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THE EUROPEAN SATELLITE POWER COMPLEX

PART I
INDIVIDUAL SATELLITE COUNTRIES:
ECONOMIC STRENGTHS AND WEAKNESSES

RUMANIA

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Project 6-51THE EUROPEAN SATELLITE POWER COMPLEX
(Contribution to NIE-33)PART I
INDIVIDUAL SATELLITE COUNTRIES:
ECONOMIC STRENGTHS AND WEAKNESSESRUMANIASummary and Conclusions.

The Rumanian economy, characterized by a large degree of Soviet control and by great dependence on imports of machinery and equipment for industrial development, currently emphasizes production of strategic materials for the Soviet Bloc. Long-range planning contemplates considerable industrialization of the predominantly agricultural economy. Operation of the economy under a comprehensive plan, however, was not initiated until 1949, and the USSR, up to that time at least, had followed a policy of exacting whatever benefits it could exact with little or no regard for the needs of the economy. In important industrial sectors production has not met planned goals, peasant resistance to collectivization has been substantial, and the extent of industrialization planned for 1955 is not likely to be attained.

Three-fourths of the 8 million workers in the Rumanian labor force are employed in agriculture. Since 1949 the nonagricultural labor force has increased about 25 percent, largely as a result of emphasis on construction, but this rate of growth is not expected to continue. Technical training is expanding and labor productivity, although low, increased in 1950. Serious food shortages, deficiencies in housing, low wages, and adverse working conditions, all of which are producing discontent, are not expected to improve materially in the next 2 years.

Despite the large proportion of the population engaged in farming, only a little more than one-third of the national income is derived from agriculture. A considerable degree of mechanization is planned, but agricultural technique remains primitive. Large exports of food to the USSR, a drought in 1950, and peasant resistance to collectivization have caused serious food shortages. Nevertheless, with favorable weather and no increase in peasant resistance, grain available for stocks and exports in 1952 may reach 745,000 metric tons.

Rumania's small iron and steel capacity is adequate to meet domestic requirements, but high percentages of the coke, ore, and ferroalloys consumed by the industry must be imported. Ore reserves are undeveloped, equipment is obsolescent, and planned modernization and expansion will depend on technical assistance from the USSR and the industrialized Satellites.

Approximately one-half of an estimated production of 250,000 metric tons of semifinished steel was shipped to the USSR and to Czechoslovakian armaments plants in 1950.

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Copper concentrates, lead, and zinc are produced in limited quantities in Rumania as by-products of gold and silver mining. Although the tonnages involved are small, vigorous measures are being taken to increase production of lead and zinc for export to the USSR because of shortages within the Bloc and because of their importance to the military-economic potential.

Rumania is self-sufficient in coal, except in types suitable for coking. Plans to increase production from 3 million tons in 1950 to 8.5 million tons in 1955 are not expected to be realized.

The petroleum industry in Rumania is second only to that of the USSR among European producers. It is important both as a source of supply to the USSR and as a mainstay of the Rumanian economy. Total proved and probable reserves are approximately 67 million metric tons. But refinery capacity, 98 percent of which is concentrated in the Ploesti area, dropped from over 10 million metric tons before the war to approximately 6 million tons as a result of bomb damage, overintensive exploitation, Soviet dismantling of equipment, obsolescence, and reduced exploratory and development drilling. It is probable that, despite these handicaps, crude-oil output will rise from 4.6 million metric tons in 1950 to 4.8 million tons in 1951. Attainment of the goal of 10 million metric tons in 1955 is unlikely, particularly in view of the fact that urgently needed drilling equipment probably will not be available in sufficient quantities. The USSR allocates approximately 80 percent of Rumanian petroleum output within the Soviet Bloc, the remaining 20 percent being consumed domestically.

The electric power industry produces sufficient power to meet Rumanian requirements and provides small exports to Bulgaria. Postwar industrial development has brought into use most of the capacity which was idle immediately after the war. New generating capacity is now required if production is to maintain the postwar rate of increase. Electrical equipment requirements must be met through imports, with the USSR being the chief supplier. It is unlikely that the planned increases of 1 million kilowatts by 1950 and another million kilowatts by 1960 will be attained.

Production of chemicals in Rumania is largely confined to the output of heavy industrial chemicals allied with the petroleum, metallurgy, and pulp-paper industries. Caustic soda, soda ash, and particularly carbon black, all exported to the USSR, are important for their contribution to the military-economic potential of the Orbit.

Although the small Rumanian engineering industry does not meet domestic requirements for most types of machinery and equipment, it does make a small but significant contribution to the Soviet Bloc, particularly in the fields of railroad equipment and shipbuilding. More than half of the output of the industry is shipped to the USSR, while substantial quantities of capital goods are imported, principally from the USSR, Hungary, and Czechoslovakia.

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A number of items of critical equipment are received from Switzerland, Austria, Italy, and West Germany. The plan to double the aggregate output of machine-building installations probably will not be achieved, although production goals for certain items appear realistic. Munitions output is steadily increasing in a number of plants where production of civilian goods continues simultaneously.

Rumania's transportation system makes an important contribution to the Soviet economic potential for war through the distribution of petroleum to the USSR and the Satellites, mainly by pipeline and by Soviet and Rumanian merchant shipping. Rumanian railroads and inland water transport also make a small but significant contribution in the delivery of petroleum products, particularly to the USSR. Rumanian transport facilities, now operating below capacity, impose only minor requirements on Soviet resources, but any substantial increase in traffic would necessitate additional transport equipment from the USSR.

Trade
Rumanian foreign trade is substantially below prewar levels, primarily because the USSR, which exercises wide control over the Rumanian economy, is maintaining and developing only those branches of industry which are of direct benefit to the USSR. In the postwar period the USSR has accounted for as much as 85 percent of the total foreign trade of Rumania. It is anticipated that through 1952 Rumania will deliver about half of its oil production to the Soviet Bloc without compensation. Currently Czechoslovakia and Poland are becoming Rumania's principal trading partners and hence the chief supporters of the economy. From the Bloc, Rumania obtains steel and iron, cotton, coal and coke, machinery, transport equipment, chemicals, and pharmaceuticals. Imports from the West include limited quantities of all types of machinery, spare parts, iron and steel products, transport equipment, cotton, leather goods, chemicals, medicines, and pharmaceuticals. Rumanian needs for exploration and drilling equipment are acute; in many instances this equipment is not available from the Bloc.

Although the long-range economic plan for Rumania contemplates the industrialization of the economy, the current pattern of the allocation of resources stresses the development of extractive industries and of agriculture. Rumania is the largest source of petroleum and petroleum products available in Eastern Europe for the Soviet war potential and also is expected to provide significant quantities of grain, carbon black, some basic chemicals, and small quantities of lead and zinc.

Western economic warfare measures against the Soviet Bloc would have a serious impact on Rumanian industry, would retard the development program, and would lower living standards. Rumania's outstanding direct vulnerability to Western measures of economic warfare lies in its dependence upon the West for oil exploration and drilling equipment to maintain current levels of petroleum production. The vulnerability of the total economy is limited by

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its predominantly agricultural character.

There is little or no evidence in the Rumanian economy of direct preparation for early hostilities. The carrying out of the industrial development program, however, would significantly increase its contribution to the war potential of the Soviet Bloc.*

* For a recapitulation of limitations, deficiencies, and requirements of economic intelligence with respect to Rumania, see Appendix A, p. 94. Footnote references in the text that follows are numbered consecutively in arabic numerals for each major subdivision. The footnotes themselves, together with references to other source material, are given in Appendix B, p. 103. Explanatory footnotes, indicated by asterisks (or, in tables, by lower-case letters), are given on the page in the text where the reference occurs.

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I. Trends in the Structure of the Economy.

Summary

The basic reorganization of the economic structure along Soviet lines and constantly increasing government domination of industry and agriculture have resulted in a highly effective state control of most phases of production and distribution of Rumanian resources. These controls will probably be further extended through 1952. Rumania is subject, in addition, to economic control by the USSR, which exercises supreme authority in economic matters.

Soviet economic exploitation of Rumania, although a source of strength to the USSR, has already weakened the Rumanian economy and is likely to cause difficulties in the implementation of Rumanian economic plans. Moreover, Soviet control over the Rumanian economy will be further consolidated through 1952. The future development of Rumania's economy will depend largely upon Soviet and Satellite assistance in capital goods and technical guidance. 1/

I. Control of the Economy by the Government (including Direct Control by the USSR).

a. Economic Planning.

(1) Preparation of Plans.

Rumania had One Year Plans in 1949 and 1950, but the plan now in effect is a Five Year Plan (1951-55). In general, the two earlier plans emphasized the extractive, electric power, and heavy industries. The Five Year Plan particularly emphasizes the establishment of economic foundations for the industrialization of a primarily agricultural economy. 2/ The attainment of an industrial economy by 1955 is unlikely because of Rumania's lack of machinery, equipment, and structural steel. 3/

The Council of Ministers is the top policy-making and control organ. In addition to formulating economic policy, it approves the over-all economic plan, which is drawn up by the State Planning Commission, 4/ and supervises its fulfillment. The State Planning Commission receives from the various Ministries draft plans for the economic units under their jurisdiction, the Ministries having coordinated the production plans submitted to them by the industrial centers. The Ministries are responsible for supervision of planning for the entire sector of the economy which is under their control, with the exception of those enterprises which serve only local needs. Here, administration is in the hands of local authorities. 5/ The

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industrial centers are the management and planning bodies for individual enterprises in their respective fields. The centers plan production (subject to higher approval), acquire and distribute raw materials, and control sales.

(2) Plan Control.

After the plan, broken down by enterprises and including target dates for completion, has been approved by the Council of Ministers, it is forwarded to the Ministries by the State Planning Commission. The Ministries forward to the State Planning Commission periodic reports on the progress of plan execution which the State Planning Commission must verify. 6/ The State Control Commission, the Central Statistical Institute, the Commission for Organization of Cooperatives, and the State Commission for Collection of Agricultural Produce also help to implement plan control.

Control by Moscow over the Rumanian economic plans is effective. This control is exerted directly through Soviet personnel holding key positions in Rumanian industry and government and indirectly through Soviet political control of Rumanian government officials.

b. Administrative Control.

(1) Industry.

(a) Control by the Government.

The government now controls, within the framework of the economic plan, all of the most important segments of Rumanian industry. In addition to the basic pattern of control developed for the nationalized industries, the Rumanian government has adopted other measures to expand and tighten economic controls over industry. First, government ministries have been reorganized in order to improve top-level control over government agencies, and, emulating the Soviet structure, a larger number of ministries with narrowed functions have been created. 7/ Second, various other organs of governmental control, such as the Standardisation Commission and the Institute for Industrial Planning, have been established as agencies under the Council of Ministers. 8/ Third, the credit and taxation systems have been reorganized to favor nationalized or cooperative industry over private enterprise.

In the cooperative segment of industry the trend has been toward increased control by the government and an increase in the number of state cooperatives, at the expense of both private cooperatives and individual enterprises. Although the whole cooperative structure since its inception has been subject to varying degrees of government control, an administrative

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consolidation in April 1949 increased state control. The various cooperatives are now organized into national unions, which are associated in national federations, controlled in turn by the Central Federation of Consumers Cooperatives (Centrecoop).

(b) Control by the USSR.

Postwar Soviet control of Rumanian industry likewise has continually expanded, increasing Rumania's economic value to the USSR and making the USSR virtually the supreme economic authority in Rumania. For example, Soviet control of Rumanian industry has been furthered by the establishment and development of joint Soviet-Rumanian (Sovrom) companies, managed by Soviet Directors-General having nearly absolute powers, and staffed by numerous Soviet officials. These joint companies control enterprises which have the majority interest in all key sectors of the economy. ^{9/} Because of economic privileges granted to the Sovrom companies by the state, most large private competitors have been driven out of business. ^{10/} Despite the fact that Sovrom companies (with the exception of Sovrombank) were placed under the control of the Rumanian government in February 1949, Soviet control is still exercised over them. ^{11/}

Through domination of Rumanian political leaders ^{12/} the USSR controls formulation and implementation of Rumanian economic policies. The presence of Soviet personnel in dominant sectors of Rumanian industry ^{13/} increases the effectiveness of Soviet control. Furthermore, representatives of the Council of Mutual Economic Assistance (CMEA) are located in Satellite countries, and these countries must accept the recommendations of such advisers, as well as furnish the USSR with all economic information that it requires. ^{14/}

Reciprocal trade treaties, reparations payments, investments, allocations of raw materials and some manufactured products, and loans supplement the USSR's peacetime control over the Rumanian economy. Should Rumania be threatened by invasion or air attack, an important economic protocol to the treaty signed by the USSR and Rumania on 4 February 1948 provides that all Rumanian industries important to the war effort would be removed to the USSR. ^{15/}

(2) Agriculture. ^{16/}

Collectivization of agriculture in Rumania is advancing at a slow pace, partly because private land tenure is a deeply rooted tradition and partly because government control over agriculture is being accomplished by other means. Independent landholdings still comprise the greatest amount of land area in Rumania. Collectivization was recently accelerated, however, at Soviet instigation.

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There are three types of state-controlled farms in Rumania. State farms contain land owned entirely by the state and operated by hired workers. Collective farms also are state-owned, but in theory each farm holds the title to its land in perpetuity. The land can be neither sold nor leased by the collective. The cooperative farm is the first step toward complete collectivization, and it passes through various stages which are characterized by the differences in land and inventory ownership and in the methods by which payment for work is made, before coming under complete state control. 17/

(3) Economic Services (Transportation, Communications, etc.).

(a) Control by the Government.

Control of most of the economic services in Rumania has been effected through nationalization. In such services as commerce, for example, where nationalization is not yet complete, the trend toward increased state and cooperative control is evident. The Nationalization Law of 11 June 1948 nationalized insurance, transportation, and telecommunications enterprises. Banking already had been nationalized. The techniques of control in these fields are similar to those employed in the industrial sector. All major export and import establishments have been nationalized, and the Ministry of Trade controls virtually every aspect of Rumania's domestic and foreign commerce. Since 1 October 1950, private traders have been required to obtain licenses. 18/

(b) Control by the USSR.

The principal means employed by the USSR to control economic services in Rumania is the extensive use of Sovrom companies, including joint banking, transport, airline, and insurance companies.

2. Factors Relating to the Effectiveness of Control.

a. Proportion of the Economy under Direct Government Control.

(1) Extent of Nationalization of Industry.

The Nationalization Law of 1948 nationalized almost all manufacturing or processing enterprises of any importance in Rumania, all mining enterprises, and most economic services. 19/ In this sphere, government control is rigid. Since the original drastic decree, some additional industries, such as motion pictures and private health institutions, also have been nationalized. One of the aims of the current Five Year Plan in Rumania is to liquidate all capitalist elements in industry and to curb private commerce by 1955.

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(2) Extent of Collectivization of Agriculture.

Official figures for 1950 indicate that 2.5 percent of the arable land was collectivized, 2.5 percent was under joint tillage or cooperative cultivation, and 8.1 percent was held by state farms. These percentages are based on the total arable land according to the agricultural census of 1948. The figure for collective farm area is based on data for December 1950, for joint tillage and cooperative farm area on data for July 1950, and for state farm area on data for October 1950.

A chronological survey of the major developments in control of agriculture demonstrates both the methods used by the government to obtain such control and the increased scope of such action after mid-1949. In December 1948, even before agricultural cooperatives had been introduced in Rumania, a speech by Gheorghe Gheorghiu-Dej, First Vice President of the Council of Ministers and President of the State Planning Commission, made it clear that their status was provisional and set collectivization as the ultimate goal of the government. His statement that collectivization would not be "forced" was made solely to allay the fears of the peasants, and ever-increasing government control of agricultural supply, distribution, and credit, plus the use of discriminatory measures to force the peasants into collectivization, have become effective instruments of government domination.

A drastic Land Expropriation Act published in March 1949 provided for total expropriation of all land belonging to rich peasants. Under the 1945 Expropriation Law, only the larger landholdings had been expropriated. The formation of Machine Tractor Stations and "voluntary" peasant associations for the use of agricultural machinery and equipment from these stations was encouraged as a move toward collectivization. A new agricultural tax law passed on 11 July 1949 exempted peasants with a production of less than 12,000 lei from all tax payments and further weakened the position of the remaining private landowners. On 24 July 1949, Rumania inaugurated its first collective farms, modeled on the Soviet kolkhoz, and granted them special concessions to establish their favored position and assure effective operation.

In 1950, both the collectivization drive and the administrative control of agriculture by the government were increased. Collective farms, which numbered 55 in 1949 and tilled only 0.1 percent of the total arable land, increased to 1,029, tilling 2.5 percent, in 1950. The State Commission for the Collection of Agricultural Produce also was established in 1950 to carry out the collection, purchase, and distribution of agricultural produce within the purview of the economic plan. 20/ Forced sales of agricultural produce at discriminatory prices to this commission have further curtailed the economic power of the independent landholder. A heavier tax law imposed in 1950 provided that 47 percent of the total governmental revenue derived from agriculture would be contributed by only 7 percent of the land holdings. In June 1950 a Land Pooling Act outlined procedures for the pooling of private land into collectives. The plots involved generally were sections of

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good land not already taken by the agricultural expropriations of 1945 and 1949 or otherwise forced into collective farms. The need to expedite the collectivization program also was an impelling factor in the revision of the administrative divisions of Rumania in September 1950. 21/ A further increase in collectivization activity has been evident in 1951 and probably will continue through 1952. The Five Year Plan specifically provides for a great reduction of capitalist elements in agriculture by 1955.

Soviet control over Rumanian agriculture is exercised through political control of Rumanian leaders, Communist Party organs, and Soviet personnel placed in official positions in Rumania.

b. Non-governmental Organizations as Instruments of Economic Control.

The Rumanian Workers' Party (the Communist Party) and its organizations are important instruments of economic control. Economic policy is dictated by the Party and implemented by its members, and such Party units as the Rumanian Workers' Party Plant Committees form powerful groups in factories, urging both workers and management to greater production. 22/

Rumanian labor unions, which all workers are required to join, have no independence, being merely devices to control workers. The unionization of farm labor is proceeding under the direction of workers from industry. 23/

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II. Capacity of Human Resources for Economic Development.

Summary

Three-quarters of the Rumanian labor force of 8 million workers are employed in agriculture. Nonagricultural labor, however, has increased by 25 percent since 1949 through the absorption of the unemployed and the induction of new workers. The planned rate of growth of the nonagricultural labor force will be slower in the next 2 years. But even so, recruitment of labor from agriculture and increased employment of women will be required, in addition to the yearly increment in population of working age, if Rumania is to achieve its 1953 goal of 8.8 million workers. Although the training of native technical personnel is increasing, foreign technicians are still necessary in the operation of Rumanian industry. Labor productivity has increased in the last year but remains low.

1. Size and Distribution of the Labor Force.

Seventy-five percent of the Rumanian labor force of 8 million workers is employed in agriculture, but the government is endeavoring to increase the nonagricultural labor force through the diversion of agricultural labor to meet the demands of industry. As late as September 1949 there were 247,000 unemployed, of whom 160,000 were urban workers. 1/ Many of these were absorbed in 1950 into the nonagricultural labor force, which increased by 25 percent over 1949. The rate of growth will not have to be as high in the next 3 years, however, in order to achieve the Five Year Plan goal of an increase of 38 percent by 1953. 2/ One of the more significant developments in 1950 has been the emphasis on construction, in which troops, as well as political prisoners, youth brigades, and free labor, have been utilized. 3/ In addition, males between the ages of 18 and 56 and females between 18 and 45 are required to contribute a specified amount of labor to the maintenance of highways. 4/

Plan goals for the Rumanian labor force and its components for 1950-53 are set forth in the table below.

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Civilian Labor Force
1950-53

| Category | Thousands | | | |
|--|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| | 1950 | 1951 | 1952 | 1953 |
| Agriculture ^{5/} | 6,000 | 5,900 | 5,850 | 5,800 |
| Industry and Services | | | | |
| Industry, Mining, and Construction | 900 ^{6/} | 1,300 ^{7/} | 1,600 ^{8/} | 1,800 ^{8/} |
| Transport and Communica- tions | 200 ^{9/} | 230 ^{10/} | 230 ^{10/} | 240 ^{10/} |
| Commerce, Public Employ- ment, etc. | 613 ^{11/} | 613 ^{11/} | 570 ^{12/} | 560 ^{12/} |
| Total, Industry and Services | <u>1,713</u> ^{13/} | <u>2,143</u> ^{14/} | <u>2,400</u> ^{14/} | <u>2,600</u> ^{15/} |
| Student Pool | 380 ^{16/} | 400 ^{17/} | 420 ^{17/} | 440 ^{17/} |
| Total ^{g/} | <u>8,100</u> | <u>8,400</u> | <u>8,650</u> | <u>8,850</u> |

^{g/} Totals are rounded because of uncertainty of final digits.

2. Level of Technical Training, Skill, and Efficiency.

Many prewar technicians and managerial personnel were replaced by political appointees when Rumanian industries were nationalized. There are Soviet technicians at present in many Rumanian industries, but their number, skill, and location are not known. ^{18/}

Semiskilled personnel are likewise in short supply, and instruction programs have been started to remedy this deficiency. ^{19/} Under the Five Year Plan, 500,000 workers are to receive professional on-the-job training, and 585,000 more are to be given training courses. ^{20/} In addition, students are sent to the Soviet Union and to the other Satellites for various kinds of training. ^{21/}

Detailed information on the productivity and efficiency of the Rumanian labor force is not available. Press comments in March 1950 ^{22/} on the excessive amounts of overtime worked, the lack of adequate training, the poor working discipline, and the need for norm changes indicated dissatisfaction with lagging labor productivity. Industrial labor output reportedly increased by 11 percent from the first quarter of 1950 to the first quarter of 1951. ^{23/} According to the 1951 Plan there should be another increase of 14 percent. ^{24/}

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3. Expansibility and Adaptability of the Labor Force.

a. Additional Labor Input from Present Labor Force.

It is estimated that increases in labor productivity, additional overtime, and reductions in absenteeism would increase the man-hour input of the present labor force by about 5 to 10 percent.

b. Sources of Additional Manpower.

The annual increase of approximately 125,000 in population of working age is insufficient for the achievement of planned increases in the labor force. ^{25/} Although goals in individual sectors may be reached through a redistribution of workers, attainment of the goal for the total labor force depends upon significant increases in the employment of women or members of other groups not now included in the work force.

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III. Living and Working Conditions.

