MINERAL PRODUCTION IN IOWA IN 1930, 1931, and 1932

by

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MINERAL PRODUCTION IN 1930 *

OUTLINE

The upward trend in mineral production, which seemed so promising in 1928, had flattened out considerably in 1929, and a disappointing downward trend began in 1930. Production during 1928 had increased more than two million dollars worth over that of 1927, but production in 1929 increased only a few hundred thousand dollars above that of 1928, and that for 1930 was more than two million dollars less than that for 1929. Table I will make clear the comparative conditions in Iowa during 1928, 1929, and 1930.

From 1928 to 1929 there was a decrease of about a million dollars in the value of cement shipments, a decline of about $700,000 in the value of gypsum sold, and a decline of nearly $200,000 in the value of limestone and lime produced. On the other hand, in the same period, clay wares increased in value about $740,000, coal nearly $1,500,000, and sand and gravel over $100,000.

From 1929 to 1930, as just stated, production decreased about two and a half million dollars. The value of the cement shipped increased more than $300,000, limestone and lime nearly $300,000, and sand and gravel over $300,000. The decrease was in clay wares, coal, and gypsum, and these decreases were too great to be offset by the increases in other materials.

These conditions in Iowa were reflected in mineral industries the nation over. From 1928 to 1929 production increased a few hundred

* Statistics are collected by the U. S. Bureau of Mines, co-operating with the Iowa Geological Survey, except in the case of Clay Wares, which are gathered by the Bureau of the Census.

TABLE I

Mineral Production in Iowa in 1928, 1929, and 1930

Product	Unit	1928			1929			1930		
		Producers	Quantity	Value	Producers	Quantity	Value	Producers	Quantity	Value
Cement	bbl	6	6,880,731	$10,734,838	6	6,586,111	$9,781,159	6	7,035,252	$10,107,584
Clay wares		55		5,048,774	42		5,791,175			4,713,448(a)
Coal	ton	222	3,683,635	10,525,000	201	4,241,069	11,948,000	233	3,892,571	10,385,000
Gypsum	ton	7	719,736	5,355,214	8	670,203	4,668,856	8	458,992	3,741,319
Limestone and lime	ton	35	1,666,270	1,742,252	41	1,625,000	1,560,066	43	1,814,291	1,850,832
Sand and gravel	ton	80	3,423,619	2,094,955	80	4,043,609	2,211,752	76	4,333,737	2,546,337
				$35,501,033			$35,961,008			$33,344,520

(a) The total clay figures given for 1929 are those published by the Bureau of Mines. The figure given for the value of clay wares in 1930 is that published by the Bureau of Census.

thousand dollars, but Table I-A shows that from 1929 to 1930 the total value of production decreased more than a billion dollars.

TABLE I-A

Mineral Production in the United States in 1929 and 1930

* SUMMARY	1929	1930
	Value	Value
Total value of metallic products	$1,475,990,000	$ 982,550,000
Total value of nonmetallic products (exclusive of mineral fuels)	1,210,653,000	1,008,900,000
Total value of mineral fuels	3,190,527,000	2,764,500,000
Total value of "unspecified" (metallic and nonmetallic) products (partly estimated)	10,430,000	8,850,000
Grand total approximate value of mineral products	5,887,600,000	4,764,800,000

* This table is taken from Mineral Resources, 1930 — Part I, A8.

CEMENT

TABLE II

Production of Cement in Iowa

	1929	1930
Production, bbls.	6,373,330	7,088,108
Stock, Dec. 31, bbls.	1,347,144	1,400,000
Shipments, bbls.	6,586,111	7,035,252
Shipments, value	$9,781,159	$10,107,584
Average price per bbl.	$1.49	$1.44
Estimated consumption, bbls.	5,462,534	6,411,595
Estimated consumption per cap., bbls.	2.25	2.59
Surplus production, bbls.	1,123,577	623,657
Annual capacity, bbls.	9,592,900	10,293,900

Table II shows that production and shipment of cement increased notably from 1929 to 1930; however, the price received per barrel was slightly less in the later year. Evidently the cement-using public took advantage of this small drop in price, as nearly one million barrels more were used in 1930 than had been used in 1929. This naturally brought up the per capita consumption, and it also had the effect of reducing the surplus production. The same plants were in existence in 1930 as in 1929, and the reason for the difference in annual capacity is not well understood; possibly it was due, in part at least, to improvements in equipments and methods of manufacture.

In the cement manufacturing district which includes eastern Missouri, Iowa, Minnesota, and South Dakota, production increased from 15,697,000 to 16,693,900 barrels and the shipment increased from 15,984,000 to 16,886,000 barrels. The value of these shipments rose from $23,430,800 to $24,061,000, an increase of 2.6 percent.

Conditions the country over seem to have been somewhat less favorable than they were in our state, for both production and shipments declined somewhat in 1930. The same plants were in operation during both years, and stocks on hand at the end of the year were more than two million barrels greater in 1930 than in 1929.

Iowa ranked tenth among the states of the Union in the making of cement in 1929 and eighth in 1930; in shipments it ranked 10th in both quantity and value in 1929, but in 1930 it had risen to 8th in quantity and 9th in value.

TABLE II-A

Production of Cement in the United States

	1929	1930
Production, bbls.	170,646,036	161,197,228
Shipments, bbls.	169,868,322	159,059,334
Shipments, value	$252,153,789	$228,779,756
Stocks, Dec. 31, bbls.	23,700,533 (a)	25,838,427
Plants active	163	163

(a) This figure has been revised and differs slightly from the one given in Mineral Production in Iowa in 1928 and 1929 in volume XXXV.

CLAY AND CLAY PRODUCTS

In 1930 eight companies produced raw clay, four of them being in Webster County. The amount produced was 6,219 tons, with a value of $41,816.

