

MATERIAL RESOURCES OF THE USSR

22 March 1954

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INDUSTRIAL COLLEGE OF THE ARMED FORCES

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Dr. Demitri B. Shimkin, Social Science Analyst, Bureau of the Census, was born in Omsk, Siberia, 4 July 1916. He was graduated from the University of California; he did postgraduate work and was Research Assistant and Associate at the university. He was also graduated from the Army's Command and General Staff School. From September 1941 until March 1942 he was on duty in the Intelligence Division, War Department General Staff. From March 1942 until August 1945 he was on duty with the Military Intelligence Service, War Department General Staff. In August 1945 he was transferred to the G-2 Section, U. S. Forces, European Theater, and in October of that year returned to duty with the Intelligence Division, War Department General Staff. In July 1946 Lieutenant Colonel Shimkin was transferred to the Staff of the National War College. He returned to inactive duty on 30 April 1947 and joined the faculty of the School of Economics and Politics at the Institute for Advanced Studies, Princeton, New Jersey. In early 1948 Dr. Shimkin was appointed lecturer of Social Anthropology and Research Associate of the Russian Research Center, Harvard University, and in 1953 was appointed lecturer at the U. S. Naval War College. He was appointed to his present position in the Bureau of Census in October 1953. Dr. Shimkin is the author of several articles on the economy of the Soviet Union, and in 1953 published a book entitled "Minerals-- A Key to Soviet Power."

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COLONEL CONNER: Of all the factors which influence the political, economic, and military strength of a nation, few, if any, have a more direct effect than do that nation's material resources. It seems appropriate, then, that we start our discussion of the Soviet bloc with that factor.

It is even more appropriate that we have as our guest speaker this morning one of the foremost authorities in that field. I say "guest." He is in a sense that; but, actually, he is really one of us. He is a colonel in the Army Reserve. He is also a student in the Industrial College in the Correspondence Study Branch. Now, students in the Correspondence Study Branch are not required to make oral presentations; but Dr. Shimkin has accepted our invitation, for which we are very grateful, because we are most anxious that he share with us some of the vast store of knowledge that he has on this subject, "Material Resources of the USSR."

Dr. Shimkin, we are pleased to have you with us this morning.

DR. SHIMKIN: Admiral Hague and gentlemen: It is a very great pleasure to return here once again, continuing the perennial problem of analyzing the capabilities of the Soviet Union.

The purpose of this talk this morning is to assess the significance of Russia's natural-resource and raw-material output position in relation to that country's military-economic capabilities. This discussion will be limited to two groups of resources--agricultural and mineral. The plan of presentation will be to consider four problems in succession: (1) the quantity, quality, and geographical distribution of resources; (2) the levels of raw-materials production achieved; (3) the relation between supplies and estimated demand; and (4) a statement of military-economic implications.

Let us first review conditions in agriculture.

The soil resources of the Soviet Union aggregate about a million square miles of arable land, a total which is exceeded only by the United States and possibly by China and India, on which our information is very poor. But the quality of the Soviet soil resources is low: The main

deficiency is in regard to the water supply. Only a fraction of the territories of the Soviet Union--the Baltic States, the triangle westward of Leningrad and Moscow, a part of the Western Caucasus, and the Maritime Province--have precipitation in excess of 25 inches of moisture a year.

Almost the entire remainder of the country, especially the great black-earth belt of the Ukraine, the Volga, and Western Siberia, lack sufficient moisture for many crops; moreover, it is subject to especially severe droughts on the average of once every five years. In central Asia and in the eastern Trans-Caucasus, agriculture is entirely dependent upon irrigation.

Furthermore, the Soviet Union is a cold country. The Ukraine, which is the largest single area of prime agricultural land, is ecologically most comparable to the Dakotas and the Canadian prairie provinces in North America. Thus, frost is a major hazard in all but the southernmost agricultural regions. In addition the insufficiency of water and of heat limits the use of fertilizer, hence all these factors together make yields low and uncertain.