Summary

Rumania's low living standards are not expected to improve in 1951 and 1952. The housing shortage is acute, deficiencies in food supply have forced holders of ration cards into the free and black markets, and health conditions are unsatisfactory. Labor morale is poor because of low wages, heavy work loads, and bad working conditions.

1. Living Conditions.

a. Housing.

There is an acute shortage of housing in Rumania. The adoption of the decree of 4 February 1949 on "Reorganization of Living Space," which provided that all space in residential premises "superfluous to requirements of inhabitants" could be allocated by official renting agencies to "homeless workers," has resulted in evictions on 24-hour notice. In general, a family of two is not permitted to occupy more than one room. Former middle- and upper-class families have been either evicted from their homes or assigned single rooms -- one room for each family. The most desirable houses and flats are allocated to Party or state officials. A flat of two rooms, kitchen, and bath now costs approximately 8,000 lei (about \$53)* a month, a prohibitive price except for a few high-paid Party members. In urban areas, workers pay about 1,000 lei a month, or about 20 to 25 percent of the gross income of an unskilled worker, for one room. Kitchen and bath, wherever available, are shared with the other families in the same house. In granting lodgings, priority is given to Party members and workers who surpass production norms.

b. Food.

Although it is an agricultural country, Rumania is faced with food shortages because of heavy shipments of meat, fruits, and cereals to the Soviet Union. Food is purchased in three ways: with food ration tickets, in government shops at "free," or high, prices, and at even higher prices in the black market. Only workers and government employees are entitled to ration cards. The following groups and their families are denied ration cards: those engaged in commercial transactions, those working for wages on privately owned land, pension holders who live in villages or who once owned land which has been expropriated, seasonal and daily workers in the countryside, professionals who are not Party members or state employees,

* One US dollar equals 150 lei at the official rate.

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and domestics employed by any of the groups listed above.

Food rationing is applied to bread, sugar, edible oils, meat, rice, macaroni, and potatoes. Kerosene, the most important cooking fuel in Rumania, also is rationed. There are now six categories of ration cards: Card A (750 grams of bread a day), for miners and steel furnace workers; B-1 (500 grams), for manual workers doing menial tasks; B (500 grams), for all other laborers; C (350 grams), for all types of office employees; D (250 grams), for families; and D-2 (250 grams), for children. The following are the monthly allowances on a typical card: 2 kilograms of wheat flour, 4 kilograms of corn (maize) flour, 2 kilograms of meat, 0.5 kilogram of fat, 0.5 kilogram of sugar, and 0.25 kilogram of soap. Several times a year butter and rice are distributed. Rations are insufficient for minimum subsistence, the rationed items are not always available, and quality is generally poor.

e. Health and Welfare.

Because of malnutrition, poor working conditions, and lack of medical care and medical supplies, there has been a marked increase of tuberculosis and syphilis, particularly among workers. It has been estimated that from 10 to 15 percent of urban workers are tubercular and about 10 percent are syphilitic. Although all workers are insured, the Communist-controlled General Confederation of Labor, which organizes and controls the Social Security budget, has not pressed for prompt insurance payments for pensions by the Ministry of Labor. Hospitals and sanatoria are seriously overcrowded, and medical treatment is not promptly given by the Ministry of Health.

d. Clothing.

Only a small part of the population is entitled to clothing and shoe rations. Cloth sells at 800 lei (about \$5.30) a meter in controlled markets and 1,600 lei a meter at free prices. A suit of poor quality under rationing costs from 5,000 to 6,000 lei, whereas in the free market it costs 22,000 lei. The one pair of shoes distributed each year on coupons costs about 1,450 lei, and a better pair of shoes bought in the free market costs 5,000 lei.

2. Working Conditions.

a. Wages.

Eight basic wage rates, correlated with skills, are set for the Rumanian industrial worker. An unskilled worker receives about 4,000 to 5,000 lei a month, and a skilled worker is paid about 6,000 to 8,000 lei a month. Take-home pay, however, is frequently reduced by penalties for failure to meet production norms, for inferior quality of production, or for damage to state-owned property, and by deductions for union fees, "donations," and subscriptions to Party and labor publications.

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b. Production Norms.

Each ministry, in agreement with the trade unions, establishes the work norm to be accomplished for each branch of activity and determines the quantity and quality of production or operation which the employee must carry out in a given period of time. Failure to fulfill norms results in wage deductions, and the norm-system has caused widespread dissatisfaction.

c. Safety Conditions.

Employees in the foundries, coal and salt mines, and oilfields work under adverse conditions. Smoke- and gas-filled factories are a safety hazard.

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IV. Foreign Trade and Finance.

Summary

Rumania does not depend upon imports for subsistence, but foreign trade is vital to the success of its industrialization program and provides strategic materials to the other Bloc members. Exports consist chiefly of the products of the extractive industries — petroleum, agriculture, and lumbering. In exchange, Rumania imports minerals, chemicals, and capital equipment.

The great bulk of Rumanian foreign trade is with the Soviet Bloc countries. For a part of the postwar period the USSR accounted for 85 percent of total foreign trade, but Czechoslovakia and Poland have recently increased their share. Trade with non-Bloc countries, although limited, enables Rumania to acquire key items needed for industrial development.

Soviet control of Rumanian foreign trade is as thorough as is its direction of the Rumanian domestic economy. The influence of the USSR is exercised through Soviet-Rumanian joint stock companies and reparations agreements.

1. Introductory.

Although Rumania sells some industrial products and buys such items as cotton and coal in foreign markets, the country is chiefly an exporter of raw materials and semiprocessed goods and an importer of finished goods. Foreign trade is at a low level, partly because of the agricultural character of the Rumanian economy and partly because the Soviet Union, which exercises thorough control in this field, is maintaining and expanding only those sectors of the Rumanian economy which directly benefit the USSR and the Bloc.

2. Trade with Non-Soviet Bloc Countries.

a. General.

Rumania acquires key industrial items for the petroleum, metallurgical, and transportation industries 1/ through trade with the non-Bloc countries. In return, Rumania exports to these countries food, petroleum, and timber products. Total trade with the non-Bloc countries reached a postwar peak of \$73.5 million in 1949, with exports valued at \$38.9 million and imports at \$34.6 million, but declined in 1950 to \$45.9 million, which included \$16.7 million worth of exports and \$28.7 million worth of imports. Postwar trade and payments agreements have been concluded with almost all of the important countries of Western Europe and with Argentina. 2/ West Germany, Italy, Austria, and Switzerland have supplied some goods cut off by export controls imposed by other Western nations.

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b. Exports to Non-Soviet Bloc Countries.

Rumanian exports to its non-Bloc trading partners consist primarily of food products and also include petroleum products and a small quantity of timber products. These shipments were valued at \$38.9 million in 1949 and \$16.7 million in 1950.

c. Imports from Non-Soviet Bloc Countries.

In 1949, Rumania received textile and machinery products from Italy and Belgium; machinery and apparatus from Denmark; chemicals, medicines, and pharmaceuticals from France; all types of spare parts and machinery, including oil drilling equipment, from West Germany; textile and nonferrous metals products from the Netherlands; textiles, machine tools, and electrical equipment from Sweden; textiles, manufactures of base metals, scientific instruments, and dyes from Switzerland; cotton and tanning materials from Turkey; and cotton, textiles, and rubber goods from the US. 3/ Other imports have included ball bearings from Switzerland and Italy, war material from Italy, industrial goods from Austria, 4/ medicines and pharmaceuticals from the Near East (primarily Israel), 5/ cotton from Egypt and India, 6/ and hides and tanning materials from Argentina. 7/ The total value of imports from non-Bloc countries was \$34.6 million in 1949 and \$28.7 million in 1950.

d. Trends.

Rumanian trade with the non-Bloc countries probably will continue the decline which began in 1950, despite the importance of Western industrial products to the country's industrialization program. Foreign credits are shrinking, and Soviet reparations requirements and other techniques are accelerating the integration of the Rumanian economy into that of the Bloc. In addition, Rumania's unwillingness or inability to make reasonable settlements on nationalized properties and outstanding prewar debts has exacerbated trade relations, particularly with Switzerland, Italy, France, and the UK.

3. Trade with Soviet Bloc Countries.

a. General.

The great bulk of Rumanian foreign trade is with the Soviet Bloc, and Rumania is a net debtor, primarily because of the uncompensated deliveries made to the USSR under the reparations agreements and joint stock company enterprises. Rumania exports petroleum, food, and timber products to the Bloc countries and receives in exchange capital equipment and industrial raw materials. Trade and payments agreements have been signed with the USSR and, under Soviet direction, with all the other Satellites.

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b. Exports to Soviet Bloc Countries.

The 1950 trade pact with the Soviet Union ^{8/} provided for Rumanian exports of 1.8 million metric tons of petroleum, 130,000 metric tons of grain, 25,000 metric tons of meat, large quantities of other foodstuffs, \$20 million worth of lumber and lumber products, 120,000 metric tons of cement, \$8 million worth of processed cotton, and other goods. Exports to the other ~~Satellites~~ followed a similar pattern. Much of the small trade with Bulgaria is complementary in nature, Rumania importing raw materials and returning processed goods to Bulgaria. ^{9/} Electric power also is exported to Bulgaria in small amounts.

c. Imports from Soviet Bloc Countries.

Under the 1950 trade agreement with the USSR, Rumania was to receive \$25 million worth of petroleum equipment, \$30 million worth of other industrial equipment, \$40 million worth of cotton, \$20 million worth of medicines, \$5 million worth of rubber, 250,000 metric tons of coal, 180,000 metric tons of coke, ores, metal products, railroad and other transport equipment, office machinery, and abrasives. ^{10/} Poland supplies Rumania with iron and steel products for the metallurgical industry, coal and coke, and carbon electrodes ^{11/}; Czechoslovakia supplies machine tools, oil pipe, trucks, and automobiles ^{12/}; and Hungary supplies oilfield equipment, tools, electrical equipment, and vehicles. ^{13/} In 1950, Rumanian imports from Czechoslovakia exceeded exports to that country by more than \$10 million, while the combined import deficit with Hungary and Poland was about \$8 million. ^{14/}

4. Means -- Including Indications of Mobilization for War.

It is expected that the present pattern of Rumanian trade with the other Bloc countries will continue through 1952 and that the USSR will continue to direct Rumanian foreign trade for Soviet benefit. In 1951 and 1952, Rumania will probably deliver about half of its petroleum production to the Bloc members without compensation.

4. Means of Carrying on Trade.

Most of Rumania's trade with non-Bloc countries is shipped by rail to Central Europe, and the volume is so small that facilities are not strained. Danube River transport, which carries a large part of the trade with the Bloc countries, is controlled by the USSR through a joint stock company.

5. Uncompensated Deliveries to the USSR.a. Joint Stock Companies.

Eleven Soviet-Rumanian joint stock companies have been established in the postwar period to direct the operation of properties formerly owned

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by Germans and enterprises which, although included under reparations, are judged more profitable if left in Rumania. These joint stock companies, known as Sovroms, enable the USSR to exact fixed profits, to obtain a share of the production of strategic industries and services, and to insure Soviet control of the Rumanian economy while avoiding the necessity of large Soviet investments.

The economic agreement of 1946 established Sovroms in the fields of transport (Sovromtransport), aviation (TARS), timber (Sovromleam), Soviet-Rumanian banking (Sovrombank), and petroleum (Sovrompetrol). ^{15/} Sovrom-tractor and Sovromchemicals were added in 1948, Sovromgas (natural gas) in early 1949, and Sovrommetal, Sovromcoal, and Sovromconstruction in July 1949. ^{16/} The most important joint stock company is Sovrompetrol, which is reported to control from 40 to 80 percent of Rumania's oil production.

b. Reparations.

The reparations clauses of the Soviet-Rumanian armistice of September 1944 set the keynote for postwar economic relations between the two countries. ^{17/} The Rumanian reparations bill was fixed at \$300 million, to be paid off by 1 July 1952 through delivery of petroleum products, grain, timber, river and ocean vessels, machinery, and other commodities, all valued at 1938 prices. In 1948, with \$110 million still outstanding, Rumanian financial difficulties reached such proportions that the USSR cut the debt balance in half. ^{18/} Nevertheless, the remaining indebtedness of \$55 million in 1938 dollars imposes an annual burden of \$41 million in current dollars on the Rumanian balance of payments and further tightens the Soviet hold on the Rumanian economy.*

6. Means of Financing Trade.

Rumanian foreign trade is financed by exports, short-term credits from the Council of Economic Mutual Assistance (CEMA), and gold and foreign exchange reserves accumulated before the end of 1945. In the postwar period, Rumania has received the following known credits ^{20/}:

Rumanian Postwar Foreign Borrowing

| <u>Country</u> | <u>Million US Dollars at Official Exchange Rate</u> | | |
|--------------------------|---|---------------------------------|--------------------|
| | <u>Amount</u> | <u>Date Received</u> | <u>Balance Due</u> |
| USSR | 10.0 | 1947-51 | Probably None |
| USSR | 22.6 | From June 1948 to March 1950 | N.A. |
| Argentina | 25.0 | 1947 | \$1.6 |
| Switzerland | 6.9 | 1947 | Probably None |
| US (Chase National Bank) | 12.0 | 1947 | None |

* Other unproductive outlays which weaken the Rumanian economy are occupation costs, estimated by Gen. Nicolae Radescu, former Prime Minister, to total \$1.8 million from September 1944 to February 1948, ^{19/} and military appropriations, which in 1950 amounted to \$400 million at the official rate of exchange.

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V. Agriculture.Summary

Grain is the mainstay of Rumanian agriculture and the staple of the national diet. Production in 1949 and 1950 was less than in 1948, the peak postwar year, but probably will surpass the 1948 total in 1951 and 1952 if average weather conditions prevail and peasant resistance to collectivization does not increase. Deficits were experienced in 1949 and 1950, but tightened rationing restrictions will probably permit surpluses in 1951 and 1952. Acreage is stable, and no reserves exist. Stockpiling is expected in 1952. The number of collective farms, increasing slowly in the face of strong peasant opposition, represented only 2.5 percent of the total arable land in 1950.

1. Production.

Grain is the most important agricultural crop in Rumania.* Livestock and livestock products, beans, and other vegetables also are produced. Grain production, after reaching a postwar peak of 7.3 million metric tons in 1948, declined substantially in 1949 and 1950. The short 1950 crop was primarily a result of unfavorable weather conditions and peasant opposition to collectivization.

Latest Annual Estimates of Grain Production
1948-50

| <u>Year</u> | <u>Estimate</u> | <u>Thousand Metric Tons</u> <u>Probable Range of</u> <u>Variation of Estimate</u> |
|-------------|-----------------|---|
| 1948 | 7,362 | 6,974 to 7,749 |
| 1949 | 6,314 | 5,981 to 6,646 |
| 1950 | 5,732 | 5,431 to 6,034 |

Grain acreage, seriously cut in the World War II period, had reached only 90 percent of the prewar total by 1948 and 92 percent by 1950. Acreages in 1951 and 1952 probably will not increase and may even decrease slightly because of peasant discontent.

* Grain unless otherwise specified includes corn (maize), wheat, rye, oats, barley, and such minor grains as spelt, meslin, and buckwheat.

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able Production.

The lack of additional savings, farm implements, and draft power and peasant adherence to traditional land and peasant customs are factors limiting production of grain. Production in 1951 and 1952 should slightly exceed the 1948 total if weather conditions are average and peasant resistance to collectivization does not increase.

**Estimated Grain Production
1951-52**

| <u>Year</u> | <u>Estimate</u> | <u>Thousand Metric Tons Probable Range of Variation of Estimate</u> |
|-------------|-----------------|---|
| 1951 | 7,615 | 7,310 to 8,122 |
| 1952 | 7,615 | 7,310 to 8,122 |

3. Domestic Requirements.

Before World II the Rumanians relied upon grain for about 75 percent of their daily caloric intake, with corn (maize) accounting for approximately 60 percent of the total. Since the war the percentage of grain in the diet has probably increased. The fact that the population lives near the subsistence level therefore limits the extent to which grain requirements can be reduced. Most of the shortages resulting from the poor 1950 crop were probably met by decreasing grain for livestock feed.

**Estimated Domestic Requirements of Grain
1948-53**

| <u>Year</u> | <u>Estimate</u> | <u>Thousand Metric Tons Probable Range of Variation of Estimate</u> |
|-------------|-----------------|---|
| 1948-49 | 6,763 | 6,670 to 6,869 |
| 1949-50 | 6,591 | 6,410 to 6,571 |
| 1950-51 | 6,394 | 6,321 to 6,467 |
| 1951-52 | 6,869 | 6,796 to 6,992 |
| 1952-53 | 6,886 | 6,813 to 7,009 |

4. Stockpiles.

It is believed that, because of poor harvests in 1949 and 1950, there are no reserve stocks of grain in Rumania. No grain was imported in 1949 and 1950, but small quantities may have been exported to the USSR, Albania, and possibly some of the other Satellites. If the expected 1951 crop materializes, about 0.7 million ton will be available for stockpiles and exports.

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Estimated Stockpiles of Grain
1950-52

| <u>As of</u> | <u>Estimate</u> | <u>Thousand Metric Tons Probable Range of Variation of Estimate</u> |
|--------------|-----------------|---|
| 31 July 1950 | None | None to 291 |
| 31 July 1951 | None | None |
| 31 July 1952 | 746 | 514 to 1,130 |

5. Surplus or Deficit.

Tightening of rationing restrictions in early 1951 has averted the threat of a grain deficit in late 1951 of 662,000 metric tons. There will probably be a surplus in the summer of 1952.

Estimated Surplus or Deficit of Grain
(Domestic Production)

| <u>Year Ending</u> | <u>Estimate</u> | <u>Thousand Metric Tons Probable Range of Variation of Estimate</u> |
|--------------------|-----------------|---|
| 31 July 1950 | -177 | -429 to +75 |
| 31 July 1951 | None | None |
| 31 July 1952 | +746 | +514 to +1,130 |

6. Collectivization.

The first steps toward collectivization were taken in October 1948 with the establishment of Machine Tractor Stations, followed in early 1949 by the organization of smaller farms into farming groups or tillage associations. In late 1949 there were 55 collective farms in operation, cultivating about 0.1 percent of the total arable land of the country. The number of collectives increased in 1950 to 1,029 small farms which cultivated 2.5 percent of the arable land. The percentage of collectivized land in Rumania is too small to have an appreciable effect on 1951 grain production. Peasant resistance to collectivization is strong and persistent.

7. Trends --- Including Indications of Mobilization for War.

Government efforts toward land reform achieved only a small increase in acreage in 1949 and 1950. The strong peasant hostility to both collectivization and the introduction of modern methods of farming makes it unlikely that the acreage in 1951 and 1952 will exceed that of 1950, and a decrease is possible. Imports of grain for stockpiles have not been reported.

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VI. Industrial Capacity and Levels of Production.A. Ferrous Metals.Summary

The iron and steel industry of Rumania under normal conditions is adequate for the needs of the country. It is dependent upon imports for all requirements of ferroalloys, except manganese and some chromite, as well as for a large proportion of its requirements of metallurgical coke and iron ore. Large reserves of coal are located in the country, but only a small part of domestic output is suitable for the production of metallurgical coke. Iron ore reserves, widely distributed throughout the country, are estimated at over 26 million metric tons, but exploitation has been slow, and Rumania imports a large proportion of its iron ore requirements.

Methods of extracting ores are primitive, installations and equipment of the small foundries and steel mills are obsolescent and worn, and competent managerial and technical personnel are lacking. To increase production, Rumania must make large investments in all phases of its industry.

Soviet managers control Rumania's four largest steel mills, and in 1950 approximately 60 percent of the total production of semifinished steel products was delivered to the Soviet Control Commission for shipment to the USSR and Czechoslovakia.

1. Production.

From 1948 through 1950 there have been small increases in iron and steel production. These increases, detailed in the table below, were achieved through increased work hours and more stringent labor discipline.

Estimated Production of Ferrous Metals
1948-50

| | Metric Tons | | |
|----------------------|-------------|-------------|---------|
| | 1948 | 1949 | 1950 |
| Metallurgical Coke | 50,000 | 60,000 | 70,000 |
| Iron Ore (30-60% Fe) | 175,000 | 328,000 | 350,000 |
| Iron and Steel Scrap | N.A. | N.A. | N.A. |
| Ferroalloys | | | 70,000 |
| Manganese | 45,000 | 70,000 | 8,000 |
| Chromite (30-50% Cr) | N.A. | 5,000-7,000 | 200,000 |
| Pig Iron | 165,000 | 175,000 | 250,000 |
| Raw Steel | 220,000 | 235,000 | 250,000 |
| Rolled Products | 200,000 | 225,000 | 230,000 |

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Soviet managers, who have arrived in increasing numbers since 1948, now control Rumania's four largest steel mills. In 1950 the Soviet Control Commission received about 50 percent of the total output of semifinished steel products for shipment to the USSR and to the armament plants of Czechoslovakia.

2. Estimated Possible Production and Capacity.

The goals of the Five Year Plan were based upon anticipated imports of equipment from the USSR. ~~These shipments have failed to materialize, however,~~ and the Plan targets will not be reached. Production in 1952 will be substantially the same as in 1951.

Estimated Production of Ferrous Metals 1951-52

| | <u>1951 and 1952</u> | Thousand Metric Tons | |
|----------------------|----------------------|-----------------------------|-----------------------------|
| | | <u>1952 Plan Target</u> | <u>1955 Plan Target</u> |
| Metallurgical Coals | 70 | | 700 |
| Iron Ore (30-60% Fe) | 400 | 523 | |
| Ferrous Alloys | | | |
| Manganese | 75 | N.A. | |
| Chromite (30-50% Cr) | 9 | N.A. | |
| Pig Iron | 250 | 1,000 | |
| Raw Steel | 275 | 1,250 | |
| Rolled Products | 250 | 800 | |

Although large coal deposits exist, much of their output is unsuited to the production of metallurgical coals, and they provide only a small base for expansion of the iron and steel industry. Iron ore reserves are estimated at 26 million metric tons and range in iron content from 30 to 60 percent, but exploitation has been so slow that Rumania is not yet freed of dependence upon imports. The chief iron ore deposits are located in the Banat, Eastern Transylvania, and in the vicinities of Monts Apuseni, Hunedoara, and Laramures.

3. Domestic Requirements.

Although little information is available on requirements, differences between 1949 and 1950 are believed to be slight. Estimates are based on the usual requirements of raw materials to produce pig iron and raw steel.

