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A Comparison of the War Potentials of the U.S. and the U.S.S.R.

Carl E. Grant
U. S. Army

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FOREWORD

All members of the Strategy and Logistics Class of the Naval War College recently submitted a thesis on "A Comparison of the War Potentials of the U. S. and the U. S. S. R."

The Academic Board selected two from the group as the best. The authors of these outstanding papers were:

Lieutenant Colonel Carl E. Grant, CmlC., U. S. A.

Lieutenant Colonel Herbert F. Gagne, QMC, U. S. A.

It was desired to publish one of these in the **Information Service For Officers** and Lieutenant Colonel Grant's was so selected. The thesis of Lieutenant Colonel Gagne is of equal merit.

It is considered a unique testimonial to the knowledge of these two officers that as Army Officers, they produced the most acceptable papers on this subject in the Naval War College.

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THE AUTHOR

Lieutenant Colonel Carl E. Grant was born in Buffalo, New York, on 18 July 1912. He received his B. S. degree from the University of Alabama in 1935 and an M. S. degree from Lafayette College in 1936.

Following tours of duty at Edgewood Arsenal, Maryland and with the Chicago Chemical Procurement District, Colonel Grant served with the Chemical Section, Headquarters Western Task Force in French Morocco and as Chemical Officer, Headquarters Eastern Base Section in Algeria and Tunisia during the period December 1942 to May 1944. He was then transferred to Allied Force Headquarters and served as Chemical Supply Officer of that headquarters throughout the remainder of the Italian Campaign and until his return to the United States in December 1945.

After post-war duty assignments at Rocky Mountain Arsenal, Denver, Colorado and as Chemical Corps Liaison Officer at Wright-Patterson Air Force Base, Colonel Grant attended the Radiological Defense Course conducted at the Naval Damage Control School, Treasure Island, California in March-April 1947. Upon the completion of this course, he was placed on temporary duty with the Bureau of Ships, and served as Radiological Safety Officer for the Bikini Resurvey operations which were conducted during the summer of that year. Following his return from Bikini, Colonel Grant was assigned to the Office of the Chief Chemical Officer, Department of the Army. His assignment prior to being ordered to the Naval War College was as Chief of the Supply Division in that office.

Colonel Grant was awarded the Bronze Star Medal, the Commendation Ribbon, and the Order of the Crown of Italy for service during World War II.

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**A COMPARISON OF THE WAR POTENTIALS
OF THE
UNITED STATES AND THE U. S. S. R.**

Lieutenant Colonel Carl E. Grant, Cml C., U. S. Army

INTRODUCTION

The six years of World War II and the magnitude of the military operations which were carried out in Africa, in Europe, in Asia, and in the Pacific areas stand as indisputable evidence that the economic strength and the industrial capacity of a nation are decisive factors in the conduct of any major war. It is upon this economic and industrial strength that the armed forces in the field are dependent for their equipment and support.

It must be borne in mind, however, that the total productive capacity of a nation can never be devoted entirely to the manufacture of armaments and the support of a war effort for the sustenance of this productive effort on the home front requires that certain minimum essentials in the way of food, clothing, and shelter be made available to the civilian populace. A nation's "economic potential for war" may therefore be defined as that portion of its total economic output which can be utilized for war purposes, or as its total economic output less minimum civilian requirements. 1/ It is obvious that the portion of a nation's productive capacity which must be set aside to satisfy these minimum civilian requirements will depend in large measure upon the standard of living enjoyed by its people and upon their moral fiber and patriotism. While it is true that a reasonably accurate comparison of national standards of living can be drawn, the psychological factors involved are much less tangible and do not lend themselves to statistical analysis.

In considering this definition, it becomes apparent that economic potential for war is merely one element of the more inclusive term "war potential", which may be broadly defined as the overall ability of a nation to impose its will upon another by military force. 2/ An examination of the factors which go to make up the

1/ "Economic Mobilization Studies," *Economic Potential for War*, Publication No. R139, Industrial College of the Armed Forces, p. 5.

2/ *Ibid.*, p. 4.

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war potential of a nation must include, in addition to economic stature, a consideration of the strength and capabilities of military forces in being, the quantity and quality of armaments on hand, national traditions and ideologies, and certain other elements which contribute to or detract from the power of that nation as the case may be.

A comparison of the war potentials of the United States and the Union of Soviet Socialist Republics involves a study of the two foremost powers in the world today, two nations which are rich in natural resources, in manpower, and in productive capacity, and are recognized by the other peoples of the world as the leading proponents of the democratic and totalitarian systems of government, respectively. Since it is evident at the outset that a comprehensive analysis of the war potentials of these two great nations is precluded by the period of time allotted for the preparation of the thesis, the scope of this paper must necessarily be limited to a less exhaustive study of the major factors which contribute to their economic and military strengths.

The number and types of elements to be taken into consideration in comparing the war potentials of two or more nations seem to be largely a matter of opinion and range, on the one hand, from the three basic factors of manpower, industry, and raw materials, which have been referred to as those which establish the order of magnitude of war-making potential, to a detailed list of elements derived from a sub-division of these three basic factors.^{3/} However, for the purpose of this study, it is proposed to restrict the bases of comparison to physical geography, natural resources, population, industrial capacity, and military forces and armaments.

No leading nation in the world today stands alone, and it may be expected that in any major conflict of the future, the principal adversaries will be blocs or alliances of nations rather than single countries. The noncooperative attitude of the party leaders in the Kremlin and the aggressive policy which the Soviet Union has pursued since the end of World War II have already served

3/ Brig. Gen. Joseph B. Sweet, USA-Ret., *The Price of Survival*, p. 28.

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to divide the major nations of the world into two blocs; one consisting of the U. S. S. R. and her several satellites and the other represented by the signatories to the North Atlantic Treaty. In comparing the war potentials of the United States and the Soviet Union, the capabilities of their probable allies will be considered wherever it may be possible and practicable to do so.

In drawing such a comparison, it must be recognized that many of the available data pertaining to the U. S. S. R. have not been revised for publication since the years prior to World War II, and that the authenticity of much of the information which has been released officially by the Kremlin during the postwar period is regarded as suspect by many. It is dangerous, however, to classify such information as sheer propaganda, or to ignore its significance entirely, and it is believed that the value of these data may well be considered in the manner suggested by Schwartz in the following quotation from the preface to his recent book:

.....the fundamental question of the credibility of Soviet statistics must be faced. It is of course possible that the totalitarian masters of the Soviet economy are misleading both their own people and the outside world by publishing false, as well as ambiguous, data. This writer does not believe so. On the basis of his own experience and research, he believes that Soviet statistics are basically accurate in the overwhelming majority of cases, though not all; to mask secrets about their economy, Soviet leaders prefer ambiguity and withholding of data rather than outright statistical prevarication. At the same time, this author's experience has been that every Soviet statistic must be scrutinized with care to make sure that one understands its degree of comparability or noncomparability with other data often published under the same title. Unless this is done, seriously incorrect conclusions may be reached. 4/

4/ Harry Schwartz, *Russia's Soviet Economy*, p. XVI

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CHAPTER I

PHYSICAL GEOGRAPHY

Size and Shape

In 1950 the area occupied by the Union of Soviet Socialist Republics was estimated to be approximately 8,600,000 square miles, of which approximately 2,000,000 square miles were in Europe and 6,600,000 square miles in Asia. This total includes the former Baltic Republics of Lithuania, Latvia, and Estonia, together with other areas in Europe and Asia which have been absorbed by the Soviet Union since 1939 but have not yet been confirmed by international peace treaties. 1/

The U. S. S. R. emerged from World War II with territorial gains of approximately 182,500 square miles in Europe and some 81,900 square miles on the continent of Asia. This expansion of her frontiers to include an area greater than that represented by the states of New York, Pennsylvania, Maryland, Virginia, and North Carolina, plus all of New England, has increased the geographical area of the Soviet Union to 2.87 times that of the continental United States. 2/

Thus, during the war and postwar period in which the United States, Great Britain, France, and the Netherlands granted independence to Asiatic territories having a combined area equal to that of the continental United States, Russia succeeded in expanding her borders by 264,400 square miles and extending the

1/ Eugenie Bouianovsky, *The U. S. S. R.—Summary of Basic Economic Information*, p. 1.

2/ *The National Geographic Magazine*, March 1951, p. 416.

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sphere of Communist influence to nine of her neighboring countries. 3/

The wide variation in the physical geography of the Soviet Union and the United States becomes evident at once when the maps of these two nations are compared with one another.

Soviet territory spreads across 160 degrees of longitude, and extends southward from latitude 77 degrees north to latitude 35 degrees north. The shortest distance between its eastern and western boundaries is more than 5,590 miles and from north to south over 2,800 miles. 4/

On the other hand, the 3,022,387 square miles which comprise the territory of the United States lie within a span of only 58 degrees of longitude, and extend southward from latitude 49 degrees north to latitude 25 degrees north. In contrast to the transcontinental distances of the Soviet Union, the most distant extremes of the United States are only 3,100 miles apart. 5/

Position

A further comparison of the geographical positions of these two nations indicates that the entire territory of the U. S. S. R. lies north of the latitude represented in the United States by a line running westward from Charlotte, North Carolina to Memphis, across central Arkansas and Oklahoma, through the Texas panhandle, and across New Mexico and Arizona to a point on the west coast roughly midway between Los Angeles and San Francisco.

