CHAPTER IX

STRATEGIC MINERALS IN WAR AND PEACE

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The title of this study may fairly lead to misunderstanding unless its basal viewpoint is explained at the start. There is of course no chance of misunderstanding the term strategic minerals—for some years past it has been rather generally used to cover those mineral supplies, important for war use, which do not occur in adequate amount on the territory of the Power under consideration. Even here, however, I might add a note of warning. It is commonly understood that the list of strategic minerals will vary, according to what country we are considering; but it is rarely understood, even in Staff studies, that it varies equally according to the particular adversary we happen to be considering. In the present study I have stated the definition in the broadest possible terms, and have at this stage purposely avoided limiting it to any one country or war situation, with the express purpose of being free to bring out certain implications which are commonly, if not always, overlooked.

The more important opportunity for misunderstanding is, of course, that my views on the phenomena war and peace do not coincide with those currently fashionable, particularly in advanced intellectual circles. For we must face the fact that for a decade past the natural reaction from war conditions has shattered the public mentality so completely that our public discussions of such questions have very little relation to fact; they are excursions into ideal rather than Realpolitik. And as such they serve merely to prevent public discussion or accept-

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ance of any serious scientific conclusions on these phenomena. So the broadly popular view today, accepted in high places as well as by the mythical man in the street, is that peace is the normal condition of human progress, while war is an abnormal, archaic, and avoidable interruption of evolution. My own view, which though at the moment not acceptable to the populace, has at least the merit of being coldly logical, is that war is a necessary and normal phase in human development and that in our present industrial civilization it is merely an openly armed continuation of our peace-time business competition.

In the present statement of my thesis, both phases of the general subject will be discussed in such detail as is here possible or advisable. In the first section of this chapter the matter of strategic minerals in war time will be considered; in the second, the bearing of certain mineral supplies on the broader question of national power, in peace and war, will be taken up.

**STRATEGIC MINERALS IN WAR**

If, as is ordinarily done, we commence our study of strategic minerals by limiting attention to the United States as the country needing them, the problem of course gains in personal interest and in the possibility of sharp definition.

As against the common and specific method of discussion, we may better consider the matter in entirely general form, without immediate reference to any particular country or to any particular adversary. And if we do that we may be sure that any generalizations reached will be true when they are applied to the specific cases in which we are most interested.

It is obvious, of course, that when we employ the term strategic minerals at all, we have in mind their use during a serious war of modern type, in which at least two great powers are involved on opposite sides. To do otherwise would make the discussion entirely vague and fruitless, for we can see that in the case of a war between Liberia and Nicaragua, for
example, every mineral in the world would be, for those particular contestants, a strategic mineral. And, it might be added, even the fullest possible supply of all the possible minerals in the world would not enable those particular contestants to stage a real war. So that at the outset, and in spite of our basal intention to keep the discussion in its most general terms, we necessarily though implicitly hypothesize a war in which at least two of the following powers are engaged on opposite sides—United States, Great Britain, France, Russia, Japan, Germany. To these six we may add, under easily possible future conditions Canada and China. These are the only countries in the world today which could commence, prosecute, and finish—under favorable conditions—a modern large-scale war. There are other countries which could conceivably cause a war or even commence a war; but without the whole-souled support of at least one of the group above named these minor parasites would not finish a war of any serious type.

In making the preceding statement I have necessarily, though implicitly, suggested the minerals which are the war-making minerals *par excellence*, though no one ever places them in the list of Strategic Minerals. For we know, so truly that we never even take the trouble to note the fact, that modern war like modern industry is founded on coal and iron, that it can not be carried on without ample supplies of these two minerals, that it has no way of replacing either of them, and that the amounts of each needed are too great to permit any hypothetic war-time supply from outside areas.

If now we apply this first criterion to the six possible war-making nations, we note immediately two important facts. One is that in time of peace five of them produce roughly all their necessary supplies of both coal and iron, and usually have export surpluses of one or both. But one important power—Japan—does not quite fall in this self-contained group; and one power—Great Britain—has certain defects in its iron ore supply. From these facts we have an important deduction—
that in case of war iron ore for Japan and Great Britain, and coal for Japan, would become strategic minerals under certain unlikely but possible conditions. Those conditions are clearly, that the countries named are in war with such adversaries that the Japanese fleet does not absolutely control all movement on the Inland Sea, and that the British Fleet does not control absolutely not only the Channel but the North Sea and the Bay of Biscay. As I have said these conditions are unlikely, and at first sight almost incredible. But aside from the unbelievable idea that the British Fleet was overmatched, there is a cold matter of war geography involved—as in the parallel case of Japan. In the one case France, in the other Russia as one of its antagonists, would turn iron and coal into strategic minerals for the countries considered.

