent the members of

the Komsomol from various places in European USSR to build up the city and its defenses.

Although there were formerly no reports of epidemics, this city and surroundings now hold great significance from the standpoint of epidemics and their studies for the following reasons: the city is an important center of traffic; the nearby broad plains are flat and moist and are crisscrossed by branches of the Amur River; and the territory is, therefore, often inundated in times of flood.

Although Komsomolsk cannot be called a city completely equipped with hygienic installations, it does have 4 hospitals and 13 sanatoriums, and the water-works system is almost completely installed.

2. Jewish Autonomous Oblast

This area was selected in 1928 as the area for Jewish immigration and is called the Jewish Autonomous Oblast, or the Birobidzhan Republic. It is completely different from all the other areas in its makeup and other characteristics.

It is a special administrative district and is filled not only with Jews from Russia, but also with Jews from America, Germany, France, Poland, Palestine, and other countries. The total population is 64,000, among these being 1,400 Jews, according to a 1933 survey.

The weather is usually harsh. In the flat plains, the average July temperature is 20.8°C, and the January temperature is -22.9°C. In the mountains, the average July temperature is 19.8°C, and the January temperature is -25.5°C.

Birobidzhan

Birobidzhan is situated 180 kilometers west of Khabarovsk on the Far Eastern Railroad. It is the political and financial center of the Jewish Autonomous Oblast and was said to have a population of 40,000 in 1938.

Although wells are relied upon for water supply, the Bira River, which flows southwest of here, is suitable as a water source for military use.

There is a municipal hospital at the southwestern tip of the city. It has 50 rooms and 110 beds and, in addition, a clinic and dispensary. The city also has schools, theaters, and other large-type buildings which can be easily set up as hospitals. As for medical facilities, there is one medical school of intermediate rating.

3. Amur Oblast

The climate is generally rigorous. This area, lying directly along the Siberian Railroad, which runs parallel with the Amur River and over the northern hills is tundra. Farming is possible,

the area is suitable for habitation, except where the valley-like plains are narrow and cut into the hills. The population in those places is very sparse.

Overlooking the Amur River banks near the vague Manchurian and Soviet boundaries there is a great malarial pesthole.

The information below gives the principal epidemics and their frequencies in this area. Of all the acute contagious diseases, dysentery is the most prevalent here. It exists in various places in all seasons, summer being especially bad. Although no recent information is in our possession, it will not be difficult to conjecture the state of things from the past poor hygienic picture in the Far East. The table below indicates conditions:

Amur Oblast

Mo Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1913	-	-	2	12	35	47	82	71	34	1	-	-	284
1914	49	97	71	156	200	689	727	385	129	96	35	23	2,659
1915	19	96	28	26	68	137	756	1044	290	89	48	18	2,619

Typhoid fever and paratyphoid are endemic contagious diseases which require special precaution because of frequent occurrence. The table following give the number of cases of these two diseases. They were especially violent in the 2 months of July and August in the 1924 and 1926.

Mo Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1924	39	42	31	26	21	41	114	99	201	195	128	182	1,119
1926	98	58	60	52	64	51	55	94	217	194	79	64	1,086

Exanthematous (eruptive) typhus does not occur very frequently, but the table below will show the month-by-month cases for 1924 and 1926:

Mo Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1924	16	23	25	17	19	28	9	7	8	9	3	4	168
1926	42	20	21	15	13	1	-	1	1	-	-	-	114

Recurrent fever does not break out frequently in Amur Oblast, but there have been some occurrences, in the past. The table below shows the yearly incidence of this disease for the period 1907 to 1914:

Yr	1907	1908	1909	1910	1911	1912	1913	1914	Total
Patients	81	27	2	158	49	28	13	19	377

The Amur area often suffer from malaria. It is said that the region around Blagoveschensk is especially plagued by frequent outbreaks. The incidence of the disease for the period

1923-1925 is shown in the following table:

Yr	1923	1924	1925
Patients	1,101	2,184	6,030

Furthermore, the monthly for 1924 is given below. The period April to September is seen to have had the most cases.