3/ *Ibid.*, pp. 416-17.

4/ Bouianovsky, *op. cit.*, p. 1.

5/ John B. McDonnell, "United States-Boundaries, etc.," *Encyclopedia Americana*, 1948 edition, 27, 305.

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The position which a nation occupies with respect to neighboring countries and bordering sea areas is a significant factor to be considered in comparing the geographical advantages of two or more countries.

In contrast to the United States, which is bordered only by Canada in the north, by Mexico and the Gulf of Mexico in the south, by the Pacific in the west, and the Atlantic in the east, the Soviet Union shares a common frontier with twelve nations: Norway, Finland, Poland, Hungary, Czechoslovakia, Rumania, Turkey, Iran, Afghanistan, China, Outer Mongolia, and Korea. Her sea frontiers border on the Arctic Ocean, the Barents, Baltic, Black, and Caspian Seas, the Sea of Japan, Sea of Okhotsk, and the Bering Sea.

While it is true that the Soviet Union has succeeded in imposing varying degrees of political, military, and economic control upon the governments and people of seven of her immediate neighbors ^{6/}, it would appear that her extensive frontiers are far less secure against attack than those of the United States.

Climate

Although the vast expanses of the U. S. S. R. include a variety of climatic regions, 80 per cent of the land area of Russia lies within the temperate zone. Only 4 per cent, in the Far East and Caucasus, enjoys a subtropical climate, and the remaining 16 per cent is within the cold or Arctic zone. ^{7/}

The outstanding characteristic of the Soviet climate is its continentality. The perpetual ice fields in the north and the mountain ranges along the eastern borders of the U. S. S. R. miti-

^{6/} Poland, Czechoslovakia, Hungary, Rumania, China, Outer Mongolia, and Northern Korea.

^{7/} Harriet L. Moore, "Union of Soviet Socialist Republics", *Encyclopeddia Americana*, 1948 edition, 27, 291C.

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gate the tempering influence of the Arctic and Pacific Oceans, respectively. Only the Atlantic exercises any moderating effect upon the climate, an effect which is limited primarily to the areas west of the Urals in European Russia. Throughout the greater portion of the Soviet Union, winter accompanied by freezing temperatures is the longest season of the year. 8/

In his book, *The Basis of Soviet Strength*, Cressey characterizes the climate of the U. S. S. R. in the following manner:

Winter is the dominant season. The frost-free period is less than 60 days in the Siberian Arctic and only 90 to 120 days in the northern half of Soviet Europe and Central Siberia. In the Central Europe area and the Ukraine and in southwestern Siberia, the frost-free time is between 120 and 180 days, and exceeds 200 days only in Middle Asia. 9/

Despite the extreme diversity of climatic conditions which exist within her boundaries, the land areas occupied by the United States lie wholly inside the temperate zone. Although average annual temperatures in the United States are intermediate between those of the Arctic and the tropics, the maximum summer temperatures in some areas exceed those encountered in tropical regions, while in other sections of the country, the lowest winter temperatures rival those of the Arctic. 10/

In contrast to the short crop-growing seasons in the Soviet Union, the frost-free period in the United States ranges from 100 to 120 days in the extreme northern sections of the country to about 260 days in the Gulf areas. In some elevated areas in the

8/ Loc. cit.

9/ George B. Cressey, *The Basis of Soviet Strength*, p. 97.

10/ J. B. Kincer, "United States of America — Climate," *Encyclopaedia Britannica*, 1945 edition, 22, 728.

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west the growing season is less than 90 days in length, but in southern Florida killing frost occurs in less than half the years. 11/

Notwithstanding the fact that one sixth of the total land area of the world lies within the perimeter of the Soviet Union, a comparison of the physical geography of the U. S. S. R. with that of the United States indicates that the latter nation possesses the majority of advantages.

CHAPTER II

NATURAL RESOURCES

Natural resources have been defined in broad terms as those things which are used by man for his own material comfort and advancement. 1/ However, for the purpose of this paper, consideration of the natural resources of the United States and the Soviet Union, insofar as they affect the war potentials of these nations, will be limited to the three general categories of energy resources, mineral resources other than fuel, and agriculture and related resources.

Energy Resources

In the field of energy resources, coal, petroleum, and hydroelectric power are generally considered to be the most important elements.

The last official estimate, which was made public at the Seventeenth International Geological Congress in Moscow in 1937, totalled Soviet coal reserves at 1,654 billion metric tons. Of this total, only 131 billion tons (8 per cent) were referred to as

11/ *Loc. cit.*

1/ "Economic Mobilization Studies," *Natural Resources*, Publication No. R134, Industrial College of the Armed Forces, p. 17.

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“actual” reserves and only 295 billion tons (18 per cent) were indicated as “probable” reserves. The remaining 74 per cent of the total must therefore be considered as “assumed” reserves. Approximately 87 percent of the total reserve of 1,654 billion tons was estimated to be anthracite or bituminous, with lignite accounting for the remaining 13 per cent. 2/

These reserves place the U. S. S. R. second only to the United States with her estimated 3,485 billion tons of coal reserves. However, as is the case with so many of the other resources credited to the natural wealth of the Soviet Union, approximately 90 per cent of these coal fields are located in Asia where the lack of transportation, absence of industrial consumers, and sparseness of population make them relatively inaccessible or uneconomical to exploit. 3/

In making a comparison of the estimated coal reserves, it is apparent that the United States, Great Britain and Canada together hold 52 per cent or more than half of the world's total. Russia's share of these total reserves is estimated to amount to 24 per cent. 4/ The distribution of the remaining 24 per cent of the world's coal reserves is indicated in Appendix A.

The extensive mechanization which has taken place in the composition and equipment of military forces during the past few years and the widespread and ever increasing use of both the gasoline and diesel engine in the fields of transportation, industry, and agriculture emphasize the importance of petroleum resources to the economic strength and military potential of any nation. Colonel E. R. Rivers-Macpherson, writing in *The Army Quarterly*, offers the following estimate of future wartime petroleum requirements:

2/ Eugenie Bouianovsky, *The U. S. S. R.—Summary of Basic Economic Information*, p. 6.

3/ *Loc. cit.*

4/ *Minerals Yearbook 1949*, p. 28.

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.....we can say, with reserve, that any future war on a large scale would consume at least four to five times the amounts of oil as were used in the last war—the latter may be an understatement. 5/

The enormity of any such requirement is emphasized when it is considered in terms of the quantities used during the course of World War II. Approximately 7,109,000 tons of petroleum products had been shipped to the European Theater of Operations alone by V-E Day, a quantity which was 43 times as large as the total tonnage of oil products used by our forces during the First World War. 6/

As in the case of coal, the most recent official estimate of Soviet petroleum reserves is the one announced at the Seventeenth International Geological Congress in 1937 when Russia estimated her oil reserves at 3,877 million metric tons, or approximately 55 per cent of the total world reserves. Of this total, however, only 883 million tons were classified by the Soviets in categories usually considered as "proved" reserves by other nations, leaving 2,994 million tons or approximately 77 per cent of the total in the category of "assumed" reserves. 7/

Subsequent estimates appear to discredit rather than substantiate these official figures, for foreign estimates of Soviet petroleum resources range all the way from 5 to 30 per cent of total world reserves, while subsequent Russian claims as high as 67 per cent of such reserves have been made. 8/ If, for comparative purposes, consideration is limited to the "proved" Soviet

5/ Colonel E. R. Rivers-Macpherson, "Oil Strategy," *The Army Quarterly*, July 1951, p. 158.

6/ Lt. Colonel Randolph Leigh, *48 Million Tons to Eisenhower*, p. 119.

7/ Bouianovsky, *op. cit.*, p. 7.

8/ Julian Towster, "Russia," *Current History*, July 1951, p. 4.

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reserves alone and these 883 million tons are converted to per cent of world reserves, a figure is obtained which is approximately the same as the 14 per cent of the proved total world oil reserves credited to the U. S. S. R. in the analysis prepared in 1947 by the National Industrial Conference Board. 9/

On this same basis of comparison, the United States holds 35 per cent of the world total of proved reserves, or about 2.5 times as much as the Soviet Union. By virtue of Venezuela's holdings of an additional 12 per cent of the world total, about half of the proved oil reserves in the world are located in the Americas. The remaining bulk of petroleum resources is located in the Middle East where reserves are estimated at approximately 30 per cent of the world's total. 10/ As further evidence of the variation in estimates, it will be noted that the data contained in Appendix A indicate that the *Minerals Yearbook* 1949 credited the U. S. S. R. with only 6 per cent of the world's oil resources.

In reviewing this distribution of oil reserves, it is apparent that if the resources of the Middle East were acquired by the Soviets, either by means of diplomatic or military persuasion, Russia would overcome the present advantage held by the United States and would, in fact, control the other half of the world's proved reserves.

Unlike coal and petroleum, hydroelectric power constitutes a source of energy which does not become exhausted by use. On the other hand, it cannot be stored or stock-piled, and can therefore be "saved" only if it is utilized.

In 1937 the Soviet Union claimed to be the world's leader in water power resources with an estimated potential annual capacity

9/ *America's Resources for World Leadership*, National Industrial Conference Board, Inc., p. 17.