If we turn next to the mineral of third rank in war importance—petroleum—we immediately see the most important fact in the whole matter. Out of the six powers which are possible war makers from other standpoints, only two are self-supplied with oil drawn from their home territories. These are of course Russia and the United States. For the four other powers, a war supply of petroleum can be secured only through the friendly offices of some ally or neutral, or by means of the steady use of an overpowering fleet. In war involving any Atlantic adversary, France and Germany must retain touch with either Russia or Roumania, Japan with the Dutch East Indies, Great Britain with Persia. There are some rather obvious corollaries to this state of facts, but they are hardly matters for public discussion.

Next in importance as war-time minerals we should probably rank copper and lead—not only by reason of utility, but because they both involve large tonnage requirements. So far as they are concerned, we find the United States entirely free from any necessity for war imports. We find Japan, Russia, and Germany with national or near-by supplies which could probably suffice in case of necessity. And we find France and Great Britain under the critical necessity of keep-
ing touch with Africa for copper supplies—again given an Atlantic adversary in each case. But with regard to copper we must always keep in mind the factor which has ultimately broken every attempt at a copper corner in time of peace—the fact that copper has been both an industrial and a household metal for some thousands of years. Since it is exceptionally durable, it is probable that any civilized country possesses always at least a ten-year supply of spare copper around its mills, shops, and homes—and in time of crisis all this can be drawn on easily.

With regard to the minor metals—tin, manganese, chromium, nickel—we find that not a single one of the six powers is self-supplied in time of peace. But since Germany, with no very richly endowed allies, managed to put up four years of a very fair war effort in spite of shortage of all these minerals, we may safely assume that in any future war a nation really in earnest will manage to replace them by substitutes, or will frankly go without. Meantime they will serve as arguments for tariffs, or bounties, or whatever happens to be wanted at the moment by any politically powerful industrial group.

Turning to the non-metals, we find fixed nitrogen, potash, and sulphuric acid as the leading possibilities in our present discussion. And here I think we may reach an entirely different phase of this matter of strategic minerals. For in each of the three cases now noted we have to deal with necessities which are not replaceable, which are needed in very heavy tonnages, and which are normally (in peace time) imported by almost all of the six powers. These imports however are not due to actual technical necessities, but to purely commercial considerations. Chilean nitrates, American sulphur, German potash—all these are important tonnage commodities in time of peace merely because it is cheaper to buy them than to make or use some other equivalent but dearer supply or product. But we know that under absolute war necessity almost every country has enough pyrite to supply all the sulphuric acid actually needed for war use. And we know
that any country with ample coal or water power can make all the nitrate it needs, while even more simply but less economically it can supply itself in time of war with potash compounds which, though dear, will satisfy actual needs.

But with these three minerals we have reached an entirely different stage of the discussion, for though all can be supplied in time of war, none can be supplied immediately or in hastily improvised plant. So in each case every one of the six powers has to choose between carrying heavy supplies of these three commodities in its war stocks, or keeping up a plant (probably unprofitable in peace time)—against the day of necessity. In at least one of these cases the question has become, in this country at least, a matter of local political interest. And as such it is of course easy to stray away from the military requirements or the military merits of any one solution, and become involved in purely political mazes.

With the foregoing general discussion as a basis, it remains to very briefly suggest some of the bearings on more specific problems, such as that of our own national security.

1. I may point out a fact which is commonly overlooked, even in purely professional—military—consideration of the subject. It is that: Any given mineral becomes strategic only if we consider it in relation not merely to a given country but to that country's given adversary. As a simple illustration I will select a very local example: So far as the United States is concerned, nickel is not a strategic mineral so long as Canada is either allied, friendly, or even coldly neutral. If Canada were actively hostile, nickel would immediately become, for us, a definitely and rather importantly strategic mineral.

2. There is a naval principle which seems clear enough to be worth stating. It is apparent, from recent experiences, that any really decisive offensive action on the seas implies absolutely overwhelming superiority on one side. But it is equally true, though not so obvious, that complete protection of trade routes implies an even more complete superiority.
All the allied fleets together were just barely able to keep the British Islands supplied with food—and oil—during the last years of the World War. And it is unlikely that in any future war the odds will be so completely one-sided. Even a moderate number of active cruisers and submarines will suffice to prevent any serious shipments of war supplies to a belligerent.