Mo Area	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Amur Oblast	52	78	52	232	352	303	224	188	296	153	164	159

a. Blagoveshchensk

Blagoveshchensk lies in the narrow delta formed by the Amur River where it meets its tributary, the Zeya. It was opened as a base for Russian mass migration in the year 1866. The city is located on the banks of Amur River, is thickly populated, and being the heart of the Zesk-Amurskaya basin, is the center of active trading in various commodities. Lively international trade is carried on across the Amur River during the winter, by sleigh. Again, the transports which cross the Amur constitute a very essential means of transportation during the summer.

All these factors are significant in considering the spread of epidemics. However, it must be noted that there is a bacteriological research laboratory with the following organization, duties, and capacity:

Organization: one technical chief, three assistant technicians, and several employees.

Duties: sanitation and human epidemic prevention (ie., bacteriological cultures for vaccines and Wright's method), animal sanitation against hog plague, research on prevention of other domestic-animan epidemics, and research on preservation and improvement of foodstuffs.

Capacity: room for 20 patients.

The statistics of deaths due to dysentery epidemics between the years 1907-1914 are as follows:

Yr	1907	1908	1909	1910	1911	1912	1913	1914	Total
Deaths	74	104	70	72	unknown	unknown	68	28	418

The no of deaths due to principal epidemics in Blagoveshchensk between the years 1924-1925 are as follows:

Deaths in Blagoveshchensk Due to Major Diseases

Yr	1924			1925		
Sex / Disease	Male	Female	Total	Male	Female	Total
Typhoid and Paratyphoid	8	7	15	11	13	24
Exanthematous Typhus	2	-	2	4	-	4
Relapsing Fever	3	2	5	1	-	1
Asiatic Cholera	1	1	2	-	-	-
Dysentery	24	9	33	10	8	18
Diarrhea	94	96	190	102	67	169

b. Kuibyshevka (Alexandrovka)

Kuibyshevka is a main station on the Amur Railroad branch to Blagoveshchensk. It lies on the left bank of the Tomi River, a tributary of the Zeya. The region is generally low and swampy. Being the center of military activity, it has a martial appearance.

The drinking water is obtained from the Tomi River and wells. The Tomi River is the source of the army water supply and is considered satisfactory. There are many military barracks, a situation which facilitates the establishment of hospitals.

c. Svobodny

Svobodny lies at the intersection of the Zeya River and the Amur Railroad on the right bank of the Zeya and is a main junction of water and land communications. Even though the city is hilly on the west side, it is low and swampy on the other three sides, since the Zeya River zigzags through it. The population of this city, together with that of Srachevka which lies to the south, is approximately 20,000. To the southeast of the city there is a railroad hospital for 100 patients and a city hospital for 150 patients.

The water supply is procured from the river and from tanks at the station; however, because of insufficient electric power, the latter source is not very dependable. Consequently, the army uses the Zeya River as its only source of water supply.

4. Lower Amur Oblast

Since there is no warm current along the coast, the winters are extremely cold. Furthermore, due to gales raging almost daily, the summer is cold, and there is a large amount of rainfall. Thus, the largest part of this area is a subfrigid zone covered with thick forests, in which many types of fur-bearing animals live.

In the north are the YURIYASU* people; in the area extending from the center to the south are a few Lamuts, belonging to the Tungus tribes, who live a very primitive existence of fishing and breeding reindeer.

There are very few Japanese and Russian fishermen in this area, except in the representative city of Okhotsk, which was established as a fishing port and fur exchange in early 1647.

This area must be closely observed from the viewpoint of the study of epidemics, since, even though no epidemics have been reported, there are places about which there are no records.

5. Kamchatka Oblast

This area is influenced by the cold coastal current and seasonal winds. For this reason, it has a continental climate during the short summer, with very high temperatures. However, the temperature drops very low during the remaining seasons. According to the Petropavlovsk observations, the average temperature in February is 10.2°C; in August, 16.7°C; and the annual average is 21°C [sic]. This is still warmer than the Japanese city of Otomari in southern Sakhalin, far to the south.

Precipitation is rather heavy due to the peninsular position. In Petropavlovsk the annual precipitation was about 1,200 millimeters. The western slopes particularly, from October through April, suffer strong northwestern winds and severe snowstorms which not only cover the entire area with a huge amount of snow, but smother all activity as well.

On the other hand, the eastern belt is appreciably warm, and, in addition, the Kamchatka River basin does not suffer from severe cold. Most of the natives belong to Kamchadals or Itelmen tribes who inhabit the central southern regions. In 1927 the population, including 8,000 Russians, was estimated at 33,000 and, by Jan 1933, it had reached 58,300. Thus, the statistics of 5 years show a great industrial development and a large increase of immigrants. According to the 1939 census, the population was three times larger than in 1929. This population is concentrated, with the exception of Petropavlovsk, in the original coastal towns.

