

## INDIA AS A COAL PRODUCER.<sup>1</sup>

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### WORLD PRODUCTION.

The total world production of coal and lignite has been steadily growing since 1860, except during the last decade when the world witnessed an unprecedented economic depression. The production during this period is given for a few representative years:

Year						Million metric tons.
1860	..	..	..	..	..	138
1870	..	..	..	..	..	236
1880	..	..	..	..	..	337
1890	..	..	..	..	..	513
1900	..	..	..	..	..	772
1910	..	..	..	..	..	1,165
1913	..	..	..	..	..	1,345
1923	..	..	..	..	..	1,359
1929	..	..	..	..	..	1,559
1936	..	..	..	..	..	1,446

The peak production was in the year 1929, but it is expected that it will be exceeded in 1938, though the final statistics for the latter year are not yet available.

The output of the chief countries is given in Table 1 from which a general idea of the relative importance can be gained. The United States, Germany, United Kingdom and U.S.S.R. are now the chief producers, followed far behind by a group comprising France, Japan, Poland, Belgium, India and China. India thus occupies about the ninth or tenth place in order of importance. (See figure 1.)

### INDIAN PRODUCTION.

Table 2 shows the output of the principal fields of India since the beginning of the present century. By far the largest part comes from the Lower Gondwana fields confined to eastern India in the Damodar-Son, Mahanadi and Godavari valleys and the Chhattisgarh and Satpura regions. The Gondwana coal occurrences of the eastern Himalayan regions are of little or no economic importance. Amongst the Tertiary fields those in Assam are the most important.