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Estimated Domestic Requirements of Ferrous Metals
1949-50

| | Metric Tons | |
|---|-------------|-------------|
| | <u>1949</u> | <u>1950</u> |
| Metallurgical Coke | 200,000 | 225,000 |
| Iron Ore | 350,000 | 400,000 |
| Scrap | 125,000 | 150,000 |
| Ferrous Alloys | | |
| Manganese | N.A. | N.A. |
| Chromite | N.A. | N.A. |
| Molybdenum, Nickel Tungsten, and Vanadium ^{a/} | | |
| Pig Iron | 175,000 | 200,000 |
| Raw Steel ^{b/} | | |
| Rolled Products ^{b/} | | |

^{a/} Insignificant amounts.

^{b/} Domestic production is supplemented by imports.

4. Stockpiles.

Rumanian production of iron and steel products is too low to permit stockpiling. Domestic output of all commodities except manganese must be supplemented by imports.

5. Surplus or Deficit.

Rumania must import all of the ferrous metals needed to maintain its iron and steel industry, with the exception of manganese. Domestic production of this ore probably satisfies requirements and permits some surplus, but no information is available as to the amount. Estimated deficits of metallurgical coke are 155,000 metric tons in 1950 and 175,000 tons in both 1951 and 1952. Deficits of iron ore are estimated at from 250,000 to 300,000 tons and 300,000 tons, respectively, for the same periods. There are also deficiencies of scrap and raw steel, as well as of chromite, molybdenum, nickel, tungsten, and vanadium, of which only insignificant amounts are required.

6. Internal Limitations.

Mining methods are primitive, and there is a need for modern techniques and mechanized equipment. Installations and equipment of foundries and mills are obsolescent and worn. Furthermore, competent managerial and technical personnel are lacking. Until large-scale improvements are made, there will be little advance in production.

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7. Trends--Including Indications of Mobilization for War.

Placing the four largest steel mills under the management of Soviet specialists may result in a small increase in production. A change also may be expected in the type of semifinished products produced, with emphasis on their usability in the armament program of the Soviet Bloc. Fewer steel products will be available for consumer use.

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B. Nonferrous Metals.

Summary

The principal nonferrous metals produced in Rumania are lead and zinc, copper production being negligible. Copper, lead, and zinc are produced only as by-products of the concentration of gold and silver ores. (Gold and silver will not be considered in a paper confined to industrial metals.) Copper minerals are smelted into copper matte, which is used to make copper sulphate. The possible mine production of recoverable copper in 1951-52 is from 600 to 800 metric tons a year, whereas requirements are estimated at from 6,000 to 8,000 tons. Thus there will be a deficit of from 5,400 to 7,200 tons a year.

Assuming that the zinc smelter at Copsa-Licea has been built and is operating, zinc and lead production in 1951 and 1952 is estimated at from 4,000 to 7,000 metric tons of lead and from 3,000 to 4,500 tons of zinc a year. Estimated requirements for lead and zinc are from 4,000 to 6,000 tons each annually, and Rumania is expected to be self-sufficient in lead by 1952. But requirements for zinc foreshadow a deficit of from 1,000 to 1,500 tons.

Known reserves of copper, lead, and zinc ores are not large. This is probably the most important factor limiting production of these metals. A nonferrous metals combine formed in January 1950 apparently is consolidating operations of all the principal mines producing copper, lead, and zinc. Installations and workers evidently are being transferred to these mines from other mines in a vigorous effort to increase production of copper, lead, and zinc. Under the Five Year Plan, flotation plants are to be built for treatment of these complex ores.

The quality and quantity of nonferrous minerals available in Rumania are not of sufficient importance to add significantly to the strength of the Soviet Bloc, and Rumanian industrial requirements for such minerals are negligible.

1. Copper.

a. Production.

Production of copper is negligible, being estimated at about 520 metric tons in 1947, the latest year for which figures are available. ^{1/} Output consists only of copper minerals recovered as a by-product from the concentration of gold and silver ores. These are smelted into copper matte, which is used to make copper sulfate. Copper metal is not produced in Rumania.

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b. Estimated Possible Production and Capacity.

The Five Year Plan contemplates that through "the development of existing mines and the opening of new mines, the production of copper, lead, and zinc ores in 1955 will be 283 percent of 1950 output." 2/

Possible mine production of recoverable copper in the 1951-52 period is estimated at from 600 to 800 metric tons a year. Capacity of all processing plants does not exceed 2,700 tons of copper a year. 3/

c. Domestic Requirements.

Current information on requirements of copper is lacking, but in 1947 it was reported that annual consumption was between 6,000 to 7,000 metric tons. 4/ The requirements for the 1951-52 period are estimated at from 6,000 to 8,000 tons a year. Information on stockpiles is lacking, and the annual deficit for 1950-52 is estimated at from 5,400 to 7,200 tons.

d. Internal Limitations.

The major limitation to the production of copper in Rumania is the shortage of available copper ore. Nearly all of the copper presently produced is a by-product of gold and silver mining. There is one known copper deposit, "Alten Tep," located in the northern part of Tulcea near the Black Sea, but it is not known whether this deposit is being worked. New mines containing some 400,000 metric tons of from 3 to 5 percent copper ore were uncovered in 1939. 5/

e. Trends--Including Indications of Mobilization for War.

The transfer of workers and equipment from other metal mines to copper, lead, and zinc mines indicates vigorous efforts to increase the production of nonferrous metals. A new nonferrous metals combine, formed in January 1950, reportedly has spent 400 million lei for new mine equipment, principally poor-quality machinery from the Soviet Union. Under the Five Year Plan, nine flotation plants are to be built to process ores containing copper, lead, and zinc.

2. Lead and Zinc.

a. Production.

The production of lead and zinc in Rumania is a by-product of certain gold and silver mining enterprises in the country. Production in 1947 was 3,316 metric tons of lead and 2,247 metric tons of zinc. 1/ In the case of zinc it is not known whether this figure represents zinc metal or metal content of zinc concentrates. A zinc smelter with a capacity of from 6,000 to 9,000 tons of concentrates annually 2/ was to have been constructed at Copșa-Licea before World War II, but it is not known whether it was completed. The principal mines

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which produce lead and zinc are the Herja mine of the Phoenix, or Baia-Liara, Company and the Raia Spric, Capnic, and Laiut mines.

b. Estimated Possible Production and Capacity.

(1) Production.

Estimates based on the output and capacity before World War II indicate that annual production of lead and zinc in 1951-52 may be from 4,000 to 7,000 metric tons of lead and 3,000 to 4,500 tons of zinc (provided the zinc smelter at Copsa-Liica has been built and put into operation). Rumania is expected to be self-sufficient in lead in 1952.

(2) Capacity.

(a) Lead.

There are three lead smelters in Rumania, all connected with important chemical works, but information regarding their capacity differs. Capacity may vary from 6,000 to 8,000 metric tons of lead a year for the 1951-52 period.

(b) Zinc.

Information is lacking on the zinc smelter which was reported to be under construction in 1959 at Copsa-Liica. If this smelter were completed and put into operation at the proposed capacity of from 6,000 to 9,000 metric tons of concentrates a year, Rumania's zinc metal ^{3/} output could be from 3,000 to 4,500 tons a year during 1951 and 1952.

c. Domestic Requirements.

Before World War II, Rumania apparently was self-sufficient in lead but had no surplus for export. In the same period, Rumania exported all of its production of zinc concentrates and imported an average of about 4,300 metric tons of slab zinc a year. ^{4/}

Estimated domestic requirements of lead and zinc for the 1948-52 period are from 4,000 to 6,000 metric tons a year each. Although Rumanian lead production will probably satisfy requirements by 1952, requirements for zinc indicate a deficit of from 1,000 to 1,500 tons. Information on stockpiling is lacking.

d. Internal Limitations.

Limiting factors in the production of lead and zinc are a shortage of raw materials, technical personnel, and equipment. The shortage of raw materials will probably be the most important limiting factor. A recent report ^{5/} indicates that the nonferrous metals combine has encountered difficulties because the development of less promising deposits has been neglected, and the rich ores were exhausted in September 1950.

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e. Trends—Including Indications of Mobilization for War.

Information 6/ indicates that the principal gold mines producing copper, lead, and zinc as by-products have been consolidated under a non-ferrous metals combine and that all gold mines not producing these non-ferrous minerals have been closed down. Installations and workers from the latter are being transferred to those mines and mills which produce nonferrous by-products. This suggests future increases in the production of lead and zinc.

3. Other Nonferrous Metals.

The production of other nonferrous metals in Rumania is unimportant, and requirements for tin, aluminum, or antimony either are supplied by the USSR or other Satellite countries or are imported from outside the Soviet Bloc. According to the International Tin Study Group, Rumania in 1949 imported 355 long tons of tin from Malaya and 25 long tons from the Netherlands, but in 1950 only 100 long tons were imported from Malaya.

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C. Coal.Summary

Rumania is self-sufficient in all types of coal except those suitable for coking. Production in 1948 was 2.6 million metric tons; in 1949, 2.8 million tons; and in 1950, approximately 3 million tons. The planned increase for 1951 over 1950 is 25.2 percent, and the 1955 target is 8.5 million tons, but neither of these targets is expected to be attained. It is estimated that production in 1952 will not exceed 4 million tons. Production in 1949 consisted of 71.3 percent brown coal, 21.9 percent lignite, 5.5 percent bituminous coal, and 1.3 percent anthracite. About 85 percent of the brown coal is produced in the Petroșani area. It is estimated that 150,000 metric tons of metallurgical coke and at least 50,000 tons of coking coal were imported in 1950 to meet Rumanian deficiencies. Approximately 200,000 tons of coke and 50,000 tons of coking coal will have to be imported in 1952. Domestic production of metallurgical coke is about 70,000 tons annually.

Railroads consume 60 percent or more of the total output (mostly brown coal and lignite), and power plants take approximately 18 percent. Nearly all of the bituminous coal and much of the anthracite are used by the iron and steel plant at Reșița. Allocations for heating probably amount to around 200,000 metric tons, or 7 percent of total output, and the remainder is used by various industries.

1. Production.

Coal is not nearly so important in the production of energy in Rumania as in other countries of the Soviet Orbit, because of the availability of large deposits of petroleum and natural gas. Coal production in 1948 was 2.6 million metric tons ^{1/}, or about 15,000 tons less than in 1940. The 1949 output of 2.8 million tons consisted of brown coal, 71.3 percent; lignite, 21.9 percent; bituminous coal, 5.5 percent; and anthracite, 1.3 percent. ^{2/} Total production for 1950 is estimated at 3 million metric tons. ^{3/} All of the mines, with the exception of those in southern Hunedoara producing brown coal, are small.

a. Brown Coal.

Rumania's coal reserves consist mostly of brown coal, which is of better quality than ordinary lignite and can be further improved by washing. The principal production is in the vicinities of Petrila, Petroșani, Aninoasa, and Lupeni in the Jiu Valley field in the southern part of Hunedoara Province. This area in 1947 produced 1.4 million metric tons, or 87 percent of the output of brown coal and 63.7 percent of the total Rumanian output of coal. ^{4/} The second most important area is in the vicinity of Asau and Comanesti in Bacau Province, where the combined output of several mines was 143,150 metric tons in 1947, or about 8.6 percent of the production of brown coal. Third in

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importance is the coal field lying west and northwest of Cluj in Cluj Province, where there are mines in the vicinity of Aghiresul, Titu, Dano, and Bagura. These mines in 1947 produced 48,811 tons. Most of the balance of production comes from the eastern part of Salaj Province, whereas Tihau (unlocated) and Mehadia in Caras Province make insignificant additions.

b. Lignite.

Lignite production is scattered in a dozen different provinces, but the four provinces of Iuscol, Dambovita, Hunedoara, and Prahova accounted in 1947 for nearly 80 percent of total Rumanian lignite production of 446,729 metric tons. The main producing area is the basin south of Campulung in Iuscol Province, which produced about 126,000 tons in 1947. None of the other provinces produced as much as 100,000 tons.

c. Bituminous Coal.

The entire production of bituminous coal comes from Caras Province in southwestern Rumania and Brasov Province in central Rumania. Production in 1947 was 139,374 metric tons. The Anina, Doman, and Secul mines in Caras Province accounted for 75 percent of the total tonnage, the Anina mine alone furnishing slightly more than 50 percent. ^{5/} The mines at Codlea and Vulcan in Brasov Province furnished only 20,673 tons, or about 15 percent of total production, the balance coming from a few very small mines.

d. Anthracite.

Before World War II the production of anthracite was less than 5,000 metric tons annually, all from the Schela (Scheia) mine in Gorj Province. It is reported ^{6/} that in 1947 production was 4,117 tons from the Schela mine and 19,662 tons from the Baia Noua mine (at Eibenthal near the Danube River in Caras Province).

2. Estimated Possible Production and Capacity.

Plan goals for coal output have not been met in recent years. The goal for 1950 was approximately 3.1 million metric tons ^{7/}, and output fell short by an estimated 125,000 tons. In 1950, new lignite mines were opened in the vicinities of Alifer-Bicsad and Paleta de Sus in Baia Mare Province. Production was carried on by primitive methods, but installation of modern equipment was planned. ^{8/} Other lignite mines were being opened in scattered localities.

The coal target for 1951 is an increase of 25 percent over 1950, ^{9/} or a total of about 3.8 million metric tons, but this figure is unlikely to be attained. In the first quarter of 1951, output was 98.1 percent of planned output. ^{10/} It is estimated that Rumania will produce 3.6 million tons of coal in 1951 and 4 million tons in 1952. According to the plan for 1955, production is to reach 8.5 million tons, ^{11/} and lignite output in particular will be considerably expanded.

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3. Domestic Requirements.a. Railroads.

Coal consumption by the railroads is 60 percent of total production. In 1948 the USSR supplied the railroads with 144,000 metric tons of coal, probably bituminous, and 3,000 tons of coke. ^{12/} Requirements are estimated at 1.5 million tons in both 1948 and 1949, 1.9 million tons in 1950, and 2.2 million tons in 1952.

b. Electric Power.

Power plants are the second major consumer of coal. About 19.8 percent of the output of electric energy was produced from coal in 1950, ^{13/} and consumption is estimated at 535,000 metric tons. Only 150,000 tons of lignite were used, but new thermal stations, in the planning stage or under construction, will greatly increase the use of lignite for power production. According to the plan for 1955, power plants are to consume 3.2 million metric tons of lignite, ^{14/} but this will depend upon the completion of the planned power facilities. It is probable that most of the increases in power output estimated for 1951 and 1952 will be obtained from lignite. Coal requirements by power stations are estimated at 1 million tons in 1952, about 25 percent of total coal production, as compared with about 18 percent of total production in 1950.

c. Iron and Steel Industry.

Probably at least 80 percent of the bituminous coal production and some of the anthracite is going to the iron and steel works at Revisa. Nevertheless, domestic supplies have been inadequate, and it has been necessary to import coking coal, local production reportedly being confined to only one mine, located at Secl. In addition, metallurgical coke must be imported, since Rumanian production apparently meets only about one-third of the country's requirements. Poland supplied 30,000 metric tons of coal and 35,000 tons of coke to Rumania in 1949. ^{15/} Czechoslovakia agreed to supply 25,000 tons of coke for foundry use and 65,000 tons for blast furnaces in the same year. ^{16/}

It is estimated that in 1950 the iron and steel industry required 185,000 metric tons of coal, mainly for coking purposes, and 220,000 tons of metallurgical coke for blast furnaces. At least 50,000 tons of coal and 150,000 tons of coke had to be imported. By 1952, Rumania will probably have to import 200,000 tons of coke but may need no more coal imports than it does at present. Production of metallurgical coke in 1952 is expected to be 70,000 metric tons, the same as in 1950, which would require approximately 100,000 tons of coal. The balance of the coal used by the iron and steel plants is consumed mainly in the production of gas and steam.

d. Other Industries.

The bulk of the coal used by various other industries is in the form of briquettes produced from brown coal mined in the Jiu Valley. Requirements are

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estimated at 275,000 metric tons in 1948 and 1949, 300,000 tons in 1950, and 350,000 tons in 1952.

e. Domestic Heating.

Allocations of coal for heating in homes and buildings are probably about 200,000 metric tons annually at present. Ten percent of the 1947 production from the Jiu Valley, or about 145,000 tons, reportedly went for household heating. 17/ Additional quantities of lignite probably increased total consumption in that year to 175,000 tons or more.

4. Stockpiles.

Coal stocks cannot be large, because brown coal and lignite are unsuited to prolonged storage, and the better types of coal are in short supply. Some indication of the size of stocks is found in a report of July 1948 which stated that the railroads were able to accumulate about 120,000 metric tons because the mild winter of 1947-48 reduced consumption. 18/ It is probable that in a normal winter much less than a month's requirements are on hand. Stockpiles at the end of 1950 are estimated at only 150,000 tons and represent for the most part working inventories.

5. Surplus or Deficit.

Although the quantities involved are relatively small, Rumania must import about two-thirds of its requirements of metallurgical coke and most of its coking coal. It is estimated that 150,000 metric tons of metallurgical coke and at least 50,000 tons of coking coal were imported in 1950 and that by 1952 imports will be 200,000 tons and 50,000 tons, respectively.

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Estimated Rumanian Availability and Requirements of Coal
1948-50 and 1952

| Availability | Thousand Metric Tons | | | |
|---|----------------------|--------------|--------------|--------------|
| | 1948 | 1949 | 1950 | 1952 |
| Production | | | | |
| Anthracite | N.A. | 35 | 40 | 50 |
| Bituminous | N.A. | 151 | 165 | 200 |
| Brown | N.A. | 1,972 | 2,115 | 2,650 |
| Lignite | 453 19/ | 605 | 675 | 1,100 |
| Total | 2,631 19/ | 2,763 | 2,995 | 4,000 |
| Stocks | | | | |
| (as of 1 Jan) | 100 | 200 | 175 | 150 |
| Imports | 204 | 30 | 50 | 50 |
| Subtotal | 2,935 | 2,993 | 3,220 | 4,200 |
| Exports | 0 | 0 | 0 | 0 |
| Stocks | | | | |
| (as of 31 Dec) | 200 | 175 | 150 | 150 |
| Total Availability | 2,735 | 2,818 | 3,070 | 4,050 |
| Requirements | | | | |
| Railroads | 1,700 | 1,700 | 1,850 | 2,200 |
| Electric Power | 410 | 480 | 535 | 1,050 |
| Iron and Steel Industry | 150 | 160 | 185 | 210 |
| Other Industries (including Briquetting) | 275 | 275 | 300 | 350 |
| Domestic Heating | 200 | 203 | 200 | 240 |
| Total Requirements | 2,735 | 2,818 | 3,070 | 4,050 |

6. Internal Limitations.

Lack of domestic supplies compels Rumania to import coks and coking coal. Coking coal reportedly is produced in only one mine, located at Secl. The manufacture of equipment for the coal industry is apparently confined to one plant in Petrosani, which doubtless can provide only a limited number of the items required and probably serves principally as a machine repair base. It is necessary to import most machinery and tools. The mines in the important Petrosani-Petrila-Iupien area are reported to be modern by Rumanian standards, and considerable new equipment has been installed since the war. Little electrical machinery is used underground, but pneumatic picks are employed to a large extent for digging coal, and the main haulage is done by compressed

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air locomotives. In 1948 the Petrosani mines were reported 20/ to be working two 12-hour shifts, and the labor force included some women, which may indicate a shortage of labor.

7. Trends--Including Indications of Mobilisation for War.

Coal production has increased gradually since World War II, and it is planned that by 1955 production will reach 8.5 million metric tons, or about 285 percent of the estimated 1950 output. A tenfold increase in the production of metallurgical coke, now about 70,000 tons a year, is planned for 1955. Power plants in 1955 are to consume 3.2 million tons of lignite, as compared with only 150,000 tons in 1950. A number of new lignite mines were opened in 1950, and plans for mechanising these operations are under way. Some difficulties will be encountered, principally in obtaining sufficient equipment, so that production probably will not be as high as intended. On the other hand, it is equally unlikely that coal requirements will reach the level contemplated in the plan, and to this extent failure to attain objectives for coal production will not handicap the Rumanian economy.

The ambitious program to increase coal and coke production cannot be judged an indication of war preparations, but when considered in the total context of the Five Year Plan, it does portend an accelerated rate of industrialization which would add materially to the Soviet war potential if objectives were accomplished. These objectives, however, seem to be beyond Rumanian capabilities.

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D. Petroleum.Summary

Rumania is the largest Satellite source of petroleum and petroleum products available to the Soviet Union. In 1950 an estimated 4.6 million metric tons of crude oil were produced, and it is probable that despite continued use of uneconomic methods crude-oil output will rise to 4.8 million tons in 1951 and 5.0 million in 1952. Technical deficiencies are a barrier to more rapid gains.

Rumanian refinery capacity, under the impact of war damage, deterioration of equipment, and cannibalization, dropped from a prewar figure in excess of 10 million metric tons a year to approximately 6 million tons. Rumania recently has had difficulty in obtaining repair and replacement equipment from the traditional sources in the West, and the Soviet Union has partially supplied these requirements. The output of the refineries is generally of poor quality. For example, aviation gasoline is 72-octane, and the lubricants are of only medium grade. It is reported that all thermal cracking facilities have shut down. The output of refined products is estimated at 4 million metric tons in 1950, 4.175 million tons in 1951, and 4.35 million tons in 1952. Of these amounts, 72-octane aviation gasoline will account for about 110,000, 115,000, and 120,000 tons, respectively.

Domestic consumption in 1950 was about 890,000 metric tons, approximately 50 percent of prewar consumption. A slight increase in domestic consumption in 1951 and 1952 may be registered in the military category. Civilian consumption will remain restricted to a minimum.

The large surplus of Rumanian petroleum products brings little benefit to the country. Most of the output is exported to the USSR, with smaller quantities going to the other Satellites, and only about 20 percent of total production is consumed internally. The loss of this source of petroleum products would be a serious blow to the Bloc.

1. Production.

Not only is petroleum Rumania's basic industry, but Rumania is the most important oil producer in Europe with the exception of the Soviet Union. Over 95 percent of Rumanian oil production is concentrated around Ploesti. Despite strenuous efforts, however, the petroleum industry has not met Plan goals. Annual increases in production since the war are becoming progressively smaller. Crude-oil production in 1950 was estimated at 4.6 million tons, 1/ only 53 percent of the 1936 peak production of 8.7 million tons.