There are no records of any epidemics up to the present.

C. Baikal Area

Even though the area is continental, on account of the comparatively high ground, the average yearly temperature is 28° C [sic] and closely resembles the northern continental, wooded areas. The average temperature during the winter is -25°C and in the coldest month it reaches -26°C. The summer temperature is 17°C and in the warmest month it reaches 19°C. Thus, annual temperature range is 42° to 45°C. During the winter, the ground is entirely frozen, and, since there is no underground water or springs, water supply for the Siberian Railroad is difficult. The annual precipitation does not exceed 290 millimeters; however, precipitation during the winter is a mere 13 millimeters. The climate of the area east of the frozen-ground limit on the east shore of Lake Baikal is peculiarly dry during the winter; therefore, it is recorded by the Koeppen method as "Dwc" and is called Nerchinsk climate. That west of Lake Baikal is classified as "Dfc".

In addition to the Siberian Railroad, the principal means of communication is, of course, the Baikal line. This line was constructed to serve in the invasion of the Far East; however, it was later used for the promotion of cultural and economic progress. Now, for the second time, it has been converted to military use. Also, part of the BAM Railroad, under construction in the northern areas is said to have been opened and is becoming more and more important to this area, militarily and economically.

It is noteworthy that this area which is adjacent to western Manchuria played an important role as a base for the Nomonhan Incident. At that point, acting as an Outer Mongolian garrison, we were painfully aware of our ignorance of the topography. The Argun River which forms part of the border line between Manchuria and the USSR, has been a cause of friction between Manchuria and the USSR. Concerning these border problems, there exists the Nerchinsk Treaty of more than 200 years ago, also several other treaties, concluded since. However, today a committee to fix the Mongolian-Manchurian frontiers has begun its work in Chita. This area will become increasingly important in relations with Russia.

Chita Oblast (Transbaikal Area)

The area beyond the region lying east of the Buryat-Mongol ASSR up to the Argun River is generally called Transbaikal and is composed of a belt between the eastern shores of Lake Baikal and the eastern Buryat-Mongol ASSR, extending as far as the Argun River.

This area is the source of plague, and, during the time of the Northern Expedition, careful attention had to be paid to it. From antiquity to the present, great epidemics have spread from Far Eastern Russia into Manchuria, with this area always the source of epidemic.

Especially since the year 1919, small epidemics have been occurring annually in this area. Even though the epidemics may occur at any time during the year, past experience has shown that they usually occur in the latter part of August and terminate at the end of April or May of the following year. Southern Russian areas again are the source of epidemics which often spread eastward into the Far Eastern USSR. This point should also be carefully considered during wartime. The tarbagans (TN: Russian marmots), which are carriers of plague, live in this area in great numbers. Prior to the outbreak of a human epidemic, an epidemic breaks out among these animals. The area where these tarbagans live extends from the left banks of the Argun River, through the Alexandrovsk factory area and the vicinity of Aga station, to the Mongolian frontiers.

The plague occurring in the Far Eastern USSR and Manchuria is different from that occurring in the southern areas. At first it starts as a glandular plague and later develops hemolytic symptoms. When the epidemic reaches large proportions, it easily spreads to the lungs. Toward the end of the epidemic, it changes into hemolytic plague and finally ends as a glandular plague.

Dysentery, typhoid, etc., are ordinarily present; and, even though they may occur at any time during the year, they usually reach their peak in midsummer.

Even though there are no recent details on these outbreaks, conditions of previous epidemic outbreaks are as follows:

Relapsing fever---in this area a great many people are infected with this disease at the present time. According to available statistics, the results are as follows:

Area Year	Transbaikal	Area Year	Transbaikal
1907	28	1911	14
1908	9	1912	34
1909	26	1913	202
1910	10	1914	15
		Total	338

People With Relapsing Fever in Far Eastern USSR in 1924

Area Mo	Transbaikal	Area Mo	Transbaikal
Jan	3	Jul	10
Feb	20	Aug	-
Mar	26	Sep	9
Apr	36	Oct	17
May	15	Nov	4
Jun	4	Dec	9
		Total	153

