

As already mentioned, the chief quality of the Ruhr coal is that it can easily and cheaply be converted into first-class coke. In fact, the percentage of coke produced in the Ruhr district of the total coke production in Germany is much larger than that of coal, as may be seen from the following figures:

COKE PRODUCTION IN GERMANY, IN TONS.

	1922 <sup>1</sup>	1921	1920	1913
Ruhr.....	22,800,000	24,203,000	21,546,000	29,379,000
Total Germany.....	29,409,000	27,921,000	25,177,000	34,630,000
Per cent Ruhr of total	76.8	86.7	85.6	84.8

<sup>1</sup> Estimated.

The by-products of coal and coke are of no less importance to many German industries than these raw materials themselves, and the abundance of coal has made the Ruhr the center of Germany's coal and coke by-product industries upon which the dye and other chemical industries depend. The value of the total output of coal and coke by-products in the Ruhr as compared with that of Germany may be seen from the following table:

PRODUCTION OF BY-PRODUCTS OF BITUMINOUS COAL.

	Tar and tar products.	Benzol.	Ammonia.	Illuminating gas (000 cubic meters).
1913.				
Ruhr district.....	934,546	155,088	390,530	145,863
Total Germany.....	1,152,772	194,425	456,411	161,805
Per cent of Ruhr district.....	81.1	79.8	85.6	90.1
1918.				
Ruhr district.....	893,254	198,410	421,266	280,307
Total Germany.....	1,102,659	247,160	492,142	320,210
Per cent of Ruhr district.....	81.0	80.3	85.6	87.5
1919.				
Ruhr district.....	581,016	113,910	230,358	246,373
Total Germany.....	734,484	146,440	274,167	287,224
Per cent of Ruhr district.....	79.1	77.8	84.0	85.8

The abundance of rich coking coal, coupled with its geographical proximity to the Lorraine iron ore and its closeness to tidewater, has made the Ruhr district not only the greatest coal and coke producing center in Continental Europe, but also the heart of the German steel and iron industry. Of the 288 German blast furnaces operated in 1913 (excluding Luxemburg), 103 were located in the Ruhr district. This region also produced, in 1913, 8,220,000 tons of pig iron, out of a total German output of 17,760,000 tons, or 46.3 per cent. Of

Germany's 159 steel plants in 1913, 91, or 57.2 per cent, were in the Ruhr Valley, and of the 17,617,000 tons of steel produced in 1913, 10,112,000 tons, or 57.4 per cent, came from that region.

Since a large percentage of German mines, steel and chemical plants, and other industries are located in the Ruhr district, one can easily comprehend its importance in Germany's foreign trade. Although no definite figures are available as to the quantity of exported goods originating in the Ruhr, the following data throw some light on the situation. Of the total value of German exports in 1913, amounting to about 10 billion gold marks, about 700 million gold marks represent the value of exported coal, coke, and briquettes, and about 3 billion gold marks the value of the exports of cast iron and steel, which came to a large extent from the Ruhr district. In the importation of food products the Ruhr district is of similar importance.

The economic influence of the Ruhr district upon the rest of Germany is so important that one is justified in saying that the presence of coal in the Ruhr district is largely responsible for the great transformation produced in German industry, whereby Germany changed from an agricultural nation to a highly developed industrial nation.

#### THE GREAT GERMAN COMBINES.

As stated before, the Ruhr district contains the bulk of the coal, iron, and other industries of the nation and furnishes the coal for a large number of public utilities, railways, and other industrial enterprises throughout Germany. Consequently, the Ruhr became the center of Germany's industrial and economic system, which at present is more completely organized and more closely controlled by a small number of combines than is the case in any other country in the world. The powerful combines and syndicates which to-day control Germany's industries have their head offices in the Ruhr or in near-by cities. The activities of these syndicates are so closely connected with the entire industrial structure of the Ruhr district that a discussion of their organization and development is necessary for a more complete analysis of the present industrial status of the Ruhr district.

Long before the outbreak of the war a number of concerns in Germany combined the manufacture of iron and steel products with the production of such primary materials as iron ore, coal, and coke. Although the formation of