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THE
INDUSTRIAL MACHINERY MARKET
IN YUGOSLAVIA



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FOREWORD

Relatively little industrial machinery, even of the simpler types, is manufactured in Yugoslavia, the market being largely supplied by imports from Austria, Hungary, Czechoslovakia, the United States, England, France, and Germany. Shipments of machinery from Germany include a large proportion on reparations account, which somewhat complicates the market.

Although American industrial machinery has been but little known on the Yugoslav market, some sales of engines, textile equipment, metal and wood working machinery, and of unclassified items such as laundry, refrigerating, and canning and other food-preparing machinery, have been effected. Thus the initial approach has been made for a variety of American industrial machinery lines, and it is felt that, by cultivating the market more intensively and by applying more direct-selling methods, sales of American equipment can be considerably expanded.

The present bulletin describes in detail the principal industries of Yugoslavia, gives the chief types of machinery at present in demand and the suppliers of such machinery, and also outlines sales methods which would be found most effective by American manufacturers. Considerable space is devoted to Government buying practices, and many practical hints are given for extending old and securing new business, both public and private.

This bulletin was written by Emil A. Kekich, American commercial attaché in Yugoslavia, and issued through the industrial machinery division of the Bureau of Foreign and Domestic Commerce. Should additional information be desired, that division will gladly supply it.

FREDERICK M. FEIKER, *Director,*
Bureau of Foreign and Domestic Commerce.

NOVEMBER, 1931.

THE INDUSTRIAL MACHINERY MARKET IN YUGOSLAVIA

By American Commercial Attaché Emil A. Kekich, Belgrade

INTRODUCTION

For centuries the territory now comprising Yugoslavia has been predominantly agricultural¹ and is likely to remain so for years to come, since 76 per cent of the population of about 13,931,000 is engaged in agricultural pursuits. Nevertheless, as one of the newer economic and political units of the world, Yugoslavia, through its possession of natural resources of minerals, forests, and power, has shown considerable progress since the World War in its endeavor to build up a modern diversified economy.

The length of time and extent of effort which will be required to attain proper development of Yugoslav resources hinges chiefly on the questions of capital and organization. In the past few years several important foreign interests, including American, have been investing in the country, and a number of others are conducting negotiations looking to investments in mining, power, and other projects, such as railway building, port development, manufacturing plants, etc.

At present, the country is passing through a more or less intensive period of planning, realization of which awaits the lessening of world tension and consequent release of foreign capital for the development of varied dormant resources.

With encouragement, therefore, there is no question but that industrially Yugoslavia will witness a period of expansion. It will build up a demand for industrial machinery for engineering projects, mining, forestry, electric power, and in the processing of raw materials in the textile, pulp, leather, and other industries. Unless deterrent factors creep in, this program should be seriously progressing in the near future, particularly since the Government is endeavoring to promote agricultural and industrial balance by encouraging foreign capital, by building communication facilities, and by engendering confidence by a policy of protection to infant industries.

IMPORTS OF INDUSTRIAL MACHINERY

Imports of industrial machinery into Yugoslavia during the 3-year period 1928 to 1930 averaged 329,390,000 dinars annually, approximately \$5,800,000, the dinar being worth \$0.0176 in United States

¹ Readers interested in the marketing of agricultural machinery in this country are referred to Trade Information Bulletin No. 759, Yugoslav Market for American Farm Equipment, available for 10 cents from the Superintendent of Documents, Government Printing Office, Washington, D. C.

currency. During 1930 these imports amounted to about \$5,732,000, and it is estimated that approximately \$1,465,000 of this total represented machinery deliveries on reparation account from Germany. Imports are shown in detail in the table following.

IMPORTS OF INDUSTRIAL MACHINERY INTO YUGOSLAVIA, 1928 TO 1930

Item	1928		1929		1930	
	Kilos	Value ¹	Kilos	Value ¹	Kilos	Value ¹
Steam boilers and accessories.....	2, 676, 095	\$493, 236	2, 392, 020	\$415, 268	1, 827, 448	\$258, 766
Steam, gas, and internal-combustion engines.....	4, 014, 295	1, 171, 549	4, 050, 876	1, 264, 113	3, 228, 746	860, 264
Woodworking machinery.....	937, 166	275, 674	850, 834	262, 899	777, 196	313, 708
Metal-working machinery.....	1, 329, 408	403, 175	1, 321, 942	357, 807	1, 138, 827	312, 312
Textile machinery.....	2, 827, 693	702, 545	3, 934, 478	1, 050, 108	3, 590, 892	712, 543
Cement-plant equipment.....	379, 301	71, 787	819, 427	131, 056	2, 371, 204	441, 596
Other industrial machinery.....	6, 948, 226	2, 398, 953	7, 370, 573	2, 659, 272	8, 571, 777	2, 833, 610
Total.....	19, 113, 184	5, 516, 919	20, 740, 150	6, 140, 523	21, 506, 090	5, 732, 799

¹ Converted to United States currency at the rate of 1 dinar equaling \$0.0176.