3. As far as the United States is concerned, the question of strategic minerals is merely and entirely a question of the attitude of the British Fleet. This may not be a pleasant or flattering conclusion, but since it is true it is at least worth keeping in mind. No other adversary can cut off our supplies of any serious war material. And on the other hand that particular adversary could do so at will without exerting any large fraction of its normal strength.

4. Since as I have earlier suggested that there are always two sides to a war, the British side needs consideration. For Great Britain every mineral except coal becomes a strategic mineral the moment the Fleet loses complete control of at least the Channel and the Mediterranean (except on the theory that the United States is its ally). On the other hand, given such full British control of the trade routes, no mineral is a strategic mineral from a British standpoint during a war with any country whatever.

Our final conclusion, therefore, is that from either the American or the British standpoint, the entire question of strategic minerals simplifies down to a political question—the state of Anglo-American relations during the hypothetical war. If one of the two were at war, while the other was a friendly neutral, the belligerent would never lack for supplies. If the two were at war as allies, there could hardly be much of a war. The third possibility—that the two meet in war as adversaries—implies, as we now know modern wars between great industrial powers, the unquestioned ending of our western civilization. It can therefore hardly be discussed as a technical or military problem.
The preceding sentence need not be understood as implying, on the part of the present writer, any particularly tender solicitude for the fortunes of the British Empire; it is merely frank recognition of the most important fact in the world situation of this generation. Wars of the current industrial type are not entered into for light causes, but for that very reason they will be fought through to the point of utter exhaustion of one, if not both, contestants. If the two contestants should by mischance happen to be the two great industrial powers of the world, the point of exhaustion would be many years away from the commencement of the war, and the industrial and cultural damage that the two powers could and would accomplish during those years would far exceed anything dreamed of during our first thoroughly mechanized war, that of 1914–1918. The consequences to the whole world structure would be disastrous, for the damage done would not be limited to the two initial contestants but would necessarily involve all the neutral countries, if indeed any country of serious utility will be permitted to remain neutral in any future war involving the great sea powers. So it will be well if everyone recognizes the fact that, though Great Britain and the United States can, if the reason be adequate, enter any other possible war rather light-heartedly, the question of an Anglo-American war is one of absolutely different type. That fact alone, of course, will not serve to prevent an Anglo-American war if either of the two countries comes to feel that it is the best way out of a thoroughly impossible situation. But it is well to keep the consequences in mind.

INDICES OF NATIONAL POWER IN PEACE AND WAR

That wording, of course, might easily lead one into careless acceptance of the popular superstition that there is, in fact, a sharp distinction between war and peace—between peace which is normal and virtuous, and war which is abnormal and wicked. To anyone who prefers facts to pretty theories, the relation between war and peace is far otherwise. In our
present industrial civilization war is merely a normal and in many cases a necessary phase of our so-called peaceful competition; it is an unpleasant phase, it is true; and its technique is as yet not particularly efficient or economic. But it is a serious error to regard it as an abnormal feature of the machine civilization of the western world; it is on the contrary the most purely normal result of the industrial development in which all nations are now engaged, and there is no reason to expect war to disappear so long as the spirit of business competition survives. We must, on the contrary, assume that any industrial power will go to war whenever it thinks that the game is worth the candle; that it will do so regardless of any agreements to the contrary; and that it will prosecute the war with all the means and by all the methods at its command, regardless also of any restrictions or conventions tending to limit its modes of action. In these last regards the case has indeed become definitely worsened in recent years, with the spread of popular government. For while there might be some hope that a treaty might be held sacred by a monarchy, as a matter of personal faith, there is no power in heaven or on earth that can force a democracy to keep its word. And since the economic pressure arising from foreign competition is now felt by the entire mass of the electorate, the decision to accept war as offering at least a temporary relief from such pressure will, when the time comes, never lack a popular majority in its support.

That being the case, it might be well to revise certain of the more vicious popular misconceptions with regard to war and peace and the probabilities of each. War is, if we look on it rightly, merely the armed continuation and necessary result of our ordinary national activities—political, social, economic. It is brought about whenever differences in any of those phases of life become acute, as between two nations or groups of nations. So the origin and character of wars vary, from period to period, according to the chief interests of the periods, or of the nations involved. In days when peoples took their
religions seriously, not to say savagely, religious differences might cause, and would certainly embitter, wars. In days when kings were taken seriously, one might fight for or about a dynasty. In these days of the machine civilization we have gone to war for colonies, for trade, for coal and iron ore fields, or gold fields. In days to come we will undoubtedly go to war to protect living standards and to keep our mills alive.