10/ *Loc. cit.*

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of 280 million kilowatts. At the same time, the United States and Canada were credited with potential capacities of 82 and 37 million kilowatts, respectively. 11/ However, in attempting to assess the comparative value of such resources, it must be remembered that the development of hydroelectric power cannot be achieved on short notice but requires considerable detailed planning and a great amount of construction at an extremely high initial cost. These factors appear to be reflected in the fact that despite their proclaimed three to one advantage over the United States in water power resources, the Soviets' hydroelectric developments were scheduled to produce only 15 percent of their total output by the end of 1950. 12/ In the United States, 35 percent of the total power output is generated by hydroelectric plants. 13/

Mineral Resources Other Than Fuel

Since neither time nor space will permit a detailed discussion of the wealth of ferrous, ferro-alloying, and non-ferrous mineral resources present in both the United States and the U. S. S. R., the comparison of these reserves will be limited, in general, to the seven major minerals listed in Appendix A, i. e., iron, manganese, copper, bauxite, lead, zinc, and tin.

Since the development and exploitation of mineral resources are directly related to the requirements of a nation's industries, it is not surprising that much of the information pertaining to mineral reserves within the U. S. S. R. is of comparatively recent origin. In fact the Soviet regime must be credited with initiating the geological work which led to the discovery that Russia's natural resources were much richer and more extensive than had ever been expected. Only

11/ S. S. Balzak, V. F. Vasyutin, and Ya. G. Feigin, *Economic Geography of the U. S. S. R.*, p. 208.

12/ Bouianovsky, *op. cit.*, p. 9.

13/ George A. Lincoln, William S. Stone, and Thomas H. Harvey, editors, *Economics of National Security*, p. 295.

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one tenth of her territory had been explored geologically prior to the Bolshevik revolution of 1917, but as the result of numerous surveys sponsored by the Soviet government during the 1930's, nearly 75 percent of the U. S. S. R. had been submitted to detailed geological survey by 1945. 14/

The extent and quality of a nation's iron ore deposits are important elements to be considered in any comparison of war potentials, for iron and coal together constitute the basis of heavy industry and are the materials from which the majority of the tools, weapons, and other implements of modern war are produced. In 1948 it was estimated that iron and steel accounted for approximately 90 per cent by weight of all the metals used in the United States. 15/

In 1938 the Soviets claimed to have had iron ore reserves of all kinds and grades totalling approximately 11 billion metric tons, 4.5 billion tons of which consisted of reserves which had been computed fairly accurately and were considered available for use in the immediate or near future. These reserves were also estimated by the Soviets as representing approximately 54 per cent of the world's total iron ore resources, including deposits of low-grade ores. 16/ This latter figure appears to have undergone a marked downward revision during the intervening years, for estimates prepared by the Bureau of Mines in 1949 credit the U. S. S. R. with only 11 per cent of the world's reserves as against the 34 per cent located within the United States and the total of 49 per cent located in the North American continent. 17/ A detailed break-

14/ "Has Russia All the Raw Materials?", *The Economist*, September 29, 1951, p. 752.

15/ "Economic Mobilization Studies," *Natural Resources*, Publication No. R134, Industrial College of the Armed Forces, p. 19.

16/ Harry Schwartz, *Russia's Soviet Economy*, p. 19.

17/ *Minerals Yearbook 1949*, p. 28.

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down of the distribution of iron ore reserves throughout the world is contained in Appendix A.

The two principal deposits of iron ore in the Soviet Union are located at Krivoi Rog in the southern Ukraine and at Magnitogorsk in the southern Urals, although it has been reported that the U. S. S. R. is currently working approximately 100 of her 600 known ore deposits. 18/

As indicated in Appendix A, Russia is the leading source in the world for manganese with reserves estimated at 58 per cent of the world total. Although the quantities of manganese used throughout the world are relatively small in comparison to the tonnages of certain other minerals, it is an essential element in steel making and, until recently, the United States was one of the principal customers in Soviet export trade in this material. That the United States is not dependent upon Russian manganese was demonstrated during the period of World War II when the flow of this material from the U. S. S. R. was interrupted and this country supplied its war industries with manganese imported from Brazil, India, Cuba, and Africa. 19/

Soviet exports of manganese to the United States have been sharply reduced since 1948, and preliminary figures indicate that our 1950 imports amounted to only about 15 per cent of the tonnage received from the U. S. S. R. in 1948. 20/

In addition to manganese, the steel industry requires somewhat lesser quantities of chromium, molybdenum, tungsten, nickel, vanadium, and cobalt in the fabrication of special purpose steels.

18/ Bouianovsky, *op. cit.*, p. 9.

19/ *Ibid.*, p. 10.

20/ *Loc. cit.*

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With the exception of molybdenum, which is available from our own sources in adequate quantities, this country is forced to rely upon imports to supplement inadequate reserves of the other ferro-alloying metals. 21/ Russia has made substantial shipments of chromium ore to the United States in the past, but, as in the case of manganese, these imports have fallen off markedly since 1948. 22/

While the Soviet Union is relatively well off with respect to its domestic supplies of chromium and nickel, the quantities of molybdenum, tungsten, vanadium, and cobalt mined within the U. S. S. R. are insufficient to satisfy production needs and must be augmented by imports from other sources. 23/

In reserves of copper, an essential material in the electrical, communications, and electronics industries, and one which has widespread uses in the manufacture of armaments and munitions, the United States enjoys a two to one advantage over the Soviet Union. Copper reserves in the United States total 20 per cent of the world's total while those in the U. S. S. R. are estimated at half that amount. 24/

The ever-increasing use of aluminum and lightweight alloys in the fabrication of aircraft and military equipment emphasizes the importance of bauxite deposits to both the economic and military strength of a nation.

With respect to reserves of this ore, the United States and the Soviet Union are in comparable positions, since each nation

21/ *America's Resources for World Leadership*, National Industrial Conference Board, Inc., p. 13.

22/ Bouianovsky, *op. cit.*, p. 10.

23/ *Ibid.*, p. 11.

24/ *Minerals Yearbook 1949*, p. 28.

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possesses only about 2 per cent of the total reserves present in the world. It should be noted, however, that the severity of these deficiencies is offset to a considerable extent by the presence of substantial reserves in adjoining or nearby countries. The continent of North America is estimated to contain 20 per cent of the world's total bauxite reserves, over and above the deposits in the United States, and the U. S. S. R. can count, with reasonable assurance, upon the availability of an additional 13 per cent of the world's total reserves which are located in Hungary and Rumania. In considering more remote sources of supply, it appears probable that the 9 per cent of the world's reserves which are located in South America and the additional 22 per cent present in the British and French African colonies would be made available to the United States and her prospective allies, while the Soviets would presumably have access to the 9 per cent of the world's total estimated to be in China. India is another major source of bauxite ore with reserves estimated at 15 per cent of the total present in the world. 25/

As indicated in Appendix A, the United States possesses a decided advantage over the U. S. S. R. in lead reserves with holdings estimated at 18 per cent of the world's total, as compared to Russia's share of 6 per cent. The position of the United States is further strengthened by the presence of lead deposits in the British Commonwealth which account for approximately half of the total estimated to be present in the world today. In terms of the world total, Canada's and Australia's holdings have been estimated at 10 per cent and 32 per cent, respectively. Outside sources which might become available to the Soviets are limited by comparison.

In terms of zinc reserves, the United States leads the world with resources amounting to 28 per cent of the total. Russia's reserves of zinc ores have been estimated at 8 per cent of the world

25/ *Loc. cit.*

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total. As in the case of lead, both Canada and Australia possess large deposits of zinc ores. 26/

The United States is almost entirely dependent upon imports to supply her requirements for tin, and although the U. S. S. R. has been credited with the possession of 3 per cent of the total tin reserves in the world, she too has been forced to rely heavily upon imports to satisfy her needs. 27/ With the major portion of the world's tin reserves located in southeast Asia, it appears that Bolivia's tin deposits will be of great importance to the United States in any future world conflict.

Uranium, a relatively unimportant mineral until a few years ago, deserves at least brief consideration in view of the significance it has attained in the present day world. It seems quite probable that as the industrial applications of nuclear energy are developed and expanded, uranium will come to be classified as an energy resource rather than a mineral resource. However, in view of its present limited application in the industrial field, it is believed that the latter classification is more appropriate for the time being.

It is known that uranium ores are present in a number of locations in the U. S. S. R., but the concerted efforts which Russia has made to obtain this material from Czechoslovakia and eastern Germany since the end of World War II suggests that her domestic sources may be inadequate. 28/

Agriculture and Related Resources

Agriculture is a basic element in the economy of any major world power for in addition to providing the bulk of the food products required by a nation, it contributes in large measure to its clothing and shelter needs. The potential agricultural development of an

26/ *Loc. cit.*

27/ Schwartz, *op. cit.*, p. 25.

28/ *Loc. cit.*

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area is determined by the existing climatic conditions and the fertility of the soil. It is possible for a nation to offset a lack of adequate rainfall by means of irrigation and to improve the quality of the soil by fertilization, both of which are expensive, but little can be done to modify the effect of the temperatures which characterize its climate.

As pointed out in Chapter I, most of the great land mass of the U. S. S. R. lies in the same latitudes as Canada and only the southern areas of the Soviet Union are located in latitudes comparable to those occupied by the northern and central regions of the United States. The climate throughout much of the U. S. S. R. is unfavorable for agriculture and the frost-free period in much of the northern and central areas imposes a definite limitation upon the length of the crop-growing season.