These figures indicate that the market for industrial machinery in Yugoslavia is already of some importance, but when it is considered that the use of machinery in the country is merely beginning, and that much greater development lies just ahead, it can be seen readily that opportunities are offered to American manufacturers to establish and cultivate possibilities in certain lines.

THE GOVERNMENT AS BUYER AND PROMOTER

Naturally in a State where the bulk of the population is engaged in agricultural pursuits and with relatively small net income per capita, there is a great deficiency of liquid capital, so that the incentive for the development of modern industrial technique must come from the Government itself. This is precisely what is happening in Yugoslavia. The Government is attempting to improve the railway network, the highways, ports, terminals, warehouses, and public-utility plants. Thus a field is offered for foreign contractors, especially in electrical, transportation, and mining development, which will pave the way for the growth of other industrial operation and create demand for private initiative in various undertakings.

In the past 12 years the Yugoslav Government has, for example, spent about \$240,000,000 in public works and communication alone, and approximately \$600,000,000 for construction of all kinds. It is estimated that immediate future needs call for expenditures by the Government and private industry reaching about \$400,000,000, much of which will be spent directly by the Government. Among the projects involved are highways, irrigation and drainage, railways, railway shops, and the development of mining, smelting, textile, foodstuffs, and iron and steel industries. All these projects, which according to present indications will be carried out on a relatively large scale, will create a large demand for industrial machinery of various kinds.

American manufacturers are greatly handicapped in selling to the Yugoslav Government. This country, next to France, receives a greater percentage of reparations in kind than any other. According to the Young plan, Yugoslavia's reparations receipts are scheduled to average nearly \$20,000,000 annually until 1966. However, it is possible, through proper effort, to make sales of certain classes of American industrial machinery to the Government for the various plants operated by the State. Most of the Government's immediate requirements are for the improvement of basic conditions, and for peculiarly distinctive State institutions. Such sales might not of themselves, except in unusual cases, represent great importance, but in that way it is often possible to introduce a line to the market and to create greater interest in machinery.

CONDITIONS FOR COMPETITIVE BIDDING

Except in some rare cases when Government departments are direct buyers (mostly the War Office), or when goods are obtained on reparations account, all Government purchases, including machinery, are usually effected on the basis of competitive bidding. Such bids are published in the Official Gazette (Slusbene Novine) about one month before they are closed.

For every individual call for bids, "special" and "technical" conditions are issued. These may be secured from the Yugoslav Ministry Concerned for a nominal fee, which is usually low, but which for exceptionally big jobs reaches several hundred or even a thousand dinars. Special conditions fix the manner of delivery, terms of payment, special conditions for taking over the goods, etc. Technical conditions concern the quality and technical features required by the goods to be offered.

Neither the special nor the technical conditions may be changed in any event (even should better quality be offered), and bids which do not contain the statement that the bidder has knowledge of same and agrees with them are disregarded.

Goods delivered are inspected and tested in accordance with the technical conditions and are refused if these conditions are not strictly maintained.

Provided all conditions are fulfilled, the order is placed generally with the lowest bidder, despite the fact that some other bids may include goods of better quality.

A very important feature is that the bidder is bound by his bid in every way (price, delivery, etc.) during 30 days after the day fixed for opening the bids, while the engagements of the department concerned begin only when the department has confirmed the results of the bidding, and the bidder is advised that the order will be placed with him; then a contract is signed. This must be done within 30 days after the opening of bids; that is why bidders are requested to remain bound by their offers during the period, although the department concerned may, for any reason, cancel the results fixed by the commission opening the bids and pass the order to the bidder who submitted the best proposal in respect to price, or may call for new bids.

The period of delivery, and any delay therein, is always established from the date of the signature of the contract (which has to be done within 10 days after the contractor receives the communication advising that the order will be placed with him) to the arrival and delivery of goods at the destination stated in the contract, so that the contractor is held responsible for the transportation of goods or for the time the goods are en route. For each day that the goods arrive at the destination later than that stated in the contract, the contractor pays a fine of two-tenths of 1 per cent of the value of the goods which arrive late. Only "force majeure" is taken into consideration for remitting this fine. This is an important point, especially for American manufacturers, as the period of delivery is usually short.

Goods on arrival are first taken over by a special commission to check the quantity delivered. Then special tests are made to establish whether or not the goods delivered are in complete accordance with the technical conditions. Should they not be in accordance with the requirements in technical conditions (even if they are of better quality) they will be refused. The contractor has the right to appeal for inspection by a higher commission if he does not agree with a decision refusing the goods.

PAYMENTS IN GOVERNMENT BUSINESS

Payment is effected as soon as the commission has certified that goods were delivered according to special and technical conditions. It takes practically 20 to 30 days from the date of the arrival of the shipment at destination until the invoice is paid. No better terms may be obtained from Government departments or municipalities, and sometimes payments are made on the installment plan, this being provided for in the special conditions of the contract.