Not more than a third of the arable area of the Soviet Union is warm enough or wet enough to grow crops other than hardy grains, hemp, flax, potatoes, and root vegetables. All cotton, tobacco, corn, rice, sugar beets, and winter wheat output must come from the most favored portion of the nation's soil resources. In other words, it is only in the southern half of the Ukraine, in the Crimea, in the Caucasus region, and in Asia that most of the technical crops and high-value crops, like sugar, can be grown. On the other hand, Russia's pasturage areas, both in the forest areas in the North and in the steppe and desert of the South, are very extensive and of great potential importance.

The Soviet agricultural resources cannot be compared, particularly in per capita terms, with those of the United States. But they are still substantial.

The miserable history of Soviet agricultural production is generally well known. To sum up briefly, grain production in the 25 years between 1928 and 1953 increased less than 30 percent, while the country's population rose by almost 40 percent. Over this same period the livestock position actually deteriorated. It is true that the number of hogs rose by almost 45 percent, to about 37 million head. On the other hand, the number of cattle fell by at least 10 percent, to not more than 55 million

head. The decline in sheep and goats amounted to about 20 percent, with a current count of less than 120 million. Horses, at 16 million head, total a little more than half the 1928 number.

Major progress in Soviet agriculture has been realized only in cotton and sugar-beet output. The former has increased about fourfold over the past 25 years, to an unginmed output of about 3.5 million metric tons. The latter has increased about 2.5 times, to between 25 and 30 million metric tons. These particular successes are not surprising, since virtually all Soviet mineral fertilizer, currently totaling 6 million metric tons has been lavished upon them.

Finally, the labor productivity in Soviet agriculture has developed very slowly. Over the past quarter century it has not increased more than 30 percent, and is today not more than 10 percent of that of America.

The demand for agricultural products may be outlined as follows: In 1950, according to official figures that have become recently available the total supply of all foodstuffs, other than bread, potatoes, and coarse vegetables, available for feeding the army, for stocks, and for the civilian urban population, consisted of 16.4 million metric tons. This total, comprising all items from meat to sugar to canned goods to beer and wine, comes to about 0.64 pound per capita today, or less than one-seventh of calculated food intake. The diet of the agricultural population is even worse. Thus, the Soviet population has for many years been subject to chronic malnutrition. The level of diet in the Soviet Union is substantially same as that in China and India.

From the standpoint of raw materials of agricultural origin, the leather situation is most acute, limiting shoe output to one pair per capita per year. The textile supply is better, though it must be considerably stretched to cover eastern European as well as domestic demands.

What is the military significance of these facts? Despite a very considerable investment in agriculture over the past 25 years, and despite reiterated campaigns by the Communist Party, Soviet agricultural production and productivity have essentially stagnated. The basic cause for this failure lies in the undying resistance of the peasant to collectivization a condition which is in sober truth worse than the serfdom of eighteenth and nineteenth century Russia. No solution to this problem, the most serious one faced by the regime, appears evident today.

The inadequacy of overall production is magnified by distribution problems. Central, northwest, and north Russia, with a total population

of some 60 million persons, constitute an area markedly deficient in foodstuffs, which must be supplied from the Volga and North Caucasus. Similarly, central Asia, which specializes performance in cotton, to be sent to central Russian mills, must import much of its food from western Siberia. Finally, the Far East imports at least a million tons of grain annually, either from western Siberia or Manchuria. As a result of these disproportions between the distribution of population and of food output a very heavy burden must be placed upon transportation to provide the country's minimum food requirements.

All of these factors together cause deep anxiety throughout the Soviet population, rural and urban alike, in regard to food. The regime has attempted to resolve this anxiety by false boasts--such as Molotov's statement, only two years ago, that the wheat problem had been definitely solved. Another temporary measure has been the use of stocks, and possibly imported supplies, to increase marketing in the urban sectors over short periods. For example, last year the marketing of butter increased 36 percent over 1952, although the national output of butter, according to Soviet statistics, increased only 3 percent. But these are only temporary answers; here, too, the permanent solution is not in sight.

Let us now turn to the problem of minerals. The general distribution of mineral resources and the quantity of geologically favorable areas in the Soviet Union make the Soviet mineral position inherently far stronger than the agricultural. In general the Soviet Union is strong in ferrous metals resources; much weaker in nonferrous metals, strong in fuels, though with certain deficiencies in quality; and strong again in most other nonmetallics.