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Refining capacity, concentrated around Ploesti, has always been much larger than the amount of crude oil available. Processing facilities were estimated to have an original capacity in excess of 10 million tons annually. ^{2/} Present capacity, reduced by bomb damage, dismantling, cannibalization, and deterioration of equipment, probably does not exceed 6 million tons, a total still in excess of crude production. Only five of the refineries have thermal cracking facilities, and these facilities were shut down in June 1950. ^{3/} Since the close of World War II, at least 7 of the 16 most important refineries have been closed, ^{4/} reportedly because of insufficient supplies of crude oil and the poor condition of equipment. In 1950 the estimated output of the operating refineries was as follows ^{5/}:

Estimated Production of Petroleum Products
1950

| Product | Thousand Metric Tons Production |
|--------------------------|------------------------------------|
| Aviation Gasoline | 110 |
| Motor Gasoline | 876 |
| Kerosene | 508 |
| Diesel Oil | 628 |
| Gasol | 1,108 |
| Fuel Oil and Distillates | 436 |
| Lubricants | 12 |
| Residuals | 92 |
| Others | 230 |
| Total | 4,000 |

Aviation gasoline is straight run with an octane number of 72. The lubricants produced are of medium quality. ^{6/}

2. Estimated Possible Production and Capacity.

The 1951 crude-oil production goal is 116.7 percent of 1950 output, or about 6.3 million metric tons. ^{7/} Under the Five Year Plan the goal for 1955 is 10 million tons. ^{8/} Both appear unrealistic because of the premature exhaustion of existing fields and the failure to uncover new deposits. It is likely that by forcing the existing fields, output can be increased to an estimated 4.8 million metric tons in 1951 and 5 million tons in 1952.

Despite recent efforts to obtain replacement and repair equipment and reported plans to construct new refineries, notably two installations in Moldavia (one a cracking plant), ^{9/} it is doubtful that the actual pattern of refinery output will vary much in 1951 and 1952. The following table is based on this assumption.

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Estimated Production of Petroleum Products
1951-52

| Product | Thousand Metric Tons | |
|--------------------------|----------------------|--------------|
| | Production | |
| | 1951 | 1952 |
| Aviation Gasoline | 115 | 120 |
| Motor Gasoline | 915 | 953 |
| Kerosene | 530 | 550 |
| Diesel Oil | 655 | 683 |
| Gasol | 1,155 | 1,205 |
| Fuel Oil and Distillates | 455 | 474 |
| Lubricants | 13 | 13 |
| Residuals | 96 | 100 |
| Others | 242 | 252 |
| Total | 4,175 | 4,350 |

3. Domestic Requirements.

Oil is the principal source of fuel for industrial and civilian use. The stringent restrictions on domestic requirements necessitated by Soviet exploitation of the oil industry are impeding the development of the Rumanian economy. Shortages of gasoline, kerosene, and fuel oil have been reported, and estimated domestic consumption in 1950 was only about 50 percent of prewar. ^{10/} Consumption in 1950 is shown in the following table by product and class of consumer:

Consumption of Petroleum Products
1950

| Product | Thousand Metric Tons | | |
|-------------------|----------------------|------------|------------|
| | Civilian | Military | Total |
| Aviation Gasoline | 2 | 11 | 13 |
| Motor Gasoline | 52 | 136 | 188 |
| Kerosene | 111 | - | 111 |
| Diesel Oil | 161 | 76 | 237 |
| Fuel Oil | 274 | 16 | 290 |
| Lubricants | 11 | 21 | 32 |
| Others | 19 | - | 19 |
| Total | 830 | 260 | 890 |

The principal consumers in the civilian category were industry, 35 percent; rail transport, 27 percent; shipping, 19 percent; and motor transport, agriculture, household, and air transport, 9 percent. Civilian allocations are not likely to increase in the next few years, but increases in military

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requirements are expected. By the end of 1952, domestic consumption may reach about 1 million metric tons.

4. Stockpiles.

Permanent storage facilities in Rumania are extensive. Capacity of the principal depots is estimated as follows:

| Storage Capacity | |
|--------------------------------|--------------|
| Thousand Metric Tons | |
| Location | Capacity |
| Crude Oil at Oilfields | 550 |
| Refined Products at Refineries | 1,539 |
| Military | 106 |
| Total | <u>2,195</u> |

In addition, there are a number of depots at airfields, old depots are being expanded, and new facilities are under construction. Nevertheless, barrels were reportedly collected in the spring of 1950 by the Ministry of Defense for oil storage. ^{11/} There is no information permitting an estimate of the quantities stockpiled. Shortages of gasoline, kerosene, and fuel oil can be explained in part by efforts to increase stocks.

5. Surplus or Deficit.

Rumania, the largest oil producer among the Satellites, has a large surplus of petroleum products. All of the crude oil produced is domestically refined, and the excess products are exported, chiefly to the USSR. Rumania's only deficiencies are high-octane gasoline and aviation lubricants, which are imported from the Soviet Union in unknown amounts.

The estimated surplus in 1950 is shown in the table below:

| Petroleum Product Surpluses and Deficits 1950 | | | | |
|--|--------------|-------------|--------------|-----------|
| Thousand Metric Tons | | | | |
| Product | Output | Consumption | Surplus | Deficit |
| Aviation Gasoline | 110 | 13 | 97 | - |
| Motor Gasoline | 876 | 191 | 685 | - |
| Kerosene | 508 | 111 | 397 | - |
| Diesel Oil | 628 | 234 | 394 | - |
| Fuel Oil and Distillates | 436 | 290 | 146 | - |
| Lubricants | 12 | 32 | - | 20 |
| Wax | 1,108 | - | 1,108 | - |
| Other | 322 | 19 | 303 | - |
| Total | <u>4,000</u> | <u>890</u> | <u>3,130</u> | <u>20</u> |

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Some of the surplus for the past few years has been used to build stocks. Possibly 500,000 metric tons were shipped in 1950 to other Satellites and to Finland, with small quantities going to Western Europe and Israel. These shipments were mostly motor gasoline and lubricants. All of the surplus of mazut 12/ and fuel oil is shipped to the USSR. Considerable quantities of aviation gasoline, motor gasoline, kerosene, and diesel oil also are taken by the Soviet Union.

6. Internal Limitations.

The chief limitation on the Rumanian petroleum industry is the wasteful method of exploitation by the Soviets, who show little consideration for the future of the Rumanian economy. Furthermore, shipments of drilling equipment have been cut off by the West, and only limited supplies have been obtained from Czechoslovakia and the USSR. Some of the refineries damaged in World War II have not been reactivated. Equipment is wearing out, and repair and replacement supplies are scarce. It is possible that the condition of the refineries would preclude increased operation even if more crude oil were available. A large number of experts and technical personnel have left the country, and some of those who remained have been imprisoned or replaced. None of the refineries has been modernized.

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7. Trends--Including Indications of Mobilization for War.

Although Soviet efforts appear to be shifting from the intensive exploitation of old oilfields to the discovery of new ones and to construction of additional refinery capacity, the extent and progress of this trend are unknown.

Rumanian Crude Oil Production
1950

| Thousand Metric Tons | | |
|--------------------------|-----------------|-------------------|
| <u>Drilling District</u> | <u>Quantity</u> | <u>% of Total</u> |
| Ploesti Area | | |
| Iuntenia | | |
| Urlati | 331.4 | |
| Boldesti | 339.7 | |
| Campina | 130.8 | |
| Balcoi | 764.7 | |
| Ibreni | 446.6 | |
| Targoviste | 451.5 | |
| Ochiori | 413.0 | |
| Sovrompetrol <u>a/</u> | 1,547.0 | |
| Total, Ploesti Area | <u>4,424.7</u> | <u>96.2</u> |
| Berea (Duzau) | 112.3 | 2.4 |
| Bacau <u>b/</u> | 63.0 | 1.4 |
| Total | <u>4,600.0</u> | <u>100.0</u> |

a/ No breakdown by drilling district is available.

b/ Sovrompetrol produced an estimated 17,000 metric tons; Ibldovo, about 46,000 metric tons.

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Estimated Annual Capacity of Principal Rumanian
Operating Refineries a/

| Thousand Metric Tons | | | | |
|----------------------|-----------------|-------------------------------|--------------------------------|--------------|
| <u>Refinery</u> | <u>Location</u> | <u>Crude Distillation</u> | <u>Thermal Cracking b/</u> | <u>Total</u> |
| Concordia-Vega | Ploesti | 1,000 | 193 | 1,193 |
| Romana-Americana | Teleajen | 750 | 279 | 1,029 |
| Steaua-Romana | Campina | 600 | - | 600 |
| Creditul Minier | Brasi | 275 | 108 | 383 |
| Astra Romana | Ploesti | 1,650 | 495 | 2,145 |
| Colombia | Ploesti | 500 | 216 | 716 |
| Total | | <u>4,775</u> | <u>1,291</u> | <u>6,066</u> |

a/ Information on capacity is as of 30 Sep 1947. In addition to the refineries listed there may be a few small ones operating, but they are unimportant.

b/ Thermal cracking facilities have been reported closed. There are no catalytic-cracking units.

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E. Electric Power.

Summary

Rumania's electricity requirements are small, and the production of electric power is now and will remain sufficient to meet these demands and provide a limited amount for export to Bulgaria. Industrial plants and mines consume nearly two-thirds of the total output.

Although production doubled from 1942 to 1950, the increase was achieved through fuller utilization of existing capacity rather than by adding new facilities. The current expansion program stresses greater use of lignite, which now ranks behind gas and petroleum among the energy sources of the industry. The expansion program is dependent upon imports of technicians and equipment, and it is not expected that the high capacity and production targets set for 1955 and 1960 will be reached.

1. Economic Importance of the Industry.

Most of the electric power produced in Rumania is consumed by industry. Since the economy is relatively undeveloped, however, industrial requirements for electric power are small. The growing proportion of manufactured goods in total Rumanian output makes electric power increasingly important to the economy. Nonindustrial use is negligible, only 25 percent of the population being served by electric power. 1/

2. Prewar and Present Trends and Developments.

Electric power capacity is still about the same as in 1942, but output has more than doubled since World War II. Over half of the thermal capacity utilizes methane gas and coal for fuel. Power plants in the Bucharest and Ploesti area depend upon petroleum, and supplies are not equal to demand. Available fuel supplies are limited, and neither rationing of fuel nor partial conversion of power plants to the use of gas has solved the problem of fueling the electric power industry.

The principal goal of the Ten Year Electrification Plan (1950-60) is an increase in capacity of about 1 million kilowatts by 1955 and a further increase of 1 million kilowatts by 1960. 2/ Production is to be more than doubled in the same period. Although it is unlikely that capacity and production will increase as fast as scheduled, the industry can expand sufficiently to meet requirements through 1952. Fuel supply may remain a problem, particularly if other demands for oil and gas increase, because the industry cannot quickly convert to other fuels.

The greatest concentration of generating capacity is in the Bucharest-Targoviste-Ploesti area, where possibly as much as 40 percent of total Rumanian capacity is concentrated. The Stalin (Drasov), Turba, Tarnaveni, Petrosani,

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Resita, and Galatz-Braila areas are the other principal power centers, together comprising an additional 40 percent of the total. Some of these areas now have a surplus capacity and can expand production without additions. It appears that the installation of new capacity is following the same locational pattern as in the past, with the exception of hydroelectric facilities, which are being built in the northwest.

3. Internal Limitations.

a. Energy Resources.

Petroleum, gas, and lignite are the principal sources of energy for the production of electric power in Rumania. The three regions of Ploesti, Transylvania, and the Jiu Valley, where large quantities of oil, gas, and lignite are found, are also the areas of greatest concentration of electric power installations. Because of postwar difficulties in petroleum production, there is a strong tendency to limit use of oil in power plants, and gas and lignite are being utilized at a higher rate. For example, twice as much gas was used in 1960 as in 1946, 3/ the increase coming through greater utilization of gas-consuming generating capacity already in existence rather than through the addition of new units. Potential fuel resources for power plants are extensive, and present supply shortages are only temporary. Rumania is well endowed with water resources for power generation. The hydroelectric power potential has been estimated at 5.7 million kilowatts, 4/ but only 1 percent of the total is developed. Rumania's streams are widely dispersed, permitting hydroelectric development in almost every area of the country and reducing the need for transmitting power and fuel over long distances.

b. Electricity Generating Plants.

About 600,000 kilowatts of capacity are now available for meeting power requirements. 5/ This capacity is principally thermal, hydroelectric units comprising about 8 percent of the total. The proportion of thermal capacity using various types of fuels is not accurately known, but production in 1950 from all energy sources is estimated as follows 6/:

Use of Energy Sources in Electric Power Production 1950

| <u>Energy Source</u> | <u>Percent</u> |
|--------------------------|----------------|
| Natural Gas | 40.3 |
| Oil Products | 29.8 |
| High-grade Coal | 6.1 |
| Low-grade Coal and Waste | 13.7 |
| Other Fuels | 2.1 |
| Water Power | 8.0 |
| Total | <u>100.0</u> |

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No further increase in the use of gas in power plants is planned, and lignite-burning and hydroelectric plants probably will produce an increasing proportion of the total power output.

The Ten Year Electrification Plan envisages the installation by 1955 of an additional 960,000 kilowatts of capacity, as well as the operation of 100,000 kilowatts of equipment now idle. (Over half of Rumania's generating equipment is more than 20 years old but is still serviceable.) Hydroelectric capacity is to be expanded to a point where it would constitute 17.5 percent of total capacity. The electrification program is to receive 11.0 percent of all investment funds allocated between 1950 and 1955. ^{7/} The present rate of construction, however, will add only 50,000 kilowatts of capacity by the end of 1952. At any rate, the Ten Year Plan goals, even if achieved, will be justified only if Rumania builds up industries that are large users of electric power, such as processing of nonferrous metals, electric metallurgy, chemicals, and electric railroads.

c. Transmission Systems.

Rumania lacks national or regional transmission networks, little effort being made to link consuming centers and power generation areas to obtain greater utilization of existing capacity. The pattern has been to provide each consuming center with its own power plant. Power plants between Bucharest and Stalin (Brasov) are loosely linked. Although work is being carried on to improve and extend the transmission lines, particularly in the area of Targoviste and Stalin (Brasov), little has been accomplished since the war. A 60-kilovolt line from the Bucharest area to Giurgiu for the transmission of power to Bulgaria was completed in 1949.

4. Production.

The following table gives figures for past, present, and planned production of power ^{8/}:

Production of Electric Power
1938, 1950, 1955, 1960

| <u>Year</u> | <u>Million Kilowatt Hours</u> | | |
|-------------|-------------------------------|----------------------|--------------|
| | <u>Thermoelectric</u> | <u>Hydroelectric</u> | <u>Total</u> |
| 1938 | 1,003 | 145 | 1,148 |
| 1950 | 1,940 | 160 | 2,100 |
| 1955 | 3,590 | 760 | 4,350 |
| 1960 | 4,660 | 2,340 | 7,000 |

The condition of the generating and transmission equipment is such that the average rate of utilization of capacity probably will not be more than 4,000 hours a year, or about 46 percent of full utilization. Production in 1952 may

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reach 2.7 billion kilowatt-hours, if present capacity is increased by putting into operation some of the equipment now idle, by adding 50,000 kilowatts of new generating equipment, and by operating the total at a rate of 4,000 hours. Meeting the 1955 production goal would require the installation of large amounts of new capacity, which is not likely to be done.

b. Consumption:

The following is the consumption pattern according to the Ten Year Electrification Plan 9/:

Electric Power Consumption
1950 and 1960

| Consumer | Million Kilowatt Hours | | | |
|--|------------------------|--------------|--------------|--------------|
| | 1950 | | 1960 | |
| | Consumption | % of Total | Consumption | % of Total |
| Industrial Plants and Lines | 1,310 | 62.2 | 4,330 | 61.6 |
| Electric Traction | 2 | 0.1 | 330 | 4.7 |
| Urban Public Services | | | | |
| Street Lighting | 70 | | 200 | |
| Streetcars and Buses | 80 | | 200 | |
| Water Supply, etc. | 40 | | 120 | |
| Total Urban Public Services | 190 | 9.0 | 520 | 7.4 |
| Urban Households and Firms | 220 | 10.4 | 750 | 10.7 |
| Rural Communities | 20 | 1.0 | 230 | 3.3 |
| Losses and Private Use of Power Plants | 358 | 17.3 | 870 | 12.3 |
| Total | <u>2,100</u> | <u>100.0</u> | <u>7,030</u> | <u>100.0</u> |

In 1949 the Minister of Electric Power revealed that power plants for supplying the extractive industries and transport would be emphasized in the electrification plans, 10/ and it is evident from the locations where power plants are being constructed and the areas where power demands by industrial consumers are increasing that the output of the new facilities will benefit Soviet-controlled industries.

According to a Rumanian-Bulgarian agreement of July 1947, Rumania is to provide power to Bulgaria in increasing amounts up to 1956, at which time 10,000 kilovolts are to be available annually to Bulgaria. Rumanian power plants in July 1949 began transmitting power to Bulgaria.

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6. Input Requirements.

Rumania has sufficient manpower, fuel, operating supplies, and repair facilities to enable the country to maintain both existing electrical generating and transmission equipment and any small additional amounts that may be installed. Large-scale expansion of electric power capacity, however, would require imports of technicians and almost all types of electrical equipment. Soviet Bloc engineers are now supervising the construction of hydroelectric plants, but the Rumanians themselves can construct thermal stations, except for the installation of foreign equipment.

7. Vulnerability.

Rumania is self-sufficient in equipment, supplies, and technological skill needed to maintain or slightly increase output of electricity, and therefore the electric power industry cannot be considered vulnerable to measures of warfare unless a large expansion is attempted.

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F. Chemicals.Summary

The Rumanian chemical industry has developed rapidly in the postwar period. The country possesses ample supplies of the raw materials essential to production of chemicals—salt, coke, limestone pyrites, and natural gas (methane) for fuel. Production has been limited largely to the heavy industrial chemicals used by the petroleum, metallurgy, and pulp-paper industries.

Rumania is self-sufficient in sulfuric acid, soda ash, caustic soda, chlorine, hydrochloric acid, calcium carbide, pyrites, methanol, and glycerine. The country also produces synthetic ammonia, nitric acid, nitrogenous fertilizers (ammonium nitrate and sulphate), and superphosphate fertilizer. Output of nitric acid, however, is inadequate for domestic needs, and both nitrogenous and superphosphate fertilizer must be imported. The production of synthetic organic chemicals is undeveloped, and such products as coal tar and aniline dyes, oxalic acid, and coke chemicals (benzol, naphthalene, etc.) must also be imported. Rumania also is deficient in sulphur.

The principal chemicals exported have been caustic soda and soda ash, both of which are in short supply within the Bloc, and, to a lesser extent, hydrochloric acid, calcium carbide, and wood chemicals. Rumanian pyrites is an important addition to the Orbit's total supply. Imports of chemicals have not been sufficiently large to cause a serious drain on the Bloc. Fertilizers have been received from the USSR, and Czechoslovakia has been the main supplier of organic and special chemicals.

The bulk of the output of chemicals originates from five principal plants. A sixth plant, the Ucea State Works at Ucea, may be completed near the end of 1952. Soviet technicians are directing the work, and Soviet equipment will be installed for the production of synthetic ammonia, nitric acid, and ammonium nitrate.

With the addition of the new Ucea plant, Rumania should become nearly self-sufficient in basic industrial chemicals but will remain dependent on imports for the small volume of organic and special chemicals not now produced.

The Rumanian rubber industry is small, and finished rubber products are imported to meet domestic demand. Synthetic rubber is now being produced in Rumania, but output is small. Four tire plants, two of which produce only bicycle tires, are in production. Carbon black production has greatly increased in postwar years, and most of the output is exported to the Soviet Bloc.

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1. Calcium Carbide.a. Production.

Rumanian production of calcium carbide is estimated as follows:

| Estimated Calcium Carbide Production 1948-50 | |
|---|-----------------------------------|
| <u>Year</u> | <u>Metric Tons Production</u> |
| 1948 | 5,400 1/ |
| 1949 | 5,656 2/ |
| 1950 | 5,800 |

The "Nitrogen" plant at Tarnaveni (Diciosanmartin), formerly part of the Solvay Combine, is the only known calcium carbide plant in Rumania. Its reported annual capacity is 30,000 metric tons, 3/ but the peak production, attained in 1943, was only 6,227 tons 4/ because only one of the three furnaces installed is used to produce carbide, the other two having been converted to manufacture ferromanganese. The actual production capacity for the plant, therefore, is probably about 10,000 metric tons a year.

b. Estimated Possible Production and Capacity.

Carbide production by the Tarnaveni plant is expected to reach 6,000 metric tons in 1951 and 6,200 tons in 1952. One 1949 report stated that the two furnaces now used for ferromanganese might be reconverted to produce carbide, 5/ but there is no additional information indicating that this conversion has been or will be accomplished.

c. Domestic Requirements.

The output of calcium carbide is sufficient to cover total requirements, estimated at about 4,500 metric tons a year, and leave a surplus for export. Carbide is used in Rumania principally for the production of acetylene gas. There is no known production of chemicals synthesized and derived from acetylene. Before 1940 the "Nitrogen" plant at Tarnaveni produced calcium cyanamide from carbide and nitrogen, but the cyanamide furnaces have been replaced with other installations. 6/ There are no available reports indicating actual or intended stockpiling of calcium carbide in Rumania. The exportable surplus in 1952 may amount to about 1,000 to 2,000 metric tons.

d. Internal Limitations.

Rumanian production of both coke and limestone is adequate to supply the calcium carbide industry.

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e. Trends—Including Indications of Mobilization for War.

No information received to date indicates that any significant increase in the production of carbide or the construction of new facilities is planned.

2. Caustic Soda.a. Production.

Rumanian production of caustic soda is estimated as follows:

Estimated Caustic Soda Production
1948-50

| <u>Year</u> | <u>Metric Tons Production</u> |
|-------------|-----------------------------------|
| 1948 | 13,791 1/ |
| 1949 | 23,810 1/ |
| 1950 | 26,000 |

Caustic soda is produced in three Rumanian plants, located in Turda, Ocna-Muresului, and Tarnaveni, which have a combined capacity of 36,000 metric tons a year. The Turda Chemical Works, heavily damaged in World War II but restored in 1949, produces caustic soda by the electrolysis of brine method. The type of chlor-alkali cells installed is not known, but annual capacity is reportedly 20,000 metric tons. 2/ The Uicara plant (formerly part of the Solvay combine) at Ocna-Muresului produces soda ash by the Solvay process (lime-soda) and caustic soda by causticizing soda ash. The capacity for caustic soda has been reported at 13,000 metric tons a year, but actual production is undertaken only when the production of the Turda plant is insufficient to meet demands. Output could be increased above this figure, but only at the expense of soda ash production. The "Nitrogen" works at Tarnaveni has a caustic soda capacity of about 3,000 metric tons a year. 3/ The process is electrolytic, and Billiter-type cells are installed. The equipment apparently is old and constantly in need of repair, for only one-third of the cells are available at a time. Conversion to modern mercury-type cells was considered in 1949. 4/

b. Estimated Possible Production and Capacity.