It is estimated that the good agricultural land in Russia covers less than one third of her 8.6 million square miles of territory, and that the remaining two thirds are either unsuitable or unused because of adverse climatic conditions, unfavorable terrain, or lack of irrigation. 29/ The bulk of Russia's farming land lies within a triangle bounded on the west by Leningrad and the Black Sea and tapering eastward toward Lake Baikal. 30/

By comparison, the environment of the United States is generally favorable for agriculture and recent statistics indicate that approximately 1,784,000 square miles or 59 per cent of the territory are devoted to agricultural production. 31/ The consistently favorable climate of the United States is evidenced by the bumper and near-bumper crops which have come to be accepted as a matter of

29/ Bouianovsky, *op. cit.*, p. 4.

30/ George B. Cressey, *The Basis of Soviet Strength*, p. 2.

31/ *Statistical Abstract of the United States 1950*, p. 561.

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course in this country, while in Russia drought and crop failure are ever-present menaces that become realities every few years. Even in the steppe, where some of the richest soil in the world is found, partial or complete crop failures occur every few years as a result of droughts.

The limitations and restrictions which nature has imposed upon Russia's agricultural resources are emphasized when it is considered that the population which must be supported by the land is one third larger than that of the United States.

Timber reserves are an important element in the natural wealth of the U. S. S. R. for, in addition to providing a basic raw material for her domestic economy, the lumber taken from them constitutes one of the Soviet Union's most important export commodities. In 1939 it was estimated that Russia's extensive forests covered approximately one third of the Soviet's territory at that time, and that these reserves comprised about 20 per cent of all the forested areas in the world. 32/

National Self-Sufficiency

Speaking at a conference of economists in 1931 Stalin said, "As far as natural resources are concerned, we are completely provided for." 33/

Notwithstanding this statement and the fact that the United States and the Soviet Union are both largely self-sufficient in terms of natural resources, neither country possesses within its borders all of the vital materials required by its economy.

As a means of overcoming these deficiencies and insuring

32/ Schwartz, *op. cit.*, p. 11.

33/ N. Mikhaylov, *Soviet Geography*, p. 39.

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the availability of a supply of these important materials which are considered essential to national defense, the United States has instituted stockpiling programs which have already led to the accumulation of stocks valued at more than 3 billion dollars, with a stockpile valued at more than 8 billion dollars as their ultimate objective. 34/ The Soviet Union has imported large quantities of tin, wool, rubber, and other commodities since the end of World War II, which indicate that it is also actively engaged in stockpiling raw materials. 35/

The growing reluctance of several of the nations of the world to engage in international trade with the U. S. S. R. is bound to make it increasingly difficult for the Soviets to obtain imports of these strategic materials, and it appears probable that this situation would become much more acute during the course of a war in which the Western Allies would undoubtedly possess control of the seas.

CHAPTER III POPULATION

"The human beings who constitute it are the primary natural resources of any society." 1/

The inhabitants of a nation contribute in large measure to its economic and military strength for it is the people who must develop and exploit the natural resources, convert the raw materials into finished products by means of their inventiveness or technical

34/ Editorial, "The Cost of Arms," *The New York Times*, October 7, 1951, Section 4, p. 10.

35/ Schwartz, *op. cit.*, p. 544.

1/ Harry Schwartz, *Russia's Soviet Economy*, p. 26.

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skills, and, in time of war or national emergency, provide both the armaments and military manpower required for the accomplishment of national objectives. The size of a population, its distribution by age and sex, its general level of education, its distribution by occupation, and its standard of living are all factors which bear directly upon the strength of a nation.

Size

A large or relatively large population is an essential element of national strength, but size alone is not enough. China and India, the two most populous countries in the world today, stand as evidence that large populations do not, in themselves, constitute national power.

The population of Russia, which was the largest in Europe even prior to World War I has increased rapidly in the face of very considerable losses to a strength estimated in 1950 at more than 200 million persons, thus making her the third largest nation in the world in terms of population. 2/ The rapid natural increase which has characterized the population change in the U. S. S. R. is typified by the gain of approximately 23.5 million persons which occurred between the census of 1926 and that of 1939. 3/ This average annual gain of about 1.2 per cent throughout this thirteen year period took place despite the famine which occurred during the early 1930's. While it is true that the territories acquired by the U. S. S. R. during the World War II period increased her population by some 24.3 million people, it must be remembered that the population of the Soviet Union has also suffered very considerable losses from time to time since the turn of the present century. 4/ Dr. P. E. Mosely, Professor of International Relations at the Rus-

2/ Loc. Cit.

3/ Schwartz op. cit., p. 27.

4/ Loc. cit.

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sian Institute, Columbia University, has summed up the effect of these losses in the following manner:

If it had not been for the losses suffered by Russia during the First World War, during the Civil War and intervention, which were much more destructive than the World War, then the period of famine, then the collectivization, (it must have eliminated around 5,000,000 people), then the Second World War which probably had direct losses of 12,000,000 people, and finally losses due to decline in birthrate during the war, (perhaps 5,000,000 more), if it were not for these great bloodlettings, which have occurred at least three times in a little over thirty years, we would face a Soviet Union which would have around 275,000,000 people rather than one which probably has around 210,000,000 today. 5/

The most recent information from the Kremlin on the subject of the Soviet population was contained in an address made in Moscow in early November of this year by Mr. L. P. Beria, a member of the Politburo. In his address, Mr. Beria indicated that the population of the U. S. S. R. was registering a net increase of more than 3 million persons annually. This increase when added to the January 1950 estimate of more than 200 million people places the present Soviet population at approximately 207 million persons. 6/

This latest figure indicates that the population of the U. S. S. R. is now approximately 54 million greater than that of the United States which was set at approximately 153 million persons by the Bureau of the Census in May of this year. 7/

5/ Dr. P. E. Mosely, "The Rise of Soviet Power," Information Service for Officers, U. S. Naval War College, December 1950, p. 14.

6/ The New York Times, November 11, 1951, Section I, p. 36.

7/ "Economic Mobilization Studies," Manpower, Publication No. R130, Industrial College of the Armed Forces, p. 9.

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In comparing populations and, in turn, manpower, it is interesting to note that according to 1949 statistics, the populations of the non-Communist nations, together with that of Yugoslavia, totalled approximately 1,624 million persons or more than double that of the 753 million people who live within the borders of the U. S. S. R. and her satellites. 8/ In making such a comparison, however, it must be borne in mind that this predominance of manpower in the anti-Communist bloc includes the estimated 342 million inhabitants of India and that her decision to remain neutral in a future world conflict would effect a corresponding decrease in this manpower advantage.

Estimates of future population changes are inclined to differ rather widely and are generally open to considerable dispute and argument because of the variables involved. They do, however, provide the only means of predicting what our own manpower resources as well as those of our potential allies and enemies may be in the future, and therefore merit consideration in any comparative study of war potentials.

Dr. Frank Lorimer has estimated that the population of the Soviet Union will have risen to 228.5 million by 1960 and to 251.4 million by 1970. 9/ The future population of the United States has been estimated at approximately 157 million in 1960 and 168 million by 1970. 10/ That such estimates are subject to continual and often marked revision is evidenced by the fact that Dr. Roy V. Peel, Director of the Census, announced in September of this year that he estimated the population of this country would rise to

8/ U. S. Congress, House, Committee on Foreign Affairs, *Background Information on the Soviet Union in International Relations*, 81st Congress, 2d Session, House Report 3135, pp. 49, 51.

9/ Frank Lorimer, "Population Prospects of the Soviet Union," *New Compass of the World*, p. 167.

10/ *Estimates of Future Population of the United States, 1940-2000*, National Resources Planning Board, p. 29.

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more than 180 million people by 1960, an increase of approximately 29.5 million over the level of 1950. 11/

Distribution by Age Group and Sex

In evaluating the human resources of a nation the distribution of its population by age group and sex provides a measure of the manpower available for productive work in industry as well as service in the armed forces. Appendix B contains a tabulation of the estimated distribution of the population of the Soviet Union by age group and sex, as of January 1939. Comparable data for the United States based upon the 1940 census have been included in Appendix C.

A review of the available data indicated that in 1939 approximately 61.5 million or 36 per cent of the Soviet people were less than fifteen years of age, that about 81 million or 47 per cent of the population were between fifteen and forty-four years of age, and that 29 million or about 17 per cent of the total were forty-five or more years of age.

By comparison, we find that in 1940 approximately 33 million persons in the United States or 25 per cent of the total population were less than fifteen years of age, that 64 million or about 48 per cent of the total were in the fifteen to forty-four year group, and that 35 million or 27 per cent of the people were forty-five or more years of age.

Thus, it appears that while the Russian population contained a greater percentage of persons under fifteen years of age and a smaller percentage of people over forty-five years of age than the population of the United States did during the period 1939-40, the percentage of individuals in the military or potential military age

11/ The New York Times, September 27, 1951, p. 47.

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group of fifteen to forty-five years of age was essentially the same in both countries. It may be assumed that the extremely heavy losses which the U. S. S. R. suffered during World War II, both in her armed forces and among her civilian populace, are now being reflected in proportional decreases in population age groups of twenty-five years or more, and that these losses will limit the size of the Soviet labor force for the next few decades.