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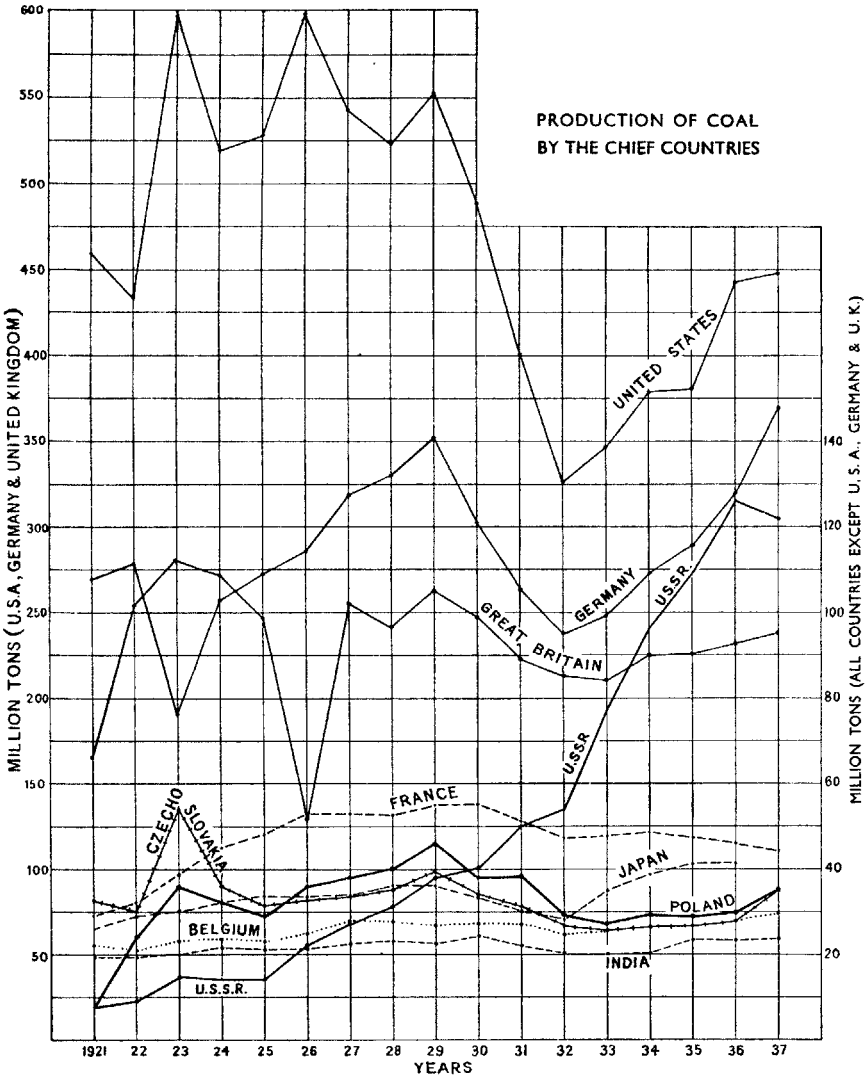
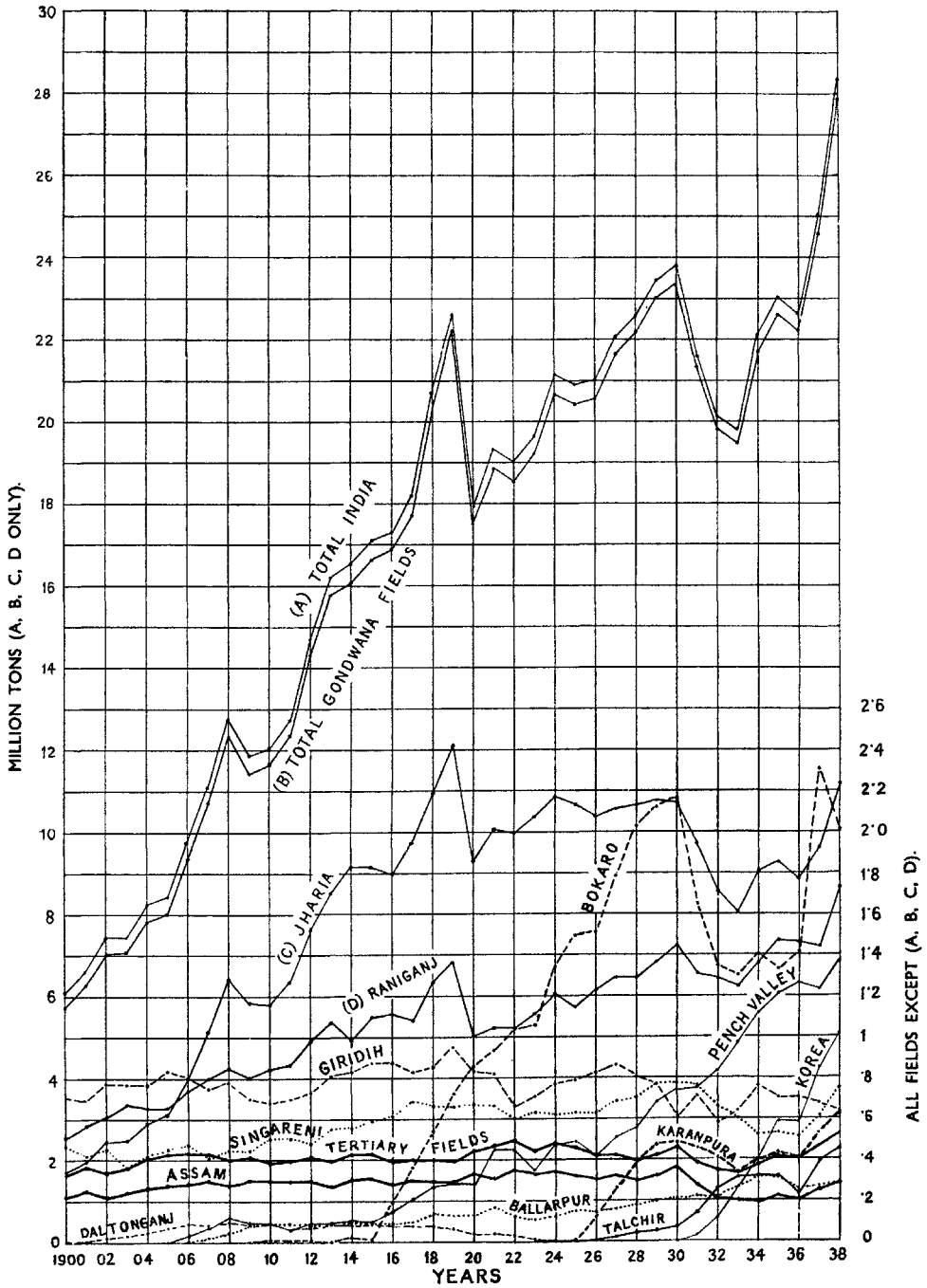