Let me outline the quality and distribution of the main mineral resources very briefly. 1/

In terms of iron ore, the Soviet Union has today fairly firm reserves of some 3.6 billion metric tons of iron content. Ninety percent of these reserves are concentrated in areas west of 60 degrees east, in other words in the Urals and European Russia. The most important iron ore deposits are Krivoi Rog, in the Ukraine--ore

1/ D. B. Shimkin, Minerals--A Key to Soviet Power, Harvard University, Cambridge, 1953. (Locations of the deposits mentioned and more details.)

deposits are both large and generally of good quality; the large, low-grade deposit at Kerch in the Crimea; the Khoper deposit on the Don, which is still undeveloped; the Tula deposit, which is small but extremely important because of its closeness to primary industrial centers; and the Yeno deposit in the far North.

In the Urals, contrary to general impressions, the iron ore resources are moderate. For a long period the Magnitogorsk deposit has been the greatest and most important one of all. But it is today very seriously depleted, and its practical exhaustion is a matter of not more than 10 or 15 years away. As a result, the Soviets have had to move in a new direction. They have had to develop low-grade deposits on the eastern slope of the Urals, particularly at Khalilovo and Ayat in the southern and Alapayeusk in the central Urals. All three of these deposits are characterized not only by low-iron content, running 30 to 40 percent, but high silica; and require heavy investment to achieve effective production. In addition to this, the Urals have a fairly large number of small deposits, particularly around the area of Sverdlovsk; but the total Ural resources do not aggregate as much as a billion tons of content, even optimistically measured.

As we go eastward, the situation from the standpoint of iron ore deteriorates. There is, in fact, only one major iron ore deposit in the Asiatic part of the Soviet Union, practically speaking. That is the deposit at Rudnogorsk on the Augara River, a deposit which is still undeveloped. The ore resources of western Siberia and of central Asia and of the Far East, are, as far as known today, of poor quality and minor extent. However, in the area of Kazakhstan the geological picture is favorable for appreciable new discoveries.

From the standpoint of ferroalloying metals, the Russian position is exceedingly strong for manganese and for chromite. The manganese comes from enormous deposits at Nikopol in the Ukraine and Chiatura in the Trans-Caucasus. Chromite comes largely from the Kempirsay deposit in the southern Urals.

The Soviet position for Nickel, vanadium, and titanium is moderately good. Nickel resources are widely dispersed. They come in three areas. The first is the area acquired in large part from Finland in the Kola Peninsula--fairly high-content sulphite ores of good quality. The largest deposits, all of low-quality silicate ores, are those in the southern Urals. The remainder comes in remote deposits of Noril'sk, north of the Arctic Circle. This is a good deposit, but extremely difficult

to work in terms of location and in terms of climatic conditions. The vanadium and titanium resources are geologically very extensive. From the standpoint of practical development, however, they are limited to those in the Urals, near Pervoural'sk, which are associated with titano-magnetite iron ores. From the standpoint of estimated demand, these resources are about in balance.

The other ferroalloying metals--cobalt, molybdenum, and tungsten--are very acutely deficient; and they cover, even with very restrictive demands, only a proportion of the most necessary requirements.

In the nonferrous metals field, as I have mentioned, the Soviet position is generally much weaker. In aluminum the Soviet resources are concentrated almost in toto in the Urals. They aggregate about 10 million metric tons of content, enough with conservation for the estimated military demand over the next couple of decades.

Copper is about in balance only. The copper deposits of the Soviet Union are primarily in the areas of central Asia, especially in Kazakhstan at Kounrad and Dzhezkazgan. These deposits resemble those of the American west--silicate ores of low content, generally running well under 1 percent copper and requiring a high technical efficiency, particularly in regard to flotation, for proper development. These technical problems have been causing the Soviets a great deal of difficulty; and it is not surprising that the plans for copper output over the recent five-year period, that is, since 1950, have been missed by a wide margin and that in 1953 copper output actually fell rather than increased.

Lead and zinc ores are again concentrated in central Asia, particularly in the Altai region of eastern Kazakhstan. These ores are rather limited in quantity, but fair in quality. The Soviets can develop output here, and have been doing it, at a rather satisfactory rate, especially since the development of new hydroelectric resources in this area. Thus, while the long-term position in lead and zinc is not satisfactory, from the short-run standpoint neither presents an acute problem.