Probably all readers of this report know that statistics for most mineral products are collected by the Bureau of Mines coöperating with the various state geological surveys. Figures for clay products, however, are collected by the Bureau of the Census without such coöperation and the Bureau feels that it can not furnish the state geological surveys with data on production by counties. It has, however, furnished the Iowa Geological Survey with information concerning production of clay wares by classes during 1930, as well as during 1929 and 1931. These figures are given in Table III. The Bureau of Mines collects data concerning the amount of clay sold, either raw or prepared, but not manufactured into ware. These figures for 1930 are as follows: fire clay, molding clay, and miscellaneous clay, 6,219 tons, valued at $41,816. It will be seen that these figures differ slightly from those given by the Bureau of the Census for the same year. Whether these figures duplicate those given by the Bureau of the Census or whether they are for different producers is not known. It will be noted

TABLE III

Production of Clay Products, by Class, Quantity, and Value: 1929 and 1930.

Class and Year	Quantity	Value
Total value:		
1930		$4,713,448
1929		5,814,109
Common brick:	Thousands	
1930	53,100	600,394
1929	55,522	640,393
Face brick:		
1930	23,906	389,275
1929	24,548	428,806
Hollow building tile:		
(a) Partition, load-bearing, etc.	Tons	
1930	212,372	1,523,298
1929	234.201	1.597.173
(c) Floor arch, etc.:		
1930	(1)	(1)
1929	48,936	384,606
Draintile:		
1930	114,500	897,344
1929	200,224	1,525,082
Sewer pipe:		
1930	45,763	675,757
1929	57,640	719,519
Flue lining:		
1930	3,648	42,938
1929	4,622	49,535
Wall coping:		
1930	774	13,511
1929	1,010	13,194
Clay sold, raw or prepared:		
1930	4,181	41,961
1929	2,289	23,984
Other clay products, including pottery:		
1930		528,970
1929		431,817

1 Included in "Other clay products" in order to avoid disclosing approximations of data supplied by individual establishments.

that the output of clay wares in 1930 was valued at more than a million dollars less than that for 1929. Evidently this was a reflection of the general tightening of business conditions which began late in 1929 and continued through 1930.

COAL

Table IV shows that the depression mentioned above took a severe toll from the coal industry. The tonnage mined in 1930 was 350,000 less than in 1929, and the value was over 1½ millions of dollars less in 1930. This decrease was due not only to the smaller tonnage, but to the decline of 15 cents per ton received at the mine. It seems somewhat anomalous that in spite of this decrease in both tonnage and value, more men should have been employed than in 1929. The tonnage re-

TABLE IV

Production, Value, Men Employed, Days Worked, and Output Per Man Per Day at Coal Mines in Iowa in 1930 [a]

(Exclusive of product of wagon mines producing less than 1,000 tons)

County	Net tons				Value		Number of employees				Average number of days worked	Average tons per man per day
							Underground					
	Loaded at mines for shipment	Sold to local trade and used by employees	Used at mines for power and heat	Total quantity	Total	Average per ton	Miners, loaders, and shot firers	All others	Surface	Total		
Adams	------	9,631	800	10,431	$ 39,000	$3.74	25	2	4	31	165	2.04
Appanoose	512,151	73,188	787	586,126	1,478,000	2.52	1,387	263	151	1,801	122	2.66
Boone	352,237	56,658	3,889	412,784	1,204,000	2.92	718	176	58	952	163	2.66
Dallas	380,909	18,380	2,155	401,444	1,091,000	2.72	497	120	36	653	181	3.39
Davis	------	3,823	----	3,823	11,000	2.88	9	4	3	16	116	2.06
Greene and Webster	------	7,066	----	7,066	28,000	3.96	18	8	5	31	141	1.62
Guthrie	------	6,878	----	6,878	25,000	3.63	26	8	6	40	99	1.74
Jasper	------	55,437	2,700	58,137	146,000	2.51	89	15	18	122	195	2.44
Jefferson and Keokuk	------	4,799	----	4,799	12,000	2.50	13	4	3	20	167	1.44
Lucas	541,780	5,163	11,350	558,293	1,417,000	2.54	524	151	50	725	148	5.21
Mahaska	89	53,462	100	53,651	134,000	2.50	113	12	26	151	140	2.53
Marion	472,530	50,806	14,421	537,757	1,619,000	3.01	607	221	64	892	174	3.47
Monroe	350,767	29,780	1,986	382,533	864,000	2.26	521	102	52	675	178	3.19
Page	700	22,408	----	23,108	96,000	4.15	37	10	6	53	211	2.07
Polk	207,027	366,411	10,655	584,093	1,536,000	2.63	822	180	80	1,082	170	3.17
Taylor	809	8,673	----	9,482	36,000	3.80	34	7	4	45	124	1.70
Van Buren	3,038	3,216	66	6,320	21,000	3.32	15	2	4	21	121	2.48
Wapello	300	83,988	685	84,973	223,000	2.62	143	35	26	204	139	2.99
Warren	106,795	28,120	6,217	141,132	352,000	2.49	217	57	25	299	152	3.10
Wayne	4,386	15,151	204	19,741	53,000	2.68	68	11	9	88	99	2.27
Total 1930	2,933,518	903,038	56,015	3,892,571	$10,385,000	$2.67	5,883	1,388	630	7,901	155	3.18
Total 1929	3,383,801	800,029	57.239	4,241.069	$11,948,000	$2.82	5,408	1,348	539	7,295	195	2.98

(a) The figures relate only to active mines of commercial size that produced coal in 1930. The number of such mines in Iowa was 233 in 1930; 201 in 1929; and 222 in 1928.

Methods of mining in 1930: The tonnage by hand was 515,942; shot off the solid, 2,152,824; cut by machines, 1,185,627; not specified, 38,178.

Size classes of commercial mines in 1930: There were 4 mines in Class 1 B (200,000 to 500,000 tons) producing 24.6 per cent of the tonnage; 8 in Class 2 (100,000 to 200,000 tons) with 29.1 per cent; 10 in Class 3 (50,000 to 100,000 tons) with 17.1 per cent; 34 in Class 4 (10,000 to 50,000 tons) with 18.8 per cent; 177 in Class 5 less than 10,000 tons) producing 10.4 per cent.

covered per man per day was greater in 1930 than in the preceding year, but the number of days worked was much less.