FIG. 1.

The aggregate output of the Tertiary fields was a little over 5 per cent of the total at the beginning of the century but it has dwindled to about 1.8 per cent at the present time. (See figure 2.)

Of all the Indian fields Jharia and Raniganj are much the most important because of their large production and also because of their containing excellent coal and being the nearest fields to one of the largest consuming centres of India.



PRODUCTION OF COAL IN INDIA, BY FIELDS.

FIG. 2.

TABLE I.—Production of Coal (in million metric tons).

A—Anthracite; C—Bituminous Coal; L—Lignite.

	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937
U.S.A.	A	82.1	49.6	84.7	79.8	56.1	76.6	68.3	67.0	62.9	54.1	45.2	44.9	51.9	46.3	49.5	46.2
"	C & L	377.3	511.8	438.8	471.8	471.8	520.1	469.7	485.3	424.1	346.6	281.0	302.7	326.0	335.0	393.8	401.4
Canada	L	3.0	3.2	3.2	3.2	3.3	3.2	3.4	3.5	3.6	3.1	2.6	3.4	2.9	3.2	3.5	3.3
S. America	..	1.3	1.1	1.2	1.5	1.4	2.1	1.9	2.0	2.0	2.2	1.8	2.2	2.5	2.8	2.6	2.9
Belgium	..	21.7	21.2	22.9	23.4	23.1	25.3	27.6	26.9	27.4	27.0	24.4	25.3	26.4	26.5	27.9	29.7
Czecho-slovakia	..	11.6	10.5	16.3	15.2	12.6	14.2	14.0	14.6	16.5	14.4	13.1	10.9	10.7	11.0	12.2	17.0
"	L	21.0	19.2	37.7	20.5	18.6	18.5	19.6	20.4	22.6	19.2	17.9	15.8	15.1	15.2	15.9	18.0
France	..	29.0	31.9	38.5	44.9	48.0	52.4	52.7	52.4	54.9	56.0	51.0	47.2	47.9	48.6	47.1	44.4
Germany	C	145.8	141.2	71.3	133.2	132.6	145.3	167.2	164.0	177.0	155.9	130.0	115.1	120.6	142.5	158.4	184.4
"	L	123.0	137.2	118.2	124.6	139.7	139.2	150.5	165.6	175.2	145.9	133.3	122.6	126.8	146.0	160.3	184.7
Hungary	..	6.4	7.1	7.7	7.2	6.3	6.6	7.0	7.2	7.8	7.0	6.9	6.8	6.7	6.9	7.5	7.9
Netherlands	..	4.3	4.9	5.6	6.4	11.3	10.0	9.7	11.1	11.7	12.3	13.0	12.8	12.6	12.4	12.0	14.4
Poland	..	7.8	24.2	36.3	32.2	29.1	35.8	38.2	40.7	46.3	37.5	38.2	28.8	27.3	29.2	28.6	35.2
U.S.S.R.	..	7.5	8.9	14.5	13.9	14.3	22.2	27.6	30.6	38.4	39.9	50.4	53.6	77.7	96.2	109.0	122.6
Spain	..	5.4	4.7	5.3	6.5	6.5	6.9	7.0	6.8	7.4	7.5	7.5	7.2	6.3	6.2	7.3	..
United Kingdom	..	165.8	253.6	280.4	271.4	247.0	128.3	255.2	241.2	262.0	247.8	223.0	212.1	210.4	224.3	225.8	236.9
India	..	19.5	19.3	20.0	21.5	21.2	21.3	22.4	22.9	22.5	24.2	22.0	20.5	20.1	20.4	23.4	23.7
China	..	19.9	22.7	18.6	21.0	21.2	..	18.3	25.1	..	..	27.7	28.0	28.4	32.7	26.8	27.1
Japan	..	26.0	29.1	30.7	32.0	33.5	33.7	33.4	35.9	36.1	33.5	30.0	28.2	34.7	38.7	40.9	41.2
South Africa	..	10.3	8.8	10.8	11.8	12.3	12.9	12.6	13.0	12.2	10.9	9.9	10.7	12.2	13.6	14.8	15.5
Australia	..	13.1	12.5	12.9	14.1	14.7	14.5	15.2	13.6	12.3	11.0	10.7	11.3	11.8	12.6	13.3	14.6
World Total..		1,194	1,226	1,359	1,357	1,372	1,365	1,470	1,464	1,559	1,413	1,258	1,124	1,176	1,284	1,329	1,446