Finally, I want to mention the problem of radioactive ores, especially uranium. We have, of course, at least to my knowledge, no good, quantitative figures on this subject. But qualitative information is extremely extensive, and permits a fair assessment of the Soviet position. Essentially the great bulk of Soviet uranium resources are comparable in their character to the American. That is, they consist of ores very similar to American carnotite--vanadium-bearing ores of low uranium concentration.

They are located especially in the area around Tashkent. This area, I would like to point out, has undergone a tremendous development of hydroelectric power in the last 10 years. The Uzbeh Republic alone produced nearly 3 billion kilowatt-hours of energy in 1950. Thus, it is very likely that a substantial proportion of the Soviet atomic energy effort is concentrated here.

The other area of appreciable uranium resources is in the Pre-Cambrian rocks, of the Baikal region, particular in association with granitic intrusions into metamorphic rock. The ores are betafites most comparable to those of Madagascar--relatively high in content, but extremely complex in structure. So far as is known, most of the lodes are small--a matter of a few tons at the most. It is not as likely that a firm foundation for a large-scale atomic effort would be developed here as in central Asia.

I wish to mention a few things about fuels. First, in regard to coal. In essence the aggregate reserves of Soviet coal are extremely large. They total something of the order of a trillion tons, reasonably assessed or guessed at. However, there is one major distributional fact that must be borne in mind. I have mentioned that 90 percent of the Soviet iron ore is to be found in the West. Ninety percent of Soviet coal is in the East. In fact the whole area of European Russia, including the Urals and the Caucasus, is deficient in coal, particularly in coking coal. Coking coal is available only in the Donets Basin, where it represents less than 10 percent of the reserves; and in the remote Vorkuta area of north Russia. Upon this depends the metallurgy of both the Ukraine and central Russia. All Urals' coking coal supplies come from western Siberia and from central Asia, especially Kazakhstan, and must flow long distances to the Urals.

In regard to petroleum, we must make a very sharp distinction between geological possibilities and actual developed reserves. From the standpoint of the former, that is, the volume of sedimentary rocks known to exist in the Soviet territory, Russia's position is relatively strong. Generally speaking, the order of magnitude of the reserves is about equal to that in this country, or something over 100 billion barrels. On the other hand, the ascertained reserves are limited to a very small fraction of the Soviet territory. Eighty percent of the reserves in 1939 were associated with Upper Tertiary formations and situated in just three locations--in the Caucasus, in the Trans-Caspian region, and in Sakhalin. Sixteen percent of the reserves were associated with the Paleozoic formations of the Volga and the remainder was scattered throughout the country. It is amazing that the Soviets, for example, have never developed the promising formations of western Siberia.

Finally, in regard to nonmetals, I want to mention only one of special economic importance, namely, sulphur minerals. The Soviet Union, unlike the United States, can satisfy only a very small fraction of its sulphur needs from native sulphur, not so much because of a geological lack of reserves, but because of a lack of development and of low quality, particularly a very high degree of adulteration with bitumens. Most of its sulphur comes from two sources; pyrites in the Urals and coal brasses in the Moscow Basin. Coal brasses are lumps of pyrites included within lignite. Development of the coal brasses has been one of the major trends in the mining in central Russia in the last 15 years.

In general, the Soviet sulphur position is one of adequate quantity, but of such low quality that the costs of sulphur for industrial purposes, for agriculture, and for munitions are exceedingly high; and the sulphur position is for this reason none too strong.

Let me now turn to the problems of production.

In mineral production, in contrast to agriculture, the record of the Soviet Union has been remarkably good. Total mineral output at constant United States values, increased 7.6 times from 1928 to 1953. Some salient figures for 1953, related to United States output in 1951, are as follows:

<u>Mineral</u>	<u>Soviet Union output 1953</u>	<u>Percent of the U. S. output 1951</u>
Coal and lignite (million metric tons)	321.0	61
Petroleum (million metric tons)	49.2	15
Natural gas (billion cubic meters)	3.0	Negligible
Pig Iron and ferroalloys (million metric tons)	27.4	42
Copper (thousand metric tons)	360.0	33
Cement (million metric tons)	16.7	27

In general, Soviet mineral consumption, as estimated at the present time, is 30 percent of the American in 1951. This is about the same proportion as in 1937. In other words, the dynamism of the American economy has been so great that the Soviets, hampered by severe war losses, have had to run like mad to maintain the same position.

