
MINERAL PRODUCTION OF IOWA.

IN 1900

BY

S. W. BEYER.

VALUE OF MINERAL PRODUCTION.

1899.

Coal.....	\$6,137,576
Clay (Federal census).....	
Stone.....	809,924
Gypsum.....	600,000
Lead and zinc.....	50,542
Iron ore.....	3,465
Total value.....	\$

1900.

Coal.....	\$ 6,977,466
Clay.....	2,395,488
Stone.....	604,886
Gypsum.....	393,750
Lead and zinc.....	22,194
Iron ore.....	5,877
Total value.....	\$10,401,661

MINERAL PRODUCTION IN IOWA FOR 1900.

BY S. W. BEYER.

The great industrial activity inaugurated early in 1899 in the mineral industries continued unabated throughout 1900 save in the development of lead and zinc properties. The output of stone also shows a marked falling off due almost wholly to the lull in Mississippi river improvements. Des Moines county produced scarcely 20 per cent in 1900 of the amount of stone marketed by her in 1899. The gypsum market was not quite as brisk as during the preceding year. Most of the mills were able to fill their orders by running a single shift, while during 1899 double shifts were quite the rule.

As during preceding years the gathering of mineral statistics was carried on jointly by the State and Federal Surveys. Most of the original requests were sent out from Washington, while the task of looking up the delinquents devolved largely upon the local office.

TOTAL PRODUCTION.

The value of the mineral production in 1900 was \$10,401,661, distributed as follows:

MINERALS.	Value.	No. of pro- ducers.
Coal.....	\$ 6,977,466	231
Clay.....	2,395,488	381
Stone.....	604,886	170
Gypsum.....	398,750	7
Lead and zinc.....	22,194	6
Iron ore.....	5,877	1
Total.....	\$ 10,401,661	796

According to the best information available the production for 1899 was:

MINERALS.	Value.	No. of pro- ducers.
Coal.....	\$ 6,137,576	203
Clay (estimated)*.....	2,275,000	360
Stone.....	809,924	175
Gypsum (estimated).....	600,000	6
Lead and zinc.....	50,542	9
Iron ore.....	3,465	1
Total.....	\$ 9,976,507	754

The total mineral production is shown by counties in table I.

*The returns for 1900 show that the estimate for clay published in the Tenth Annual Report was 100 high.

MINERAL PRODUCTION BY COUNTIES.

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TABLE I.

Total mineral production by counties.

COUNTIES.	Total coal.	Total clay.	Total stone.	Miscellaneous.	Total.
Adair.....		\$ 9,560			\$ 9,560
Adams.....	\$ 22,522	10,518	\$ 1,250		34,040
Allamakee.....		19,590		\$ 5,877	34,389
Appanoose.....	1,129,881	8,480			1,138,491
Benton.....		17,076	4,285		21,361
Black Hawk.....		15,850	15,231		31,081
Boone.....	485,081	33,472			518,553
Bremer.....		4,100			4,100
Buchanan.....					
Buena Vista.....		14,813			14,813
Butler.....					
Calhoun.....		11,000			11,000
Cass.....		5,275			5,275
Carroll.....					
Cedar.....		8,141	89,824		97,965
Cerro Gordo.....		88,135	15,330		103,465
Cherokee.....					
Chickasaw.....					
Clarke.....		170,580			170,580
Clay.....					
Clayton.....		8,050			8,050
Clinton.....		22,980	1,829		24,809
Crawford.....		7,925			7,925
Dallas.....	30,532	68,132			98,664
Davis.....	795	1,090			1,885
Decatur.....		8,760	1,358		10,118
Delaware.....		5,430	1,300		6,730
Des Moines.....		19,950	27,972		47,922
Dubuque.....		32,650	35,375	22,194	90,219
Fayette.....		12,380	11,118		23,498
Floyd.....		6,715	2,200		8,915
Franklin.....		2,240			2,240
Fremont.....		13,957			13,957
Greene.....	30,009	16,770			46,779
Grundy.....		3,100			3,100
Guthrie.....		33,895			33,895
Hamilton.....		62,114	1,874		63,988
Hancock.....					
Hardin.....		25,458	7,925		35,383
Harrison.....		14,838			14,838
Henry.....		23,089			23,089
Howard.....			1,821		1,821
Humboldt.....			5,400		5,400
Ida.....					
Iowa.....		29,102			29,102
Jackson.....			60,525		60,525
Jasper.....	135,412	22,125			157,537
Jefferson.....	6,063	16,272			22,485

