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COMBINATION
IN THE
MINING INDUSTRY:
A STUDY OF CONCENTRATION IN LAKE SUPERIOR
IRON ORE PRODUCTION

BY

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*No. 60 in the 'Studies in History, Economics &
Public Law' of Columbia University.*

SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS

FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

IN THE

FACULTY OF POLITICAL SCIENCE

COLUMBIA UNIVERSITY

New York
1905

X9(D3182):517.7L88

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PREFACE

THIS essay is an attempt to explain the remarkable concentration which has taken place in the control of the Lake Superior iron mines during the past thirty years. The study is based upon such printed sources of information as are available and no effort has been made to investigate at first hand present conditions in the mining industry. Since the theory offered is based upon incomplete data, its conclusions may be subject to modification upon further investigation. It is presented at this time in the hope that it may throw some light on the problem of the development of monopoly.

H. R. M.

NEW YORK, APRIL 14, 1905.

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APPENDIX

The following tables give the average yearly price of No. 1 foundry pig iron at Philadelphia, the total production of all kinds of pig iron in the United States, the season contract price of Marquette specular No. 1 Bessemer ore delivered at Cleveland, the total shipments of Lake Superior iron ore, and the shipments by ranges, from 1854 to 1904; the season contract price of soft hematite non-Bessemer ore at Cleveland from 1883 to 1904; and the corresponding figures for Mesabi No. 1 Bessemer ore from 1894.

The figures of production and price of pig iron and shipments of ore are taken from the reports of the American Iron and Steel Association. The prices of ore shown are as follows: From 1856 to 1874 the price of standard Bessemer ore, as given by the Michigan Commissioner of Mineral Statistics in his report for 1890, p. 56; from 1875 to 1882 the price of Republic ore as given by the *Iron Age* during those years; from 1883 to 1896 the price of No. 1 Republic and Champion ore, as given by the Reports of the American Iron and Steel Association; from 1897 to 1904 the price of Marquette specular No. 1 Bessemer ore, from 1883 to 1904 the price of No. 1 soft hematite non-Bessemer ore, and from 1894 to 1904 the price of Mesabi No. 1 Bessemer ore, all as given by the reports of the American Iron and Steel Association.

The ore prices given before and after 1875 are not strictly

comparable, the prices of Republic ore from 1875 to 1890 being higher than those of standard Bessemer ore for the same years, as given by the Commissioner, by from \$1.25 to \$.25, or an average of \$.60 for the period. From 1875 on they are strictly comparable. Prices here given for the years before 1883 should be received with caution.

TABLE I

Production and Prices of Pig Iron and Lake Superior Ore, 1854-1864

Year	Price of Pig Iron	Production of Pig Iron	Price of No. 1 Ore	Shipments of Lake Superior Ore
1854	\$36.88	657,337		3,000
1855	27.75	700,159		1,449
1856	27.12	788,515	\$8.00	36,343
1857	26.38	712,640	8.00	25,646
1858	22.25	629,548	6.50	15,876
1859	23.38	750,560	6.00	68,832
1860	22.75	821,223	5.25	114,401
1861	20.25	653,164	5.25	49,909
1862	23.88	703,270	5.25	124,169
1863	35.25	846,075	7.50	203,055
1864	59.25	1,014,282	8.50	243,127

TABLE II.

Production and Prices of Pig Iron and Lake Superior Ore, 1865-1904.