TABLE 2.—Output of coal in India by the principal fields (in thousands of long tons).

	1900	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	
Jharia	1,711 28.0	1,947 29.8	2,421 32.6	2,494 33.5	2,890 35.2	3,071 36.5	4,077 41.7	5,179 46.5	6,459 50.6	5,833 49.1	5,795 48.1	6,374 50.1	7,653 52.0	8,608 53.1	9,147 55.6	9,141 53.4	8,950 51.9	9,784 53.7	10,952 52.8	12,146 53.7	9,294 51.7	10,069 52.2	9,936 52.3	10,346 52.6	10,846 51.2	10,677 51.1	10,374 49.4	10,583 47.9	10,665 47.3	10,786 46.1	10,754 45.2	9,755 44.9	8,551 42.4	8,015 40.5	9,058 41.1	9,245 40.2	8,830 39.1	9,601 38.4	11,144 39.2	
Raniganj	2,552 41.7	2,842 42.8	3,042 41.0	3,067 41.3	3,350 40.8	3,263 38.8	3,651 37.3	3,981 35.7	4,222 33.1	4,036 34.0	4,213 34.9	4,312 33.9	4,944 33.6	5,327 32.9	4,946 30.0	5,485 32.1	5,535 32.1	5,376 29.5	6,369 30.7	6,815 30.1	4,998 27.8	5,212 27.0	5,203 27.4	5,557 28.3	6,035 28.5	5,730 27.4	6,125 29.2	6,472 29.3	6,460 28.7	6,828 29.2	7,219 30.3	6,531 30.1	6,419 31.9	6,266 31.7	6,796 30.8	7,348 31.9	7,305 32.3	7,196 28.7	8,651 30.5	
Bokaro	..	..	..	..	..	..	..	..	..	2	3	*	8	3	17	10	197	361	542	723	858	929	1,037	1,060	1,344	1,495	1,515	1,791	2,027	2,119	2,160	1,657	1,349	1,305	1,399	1,331	1,417	2,309	2,007	
Giridih	713 11.6	695 10.5	777 10.4	767 10.3	773 9.4	829 9.8	803 8.2	750 6.7	782 6.1	705 5.9	679 5.6	704 5.5	731 5.0	807 5.0	825 5.0	873 5.1	866 5.0	824 4.5	847 4.1	950 4.2	831 4.6	819 4.2	659 3.5	714 3.6	769 3.6	787 3.8	819 3.9	855 3.9	804 3.6	771 3.3	614 2.6	713 3.3	583 2.9	636 3.2	761 3.5	709 3.1	698 3.1	675 2.7	636 2.2	
Fench valley	..	..	..	*	..	1	32	75	120	92	88	63	91	90	96	103	155	205	267	285	279	449	453	346	474	486	417	506	556	680	740	750	882	978	1,118	1,214	1,259	1,234	1,369	
Singareni	469 7.6	421 6.3	455 6.1	363 4.9	420 5.1	454 5.4	468 4.8	414 3.7	444 3.5	443 3.7	506 4.2	505 4.0	482 3.3	552 3.4	556 3.4	587 3.4	615 3.7	681 3.7	659 3.2	662 2.9	666 3.7	646 3.4	604 3.2	629 3.2	620 2.9	630 3.0	610 2.9	682 3.1	699 3.1	768 3.3	765 3.2	658 3.0	593 3.0	519 2.6	528 2.4	513 2.2	606 2.7	741 3.0	691 2.4	
Daltonganj (Korea from 1930)	1 ..	4 ..	19 0.2	34 0.5	51 0.6	71 0.8	87 0.9	82 0.7	96 0.8	84 0.7	85 0.7	71 0.5	72 0.5	85 0.5	82 0.5	86 0.5	76 0.4	77 0.4	82 0.4	63 0.3	39 0.2	37 0.2	32 0.2	12 0.1	4 ..	17 0.1	10 ..	..	1	Korea	4	31	114	264	400	580	580	851	1,013	
Karanpura	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	13	124	262	390	467	482	462	410	344	397	425	396	534	626
Talchir	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	5	5	7	13	23	38	47	69	142	254	317	307	309	224	392	448
Ballarpur	..	..	..	..	*	*	1	18	45	85	93	97	86	81	89	95	85	95	135	126	128	171	133	112	128	150	143	159	176	202	212	223	217	256	321	313	247	264	279	
Assam	217 3.5	254 3.8	221 3.1	239 3.2	267 3.3	277 3.3	285 2.9	296 2.7	275 2.2	306 2.6	297 2.5	295 2.3	297 2.0	271 1.7	305 1.9	311 1.8	287 1.7	301 1.7	294 1.4	292 1.3	326 1.8	312 1.6	348 1.8	326 1.7	335 1.6	319 1.5	301 1.4	323 1.5	298 1.3	323 1.4	359 1.5	275 1.3	210 1.1	194 1.0	190 0.9	221 1.0	203 0.9	249 1.0	278 1.0	
Total Gondwana	5,785 94.6	6,265 94.4	7,083 95.4	7,076 95.1	7,803 95.0	7,993 94.9	9,349 95.6	10,720 96.2	12,373 96.9	11,463 96.6	11,636 96.6	12,329 97.0	14,298 97.2	15,814 97.6	16,039 94.4	16,673 97.5	16,863 97.7	17,815 97.8	20,323 98.1	22,239 98.3	17,526 97.6	18,844 97.6	18,520 97.4	19,217 97.8	20,696 97.8	20,447 97.8	20,583 98.0	21,664 98.1	22,153 98.3	23,002 98.2	23,342 98.1	21,332 98.2	19,815 98.3	19,456 98.3	21,691 98.3	22,607 98.2	22,212 98.2	24,571 98.1	27,324 98.2	
Total Tertiary	334 5.4	371 5.6	341 4.6	362 4.9	409 5.0	424 5.1	484 4.4	427 3.8	397 3.1	407 3.4	412 3.4	386 3.0	408 2.8	394 2.4	425 2.6	431 2.5	391 2.3	398 2.2	400 1.9	389 1.7	436 2.4	459 2.4	490 2.6	440 2.2	478 2.3	456 2.2	416 2.0	418 1.9	390 1.7	417 1.8	461 1.9	385 1.8	339 1.7	332 1.7	366 1.7	409 1.8	398 1.8	465 1.9	519 1.8	
Total India	6,119	6,636	7,424	7,438	8,217	8,418	9,783	11,147	12,770	11,870	12,047	12,716	14,706	16,208	16,464	17,104	17,254	18,213	20,722	22,628	17,962	19,303	19,011	19,657	21,174	20,904	20,999	22,082	22,542	23,419	23,803	21,716	20,153	19,789	22,057	23,017	22,611	25,036	28,343	

The first figure against each field is the tonnage and the second the percentage of total Indian production. An asterisk signifies a production of less than 1,000 tons.