The necessity of being informed as soon as possible regarding calls for bids; the necessity of translating the special and technical conditions and specifications which are issued in the Serbian language; the fact that security must be deposited at the rate of 5 per cent of the total value by Yugoslav subjects and 10 per cent by foreign concerns; the different documents to be submitted with the bids; the short time before the contract is signed; the usually short period of delivery; the frequent necessity of negotiating with the department concerned in connection with the tests of delivered goods; the fact that prices are generally required in dinars and that direct representations are often necessary to settle unforeseen misunderstandings—all these render it very difficult for American concerns to handle Government and municipal business direct, without appointing a general representative or a dealer authorized to handle a special job by a power of attorney.

Even should the manufacturer be represented in some other European country, such a representative could hardly handle the business without engaging a local Yugoslav dealer acquainted with Government and municipal business.

Contracts may be concluded in the name of the manufacturer or in the name of the representative. In the latter case, it is possible to take advantage of the provision that only 5 per cent security is to be deposited.

Bids must be drawn up with prices c. i. f. destination, with all duty and taxes paid (this also makes it very difficult to handle the business directly), so that when the representative is paying these additional costs, the amount collected from the Government departments or municipalities has to be shared between the manufacturer and the representative. The usual way to guarantee both parties is to use the services of a bank, which collects the money from the purchaser and pays the amount collected to the representative, after having deducted from it and remitted to the manufacturer the amount of his invoice. All fines for delay in delivery or charges for shortcomings in the quantity or quality of goods delivered are deducted from the amount to be paid and are, of course, borne by the contractor. Surplus material will not be taken over.

INFLUENCE OF REPARATION DELIVERIES

American industrial machinery, with some exceptions, has been little known in Yugoslavia and has been handicapped in the open market by the influence of reparations deliveries from Germany. Prior to 1927 the Yugoslav Government made it a practice to apply large percentages of total deliveries in kind from Germany to private enterprise. This use of German reparations materials by private enterprises really had tremendous influence in establishing new industries in the country and in enlarging those existing. At present, however, the Government itself is utilizing the great bulk of reparations deliveries, which creates a somewhat improved condition for American manufacturers wishing to sell in the open market. It should be borne in mind, however, that through reparations industrial-machinery users in Yugoslavia have become familiar with German products and methods.

An important consideration is that the Yugoslav Government realizes that industrial development is essential and is encouraging the growth of manufacturing and extractive industries. Toward that end, cheap industrial credits are being sought abroad for plant and machinery, and for direct investment in Yugoslav industries. The chambers of commerce of the country, the organization of which is rather effective, are devoting considerable attention to practical industrial problems. Since virtually all the machinery supplies must be imported, the Government is further attracting development by a liberal attitude toward importation of machinery and materials for manufacturing and by protection of established plants.

MACHINE-USING INDUSTRIES

The principal established manufacturing industries in Yugoslavia to-day are the textile, lumber, leather, tanning, chemical, cement, beer and wine, and food manufacturing industries. Aside from the agricultural industry, and including lumbering and mining activities, it is estimated that the aggregate revenue to the country through these industries is somewhere in the neighborhood of \$300,000,000 a year. No accurate data are available to show the progress that has been made in the past few years, but it is generally known that the industrial situation of the country at present is far improved beyond that of 12 years ago. Nor do figures exist showing the precise num-

ber of industries established at present, although the number is thought to be considerably greater than in 1927, for which year data are given in the table following.

INDUSTRIAL ESTABLISHMENTS IN YUGOSLAVIA IN 1927, BY PROVINCES

	Serbia	Croatia and Slavonia	Slovenia	Voivodina	Bosnia	Dalmatia	Total
Mining and smelting.....	23	51	89	-----	15	42	158
Wood and paper.....	82	255	108	68	186	6	705
Agricultural industries.....	318	491	56	216	98	138	1,387
Chemical.....	27	104	38	48	19	14	250
Textile.....	61	76	39	69	26	8	279
Leather.....	19	36	27	23	5	2	112
Metal.....	52	72	46	60	13	11	254
Building.....	122	133	48	169	32	31	535
Other.....	52	128	40	28	86	17	351
Total.....	675	1,346	431	751	468	259	4,031

This table is striking in its illustration that most of the industries are concentrated in old-established Croatia and Slavonia and in Serbia. In the latter district, of course, a great deal of the development is virtually new, and it is in this region that expansion is expected because of the mining districts, the power facilities, and the new communication arteries being established. The mining areas of southern Serbia, Dalmatia, and Bosnia especially hold a wealth, not only of modern industrial minerals such as chrome, bauxite, manganese, and magnesite, but also of gold, silver, copper, lead, zinc, and iron. There are coal deposits in practically every section of the country.

Mining has been carried on sporadically in Yugoslavia since Roman times. Lack of capital has been the drawback, but the Government is now promoting concessions to foreign capital and proclaiming a new mining law offering national and foreign mining enterprises a solid basis of legal support and security. In Yugoslav mining considerable hand labor is used, but with the trend toward ownership and management of paying properties by foreign interests, modern machinery is coming more into demand. In two properties operated by British, French, and American engineers, American machinery is being introduced on a greater scale—a development of only the past few years. In view of the mining possibilities of the country a large demand for mining machinery can be anticipated.