Some rather surprising changes took place in the relative standing of the different counties. Marion County, which had been leader for several years in both tonnage and in the value of the coal produced, dropped to fourth place in tonnage, although retaining first place in value. Polk was second in both tonnage and value in 1930. Appanoose was third in value, although it rose to first in tonnage. Lucas was third in tonnage and fourth in value. Each of these counties produced 500,000 tons or more; Boone County held fifth place in tonnage and value, but with rather a long gap between it and the county next above, as it produced only a little over 400,000 tons. Monroe dropped back considerably in 1930, both in amount produced and in relative position.

As to methods of mining, it is perhaps noteworthy that the tonnage mined by hand increased over that so mined in 1929, while less coal was shot off the solid in 1930 than during the previous year. The amount of coal cut by machines also was less in 1930 than in 1929.

It seems significant that in 1930 twelve mines produced over half of the tonnage mined in the entire state. These with ten other mines produced over 70 percent of the total tonnage raised from 233 mines in this state.

The small field in southwestern Iowa, while not very important in tonnage as compared with the Des Moines valley field, is of considerable local importance because it furnishes a supply to the neighboring communities at lower prices than they would be obliged to pay for coal shipped in from more distant coal fields. This fact offers one of the reasons why such a small field with such a thin vein can continue to operate to advantage and with some measure of profit. Another important reason is the fact that the bed of coal is very persistent; it occupies many square miles with a uniform thickness and constant characters. On this account mining is fairly easy and the tonnage is fairly certain. The thickness of the bed is about 16 inches.

Coal produced in the United States showed a decline similar to that mentioned in Iowa. Bituminous coal in the United States in 1929 amounted to 534,988,000 tons with a value of $952,781,000. Figures for production in 1930 are given in Table IV-A by the Bureau of Mines.

The first 15 states rank as follows in production: Pennsylvania, West Virginia, Illinois, Kentucky, Ohio, Indiana, Alabama, Virginia,

TABLE IV-A

Production, Value, Men Employed, Days Worked, and Output Per Man Per Day at Coal Mines in The United States in 1930.

(Exclusive of product of wagon mines producing less than 1,000 tons)

State	Total quantity net tons	Total value	Average per ton	Number of employees	Average number of days worked	Average tons per man per day
Alabama	15,570,058	$ 31,616,000	$2.03	24,393	189	3.38
Alaska	120,100	631,000	5.25	99	294	4.13
Arizona	9,084	29,000	3.19	24	196	1.94
Arkansas	1,533,434	5,153,000	3.36	4,626	115	2.87
Calif., Idaho, Oregon	18,538	100,000	5.39	138	74	1.81
Colorado	8,196,910	21,485,000	2.62	11,091	169	4.38
Georgia	7,092	18,000	2.54	60	71	1.66
Illinois	53,731,230	93,484,000	1.74	53,603	156	6.42
Indiana	16,489,962	26,178,000	1.59	13,881	157	7.56
Iowa	3,892,571	10,385,000	2.67	7,901	155	3.18
Kansas	2,429,929	5,231,000	2.15	4,855	126	3.96
Kentucky	51,208,995	76,186,000	1.49	56,674	187	4.83
Maryland	2,270,593	3,690,000	1.63	3,299	197	3.50
Michigan	661,113	2,323,000	3.51	1,294	187	2.73
Missouri	3,853,150	8,967,000	2.33	5,700	166	4.07
Montana	3,022,004	6,043,000	2.00	2,085	172	8.45
New Mexico	1,969,433	6,017,000	3.06	2,902	176	3.85
North Carolina	28,500	100,000	3.51	70	290	1.40
North Dakota	1,700,157	2,768,000	1.63	1,258	180	7.50
Ohio	22,551,978	31,643,000	1.40	25,574	189	4.67
Oklahoma	2,793,954	7,768,000	2.78	5,424	148	3.49
Pa. bituminous	124,462,787	213,584,000	1.72	130,150	198	4.82
South Dakota	12,810	31,000	2.42	43	109	2.73
Tennessee	5,130,428	8,417,000	1.64	7,535	196	3.48
Texas	833,872	1,307,000	1.57	1,305	181	3.53
Utah	4,257,541	10,515,000	2.47	3,504	168	7.23
Virginia	10,907,377	17,520,000	1.61	11,709	200	4.66
Washington	2,301,928	7,439,000	3.23	2,801	205	4.01
West Virginia	121,472,638	181,722,000	1.50	105,988	204	5.61
Wyoming	6,088,133	15,133,000	2.49	5,216	188	6.20
Total bituminous, 1930	467,526,299[a]	$795,483,000	$1.70	493,202	187	5.06
Total bituminous, 1929	534,988,593	$952,781,000	$1.78	502,993	219	4.85

(a) The figures relate only to active mines of commercial size that produced bituminous coal in 1930. The number of such mines in the United States was 5,891 in 1930; 6,057 in 1929; and 6,450 in 1928.

Methods of mining in 1930: The tonnage by hand was 55,489,908; shot off the solid, 29,105,549; cut by machines 362,425,163; mined by stripping, 19,842,359; not specified, 663,320.

Colorado, Wyoming, Tennessee, Utah, Iowa, Missouri, Montana. The rank in value differs slightly — Pennsylvania, West Virginia, Illinois, Kentucky, Ohio, Alabama, Indiana, Colorado, Virginia, Wyoming, Utah, Iowa, Missouri, Tennessee, and Oklahoma.

GYPSUM

The gypsum industry suffered a further serious decline in 1930. Tonnages were less in almost every department in the industry, and values were less in every case.

TABLE V

Production of Gypsum in Iowa in 1929 and 1930

	1929		1930	
	Tons	Value	Tons	Value
Crude gypsum mined	718,503	$	484,047	$
Sold crude — cement mills	147,330	232,846	154,860	211,645
Agriculture	1,112	5,888	902	4,057
Total sold crude	148,442	238,734	155,762	215,702
Sold calcined — neat and sanded plaster	39,114	208,416	22,178	208,341
Fibered plaster	276,033	1,276,645	153,576	1,136,208
Plaster board and wall board	126,018 (c)	2,240,024	66,900 (c)	1,671,805
Partition tile	54,468	356,160	31,022	224,083
Other building (a)	17,173	274,823	9,174	141,211
Plaster of paris (b)	8,955	74,054	20,380	143,971
Total sold calcined	521,761	4,430,122	303,230	3,525,617
Total sold	670,203	$4,668,856	458,992	$3,741,319

(a) Includes: Roofing tile, special tile, insulating, fireproofing, other building materials.