Let me now outline the problems of demand. These are, of course, extremely complex, and I have dealt with them at considerable length, both in my "Minerals" volume and in my monograph with Grossman. Here, I wish only to outline the major lines of evidence indicating the level of Soviet demand relative to that country's gross national product and gross industrial output. The basis of comparison is the United States.

Major indications that the demand for minerals in the USSR is relatively high are the following:

The product-mix of the economy. --In 1937 the proportion of mineral-intensive industries--industries requiring a lot of minerals in relation to output--was about the same as the United States in that year, roughly 50 to 55 percent. Since 1937, however, the vast bulk of Soviet industrial growth has been concentrated in the mineral-intensive industries. For example, if we take the official index alone, 60 percent of the entire growth from 1937 to 1953 comes solely from the growth of machine building; while, if we consider in addition other producer goods, this total comes to more than 80 percent. As a result, at least two-thirds of all Soviet industry today is mineral-intensive and requires a very high degree of fuel and metals input per unit of output.

Secondly, Soviet industry is not only oriented toward mineral-intensive manufacturing, but especially toward munitions. At present munitions output is about four or five times as great as in 1937. Aviation has a special influence. All of this has put substantial pressure upon certain aspects of mineral production--above all, electric power, fuels, and special alloying metals, like cobalt.

In addition to this high investment rates have continued throughout the whole period since 1937, with at least 20 percent of the gross national product going in the peacetime years into investment. This requires heavy outlays of steel, copper, and lead, to mention only a few minerals. Soviet technology is also peculiarly oriented toward the lavish use of minerals. On the one hand we have a relatively low level of technical skill, which means low recovery. It means that large amounts of raw

materials must be used to produce a given output of finished product. And in general the studies that we have made indicate that Soviet recoveries in metals run at least 15 percent lower than western practice.

On top of this Soviet scrap resources are limited, because theirs is a young industry, which, therefore, has a relatively small amount of obsolescent equipment. It is a country, furthermore, which is oriented toward using equipment until it wears out completely. As a result, the scrapping rate is low; and until very recently the Soviets have had poor recovery techniques for scrap, particularly in nonferrous metals. As a result they must use relatively very large amounts of virgin metal.

Beyond these factors, there are many peculiarities of the Soviet economy, particularly in its technological conservatism, which tend to high mineral use. One of the most important is a reluctance to develop petroleum and a maintenance of coal as the fundamental fuel.

Coal, gentlemen, is much lower in calories per ton than is petroleum. Furthermore, coal requires a heavy investment for its transportation. It cannot be moved in the same way as petroleum, that is, by pipeline. One consequence of it is this: The Soviet Union requires about 40 percent more ton-mileage of transportation per unit of industrial output than does the United States. That transportation requires vast amounts of fuel. It requires vast amounts of metal. The technological backwardness in this case represents a substantial drag upon the Soviet economy.

Two other factors should be mentioned briefly. Stockpiling, particularly nonferrous metals, is a major policy of the Soviet government. This again requires the setting aside of certain amounts of the production for future contingencies.

Finally, the satellites by and large require more in the way of minerals from the Soviet Union than they contribute to the Soviet Union. This is particularly true of eastern Europe, which is desperately poor in iron ore. Today, at least three-quarters of the iron ore consumed by the metallurgical industry of eastern Europe must come from the Soviet Union. In addition, the eastern European satellites are very poor in copper, chromite, manganese, and nickel. All of these minerals must be shared by the Soviet Union.

In general China is in a somewhat different position; and, as we shall mention in a moment, is more of a contributor than a demander,

at least as of the present time. In what way does the Soviet Union relieve these demands? I want to outline here a few of the principal methods.

First of all, the Soviet Union has for the past 25 years had very severe allocation policies. It has had both direct allocation and differential pricing, which has restricted domestic consumption extremely severely. In order to restrain kerosene consumption, which is vital, for example, for domestic heating and especially for domestic lighting in the Soviet Union, the Soviet have increased the selling price of kerosene a hundredfold between 1926 and the late thirties. That is a kind of sales tax which amounts to something as a matter of restriction.