The estimated 1951 production figure of 33,000 metric tons is based on a planned increase of 127.8 percent over 1950, 5/ and 1952 output is calculated at 36,000 metric tons, or an estimated increase of 108 percent over 1951. Under the Five Year Plan, two new caustic soda plants using the electrolytic process are planned. 6/ It is unlikely that these plants will be in operation by the end of 1952.

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c. Domestic Requirements.

Rumania is self-sufficient in caustic soda and produces a surplus for export. Domestic needs are estimated at 18,000 metric tons in 1950 and 24,000 tons in 1952. The soap, petroleum refining, and pulp and paper industries consumed 11,000 tons, nearly half of the total output, in 1949. Lesser consumers are the rayon, vegetable oils, lye and cleansers, textile, and other miscellaneous industries. In 1941, nearly 3 million tons were exported, and large amounts will be shipped to the Soviet Bloc countries in 1951. The heavy demand by other Satellite countries, especially East Germany, for caustic soda makes it extremely doubtful that this commodity has been stockpiled in Rumania. Surpluses are estimated at 8,000 metric tons in 1950 and 12,000 tons in 1952.

d. Internal Limitations.

Limestone and salt, the raw materials required in the manufacture of caustic soda, are found in ample quantities in Rumania. Production difficulties have been reported at the "Nitrogen" plant at Tarnaveni. The equipment is old and constantly in need of repair. The Billiter-type cells lack filter cloths, asbestos (for cell diaphragms), and experienced specialists to operate them also are needed. A postwar report stated that the Solvay-process equipment at the Uicara plant in Ocna-Muresului was badly worn, but that situation may now be improved. It is believed that replacement parts to maintain installations at all three plants currently are scarce. If this condition should continue, maximum production may be limited to 27,000 metric tons a year, or less than 75 percent of capacity.

e. Trends--Including Indications of Mobilization for War.

Despite Rumania's self-sufficiency in caustic soda, great efforts are being exerted to increase production. The construction of two caustic soda plants with a combined capacity of 15,000 metric tons a year is projected in the Five Year Plan. 6/ Nothing is known about their locations or the progress made in actual construction. These plans are probably not an indication of mobilization for war, because Rumania requires expanded production of caustic soda to meet increased domestic and foreign demands.

3. Chlorine.

a. Production

Rumanian production of chlorine is estimated as follows:*

* Calculated from electrolytically-derived caustic soda production.

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Estimated Chlorine Production
1947-50

| <u>Year</u> | <u>Metric Tons Production</u> |
|-------------|-----------------------------------|
| 1947 | 11,000 |
| 1948 | 11,000 |
| 1949 | 12,000 |
| 1950 | 13,000 |

Much of the chlorine produced is allowed to escape into the atmosphere, and only a small amount, about 500 metric tons in 1948 and about 900 tons in 1950, is liquified. The remainder is used to make hydrochloric acid (estimated at 3,200 tons in 1950), calcium chloride (about 4,500 tons in 1950), and a limited number of miscellaneous chlorinated chemicals. The following table estimates the available chlorine (purified for use):

Estimated Available Chlorine
1947-50

| <u>Year</u> | <u>Metric Tons Production</u> |
|-------------|-----------------------------------|
| 1947 | 2,000 |
| 1948 | 3,000 |
| 1949 | 4,000 |
| 1950 | 5,000 |

Chlorine is produced by the Turda Chemical Works at Turda and the "Nitrogen" plant at Tarnaveni (Diciosarmartin). Both produce chlorine and caustic soda by the electrolysis of brine method. The combined annual capacity for the two plants, calculated on the basis of their caustic soda capacity, is about 20,100 metric tons. The estimated chlorine capacity of the Turda Chemical Works is about 17,500 metric tons a year, and current production is probably about 12,000 metric tons a year. The plant also produces some synthetic hydrochloric acid and calcium chloride. The "Nitrogen" plant at Tarnaveni has an estimated chlorine capacity of 2,600 metric tons a year. Current production is probably 1,700 metric tons a year. The "Nitrogen" plant supposedly also produces synthetic hydrochloric acid.

b. Estimated Possible Production and Capacity.

Chlorine production and capacity for 1951-52 are estimated as follows:

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Estimated Chlorine Production and Capacity
1951-52

| <u>Year</u> | <u>Production</u> | <u>Metric Tons Capacity</u> |
|-------------|-------------------|---------------------------------|
| 1951 | 14,000 | 20,100 |
| 1952 | 15,000 | 20,100 |

These estimates are projected figures from the 1950 estimate and are based upon probable electrolytic production of caustic soda in the same years. Under the Five Year Plan, two new plants for the production of caustic soda and chlorine by the electrolytic process are to be built. ^{2/} If these plants are constructed, it is unlikely that either of them will begin operation by the end of 1952.

c. Domestic Requirements.

The production of chlorine in Rumania, estimated at 5,000 metric tons in 1950, 6,000 tons in 1951, and 7,000 tons in 1952, is more than enough to meet all domestic demands. There are no known imports of chlorine, nor are any exports reported, an indication that liquefying facilities are inadequate. Most of the available chlorine is used in the production of hydrochloric acid by the synthetic process (combustion of chlorine in a slight excess of hydrogen). The other major consumers in Rumania are the petroleum, metallurgical, glue, and textile industries.* Production of calcium chloride also satisfies all demand. The synthetic organic chemical industry is not developed in Rumania; so chlorine is not required for synthesizing purposes. Requirements of chlorinated organic chemicals are imported. There are no indications that stockpiles of liquid chlorine are being established. Rumania produces slightly more chlorine than it consumes, but it is believed that any excess production is lost in permitting the gas to escape.

d. Internal Limitations.

Salt, the basic raw material for the production of chlorine, is plentiful, but Rumanian production is limited by shortages of replacement parts for worn-out equipment, facilities to liquefy and recover surplus production, and pressure cylinders for shipping and storage.

e. Trends—Including Indications of Mobilization for War.

Production of chlorine is increasing, not because of greater direct demand but rather because chlorine is a by-product in the electrolytic method of manufacturing caustic soda, for which Soviet Bloc requirements are increasing.

* The Turda plant furnishes much of its liquid chlorine to the Zarnesti cellulose factory. ^{3/}

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Two new plants are projected in the Five Year Plan, and their combined chlorine capacity would be about 13,000 metric tons a year, based on an estimated caustic soda capacity of 15,000 metric tons. 4/ Total capacity would be approximately 33,100 metric tons in 1955. There is no information, however, that the construction of these plants has started, or even that the plans for their erection still exist.

4. Synthetic Ammonia.a. Production.

Rumania's estimated production of synthetic ammonia is as follows:

Estimated Synthetic Ammonia Production
1946-50

| <u>Year</u> | <u>Metric Tons (Nitrogen Content) Production</u> |
|-------------|--|
| 1946 | 1,610 <u>1/</u> |
| 1947 | 852 <u>2/</u> |
| 1948 | 1,000 <u>3/</u> |
| 1949 | 1,400 |
| 1950 | 1,800 |

Synthetic ammonia is produced by two installations, the "Nitramonia" plant in Fagaras and the "Nitrogen" plant in Tarnaveni (Diciosamartin), both constructed in the late 1930's. The "Nitramonia" is believed to be the largest Rumanian producer of synthetic ammonia, present capacity being about 2,300 metric tons (nitrogen content) a year, 4/ whereas the "Nitrogen" plant has an annual capacity of only about 1,400 tons. 5/

Production of nitrogenous fertilizers is small, and some imports are necessary. Production estimates for ammonium sulfate and ammonium nitrate are as follows:

Estimated Production of Ammonium Sulfate and Ammonium Nitrate
1947-52

| <u>Year</u> | <u>Metric Tons</u> | |
|-------------|-------------------------|-------------------------|
| | <u>Ammonium Sulfate</u> | <u>Ammonium Nitrate</u> |
| 1947 | 214 <u>6/</u> | N.A. |
| 1948 | 350 <u>3/</u> | 1,050 <u>7/</u> |
| 1949 | 450 | 1,082 |
| 1950 | 600 | 1,150 |
| 1951 | 750 | 1,250 |
| 1952 | 900 | 1,600 |

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b. Estimated Possible Production and Capacity.

The estimated production and capacity of synthetic ammonia in 1951 and 1952 is as follows:

Estimated Synthetic Ammonia Production and Capacity
1951-52

| Year | Metric Tons (Nitrogen Content) | |
|------|--------------------------------|----------|
| | Production | Capacity |
| 1951 | 2,300 | 3,700 |
| 1952 | 3,500 | 9,400 |

Another synthetic ammonia plant, the Ucea State Works located about 25 kilometers from Fagaras in the Ucea de Jos-Ucea de Sus area, is presently under construction. Soviet technicians are directing the construction, and, reportedly, machinery from the USSR is to be installed. The enterprise is a Sovromchim, or joint Soviet-Rumanian chemical company, project. The Ucea plant is not expected to be completed until after mid-1952. The reported planned capacity is 20 metric tons a day of ammonia, with a nitrogen content equivalent of about 5,700 metric tons a year. 4 The total maximum capacity of all three plants by the end of 1952 may approach 9,400 metric tons a year.

c. Domestic Requirements.

Domestic requirements are not known. Most of Rumanian output of synthetic ammonia is used in the production of nitric acid, nitrogenous fertilizers, and other ammonium salts and for refrigeration. Some ammonia liquor is supplied to plants which produce soda ash by the Solvay process. Production of nitrogenous fertilizers since the war has been insufficient for agricultural needs. The only known imports of fertilizer are of Soviet origin. It is believed that the USSR is supplying fertilizers, perhaps ammonium nitrate, but the amount probably is less than 10,000 metric tons a year.

It has been reported that the ammonia production of the "Nitrogen" plant in Tarnaveni is shipped to "Nitramonia" at Fagaras to be made into nitric acid and that the "Nitramonia" plant supplies the nitric acid to the "First Rumanian Explosive Corporation" in Fagaras.

There is no stockpiling of synthetic ammonia, since Rumania has none of the pressure-type containers required for stockpiling this commodity.

In 1950 there was no known deficit of synthetic ammonia. However, nitrogen fertilizers in limited quantities had to be imported. In 1952, when the demand for fertilizer will be greater, domestic production will not be adequate, even though the new fertilizer plant at Ucea may begin operations in the latter half of that year.

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d. Internal Limitations.

There are no raw materials shortages in the synthetic ammonia industry. Production is limited by shortages of spare parts, general disrepair and obsolescence of equipment, and unskilled labor. It is known that the "Nitrogen" plant as late as 1949 was operating with inferior ammonia catalysts. 5/

e. Trends--Including Indications of Mobilization for War.

The completion of the Ucea nitrogen plant should assist Rumania in becoming self-sufficient in nitrogen fertilizers by the end of 1953. The Ucea plant will produce ammonium nitrate, which in event of war can be used by the explosives plants in the manufacture of Amatol, a TNT-ammonium nitrate mixture used as an explosive filler in shells and bombs.

5. Nitric Acid.a. Production.

Rumanian production of nitric acid is estimated as follows:

Estimated Nitric Acid Production
1938 and 1945-50

| Year | Metric Tons (100 Percent) Production |
|------|---|
| 1938 | 441 1/2 |
| 1945 | 582 1/2 |
| 1946 | 194 1/2 |
| 1947 | 191 1/2 |
| 1948 | 200 |
| 1949 | 200 2/3 |
| 1950 | 1,000 |

The only plant known to produce nitric acid is the "Nitramonia" installation at Fagaras. Production of nitric acid by the ammonia oxidation method was planned at the "Nitrogen" synthetic ammonia plant in 1940, 3/ but there is no definite indication that nitric acid is being made there. The "Nitramonia" plant is reported to have a nitric acid capacity of 8,400 metric tons (100 percent acid basis) a year. 4/ There are four or five combustion furnaces for acid production, but only one furnace was in operation in 1949, because of a shortage of platinum meshes (catalyst). 5/ Another plant that might be producing nitric acid is the "Jessa Bella" (formerly "Phoenix") at Baia Mare, but even if it makes nitric acid, production is probably small.

b. Estimated Possible Production and Capacity.

Rumania's possible nitric acid production and capacity for 1951-52 are as follows:

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Estimated Nitric Acid Production and Capacity
1951-52

| <u>Year</u> | <u>Metric Tons (100 Percent)</u> | |
|-------------|----------------------------------|-----------------|
| | <u>Production</u> | <u>Capacity</u> |
| 1951 | 3,000 | 8,400 |
| 1952 | 5,000 | 8,400 g/ |

g/ Capacity increased to 23,400 metric tons if Ucea State Works starts production.

These production estimates are considerably larger than previous annual output. It is believed that greater emphasis is now being placed on the production of nitric acid, and that the condition of the equipment at "Nitramonia" is now much improved. Completion of the Ucea plant, the planned capacity of which is 20 metric tons a day of ammonia, or 5,700 tons of nitrogen a year, g/ will permit a considerable expansion of production. Possible nitric acid capacity, therefore, may be about 15,000 tons (100 percent nitric acid) a year.

c. Domestic Requirements.

Rumania's estimated requirements of nitric acid are as follows:

Estimated Nitric Acid Requirements
1950-52

| <u>Year</u> | <u>Metric Tons Production</u> |
|-------------|-----------------------------------|
| 1950 | 5,000 |
| 1951 | 9,000 |
| 1952 | 10,000 |

Domestic production of nitric acid is believed to be sufficient for Rumanian industries whose requirements for this basic chemical are limited. Nitric acid is not imported. Artificial fertilizers of the fixed nitrogen type are in short supply, however, presumably because of larger agricultural requirements. Rumania will require about 10,000 metric tons of ammonium nitrate of fertilizer grade in 1951, and imports may therefore total about 7,500 metric tons. Estimated deficits of 4,000 metric tons in 1950 and 5,000 tons in 1952 will result from increased requirements for ammonium nitrate fertilizer. There is no information indicating that a stockpile of nitric acid has been or will be established in Rumania.

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d. Internal Limitations.

The raw materials essential for the manufacture of nitric acid are anhydrous ammonia, which is in adequate supply in Rumania; air; and water. Stainless-steel alloys and fine platinum gauze,* also required by the industry, are in short supply in the Soviet Bloc. It is expected that production at the "Nitramonia" plant will be only 60 percent of capacity in 1952 because of shortages of replacement parts for special equipment.

e. Trends--Including Indications of Mobilization for War.

The completion of the Ucea plant, not likely to be finished until the last half of 1952, should assist Rumania in becoming self-sufficient in nitrogenous fertilizers by the end of 1953. The ammonia nitrate produced by the Ucea plant could be available for immediate use by explosive plants in manufacturing a TNT-ammonium nitrate mixture for high-explosive filler in shells and bombs.

6. Coke Chemicals.

Very little information is available on the production of coke chemicals in Rumania. Only one plant is reported producing metallurgical coke. This installation has a battery of about 24 coke ovens, but it is not known whether all of the ovens are equipped to recover by-products. Plant capacity is about 80,000 metric tons of metallurgical coke a year, and estimated production was approximately 70,000 metric tons in 1950. Assuming that all coke by-products are recovered, the production of the various coke chemicals would be as follows:

Estimated Production of Coke Chemicals
1950

| <u>Product</u> | <u>Metric Tons Production</u> |
|------------------|-----------------------------------|
| Coal Tar | 3,500 |
| Benzol, Refined | 570 |
| Toluol | 140 |
| Xylene | 70 |
| Ammonium Sulfate | 920 |
| Naphthalene | 190 |
| Anthracene | 40 |
| Phenol | 25 |
| Cresols | 40 |
| Xylenols | a/ |
| Creosote Oil | 1,000 |

a/ Negligible.

* Used as a catalyst.

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Production of coke chemicals is not sufficient for Rumanian requirements, and Czechoslovakia supplies the small additional amounts needed. In 1948, about 100 metric tons of benzol and 50 metric tons of naphthalene were imported from Czechoslovakia. 1/ The synthetic organic chemical industry in Rumania is not developed, and, therefore, there is no sizable demand for chemicals from coal. Some benzol is shipped to the "First Rumanian Explosive Corporation" plant at Fagaras. 2/

7. Sulphur and Pyrites.

a. Production.

The only available figure for sulphur output is an unconfirmed report of the production of 5,000 metric tons in 1949. Sulphur deposits of unknown extent have been discovered in the course of petroleum explorations in Prahova near Floesti. 1/ Output of pyrites in 1939 was 11,600 metric tons. 2/ Production of pyrite concentrates in January and February 1949 was 6,296 metric tons, 3/ or an annual rate of 37,776 tons. Production has probably been increased in 1950 and 1951 to meet the requirements of the expanding sulphuric acid industry and to supply exports to Czechoslovakia. Part of the production is obtained from deposits of iron pyrites in Transylvania, part from copper pyrites at Altan Tep and Balamul, and part from differential flotation of gold ores. 4/ Much of the output is said to be of poor quality and high arsenic content. 5/

b. Estimated Possible Production and Capacity.

No information is available on possible production of sulphur in 1952. If the Five Year Plan is to be three-fifths completed by the end of 1952, production of pyrites for sulphuric acid alone must reach 83,500 metric tons. Whether this amount can be provided entirely by domestic production is open to question.

c. Domestic Requirements.

No information is available on requirements for sulphur, of which agriculture is probably the chief consumer. The production of sulphuric acid accounts for the bulk of the pyrites requirements. In 1950 the estimated amount used was 42,000 metric tons, and in 1952 an estimated 83,500 tons will be required.* Requirements of other industries are probably small, so that the total demand for all industries would be approximately 60,000 and 110,000 metric tons in 1950 and 1952, respectively.

d. Stockpiles.

Since Rumania has large domestic supplies of pyrites, stockpiling is not required. It was reported in 1949, however, that pyrites from the Urals were being stored at Galati and that 10 shipments of iron pyrites

* Calculated from sulphuric acid production in 1950 and the 1952 goal.

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were scheduled for delivery that summer. 6/ Furthermore, Soviet pyrites is reportedly shipped to Orsova for forwarding to the Viitorul steel plant, where the ore is roasted to extract the sulphur content. The finished iron is exported to the USSR. 7/

e. Surplus or Deficit.

As Rumania produces no sulphur, all requirements must be imported. Incomplete import data show that 6,348 metric tons were received in 1949. 8/ Rumania is both an importer and an exporter of pyrites and apparently has a net surplus. Pyrites was included in the 1947 Rumanian-Soviet trade agreement, 9/ and substantial quantities were to have been received from the USSR in 1949. Rumanian imports of 2,900 metric tons from Cyprus in 1949 10/ may have been destined for transshipment to Czechoslovakia. On the other hand, Rumania exported 15,000 metric tons to Czechoslovakia in 1950 11/ and in 1951 planned to export 40,000 tons to Hungary and possibly 40,000 tons to Czechoslovakia. 12/

f. Internal Limitations.

No data are available on the extent of either the sulphur or the pyrites reserves in Rumania, nor is there any definite information on Rumanian shortages of technical manpower and equipment.

g. Trends--Including Indications of Mobilization for War.

Rumania is emerging as a fairly important source of pyrites for Czechoslovakia and Hungary, both of which have in the past depended largely on imports from non-Bloc countries. The Bloc will be less vulnerable, therefore, to the world shortage of pyrites predicted for 1952. Rumania's rapidly increasing production of sulphuric acid, however, may restrict the volume of pyrites available for export, unless production can be materially increased. Although the bulk of the increased output of sulphuric acid will be used for the manufacture of fertilizers, Rumania's capacity to produce war materials, especially explosives, also will be increased.

8. Rubber.

a. Production.

Rumanian production of synthetic rubber is believed to be small. 1/ The importation of 20 kilograms of rubber plant seed under the 1947 trade agreement with the USSR 2/ indicates that experimentation with latex-bearing shrubs such as kok-sagyz was planned.

Tire production is reported at 316.4 metric tons in 1947. 3/ Capacity of the two automobile tire-producing plants is 220 tires a day, or 66,000 a year. 4/ Two other plants are believed to be producing bicycle tires. 5/ Postwar production of tires and tubes by the principal tire plant, the Banloc Rubber Factory, is estimated at 1,140 metric tons in 1948,

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2,364 tons in 1949,* and 2,647 tons in 1950. 6/

Production of carbon black in Rumania was 22,086 metric tons in 1949. 7/ With the addition of another plant early in 1950, production probably increased. Planned production in 1955 is to be 4.5 times larger than 1950 output. 8/ Natural gas and the by-products from the refineries are of such quality that large quantities of carbon black can be turned out to any specification required.

b. Estimated Possible Production and Capacity.

Some expansion of plants for the manufacture of rubber products is probably planned, and the 1949 trade agreement between Rumania and East Germany provided that East Germany would supply various machines and spare parts for the rubber industry. 9/ The current Five Year Plan provides for the production of 4,000 metric tons of tires by 1955. 10/

c. Domestic Requirements.

Rumania's motor park, estimated at about 10,000 vehicles in 1950, requires from 40,000 to 50,000 tires annually. Carbon black requirements are small, probably about 500 metric tons a year. There is no information available on stockpiling of rubber in Rumania.

d. Surplus or Deficit.

No information is available on types and sizes of tire manufacturing capacity in Rumania, but imports from the USSR indicate that Rumanian production may be deficient in some categories. The USSR has supplied tires to Rumania since 1947. 11/ Other types of rubber goods also are imported from the Soviet Bloc. Imports of natural rubber have been less than before the war and totaled 1,000 metric tons in 1948, 1,250 tons in 1949, and 575 tons in 1950. 12/ However, additional imports of natural and synthetic rubber from the USSR and Satellite countries which are not included in these totals have considerably increased the total Rumanian rubber supply. The USSR supplied 400 metric tons of rubber in March 1949, and additional quantities were probably shipped in 1950. 13/ Large surpluses of carbon black are available for export.

e. Internal Limitations.

