mountains, on the ridges of the Valley of East Tennessee, and on the E. slope of the East Gulf Plains vary greatly according to the rocks from which they are derived. In the Cumberland Plateau, in the inner portion of the Highland Rim, and in the W. slope of the East Gulf Plains there is for the most part a light sandy soil, much of it too poor for cultivation.

*Agriculture.—*The total area of farms in the state in 1900 was 20,342,058 acres, of which about one-half was classed as “ improved.” The average size was 90∙6 acres, and the average number of acres of improved land per farm was 45∙6. Of the total farm acreage 68∙8 per cent. was held or operated by owners or part owners, 9∙4 per cent. by cash tenants, 17∙4 per cent. by share tenants, and the remainder under miscellaneous tenure. Some 15∙1 per cent. of all the farms were operated by coloured farmers, who in 1899 produced 22∙2 per cent. of the agricultural products of the state, not fed to live stock. The total value of farms, including buildings, was $265,150,750 (the value of buildings being 23∙8 per cent. of the total); in addition implements and machinery valued at $15,232,670 were employed. The principal products and their values in 1909 were: wheat, 8,320,000 bushels ($9,568,000); Indian corn, 78,650,000 bushels ($55,055,000); oats, 4,000,000 bushels ($2,120,000); cotton, 240,000 bales; tobacco, 53,290,000 lb, ($4,156,620). The average yield per acre in r909 was, of wheat 10∙4 bushels, of Indian corn 22 bushels, of cotton (1908) 218 lb, of tobacco 730 lb. Cotton is not raised to any extent except in the rich alluvial land of the Mississippi Valley. Tennessee ranked fifth among the tobacco-growing states in 1899 and fourth in 1909. Considerable areas in the central part of the state are admirably adapted for grazing and the raising of fine horses and cattle. The value of live stock on farms and ranges on the 1st of January 1910 was as follows: horses, $36,288,000; mules, $35,670,000; milch cows, $8,828,000; other cattle, $7,797,000; swine, $8,216,000.

*Mining.—*Previous to the close of the Civil War (1865) mining had been carried on upon a comparatively small scale, but im­mediately thereafter attention was attracted to the extensive and valuable deposits of coal and iron ore, and their development was begun on a large scale. The minerals of most commercial im­portance are coal, iron ores, copper ores, marble and phosphate rock.

About 5000 sq. m., or almost one-eighth of the area of the state, is underlaid by the coal measures, which occupy a belt in the Cumber­land Plateau from 50 to 70 m. wide extending entirely across the easterly part of the state in a north-easterly, south-westerly direction. The coal is of the soft or “ bituminous ’’ kind, generally of excellent quality, and much of it suitable for conversion into gas and coke, of which latter -468,092 long tons were produced in 1905. The mining of coal in the state has developed rapidly in connexion with the notable expansion of the iron and steel industries of the South. In 1908 the product was 6,199,171 tons, valued at $7,118,499.

Iron orc is found and has been mined in many places in the state. The deposits of most commercial importance are the limonites and brown hematites found west of the Cumberland Plateau, and the fossiliferous red hematite which crops out along the eastern base of that plateau. In the early history of Tennessee iron of superior quality was produced, in small charcoal furnaces, from the brown hematites of the central part of the state. A little later, considerable quantities of this iron were shipped and marketed at Pittsburg. After the close of the Civil War (1865) the iron resources of the state attracted renewed attention, particularly the brown and red hematites, and large and modern furnaces were erected in the Chattanooga district to reduce these ores. The output of iron ore was 874,542 tons (valued at $1,123,527) in 1902, when Tennessee ranked fifth among the iron ore producing states. Owing to the industrial depression following 1907 the output was only 635,343 tons, valued at $876,007, in 1908.

The only copper mines of industrial importance are the Ducktown mines in the extreme south-eastern corner of the state. Copper has been mined here since 1847, and notwithstanding the difficulties of transportation through a rough mountain region, mines were rapidly developed, and in 1855 over 14,000 tons of ore, worth more than a million dollars, were marketed. These mines were the principal source of the supply of copper for the Confederate States during the Civil War. The opening, in 1869, of a railway passing directly through the mining territory, made it possible to work the mines more profitably, and operations were developed on a large scale. In 1908, 618,806 short tons of ore were mined, producing, from the smelters on the ground, 19,710,103 lb of metallic copper. The ore is a sulphide, and in 1898 an extensive plant was erected to manufacture sulphuric acid as a by-product.

In 1892-1893 large deposits of phosphate rock of high quality were discovered in the central-southern part of the state about 60 m. south-west of Nashville, and the rapid development of quarries was begun. The output increased from 19,188 tons in 1894 to 638,612 tons (valued at $3,047,836) in 1907, when Tennessee ranked second among the states of the Union in the production of phosphate- rock. The introduction of this new supply had a marked effect on the fertilizer business of the country.