General Level of Education

The extent to which the people of a nation are capable of developing and exploiting their natural resources and their efficiency in transforming these raw materials into usable goods are governed by their educational level and the technical skills which they have developed. It is axiomatic that the economic strength of a nation of well educated people is far superior to that of a country where the general level of education is substantially lower, even though the natural wealth and resources of the two nations may be approximately the same.

Throughout the long span of the Czarist regime, the great masses of the Russian people were uneducated for the most part, and it has been estimated that approximately 75 per cent of the people were illiterate when the Bolsheviks came to power in 1917. 12/ The Reds, however, were quick to appreciate the potential power of education both as a means of winning the political support of the people and of producing the technical skills which would be required if Russia were to throw off her traditional cloak of backwardness and take a place among the industrial nations of the world. The drive for universal literacy in the Soviet Union has received special emphasis since that time and the census of 1939 reported that illiteracy among the Russian people had been reduced to less than

12/ "How Strong is Soviet Russia?", *Armed Forces Talk*, No. 375, June 8, 1951, p. 4.

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20 per cent of the total population. 13/ It may be well to point out at this time that the Russians define literacy as "the ability to read and write or only read." 14/

In contrast to the educational system of the United States, the school system of the U. S. S. R. like every other phase of Soviet life is controlled and operated by the Communist Party rather than by the educators, and features a liberal amount of political indoctrination and training throughout its structure.

The four-year level of compulsory education which was established in the U. S. S. R. in 1930 has gradually been increased to seven years and this latter level became compulsory throughout the Soviet Union beginning with the 1949-50 school year. 15/ However, despite the importance which has been attached to the educational progress of the country by the Soviet regime, it is estimated that only about 24 per cent of the children in the U. S. S. R. continue their education beyond the level of the fourth grade. 16/ It may be assumed that this proportion will increase appreciably within the next few years as a result of the recent increase in the period of compulsory schooling.

In relation to national population, attendance at colleges and universities is much lower in the Soviet Union than in the United States. 17/

Distribution by Occupation

A fourth factor to be considered in comparing human resources is the occupational distribution of a population. Since

13/ Eugenie Bouianovsky, *The U. S. S. R.—Summary of Basic Economic Information.*, p. 4.

14/ *Loc. cit.*

15/ *Ibid.*, p. 3.

16/ *Armed Forces Talk*, No. 375, June 8, 1951, p. 4.

17/ *Loc. cit.*

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rural populations are largely employed in agriculture and those in the urban areas are primarily engaged in producing goods or providing services, the division of a nation's population into rural and urban segments provides an approximate measure of that nation's degree of industrialization and productive capacity.

As in the case of distribution by age groups, the 1939 Soviet census is the latest source of data relative to the division of the Russian population between rural and urban communities. These and prior figures, which do provide a basis of comparison, have been listed in Appendix D, together with United States census figures for the corresponding periods of time.

These data indicate that the percentage of Soviet people living in urban areas nearly doubled during the period between the census of 1926 and that of 1939, although more than two-thirds of the total population was still classified as rural in 1939. One source has estimated that the urban population of the U. S. S. R. may well have risen to 40 per cent of the total by 1950. 18/ If such were the case, the percentage of Russians living in urban communities would be equivalent to the corresponding proportion for the United States in the year 1900. In any event, it is apparent that the total percentage of the Soviet labor force devoted to manufacturing is appreciably less than that of the United States, a situation which may be expected to continue for some time into the future.

Standard of Living

In terms of their respective standards of living there is a marked differential between that enjoyed by the American citizen and that to which the average resident of the U. S. S. R. has become accustomed. While it is obvious that living standards are

18/ Schwartz, *op. cit.*, p. 33.

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bound to vary to a considerable degree among the more than 150 ethnic groups which comprise the citizenry of the U. S. S. R., and general statements about living standards may be held open to question on this basis, it may be stated with assurance that "throughout Soviet history—as well as under the Czarist regime—the average standard of living in the U. S. S. R. has been low compared with that in Western Europe and the United States." 19/

The average Russian subsists on a diet composed largely of bread and other grain foods and has little or no contact with the types of consumer goods which have come to be accepted in the United States as the hallmark of 20th century living. This relatively low standard of living cannot be accepted without reservation as an indication of low productivity on the part of the Soviet Union, however, for the national programs instituted by the Kremlin have stressed a rapid industrialization in the interest of building a modern economy at the expense of personal comforts and an adequate supply of consumer goods. While the Fourth Five-Year Plan placed emphasis upon the production of civilian goods, information divulged by the Soviet authorities in 1950 indicated that the manufacture of consumer goods still had not reached 1940 goals, although the situation which prevailed at the end of World War II had been materially improved. 20/

The poor quality and inadequacy of housing which has for years been one of the worst features of the Soviet standard of living was further aggravated by the rapid expansion of urban areas during the 1930's coupled with the widespread destruction of housing which took place in the western portions of the country during World War II. Gross overcrowding continues to exist and the

19/ Ibid., pp. 26, 360.

20/ Ibid., p. 568.

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prewar housing pattern of one room per family, with shared kitchen and bathroom facilities, still obtains. 21/

As might be expected, the shortage of housing is most acute in the urban areas, and it has been estimated that the per capita average of forty-six square feet which prevailed in the city of Moscow in 1938 has since been reduced to thirty-eight square feet. 22/ The rural housing program is also lagging in that only 2.7 million or slightly less than 80 per cent of the scheduled 3.4 million houses have been either built or repaired. 23/

The underlying causes of the wide variance in the American and Soviet standards of living are summarized in the following observation:

The immense efforts put forth in the U. S. S. R. since 1928 and the enormous resources employed could have made possible a rise in the standard of living to heights far beyond any known before in that country. But the government put guns before butter and factories before homes, failing time and again to realize the glowing promises of improved conditions made to its people.....around 1937 the real per capita disposable income available to consumers in the U. S. S. R. was roughly equivalent to that in the United States during the decade 1869-78. At the same time the volume of Soviet production of chief industrial raw materials was at approximately the level of United States output of these commodities in the first decade of the twentieth century. The thirty year gap in-

21/ Howard C. Gary, "The U. S. S. R.—Economic Strengths and Weaknesses," *Foreign Policy Reports*, April 1, 1951, p. 21.

22/ *Loc. cit.*

23/ Isaac Deutscher, "How Strong is the U. S. S. R.?", *The Reporter*, August 7, 1951, p. 20.

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licated between consumption and industrial raw material output is a crude but significant measure of the differential impact of capitalist and Soviet economic development upon standards of living. 24/

CHAPTER IV

INDUSTRIAL CAPACITY

Although the expansion of mineral, metallurgical, textile and transportation industries in Russia during the latter part of the 19th century marked the beginning of a rapid transformation in a nation which had been predominantly peasant throughout its history, it remained for the Soviet regime to develop her industrial power to a level second only to that of the United States. While the accuracy of the figures has often been questioned, it has been reported that Russia's industries produced 18.5 per cent of the world's manufacturing production in 1938 as compared to only 5.5 per cent of the total in 1913. 1/

In spite of the fact that it is frequently difficult to evaluate production changes which have taken place within the U. S. S. R. because of the complete lack of or the untrustworthiness of the data released by the Soviet government, certain elements of her industrial capacity do lend themselves to reasonably accurate and comparable measurement. A list of comparative production data in selected economic fields in both the United States and the U. S. S. R. for the year 1949 is included in Appendix E.

Agriculture

Year-end figures made public by the Kremlin in November of

24/ Schwartz, *op. cit.*, pp. 537, 538.

1/ Howard C. Gary, "The U. S. S. R.—Economic Strengths and Weaknesses," *Foreign Policy Reports*, April 1, 1951, p. 19.

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last year indicate that the 1950 grain crop totaled 124 million metric tons or about 3 million tons less than the target set in the Fourth Five-Year Plan. The same statement claimed that although the sugar beet harvest was some 2.5 million tons short of the planned production yield, it represented a substantial increase over 1940 levels, and that cotton produced in 1950 exceeded the planned goal of 3.1 million metric tons by more than 500 thousand tons. 2/ In his speech in Moscow last month, Mr. Beria made no claim of any marked increase in the Soviet grain crop for 1951, but did state that cotton and sugar beet production were higher again this year. 3/

While it is evident that Soviet agriculture has made definite gains since the end of the war, it has been pointed out that these accomplishments should be weighed against the additional territory and population which the U. S. S. R. has acquired since 1939. "This combination of more territory and more mouths to feed indicates that no substantial improvement in nutritional standards has been achieved—despite the vaunted gains in crop yields." 4/

In general it appears that Soviet agriculture is less productive than that of the United States and falls short of providing an abundance of foodstuffs and agricultural raw materials. The inadequacy of farm production to satisfy requirements for certain foods is revealed in the fact that some 19 million urban workers in the U. S. S. R. have had to cultivate potato and vegetable gardens during the postwar period, and that mass gardening by millions of Soviet urbanites has been put on a long-term basis by government decree. 5/ Cressey believes that the possibilities for any signifi-

2/ Gary, *op. cit.*, p. 19.

3/ Editorial, "Russia's Economic Picture," *The New York Times*, November 11, 1951, Section 4, p. 10.

4/ Gary, *op. cit.*, p. 19.