TABLE I.—CONTINUED.

Total mineral production by counties.

COUNTIES.	Total coal.	Total clay.	Total stone.	Miscellaneous.	Total.
Johnson.....		\$ 24,425	\$ 3,780		\$ 28,205
Jones.....		12,295	84,718		97,013
Keokuk.....	\$ 306,887	28,264	2,196		337,347
Kossuth.....		1,950			1,950
Lee.....	1,600	8,510	40,652		50,762
Linn.....		41,595	27,676		69,271
Louisa.....		10,220	2,196		12,416
Lucas.....	292,090	5,300			297,390
Madison.....		3,600	4,409		8,009
Mahaska.....	1,337,548	52,705	1,165		1,391,418
Marion.....	233,597	16,375	6,755		256,727
Marshall.....		33,236	44,185		77,421
Mills.....		19,550			19,550
Mitchell.....					3,663
Monona.....					
Monroe.....	851,252	3,575	3,950		858,777
Montgomery.....		28,795	1,125		29,920
Muscatine.....		28,228			28,228
O'Brien.....					
Page.....	1,450	23,000			24,450
Plymouth.....					
Pocahontas.....					
Polk.....	1,300,636	373,486			1,674,122
Pottawattamie.....		70,965			70,965
Poweshiek.....		13,140			13,140
Ringgold.....		7,700			7,700
Sac.....					
Scott.....	48,932	57,010	49,425		155,367
Shelby.....		16,950			16,950
Sioux.....		6,400			6,400
Story.....	8,600	23,656			23,656
Tama.....		56,350	230		56,580
Taylor.....	35,658	11,075			46,733
Union.....		12,570			12,570
Van Buren.....	14,393	18,319	445		33,157
Wapello.....	349,651	42,280	14,286		406,217
Warren.....	37,857	1,990			39,847
Washington.....		24,456	3,006		27,462
Wayne.....	83,558	10,080			93,638
Webster.....	233,462	155,492	5,175	393,750	787,879
Winnebago.....					
Winneshiek.....		5,300			5,300
Woodbury.....		146,293			146,293
Wright.....		15,953			15,953
Single producers.....	(2) 2,395	(16) 81,958	(16) 22,919		
Estimate.....		(7) 45,000			
Total.....	\$ 6,977,466	\$ 2,395,488	\$ 604,886	\$ 421,821	\$ 10,401,661

COAL.

The coal trade continued brisk notwithstanding the mild winter of 1900, and the price increased throughout the year. The operators were able to benefit from the good times which they were not fully able to enjoy because of early contracts during the preceding year. This prosperity was not monopolized by the operators but was shared with the miners. The wage scale was higher than for any year in the last decade.

The average price per ton was nearly 10 per cent higher than for 1899 and the total tonnage increased nearly 3 per cent. There was a notable increase in the number of men employed and the average number of days worked was not very different from the preceding year. Prospecting and exploration in several of the old districts and many new fields were vigorously prosecuted throughout the year. The most important results were obtained in Polk, Jasper and Monroe counties.