Year	Price of Pig Iron	Production of Pig Iron	Price of No. 1 Bessemer Ore	Shipments of Lake Superior Ore	Price of No. 1 Soft Hematite Non-Bessemer	Price of Mesabi No. 1 Bessemer
1865	\$46.12	831,770	\$7.50	236,208		
1866	46.88	1,205,663	9.50	278,796		
1867	44.12	1,305,023	10.50	473,567		
1868	39.25	1,431,250	8.25	491,449		
1869	40.63	1,711,287	8.25	617,444		
1870	33.25	1,665,279	8.50	830,940		
1871	35.12	1,706,793	8.00	779,607		
1872	48.88	2,548,713	9.00	900,901		
1873	42.75	2,560,963	12.00	1,162,458		
1874	30.25	2,401,262	9.00	919,557		
1875	25.50	2,023,733	7.75	891,257		
1876	22.25	1,868,961	7.50	992,764		
1877	18.88	2,066,594	7.00	1,015,087		
1878	17.63	2,301,215	6.50	1,111,110		
1879	21.50	2,741,853	7.00	1,375,691		
1880	28.50	3,835,191	10.00	1,908,745		
1881	25.12	4,144,254	10.00	2,306,505		
1882	25.75	4,623,323	10.00	2,965,412		
1883	22.38	4,595,510	7.50	2,353,288	\$4.75	
1884	19.88	4,097,868	6.00	2,518,692	4.50	
1885	18.00	4,044,526	5.75	2,466,372	4.00	
1886	18.71	5,683,329	6.25	3,568,022	4.50	
1887	20.92	6,417,148	7.00	4,762,107	5.00	
1888	18.88	6,489,738	5.75	5,063,877	4.00	
1889	17.75	7,603,642	5.50	7,292,643	3.75	
1890	18.40	9,202,703	6.50	9,003,725	4.50	
1891	17.52	8,279,870	5.50	7,071,053	3.75	
1892	15.75	9,157,000	5.50	9,072,241	3.75	
1893	14.52	7,124,502	4.50	6,065,716	3.25	
1894	12.66	6,657,388	3.35	7,748,312	2.00	\$2.50
1895	13.10	9,446,308	3.30	10,429,037	2.25	2.50
1896	12.95	8,623,127	4.50	9,934,828	2.60	3.25-3.75
1897	12.10	9,652,680	2.80-3.10	12,464,574	2.25	2.10-2.30
1898	11.66	11,773,934	3.10-3.35	14,024,673	2.20	2.15-2.25
1899	19.36	13,620,703	3.21-3.50	18,251,804	2.00-2.15	2.25-2.40
1900	19.98	13,789,242	5.93-6.48	19,059,393	4.15-4.25	4.40-4.90
1901	15.87	15,878,354	4.66-4.92	20,593,537	2.85-3.15	2.75-3.00
1902	22.19	17,821,307	4.65-5.00	27,571,121	3.00-3.25	3.00-3.25
1903	19.92	18,009,252	4.85-5.15	24,289,878	3.60	4.00
1904	15.46	16,497,033	3.60-3.85	21,843,743	2.60-2.80	2.75-3.00

TABLE III
Shipments by Ranges

Year	Marquette	Menominee	Gogebic	Vermillion	Menabi
1865	236,208				
1866	278,796				
1867	473,567				
1868	491,449				
1869	617,444				
1870	830,940				
1871	779,607				
1872	900,901				
1873	1,162,458				
1874	919,557				
1875	891,257				
1876	992,764				
1877	1,004,682	10,405			
1878	1,016,865	94,245			
1879	1,106,602	269,089			
1880	1,316,552	592,193			
1881	1,567,370	739,135			
1882	1,914,745	1,032,647			
1883	1,305,425	1,047,863			
1884	1,558,033	895,634	1,022	62,124	
1885	1,430,422	690,435	119,590	225,484	
1886	1,627,383	880,006	756,237	304,396	
1887	1,860,043	1,199,343	1,285,265	394,252	
1888	1,921,525	1,165,039	1,424,762	511,953	
1889	2,634,817	1,796,764	2,016,391	844,782	
1890	2,997,927	2,289,017	2,845,171	880,264	
1891	2,511,395	1,824,552	1,834,747	891,539	
1892	2,680,194	2,259,367	2,967,678	1,158,072	4,245
1893	1,832,750	1,460,646	1,328,591	817,458	621,047
1894	2,058,683	1,139,273	1,810,290	948,514	1,792,172
1895	2,095,166	1,926,203	2,560,765	1,077,838	2,778,296
1896	2,605,152	1,538,238	1,799,884	1,088,389	2,884,372
1897	2,715,039	1,937,013	2,258,236	1,278,481	4,280,873
1898	3,125,039	2,522,265	2,498,461	1,265,142	4,613,766
1899	3,757,010	3,301,052	2,795,856	1,771,502	6,626,384
1900	3,457,522	3,261,221	2,875,295	1,655,820	7,809,535
1901	3,245,346	3,619,083	2,938,155	1,786,063	9,004,890
1902	3,868,025	4,612,509	3,663,484	2,084,263	13,342,840
1903	3,040,245	3,749,567	2,912,912	1,676,699	12,892,542
1904	2,504,951	3,047,096	2,288,400	1,299,265	12,086,878

VITA

THE author of this dissertation, Henry Raymond Mussey, was born in Atkinson, Illinois, December 7, 1875. He prepared for college at the Geneseo Collegiate Institute, Geneseo, Illinois, and was graduated from Beloit College with the degree of A. B. in 1900. In 1901 he was appointed University Fellow in Economics at Columbia University, in which institution he studied during that and the following year under Professors E. R. A. Seligman, John B. Clark, H. R. Seager, H. L. Moore, F. H. Giddings, James Harvey Robinson and William M. Sloane, attending the seminars of Professors Seligman and Clark. In 1903 he was appointed Instructor and in 1904 Assistant Professor of Economics and Industry in the New York University School of Commerce, Accounts and Finance.

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R003-04

Sketch Map of the
Lake Superior Iron
District