(b) The 1929 figures include Keene's cement, sold to plate glassworks. The 1930 figures include sold to plate glassworks, and other purposes.

(c) 1929: Equals 151,961,741 square feet, or 3,489 acres, or 5.45 square miles. 1930: 83,312,425 square feet, or 1912 acres, or 2.99 square miles.

The sales of crude gypsum for use as retarder in cement mills, and sales of plaster of paris were the only items in the gypsum industry which showed an improvement in 1930 over sales for 1929. Unfortunately, lower prices for crude gypsum caused the total amount received for this material to be less than it had been the year before. Sales of plaster of paris increased more than 100 percent in amount and nearly 100 percent in value. This seems to be the one bright spot in the picture. No doubt the great decline in building was the chief reason for the falling off in the business transacted by the gypsum manufacturers. Gypsum has come to be an indispensable material in building construction, and with improvement in business conditions we may look for a return of prosperity to the gypsum industry.

A study of the table giving production of gypsum in the United States shows that this reflects on a larger scale the decrease in production in Iowa. The quantity of crude gypsum mined decreased 31 percent from 1929 to 1930. The value of the sales of gypsum by producers was 14 percent less than in 1929, and 16 percent less than in 1928. New York continued to be the largest producer of gypsum, but showed a notable decrease in 1930. Michigan ranked second in production of gypsum, and Iowa was third. Table V-B gives some details of production in the various manufacturing states.

TABLE V-A

Table of Gypsum in the United States for 1929 and 1930.

	1929		1930	
Plants active	59		56	
	Tons	Value	Tons	Value
Total mined	5,016,132		3,471,393	
Sold crude	1,065,697	$ 2,096,779	989,591	$ 1,886,254
Sold calcined	3,361,580	29,196,190	2,191,376	25,165,230
Total sales	4,427,277	31,292,969	3,180,967	27,051,484

TABLE V-B

Gypsum Mined and Uncalcined and Calcined Gypsum Sold in the United States in 1930.

State	Number of active operators	Total quantity mined (short tons)	Sold by producers				
			Without calcining		Calcined		Total value
			Short tons	Value	Short tons	Value	
Iowa	7	481,047	155,762	$ 215,702	303,230	$ 3,525,617	$ 3,741,319
Michigan	5	519,225	182,050	292,881	300,524	3,462,750	3,755,631
Nevada	5	165,279	49,801	137,214	97,530	839,436	976,650
New York	10	912,070	275,294	597,938	573,602	6,461,170	7,059,108
Ohio	3	255,337	11,460	30,017	243,566	3,064,478	3,094,495
Texas	5	359,315	54,146	84,883	255,727	3,436,860	3,521,743
Utah	3	26,694	(a)	(a)	(a)	(a)	185,148
Other States (b)	18	752,426	(c) 261,078	(c) 527,619	(c) 417,197	(c) 4,374,919	4,717,390
Total, 1930	56	3,471,393	969,591	$ 1,886,254	2,191,376	$25,165,230	$27,051,484
Total, 1929	59	5,016,132	1,065,697	$ 2,096,779	3,361,580	$29,196,190	$31,292,969

(a) Included in "Other States."
(b) Includes Arizona, California, Colorado, Kansas, Montana, Oklahoma, South Dakota, Virginia, and Wyoming.
(c) These figures include also sales from Utah.

LIMESTONE AND LIME

The production of stone and lime in Iowa had declined slightly from 1928 to 1929, but this decline was more than made up in 1930. Table VI shows that increase in the production of stone amounted to over 200,000 tons in 1930, while the increase in value was nearly $300,000. This is, indeed, an encouraging feature in the midst of so many discouraging declines in mineral production. The increase in production of limestone was shared in by most branches of the industry. The ones which showed a decline in 1930 were building stone and stone for fluxing. All other classes of limestone were produced in larger quantities, most of them, it is true, only slightly larger, but in the case of railroad ballast, very notably larger.

The leading kinds of stone produced in 1930, in the order of their tonnages are: 1, stone for concrete and road building; 2, stone for

TABLE VI

Production of Stone and Lime in Iowa, 1929 and 1930.

Kind	1929			1930		
	Plants	Tons	Value	Plants	Tons	Value
Building, Curbing, flagging, paving	3	12,510 (a)	$ 13,839	3	3,936	$ 4,074
Rubble	3	2,110	2,952	5	6,172	6,885
Riprap	12	92,660	103,777	9	98,780	85,704
Concrete and road metal	29	1,158,490	1,182,773	27	1,160,390	1,297,836
Railroad ballast	5	107,390	45,809	6	258,787	217,727
Flux and Other Uses, Glass and sugar factories	2 6	58,190	40,841	3 2	33,545	43,397
Agriculture	19	193,050	159,752	27	268,720	197,788
		1,625,000	$1,560,066		1,830,320	$1,853,411

(a) The figures for curbing, flagging, and paving were not combined with the Building totals in 1929, but were combined in 1930. These items were not reported for 1929.

agriculture; 3, railroad ballast; 4, riprap. The values of different kinds of stone differed considerably in rank from the rankings in tonnage, and were as follows: 1, stone for concrete and roadbuilding; 2, railroad ballast; 3, stone used in agriculture; 4, riprap. Table VI shows the production of stone during 1929 and 1930 by classes, while Table VII shows production by counties.

Among the counties, Madison was the leader in both tonnage and value, with the Hawkeye Portland Cement Co. the largest operator. This company has its office and cement plant in Des Moines. (As is true in all of these reports, the limestone that is discussed under this topic is separate from that used for cement making.) The other leading counties were Scott, Marshall, Black Hawk, Clayton, and Johnson in tonnage, and Black Hawk, Marshall, Scott, Johnson, and Clayton in value.