Table II gives the total tonnage, average price per ton, total value, number of mines producing, average number of days worked and number of men employed, arranged by counties. No attempt was made to keep separately the various sizes of coal put upon the market. Mine run, nut and steam coal are included in the total. This fact must be kept in mind if an analysis by counties be attempted. The Center-ville district produces almost no slack and the average price given would be for lump coal, while the Des Moines-Oskaloosa district puts upon the market about 30 per cent "steam coal."

TABLE II.

Coal output by counties.

COUNTIES.	No. of producers.	Tonnage.	Value.	Average price per ton.	Average No. of men employed.	Average No. days worked.
Adams.....	12	12,146	\$ 22,522	\$ 1.85	170	99
Appanoose.....	49	734,698	1,130,762	1.54	190	2,561
Boone.....	12	288,742	485,081	1.68	206	856
Dallas.....	4	16,521	30,532	1.85	200	64
Davis*.....	1					
Greene.....	5	17,044	30,009	1.75	165	67
Jasper.....	8	100,256	135,412	1.35	238	221
Jefferson.....	2	3,650	6,063	1.66	150	12
Keokuk.....	7	227,727	306,887	1.35	270	388
Lee*.....	1					
Lucas.....	2	221,922	292,090	1.32	240	378
Mahaska.....	22	1,098,617	1,337,548	1.22	254	2,016
Marion.....	20	209,223	233,597	1.12	231	462
Monroe.....	10	772,457	871,252	1.12	256	1,596
Page.....	2	600	1,450	2.42	120	7
Polk.....	21	851,667	1,300,636	1.53	226	1,566
Scott.....	7	28,728	48,932	1.70	182	97
Story.....	2	3,200	8,600	2.68	100	18
Taylor.....	3	17,829	35,658	2.06	245	60
Wapello.....	13	270,330	349,651	1.29	266	529
Warren.....	8	27,824	37,857	1.36	202	68
Wayne.....	3	54,503	85,558	1.53	190	182
Webster.....	19	135,661	233,462	1.72	210	333
Total.....	231	5,105,151	\$ 6,977,466	\$ 1.37	228	11,601

The average number of days worked and the number of men employed during the past nine years, according to the best information available, was as follows:

YEARS.	Average number of days worked.	Number of men employed.
1892.....	236	8,170
1893.....	204	8,863
1894.....	170	9,995
1895.....	189	10,066
1896.....	178	9,672
1897.....	201	10,703
1898.....	218	10,256
1899.....	229	10,268
1900.....	228	11,601

*Single producer.

The United States Geological Survey has not yet made public the Mineral Statistics for 1899 and it is impossible to give Iowa's rank as a coal producer for that year. In 1898 the state ranked eighth in tonnage and fifth according to value of output. These figures would scarcely be changed for 1899 and 1900.

Table III compares the output for 1900 with the output for the six preceding years:

TABLE III.

YEARS.	Short tons.	Price.	Value.	AUTHORITY.
1894.....	3,967,253	\$ 1.26	\$ 4,999,939	U. S. Geol. Survey
1895.....	4,156,074	1.20	4,982,102	U. S. Geol. Survey
1896.....	3,954,028	1.17	4,628,022	U. S. Geol. Survey
1897.....	4,611,865	1.13	5,219,503	U. S. Geol. Survey
1898.....	4,618,842	1.14	5,260,716	U. S. Geol. Survey
1899.....	4,928,477	1.25	6,137,576	Iowa Geol. Survey
1900.....	5,105,151	1.37	6,977,466	Iowa Geol. Survey

CLAY OUTPUT FOR IOWA 1900.

The clay output for Iowa for 1900 shows a healthy increase over preceding years. Every department of the industry shows an increase save paving brick and burnt clay ballast. In the manufacture and sale of paving brick there is a marked falling off, probably due to our defective paving laws and the activity of the asphalt people. The total value of clay goods marketed during 1900 approximates \$2,400,000, distributed as follows:

	THOUSANDS.	VALUES.
Common brick.....	226,156	\$1,462,395
Front brick.....	10,013	91,682
Vitrified paving brick.....	14,870	129,677
Ornamental brick.....		1,950
Fire brick.....		2,795
Stove linings.....		175
Drain tile.....		379,140
Sewer pipe.....		52,452
Sidewalk block.....		2,155

MINERAL PRODUCTION OF IOWA.