Yugoslavia's lumber industry is relatively very important, comprising about 280 large sawmills and some 2,000 small ones. Normally, exports of lumber and wood products form a formidable item in the total export trade of the country. There are several wood-pulp, cellulose, and paper plants, centered in the northwest districts, but this industry, as a whole, is poorly developed, yet offering great possibilities because of resources in timber and water power.

In the agricultural industries are numbered a large variety of activities, including the making of beer and wine, butter, sugar, cheese, tobacco, canning of vegetables and fruits, dehydrating of

prunes, flour milling, etc. This industry, also, is considered to have a greater future, owing to the policy of the Government to convert its rich agricultural resources to modern demand, particularly in foreign countries.

Probably no industry in Yugoslavia has shown the same degree of development in recent years as the chemical industry. In this industry are involved wood distillation, matches, calcium carbide, cyanamide, sulphuric acid, explosives, soap, candles, paints and varnishes, glue, pharmaceuticals, and perfumery. With general economic improvement, unquestionably this industry has a much wider field in store.

Another industry which has shown remarkable progress through the investment of foreign capital is the textile industry. At present woolen fabrics, cotton, and silk goods are manufactured. There are a number of plants manufacturing knit goods, shirts, underwear, hats, and carpets. The industry is an example of successful Government protection, and its chief interest in the immediate future is to improve its equipment and methods.

The leather and tanning industry is relatively less developed but is showing progress in the making of shoe leather, saddlery, upholstery, bag, and trunk leather. Because of the resources in livestock the industry is expected to undergo growth in line with the policy of the Government to foster animal husbandry. Several shoe factories have been established and are gradually expanding.

The initial industry consists for the most part of small manufacturers, making wire, nails, hardware, household utensils, etc., some of the establishments being repair shops of various kinds.

The building-materials industry, particularly stone and clay working, and including the making of bricks, tiles, cement and clay pipes, glass and refractory materials, is important. At present the reduction in building activities at home and abroad has caused decreased production of these materials in Yugoslavia, but normally there is a large and growing demand, and the industry has a future in domestic as well as foreign consumption on the basis of abundance of available raw materials.

Among other industries worthy of mention are those producing iron and steel, celluloid, musical instruments, electric light and power, rubber goods, and confectionery. There is every reason to believe that the next several years will see progress made in the establishment of an iron and steel industry of some proportion under the initiative and protection of the State. The electric light and power industry at present is on the eve of what may prove to be an enormous development within 5 or 10 years.

LEADING EQUIPMENT ITEMS

BOILERS

As indicated in the following table, shipments of boilers from abroad have been dwindling. A local firm affiliated with British interests supplies at least 80 per cent of the requirements, chiefly of the small capacity. These are for a rather cheap grade of coal and wood, modern types not yet being in demand. A large number of boilers were originally imported on reparations account, and the

tendency to-day on the part of private consumers is to buy local boilers or second-hand boilers in neighboring countries. Potentialities exist for development in this class of equipment, but it is doubtful whether American manufacturers could successfully meet European concerns competing for the present relatively small turnover, considering that the trend toward local manufacture will undoubtedly become greater.

IMPORTS OF STEAM BOILERS AND ACCESSORIES INTO YUGOSLAVIA, 1928-1930

Country	1928		1929		1930	
	Kilos	Value †	Kilos	Value †	Kilos	Value †
Austria.....	324, 154	\$46, 130	446, 081	\$78, 476	324, 349	\$42, 440
Hungary.....	602, 182	152, 583	288, 258	78, 400	77, 787	16, 055
Germany.....	1, 059, 236	174, 265	1, 002, 036	153, 128	1, 054, 075	134, 710
Czechoslovakia.....	680, 520	117, 543	634, 590	101, 092	328, 545	55, 251
Other.....	9, 953	2, 714	21, 055	4, 171	42, 692	10, 311
Total.....	2, 676, 095	493, 235	2, 392, 020	415, 267	1, 827, 448	258, 767

† Converted to U. S. currency at the rate of 1 dinar equaling \$0.0176.

STEAM, GAS, AND INTERNAL-COMBUSTION ENGINES

The use of steam engines in Yugoslavia is a considerable factor in the machinery trade because of the cheapness of coal and wood, while other engines are relatively expensive to operate. Austrian and German horizontal steam engines are the best introduced. Lack of mechanical specialists in the country renders it difficult to secure appreciation of the newer types, although local trade is beginning to see the advantages of the high-quality engines recently introduced on a small scale by British and Belgian manufacturers. The type of internal-combustion engine chiefly in use is the two-cycle vertical engine, the leading suppliers being Germany, Hungary, and Czechoslovakia. To secure a share of the business, American manufacturers would have to allow liberal terms.

The imports of steam, gas, and combustion engines into Yugoslavia are shown in the table following.