Exanthematous Typhus---the following tables show the persons afflicted with this disease:

People With Exanthematous Typhus in Far Eastern Areas in 1924

Area Mo	Transbaikal	Area Mo	Transbaikal
Jan	43	Jul	22
Feb	43	Aug	2
Mar	60	Sep	5
Apr	51	Oct	34
May	19	Nov	62
Jun	7	Dec	43
Total	223	Total	168

People With Exanthematous Typhus in Far Eastern USSR in 1926

Area Mo	Transbaikal	Area Mo	Transbaikal
Jan	72	Jul	4
Feb	21	Aug	4
Mar	75	Sep	3
Apr	23	Oct	-
May	29	Nov	19
Jun	16	Dec	32
		Total	298

Malaria---persons inflicted with this disease are shown in the following tables:

Persons With Malaria in Far Eastern Areas in 1923-1925

Yr	Patients
1923	1,518
1924	171
1925	204
Total	1,893

People With Malaria in Far Eastern USSR in 1924

Area Mo	Transbaikal	Area Mo	Transbaikal
Jan	22	Jul	1
Feb	44	Aug	-
Mar	24	Sep	1
Apr	62	Oct	-
May	1	Nov	-
Jun	9	Dec	-

People With Malaria in Far Eastern USSR in 1926

Area Mo	Transbaikal	Area Mo	Transbaikal
Jan	1	Jul	12
Feb	15	Aug	31
Mar	40	Sep	22
Apr	46	Oct	4
May	185	Nov	6
Jun	264	Dec	14
		Total	640

People With Malaria Along the Notara-Transbaikal Railroad of the Far East in 1926

Railroad Mo	Transbaikal Railroad	Railroad Mo	Transbaikal Railroad
Jan	5	Jul	40
Feb	8	Aug	48
Mar	-	Sep	43
Apr	27	Oct	10
May	57	Nov	8
Jun	85	Dec	-
		Total	331

Anthrax and glanders---these two diseases have raged in the Far Eastern USSR since antiquity. At the time of the Czars (about 1785), an anthrax epidemic broke out in the Ob River area, with Siberia and Tobolsk as its center. Before this epidemic subsided, a severe glanders epidemic broke out and is said to have infected half of the horses in this area. The state of these two diseases in 1924-1925 was as follows:

Area Disease	Transbaikal
Glanders	95
Anthrax	467

NOTE: The number of victims appears to be directly proportional to the number of animals in each district.

1. City of Chita

The city of Chita is the political, military, and economic center of Chita Oblast, with a population of about 102,000. Even though the city is well-planned and quite scenic, the roads are not yet finished, and the sewage-and garbage-disposal systems are by no means completed. Hence, the city in general is very unsanitary.

Even though a great number of anopheles have been noticed recently, there are no records of any malaria among the inhabitants.

Since the city is an important station of the Siberian Railroad and a commercial center between the USSR and Mongolia, exanthematous typhus, relapsing fever, plague, and dysentery are often introduced, causing violent epidemics. An outstanding example of this is the great epidemic of exanthematous typhus which broke out near the city of Chita in 1915-1916.

The medical institutions include, besides the three hospitals, a mental hospital, a tuberculosis sanitarium, a venereal-disease station, and a railroad hospital which are extremely valuable. In addition, there is a medical institute, a plague research laboratory, a bacteriological plant, and other establishments of

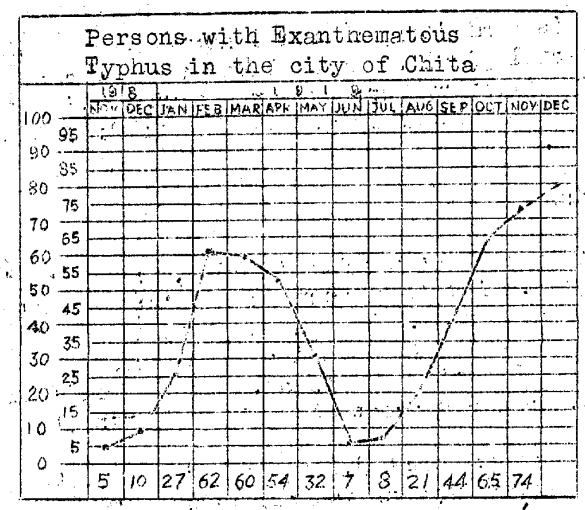
considerable value.