	THOUSANDS.	VALUES.
Fire proofing		31,850
Tile		300
Pottery		42,727
Burnt clay ballast		198,080
Raw clay		110
		<u>\$2,395,488</u>

The most remarkable increase was in the production of common building brick, which faithfully reflects the building revival. The average price per thousand for common brick increased from \$5.90 per thousand, in 1898, to \$6.47, for 1900. A similar increase may be noted in the value of the other products. The distribution of clay products by counties is contained in table IV, herewith appended.

TABLE IV.

Clay production by counties.

COUNTIES.	No. of producers.	Common brick in thousands.	*Total brick in thousands.	Value of common brick.	*Value of total brick.	Value of total clay.
Adair.....	6	1,506	1,506	\$ 9,435	\$ 9,435	9,560
Adams.....	5	1,745	1,745	10,268	10,268	10,518
Appanoose.....	5	2,380	2,905	15,090	19,590	19,590
Audubon.....	2	1,300	1,300	8,300	8,300	8,480
Benton.....	4	1,983	2,083	12,481	13,681	17,076
Black Hawk.....	2	2,800	2,800	15,850	17,050	15,850
Boone.....	8	2,913	3,963	18,297	27,672	33,472
Bremer.....	3	600	600	4,100	4,100	4,100
Buchanan.....	1					
Buena Vista.....	3	849	5,919	5,919	5,919	14,813
Butler.....	1					
Calhoun.....	3	700	765	5,400	5,950	11,000
Cass.....	3	895	895	5,275	5,275	5,275
Carroll.....	1					
Cedar.....	2	663	663	4,641	4,641	8,141
Cerro Gordo.....	3	4,950	4,950	30,600	30,600	88,135
Cherokee.....	1					
Chickasaw.....	1					
Clarke.....	2	400	400	2,500	2,500	170,580
Clay.....	1					
Clayton.....	4	1,355	1,355	7,740	7,740	8,050
Clinton.....	4	2,035	2,935	12,380	21,380	22,980

* Not including fancy and fire brick.

TABLE IV.—CONTINUED.
Clay production by counties.