IMPORTS OF STEAM, GAS, AND INTERNAL-COMBUSTION ENGINES INTO YUGOSLAVIA, 1928-1930

Country	1928		1929		1930	
	Kilos	Value †	Kilos	Value †	Kilos	Value †
Austria.....	859, 265	\$166, 421	390, 457	\$93, 600	245, 514	\$74, 544
Hungary.....	905, 763	292, 364	828, 659	285, 822	450, 048	120, 016
Germany.....	1, 454, 583	435, 686	1, 433, 444	448, 094	1, 304, 447	368, 368
Czechoslovakia.....	467, 888	142, 671	857, 914	244, 741	708, 104	117, 915
United States.....	35, 381	22, 300	72, 668	31, 886	45, 425	18, 393
Other.....	291, 415	112, 106	467, 734	159, 021	475, 208	161, 028
Total.....	4, 014, 295	1, 171, 545	4, 050, 876	1, 263, 164	3, 228, 746	860, 264

† Converted into U. S. currency at the rate of 1 dinar equaling \$0.0176.

SAWMILL AND WOODWORKING MACHINERY

The industrial sawmills in Yugoslavia are largely concentrated in Croatia and Slavonia and range in size from 6 to 24 frames. They are equipped with modern machinery, most of the saws being of the vertical frame type with auxiliary circular and band saws. The modern American type of band saw is rare, the Central European frame saw apparently being preferred. Saw blades are furnished principally by German manufacturers firmly established in the market by open credits of long duration, although there is some local manufacture. Furniture-making machinery is of a modern and efficient type, and recently there has been a trend toward interest in greater plywood production. Probably the first instance of American woodworking machinery being used in Yugoslavia was the recent installation, in a plant near Belgrade, of plywood machinery made in the United States.

The possibilities of selling American woodworking equipment are not great. The woodworking industry is not as active as it has been. Hardwood supplies in the country are being depleted, hence there is little probability of new installations. The same applies to the woodworking trades in general, the country being fully supplied with machinery. The only visible requirements are special machines from time to time and occasional replacements of obsolete machines.

German, Czechoslovakian, and Austrian firms know the market thoroughly and are in turn well known to the customers. They know exactly the status of individual firms and give terms and credits that otherwise would not be possible. In woodworking machinery, as in other lines, European suppliers have a distinct advantage because of their proximity.

The imports of woodworking machinery into Yugoslavia in the years 1928, 1929, and 1930 are shown in the table following.

IMPORTS OF WOODWORKING MACHINERY INTO YUGOSLAVIA, 1928-1930

Country	1928		1929		1930	
	Kilos	Value ¹	Kilos	Value ¹	Kilos	Value ¹
Austria.....	140,772	\$42,935	184,387	\$41,698	131,698	\$37,705
Hungary.....	32,490	6,998	10,410	2,464	33,660	7,198
Germany.....	541,443	176,104	480,771	167,966	415,164	177,350
Czechoslovakia.....	197,818	43,781	154,587	44,761	146,337	70,280
United States.....	1,200	422			44,076	18,480
Other.....	23,443	5,433	20,679	6,010	6,261	2,693
Total.....	937,166	275,673	850,834	262,899	777,196	313,706

¹ Converted to U. S. currency at the rate of 1 dinar equaling \$0.0176.

METAL-WORKING MACHINERY

The present users of metal-working machinery in Yugoslavia are largely confined to the mining shops, foundries, railway, street-car, and aviation shops, and small machine shops. There are several airplane-engine manufacturers, operating either through French control and management or assistance. As the country approaches a more advanced stage of manufacturing, imports of lathes, planers,

drills, milling machines, etc., will become of importance sufficient to justify efforts on the part of American metal-working machine manufacturers to secure a share of the business. At present most of the equipment used is of German origin, a large part of which originally was delivered on reparations account.

IMPORTS OF METAL-WORKING MACHINERY INTO YUGOSLAVIA, 1928-1930

Country	1928		1929		1930	
	Kilos	Value ¹	Kilos	Value ¹	Kilos	Value ¹
Austria.....	261, 657	\$541, 591	559, 453	\$122, 269	381, 474	\$60, 063
Hungary.....	97, 805	15, 826	71, 501	16, 856	36, 323	10, 555
Germany.....	602, 692	194, 861	561, 319	176, 798	506, 481	183, 010
Czechoslovakia.....	58, 470	13, 671	61, 411	13, 405	153, 047	29, 511
United States.....	7, 693	11, 591	4, 801	3, 891	2, 695	2, 511
Other.....	301, 091	112, 634	63, 457	24, 588	58, 807	26, 363
Total.....	1, 329, 408	403, 174	1, 321, 942	357, 807	1, 138, 827	312, 313

¹ Converted to U. S. currency at the rate of 1 dinar equaling \$0.0176.

TEXTILE MACHINERY

On the nucleus of a textile industry established prior to the World War in Slovenia and Croatia, Yugoslavia in the past 10 years has developed the industry remarkably. To-day there are 43 cotton mills in the country with 133,000 spindles and 10,700 looms, in addition to 28 woolen mills with 63,000 spindles, with some of the woolen mills being operated in conjunction with the cotton spinning and weaving plants. The industry now employs 18,000 workmen and is largely in the hands of Czechoslovak capital. The bulk of the equipment is from Germany, furnished, to a considerable extent, through reparations deliveries. The Government has decided that textile enterprises in the country can be erected only with new machinery, and there is a movement afoot that existing establishments, to be enlarged or reorganized, must use first-class equipment only. American manufacturers have made practically no effort to cultivate this market, and the use of European machinery is no doubt chiefly due to the fact that European capital controls the industry.