Supplies of raw rubber must be imported. Rumania apparently received only 7 metric tons directly from Malaya in 1950. 14/ More was obtained through reexports and transshipments through the UK and West Germany, and the USSR and the other Satellites probably furnished some. Rubber chemicals also were supplied by the USSR in 1950. Synthetic rubber production will require other raw materials imports. Soviet specialists are believed to be in the country to assist in developing synthetic rubber production, 15/ and other

* Includes 204 metric tons of bicycle tires and tubes.

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technical aid by Soviet personnel will probably continue. Rumania may also be short of equipment for the manufacture of certain types and sizes of tires.

f. Trends—Including Indications of Mobilization for War.

A great expansion of capacity for the production of carbon black in Rumania provides the Soviet Bloc with a highly strategic commodity. The Bloc countries have been critically short of this product in postwar years, and great efforts have been made to procure it from the West. The ability to obtain large amounts of Rumanian carbon black will help to conserve the Bloc's foreign exchange supplies. In addition, expansion of carbon black production and increased tire production in Rumania will aid the domestic economy by making the country less dependent on the Soviet Bloc and by strengthening its foreign trade position.

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G. Engineering Industry.Summary

The engineering industry of Rumania is small and unimportant in comparison with that of Czechoslovakia or Hungary, but Rumanian output, particularly in the fields of railroad equipment and shipbuilding, nevertheless makes a small but significant contribution to the economic potential of the Soviet Bloc. It is estimated that over 50 percent of the total output of the engineering industry is shipped to the USSR, and for important individual plants the export figure is much higher, sometimes exceeding 90 percent.

Output of the more important products of the engineering industry is estimated in the following table.

Estimated Production of Ships, Locomotives,
Railroad Cars, and Tractors
1950, 1952, and 1955

| <u>Item</u> | <u>Unit</u> | <u>1950</u> | <u>1952</u> | <u>1955 Plan</u> |
|---------------|-------------|-------------|-------------|------------------|
| Shipbuilding | Metric Tons | 28,000 a/ | 40,000 | N.A. |
| Locomotives | Units | 150 | 200 | N.A. |
| Railroad Cars | Units | 3,000 | 3,600 | 5,200 |
| Tractors | Units | 3,000 | 4,000 | 5,000 |

a/ In 1949.

The Rumanian engineering industry does not meet total domestic requirements except for railroad equipment, and the fact that the bulk of the output is exported to the USSR further increases this deficit. Imports of capital goods are substantial, the major portion coming from the USSR, Hungary, and Czechoslovakia. Some critical equipment is obtained from Switzerland, Austria, Italy, and West Germany.

The technological level of the industry is not high. Its products are of simple design, usually copies of foreign models, and little attention is devoted to improvement of techniques and products. Industrial laboratories and experimental shops have been completely neglected, although an attempt is being made to correct these shortcomings through adoption of the latest Soviet industrial techniques. The industry also is handicapped by a lack of engineers and skilled labor, and shortages of raw materials, machine tools and other production equipment, machinery components, and spare parts have constantly

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hampered production. Defective organization and planning have resulted in a number of production bottlenecks. These limitations have often prevented fulfillment of production plans for specific items but have not prevented a steady increase in over-all output.

The 1949 and 1950 Plans called for a considerable increase in machinery output. This was to be accomplished by expansion of production at existing plants. Under the Five Year Plan (1951-55), output of machinery is to be doubled, and 10 or 12 new plants are to be constructed and put into operation. Although individual production goals for various categories of machinery and equipment could be attained (1) if the plant construction program is completed on time, (2) if sufficient raw materials and production equipment can be imported, and (3) if munitions production does not expand and monopolize scarce resources, the over-all target of doubled aggregate output seems unlikely to be achieved.

Expansion of the Rumanian engineering industry means an expansion of potential for the manufacture of war material. Munitions production in the World War II period was significant but declined precipitously in the postwar period. In the latter part of 1948 and in 1949, production of munitions was resumed in a number of plants and has steadily increased. More than two-thirds of the munitions manufacturing plants of World War II are, to varying degrees, again engaged in the production of light weapons, components, and ammunition. There are isolated instances of total conversion, but, in general, production of civilian goods has continued parallel with that of munitions. If the current trend toward increased munitions output continues, however, production of machinery and equipment will decrease, and the Rumanian engineering industry will be unable to meet the production goals established in the Five Year Plan.

1. Machine Tools.

The production of machine tools is small when compared with the requirements of Rumanian industry. A few machine tools were manufactured in Rumania before World War II and during the German occupation. Postwar plans for the development of heavy industry have placed increasing emphasis on the manufacture of machine tools. The Five Year Plan schedules a production of 645 lathes in 1955. Although this is a small number, it is many times more than present production. 1/ More important is the projected production of a number of new types of machine tools, many of them complex, which Rumania thus far has shown no ability to manufacture.* The principal manufacturing plants for machine tools are Steagul Rosu and Strungul in Stalin (Brasov), Victoria in Arad, Cugir in Cugir, Infratirea in Oradea, Unio in Satu Mare, and Dinamo in Bucharest. 2/

* At the Rumanian Industrial Exhibition in 1950 a few machine tools of Rumanian manufacture were on display—engine lathes, single-spindle drills, bench grinders, two boring machines, a shaper, etc. With the exception of two of the drills, the machines bore the inscription "Made for the First Time in This Country." They were all simple models and appeared to be fairly good copies of US or British types. 3/

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Almost all requirements of machine tools must be imported. According to the Rumanian press, the USSR is supplying numerous industrial plants in Rumania with a multitude of different types. Nevertheless, Rumania continues to import machine tools from the West, particularly from Switzerland and Italy. Official exports of machine tools from Switzerland to Rumania totaled 44 metric tons in 1948, 191 tons in 1949, and 84 tons in the first 6 months of 1950. 1/ France supplied Rumania with eight high-speed threading machines, useful in munitions production, in the fourth quarter of 1950. 5/ Italy shipped 35 tons of boring machines in November 1950 6/ and, under the current trade agreement, is to supply \$300,000 worth of machine tools during 1951. 7/

2. Agricultural Machinery.

Production of tractors was started in Rumania in 1947 when the former IAR aircraft plant was converted to tractor production under the control of the joint Soviet-Rumanian company Sovromtractor. 1/ Current tractor production is 3,000 units a year. 2/ Annual output is scheduled to reach 4,000 units in 1952 and 5,000 units in 1955. 3/ Production was begun with an adaptation of the German Hanomag, wheeled model, to which several modifications have since been made. Current production should be sufficient to meet the minimum requirements of agriculture for the type of tractor produced. However, the entire output may not be allocated to domestic users. Despite the increased domestic output, Rumania has continued to import tractors. Seventy Zetor tractors of Czech manufacture were imported in a 4-month period in 1950, and Rumania has also received some Soviet tractors. 4/ Caterpillar tractors are not produced at present, although the Sovromtractor plant is scheduled to make the Soviet KD-35 caterpillar tractor in the near future. 5/ The Rumanians possess a number of Caterpillar D-7 and D-8 tractors of US manufacture, for which it is difficult to obtain replacement parts. 6/

In addition to tractors, the Sovromtractor plant has for some time produced aircraft and possibly tanks. Tractor production may possibly have been suspended in early 1950 in order to expand tank production and to produce accessories for armored cars. Such total conversion would conflict with the urgent needs of Rumanian agriculture for tractors and would therefore constitute an important step toward mobilization for war.

3. Transportation Equipment.

The greatest contribution of the Rumanian engineering industry to the economy of the Soviet Bloc has been in the field of railroad equipment. More than 80 percent of the production of locomotives, freight cars, braking equipment, and wheel sets is shipped to the USSR.

Production of steam locomotives is concentrated at the Sovrommetal plant in Recita and at the "23rd of August" plant in Bucharest, which produce an estimated 100 and 50 units a year, respectively. Over 80 percent of the locomotives are of the Soviet wide-gauge type and are shipped to the

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USSR, whereas the remainder are standard-gauge for the Rumanian State Railways. Total production in 1952 will probably approximate 200 units.

Production of rolling stock in 1950 is estimated at 3,000 units and should increase to 3,600 in 1952. The Five Year Plan calls for an output of 5,200 freight and tank cars in 1955. Almost the entire output is sent to the USSR. 1/ The most important producers of rolling stock are the "23rd of August" plant and the Steagul Rosu plant in Stalin (Brasov). Other producers are located at Arad, Braila, Orastie, Satu Mare, and Turmu Severin.

Some railroad equipment is imported, and several 1949-model Swiss diesel locomotives have been seen in operation on the Rumanian railroads. The current trade agreement with Italy calls for the supply of \$200,000 worth of Italian railroad equipment in 1951. Narrow-gauge cars were imported from the USSR in 1950. 2/

Shortages of raw materials and components—rolled steel, stamped parts, timber for freight cars, antifriction bearings, and injectors and pumps for locomotives—and of production equipment seriously hampered output in 1949. These shortages still exist, and although they are not sufficiently serious to cause a drop in production, they have slowed the rate of increase. 3/

4. Petroleum Equipment.

Rumania produces a small amount of oilfield equipment. The "First of May" Sovrompetrol plant in Ploesti and the Sovrommetal plant in Recita have for some years produced steam drilling rigs on a small scale. 1/ In 1949 the Steagul Rosu plant at Stalin (Brasov) began production of tricone drilling bits, winches, crude pumps, and drilling rigs. 2/ The 1949 and 1950 Plans placed considerable emphasis on the production of oilfield equipment. Production targets for 1955 were given in the Five Year Plan only for rotary tables and drilling trolleys, and the goals, 90 units in each case, are modest. 3/ Quarterly fulfillment reports have stressed substantial increases in production of other drilling equipment such as crown blocks, traveling blocks, drilling rigs, pumping units, and reducing gears.

The low production of the Rumanian oil industry in 1950 has been attributed, among other things, to a shortage of new equipment and a deterioration in existing facilities. 4/ Even if Rumania's total output of oil equipment were allocated for domestic use, the requirements of the oil industry could not be met. A substantial part, however, including such items as crude-oil pumps, rock bits, drilling tongs, traveling and crown blocks, rotary tables, rotary swivels, blowout preventers, and tubing, has been going to the USSR as reparations. 5/ Items such as diesel drilling rigs and all control apparatus must be imported. 6/

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Before World War II and immediately thereafter, Rumania imported considerable quantities of US equipment. After the imposition of US export controls, the Rumanian government made strenuous efforts to obtain this equipment elsewhere. Substantial quantities of drilling pipe and well casing have been procured through circuitous channels from Italy and West Germany. The USIA (Soviet enterprises in Austria) firm of Mannesmann-Trauzl supplied Rumania with drilling equipment in 1950. 7/ Italy is scheduled to supply drilling equipment valued at \$120,000 in 1951. 8/ Rumania placed definite orders in September 1950 with the West German firm ITAG for delivery of \$150,000 worth of drilling rigs. 9/ The USSR has also supplied equipment, including, it is reported, drilling machinery for four new wells in the latter part of 1950. 10/

The Steaua Rosie Works (formerly E. Wolff Corporation) in Bucharest, the only significant producer of refinery equipment, 11/ manufactures large structural parts such as fractionating columns, tanks, and heat exchangers. 12/ Pumps, valves, motors, and control equipment for refineries are imported.

The trend in Rumania is toward an increased output of petroleum equipment. There are no plans for construction of new plants, however, nor for any substantial expansion of existing plants. Recently announced percentage increases of considerable magnitude for the production of oil equipment reflect the manufacture of new items rather than any great expansion in volume of output. Rumania will continue to depend, although to a lesser extent than before the war, upon imports of petroleum equipment.

5. Munitions.

During World War II, Rumania had a substantial capacity, distributed among 29 plants, 1/ for the production of light weapons and ammunition. Monthly capacity has been estimated, presumably on the basis of wartime output, at 75 pieces of light artillery, 345 mortars, 1,540 small arms, 403,750 shells, 14,500 aerial bombs, 234,000 mortar shells, 330,000 infantry grenades, and 12,290,000 rounds of small-arms ammunition. At the end of the war, most of these plants were converted to peacetime production, although a few government arsenals may have continued to produce munitions on a small scale. By order of the Ministry of War, however, 40 percent of the facilities for munitions production was not to be used for nonmilitary purposes but was to be maintained in condition to resume operations on 48 hours' notice. Furthermore, industrial mobilization plans were prepared to enable the industry quickly to regain the level of production reached during World War II. 2/

Since June 1948 the entire munitions industry, like all heavy industry, has been nationalized. Military directorates known as Production Directorates, which receive orders directly from the Ministry of National Defense, 3/ have been established in the Ministries of Industry, Oil, National Economy, and Food. In late 1948 and 1949 a number of Rumanian industrial plants resumed production of munitions, although continuing to manufacture industrial products. This trend was accelerated in 1950 and early 1951. Approximately 20

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of the 29 plants which produced munitions during the war are again producing light weapons, ammunition, and components. 4/ These 20 plants include almost all of the important engineering establishments.

The Uzina Ilie Pirtilie (formerly Margineanca) plant near Ploesti, for example, made shell cases, fuzes, and mortar shells during the war. Capacity was 282,000 shells a year. 5/ After the war the plant was converted to the production of agricultural equipment, but in mid-1949 shell production was resumed. 6/ In the first 9 months of 1950, 200,000 antitank gun shells for the USSR were turned out, and the 1951 production goal is 1.5 million shells, over 5 times the plant's estimated World War II capacity. 7/

It is unlikely that the munitions industry as a whole is currently producing at a level near its wartime capacity. Most of the engineering plants continue to manufacture peacetime industrial products, but civilian production appears to have been cut back. There have been numerous instances of diversion of materials and manufacturing facilities to munitions production, which will inevitably reduce the output of machinery and equipment. 8/

Although Rumanian munitions production represents a substantial contribution to Soviet strength, the industry must depend upon Bloc assistance. It may be able to supply the requirements of the Rumanian Army for light weapons, small arms, and ammunition, but heavy weapons would have to be furnished by other Soviet Bloc countries. In addition, the munitions industry is dependent upon outside sources for much of its raw materials and almost all of its production equipment and replacement parts.

6. Aircraft.

Rumania has neither an extensive aircraft industry nor the resources to support one. The country is dependent upon imports from the USSR to fill civil transport and military aircraft requirements. Domestic use and export to the USSR of the aircraft instruments and light training and sport aircraft currently manufactured will probably continue, but no important contribution to the power of either Rumania or the USSR is made by the industry. The chief advantages to the Soviet Union are the facilities for extensive maintenance of Soviet transport aircraft operating in and through Rumania and for potential repair of tactical aircraft in event of war. The contribution to the Rumanian economy is not significant. The industry is completely nationalized, and total employment probably does not exceed 1,500. Aircraft and components are produced in conjunction with other products in plants under the direction of the Ministry of Metallurgical and Chemical Industry. The most important plant with respect to aircraft production is Sovromtractor, a joint Soviet-Rumanian company under the supervision and control of the USSR.

After World War II, some machinery in aircraft factories was transported to the USSR, and most of the remainder was used for the production of consumer goods. In 1948, it was reported that the Soviets had authorized the retooling for aircraft production of the SET plant in Bucharest and the Astra and Sovromtractor plants in Stalin (Brazov). A group of 22 engineers and technicians

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from the USSR visited the Sovromtractor plant with the announced purpose of developing it for the production of jet aircraft, although the real reason probably was to determine its usability for servicing jets.

No large expansion of production is expected, and recent augmentation of repair facilities and personnel has been insufficient to indicate mobilization for war.

7. Shipbuilding.

Rumania's 24 known shipyards have an annual capacity of 80,000 metric tons. The planned production for 1949 was 42,000 tons, though only 28,000 tons were built, but in 1950 production increased by an undetermined amount. Although larger ships can be built in the major yards, the great bulk of the present and planned output consists of tugs, tanker barges, fishing craft, small river cargo ships, and, in the Sovrom yards, motor torpedo boats, patrol boats, minelayers, and minesweepers. All of the naval craft are standardized on Soviet specifications, and a new motor torpedo boat, the prototype of which is believed to have been finished in the Izbanda plant at Braila, will go into construction in 1951-52.

The industry employs approximately 22,000 workers, and the most important shipyards are located in Braila, Turmu Severin, Galatz, and Constantza. Technical trade schools were inaugurated in all yards in 1949, and the resulting increase in labor skills, together with larger imports of engines and raw materials from the USSR and the standardization of construction, is credited with the 1950 production gains.

The entire output of the Rumanian shipbuilding industry from the termination of World War II until the end of 1951 was delivered to the USSR as reparations. In that period Rumania purchased some ships abroad, but its merchant marine is still deficient. The industry is expected in 1951 not only to fill the reparations quota but to have a surplus for national requirements, with an increase of output to more than 40,000 metric tons.

Rumanian shipbuilding is heavily dependent upon imports of raw materials. Tungsten, copper, aluminum, and lead are obtained from the USSR, manganese from Hungary and Bulgaria, and steel from Poland and Czechoslovakia. The USSR is the principal source of finished marine engines, although plants in Braila, Galatz, and Turmu Severin produce them in limited quantities.

There is no indication of conversion of other industry to shipbuilding, but expansion of all shipyards has been marked in the past 2 years. New machinery has been supplied by the USSR for constructing two new but small yards. Although increased activity in this industry cannot be considered an immediate step in mobilization for war, the war potential is definitely being improved. The need for imports makes the industry vulnerable in peacetime, and the concentration of the shipyards in a very few locations would make them vulnerable to bombing.

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VII. Transportation.

Summary

The distribution of petroleum products to the Soviet Union and to the Satellites is the chief contribution of the Rumanian transport system to the Bloc's economic potential for war. This distribution is carried out principally by the pipeline network, in conjunction with the Soviet and Rumanian merchant marines and, to a lesser extent, the Rumanian railroads and inland water transport.

Rumania is not capable of making large contributions of transport equipment to the USSR. The diversion to the USSR of moderate quantities of rolling stock and motor vehicles, however, would not seriously affect the Rumanian economy. Rumania probably will continue to deliver rolling stock and small vessels to the USSR out of current production.

Present Rumanian transport activity imposes only minor requirements on Soviet economic resources, since most Rumanian transport facilities are operating below capacity. A substantial increase in traffic, however, would require Soviet assistance in the form of additional transport equipment. Because of Rumania's strategic location, its transport system is of considerable military as well as economic importance.

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A. Railroads.

1. Direct Contributions of Railroads to the Economic Potential for War of the USSR.

Rumania's railroad facilities make only a limited contribution to the Soviet economic potential for war. The principal economic importance of the railroad system is in the distribution of petroleum products to the USSR and the other Satellites, and in the event of war the system would provide logistic support for military operations in the Balkans and the Adriatic area.

The difference in gauge between Soviet and Rumanian railroads* does not prevent the USSR from utilizing the Rumanian network, because transloading points at Galatz-Reni, Iasi-Ungheni, and possibly at Dornesti, permit through traffic between all points in both systems. Transfrontier traffic is accomplished by transloading shipments and by substituting axles of the desired gauge at the transfer points.

a. General Description of the Network.

The major portion of Rumania's railroad network is roughly parallel to the southern and eastern frontiers of the country, cut off from Transylvania by the East Carpathian range and the Transylvanian Alps. From Craiova, two parallel lines sweep eastward to Bucharest and northward to the Soviet frontier south of Chernovitsy. Five gaps in the mountains lead into Transylvania, but only the routes through Orsova and Brasov are major lines. Branch lines to Galatz and Constanza carry Rumania's heaviest traffic.

b. Traffic.

Rail freight traffic comprises 85 percent of all internal traffic in Rumania. The level of traffic has surpassed the prewar volume and apparently continues to increase. Rumanian rail freight traffic for 1951 is planned at 7.8 billion ton-kilometers, 28 percent above the 1939 traffic figure. Domestic rail traffic consists chiefly of petroleum products,** timber, grain, and some iron and steel products. 1/

Responsibility for the control of railroad traffic is divided between 2 of the 11 Central Directorates of the General Directorate of Railways: the Operations and Traffic Directorates, which have subordinate offices in the 6 regional Railway District Directorates--Bucharest, Iasi, Craiova, Timisoara, Brasov, and Cluj. The respective regional-level Directorates control suboffices

* The Soviet gauge is 5 feet; the Rumanian, 4 feet 8 $\frac{1}{2}$ inches.

** The railroads carry only about 12 percent of the oil delivered to the USSR, the remainder going by pipeline and tanker. 2/

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at every junction and station throughout their regions. 3/

Railroad traffic control is not highly developed, and no centralized traffic control equipment has been installed, leaving the telephone as the chief means of control. On double-track lines the conventional semaphore type signal system is used, while the "train staff signal system" (Zhezlovaya Sistema), under which trains proceed from station to station and receive further orders at each stop, is employed on single-track lines. 4/ However, automatic block system signals have been placed in service between Bucharest and Ploesti, and future improvements in this field are expected.

c. Equipment.

Most of the war damage to the fixed facilities in Rumania has been repaired, but the postwar program to improve the subgrade, replace worn rails and ties, increase the weight of rail on main lines, and install safety and signal equipment has not been completed. Only the major through routes have capacities comparable to the average of Central European lines. New rails for postwar construction and replacement have come chiefly from the USSR and Czechoslovakia, but Rumania is now believed to be self-sufficient in rails. Rumanian production of ties is more than adequate for domestic needs.

d. Capacity.

The traffic capacity of Rumanian railroads has exceeded requirements since June 1947. 5/ Capacity in 1951 is estimated at about 8.45 billion ton-kilometers a year, a 40-percent increase over 1939. Planned requirements for 1951 are only 7.8 billion ton-kilometers, and the railroad system could carry additional loads of 1.78 million ton-kilometers a day, an amount sufficient for large-scale economic or military traffic movements.

Since 1947 the opening of four new lines, in conjunction with certain improvements to a few classification yards and block signal installations, has nearly doubled the theoretical capacity between Livezeni and Bumbesti, Craiova and Bucharest, Visoul and Telciu, and Faurei and Tecuci. The effective capacity, however, as contrasted with the theoretical capacity depends not only on fixed line facilities but includes rolling stock and locomotive inventories, yard facilities, and signalling equipment. All of these items must be increased before the theoretical capacity can be realized.

The capacity of transloading stations between Rumania and the USSR is adequate for present needs, and if traffic is greatly increased, the stations can readily be expanded to cope with the additional requirements.

e. Vulnerability.