Inexhaustible deposits of marble are found in Eastern Tennessee in an area about 100 m. long by 20 m. wide, the centre of which is Knox county, the deposits extending southward into Georgia. These marbles are of a distinctive character, being usually mottled in bright shades of red, pink, chocolate and grey. They are em­ployed principally for interior decoration, and were thus largely used in the capitol at Nashville and in the National Capitol at Washington. Systematic quarrying of these marbles was begun as early as I838, and the output of the quarries has constantly increased since the Civil War.

In 1908 Tennessee produced 179 ozs. of fine gold and 57,696 ozs. of fine silver, a part of each coming, as a by-product, from the copper refineries. Zinc ore is mined on a small scale in the eastern part of the state, the product in 1908 being 341 short tons of metallic zinc valued at $32,054. Among the other minerals found and mined to a limited extent are lead, manganese, barytes, fluorspar, slate, granite and petroleum. The total value of all minerals was $19,277,031 in 1908.

*Manufactures.—*To an unusual degree the natural resources of the state supply the raw material for its manufactures. The ownership of industrial establishments is largely in the hands of individuals, firms, and comparatively small corporations, rather than of large combinations, the average capital per establishment in 1905 being about $32,000. The amount of capital invested in manufacturing in 1880 was $20,092,845, and the value of the products was $37,074,886. In 1905 capitalization (under the factory system) had increased to $102,439,481, and value of products to $137,960,476. This rapid industrial growth has been due in no small degree to the great natural resources of the state and its excellent transportation facilities. Judged by the value of products, regardless of cost of materials used, the flour and grist mill industry ranked first in 1905 ($25,350,758). Second in importance was the timber and lumber industry and lumber products ($21,580,120.)

The state has always held an important place in the iron and steel industry. The capital invested in blast furnaces in 1905 was $5,939,783, they employed i486 persons, and the value of their products was $3,428,049. The foundries and machine shops of the state had a capital of $5,516,453, they gave employment to over 4000 persons, and the value of their products was $6,946,567. These figures are exclusive of the numerous and large railway repair shops, the value of whose products was $5,839,445.

The manufacture of leather is another important industry. Large tanneries were attracted to the state, soon after the Civil War, by the abundance of tan bark in the forests, and the cheapness of labour. In 1905 $4,013,289 was invested in the manufacture of leather, and the products were valued at $3,583,871.

In 1905 the textile industry had an invested capital of $8,583,133, and a product valued at $6,895,203. The manufacture of cotton goods was the chief sub-division of the industry, employing 153,375 spindles, 3008 looms and 1787 knitting machines.

The printing and publishing industry of the state had an invested capital of $4,408,584 and products valued at $5,063,580. The manu­facture of malt and distilled liquors employed (1905) a capital of $3,220,899, and the value of the product was $2,400,256. Among the other important manufacturing industries of the state and the value of their products in 1905 are: men’s clothing, $2,961,581; patent medicines, $2,680,610; cotton-seed oil and oil cake, $3,743,927; tobacco, $404,241; artificial ice, $727,263; agricultural implements, $768,895; and coke, $809,801.

*Transportation.*—The railway mileage of Tennessee increased from 1253 m. in i860 to 3184 in 1900, and 3480 on the 1st of January 1909. The principal railways operating in the state in 1910 were the Louisville.& Nashville, the Nashville, Chattanooga & St Louis, the Cincinnati Southern and the Southern. The navigable water­ways include the Mississippi river (which forms the western boundary of the state); the Tennessee river, navigable throughout its length, from Knoxville; and the Cumberland river, navigable throughout its length in the state. Chattanooga, Knoxville, Memphis and Nashville are ports of entry.

*Population.—*The total population in 1880 was 1,542,359; in 1890, 1,767,518; in 1900, 2,020,616; and in 1910, 2,184,789.@@1 Of the total population in 1900, 1,522,600 were native whites, 17,746 were foreign-born, 480,243 were negroes, 108 were Indians, 75 were Chinese and 4 were Japanese. Of the in­habitants born in the United States 38,561 were born in Georgia, 36,052 in Kentucky, 28,405 in North Carolina, 27,709 in Ala­bama, and 25,953 in Virginia. Of the foreign-born 4569 were Germans, 3372 were Irish and 2207 were English. Of the total population 59,032 were of foreign parentage—*i.e.* either one or both parents were foreign-born—and 11,164 were of German, 9268 of Irish and 3532 of English parentage on both the father’s and the mother’s side. Of the total population of the state in 1906, 697,570 were members of religious denominations. There

@@@1 The populations in other census years were as follows: (1790), 35,691; (1800), 105,602; (1810), 261,727; (1820), 422,823; (1830), 681,904; (1840), 829,210; (1850), 1,002,717; (i860), 1,109,801; (1870), 1,258,520.