The table following indicates imports of textile machinery into Yugoslavia for the years 1928, 1929, and 1930.

IMPORTS OF TEXTILE MACHINERY INTO YUGOSLAVIA, 1928-1930

Country	1928		1929		1930	
	Kilos	Value ¹	Kilos	Value ¹	Kilos	Value ¹
Austria.....	123, 088	\$31, 259	199, 256	\$60, 706	641, 665	\$103, 177
Hungary.....	12, 608	2, 198	33, 180	8, 081	234, 794	53, 277
Germany.....	997, 945	313, 546	2, 085, 823	659, 167	1, 097, 091	274, 240
Czechoslovakia.....	1, 144, 999	189, 861	1, 316, 011	233, 951	1, 025, 286	162, 250
United States.....	16, 015	11, 633	96, 210	16, 315	4, 672	3, 150
England.....	267, 092	88, 948	99, 048	32, 138	313, 640	50, 107
France.....	814	464	36, 822	11, 684	89, 423	20, 102
Other.....	265, 132	64, 634	68, 128	28, 067	184, 321	46, 240
Total.....	2, 827, 693	702, 543	3, 934, 478	1, 050, 109	3, 590, 892	712, 543

¹ Converted to U. S. currency at the rate of 1 dinar equaling \$0.0176.

CEMENT-MAKING MACHINERY

The cement industry of Yugoslavia is well developed, with world-wide export connections. There are 12 important plants with a total capacity of close to 1,000,000 tons annually. They are situated for the most part on the Adriatic coast and use German and Austrian machinery chiefly. The industry is at present in a slump, because of reduction in export as well as domestic demand, but since general conditions tend toward expansion, possibilities of supplying some American equipment to present and future plants are believed to exist when conditions improve.

IMPORTS OF CEMENT INDUSTRY MACHINERY INTO YUGOSLAVIA, 1928-1930

Country	1928		1929		1930	
	Kilos	Value ¹	Kilos	Value ¹	Kilos	Value ¹
Austria.....	9,464	\$3,061	32,364	\$9,013	168,599	\$69,165
Hungary.....	646	158	4,613	2,878	8,819	2,288
Germany.....	314,623	53,740	726,801	99,163	1,444,300	291,915
Czechoslovakia.....	30,179	4,341	41,211	7,719	572,787	41,079
United States.....					104	55
Other.....	24,389	10,486	14,438	12,283	176,595	37,094
Total.....	379,301	71,788	819,427	131,056	2,371,204	441,596

¹ Converted to U. S. currency at the rate of 1 dinar equaling \$0.0176.

MISCELLANEOUS INDUSTRIAL MACHINERY

Items in the Yugoslav classification "Other industrial machinery" which should be of peculiar interest to American manufacturers include laundry machinery, refrigerating machinery, bread-making equipment, food manufacturing and canning machinery, confectionery-making equipment, etc. All these items are becoming increasingly necessary to the proper development of the country. Good salesmanship on this class of machinery in the near future should do much to permit American manufacturers to secure a foothold in the market. Brief summaries of further items included in this classification follow. The table shows countries of origin of Yugoslav imports of "Other industrial machinery."

IMPORTS OF MISCELLANEOUS INDUSTRIAL MACHINERY INTO YUGOSLAVIA, 1928-1930

Country	1928		1929		1930	
	Kilos	Value ¹	Kilos	Value ¹	Kilos	Value ¹
Austria.....	1,444,652	\$537,319	1,665,548	\$607,830	1,438,719	\$539,693
Hungary.....	322,383	101,501	422,111	126,440	330,583	110,231
Germany.....	2,934,819	1,113,390	3,302,070	1,163,011	3,749,495	1,308,132
Czechoslovakia.....	1,168,076	266,202	987,365	275,487	1,847,652	415,434
United States.....	126,321	60,191	212,980	135,243	198,605	71,139
France.....	603,716	135,601	336,325	137,396	165,043	78,090
Other.....	349,259	184,748	444,174	213,864	840,680	310,891
Total.....	6,049,226	2,398,052	7,370,573	2,659,271	8,571,777	2,833,610

¹ Converted to U. S. currency at the rate of 1 dinar equaling \$0.0176.

MINING MACHINERY

Brief reference has previously been made to Yugoslavia's extensive mineral wealth. However, since the flourishing mining activities carried on in the territory under Roman rule, this wealth has been dormant, largely because of the effects of the Turkish invasion. Since gaining their independence the people of Yugoslavia have begun to exploit the mines. Because of lack of capital and technical skill little has been accomplished, although it can be said that mining in the country is now on the eve of industrialization.