Lime was burned during 1929 and 1930 at only one plant — the Hurst estate at Hurstville near Maquoketa in Jackson County. The

TABLE VI-A

Stone sold or used by producers in the United States, 1929 and 1930, by uses

Use	1929		1930	
	Quantity in short tons	Value	Quantity in short tons	Value
Building and monumental stone	3,013,640	$ 59,753,249	2,612,370	$ 52,269,077
Paving blocks, curbing, and flagging	724,470	7,453,939	638,410	6,551,388
Rubble, riprap, crushed stone	97,842,060	100,743,302	92,469,510	93,215,413
Other uses (a)	39,529,410	34.742,272	31,276,050	26,912,733
Total (quantities approximate in short tons)	141,109.580	$202,692,762	126,996,340	$178,948,611

(a) Other uses include furnace flux, refractory stone, agricultural limestone, manufacturing industries, and miscellaneous stone used.

TABLE VII

Production of Limestone and Lime in Iowa in 1930.

Counties	Plants	Building stone, rubble, riprap		Concrete, road metal		Other uses (a)		Total	
		Tons	Value	Tons	Value	Tons	Value	Tons	Value
Allamakee (2), Winneshiek (1)	3			43,515	$ 54,938	(b)	(b)	43,515	$ 54,938
Black Hawk (3), Bremer (1)	4			146,646	180,721	31,859	$ 19,152	178,505	199,873
Cass (1), Madison (1), Van Buren (2)	4	(b)	(b)	314,510	349,677	48,525	27,713	363,035	377,390
Cerro Gordo (1), Fayette (1), Hardin (1), Marshall (2)	5			153,050	173,306	303,233	274,985	456,283	448,291
Clayton (3), Dubuque (3), Jackson (2)	8	79,016	$ 62,887	162,000	175,890	43,235	38,853	284,251	277,630
Clinton (4), Scott (2)	6	(b)	(b)	158,642	132,156	83,317	65,682	241,959	197,838
Floyd (1), Jones (3)	4	13,320	13,981	8,372	8,372	11,107	11,466	32,799	33,819
Johnson (1), Linn (3)	4			158,694	175,381	17,173	12,576	175,867	187,957
Lee	5	8,195	9,503	39,863	60,416	6,048	5,756	54,106	75,675
Totals for 1930	43	100,511	$ 86,371	1,185,292	$1,310,857	544,497	$456,183	1,830,320	$1,853,411
Totals for 1929	41	107,280	$120,568	1,158,490	$1,182,773	359,230	$251,652	1,625,000	$1,560,066

(a) Includes: Railroad ballast, flux, sold to sugar factories, agricultural limestone, railroad fills.
(b) Included in Concrete.

figures regarding production are combined with those for the output of limestone.

Production of limestone decreased in United States as a whole. In 1930 the output amounted to 88,741,440 short tons valued at $100,002,114, a decrease of 12 percent in both quantity and value from 1929. Table VI-A shows the production of different classes of stone during 1929 and 1930.

SAND AND GRAVEL

Table VIII shows a gratifying increase in the total production of both sand and gravel during 1930. The price per ton for some classes was slightly less in 1930, and consequently the increase in value is somewhat less than the increase in tonnage. The more important increases in 1930 were in building sand, which increased 140,000 tons; paving and road sand, where increase amounted to 100,000 tons; building gravel, which increased nearly 170,000 tons; and paving and road gravel, which increased about 150,000 tons.

There were slight declines in the production of molding sand, grinding and polishing sand, engine sand, miscellaneous sands, and railroad and miscellaneous gravel counted together.

TABLE VIII

Summary of Sand and Gravel Production in Iowa, 1929 and 1930.

Materials	1929				1930			
	Pits	Tons	Value	Ave. Price	Pits	Tons	Value	Ave. Price
Sand								
Molding	3	48,558	$ 32,911	$ .68	5	28,343	$ 27,030	$ .95
Building	39	442,491	224,833	.51	49	583,949	292,721	.50
Paving and roads	42	1,294,148	538,416	.42	39	1,397,207	562,809	.40
Grinding, polishing	3	18,676 (a)	41,050		3	2,788 (b)	4,137	1.48
Engine	10	44,338	22,146	.50	10	31,184	15,396	.49
Filter	0				4	3,172	1,939	.61
Railroad ballast	3	26,345	5,726	.22	4	56,260	18,670	.33
Other	7	12,723	2,965	.23	4	7,433 (c)	1,710	
Total sand	62*	1,887,279	$ 868,047		66*	2,110,336	$ 924,412	
Gravel								
Building	40	317,719	254,666	.80	54	485,792	496,261	1.02
Paving and roads	44	1,600,895	973,893	.61	50	1,749,235	1,113,549	.64
Railroad ballast	7	224,204	93,587	.42	6	(d)		.36
Other	4	13,572	21,559	1.60	1	176,608	64,885	2.00
Total gravel	64*	2,156,330	$1,343,705		76*	2,411,635	$1,674,695	
Total output		4,043,609	$2,211,752			4,521,971	$2,599,107	

(a) The figures for 1929 include filter sand and blast sand with grinding and polishing.
(b) This figure includes grinding, polishing, and blast sand.
(c) The totals for fire and furnace sand are included in other sand.
(d) Included in other gravels.
* This figure is not the sum of the numbers given above. It is the total number of different pits in the state. The same pit may produce sand or gravel that is used for several different purposes.

These reports have previously called attention to the fluctuations of sand and gravel in different counties during a period of years. These fluctuations were well illustrated during 1930. In that year the leading counties in tonnage were: first, Sac, followed in order by Cerro Gordo, Polk, Muscatine, Butler, Sioux, and Mahaska.

In value the ranking of the first seven counties was slightly different: Cerro Gordo, Sac, Polk, Mahaska, Muscatine, Butler, and Sioux.

Reports show that Muscatine has declined from first in tonnage and value in 1929 to fourth in tonnage and fifth in value in 1930. Sac advanced from fourth in tonnage and third in value in 1929 to first in tonnage and second in value in 1930. Cerro Gordo made a slight advance; from second in both tonnage and value in 1929 it remained second in tonnage and became first in value in 1930.