The number of deaths due to these major diseases in this city is as follows:

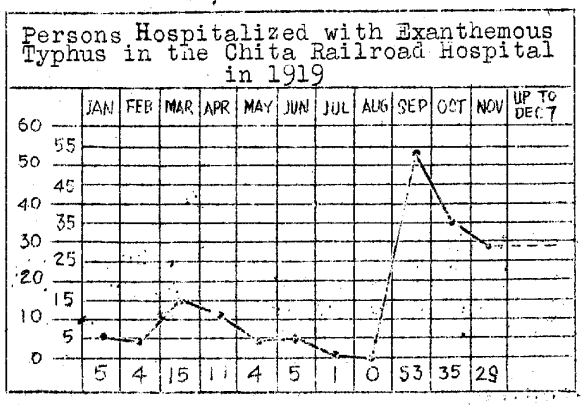
Dysentery

Yr	1908	1909	1910	1911	1912	1913	1914	Total
Deaths	28	16	13	46	18	13	15	149

Exanthematous Typhus



NOTE: The Arabic numbers to the left and bottom indicate the number of patients.



NOTE: The Arabic nunbers to the left and bottom indicate the number of patients.

2. Dauriya

Dauriya lies at the end of the Molotov Railroad, a branch of the Manchuria Railroad, about 50 kilometers from the Russian-Manchurian frontiers. There are no inhabitants in the vast, surrounding area.

Even though the military installations are still in the process of being strengthened, the city has a military appearance. There is a population of only 2,500 people and they are engaged in stock farming.

There is a military hospital northeast of the city, as well as a bacteriological research laboratory of considerable importance. The military barracks are about 1 kilometer northeast of the town on a high sandy area, and the buildings are strong and well-constructed.

3. Nerchinsk

This town was established in 1658, and being in the center of an area of gold, silver, mercury, lead, tin, and other types of mines, is quite prosperous. Today, it is still developing as a mining city. Because of its location in the center of the steppes, it enjoys special climatic conditions. The precipitation is a mere 275 millimeters, and 85 percent of it falls during the summer.

Besides the frequent dysentery epidemics, there are outbreaks of exanthematous typhus and malaria. Authentic statistics of recent times do not exist; however, the available ones are as follows:

Exanthematous typhus---In 1915 there were two patients. The number of patients and deaths in Sep, Oct, and Dec 1919 was as follows:

Mo	New Patients	Deaths	Survivals
Sep	25	1	25
Oct	24	2	25
Dec	33	2	34

Malaria---Details are not available, but it appears that 24 patients in 1916 and 27 in 1917 entered the Russian City Hospital. Judging from the records, epidemics in this area account for a large number of patients.

D. Buryat-Mongol ASSR

This area extends from the western shores of Lake Baikal east to the Vitim River and includes the Selenga River basin. To the south, it reaches the Outer Mongolian frontiers. The Soviet government granted autonomy t these people who are now organized as an autonomous soviet socialist republic.

Lake Baikal, located in this area, is the largest lake on the Erasian continent and has great influence upon the climate in moderating the severe continental climate, ie., the summer temperatures are comparatively low, and the winter temperatures, comparatively high. Even though precipitation in the southern half of the lake is high, that in the northern half is low. The surface of the lake is entirely frozen, beginning in January and, for the next 88-146 days, is covered with ice 0.5-meters thick which permits communications over it, supporting even a railroad.

There are records of an anthrax epidemic in KARZA*, northeast of Barguzin which is on the eastern shore of Lake Baikal; however, no details are available.

1. Ulan Ude

Ulan Ude lies at the intersection of the Selenga and Uda Rivers on the East Siberian Railroad. It is a colonized city of 130,000 people (1935) and was formerly called Verkhne Udinsk. This city is not only the capital of the republic in which it is located, but it was used as a military supply base against Outer Mongolia. It is making tremendous progress at present.