Limitation of investment has also been a major policy. This has been implemented by maximizing the use of all facilities--the loading of capacity of railroads, of houses, of all productive facilities to the utmost. For example, in housing, to take an especially acute case, the space allotment per person has decreased from some six square meters in 1928 to four square meters per person, or about one-third of a room per person, at the present time.

The Soviets have had also very extensive conservation policies on raw materials for investment. They are always pressing to reduce frills in construction; for example, such frills as ventilation systems in mines. They use today a maximum of concrete slabs and other simplified construction in order to minimize the steel consumed in building. Their whole policy in housing has been to maintain very high densities. Their planned density in urban populations runs from 13,000 to 15,000 persons per square mile, largely in multiple unit dwellings. This may be suicidal in a modern atomic age.

Another measure which the Soviets have employed very extensively to minimize the requirements has been substitution. The most successful area of substitution, and one which deserves very great attention on our part, has been in metallurgy, and particularly in the substitution of casting for forging and machining in a very wide range of industrial products. As early as World War II, 1943 to 1944, practically all Soviet projectiles were cast rather than forged and machined. They have, through good metallurgy, through the modification of cast iron to get good molecular structure, and through good ballistic design, been able to achieve excellent results. Casting is not only more economical in terms of metal, but it is also an immense area of saving in regard to machines, and thus a saving in the ferroalloying metals, like tungsten and cobalt.

In other areas, such as the attempted substitution of gas generation for normal liquid fuel, or the attempt to substitute ceramic discs for carbides in machine tools, the Soviets' results have been low or actually adverse.

Finally, the Soviets have been able to supplement their resources from imports, especially from the Far East. Pig iron from Manchuria, some tin and antimony and some tungsten from China, have been an appreciable aid to the Soviet Union.

The general conclusion is one that there is heavy pressure in the Soviet Union upon available supplies of minerals. This conclusion has been fortified by considerable direct evidence for the period 1951 to 1953. In general the Soviets have put out a large number of limitation and substitution orders since 1950 to conserve aluminum, molybdenum, and other metals and to place extreme restrictions upon fuel consumption. In addition we have had a marked slowing in the rate of expansion of construction. According to the Soviet official index, the volume of construction increased only 4 percent in 1953, as opposed to the 1950 to 1952 average of 18 percent.

Finally, the recent Soviet export agreements, especially in regard to moderate quantities of petroleum, do not indicate surpluses; but indicate temporary gluts of raw materials output over processing capacity.

Let us now turn to military-economic implications. The military demand, the investment demand, and the general consumer demand of the Soviet Union definitely exceed the mineral output, although it has grown by very substantial amounts over the past 25 years. Nevertheless, the mineral position of the Soviet Union is far stronger now than in World War II. Supplies today are twice as great as in 1944, when fully one-quarter of that supply, including the great bulk of nonferrous metals, came from Lend-Lease. At the same time, the rigid requirements of modern warfare put a number of specific Soviet deficiencies, such as diamonds and cobalt, into sharp focus.

Overall, the two weakest and most vulnerable areas in the Soviet mineral production are limited and overloaded refining capacity and the great need for transport. In general central and northwest Russia today produce 70 percent of the machinery and transportation equipment of the entire Soviet Union, but these regions contribute only 6 percent of the mineral output. Thus, as I have mentioned, all coking coals used in the Urals must come from western Siberia and Kazakhstan.

Nearly all the iron ore used in western Siberia must come from the Urals. At least a third of the bauxite used by the Soviet aluminum industry must come from Hungary and so on.

In conclusion, agricultural and mineral resources show contrasting phases of the material position of the USSR--one of great weakness and one of substantial strength. This type of conflict typifies the entire Soviet position. It makes analysis extremely difficult, because for every strength we can oppose a major weakness.

The general implication appears to be this: The Soviet Union can, through the organization of its strength, conduct an extremely vigorous domestic and foreign policy so long as it has control of its situation. But it is peculiarly susceptible to unplanned events and to miscalculations, when its rigidity and the presence of areas of weakness can cause a general confusion and disorganization.

Secondly, the primary significance from a military standpoint of deficiencies in both agricultural and mineral resources is relatively long term, in relation to the Soviet rate of growth or in relation to national morale. Neither would have much effect, neither would present a significant bottleneck, in the first phases of a general conflict.