Some idea of the growth of Yugoslav mining since 1919 can be gained from the fact that, through Government assistance to private enterprise, coal production increased from 2,240,000 metric tons in 1919 to 5,268,000 in 1930; iron ore from 318 to 431,000 tons; copper ore from 16,000 to 493,000 tons; lead ore from 54,000 to 184,000 tons; bauxite from 1,213 to 94,700 tons; and chrome ore from 1,300 tons in 1924 to 54,000 in 1930. A complete list of the known minerals in the country would include coal, iron, copper, chrome, manganese, lead, zinc, gold, silver, pyrites, mercury, mica, antimony, magnesite, bauxite, salt, asphalt, and gypsum.

Two large mining properties are being exploited in the country on a large scale at the present time. These produce lead and copper ore; both are foreign enterprises. However, there are more than a score of other properties looking for capital for development. Also, a number of American interests are looking into mining possibilities. The policy of the Government is to attract foreign capital for mining and to develop, if possible, a metallurgical industry, particularly in iron and steel, copper, lead, zinc, and aluminum.

Naturally with the Yugoslav mining industry in a state of flux, the market for equipment is not yet large. But if favorable developments occur, there is no doubt but that equipment for prospecting will be greatly needed. At present only a few hundred drills a year are in demand, but 90 per cent of these are of recent American manufacture.

In general, the mining machinery made in the United States thus far used has been so satisfactory that subsequent requirements will undoubtedly be ordered from the same source. The principal users of drills are a British company affiliated with American mining interests and a French concern mining and smelting copper. The same is true of air compressors, drill sharpeners, and ore-milling machinery. Recently the British concern installed a modern American ore-milling and flotation plant which is reported to be giving splendid results. The present annual consumption of air compressors is about 50 units, there being a little German, Austrian, and Swedish competition. Incidentally, air compressors should have an increasing outlet in other channels, such as railway construction. Other classes of equipment in which it is believed an eventual market will be opened up, particularly if American engineers become participants on a larger scale in Yugoslav mining, are American aerial tramway equipment, coal cutters, ore cars, and pumping machinery, as well as smelting and refining apparatus.

As previously stated, coal production totaled 5,268,000 tons in 1930. Although the coal reserves are probably important, their development has not advanced very far as yet.

Practically no cutting and loading machines are used in the coal mines at present although mechanization along other lines has made some progress, notably in the field of drilling, screening, sorting, washing, drying, and transporting.

The industry has not yet developed to a point where it has been necessary to mine at any great depth. As a consequence, all of the operations have been comparatively simple. The quality of the coal is such that it yields rapidly to the hand pick. It is understood that the mine roofs are generally weak, with the result that operators have hesitated to employ large machinery that might start falls through vibration. Furthermore, galleries are usually small and narrow and the steepness of the slope adds to the difficulties of working with machinery of any kind.

Although most of the coal and lignite is loaded by hand shovels, there are two or three mines equipped with belt conveyors, and others have rope haulways at the surface, connecting the mines with the railways. It is quite probable that as the country develops the trend in the direction of mechanizing these mines will move more rapidly than heretofore.

CONSTRUCTION MACHINERY

Yugoslavia has done a very large amount of building in the past few years and faces a good deal more in the next 5 or 10. In connection particularly with road building, the country will become a growing market for road rollers, stone crushers, compressors, etc. Steam road rollers are now furnished chiefly by British and German manufacturers, but there should soon be a market for 20 to 30 units a year of motor road rollers, because of long distances and sparsely settled communities in many regions where road building will be undertaken. There should also be an outlet for 20 to 30 modern stone-crushing units annually. Most of the crushers now used are of German origin. So far there are no foreign interests engaged in construction contract work in Yugoslavia, except in railway and irrigation work, but undoubtedly foreign interests will eventually undertake highway construction, buildings, etc. A good deal of the State railway work is being done by French concerns which are using German equipment arriving via reparations, but which have recently utilized American machines for certain work. While the use of excavating machinery is new because of prevalence of hand labor, and is predominantly German, there is every reason to believe that American excavators will find increasing business in Yugoslavia.

SHOE MACHINERY

There are half a dozen important shoe manufacturers in Yugoslavia, and these are generally provided with modern machinery. However, at present these factories are not working at capacity because of the keen competition of a Czechoslovak firm which has been able to lay down shoes in Yugoslavia at prices under those of the local industry, in spite of protective duties. There is little possibility, therefore, that new shoe factories will be immediately started, or that existing plants will expand materially. The machinery used is imported chiefly from Germany and to a lesser extent from Austria

and Czechoslovakia. There are some American machines in use, imported several years ago.

CRANES AND ELEVATING MACHINERY

There is little utilization of crane and elevating machinery in Yugoslavia. Most of the equipment has been imported by the Government on reparations. A new Government program which embodies the construction of grain elevators, may be considered interesting to American manufacturers of grain-handling equipment. The program will probably be initiated and carried through, at least in a preliminary way, within the next year or two. American manufacturers have possibilities in this general line, particularly in connection with public contract work and mining, although the competition of European makers must be reckoned with.