Tables IX and X show the production of sand and gravel respectively by counties. It is regrettable that so many counties must be grouped together, but this is necessary in order not to reveal individual production.

Table VIII-A shows the production of different classes of sand and gravel in the United States in 1929 and 1930. Production of sand and gravel in 1928 was the highest in the nation's history thus far. In 1929

TABLE VIII-A

Sand and Gravel Sold or Used by Producers in the United States 1929 and 1930 by Uses

Use	1929		1930	
	Short Tons	Value	Short Tons	Value
Sand:				
Glass	2,219,677	$ 3,788,471	1,849,101	$ 3,210,973
Molding	6,195,343	6,410,343	3,336,855	3,547,154
Building	41,161,013	23,309,238	33,599,524	18,850,936
Paving	40,801,991	21,131,731	36,367,468	18,674,649
Grinding and Polishing	1,636,464	2,303,652	1,115,915	1,613,022
Fire or Furnace	440,679	483,551	258,241	333,727
Engine	2,318,931	1,487,906	1,773,204	1,219,070
Filter	100,081	199,838	80,326	167,947
Other (a)	4,378,875	1,686,627	5,277,984	2,104,075
	99,253,054	60,801,357	83,658,618	49,721,553
Gravel:				
Building	32,448,800	23,813,885	28,271,902	21,346,251
Paving	60,029,164	38,695,207	64,408,274	37,349,936
Railroad Ballast (b)	30,840,887	9,525,530	20,712,932	6,758,803
	123,318,851	72,034,622	113,393,108	65,454,990
Grand Total	222,571,905	$132,835,979	197,051,726	$115,176,543

(a) Includes some sand used for railroad ballast, fills, etc.
(b) Includes some gravel used by the railroads for fills and other purposes. The quantity of gravel reported as used exclusively for railroad ballast was as follows: 1929, 27,332,529 tons, valued at $8,804,082; 1930, 16,227,543 tons, valued at $5,554,684.

TABLE IX

Production of Sand and Gravel in 1930 — Sand

Counties	Producers	Structural sand		Paving sand		Other sand (a)		Total sand	
		Tons	Value	Tons	Value	Tons	Value	Tons	Value
Allamakee (1), Clayton (2), Dubuque (2), Fayette (1)	6	44,663	$ 29,473	35,295	$ 13,147	(c)	(c)	79,958	$ 42,620
Appanoose (1), Lee (2), Marion (1)	4	19,613	8,872	6,700	3,272	(b) (c)	(b) (c)	26,313	12,144
Black Hawk (3), Butler (3)	6	66,030	37,193	152,906	54,029	(c)	(c)	218,936	91,222
Boone (2), Dallas (1), Story (1)	4	12,160	8,567			(c)	(c)	12,160	8,567
Buena Vista (0), Cherokee (1), Palo Alto (1), Pocahontas (1)	3			112,032	19,856	(b)	(b)	112,032	19,856
Cerro Gordo (2), Floyd (1), Grundy (0), Mitchell (0)	3	263,110	122,020	(c)	(c)	(c)	(c)	263,110	122,020
Clay (1), Sioux (4)	5	76,400	30,740	71,700	26,530	20,420	7,480	168,520	64,750
Clinton	3	56,168	19,214	(c)	(c)			56,168	19,214
Crawford (0), Harrison (1), Sac (3), Webster (1)	5	(b)	(b)	172,605	66,105			172,605	66,105
Des Moines (1), Muscatine (3), Scott (1)	5	28,878	21,251	162,827	57,319	(c)	(c)	191,705	78,570
Emmet (1), Lyon (1), Osceola (0), Plymouth (1)	3	18,162	6,798					18,162	6,798
Franklin (1), Hancock (1), Humboldt (1), Wright (0)	3	134,639	53,570	(c)	(c)	(c)	(c)	134,639	53,570
Jackson (1), Johnson (2)	3	19,195	9,034	40,500	17,450	(d)	(d)	59,695	26,484
Linn (2), Mahaska (1), Marshall (0), Tama (1), Van Buren (1)	5	110,526	59,512	209,047	110,958	(c)	(c)	319,573	170,470
Polk	8	84,574	44,542	192,186	97,480	(c)	(c)	276,760	142,022
Totals for 1930	66	934,118	$449,786	1,155,798	$466,146	20,420	$ 7,480	2,110,336	$924,412
Totals for 1929	60	442,491	$224,833	1,294,148	$538,416	150,640	$104,798	1,887,279	$868,047

(a) Includes: Molding, cutting and grinding and blast, engine, filter, railroad ballast, and other sands.
(b) Included with paving sand.
(c) Included with structural sand.

TABLE X

Production of Sand and Gravel in 1930 — Gravel

Counties	Producers	Structural gravel		Paving and other gravel		Total sand and gravel		Total quantity washed	
		Tons	Value	Tons	Value	Tons	Value	Tons	Value
Allamakee (1), Clayton (2), Dubuque (2), Fayette (1)	6	19,050	$ 9,950	99,484	$ 52,844	198,492	$ 105,394	75,990	$ 56,395
Appanoose (0), Lee (2), Marion (1)	3	5,224	5,599			31,537	17,743	30,923	17,614
Black Hawk (3), Butler (2)	5	11,281	13,769	148,685	153,321	378,902	258,312	374,177	255,687
Boone (2), Dallas (1), Story (1)	4	4,337	3,796	130,749	48,236	147,246	60,599	97,725	55,709
Buena Vista (1), Cherokee (1), Palo Alto (2), Pocahontas (1)	5	(b)	(b)	368,642	83,026	480,674	102,882	74,880	24,700
Cerro Gordo (2), Floyd (0), Grundy (1), Mitchell (1)	4	62,034	73,605	156,429	170,630	481,573	366,255	481,034	366,005
Clay (1), Sioux (5)	6	46,585	47,993	87,500	48,750	302,605	161,493	232,500	129,983
Clinton	5	45,224	34,760	52,104	24,500	142,552	78,474	120,257	64,344
Crawford (2), Harrison (2), Sac (6), Webster (0)	10	197,401	184,351	243,609	88,124	613,615	338,580	527,407	325,722
Des Moines (1), Muscatine (3), Scott (1)	5	11,230	26,685	213,250	150,989	416,185	256,244	396,738	242,004
Emmet (1), Lyon (2), Osecola (1), Plymouth (1)	5	11,239	5,707	81,309	16,852	110,710	29,357	37,292	16,039
Franklin (1), Hancock (1), Humboldt (1), Wright (1)	4	11,259	14,836	70,836	45,498	216,734	113,904	143,905	105,120
Jackson (1), Johnson (2)	3	8,195	5,858	78,231	54,609	146,121	86,951	146,121	86,951
Linn (1), Mahaska (1), Marshall (1), Tama (1), Van Buren (0)	4	15,304	20,009	121,081	155,017	455,958	345,496	449,800	344,136
Polk	7	37,282	49,320	74,081	86,061	388,123	277,403	353,221	248,725
Totals for 1930	76	485,645	$496,238	1,925,990	$1,178,457	4,521,971	$2,599,107	3,541,970	$2,339,134
Totals for 1929	64	317,719	$254,666	1,838,611	$1,089,039	4,043,609	$2,211,752	3,089,611	$1,992,835