TABLE 3.—Output of Coal in Countries around the Western Pacific and Indian Oceans (in thousands of metric tons).

(Data taken from the League of Nations Year Books.)

	1926	1927	1928	1929	1930	1931	1932	1933	1934	1935	1936
Japan ..	L 161	179	148	139	129	118	109	116	127	109	109
" Br. Borneo ..	C 31,427	33,531	33,860	34,258	31,376	27,987	28,053	32,524	35,925	37,762	41,803
Manchuria ..	..	80	80	73	74	48	..	..	..	..	..
Chosen ..	..	8,139	9,477	9,924	10,041	7,949	7,099	9,063	10,704	11,474	12,020
Sakhalin (Japan) ..	..	683	710	938	884	936	1,104	1,307	1,689	1,999	2,282
Formosa ..	..	245	357	539	645	638	677	889	1,197	1,516	2,075
Fr. Indo-China ..	..	1,795	1,800	1,584	1,599	1,422	1,355	1,533	1,521	1,597	1,744
Netherland Indies ..	..	1,280	1,486	1,967	1,972	1,726	1,714	1,591	1,592	1,775	2,186
Philippines ..	..	1,466	1,620	1,704	1,832	1,871	1,404	1,035	1,033	1,111	1,147
F.M.S. ..	..	29	23	28	17	19	18	18	23	..	25
China ..	..	472	470	568	672	575	409	282	327	383	511
India ..	..	15,045	14,182	15,364	15,186	15,832	17,995	18,858	18,802	20,997	..
..	..	21,336	22,436	22,905	23,795	24,185	22,065	20,477	22,411	23,386	22,974
ASIA (ex. U.S.S.R.) ..	..	82,020	85,655	88,890	90,833	89,058	83,698	80,687	87,089	97,319	102,500
South Africa ..	..	12,950	12,580	12,607	13,018	12,223	10,881	9,921	10,714	12,195	13,574
S. Rhodesia ..	..	874	909	1,095	1,037	939	587	438	484	695	705
TOTAL AFRICA ..	..	14,258	13,961	14,182	14,535	13,667	11,914	10,693	11,510	13,190	14,640
Australia ..	..	L 973	1,479	1,617	1,769	1,861	2,230	2,654	2,621	2,660	2,257
New Zealand ..	..	C 13,488	13,740	12,030	10,532	9,684	8,536	8,724	9,238	9,504	11,063
" ..	..	L 1,060	1,093	1,105	1,187	1,178	1,197	928	993	1,248	1,311
" ..	..	C 1,215	1,312	1,370	1,389	1,405	995	943	857	838	873
TOTAL OCEANIA ..	..	16,751	17,633	16,139	14,898	14,138	12,958	13,249	13,709	14,257	15,469
											16,822

L—Lignite; C—Coal.

There is a small production in Nigeria, Belgian Congo, Algeria, French Morocco and New Caledonia; these are included under the totals for Africa and Oceania.

In Table 3 are shown the output of countries on the Indian Ocean and Western Pacific sea-boards which are India's actual or potential competitors. At present, South Africa is a keen competitor of India not only in her foreign markets but also often in parts of her domestic market. A point worthy of note is that Indo-China is a producer of excellent anthracite which finds a ready market not only in China and Japan but also farther afield. In fact Canada took more than 85,000 tons of Indo-China anthracite in 1937.

#### GENERAL TRENDS IN COAL PRODUCTION.

Taking the world production of bituminous coal and anthracite for the decade 1926-35, the average annual figure comes to about 1,234 million metric tons. The International Labour Office has calculated that, at that constant rate, the world reserves will last for about 37 centuries (World Coal Mining Industry, 1938, p. 40). Table 4, reproduced from the above-mentioned publication, shows the reserves of a few important countries and the calculations of life based on different assumed rates of production.