GRAIN-MILLING MACHINERY

There are perhaps 40 modernly equipped grain mills in the country using German, Austrian, Hungarian, and Czechoslovak machinery. Because of the agricultural crisis which began in 1930 imports of grain-milling machinery have fallen 45 per cent below normal.

SUGAR MACHINERY

There are eight beet-sugar mills located in various parts of the country, the largest having a capacity of 2,400 tons of beet sugar per day. Czechoslovak interests have been important factors in Yugoslavia's sugar industry and trade, and a great deal of the machinery has been imported from Czechoslovakia. In recent years, however, the bulk of the sugar machinery imported has been from Germany.

PUMPING MACHINERY

Water-pumping equipment of all kinds is an important item in Yugoslavia's machinery trade, particularly for the future, in connection with water supply, mining, and reclamation work. The bulk of the industrial steam pumps is imported from Germany, Austria, and Czechoslovakia. There should be a good market for American pumps provided manufacturers actively work the territory.

MARKETING AMERICAN MACHINERY

The general characteristics of the Yugoslav market for industrial machinery involve the keen competition of European manufacturers, notably German, Austrian, Czechoslovak, and Hungarian, low labor costs, conservatism on the part of the average consumer, the fact that the country is pioneering in industrial development, and the very great difficulty incident to securing adequate representation and promotion.

First of all, in most of the existing manufacturing plants skilled labor and foremen, if not ownership and management, are central European. Operators and employees who have been trained in Germany and Austria think technically in German, and the result is

that German or Austrian technical men or business travelers can talk their language. The salesmen can reach Yugoslav cities in 12 to 24 hours. They exhibit machines twice a year, and often these machines are left in the country for display until sold. Because of lack of capital, the Yugoslav consumers are hand-to-mouth buyers. The Germans and Austrians therefore cater to individual needs for spare parts, regardless of the volume, and freely use the parcel post.

Extended terms of credit are often given, some German firms granting three or four years' credit without interest, the installments being payable at regular intervals. In some cases even the intervals are not stated, the contract being that the buyer may pay at convenience, provided the total is retired within the stipulated period. There is, too, the factor of price competition, but it has been estimated that in a good many cases American machines are not so much out of line with similar German products as formerly and often can compete readily on an outright price basis.

Naturally prices and initial costs weigh very heavily with Yugoslav consumers of machinery. Their labor cost is relatively low, while their outlet for manufactured products is still restricted. Furthermore, because of the high interest rates obtaining, the ability of industrialists to get banking accommodations is hampered. These things deter them from buying anything which savors of elaborate equipment, although they may be convinced of the economic soundness of doing so. Again, the geographic remoteness of the United States, difficulties as to correspondence, language, and deliveries of materials are additional obstacles.

All these factors make it more imperative that an American manufacturer who desires to enter the Yugoslav market should spare no efforts to secure the best available representation; yet difficulties peculiar to the market present themselves. Yugoslav plant operators may know superficially the world-wide reputation of American goods, and probably many of them would desire American machinery installations, but to bridge the gap between the prospect's desire and the signing of the order blank requires the utmost technical skill and salesmanship. The explanation is simple. The country has been for so many hundred years an agricultural one, and it is only now taking the first steps on the path to industrialization. It is this latter fact which makes Yugoslavia an interesting industrial-machinery market. What many firms lack in technical knowledge and salesmanship they may make up in vision, enthusiasm, and connections.

Until comparatively recently there were virtually no local concerns representing American machinery houses. In the past few years, however, several Yugoslav firms of small capital, acting merely as commission agents with practically no previous acquaintance with American machinery or methods of doing business, have been able to do very satisfactory work for their American principals, who in turn have given their agents all possible encouragement and support.

Despite the present scarcity of firms in Yugoslavia capable of handling American industrial machinery, it must be remembered that conditions are gradually changing. Some new firms, by virtue of connections and organization, may prove excellent machinery

distributors. No rule can be laid down as to the best manner in which American firms may contact with such firms, since each individual case must be thoroughly studied in relation to the existing conditions.

The type of concern that buys machinery from the manufacturer and distributes on its own account is exceedingly rare in Yugoslavia. The best avenue of merchandising is through a good agent, to be personally selected by the manufacturer's factory representative, if possible. Several American firms, seeing possibilities, have not hesitated to support these agents in every way. Such manufacturing concerns are usually in a position to effect short-term deliveries and spare-parts service, a few maintaining stocks either in a neighboring country or in Yugoslavia. Local agency firms generally have a small staff of engineers and travelers, and it is their business to keep in touch with prospects all over the country and to be ready to make quotations.

It would be preferable, if the nature of the line permits and other things are equal, that the agency firm should have its headquarters in Belgrade. To-day, possibly 70 per cent of the business in machinery items is handled in Belgrade, although it is important to maintain contact through the Belgrade organization with such centers as Zagreb, Ljubljana, and Sarajevo, depending on the line.

Lists of industrial machinery distributors in Belgrade are available in the commercial intelligence division of the Bureau of Foreign and Domestic Commerce, Washington, D. C., and will be furnished on request.

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