(b) Included with paving gravel.

production increased 6.4 percent over that of 1928. This industry, however, was feeling the effects of the worldwide depression in 1930, and the output decreased 11 percent in quantity and 13 percent in value from that of 1929.

In Table IX-A is shown the production of sand and gravel in ten leading states during 1929 and 1930. Iowa ranked sixteenth in tonnage produced and fourteenth in value for 1930. This compares with a rank of fifteenth in production and sixteenth in value during 1929.

TABLE IX-A

Sand and Gravel Production in Leading States in 1929 and 1930

State	1929		1930	
	Tons	Value	Tons	Value
New York	21,061,094	$ 14,919,658	20,865,866	$ 12,710,172
Illinois	18,256,203	9,071,258	17,398,693	8,382,025
Michigan	16,844,099	7,928,744	11,389,119	5,161,176
California	15,688,545	8,371,263	12,604,051	7,354,506
Ohio	14,250,141	9,182,862	12,679,854	8,173,741
Pennsylvania	12,674,320	13,658,328	11,012,512	11,107,825
Indiana	10,901,798	5,528,832	9,838,757	4,667,771
Wisconsin	10,727,632	4,574,182	7,082,063	2,801,713
Texas	9,409,295	5,765,943	8,803,929	5,567,127
New Jersey	6,721,498	5,585,285	5,969,479	5,009,866
Total for U. S.	222,571,905	$132,835,979	197,051,726	$115,176,543

Iowa ranked sixteenth in tonnage and fourteenth in value.

MINERAL PRODUCTION IN 1931

OUTLINE

The record of mineral production in 1930 did not offer much encouragement in comparison with the record for 1929, for there was a decrease of over two million dollars in the value of the output in the later year. But what shall we say for 1931? The record for this year shows a drop from 33 million to 21 million dollars. This is the most serious decline that has occurred since this Survey began collecting mineral statistics.

In the first place, the number of operators was less in nearly every branch of the mineral industry. In the second place, the value of materials produced and sold was less in every division of the industry in 1931 — in some cases nearly 50 percent less. The most serious declines were in cement, where values dropped from $10,100,000 in 1930 to $5,450,000 in 1931; in clay wares, where the drop was from $4,700,000 to $2,280,000; and in sand and gravel, where values declined from $2,545,000 to $1,511,000. While these conditions are decidedly discouraging, they are only a part of a nation-wide and even worldwide situation.

The mineral industry, in turn, merely reflects conditions in other lines of business; this industry will improve as other business comes back to normal.

TABLE I

Mineral Production in Iowa in 1930 and 1931

Product	Unit	1930			1931		
		Producers	Quantity	Value	Producers	Quantity	Value
Cement	bbl.	6	7,035,252	$10,107,584	5	5,790,087	$ 5,453,320
Clay Wares	ton			4,713,448			2,287,903
Coal	ton	233	3,892,571	10,385,000	231	3,388,355	8,575,000
Gypsum	ton	8	458,992	3,741,319	6	309,200	2,588,126
Limestone and Lime	ton	43	1,814,291	1,850,832	43	1,271,710	1,210,705
Sand and Gravel	ton	87	4,333,637	2,545,287	75	3,403,396	1,511,278
				$33,343,470			$21,626,332

TABLE I-A

Mineral Production in the United States in 1930 and 1931

Summary	1930	1931
	Value	Value
Total value of metallic products	$ 982,550,000	$ 567,200,000
Total value of nonmetallic products (exclusive of mineral fuels)	1,008,900,000	699,700,000
Total value of mineral fuels	2,764,500,000	1,892,400,000
Total value of "unspecified" (metallic and nonmetallic) products (partly estimated)	8,850,000	7,300,000
Grand total approximate value of mineral products	$4,764,800,000	$3,166,600,000

Table I gives a comparison of conditions in Iowa in 1930 and 1931. Table I-A shows a summary of mineral production in the United States for the same years. This table brings out the facts that metallic products decreased in value nearly one half — from almost one billion dollars to a little over one-half billion dollars; nonmetallic products except fuels decreased from one billion dollars to almost 700 million dollars. Mineral fuels decreased from nearly $2\frac{3}{4}$ billion dollars to a little less than 2 billion dollars. The total mineral production decreased from a value of nearly $4\frac{3}{4}$ billion dollars to a little over 3 billion dollars.

CEMENT

The portland cement industry suffered in 1931 what was undoubtedly the most serious reverse of its history in Iowa. The decrease in the number of barrels shipped amounted to slightly over one million. This was serious enough in itself, but, added to a drop of 50 cents per barrel in the average price received at the mills, it brought about a fall in value amounting to about 44 percent.