Rumania's rail facilities, because of the system's many bridges, tunnels, and strategic junctions, are vulnerable to a limited degree to both air attack and sabotage. Alternative routes have been increased since the war,

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but numerous targets are available for the effective reduction of rail communications. Rail traffic could not be disrupted completely, however, without heavy and sustained attacks.

2. Direct Contributions of Railroad Equipment to the Economic Potential for War of the USSR.

a. Inventories.

Current railroad equipment inventories are estimated at about 62,000 freight cars and 2,000 locomotives, about 10 percent being un-serviceable at any given time. These inventories are approximately equal to prewar figures, and intensification of utilization has been achieved to cope with the substantially increased current traffic. Turn-round time, for example, has been reduced to a minimum, and workshop production has achieved greater efficiency.

b. Production Capabilities.

Only slight increases in traffic can now be met by intensifying utilization, and some increases in rolling stock and locomotive inventories must be made if future traffic requirements are to be met. A slight reduction in exports to the USSR would enable Rumania's railroad equipment industry to provide the necessary domestic additions.

c. Effect of Transfers to the USSR.

Any transfers of locomotives or other rolling stock to the USSR or elsewhere in the Soviet Bloc would result in reduction of domestic transport availability in proportion to the quantity of equipment removed. Such removals however, would not substantially augment Rumania's contribution to the USSR's economic potential for war.

3. Indirect Contributions.

a. Role of Railroads in Soviet Trade.

(1) Extent and Nature of Traffic with the USSR and the Satellites.

The chief exports to the USSR which are carried by Rumanian railroads are petroleum products, timber, grain, and cement. Petroleum is the major export, but only about 12 percent of total petroleum shipments to the USSR move by rail. Grain, timber, cement, and some iron and steel products move chiefly by sea but depend on the railroads for transportation to the ports. Machinery imported from the Satellites depends heavily upon rail transport.

(2) Importance of Traffic to the Soviet Economy.

Transportation of petroleum from Rumania is of primary importance to the USSR. Imports of grain, timber, and cement from Rumania are less vital to the Soviet economy.

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b. Role of Railroads in Trade with the West.

Rumanian railroads are of negligible importance in the low volume of overt trade with the West. A small amount of clandestine traffic with non-Bloc countries moves largely over Eastern European rail lines, but the motor vehicles, machinery, and replacement parts which Rumania procures in this way from the West probably are not required to maintain economic activity at prewar or even 1948 levels.

4. Inverse Contributions.

a. Equipment.

Rumanian railroads make almost no equipment demands on the Soviet economy, and, in fact, Rumanian industry exports considerable numbers of locomotives and other rolling stock to the USSR yearly.

b. Materials.

The USSR supplies small quantities of materials, steel plates, and wheel rims to Rumanian railroad equipment factories. Rumania imported some rails from the Orbit in the years immediately following the war, but domestic productive capacity is now believed to be slightly in excess of Rumania's own rail requirements.

c. Manpower.

Rumania is self-sufficient in manpower for railroad operations. The Soviet Union has supplied technical experts in the past, largely in order to train Rumanian personnel in Soviet procedures, but the few Soviet railroad personnel now employed in Rumania hold supervisory positions to insure Soviet control of the system.

5. Probable Developments.

Small and gradual improvements are expected throughout 1951-52 in the condition of Rumanian railroad equipment and facilities, chiefly in the strengthening of the fixed facilities along main lines. These improvements will maintain present capacities rather than appreciably increase the total carrying capacity of the rail system. It is possible that in 1952 Rumania will double-track a large portion of the line between Bucharest and Craiova and strengthen the roadbed and superstructure between Darmanesti and Salva via Vatra Dornei. Construction on the projected bridge between Corobia and Gigen may be well advanced in 1952, but no work is expected to be undertaken on a bridge planned between Giurgiu and Ruschuk. Locomotive and freight car inventories may be increased slightly, and the average age of equipment will be reduced. The percentage of cars with air brakes and automatic couplings will be increased by the replacement of obsolete equipment.

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B. Highways.1. Direct Contributions of Highways to the Economic Potential for War of the USSR.

The condition of Rumanian roads is poor, and highway traffic is not considered important to the national economy. In good weather, practically all of the roads are negotiable by motor vehicles, but in wet weather, especially in the spring, most of them can be traversed only with the greatest difficulty. 1/ Postwar efforts to improve and modernize the road system have stressed the construction of relatively high-capacity, all-weather highways across Rumania from northeast to southwest. While these highways will contribute substantially to the economic capabilities of the country, their routes and structure, and the great emphasis placed on speedy completion, indicate that strategic considerations may play a large part in their construction.

a. General Description of the Network.

Although the Rumanian road system is well distributed throughout the country, its condition is poor, its density is low (0.28 kilometer per square kilometer), and it is inadequate for economic and military requirements. The extent and character of the network in 1947 was as follows: 2/

Types and Distances of Rumanian Roads
1947

| <u>Class of Road</u> | <u>Kilometers</u> | | | |
|----------------------|----------------------|-------------------------------|---------------------|---------------|
| | <u>Hard-Surfaced</u> | <u>Gravel or Broken Stone</u> | <u>Earth Tracks</u> | <u>Total</u> |
| National | 1,749 | 10,245 | 180 | 12,174 |
| Departmental | 42 | 17,000 | 3,900 | 20,942 |
| Municipal | 0 | 11,500 | 22,000 | 33,500 |
| Total | 1,791 | 38,745 | 26,080 | 66,616 |

The gravel and broken stone roads cannot sustain prolonged high-speed traffic, and only 2,655 kilometers of the 10,245 kilometers of national roads of this type were in good condition in 1947. Nevertheless, at present there are probably from 4,000 to 5,000 kilometers of highways, strategically located to facilitate motor transport across Rumania from the USSR, which are capable of carrying rapid long-distance traffic. 3/ Postwar projects emphasize the construction of modern hard-surfaced highways leading north and east from Bucharest, the prewar highway system having been oriented mainly toward the west and south.

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Large-scale reconstruction is reported in Transylvania, 4/ and there are plans for the improvement and widening of roads in the Banat plain area bordering Yugoslavia. 5/ Road construction projects accounted for 21 percent of the 1949-50 budget. 6/

b. Traffic.

The 1951 plan for highway transport calls for the movement of 58.5 million ton-kilometers of freight,* a sizable increase over the 49 million ton-kilometers carried in 1950. 7/ Although reliable data for previous years are lacking, there are indications that since the establishment in 1946 of RATA, 8/ the state monopoly for motor vehicle transport, truck traffic has steadily increased. RATA carried 5,100 metric tons of freight in 1946 and 123,000 tons in 1949, 9/ and the 1950 Plan for RATA called for the movement of 371,000 tons of freight. 10/ Except for a small quantity of highway traffic handled by the joint Soviet-Rumanian transportation agency, Sovromtransport,** RATA does all the commercial trucking in Rumania. 11/ However, a much larger proportion of total highway traffic is of a noncommercial nature and is hauled by trucks belonging to various industrial enterprises and by horse-drawn vehicles. Agricultural produce is the chief commodity transported by road, but, in addition, industrial products and raw materials are carried in the urban areas.

c. Equipment.

The type and quantity of road-building machinery now in use are not known. Imports of heavy construction machinery from Czechoslovakia, Hungary, and the USSR have been reported in the Rumanian press, and small quantities of such equipment have been requisitioned from private owners. Manual labor is widely used, and road work is compulsory for much of the population at a maximum rate of 20 days a year. 12/

d. Capacity.

From 4,000 to 5,000 kilometers of the highway network, including roads from Bucharest to the Soviet and Hungarian frontiers, are probably able to sustain traffic at a rate of 1,000 metric tons each way a day. The capacity of the rest of the system is unknown, but it is highly unlikely that any of the highways are used to capacity. The road system, therefore, is probably capable of accommodating appreciably increased traffic movements.

e. Vulnerability.

Long-distance motor vehicle traffic in Rumania is confined to a limited number of highways, but the resulting vulnerability is of little importance, because of the small percentage of total traffic normally carried by highway transport.

* Or 6 percent of all Rumanian freight traffic.

** Sovromtransport, a Soviet-Rumanian joint stock company, is believed to control the policies and operations of RATA.

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2. Direct Contributions of Highway Transport Equipment to the Economic Potential for War of the USSR.

a. Inventories.

Before World War II there were from 32,000 to 35,000 vehicles of all types in the Rumanian motor vehicle park, but by early 1948 the total had dropped to from 15,000 to 17,000, all of which were reported to be in poor condition. ^{13/} Another report for the year 1948 states that the vehicle inventory at that time totalled 17,200 units, including 11,000 passenger cars, 5,000 trucks, and 1,200 buses. Thirty percent of the trucks and buses, all of which burned either gasoline or diesel fuel, and 70 percent of the passenger cars were believed to be of US manufacture. ^{14/}

Receipts of vehicles under the terms of Rumanian trade agreements with the USSR have been widely publicized, but actual figures have not been reported. Rumania's known vehicle imports are as follows:

Known Rumanian Motor Vehicle Imports
1949-50

| <u>Year</u> | <u>Origin</u> | <u>Jeeps</u> | <u>Trucks</u> | <u>Passenger Cars</u> | <u>Buses</u> | <u>Total</u> |
|-------------|--------------------|------------------|---------------------|-----------------------|--------------|--------------|
| 1949 | US | 80 ^{a/} | 130 ^{b/} | 16 | | 226 |
| | Italy | 58 ^{c/} | 200 ^{c/} | | | 258 |
| | UK | | 16 | | | 16 |
| | Czechoslovakia | | 1,600 ^{c/} | 50 | | 1,650 |
| | Hungary | | | | 25 | 25 |
| | USSR ^{d/} | | | | | 947 |
| | Total | 138 | 1,946 | 66 | 25 | 3,122 |
| 1950 | Italy | 222 | 100 ^{a/} | | | 322 |
| | Czechoslovakia | | 260 | 10 | | 270 |
| | USSR | | 780 ^{f/} | | | 780 |
| | Total | | | | | 1,372 |
| | Grand Total | 360 | 3,086 | 76 | 25 | 4,194 |

- ^{a/} Through Turkey.
^{b/} 100 unconfirmed.
^{c/} Probable.
^{d/} Types unknown.
^{e/} Unconfirmed.
^{f/} 600 probably chassis only.

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While these figures do not represent total deliveries, they are believed to include a sufficient number of deliveries to indicate that the current vehicle inventory does not exceed 25,000 units. This figure probably includes military vehicles and vehicles belonging to industrial establishments and government ministries, since in 1948 RATA operated a fleet of just over 400 trucks and buses and at that time expected to operate only 1,000 vehicles by the end of March 1949. 15/ The number of available motor vehicles is inadequate, as indicated by two 1949 government decrees which ordered all private owners of draft animals and carts to register with police authorities for the purpose of carrying materials for various state enterprises as required. Despite the small size of the vehicle park, gas rationing has been in effect since 1948, probably because of heavy petroleum exports to the USSR.

It is likely that the age and divergent origin of much of the Rumanian vehicle park and the difficulty involved in procuring parts for obsolete models limit serviceability to a maximum of 60 percent. The press in 1949 stated that RATA vehicles, reported to be operating about 100 kilometers each a day, 16/ averaged 27,000 kilometers between repairs and traveled from 40,000 to 60,000 kilometers on one set of tires. 17/

b. Effect of Transfers to the USSR.

No transfers of motor vehicles to the USSR are known to have taken place. The comparatively undeveloped state of Rumanian motor transport and the small percentage of total vehicles now used for commercial purposes suggest that possible future transfers of motor vehicles would have only a minor effect on the Rumanian economy. If, however, transfers should include large numbers of carts, wagons, and draft animals, the effects on the economy would be more widespread.

3. Indirect Contributions.

Some motor vehicle traffic presumably moves between Rumania and the USSR, but no data are available on such traffic. There is no known highway traffic between Rumania and the West.

4. Inverse Contributions.

a. Equipment.

The acceleration of large-scale highway construction and improvement in Rumania will require imports of additional road-building machinery, and the continued expansion and modernization of the motor vehicle park will require increasing imports of vehicles. An April 1951 report states that Rumania is importing 250 Soviet vehicles, mostly trucks, a month. 18/ Spare parts and tires represent a further import requirement. Czechoslovakia probably will also continue to supply Rumania with vehicles and parts.

b. Materials.

Rumania has ample supplies of road-building materials. Cement, asphalt, and a newly developed surfacing material called irasbit are all produced in volumes which meet Rumanian needs and leave a surplus for

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export. Structural steel for bridges, however, is a major highway item for which Rumania is dependent on outside aid.

c. Manpower.

Rumania has a pool of manual labor sufficient for highway needs but requires external assistance in obtaining engineers, designers, and trained technicians.

d. Soviet Control.

Road construction, although controlled by the Ministry of Construction, is performed by the joint Soviet-Rumanian company Sovrom-construction, staffed mainly with Soviet personnel, and by its subsidiary, Derubau, a former German organization taken over by the USSR after the war. Derubau has been responsible for the construction of the major Rumanian roads of national importance. 19/

Although details of the control of the highway transport agency RATA are not known, it is likely that its policies and operations are directed by Sovromtransport, the joint Soviet-Rumanian company largely staffed and exclusively controlled by Soviet personnel.

5. Probable Developments.

It is probable that 1952 will see the completion of the major all-weather highways now being built through Rumania to link the USSR with Central Europe. It appears doubtful, however, that motor transport traffic will increase significantly or that the number of motor vehicles allotted to commercial activity will expand appreciably. The development of both the vehicle park and the highway network will continue to be focused on military and strategic rather than on economic objectives.

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C. Water Transport.1. Direct Contributions of Water Transport to the Economic Potential for War of the USSR.

Rumanian water transport facilities make a direct and important contribution to the Soviet economic potential for war. The Danube River provides a cheap and easy means of transportation for petroleum exports to the USSR. Rumania's maritime ports, moreover, are essential to trade with the USSR, since cargoes moved within Rumania by rail and pipeline are transhipped at these ports to the Soviet Union. Despite their vulnerability, Rumania's ports would be useful in wartime supply operations in the Balkans, and the Danube would provide a military supply route.

a. General Description of the Network.

Although Rumania has several navigable rivers, only the Danube, which forms much of the southern border of Rumania, is of economic importance. Constanza is the only major maritime port, and its importance will be increased by the eventual completion of the Danube-Black Sea Canal, now under construction, which will link Constanza with the Danube near Cerna-Voda. Galatz and Braila, inland ports on the Danube, are also served by ships trading in the Black Sea. In addition to Galatz and Braila, there are about 25 smaller ports on the Rumanian Danube, some of them mere docking points, others, such as Orsova, Turna-Severin, and Giurgiu, of considerable importance to river traffic.

b. Traffic.

Rumania's water transport system is important to the country's foreign trade, as well as to the internal economy. Rumanian exports to the USSR consist primarily of petroleum products from the Ploesti fields, grain and other foodstuffs, and lumber, which move downstream on the Danube to Rumanian Black Sea ports for transshipment to Soviet ports on the Black Sea. There is also considerable petroleum traffic to the Communist Far East. Although the Rumanian merchant fleet has become increasingly active in foreign trade, such as the grain traffic to Albania, the bulk of the petroleum traffic is carried in Soviet vessels. Danube traffic also includes petroleum and grain for Czechoslovakia and lumber for Hungary and Western Europe. Rumanian imports carried by water are chiefly industrial raw materials and products shipped down the Danube from the other Satellites and by sea from Poland, the USSR, and the West.

c. Equipment.

The ports and waterways of Rumania are fairly well-equipped with traffic and cargo-handling facilities. War damage has not been completely repaired in all ports, although Constanza, Braila, and Galatz are believed to be in better than average condition, and in many harbors the lack of storage facilities is a severe handicap. The Danube route is still replete with such traffic hazards as sunken barges and rapids.

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d. Capacity.

The total capacity of Rumanian ports for ocean traffic is estimated at about 13,500 metric tons a day, a significant portion of the total port capacity of the Satellites on the Black Sea. Of this total, 8,500 tons can be handled at Constanza, and 5,000 tons at Galatz and Braila. Recent reports indicate considerable activity in the Rumanian seaports, and it is possible that there is no significant excess capacity available at the present time. The combined capacity of the Danube ports of Rumania might be as much as 15,000 metric tons a day. 1/

e. Vulnerability.

Disruption of water transport would affect both Rumania's domestic and foreign trade and would be particularly damaging to the transport of petroleum and grain.

2. Direct Contributions of Shipping to the Economic Potential for War of the USSR.

a. Inventories.

The Rumanian fleet includes seven ocean-going ships of 29,000 gross registered tons. 2/ No reliable census of the river fleet is available, but it is known to consist of small passenger boats, freighters of from 500 to 600 tons, cargo barges and tank barges up to 1,000 tons, and tugs of various sizes.

b. Effect of Transfers to the USSR.

The USSR has already taken over portions of both the Rumanian ocean and inland fleets and receives tonnage as well from current Rumanian production. As a result, the Rumanian fleets have little or not surplus tonnage, and any further transfers to the USSR would be correspondingly damaging to their capacity.

3. Indirect Contributions.

a. Role of Water Transport in Soviet Trade.

Although much of Soviet-Rumanian trade across the Black Sea moves in Soviet ships, Rumanian water transport makes a direct contribution to this traffic and plays an important role in the inland movement of export traffic destined for the USSR. The principal export cargoes are petroleum, wheat, and timber, while Rumanian imports consist mainly of cotton. This traffic, as previously indicated, is of considerable importance to the Soviet economic potential. The transport of petroleum products would be of critical significance in the event of war.

Rumania's maritime and Danube traffic with various other Satellites is not believed to be of major economic importance, but the Rumanian Danube is also used for transit traffic between the USSR and other Satellites.

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b. Role of Water Transport in Trade with the West.

Rumanian ships trade with Turkey and nearby Black Sea areas but in recent months have been increasingly active outside the Black Sea. Traffic with the West, however, is of little economic importance.

4. Inverse Contributions.

Any major expansion of Rumania's water transport potential would necessarily depend largely on Soviet assistance or direct participation. Soviet control over Rumanian maritime transport is complete at present, and there is little prospect for any change in the near future.

5. Probable Developments.

Several ships may be added to the Rumanian fleet in 1951, and port facilities and river navigation conditions may be improved, but substantial changes in the Rumanian water transport potential by 1952 are not likely.

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D. Air Transport.1. Direct Contributions of Air Transport to the Economic Potential for War of the USSR.

The only factor in Rumanian air transport of strategic significance to the USSR is the contribution made by the Rumanian airfield network to the Soviet-sponsored complex of such facilities extending from the Baltic Sea to the southern frontier of Bulgaria.

a. General Description of the Network.

The Rumanian airfield network consists of 49 airfields and 1 seaplane base. 1/ There are 15 airfields designated exclusively for civil aviation, and 6 additional airfields are shared jointly by civil and military aircraft. Of the 49 land installations only 3, Bucharest/Banasa, Bucharest/Otopeni, and Zilistea, have paved runways. Zilistea is the only airfield known to have a runway extending from 6,000 to 7,000 feet. It is possible, however, that runways at the two Bucharest airfields may be in process of extension.

b. Traffic.

Civil air traffic in Rumania is light, and operations are carried out by the jointly owned Soviet-Rumanian airline TARS. With one exception, all domestic routes radiate from Bucharest. Two external routes are flown by TARS.

Rumanian Air Routes 2/
1951

| <u>Routes</u> | <u>Frequency</u> |
|----------------------------------|---------------------|
| Internal | |
| Bucharest-Constanssa | Unknown |
| Bucharest-Sibiu-Targu Mures-Cluj | Daily except Sunday |
| Bucharest-Timisoara-Arad | Daily except Sunday |
| Bucharest-Cluj-Satu Mare | Daily except Sunday |
| Bucharest-Sibiu-Oradea Mare | Daily except Sunday |
| Bucharest-Targu Mures-Cluj | Daily except Sunday |
| Bucharest-Galatz-Bacau-Iassy | Daily except Sunday |
| Timisoara-Arad-Oradea Mare-Cluj | Unknown |
| External | |
| Bucharest-Budapest | Biweekly |
| Bucharest-Prague | Weekly |

Foreign air traffic into Rumania is limited to certain Satellite airlines and the Soviet Aeroflot.

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Foreign Airlines Serving Rumania

| <u>Airline</u> | <u>Route</u> | <u>Frequency</u> |
|----------------------|------------------------------------|-------------------|
| LOT (Poland) | Warsaw-Oradea Mare-Bucharest | Weekly |
| Masovlet (Hungary) | Bucharest-Budapest | Biweekly |
| CSA (Czechoslovakia) | Prague-Bucharest | Weekly |
| Aeroflot (USSR) | Moscow-Kiev-Odessa-Bucharest-Sofia | Four Times a Week |

c. Equipment.

Rumanian airfield equipment is primitive by Western standards but could support an increased air transport program if such operations were conducted with aircraft no larger than the IL-2. A limited airfield equipment and runway extension program was initiated in 1948 under a Soviet-Rumanian agreement. Emphasis has been placed on the fields used for civil transportation such as Arad/Ceala, Cluj/Someseni, Satul/Mare, and Sibin/Turnisor. Radio aids to navigation consist only of D/F equipment, tower facilities, and beacons. Airfield lighting for night landings is not adequate, and ground handling equipment is scarce. 3/

d. Capacity.

The capacity of the Rumanian airfield network would permit relatively large-scale transport operations with the type of aircraft utilized by the USSR.

e. Vulnerability.

Rumanian air transport equipment is vulnerable to sabotage, but its destruction would have no effect upon the Soviet economic potential.

2. Direct Contributions of Air Transport Equipment to the Economic Potential for War of the USSR.a. Inventories.

With the exception of three IL-12 aircraft obtained from the USSR and used by the civil airline, all Rumanian civil and military air transports are obsolete, and a large percentage are nonoperational because of lack of spare parts.* Rumanian air transport equipment, therefore, does not add to the economic potential for war of the USSR.

* The Rumanian civil aircraft inventory includes 3 IL-12s, 13 IL-2s, 4 JU-52s, 4 Lodestars, 5 PO-2s, 2 HE-111s, and 11 JU-34s. 4/ Military aircraft are limited to 5 JU-52s, 5 SM-79s, and 5 C-60s. 5/

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b. Effect of Transfers to the USSR.

Transfers of operational aircraft to the USSR would result in the virtual cessation of air transportation within Rumania but would have no appreciable effect on the economy.

3. Indirect Contributions.

Rumanian air transport is not a factor in Soviet-Rumanian trade, nor in Rumanian trade, overt and clandestine, with the West.