5/ Harry Schwartz, *Russia's Soviet Economy*, p. 320.

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cant expansion of Russian croplands, except in the steppe, are remote, and that increased agricultural output will have to stem from higher crop yields and more efficient utilization of farm acreage. 6/

Mining and Manufacturing

The second major element of industrial capacity to be considered includes the mining and manufacturing industries, for the armed forces of a nation are dependent upon these industries to supply them with the armaments and materials required in modern warfare. Within this category a nation's war potential is governed largely by its ability to produce coal, iron ore, steel, petroleum, and electric power.

Coal production in the U. S. S. R. has always been appreciably lower than that of the United States. As indicated in Appendix E, the coal output in the Soviet Union totaled 236 million metric tons in 1949 or an amount equivalent to about 55 per cent of the total quantity mined in the United States during the same period. Marshal Bulganin in his speech of November 1950 indicated that coal production in the U. S. S. R. would total 261 million metric tons in 1950 or about 11 million tons in excess of the planned goal for that year. 7/ In his speech made last month, Mr. Beria indicated that coal production for 1951 will be in the neighborhood of 300 million short tons (273 million metric tons). 8/

Iron ore production in the Soviet Union, which had reached a prewar level of about 30 million metric tons in 1940, was expected to meet the planned target of 40 million tons in 1950. 9/ This pro-

6/ George B. Cressey, *The Basis of Soviet Strength*, p. 140.

7/ Schwartz, *op. cit.*, p. 567.

8/ *The New York Times*, November 11, 1951, Section 4, p. 10.

9/ Eugenie Bouïanovsky, *The U. S. S. R.—Summary of Basic Economic Information*, p. 9.

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duction, if attained, would represent approximately 45 per cent of the iron ore produced in the United States during the same year. 10/

As indicated in Appendix E, the total tonnage of pig iron produced by the Soviets in 1949 amounted to 17 million metric tons or slightly less than 35 per cent of the quantity turned out in the United States. Soviet production of this commodity for 1950 has been estimated at from 19 to 20 million tons. 11/

The comparative figures listed in Appendix E indicate that the 71.2 million metric tons of steel produced by the United States in 1949 exceeded Soviet production for the same year by a ratio of more than three to one, notwithstanding the fact that American production of coal, pig iron, and steel during that particular period had been substantially reduced by a series of costly strikes.

In an address delivered on April 26th of this year, Mr. Charles E. Wilson, Defense Mobilization Director, made the following analysis of steel production in the United States and the Soviet Union:

Only last week Moscow reported jubilantly that it had attained an annual steel production of 27,200,000 tons and it was shooting for a goal of 60,000,000 tons by 1960. By comparison, the United States is now producing at the annual rate of 108,000,000 and is aiming for a production of 117,000,000 tons in the next two years. 12/

In comparing the steel output of the United States with that of the Soviet Union, however, it must be remembered that the planned economy and the drastic curtailment of consumer's

10/ *Statesman's Year-Book*, 1951, p. 588.

11/ Schwartz, *op. cit.*, p. 567.

12/ *The New York Times*, April 27, 1951, p. 14.

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goods by the Soviet government have made possible the diversion of a much greater percentage of her total steel production to the manufacture of armaments. It has been estimated that during the period of World War II the Soviets were able to divert some 70 per cent of their steel into war production, while the quantity set aside for military purposes by the United States during this period never exceeded 26 per cent of the total amount produced. 13/ Present indications are that the U. S. S. R. is already allocating so much of its steel production to armament manufacture that a significant increase in arms production can only be achieved by means of a corresponding increase in the total quantity of steel produced. 14/ On the other hand, it is reasonable to assume that the present relatively low proportion of steel diverted to armament production by the United States will enable this country to effect a substantial increase in her military allocations by means of a comparable reduction in the manufacture of durable and semi-durable consumer's goods.

The steel output of the Soviet satellites has been estimated at a little more than 8 million metric tons per year, compared to Western Europe's production of nearly 57 million tons per year. 15/

The productive capacity of the Soviet petroleum industry is equivalent to approximately 14 per cent of that of the United States, the leading oil producing nation in the world. The U. S. S. R. reported an output of 37.5 million metric tons during 1950, as compared to the 270 million tons produced by the United States in the same year. 16/

There seems to be considerable evidence to indicate that

13/ Gary, *op. cit.*, p. 20.

14/ *Loc. cit.*

15/ *Loc. cit.*

16/ Dr. Merle Fainsod, "Rise of Soviet Power," Lecture delivered at the Naval War College, October 19, 1951, p. 25.

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the current petroleum output of the U. S. S. R. is inadequate to meet existing domestic requirements which have resulted in large measure from the increased postwar use of gasoline and diesel powered equipment in both industry and agriculture. It appears that the Soviets have drawn rather heavily upon the oil output of their satellites in an attempt to reduce this deficiency, and that efforts are also being made to economize in the use of petroleum products through the conversion of trucks and farm equipment from gasoline to solid fuels. 17/ While it is difficult, if not altogether impossible, to make an accurate appraisal of the existing situation inside the U. S. S. R., one writer recently suggested that "the Soviets at present have so limited an oil margin that if they were involved in a prolonged war they would be compelled to make the serious choice between oil for planes and oil for their tremendous mechanized state-owned farms." 18/

The United States with a population equivalent to less than 7 per cent of the world's total produces nearly one half of the supply of electric power generated in the world today. 19/

It must be assumed that Soviet Russia has achieved some degree of success in reducing the better than 4.5 to 1 production ratio which the United States enjoyed in 1949, for the Kremlin announced a year ago that the U. S. S. R. had succeeded in surpassing its planned 1950 target of 82 billion kilowatt-hours by a margin of 8.3 billion. 20/ Mr. Beria, in his speech of last month, indicated that the Soviet Union will produce some 104 billion kilowatt-hours during the pres-

17/ Schwartz, *op. cit.*, p. 221.

18/ Colonel E. R. Rivers-Macpherson, "Oil Strategy," *The Army Quarterly*, July 1951, p. 158.

19/ *The New York Times*, October 8, 1951, p. 1.

20/ Schwartz, *op. cit.*, p. 567,

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ent year. 21/ In this country present indications are that power generation will reach a new high this year of 370 billion kilowatt-hours, or better than 1 billion kilowatt-hours per day. 22/ On the basis of this estimate and the figure presented by Mr. Beria, the United States will still possess a 3.5 to 1 production ratio over Russia. Power experts in this country have estimated that during a period of intensive war effort this nation's power companies and public projects would be capable of generating power at a rate in excess of 400 billion kilowatt-hours per year. 23/

Power companies in the United States had completed by the end of 1950 more than 50 per cent of the planned 15 billion dollar expansion program which was initiated shortly after the close of World War II and is scheduled to be completed by the end of 1953. 24/

Considerable progress has been made in the postwar development of generating capacity in various areas throughout the Soviet Union, although recent reports made by the Russian press indicate that little work other than that of a preparatory nature has been accomplished to date on the large Kuibyshev and Stalin-grad hydroelectric stations on the Volga River, whose projected construction was announced in mid-1950. Originally planned for completion during 1955-56, these two installations are scheduled to produce together a total of 20 billion kilowatt-hours per year. 25/

The long-range planning goals set for Soviet industry were announced to the world by no less an authority than Marshal Stalin

21/ Editorial, "Russia's Economic Picture," *The New York Times*, November 11, 1951, Section 4, p. 10.

22/ *The New York Times*, October 8, 1951, p. 1.

23/ *Loc. cit.*

24/ *Loc. cit.*

25/ *The New York Times*, September 16, 1951, Section 1, p. 28.

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himself. In his speech of February 1946, in which he spoke of tripling the Soviet prewar industrial productivity and achieving output goals for pig iron, steel, oil, and coal far beyond those established by the Fourth Five-Year Plan, Stalin observed, "That will take three more Five-Year Plans, I should think, if not more. But it can be done and we must do it." 26/

Transportation

Transportation is an inseparable part of any industrial complex for it makes possible the exploitation and development of natural resources, the transfer of raw materials to manufacturing centers, and the distribution of finished goods to the consumer. While adequate transportation facilities are vital to a strong peacetime economy, they assume an even greater importance in time of war when they are called upon to transport large numbers of personnel and heavy tonnages of military supplies and equipment as well as continue to carry on the distribution of the goods required by the civilian populace.

Although the Soviet rail network comprises only about 25 per cent as much trackage as that included in our railroad system, the U. S. S. R. ranks second only to the United States in terms of total railway mileage. 27/ In this connection, it is interesting to note that the railroad system of the United States has not undergone any appreciable expansion since 1913, whereas the Russian system expanded by 50 per cent during the period between 1913 and 1937. 28/

Unlike the United States, which is traversed by several trans-continental railroads, the bulk of the U. S. S. R. which lies east of the

26/ Schwartz, *op. cit.*, p. 119.

27/ Andrew J. Steiger, "Union of Soviet Socialist Republics—Communications", *Encyclopedia Americana*, 1948 edition, 27, 292QQ.