TABLE 4.—*Probable life of coal reserves.*

Country.	Reserves to 2,000 metres depth.	Average annual production 1925-35.	Probable life		
			At constant production.	With yearly increase of	
				0.5%	2%
Million metric tons.		Years.			
World .. .. .	4,600,000	1233.5	3,730	595	217
United States .. .. .	1,975,000	535.8	3,686	593	217
U.S.S.R. .. .. .	1,075,000	30.3	35,478	1,037	330
Great Britain .. .. .	200,000	230.3	868	329	147
Germany .. .. .	289,000	148.1	1,951	470	186
Poland .. .. .	138,000	37.8	3,651	590	216
Canada .. .. .	286,000	11.3	25,310	969	314
China .. .. .	220,000	16.5	13,330	842	282

There are now more than 50 different countries which figure in statistics as coal producers. Taking the coal output of the world in 1936 at 1,280 million metric tons (all kinds converted to a standard bituminous type on the basis of calorific value), this would be equivalent to 87.7 per cent of bituminous coal, 7.6 per cent anthracite and 4.8 per cent lignite.

It is an interesting fact that the production of coal in 1913 was about the same as in 1936, though there has been considerable change in the contribution of different countries towards this total. For instance, U.S.A. and Great Britain produced nearly two-thirds of the total in 1913 whereas they were responsible for only half the total in 1936. In 1913 the aggregate production of Russia, Japan, China, India and South Africa was only 7 per cent of

the total while in 1936 their contribution rose to about 17 per cent. The Soviet Union has forged its way to the front rank during the last decade or so.

At present over three-fourths of the world production (of coal equivalent) is from four countries, and over nine-tenths by ten countries as will be seen from the percentages of output in 1936:—

	Per cent.		Per cent.
U.S.A.	34.4	Czechoslovakia	1.7
Great Britain	18.1	China	1.6
Germany	15.2	S. Africa	1.2
U.S.S.R.	8.7	Netherlands	1.0
France	3.6	Manchuria	0.9
Japan	3.0	Australia	0.9
Poland	2.3	Canada	0.9
Belgium	2.2	Others	2.5
India	1.8		

It will thus be seen that the production is still greatly concentrated in a few countries which have made rapid progress in the mechanised industries. Still more striking is the fact that a small group of fields in the world (Table 5) is responsible for a very large part of the output.

TABLE 5.—*Production by the chief districts in 1936.*

District.	Million tons (Coal equivalent).	Percentage of world output.
West Virginia (U.S.A.)	106.6	8.3
Pennsylvania	98.6	7.7
Penn. anthracite	49.8	3.9
Illinois	45.6	3.6
E. Kentucky	35.6	2.8
Indiana-Iowa	19.1	1.5
Ruhr-Aachen (Germany)	115.1	9.0
U. and L. Silesia	26.2	2.0
Central lignite fields	15.2	1.2
Saar	11.7	0.9
East Upper Silesia (Poland)	22.1	1.7
Donetz (U.S.S.R.)	75.2	5.9
Kuznetz	17.3	1.3
South Wales (England)	34.4	2.7
Durham	31.9	2.5
S. Yorkshire	30.7	2.4
Pas-de-Calais-Nord (France)	28.5	2.2
Charleroi-Mons (Belgium)	11.9	0.9
Bengal-Bihar (India)	19.1	1.5

The gradual shift that is taking place in production is to be attributed to a large extent to the growth of industrialisation. Other factors affecting



the consumption of coal are advances in fuel efficiency and the displacement of coal by petroleum and water-power.

Though coal figures as one of the most important mineral products, only 10 per cent of the world production enters into world trade, for the producers are also important consumers. Countries deficient in coal try to develop water-power as in the case of Scandinavia, Switzerland and Italy.

There is every indication that production will go on rising in many countries, depending on the extent of their coal resources and rate of development of industries. This is particularly true of the newer industrial countries of Asia and Africa.