Records show that in 1919 an epidemic of exanthematous typhus occurred in this city. This was because the revolution spread steadily eastward, and because this city was a gateway to the entire area. It became the haven for a great influx of refugees, among them, many disease carriers. Fatalities after Sep 1919 were as follows:

Mo	Sep			Oct		
Class of Patients		Military Personnel	Inhabi-tants	Refugees	Travel-lers	Pri-soners
New Patients	25	73	54	32	39	5
Deaths	1	18	4	1	4	-
Survivals	25	56	42	8	42	-

Mo	Nov		Dec	
Class of Patients	Unknown	Military Personnel	Inhabitants	Refugees
New Patients		7	10	-
Deaths		1	1	-
Survivals		-	12	-

Water is procured from wells located in various parts of the city; however, the water is not sufficient for the entire area, so many people use river water. The military water supply is procured from the river and is considered good. There is a public hospital, in addition to a large general hospital established in 1938 (in the locomotive factory). There is also a lower medical school. The number of students in 1938 was 32 medical assistants, 14 maternity assistant nurses, and 26 nurses.

In addition, the large number of test tubes manufactured at the glass factory since 1938 must be considered.

2. Kyakhta

Kyakhta is a frontier city built on a 720-meter elevation in the southern region of this area near the border. This city is the base of a commercial route through Urga (Ulan Bator) leading to Peiping, over which imports of Chinese tea arrive. Even though there are no records of epidemic diseases, this city appears to be worthy of attention from the viewpoint of epidemiology.

E. Part of Irkutsk Oblast

This is a belt on the west shores of Lake Baikal bounded by the Baikal Mountain Range which runs along most of the western shore of Lake Baikal on the east and the Onot Mountain Range on the west. Maximum height in the Baikal Mountain Range is 1,830 meters; however, the range is not irregular, and there are no outstanding peaks. The Onot Mountain Range is made of many low, round hills and contains Siberian virgin jungles, swamps, ravines, and plateaus which make crossing very difficult.

Different types of animal anthrax exist in this area.

Tunguska which lies to the north of Irkutsk, at a latitude below 50° north is a vast source of malaria. Even though details are lacking, reports indicate that, during the epidemics of 1914 and 1916-1919, the number of people afflicted in this oblast was 126.7 per 10,000.

City of Irkutsk

This city lies at the intersection of the Angara and Irkutsk Rivers, facing the former, in the region near the western extremity of Lake Baikal. It is a colonized city built by the Siberian-Yakut people, ie, Siberian Russians, in 1651. There are rich gold mines here. The city is very beautiful and is called the Paris of Siberia.

Again, because of the transient trade in Chinese tea, paper, raw silk, and pottery exported from here to Europe, it has also made great progress as a commercial city. Consequently, diseases were gradually introduced, and violent epidemics of relapsing fever, exanthematous typhus, malaria, and dysentery have occurred

The city today is not only the political, economic, and communication center of Irkutsk Oblast, but a military city as well, acting as a major base for the Far Eastern Army; this fact is worthy of considerable attention. It is also becoming a great industrial center. The population is estimated at 243,000, and the city is now considered one of the leading cultural centers in the USSR.

The principal epidemics that have occurred in this city are as follows:

Relapsing fever---The epidemic of 1908 was extremely severe and particularly so in this city, where the number of deaths reached 100.

Since then, the epidemics have been sporadic. The number of patients in this oblast from 1907 to 1917 was as follows:

Yr of Epidemic	1907	1908	1909	1910	1911	1912	1913	1914	Total
Patients	33	1,550	839	21	17	56	11	33	2,560

Exanthematous Typhus---Between 1914-1917 the city received the aftereffects of the epidemic raging in western Siberia. However, in 1918, the epidemic broke out in the city with a 10 percent mortality. Later, in 1919, a new and violent epidemic broke out with a 35 percent mortality, later dropping to 7-8 percent.

Dysentery---The number of deaths during the 1907-1914 epidemics is shown in the following table. However, these figures are open to conjecture.

Yr of Epidemic	1907	1908	1909	1910	1911	1912	1913	1914	Total
Deaths	21	37	48	39	10	15	17	187	

The city's water system is still in the planning stages, and no part of it is in operation. Because the sewage- and garbage-disposal vehicles are operated by the national, and not the local, government, the city's sanitation is in bad condition. The city is comparatively well equipped with medical institutions, having 106 hospitals [sic] with a capacity of 4,295 persons. Besides these, there are several medical centers, pharmacies, and maternity hospitals. For medical training, there are a National Medical College, a mouth and throat institute, and a medical assistants' school. A toxic bacteriology research laboratory merits special attention.