28/ *Loc. cit.*

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Urals is uncrossed by rail lines and the Soviets are dependent upon a single vital railroad, the Trans-Siberian, to reinforce and supply their troops in the Far East. While the uneven distribution of Russian rail facilities, coupled with the fact that approximately 80 per cent of that nation's freight is carried by rail ^{29/}, might seem to indicate at first glance that her primary means of transport in many areas is extremely vulnerable to enemy attack, it should be remembered that the Soviets were able to support extensive military operations during World War II despite the fact that much of the railroad trackage in western Russia was destroyed or damaged as the result of combat or the "scorched earth" policy of the retreating Red Army. It has been estimated that during the period 1941 to 1943 the U. S. S. R. suffered the loss of 40 per cent of its rail trackage, 15 per cent of its locomotives, and 20 per cent of its freight cars. ^{30/} Nevertheless, as a result of the high priority assigned to railroad restoration by the Soviet government, the total rail mileage in the U. S. S. R. at the end of 1945 exceeded the prewar total. ^{31/}

Present indications are that the Soviets are seeking to end their present dependence upon the Trans-Siberian Railway for maintenance of their control in the Far East through the construction of the so-called South Siberian railroad, which will link the western U. S. S. R. with the new port of Sovetskaya Gavan north of Vladivostok. ^{32/}

The highway system of the Soviet Union is decidedly inferior to that of the United States, and vehicular roads in the U. S. S. R. have been described as comparable to those which were common in this country prior to the time that the mass production of

29/ *Ibid.*, 292PP.

30/ Schwartz, *op. cit.*, p. 338.

31/ *Loc. cit.*

32/ *Ibid.*, p. 339.

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automobiles forced the development of the national highway network we know today.

In 1941 the mileage of surfaced highways in the United States totalled 1,596,000 miles while in Russia, a country almost three times as large, surfaced highways accounted for only 64,200 miles of the 840,000 miles of roadways which had been constructed by 1938. Only 2,400 miles of these highways were of asphalt construction. 33/ Due in large measure to the shortage of sand, gravel, and hard rock for road building in many areas of the U. S. S. R., the major portion of the Soviet highway system consists only of packed earth roads which change from dust to mud and back to dust with the passage of the seasons. There are no paved transcontinental highways in the U. S. S. R., but there have been indications that the construction of such a highway parallel to the Trans-Siberian Railway has been under consideration. 34/

Although World War II provided the Soviets with firsthand knowledge of large scale trucking operations and resulted in the training of thousands of new drivers, the motor vehicle is still largely a medium of urban transport in that country. The efforts of the Soviet government to improve highway conditions is hampered in large measure by the fact that the obligatory labor of farmers is still the primary means of keeping a majority of the primitive roads moderately passable during the periods when climatic conditions permit their use. 35/ From a long-range viewpoint, it appears that the widespread development of motor transportation in the U. S. S. R. will depend to a large extent upon her ability to increase her petroleum production. 36/ As has been mentioned previously in this chapter, there are some indications that the Soviets

33/ Steiger, *op. cit.*, 292RR.

34/ *Loc. cit.*

35/ Schwartz, *op. cit.*, p. 350.

36/ *Loc. cit.*

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are endeavoring to economize in their use of petroleum products through the use of solid fuels in their trucks and farm equipment.

The several important rivers which comprise the inland waterways system of the Soviet Union are limited in their usefulness by climatic conditions since their freezing over precludes their employment during a part of the year throughout the country and for a major portion of the year in some areas. The direction of their flow imposes another limitation, for, as a glance at a map will indicate, their use is confined, in general, to north-south communication.

Notwithstanding Soviet efforts to increase the volume of traffic on the inland waterways of the U. S. S. R. during the period just prior to World War II, the statements made by both governmental leaders and the press of that country indicated that the progress of developments in the river transport system left much to be desired. 37/

Although commercial aviation in the Soviet Union lagged behind that of the United States for a number of years, civil airways now link all of the major urban areas of the U. S. S. R. and provide the primary means of communication with remote but important areas of the country which are not yet accessible either by rail or by good roads. The Soviets established their own aircraft industry during the late 1920's, and by 1932 had ceased to be dependent upon foreign countries for both engines and planes. 38/ In 1950 the Russian press claimed that Soviet airlines were transporting more freight than were the airlines of any capitalist nation. 39/

37/ *Ibid.*, p. 346.

38/ Steiger, *op. cit.*, 292TT.

39/ Schwartz, *op. cit.*, p. 354.

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It was once said of Czarist Russia that in a third of her vast realm transportation depended on dogs and reindeer; in a sixth of the country on camels; in nearly half, on horses and oxen; and in certain southern areas, on mules, asses, and buffaloes. Despite the marked improvements in transportation made during the Soviet regime, the remark still holds some truth, especially insofar as the more remote sections of the country are concerned. 40/

CHAPTER V MILITARY FORCES AND ARMAMENTS

Military Forces

Notwithstanding Marshal Stalin's assurances early this year that the Red Army had demobilized following World War II and had completed its demobilization in 1948, 1/ the armed forces of the Soviet Union are recognized as the most powerful in the world today.

Although few data pertaining to the strength and composition of the Russian military forces are available, a report issued by the U. S. Senate Foreign Relations Committee in February of this year estimated the total strength of the Soviet armed forces as being in excess of 4 million men, including a ground force of some 175 divisions. 2/ These 175 Red Army divisions are roughly equivalent to 105 United States Army divisions in terms of the military manpower involved. 3/

40/ Steiger, *op. cit.*, 292RR, 292SS.

1/ Editorial, "Soviet Military Planning Belies Red Peace Talk," *The Saturday Evening Post*, July 21, 1951, p. 10.

2/ "How Strong is Soviet Russia?", *Armed Forces Talk*, No. 375, June 8, 1951, p. 11.

3/ *Loc. cit.*

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In contrast to the pattern set by the Soviet Union for the postwar maintenance of her military strength, the armed forces of the United States were reduced to a fraction of their wartime strength in a rapid, if not reckless, demobilization effort. Reductions in the strength of our military forces to meet budgetary limitations were still being effected during the first six months of 1950, and the outbreak of hostilities in Korea found less than 1.5 million persons in the armed forces of the United States. 4/ Of this total, approximately 591,000 were in the Army, 380,600 in the Navy, 74,200 in the Marine Corps, and 412,000 in the Air Force. 5/

The statutory limitation which placed a ceiling of slightly more than 2 million on the total strength of the United States armed forces was suspended for an indefinite period in early August of 1950, and this country is now in the process of building up her military forces to approximately 3.5 million men, the number recommended to the President and the Congress by the Joint Chiefs of Staff as that required to meet the present foreseeable threat to our national security. 6/

Data pertaining to the exact strength of the Soviet Air Force are not available, but it has been estimated that the Russians possess approximately 20,000 first-line aircraft. 7/ One military writer in this country has made the following observation:

The Soviet Air Force is numerically the largest in the world. The most conservative estimate of the number of Soviet military aircraft is a figure substantially ex-

4/ "Building Our Military Manpower," Army Information Digest, September 1950, p. 3.

5/ Loc. cit.

6/ Lt. Colonel C. V. Clifton, "The Mobilization Recipe," Combat Forces Journal, March 1951, p. 28.

7/ Armed Forces Talk, No. 375, June 8, 1951, p. 11.

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ceeding the total combat aircraft operated by the United States and all our possible allies. 8/

In terms of naval forces, the U. S. S. R. is considerably weaker than this country and there is little doubt but that the United States Navy is capable of defeating any other naval surface force in the world. The principal offensive power of the Soviet Navy lies in her reportedly large submarine force which could constitute a major threat to this nation in the conduct of any military operations involving extended sea lines of communication. The Soviet Navy is estimated to have no fewer than 350-370 submarines in service, and another 120 are reported to be under construction in Soviet dockyards. 9/ It is noteworthy that the Red Navy is without aircraft carriers, the type of ship which proved to be our most powerful offensive naval weapon in World War II.

The Senate Foreign Relations Committee report, which has been referred to previously in this chapter, estimated that the European satellites of the U. S. S. R. have an additional 1 million men under arms. An article published in a British periodical this past summer substantiates this estimate, but points out the fact that a large portion of this satellite armed strength is not organized in the traditional military type units with which we are accustomed and that estimates of these forces will vary substantially depending upon whether security troops and similar units are included in or excluded from the total figures used. 10/

The Senate Committee report also estimated the ground force strength of the United States and the North Atlantic Treaty nations at some 2.3 million men, and the combined land, air, and sea

8/ Brig. Gen. Joseph B. Sweet, USA-Ret., *The Price of Survival*, p. 32.

9/ *Jane's Fighting Ships, 1950-1951*, p. 332.

10/ "The Satellite Armed Forces," *The World Today*, June 1951, pp. 232-33.

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forces of these same nations at about 4.5 million men. Recent figures indicate that the NATO forces under General Eisenhower's command in Europe have been increased this year from 7 to 22 divisions as part of the effort to achieve a strength of 28 divisions by the end of next year and a total of 60 divisions by the end of 1954. 11/ Definite progress has been made in this direction, but it is evident that the present forces in being in western Europe can scarcely be considered adequate to accomplish the mission they may be called upon to perform, and that much remains to be done in providing for their continued growth and reinforcement.

Armaments

The minor proportion of the postwar industrial output of the U. S. S. R. which has been allocated to the production of consumer's goods or otherwise employed to improve the lot of the Soviet citizenry appears in itself to be prima-facie evidence of the fact that the Kremlin leaders are devoting the major portion of their industrial capacity to the production of armaments. While it is certain that some of the expanding capacity was, and probably still is, required in connection with the reconstruction and rehabilitation of facilities destroyed during the war years, there is still reason to believe that armaments constitutes a large part of the Soviet industrial production.