COUNTIES.	No. of producers.	Common brick in thousands.	*Total brick in thousands.	Value of common brick.	*Value of total brick.	Value of total clay.
Crawford.....	8	1,150	1,200	\$ 7,375	\$ 7,925	\$ 7,925
Dallas.....	10	3,292	4,482	21,740	32,836	68,132
Davis.....	3	173	173	1,090	1,090	1,090
Decatur.....	5	1,155	1,175	7,800	8,000	8,760
Delaware.....	3	670	720	3,980	4,330	5,430
Des Moines.....	3	1,450	2,068	7,500	17,950	19,950
Dubuque.....	6	6,365	6,365	32,650	32,650	32,655
Fayette.....	4	1,870	1,870	11,880	11,880	12,380
Floyd.....	2	850	857	6,375	6,461	6,710
Franklin.....	2	313	313	2,100	2,100	2,240
Fremont.....	7	2,070	2,070	13,942	13,942	13,957
Greene.....	1	.....	.....	.....	.....	.....
Grundy.....	2	500	500	3,100	3,100	3,100
Guthrie.....	7	2,981	2,981	21,164	21,164	33,895
Hamilton.....	3	5,075	5,075	30,525	30,525	62,114
Hardin.....	4	445	520	2,988	3,588	25,458
Harrison.....	7	2,155	2,155	14,838	14,838	14,838
Henry.....	7	1,733	1,733	11,043	11,043	23,089
Howard.....	1	.....	.....	.....	.....	.....
Humboldt.....	1	.....	.....	.....	.....	.....
Ida.....	1	.....	.....	.....	.....	.....
Iowa.....	6	3,940	3,940	24,102	24,102	29,102
Jasper.....	7	3,150	3,270	18,675	19,825	22,125
Jefferson.....	3	910	910	6,470	6,470	16,272
Johnson.....	6	3,260	3,260	17,075	17,075	24,425
Jones.....	3	820	820	5,380	5,380	12,295
Keokuk.....	7	1,548	1,548	11,040	11,040	28,264
Kossuth.....	2	325	325	1,950	1,950	1,950
Lee.....	4	1,645	1,715	7,760	8,510	8,510
Linn.....	9	5,510	5,510	35,535	35,535	41,595
Louisa.....	4	1,280	1,280	8,420	8,420	10,220
Lucas.....	3	800	800	5,300	5,300	5,300
Madison.....	2	550	550	3,600	3,600	3,600
Mahaska.....	5	3,700	5,700	27,555	45,555	52,705
Marion.....	3	1,700	1,700	14,275	14,275	16,375
Marshall.....	6	4,800	4,800	28,400	28,400	33,236
Mills.....	4	2,800	2,800	19,550	19,550	19,550
Monona.....	1	.....	.....	.....	.....	.....
Monroe.....	3	575	575	3,575	3,575	3,575
Montgomery.....	6	3,620	3,620	24,265	24,265	28,795
Muscatine.....	11	4,140	4,140	23,228	23,228	28,228
O'Brien.....	1	.....	.....	.....	.....	.....
Page.....	2	4,000	4,000	23,000	23,000	23,000
Plymouth.....	1	.....	.....	.....	.....	.....
Pocahontas.....	1	.....	.....	.....	.....	.....
Polk.....	18	29,454	38,877	211,224	300,786	373,486
Pottawattamie.....	12	11,790	11,790	68,565	70,965	70,965

* Not including fancy and tile brick.

MINERAL PRODUCTION OF IOWA.

TABLE IV.—CONTINUED.

Clay production by counties.

COUNTIES.	No. of producers.	Common brick in thousands.	*Total brick in thousands.	Value of common brick.	*Value of total brick.	Value of total clay.
Poweshiek.....	3	875	875	\$ 6,310	\$ 6,310	\$ 13,140
Ringgold.....	4	975	975	6,700	6,700	7,700
Sac.....	1	.....	.....	.....	.....	.....
Scott.....	7	8,717	8,717	50,425	52,175	57,010
Shelby.....	3	2,550	2,550	16,950	16,950	16,950
Sioux.....	2	900	980	5,600	6,400	6,400
Story.....	6	1,621	1,621	12,439	12,439	23,676
Tama.....	7	4,045	5,941	26,050	52,350	56,350
Taylor.....	4	1,655	1,655	11,075	11,075	11,075
Union.....	2	1,730	1,730	12,110	12,110	12,570
Van Buren.....	4	950	950	5,875	5,875	18,319
Wapello.....	5	5,053	6,154	21,880	39,130	42,280
Warren.....	2	260	260	1,790	1,790	1,990
Washington.....	5	3,483	3,547	19,254	19,766	24,456
Wayne.....	6	1,490	1,490	9,680	9,680	10,080
Webster.....	7	12,600	14,375	75,100	104,565	155,492
Winnebago.....	1	.....	.....	.....	.....	.....
Winneshiek.....	2	1,000	1,000	5,300	5,300	5,300
Woodbury.....	6	22,883	25,383	67,355	67,355	146,293
Wright.....	4	150	150	1,230	1,230	15,953
Single Producers.....	16	7,047	7,287	45,300	47,640	81,958
Estimate.....	7	.....	.....	.....	.....	45,000
Total.....	381	226,156	251,039	\$ 1,462,395	\$ 1,683,754	\$ 2,395,488

* Not including fancy and fire brick.