F. Yakut ASSR

This area lies in an extremely cold belt. The ground is permanently frozen, but, even though it reaches a depth of 200 meters at places, it does not hinder agriculture. In other works, because of the extreme continental climate of this area, the temperatures rise considerably during the summer (the average temperature in July in the city of Yakutsk is 18.8°C and the maximum, 35°C), causing the surface of the ground to thaw. The moisture thus produced supplements the scant precipitation and supports the growth of vegetation. This comparatively high temperature makes it possible, at times, for wheat, vegetables, flax, and even melons to grow.

In an area of 3,030,000 square kilometers, the population is only 328,000. The reasons for this low density of population are three: the climate is severe; the area is isolated; and there are vast Siberian virgin forests. These three reasons interfere with the colonization of the area by the Russians. The population is composed of 88 percent Yakut, and 11 percent Russians. Even though the natural resources are unlimited, no development has taken place, and these resources will have to be exploited in the future. The inadequacy of the roads and means of communication on the other hand has struck a fatal blow to the economic development of this area. It is therefore

natural that the Soviet government in the execution of its Siberian economic policy should first start with the economic development of Yakut by establishing a line of communications here. However, the point to observe in this connection is the completion of a polar sea route joining the Far East with western USSR and the establishment of aerial routes between Irkutsk, Yakutsk, and Tiksi and Aldan and Rukhlovo (Skovorodino), a station on the Amur Railroad.

There are only a few records of epidemic diseases in the Yakut district. The outstanding ones are as follows:

Dysentery Patients (1924-1927)				
Yr of Epidemic	1924	1925	1926	1927
Rate of Affliction (per 10,000 of population)	28.4	58.1	47.0	27.5

Typhoid Patients (1924-1926)			
Yr of Epidemic	1924	1925	1926
Rate of Affliction (per 10,000 population)	7.9	16.4	9.8

Even though Adelheim has reported an incidence of 33.1 per 10,000 population during the malaria epidemic of 1914 and 1916-1919, this seems to be a local type of malaria. The incidence of malaria between 1926--1929 was as follows:

Yr of Epidemic	1926	1927	1928	1929
Rate of Affliction (per 10,000 of population)	33.1	33.3	--	31.3

1. City of Yakutsk

With a population of 30,000, Yakutsk lies on the west bank of the Lena River; it is a highway junction. Even though it is the cultural center of Yakut, there are no records of epidemic diseases in existence.

The basin of the Yana, Kolyma, and Indigirka Rivers is known to have the lowest winter temperatures in the world. It has an extreme continental climate.

2. Verkhoyansk

Verkhoyansk is a town built by the Cossacks in 1638. It lies on the Yana River and has a population of several hundred people. It has the lowest temperature on earth, 69.8°C. The average temperature in January is 50.1°C, and, since this place has the greatest annual temperature range (65 degrees), it is famous among scientists. There are no records of any epidemic diseases.

For reference purposes, the maximum and minimum temperatures, as well as monthly precipitation of the important areas of the Far Eastern USSR, are shown in the following tables:

Area			Eastern District 1918-1920					Central District 1918-1920					Western District 1914 1915 1916 1917 1915 1920 1915 1917			
Yr of Statistics																
Place			Vladivostok	Spasskoye	Olga	Vydzemskaya	Kruskaya	Khabarovsk	Sovetskaya Gavan	Nizhne-Amursk (Nikolayevsk)	Arkhara	Blagoveshchensk	Kuybyshev (Bochkarevo)	Skovorodine (Rukhlovo)	Olovyannaya	Chita	Irkutsk	Nerchinsk
Mo																		
Jan	Max Temp		3.0	1.4	2.2	2.6	6.5				8.5	3.7		4.9	9.6	12.5	8.6	
	Min Temp		28.0	35.3	30.1			43.1	28.0	42.1	43.4	38.0	46.2	45.0		45.4	50.2	53.5
	Precipitation		6.1	11.9	20.8			8.1	14.5	27.0	3.3	6.4	3.9	2.4		2.7		3.3
Feb	Max Temp		6.5	6.1	9.7	5.5	0.2				1.5	2.2		3.5	6.2		3.3	
	Min Temp		27.8	39.0	28.2			36.3	35.8	45.9	42.8	45.4	46.6	45.0		41.3	44.6	45.5
	Precipitation		9.6	8.4	13.9			6.8	2.8	8.0	5.9	2.6	3.0	3.1		4.1		2.1
Mar	Max Temp		8.5	6.8	9.7	13.2	0.6				10.0	12.8		9.0	7.7	8.4	7.8	
	Min Temp		18.8	25.6	20.5			23.8	25.0	36.9	32.2	29.4	33.9	41.0		32.6	35.6	37.0
	Precipitation		47.0	13.8	17.2			8.6	13.4	6.7	5.2	5.7	6.8	4.8		2.0		2.0
Apr	Max Temp		16.3	21.2	17.2	23.0	23.8				26.5	27.9		24.1	22.4	13.0	16.6	
	Min Temp		7.1	9.1	14.2			14.7	12.0	19.1	12.6	12.1	13.6	18.0		20.5	22.2	34.9
	Precipitation		55.0	41.9	70.5			18.4	9.5	29.7	28.3	2.8	30.8	17.0		5.6		6.1
May	Max Temp		22.5	28.7	25.1	28.6	29.6				31.2	32.9		28.5	24.3	20.6	22.1	
	Min Temp		2.3	1.8	3.5			4.0	6.0	7.6	5.6	3.8	5.5	7.2		9.7	8.7	10.1
	Precipitation		54.8	63.8	51.9			50.6	77.7	26.1	47.2	49.0	18.7	20.9		11.6		18.4
Jun	Max Temp		26.4	28.6	27.1	30.5	3.00				31.1	32.2		31.5	28.6	28.7	30.1	
	Min Temp		7.5	6.0	0.7			4.4	2.0	2.1	2.0	4.1	0.3	4.3		0.9	2.2	5.9
	Precipitation		102.3	97.0	92.5			88.4	92.3	21.9	87.1	4.3	105.0	88.3		59.8		59.7

Jul	Max Temp	30.8	38.2	33.8	34.5	31.5				33.6	36.4		34.4	31.0	32.6	30.5	
	Min Temp	12.2	11.0	2.8			7.2	4.0	3.7	5.5	8.7	7.4	2.2		3.3	4.4	1.0
	Precipitation	99.6	77.5	148.9			94.2	92.9	35.1	76.2	63.6	102.6	157.4	75.2		49.7	
Aug	Max Temp	29.5	32.3	33.8	33.5	32.0				30.2	34.8		30.5	29.2	26.6	27.3	
	Min Temp	14.5	10.3	6.3			12.2	4.0	4.0	5.7	6.4	4.5	2.2		1.2	0.9	0.2
	Precipitation	100.0	129.9	148.2			78.7	58.5	49.8	79.8	135.1	76.9	117.5		98.7		76.5
Sep	Max Temp	25.2	25.9	26.9	27.6	24.5				25.8	27.5		24.9	22.4	19.8	23.0	
	Min Temp	6.5	4.0	2.3			2.7	2.8	2.7	4.8	1.7	7.2	4.3		7.5	5.5	7.7
	Precipitation	193.5	175.4	207.9			87.4	58.3	43.2	67.0	22.4	65.4	52.0		39.3		39.4
Oct	Max Temp	21.4	22.1	22.0	22.3	21.4				22.7	23.5		19.6	16.2	8.2	11.7	
	Min Temp	4.1	8.7	8.4			10.3	9.9	15.4	19.7	16.5	18.8	20.0		20.7	21.8	25.8
	Precipitation	42.2	28.8	59.2			18.2	43.3	67.4	7.9	7.6	10.1	14.8		14.0		8.3
Nov	Max Temp	17.5	16.9	17.7	13.2	9.5				2.8	2.9		3.5	5.8	3.2	1.4	
	Min Temp	16.0	26.8	18.4			27.1	21.1	33.7	35.1	29.2	32.4	34.0		35.3	40.4	87.3
	Precipitation	86.2	35.4	23.8			16.3	16.1	42.5	27.8	6.7	7.4	20.3		4.1		25.4
Dec	Max Temp	5.7	2.8	7.8	3.0	11.0				2.0	4.9		9.5	3.4	2.1	2.0	
	Min Temp	21.9	33.8	24.7			32.1	33.8	37.3	40.5	38.2	43.3	34.0		42.2	39.6	48.3
	Precipitation	10.9	7.4	10.8			9.8	20.5	14.7	3.4	3.7	6.3	6.2		2.7		5.6

NOTE: Heavy print indicates sub-zero temperatures.

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