As might be expected, the estimated size of the Soviet military budget appears to be largely a matter of interpretation, with the result that estimates of the total amount of these funds may vary rather widely. Dr. Stefan T. Possony has pointed out that the Soviet military budget in itself does not present a true picture of actual military appropriations in that a large part of the armament industry, aircraft production, atomic research

11/ The New York Times, November 25, 1951, Section 4, p. 3.

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and production, and even such purely military functions as the training of reserves are not financed with military funds, but are supported by appropriations hidden elsewhere in the budget structure of the U. S. S. R. 12/ Schwartz shares this opinion and states that "the available evidence indicates that it [Soviet military budget] covers only the direct costs of the land, sea, and air forces of the Soviet Union." 13/ He further indicates that by reason of the fact that the Red military forces apparently purchase subsistence, weapons, and similar materials from other government agencies, little or no turn-over tax is levied upon these military purchases. This obviously increases the purchasing power of the "military ruble" over that in the hands of the Soviet citizen, and places the relative value of military appropriations at a higher level than the proportionate part of total budgetary expenditures they represent would seem to indicate at first glance. 14/

The Soviet military budget for the current year has been estimated at 24 billion dollars, a sum twice as large as that appropriated in 1948 and even greater than the military budgets for the war years of 1942 and 1943. If the 19 billion dollars which is included in the 1951 Soviet budget for the expansion of her heavy industries and the 10 billion dollars required to finance the three police armies and certain other classified activities were considered as contributing to her military effort, the U. S. S. R. could be credited with an over-all military budget in the order of 53 billion dollars. 15/ Present indications are that the 1952 defense appropriation in the United States will be approximately 55 billion dollars.

In terms of national income, it is estimated that the U. S.

12/ Stefan T. Possony, "The Cost of American Security," *Combat Forces Journal*, February 1951, p. 34.

13/ Harry Schwartz, *Russia's Soviet Economy*, p. 429.

14/ *Loc. cit.*

15/ *The Saturday Evening Post*, July 21, 1951, p. 10.

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S. R. allocates about 20 per cent of its total, either directly or indirectly, for military purposes. Military spending in this country, on the other hand, represents only about 6 per cent of our total national income. 16/

In making a comparison of Russia's military expenditures and those of the United States, consideration should be given to the relative purchasing power of the "military dollar" in each nation. At the present time, it appears that the Soviet "dollar" is capable of buying a greater amount of military manpower and weapons than is the American dollar. The low wages paid to Soviet labor are undoubtedly reflected in lower end item costs, at least where government purchases are involved, and, as has been previously pointed out, the Red military forces apparently procure the major part of their material from other agencies of the Soviet government. Secondly, the simplified design which characterizes much of Russia's military equipment contributes to lower manufacturing costs. It is generally agreed that much Russian materiel is constructed to perform the job expected of it and no more, with little thought, if any, given to the safety and well-being of the man who operates it in combat. A third factor which contributes materially to the greater purchasing power of the Soviet "military dollar" is the lower pay scale of the Russian armed forces. Past experience in this country indicates that during the period 1946-1950, the United States devoted an average of 40 per cent of its military budgets to paying, feeding, clothing, and transporting its armed forces. 17/ While it is believed that the acceptance of this figure should be tempered by the realization that this seemingly high expenditure occurred during a period when the United States was demobilizing rather than arming, there appears to be little question that the per capita cost of maintaining military manpower is appreciably less in the Soviet Union than in this country.

16/ Possony, *op. cit.*, p. 35.

17/ Possony, *op. cit.*, pp. 34, 35.

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CHAPTER VI

SUMMARY AND CONCLUSIONS

Perhaps the most significant conclusion which can be drawn from the elements of economic and military strength discussed in the foregoing chapters is that the economic might of the Soviet Union is comparable to that of the United States and that this country now faces a more formidable potential adversary than any encountered heretofore in its national history. There is reason to doubt that the U. S. S. R. will be in a position to challenge seriously the industrial capacity of the United States in the foreseeable future, but there is equal reason to believe that the Soviet Union commands sufficient industry to support a war effort greater than any we have encountered in the past.

Previous mention has been made of the fact that the U. S. S. R. and the United States are the two most powerful nations in the world today. Both countries are large in terms of geographical area, have populations large enough to support both military and industrial labor forces, and are largely self-sufficient in the resources and raw materials which provide the essential bases of war.

Russia, as has already been pointed out, now occupies an area 2.87 times as large as that of the United States and is therefore in indisputable possession of the advantage in size, an advantage which permitted the Soviets to withdraw their armed forces and relocate a large portion of their vital industrial facilities while they traded space for time in the months following the German invasion of Russia in 1941.

The United States, on the other hand, possesses the advantage of location and climate. Situated as she is between the At-

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lantic and Pacific Oceans, she has ready access to the principal trade routes of the world, and her major ports on the east, west, and Gulf coasts provide a marked contrast to the very limited ice-free sea frontiers of the Soviet Union. From the climatic standpoint the United States possesses a definite advantage. The extremely cold climates encountered in the northern part of the U. S. S. R. have militated against the economic development of large areas in that nation, and the relatively harsh climate which is common to the remainder of the country is reflected in the short crop-growing seasons. From a purely military standpoint, however, this same harsh climate is not entirely without advantage to the U. S. S. R., for the Soviet conscript who has already been hardened by the varied and severe conditions of the Russian climate and terrain is capable of being transformed rapidly into a first-rate infantryman who is little affected by geographic and climatic extremes. The performance of the Red soldier during the winter campaigns of World War II is testimony of his endurance in the field.

The industrial potential of the United States appears to be substantially greater than that of the Soviet Union and it seems reasonably certain that our technological advances will insure the retention of this very important material advantage for some time to come, if not indefinitely. This affords little cause for complacency, however, for the fact remains that Russia's productivity has been increased rapidly under the Soviet regime and it may be expected that her future Five-Year Plans will be concerned to a large extent with programs designed to further reduce the appreciable production advantage held by the United States.

In terms of military forces in being and available reserves of armaments, there appears to be little basis to argue that the present state of military preparedness of the U. S. S. R. does not

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surpass that of the United States, or that that of the Communist bloc, taken as a whole, does not exceed that of the Western Allies.

In considering the factors which contribute to the war potentials of these two nations, it becomes increasingly evident that the time element is of particular significance, for the period of time available to or required by a nation to bring its full economic strength into play will determine, to a large extent, the degree of military power which can be brought to bear against the enemy.

When viewed in terms of a war in the immediate or even near future, it appears that the advantage will almost certainly lie with the Soviet bloc. As has been previously noted, the armed forces of the U. S. S. R. are predominantly larger than those of the Western Allies and are apparently being maintained in a state of readiness which will permit the initiation of large-scale military operations on short notice. In supporting these forces, the Soviets can draw upon the stockpiles of both foodstuffs and armaments which have been accumulated since the end of World War II, as well as upon the reserves of strategic raw materials which have been obtained through large-scale postwar purchases from abroad. Soviet industry, which has been engaged primarily in the manufacture of armaments for the past several years, is already on a war footing for all intents and purposes, and it appears unlikely that the average Soviet citizen would recognize any marked change in the reversion from a "peacetime" to a war economy. In contrast, an outbreak of full-scale war in the immediate future would find the United States and her allies in the process of mobilizing and training military forces and in the process of converting industries and assembly lines from the production of consumer's goods to the manufacture of the armaments required to support these forces.

However, if all-out war with the Soviets and their satellites

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does not occur within the coming year or two, there is good reason to believe that the Western Allies will begin to close the gap, and that the advantage which the Russians now hold will be materially decreased. We are steadily increasing the size of our military forces in being, and the rearmament program which was established following the outbreak of hostilities in Korea is designed to gear our industrial capacity to the orderly production of the armaments required to support our expanding armed forces, together with those needed to supplement the equipment of our European allies. This diversion of a portion of our industrial capacity and material resources from the manufacture of consumer's goods to armament production is of two-fold advantage, for, in addition to producing the necessary military supplies and equipment, it also provides a basis for immediate expansion to full-scale war production if need be. It is also apparent that with the major portion of our industry still devoted to the manufacture of civilian type products, the proportions of our labor force and industrial capacity which can be made available for conversion to war production are far greater than those of the U. S. S. R.

The availability of atomic weapons is a new but important factor to be considered in assessing war potential. While the Soviet Union has been credited with having produced the atom bomb during the postwar period, it is probable that the United States possesses a substantial advantage in weapons of this type and will continue to maintain this advantage for some time to come.

It has been said that "a danger known is half overcome." Certainly the invasion of South Korea by the Communists in June of last year served to bring to the free world the realization that the Soviet threat to world peace was indeed a real one, and that positive and immediate measures had to be taken if the Communists bloc was to be checked effectively. Now that the danger has been

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fully recognized, there seems to be reason to believe that time is now working in the favor of the United States and the Western Allies, rather than to the advantage of the Soviet Union and her Communist satellites.

“The Russian bear is certainly capable of anything, as long as he knows that the other animals he has to deal with are capable of nothing.”¹

—Karl Marx,
A letter of July 1, 1853, published in
the New York Tribune on July 14,
1853.