Third, and finally, both agricultural and mineral resources have one common denominator of weakness--the necessity for heavy use of transportation in the process of fabrication and in the process of consumption. While transportation presents an exceedingly difficult target system, it is here above all that heavy pressure could lead to a major and relatively early weakening of Soviet military-economic capabilities.

Thank you, gentlemen.

COLONEL CONNER: Dr. Shimkin is ready for your questions. What is the reliability of the basic figures?

DR. SHIMKIN: This is a subject to which I devote a whole chapter in my "Minerals" volume, so I would like to refer you to it for details. In general the order of magnitude of error for most of our statistics does not exceed 10 percent.

Now, why do you say that with such degree of confidence? The main basis is that we have now through the last 10 years been able to develop

enough material on the whole process of industrial production so that a substantial amount of cross-checking on a general input-output is possible.

The main error which confounds people in the use of Soviet statistics today is the definitional one. You will notice, if you check the figures I give against those officially announced, that I often make mine considerably lower. This is done with full cognizance of the facts, because the Soviets have as a matter of policy constantly changed their definitions.

For example, for a long time the Soviets have been including lignite in their coal statistics. About a quarter of the Soviet so-called coal output is not coal at all, but lignite, which is much poorer in heat value, ash characteristics, and water content than is true of coal.

In the same way the recent petroleum statistics cover not only petroleum, but cover natural gas, valued at a completely conventional rate of 1,000 cubic meters to one metric ton of petroleum, which is about 10 times the true heating value ration.

In general we are in pretty good shape. When we come, for example, to estimates of, say cobalt statistics, our errors may be of the order of 100 percent. But that doesn't matter; because, even if our estimates of cobalt production are half too low, the order of magnitude is still the same--in other words, very low.

So, in the minerals field we have the best materials to work with. When you go into other problems, such as the investment rate, there the problems of measurement and evaluation become much more serious. But the economic field as a whole is one of infinitely better knowledge than is, for example, the political field, where to the best of my opinion it is pretty strictly a matter of guessing.

QUESTION: Doctor, the Cosmopolitan World Outline for 1951 gives some statistics on gainfully employed people in the USSR versus the United States. They give some 91 percent in Russia and 62 percent in America gainfully employed. Those gainfully employed are broken down into agriculture, manufacturing, transportation, mining, and so on. In the area of mining, Russia is reported as having a negligible percentage of its people gainfully employed. What is the meaning of that low reported percentage of people gainfully employed in mining in Russia?

DR. SHIMKIN: The meaning is very simple. The statistics are no good.

QUESTION: Is it because the Russians have slave labor in the mines, or is it something else? Is it dependent upon their control of the source of new slaves?

DR. SHIMKIN: No. This gets into quite an area of discussion. But, for example, we can say very definitely that in coal mining alone the Soviet employment at the present time is something over half a million persons. The whole amount of employment involved in producer goods other than machine building, according to the most recent calculations we have made, is about 5 million. So that the statistics you quote just bear no relation to things that have been carefully worked out.

I would say, in regard to the slave labor aspect, that most of the people in the labor force are accounted for in the official workers and employees statistics whether they are free or slave. There are certain moderate exclusions that we know of, but the official statistics represent possibly a 90-percent coverage. That is, the 40 million people in the workers and employees receiving a salary cover about 90 percent of the total urban labor force. This is very complicated; and, in view of the fact that we are dealing particularly with material rather than manpower resources, I would rather not go into it further at this time.

QUESTION: You pointed out very clearly the weakness in the Russians' transportation system. This weakness has been known to them for a number of years. I am wondering why they haven't made more progress in developing their transportation.

DR. SHIMKIN: Transportation is again a very large subject, like manpower; and I can only devote a very few words to this. Essentially we can say: The Soviets made a deliberate policy of minimizing the investment in transportation. They have tried to throw everything they could into physical production and to put as little in transportation as they could.

Now, their transportation system is very efficient for certain purposes. What they have done essentially is to develop a shuttle system for raw materials. The shuttle system can be described essentially as a "T," from the Ukraine to central Russia and Leningrad and between western Siberia and the Urals and central Russia. Outside this "T," which is very efficient transportation network, there is extremely little.