Since the wars of the present and immediately future generations will of necessity be conditioned by our type of civilization, we may as well assume that coal and iron will continue to furnish our best indices to national power in those wars as well as in the intervening periods of peace. In order to make this matter clear, I am drawing comparisons between certain nations and groups of nations. And in order to make these comparisons as broadly useful as possible, four different factors are used, in each case, as bases of comparison. These are:

1. The *current annual coal output*, in percentage of the world output. This is a measure of the extent to which a nation is utilizing its coal supply; it is a fair index of present development.

2. The *national coal reserves*, in percentage of the total coal reserves of the world. This is a measure of what the nation can do in the extent of its future development. It is an index of possible power.

3. The *current annual iron ore output*, in percentage of world output. This is the least important factor of the four by far; it suggests, taken along with 1 and 4, the extent to which the nations' industries would be self-sustaining in time of blockade.

4. The *current annual pig iron output*, again in percentage of world output for 1929. This is a valuable index of mechanization.

Before taking up the different comparisons it might be noted that the coal, iron ore and pig iron outputs of the countries are more concentrated than one might think, and that the large coal reserves are even more closely controlled by a few favored countries. The present rank in the four items used
in my comparisons is, for the leading countries in each, as follows:

<table>
<thead>
<tr>
<th>Coal output</th>
<th>Coal reserves</th>
<th>Iron ore output</th>
<th>Pig iron output</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. United States</td>
<td>1. United States</td>
<td>1. United States</td>
<td>1. United States</td>
</tr>
<tr>
<td>2. Great Britain</td>
<td>2. China</td>
<td>2. France</td>
<td>2. Germany</td>
</tr>
</tbody>
</table>

In each case the two countries named above produce together over half the world output, or in the case of coal reserves, possess together far more than half the world’s total coal.

*United States and British Empire.*—Considering the modern history of the world, one of our first comparisons is very naturally that between the United States and the British Empire as it now exists. For the four factors on which all the comparisons will be based, this results as follows:

<table>
<thead>
<tr>
<th>Country</th>
<th>Coal output, per cent</th>
<th>Coal reserve, per cent</th>
<th>Iron ore output, per cent</th>
<th>Pig iron output, per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>36</td>
<td>37</td>
<td>37</td>
<td>44</td>
</tr>
<tr>
<td>British Empire</td>
<td>21</td>
<td>22</td>
<td>12</td>
<td>11</td>
</tr>
</tbody>
</table>

This comparison needs no elaboration, but it might be called to the reader’s attention that the States and the Empire are very closely alike in industrial power *per capita*, present and future, if we compare them on the basis of the total white population in each. And that, of course, suggests a still more interesting fact. For if we drop India out of the comparison, for reasons which are unfortunately obvious enough, we have left a series of purely English-speaking units, all over the world, whose control of industrial power is about as shown by the following percentages: English-speaking peoples have 55 per cent of the world’s coal output, 57 per cent of the world’s
coal reserves, 47 per cent of the world’s iron ore output, 53 per cent of the world’s pig iron output.

Study of these surprising figures will suggest why, a few pages back, I was able to say casually that either the Empire or the States might go quite light heartedly into any possible war except a war with each other.

Strength of Northwest Europe.—One of the possibilities of the future is, of course, that the common interest of the west European countries in the Westphalian coal field and the Lorraine iron ore field will some day find expression in a Continental bloc or Zollverein, including Germany, France, Belgium, Luxemburg, and the ore supply of Sweden. In time of peace such a combination would be merely a matter of intelligent business; in time of war, as we have seen often in the past, it would be the normal defense form taken against a rigorous blockade. In any case, it has some future interest, and it works out as below. For comparison, the tonnages of Great Britain are placed on a line below, and in these I have included the Spanish ores.

As a further point of interest, the United States figures are placed in the last line of the preceding table, for comparison with West Europe, taken as a peace-time commercial unit.