1900 was characterized by the opening of a considerable number of new plants, some of which were of large capacity, and the number of idle plants was the smallest in the history of the industry. Plants which had stood idle for years were rejuvenated and made to become revenue producers. Two new up-to-date plants were opened at Mason City during the year. While as in former years the clays and silts of the Pleistocene are used very widely over the state, there is a growing tendency to use more and more of the shales, particularly those of the Ordovician (Maquoketa shales), Devonian (Lime Creek shales), and Coal Measures.

In 1899 the Federal Census Bureau collected the clay statistics and their report has not been made public so that it

is impossible to give the production for that year. In compiling the statistics for 1899, the clay production was estimated at \$2,500,000 which is now known to have been too high. This over estimate was brought about by the greatly increased production of common building brick, while due allowance was not made for the falling off in the production of paving brick. In 1898 the state ranked fourth in the production of paving brick and eighth in total clay products. During the past two years the rank of the state in total clay products probably remains unchanged while she has undoubtedly fallen far to the rear in her vitrified products.

STONE.

The production of dimension and building stone shows a decline, owing, in part at least, to the increasing popularity of brick for structural purposes, while natural and Portland cements are displacing lime in the more important structures. Jackson county is still the leading lime producer. The output of lime for 1900 slightly exceeds that for 1899, owing chiefly to the renewal of the industry on Sugar creek in Cedar county. The stone put upon the market includes limestone, dolomite and sandstone. The returns show an output of \$604,886, against \$809,924 for the preceding year. The production was distributed as follows:

LIMESTONE—USED FOR:

Building purposes.....	\$257,133
Paving or road making.....	154,149
Riprap.....	58,490
Lime.....	111,169
Other purposes.....	14,566
Sandstone.....	9,379
Total.....	\$604,886

Table V shows the production by counties and specifies the various grades of stone put upon the market.

TABLE V.

Production of limestone in Iowa in 1900 by counties.

COUNTIES.	Total.	Building pur- poses.	Paving or road making.	Riprap.	Made into lime.	Stone sold to lime burners.	Other purposes.
Adams (two producers)...	\$ 1,250	\$ 1,180	\$ 70				
Allamakee.....							
Appanoose.....							
Benton.....	4,285	4,000		\$ 5		\$280	
Black Hawk.....	15,231	14,060	541				\$ 630
Buchanan.....							
*Cedar (three firms).....	89,824	8,864	58,242	552	\$ 22,166		
Cerro Gordo.....	15,330	9,925	237		5,168		
Clarke.....							
Clayton.....	6,286	4,706			1,580		
Clinton.....	1,829	1,581	55	193			
Decatur.....	1,358	1,194	24	40			100
Delaware (two producers)	1,800	1,300					
Des Moines.....	27,667	11,762	4,236	11,669			
Dubuque.....	35,375	19,972	2,775	3,508	9,120		
Fayette.....	10,743	8,543		100			
Floyd (two firms).....	2,200	2,200					
Grundy.....							
Hamilton (two firms)....	1,874	1,874					
Hancock.....							
Harden.....	7,925	7,125	250	300			250
Henry.....							
Howard (two firms).....	1,821	1,805	16				
Humboldt.....	5,400	5,400					
Jackson.....	60,525	475	850		59,200		
Johnson.....	3,780	2,050	1,344	370			16
Jones.....	84,718	49,962	24,467	1,262			9,027
Keokuk.....	2,052	1,735	210	107			
Lee.....	38,737	7,009	18,496				45
Linn.....	27,676	5,035	8,884	5,757	8,000		
Louisa.....	2,196	1,624	512	60			
Madison.....	4,409	4,109			180		120
Mahaska.....	1,165	1,101	64				
Marion.....	6,755	5,259	1,152	274			70
Marshall (two firms)....	44,185	23,745	11,568	4,672			4,200
Mitchell.....							
Monroe.....	3,950	3,575	375				
Montgomery.....	1,125	1,125					
Scott.....	48,405	24,087	9,735	14,150	125	300	8
Tama.....	230	230					
Van Buren.....	400	320					80
Wapello.....	14,286	12,244	892	1,150			
Washington.....	3,006	2,527	279	200			
Webster.....	225	225					
Single producers.....	18,209	5,430	9,809		2,950		20
Total.....	\$586,410	\$248,866	\$153,949	\$ 54,490	\$110,589	\$590	\$ 13,936