4. Inverse Contributions.

a. Equipment.

Rumania's principal requirement in the field of air transport is for aircraft of the LI-2 or IL-12 types, which can be obtained only from the USSR. Soviet assistance to Rumanian air transport has been limited, however, to one IL-12, delivered to the civil air line in 1949, and two others recently made available.

b. Materials.

Some spare parts for the miscellaneous group of Rumanian aircraft have been obtained, presumably from Czechoslovakia or Hungary, but the large percentage of nonoperational aircraft indicates that Rumanian requirements for spare parts and engine replacements are not satisfied.

c. Personnel.

Rumania has sufficient personnel to conduct the present limited air transport operations without assistance from the USSR.

5. Probable Developments.

A recent report 6/ discloses a plan to improve the efficiency of Satellite air transport operations through a consortium of airlines. Under this plan, designed to replace the present system of individual single-stop round trips, the airlines of Poland, Hungary, Bulgaria, Rumania, and Czechoslovakia would operate over an international Satellite network touching the principal cities. Such a development, requiring a pooling of equipment and repair facilities, is feasible and would probably achieve some economies of operations. It would also tend to simplify Soviet control of Satellite air transport operations.

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E. Pipelines.

1. Direct Contributions of Pipeline Facilities to the Economic Potential for War of the USSR.

a. General Description of the Network.

The total length of the Rumanian pipeline network is about 1,420 kilometers. Oil pipelines connect the Ploesti fields with Constanza, Giurgiu, and Reni. Three 10-inch lines lead to Constanza. Branching from these lines are a 5-inch and a 10-inch line extending to Bucharest, from which two 5-inch lines continue to Giurgiu. A 10-inch line also branches from Faurei to Braila and Reni. Extension of this latter line to Odessa is believed completed. The branch line to Reni was built on Soviet orders with pipe taken from two additional lines which the Germans had laid to Giurgiu. Two gas lines also lead to Bucharest.

b. Traffic.

It is probable that over 50 percent of all POL supplied by Rumania to the USSR is at some stage carried by pipeline.

c. Equipment.

No data are available on machinery in use for pipeline construction in Rumania.

d. Capacity.

Capacity of the Rumanian oil pipeline system has been estimated at 17,000 metric tons a day. The reliability of this estimate, which indicates the existence of substantial unused capacity, has not been established. Furthermore, it is not the practice of the petroleum industry to operate oil pipelines at capacity for extended periods of time. The capacity of the gas lines is unknown.

e. Vulnerability.

The economic vulnerability involved in the oil pipeline system is illustrated by the fact that apparently about 60 percent of all Rumanian oil is transported at some time by long-distance pipelines. The Constanza lines cross the Danube on a rail bridge between Fetesti and Ouidiu, and the line to Reni crosses the Pruth in a similar manner at Galatz. Successful attacks at these points would seriously disrupt Rumania's oil transport system.

2. Direct Contributions of Pipeline Equipment to the Economic Potential for War of the USSR.

So far as is known, no Rumanian-built pipeline equipment has been transferred to the USSR. Rumanian production of such equipment is probably

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limited to pumps and is so slight in volume as to preclude future exports of any significance.

3. Indirect Contributions.

Although Rumanian oil exports to the USSR do not exceed 10 percent of Soviet petroleum production, this contribution is a significant one because of the petroleum shortage in the Orbit. Since over 50 percent of all Rumanian POL exports to the USSR is carried at some time by pipeline, and since other forms of transport could not absorb this traffic in its entirety, the role of Rumanian pipelines in trade with the USSR is a vital one. The Rumanian pipeline network plays no part in trade with the West.

4. Inverse Contributions.

Whatever pipes and pumps may be required for expansion of the Rumanian pipeline network must be largely imported.

5. Probable Developments.

Little change in the extent or employment of the Rumanian pipeline system is anticipated. Since petroleum production is not sufficient to tax the present capacity of the network, further expansion is unlikely.

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VIII. Current Allocations of Economic Resources.

1. Investment and Production in Industry.

While the Rumanian economic plan aims at eventual broad industrialization, postwar efforts have been concentrated on the development of key extractive industries to capacities beyond domestic requirements and on the mechanization of agriculture. Thus, while the general pattern of allocation of resources is directed toward greater industrialization of the country, current and immediately prospective development is predominantly in fields which provide strategic materials to the Bloc. Stress is placed on the petroleum industry, on expanded production of carbon black, and on development of copper, lead, and zinc mining. Some attempt is also being made to develop the production of industrial machinery and equipment such as oil drilling equipment and ball bearings. Tractor production is being promoted on a considerable scale as a step toward expanded output of grain.

2. Agricultural Development.

Although agriculture employs about three-fourths of the Rumanian labor force, it produces only a little more than one-third of the national income. The economic plan, while assigning higher priority to industrial development, will devote substantial resources to the mechanization of agriculture, and tractor production is scheduled to increase from 3,000 units in 1951 to 5,000 units in 1955.

3. Civilian Consumption.

In the allocation of Rumanian resources under the plan for economic development, requirements for civilian consumption receive the lowest priority. Food and shelter apparently will be allocated only in amounts sufficient to maintain industrial and agricultural production as scheduled.

4. Contributions of the Economy to the War Capabilities of the USSR.

By far the most important economic contribution made by Rumania to the Soviet war potential is petroleum. Rumania is the largest source of petroleum and petroleum products available to the Soviet Union in Eastern Europe. Only about 20 percent of Rumania's output is consumed domestically, and the remaining 80 percent is allocated by the USSR within the Bloc. Grain also is expected to make a contribution to the Soviet war potential. An export surplus of 745,000 metric tons, anticipated for 1952, will be a significant Soviet gain in view of rising food requirements in the USSR. Other strategic commodities contributed by Rumania to the war potential of the USSR are carbon black for rubber tire production, pyrites for the production of sulphuric acid, and caustic soda and soda ash for the chemical industry. Though small in tonnage, Rumanian exports of copper, lead, and zinc are important, since these minerals are in short supply in the Bloc.

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Various new industries, which did not exist in prewar Rumania, have been started as part of the country's long-range industrialization program. Attempts are being made to produce oil drilling equipment. The difficulty of obtaining ball bearings has led to the beginning of a domestic bearing industry. Tractors are being produced in increasing numbers. All these industries are still in their infancy, but they represent a significant change in the structure of the economy. This development of Rumania's industry will contribute in the long run to the economic potential for war of the Soviet Bloc. More immediate contributions are apparent in the shipments to the USSR of strategic materials, notably petroleum, grain, chemical products, some nonferrous ores, and pyrites.

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IX. Estimated Degree of Vulnerability to Western Economic Warfare.

Because of the relatively low level of industrialization in Rumania, its present import requirements, with some exceptions, can be supplied by the other Bloc members. The most important exception is specialized machinery, particularly for the petroleum industry, which in order to maintain current production, requires exploration and drilling equipment that in many instances neither the USSR nor Czechoslovakia can supply. Rumania's vigorous attempts to obtain this equipment from the West are evidence of its serious need.

Modern equipment will be needed to fulfill plans for a large increase in coal production in the next 5 years. Newly established manufacturing industries will also require machines and equipment. If imports from the West were completely cut off, the projected industrialization program would be retarded, whereas if Western exports were denied to the entire Soviet Bloc, the effect on Rumania would be more severe. A large part of Rumania's machine tools, steel, transportation equipment, and agricultural machinery are imported from within the Bloc, and the reallocation of these materials and equipment within the Bloc, which would be necessitated by Western economic warfare, would force Rumania to modify its economic plans. Furthermore, the allocation of resources by the Soviets would probably be severely limited because of Rumania's relatively small economic contribution to the Bloc.

Intra-Bloc trade could only partially offset the effects of Western measures of economic warfare against Rumania, because the Soviet Bloc is already allocating the maximum available supply of machine tools and other industrial equipment. Since the Rumanian economy has only a few specialized industrial lines, opportunities for adjustment to measures of economic warfare through substitutions and changes in production schedules and consumption patterns would be limited.

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I. Indications of Preparations for War.

There is no evidence in Rumania of such war preparations as the mobilization of manpower or the dispersal of industry. There is no evidence of stockpile accumulation that would constitute immediate preparation for war, although there is some stockpiling of petroleum. Efforts to reduce economic dependence on the West and development of transport facilities are for the most part an integral part of the Rumanian industrialization program, but the development of some transport facilities coincides with war requirements.

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APPENDIX A

RECAPITULATION OF LIMITATIONS, DEFICIENCIES,
AND REQUIREMENTS OF INTELLIGENCE

Sections III, VIII, IX, and X do not have material
to be included in this Appendix.

I. Trends in the Structure of the Economy.

Unfortunately, the limited time available for the preparation of this paper made it impossible to exploit all the sources of information that were available and to evaluate completely all of the information that was used. Consequently, the following list of requirements should be regarded as tentative and preliminary rather than complete.

1. Preparation of Plans.

- a. Methods and agencies used in formulating economic plans in Rumania.
- b. Soviet control of Rumanian plan preparation, including information on the extent to which these plans are drafted by the USSR.
- c. The role in plan control of the State Control Commission, the Commission for Organization of Cooperatives, the Central Statistical Institute, and the State Commission for Collection of Agricultural Produce.
- d. The extent of Soviet control of plan fulfillment and methods by which this control is effected.

2. Plan Control.

- a. More recent quantitative estimates of industries and economic services nationalized.
- b. More complete lists of industries and services nationalized since the original decree of 11 June 1948 and the percentages of total output produced by nationalized enterprises.
- c. Effectiveness of government control over both nationalized and nonnationalized enterprises.
- d. More recent quantitative estimates of land collectivized in Rumania.
- e. The effect of collectivization on agricultural production and distribution.

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f. Other nongovernmental instruments of economic control.

g. Methods by which these other organizational structures are utilized by the state as instruments of economic control.

3. Administrative Control of Industry.

a. Administrative control of cooperatives and private industry by the Rumanian government.

b. Key positions currently held by Soviet citizens in Rumanian industry.

c. Extent to which the Soviet control of Rumanian industry has effectively achieved USSR plans regarding those industries.

d. The administrative mechanism and the chain of command used by the government to control industry.

e. The internal structure of Rumanian ministries, particularly those which implement state planning.

f. Soviet-Satellite assistance given Rumania in its capital goods requirements, investment needs, and technical guidance.

4. Administrative Control of Agriculture.

a. Degree to which collectivization difficulties have been encountered thus far.

b. The organizational structure and functions of the Ministry of Agriculture.

5. Administrative Control of Services.

a. The extent to which control of commerce has been increased recently by the state and by cooperative organizations.

b. Soviet means of control over finance, particularly over banking.

c. The organizational structure of nationalized economic services.

II. Capacity of Human Resources for Economic Development.

The estimate of the total agricultural labor force is subject to a margin of error of about 5 percent. Additional data on the progress of collectivization and the drafting of labor from farms are necessary for the refinement of estimates. The estimates of the occupational distribution of the labor force are believed to be subject to varying but small margins of error, and additional data are necessary for further refinement. Further collection of data concerning

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military personnel used in construction and employment of political prisoners is necessary.

The numbers of advanced students is believed to be subject to a margin of error of less than 5 percent. Additional data on the training of various types of technical personnel and on the number of Soviet technicians in Rumania are needed to determine the number of technical personnel available to the Rumanian economy. Additional information concerning the level of labor productivity and factors affecting it is required for better estimates of future changes in productivity.

IV. Foreign Trade and Finance.

The problem of making an evaluation of Rumanian foreign trade and finance is made difficult by the lack of information on the value of trade for the period 1940-47. Another obstacle to trade evaluation and analysis is inconsistency in the data. Attempts to estimate and to forecast encounter the same difficulties of noncontinuous and noncomparable data. General statements, therefore, are based on different degrees of accuracy in estimating and in many cases need varying degrees of modification, depending on the assumptions used.

Trade agreements were used to estimate the planned level of trade, but the official exchange rates indicate projected levels which seem abnormally high if compared from period to period. It is unknown whether these planned exchanges were based on prices in 1938, in 1944, in the previous year, or in the current year, or on world prices.

V. Agriculture.

Adequate prewar statistics and statistical bases have been prepared for Rumania by the Office of Foreign Agricultural Relations, US Department of Agriculture; the International Institute for Agriculture, Rome (now the Food and Agriculture Organization of the United Nations Organization); and others. In addition, the Rumanian Agricultural Statistical Yearbook is available in the Library of Congress and the Library of the US Department of Agriculture.

Postwar agricultural information on Rumania has become increasingly unreliable. Until the early part of 1950 the agricultural reporting, within the limits imposed by the Rumanian government, was fairly good, but at that time the vice consul in charge of agricultural reporting was transferred, and he has not been replaced. This has further reduced the standards of the US Embassy's Bucharest reports.

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In general, the Food and Agriculture Branch depends primarily on newspapers, radio broadcasts, and other incidental information as the basis for its estimates. Much of the required information, it is believed, could be obtained by a trained agricultural reporter. Production estimates could be much more accurate if dependable weather information were available.

VI. Industrial Capacity and Levels of Production.

A. Ferrous Metals.

Very little information on developments in the Rumanian iron and steel industry is being currently received. Reliable data are needed on the location of ore deposits and mines; estimates of reserves of ferrous metals; production figures for 1948, 1949, and 1950; production estimates for 1951 and 1952; trade statistics on raw materials and semifinished iron and steel products; domestic requirements for iron and steel products; and progress reports on the expansion of the industry.

B. Nonferrous Metals.

1. Copper.

Information is lacking on recent production figures, on the capacity of mines and processing facilities, on requirements, on stockpiles, on expansion of mines and facilities, and on new exploitations at the Alten Tep mine in Tulcea.

2. Lead and Zinc.

Information is lacking on recent production figures; on whether or not a smelter exists at Copsa-Mica and, if so, its capacity; on the capacity of mines and processing facilities; on requirements; on stockpiles; and on the new nonferrous metals combine.

C. Coal.

The following information is required:

1. Annual coal production figures by areas and for individual mines if possible. The last year for which such data are available is 1947.

2. Detailed data on individual mines other than those in the Jiu Valley in Hunedoara Province, for which some fairly good reports have been received. Information should include the location, type of mine (shaft, drift or slope), thickness of the coal seam, mining methods, equipment used, mining difficulties, labor conditions, analyses of the coal, cleaning and briquetting, and destination of the product.

3. Data on the source, production, and types of mining machinery and equipment manufactured in Rumania. The A.C.P. plant in Petrosani is reported to be supplying equipment and apparently serves as a machine repair base, but nothing more is known about this plant.

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4. Information on the source, quantities, and types of coal mining machinery and equipment imported.

5. Data on the consumption of and requirements for coal by various categories of consumers.

6. Current figures on imports of coal and coke from Poland, Czechoslovakia, and the USSR.

7. Data on production and imports of metallurgical coke.

8. Data on the production of gas coke, including information on the plants producing it.

9. Information on the size and location of the principal stockpiles of coal.

D. Petroleum.

Historical data on Rumanian petroleum are very good, but since 1948 little concrete information has been received. The major gaps are listed below.

1. Size, location, and type of stockpiles.

2. Exports of petroleum products by quantity, destination, and product.

3. Location, capacity, and output of individual operating refineries.

4. Crude-oil production statistics by fields and total.

5. Consumption by quantity, product, and consumer group.

6. Construction of new refineries, including equipment and units to be installed.

7. Exploration, successful and unsuccessful, for new deposits of crude oil.

8. Construction or expansion of storage facilities, including capacity.

E. Electric Power.

1. Energy Resources.

It is not known what difficulties are being encountered as a consequence of the Rumanian oil shortage and what steps, in addition the decision to place a limit on the consumption of gas by power plants, are being taken to overcome them. There is, therefore, no accurate way to predict consumption

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of the various types of fuels in 1951-52 or to determine how the efficiency of the industry has been affected.

2. Electricity Generating Plants.

There is almost no postwar information on electricity generating plants in Rumania. A list of generating plants was prepared in 1948, with a figure for the capacity for each plant, but a lack of knowledge of the condition, age, and origin of the equipment, of fuel supply, and of the adequacy of trained personnel means that the margin of error in estimates of the operating capacity of a power plant is as high as 50 percent. Such gaps in information prevent accurate estimates of regional concentration, of reserves or shortages of capacity, and of the balance between the capacity demands of an industrial installation and the capacity of a nearby power plant. Adequate information is lacking for an estimate of the rate of installation of new capacity. Many of the projects underway are known, but completion dates cannot be estimated.

3. Transmission.

Although there are some data on the network of power connections between individual power plants and consuming centers, there is little detailed information on the condition and carrying capacity of lines and substations.

4. Production.

The 1950 figure for total production is probably accurate, but estimates of production for 1951 and 1952 contain weaknesses which are unavoidable when percentages published in the Rumanian press, the only available source, are used. Figures for regional distribution of production are lacking for any year. Information of this type would help in estimating reserve capacity, type of load, and condition of equipment.

5. Consumption.

Available data on the consumption pattern are good, but the lack of consumption information for industrial installations is a weakness accounting for the inability to determine trends in industrial consumption.

6. Input Requirements.

The Rumanians may be capable of operating existing facilities without large inputs of spare parts, materials, and skilled manpower from foreign countries, but proof is required. There is no information on which to base quantitative estimates of equipment, materials, and manpower actually received.

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F. Chemicals.

The volume of current information concerning the production of chemicals in Rumania has declined markedly since early 1949. Before that time, published statistics on output of chemicals were available, but, beginning in 1949, annual production was reported only in terms of percentage increases over the previous year's output. Information is needed particularly on the production and capacity of the following plants: "Nitrogen" at Tarnaveni, "Nitramonia" at Fagaras, Turda Chemical Works at Turda, Uicara at Ocna-Muresului, and the Ucea State Works at Ucea (under construction). These plants produce the bulk of Rumania's heavy chemicals.

1. Sulphur and Pyrites.

Little reliable information is available on the production and distribution of sulphur and pyrites in Rumania. The existing world shortage of sulphur and the future shortage anticipated in pyrites make procurement of such information increasingly important, since the Satellites are in large part dependent on the West for supplies of these materials.

2. Rubber.

Extremely little information is available on the rubber industry in Rumania. Data are particularly needed on synthetic rubber production, existing or planned. Although press reports state that such production is underway, the only reports available indicate production is at only a pilot-plant or experimental stage. Information on the actual existence of plants, their location, facilities, type and process, and raw materials is needed. Recent data on carbon black facilities, production, and exports and any post-war data on rubber fabrication facilities and production would be of value.

G. Engineering Industry.

It is estimated that the accompanying paper represents approximately a 50-percent research job of the material available in CIA. Between 70 and 80 percent of the material available was scanned, and it is believed that the nature and trends of the Rumanian engineering industry have been fairly adequately covered in broad outline. About 3 months would be required to complete a thorough research and development of the material available.

The following table indicates the thoroughness of the research accomplished on the various phases of the industry:

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| | <u>Material Available</u> | <u>Percent of Material Read</u> | <u>Percent of Material Developed</u> |
|----------------------|---------------------------|---------------------------------|--------------------------------------|
| Planning | Good | 90 | 60 |
| Production | Fair | 75 | 50 |
| Requirements | Poor | 75 | 40 |
| Trade | Fair | 70 | 40 |
| Internal Limitations | Fair | 60 | 50 |

No statistical analysis of the relative size of the industry, expressed in such terms as numbers of workers employed or aggregate tonnage output, has been compiled. An estimate of the total number of workers would require the addition of individual estimates on each plant, and no over-all employment statistics are believed to be available in CIA.

Official production statistics in other than percentage terms are not available except for tractors, for which projections can be made from base figures. Calculations of railroad equipment production were made from estimates of ex-prisoners of war and defectors. For other types of machinery and equipment, there are no production statistics, although estimates could be made by totalling ex-prisoners-of-war and defector estimates of individual plant output. Since the reliability of these estimates varies widely, and for some plants are not available, such over-all estimates would be subject to a wide margin of error.

Data on requirements are sparse, but with considerable effort reasonable estimates could be made on the basis of production statistics for those sectors of the economy which are users of machinery and equipment, such as petroleum and agriculture. Trade data are in fragmentary form. No detailed import or export statistics are available, and little more than general conclusions could be reached. Present information concerning Rumanian aircraft production and Soviet intentions for its utilization is unreliable, incomplete, and frequently contradictory.

VII. Transportation.

A. Railroads.

Available intelligence on Rumanian railroads is inadequate in every field of railroad activity. Reliable traffic statistics for the years after 1945 do not exist. Reliable figures on inventories of locomotives, freight cars, tank cars, and passenger cars are not available after 1945, nor is

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there accurate information on the percentages of cars which are serviceable, unserviceable, or beyond repair. Although there is fairly good information on network developments and new line construction in the southern part of the country, almost nothing is known about developments north of the 47th parallel, despite the fact that this is the area in which strategic developments are to be expected. Information on line construction, strengthening, and broadening is urgently needed.

B. Highways.

Major deficiencies in information on Rumanian highway transport concern the following: the specific number, types, and condition of vehicles currently in the civilian motor vehicle park; the procurement and disposition of motor vehicles, including method, number, type, origin, and destination; maintenance procedures and spare parts requirements; location and production of repair shops and parts plants; motor vehicle operations and traffic; fuel requirements; vehicle retirement rate; type, quantity, origin, and destination of commodities carried by motor vehicles; the nature and effect of seasonal factors in operations and traffic; total tons now carried by motor vehicles, average length of haul, total ton-kilometers (similar data are also required for animal-drawn highway transport); capacity of the road network, in total and between specific points; requirements, procurement, and use of road construction and maintenance machinery.

C. Water Transport.

More information on conditions, facilities, and capacities of the Rumanian river ports is required. A more accurate census of the river fleet is also needed, and information identifying the fleet by name, type, tonnage, and official serial number, as well as a brief technical description of typical craft, would be very useful.

D. Air Transport.

It is believed that two airfields in Rumania are undergoing major improvements to permit their use by four-engine aircraft, but verification, as well as the names of the airfields and the extent of the rehabilitation being undertaken, is needed. Prompt reporting is desired of any improvement in the system of navigational aids provided at several airfields which would permit all-weather operations and night landings.

E. Pipelines.

Major deficiencies in available information on Rumanian pipelines include accurate data on traffic, procurement and sources of pipes and pumps, operation and maintenance policies and practices, type and quantity of fuel used in pipeline operations, the administrative organization of the pipeline system, and plans regarding future construction and operations.

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