American and Asiatic Power.—There are excellent reasons for all of us to be interested in determining the relative present and future industrial power of the two continents named. And since it is advisable to determine the maximum possible

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<table>
<thead>
<tr>
<th>Locality</th>
<th>Coal output, per cent</th>
<th>Coal reserve, per cent</th>
<th>Ore output, per cent</th>
<th>Metal output, per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northwest Continent...</td>
<td>31</td>
<td>10</td>
<td>40</td>
<td>35</td>
</tr>
<tr>
<td>Great Britain..........</td>
<td>17</td>
<td>5</td>
<td>10</td>
<td>9</td>
</tr>
<tr>
<td>Total, northwest Europe</td>
<td>48</td>
<td>15</td>
<td>50</td>
<td>44</td>
</tr>
<tr>
<td>United States..........</td>
<td>36</td>
<td>37</td>
<td>37</td>
<td>44</td>
</tr>
</tbody>
</table>
that may some time be expected, rather than any other figure, I am throwing all doubtful points to the credit of the Asiatic total. The items thus given as excess credit are of two main sorts. First, all Russia is included in the Asiatic total; that seems fair to me, for there are material reasons for expecting Russian development in the future to become more and more Asiatic and less and less European. Second, in place of using previous percentages for the coal reserves I am crediting Russia and China with the largest reserves\(^1\) that have been claimed for them, while the United States and Canadian reserves are figured very conservatively indeed. So the result of the comparison is the worst that can be looked for under any conditions.

<table>
<thead>
<tr>
<th>Locality</th>
<th>Coal output, per cent</th>
<th>Coal reserve,(^1) per cent</th>
<th>Ore output, per cent</th>
<th>Pig iron output, per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asia</td>
<td>7</td>
<td>49</td>
<td>6</td>
<td>8</td>
</tr>
<tr>
<td>North America</td>
<td>37</td>
<td>51</td>
<td>40</td>
<td>46</td>
</tr>
</tbody>
</table>

\(^1\) Percentages of Asiatic plus North American totals.

It will be seen that there is a distinct suggestion of future great industrial power in North Asia. And it will also be seen that on the worst possible view of the matter, the odds as to coal reserves will be a shade in favor of North America. It might be noted that if I had used the 1913 coal reserve figures in this comparison, the percentages in that regard would be: Asia, 33 per cent; North America, 45 per cent of the total world reserves.

Out of all these comparisons we should reach certain very clear and sound conclusions regarding the possibilities of the future. And it may be noted that those conclusions differ, in some regards, from those to which hysterical idealism, in entire

\(^1\) Russia 500 billion tons; China 995 billion tons; United States 1350 billion tons; Canada 287 billion tons.
disregard of facts, might lead us. We see, for example, that there are only two real foci of power in the world today, and that there can be only three in the future. One, by far the most important, is centered in temperate North America, the second in current importance is in Northwest Europe, the third of possible future importance is North Asia. The three other continents, as well as the other sections of the three named, are of no serious importance in either war or peace; they may furnish cheap raw materials, or food stuffs, or men—but otherwise they may be left out of calculations.

The second conclusion of importance is of interest only to us, and to our oldest and dearest friend and enemy, the British Empire. It is, that though each country can indulge its tastes freely enough in all other ways, there is one possible war, and only one, that would definitely wreck our present civilization and turn world control over to Asiatic and allied races. If we only avoid that single act of madness, there is no possible outside enemy or coalition of enemies that need be taken with real seriousness, and we can both afford to treat the subject of strategic minerals as one of merely academic importance.

The third is that a Russo-Chinese bloc would, in either peace or war, be a rather serious matter for all the western world; and that it is perhaps worth while going to some trouble to prevent the formation of such a grouping.

From this necessarily brief summary of the case it is clear enough that so long as our present type of civilization may endure the power of the world, in war or in peace, will of necessity be concentrated in the hands of a very few national groups. The United States and Canada; Great Britain, Germany and France; Russia, China, Japan—these constitute the present and only possible powers in the world, in any proper sense of the term. To one or other of the European powers can at any time be added, as an appanage, such areas as Belgium, Luxembourg, and the curious temporary entity which for convenience we call Poland. And to others there are, of necessity, attached certain colonial or other dependencies.
Except for the eight nations named and their dependencies, there is no country which can of its own unaided efforts, make itself felt seriously outside of its own frontiers. All the other countries of the world will continue to function as suppliers of raw materials or soldiers to their proper superiors overseas.

One hundred and fifty years of intensive industrialism have brought us then, to the point where only eight nations can now effectively make war. And it is perhaps a sufficient critique of the manner in which we have employed our technical gains if we admit that no nation, or group of nations, can now effectively make peace.

Postscript, December 1931. Chapter IX was written in March 1931, long before any disturbance of world peace was threatened in Manchuria. The events there, suggest that my main thesis, which in the spring of the year might have seemed unduly cynical, is substantially correct. And the closing paragraph in particular was curiously exact. E. C. E.