The Soviets load their railroads fantastically. They put on about four times the freight per mile of trackage that we do in this country. And they can do a creditable job so long as their arteries are not interfered with.

By this system is, to use a phrase that came up in an article in "Fortune" some years ago, subject to coronary occlusion. The Germans, who never understood strategic bombardment, never interfered with the Soviet transportation; and, because of that, the Soviets were able to concentrate enormous traffic upon individual lines and to support and supply considerable military forces upon entirely inadequate rail lines. This kind of situation, with any kind of interference of an active sort, particularly in terms of the attack upon rolling stock and especially locomotives and locomotive production and repair, just wouldn't work.

QUESTION: Would you comment on Soviet gold production and its possible stock?

DR. SHIMKIN: This is a major mystery. We have pretty good data on the prewar period, for which estimates of about 5 million ounces of gold per year seem to represent a pretty good figure.

What has happened since then is very hard to say. Much of the area where gold production was concentrated, particularly the upper Lena, is not an area of major investment today. Again, in the Kolyma area we have rich but definitely limited gold sources. We don't know how close they are to exhaustion. Again here the main effort has shifted toward tin rather than gold. I would in general be very dubious if their gold production today were at all close to 5 million ounces a year.

Now, what their reserves are is extremely difficult to say. They certainly amount to some billions of dollars in terms of a \$35-an-ounce price. And they are certainly adequate for the purposes for which they use gold, namely, to overcome short-term deficiencies of other exportable products. Certainly they cannot continue major gold exports for a long period of time with any degree of safety, insofar as they think gold is important at all. But, internally they don't use gold. So while there is great talk about gold in commercial circles from time to time, I think that it is not an important subject.

There is one qualification. All the Soviet investment in gold would pay off, and pay off very handsomely, if we revalued gold again and gave the Soviet Union a fat bonus. The help we gave the Russians during the thirties by changing the value of gold is very difficult to overestimate. That was one of the most critical margins that permitted them to fulfill their prewar plans by buying American machinery and

to stockpile minerals that they needed for their military mobilization. If we give them that kind of bonus, they will be very happy, and gold will come into real account. But so long as gold is in essence at the rockbottom prices, it is not worth much to them.

QUESTION: Referring to the fact that you said that agriculturally Russia is not so well off, that its people are not well fed, the class has been exposed to the idea that one of the troubles with the western European economies is the fact that they are workshops, while the raw materials and the food have to come from eastern Europe and Russia. I am trying to make those two things add up. The situation is complicated by the fact that you left out the satellites. Russia doesn't have enough for herself, let alone giving some to western Europe if the worst should come about.

DR. SHIMKIN: That is perfectly true. The same thing happens in eastern Europe. In Germany the food situation is very bad indeed. In general, even in Rumania and Hungary, which used to be large suppliers of food for western Europe, the margin of food production has diminished and continues to diminish.

Now, there are two factors involved here. First of all, the whole emphasis has been upon heavy industry, which means that agriculture is starving for investments. Second, the fact is that collectivization is simply a mechanism controlling agriculture, that it is the world's most inefficient technique for agricultural production.

While, from the standpoint of resources, there is no question that the Soviet Union can ultimately produce two and three times as much in agricultural stuffs as it does now, I don't believe there is a ghost of a chance of its overcoming its agricultural problem so long as its whole philosophy is based upon collectivization and the idea of eliminating the peasant. This is inherent in Marxism. There was nobody that Marx hated worse than the peasant. So long as you have that, you are not going to have efficient agricultural production.

So from the standpoint of western Europe, in general, not only for agriculture but for minerals or for any kind of trade, the idea of great treasures and resources to be gained from the Iron Curtain countries is complete nonsense. There just isn't any such market. Every time the discussions of trade have come to a showdown, the whole thing has evaporated. The Soviets can, by suppression of their people, squeeze out some coarse grain exports; but that doesn't cause

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a surplus. They can do that by reducing their livestock numbers or just by feeding the peasants a little less bread. But there is no surplus and there can't be a surplus with their system.

COLONEL CONNER: Dr. Shimkin, on behalf of the college, I thank you for a most informative lecture and question period. You have given us a lot of information for the solution of our committee problems.

(13) May 1954--750/S/mmg