* E. J. C. Bealer; King & Co.; Sugar Creek Lime Co.

PRODUCTION OF SANDSTONE IN IOWA IN 1900 BY COUNTIES.

COUNTIES.	Total.	Rough.	Building Purposes.	Curbing-and Flagstone.	Other Purposes.
Keokuk.....	475	125	350	.....	.....
Webster.....	4,950	1,200	3,750	.....	.....
Single producers.....	4,285	1,103	2,517	515	150
Total.....	9,710	2,428	6,617	515	150

In 1898 the state ranked nineteenth among the stone producers and eighth in the value of its limestone. No later figures are at hand.

The value of the stone produced in Iowa during 1900 and the eight years preceding, was as follows:

TABLE VI.

YEAR.	Sandstone.	Limestone.	Total.
1892.....	\$25,000	\$705,000	\$730,000
1893.....	18,347	547,000	565,347
1894.....	11,639	616,630	628,269
1895.....	5,575	449,501	455,076
1896.....	12,351	410,037	422,388
1897.....	14,771	480,572	495,343
1898.....	6,562	557,024	563,586
1899.....	17,239	792,685	809,924
1900.....	9,379	595,507	604,886

GYPSUM.

The gypsum trade continued brisk during 1900 but double shifts at the mills were not found to be necessary to fill orders as during the preceding year. Early in the season, owing to the installation of new plants, stucco sold as low as \$5.00 per ton on board the cars at Fort Dodge and Corbin station. The average price for the year would be considerably higher, perhaps \$5.25 per ton would be a conservative figure. The output

for 1900 would exceed 75,000 tons. This includes stucco and all grades of plaster.

THE ZINC INDUSTRY OF THE DUBUQUE REGION FOR 1900.

The mining operations in and about Dubuque were carried on less vigorously during 1900 than for the two years preceding. This was in part due to falling prices and in part due to writs of injunction; two of the leading companies were engaged in litigation during the greater portion of the year, and active operations were at a standstill in their respective properties. About 2,000 tons of crude zinc ore was produced, selling at from \$6.50 to \$12 per ton, according to quality. The average price being not far from \$8, or a total of \$16,000 was received for the output of the district. A portion of the ore was milled by the Dubuque Ore Concentrating Company, and all of the ore was sold to the Mineral Point Zinc Company, of Mineral Point, Wis. The ore, as in 1899, consisted principally of zinc carbonate, "dry-bone," with disseminated particles of zinc sulphide, "jack." Prospecting was carried on quite extensively during the year, but chiefly for lead. The outlook for 1901 is not specially encouraging, although the amount produced will probably exceed that for 1900.

The price of lead continued better than for zinc, yet the output was not visibly affected. The Waters' smelter reduced 1,132,226 pounds of galena which was obtained in great part from the mines across the river in Illinois.

The output of lead and zinc may be summarized as follows:

Zinc, (carbonate and sulphide), 2,000 tons.....	\$16,000
Lead, (sulphide), 495,000 pounds.....	6,194
Total.....	\$22,194

IRON.

The production of iron ore, inaugurated in 1899, shows a healthy growth for 1900. New crushing and washing machinery has been installed and plans are being matured to

carry on mining operations on a larger scale. Shipments were made during the year to Omaha, Milwaukee and Chicago. At the present time the Waukon Iron Company is the only producer.