The Gilmore City Plant of the Northwestern States Portland Cement Co. was idle. The other five plants were operating, but on a scale

far below their real capacity. The following companies were operating during 1930 and 1931:

Davenport, Dewey Portland Cement Co., Kansas City, Mo.
Brand — Dewey.
Des Moines, Hawkeye Portland Cement Co., Des Moines.
Brand — Hawkeye.
Gilmore City, Northwestern States Portland Cement Co., Mason City.
Brand — Northwestern. (In 1930 only)
Mason City, Lehigh Portland Cement Co., Allenton, Pa.
Brand — Lehigh.
Northwestern States Portland Cement Co., Mason City.
Brand — Northwestern.
Valley Junction, Pennsylvania-Dixie Cement Corporation, Des Moines.
Brand — Pyramid.

All of the plants except the Mason City plant of the Northwestern States Portland Cement Co. are now operating by the wet process rather than by the dry process, which all of the older plants formerly used. These data are given in detail in Table II.

TABLE II

Production of Cement in Iowa

	1930	1931
Production, bbls.	7,088,108	5,804,462
Stock, December 31, bbls.	1,400,000	1,414,375
Shipments, bbls.	7,035,252	5,790,087
Shipments, value	$ 10,107,584	$ 5,453,320
Average price per bbl.	$1.44	$0.94
Estimated consumption, bbls.	6,411,595	
Annual capacity, bbls.	10,293,900	10,293,900

Production of portland cement in the United States in 1931 showed a decrease of 21 percent from 1930. Shipments from mills during 1931 — 127,150,000 barrels, valued at $140,976,000 — decreased 20 percent in quantity and 38 percent in value. The average factory price per barrel in 1931 was $1.11, a decrease of 33 cents per barrel as compared with 1930. A summary of the statistics for the cement industry in 1931 is given in Table II-A.

TABLE II-A

Production of Cement in the United States

	1930	1931
Production, bbls.	161,197,228	125,429,071
Shipments, bbls.	159,059,334	127,150,534
Shipments, value	$228,779,756	$140,976,450
Stock, December 31, bbls.	25,838,427	24,177,159
Plants active	163	163

CLAY AND CLAY PRODUCTS

The production of clay was much decreased in 1931 from that of

1930. 1,271 tons were reported in quantity and $13,322 in value.

If the situation in the cement industry was discouraging in 1931, the condition of the clay wares industry was even less satisfactory. Production in this industry in Iowa dropped off slightly more than 50 percent in value, from $4,700,000 to less than $2,300,000. Naturally, the different classes of clay wares showed similar declines, such, for instance, as common brick from a value of $600,000 to $400,000; and drain tile from $900,000 to $250,000. In fact, every branch of the clay-working industry showed a similar decline. Details of production showing quantities and values for 1931 are shown in Table III.

TABLE III

Production of Clay Products, by Class, Quantity, and Value, 1930 and 1931

Class and Year	Quantity	Value
Total value:		
1931		$2,287,903
1930		4,713,448
Common brick:	Thousands	
1931	33,814	403,547
1930	53,100	600,394
Face brick:		
1931	16,024	239,036
1930	23,906	389,275
Hollow building tile:		
(a) Partition, load-bearing, etc. —	Tons	
1931	112,890	694,789
1930	212,372	1,523,298
(c) Floor arch, etc. —		
1931	35,651	186,365
1930	(1)	(1)
Draintile:		
1931	34,697	256,354
1930	114,500	897,344
Sewer pipe:		
1931	29,017	392,208
1930	45,763	675,757
Flue lining:		
1931	2,243	22,280
1930	3,648	42,938
Wall coping:		
1931	362	6,723
1930	774	13,511
Clay sold, raw or prepared:		
1931	978	11,721
1930	4,181	41,961
Other clay products, including pottery:		
1931		74,880
1930		528,970

(1) Included in "Other clay products" in order to avoid disclosing approximations of data supplied by individual establishments.

The list of clay ware producers in Iowa is given below.

Appanoose County — Centerville Brick & Tile Co., Centerville.
Cerro Gordo County — Mason City Brick & Tile Co., Mason City.

Dallas County — Adel Products Co., Redfield; Redfield Brick & Tile Co., Redfield; United Brick & Tile Co., Adel.
Floyd County — Rockford Brick & Tile Co., Rockford.
Franklin County — Sheffield Brick & Tile Co., Sheffield.
Jackson County — Bellevue Pottery Co., Bellevue.
Keokuk County — Nelson & Sons, What Cheer.
Polk County — Des Moines Clay Co., 25th & Aurora Sts., Des Moines; Flint Brick Co., 907 Bankers Trust Bldg., Des Moines; Goodwin Brick and Tile Co., 410 Shops Bldg., Des Moines; United Brick & Tile Co., 412 Hubbell Bldg., Des Moines.
Story County — Nevada Brick & Tile Works, Nevada.
Tama County — Gladbrook Press Brick & Tile Co., Gladbrook.
Wapello County — Morey Clay Products Co., Ottumwa.
Webster County — Johnson Clay Works, Fort Dodge; Kalo Brick & Tile Co., Fort Dodge; Kalo Brick & Tile Co., Otho; Lehigh Sewer Pipe & Tile Co., Fort Dodge; M. J. M. Norton, Fort Dodge; Vincent Clay Products Co., Fort Dodge.
Woodbury County — Sioux City Brick & Tile Co., Sioux City.

COAL

The picture of coal operations in 1931 is of itself none too bright, it is true; however, in contrast with some other portions of the mineral industry, it does offer some relief from the rather dreary picture of the mineral industry in general. Coal production declined about half a million tons in 1931. Of course this was serious enough, but it was rather slight as compared with the declines in cement and clay shipments.

The decline in average price per ton from $2.67 to $2.53 was one of the important factors in the decline of nearly two million dollars in the value of the coal sold. The number of employees was practically the same each year, but the average number of days worked was 13 less in 1931 than in 1930. The average tonnage mined by each man was also less in 1931. Only two mines produced between 200,000 and 500,000 tons each, as compared with four mines of that rank in 1930. Six mines produced between 100,000 and 200,000 tons each, as compared with eight such mines the previous year. Nine mines produced between 50,000 and 100,000 tons each, while ten mines ranked in this class in 1930. There were 36 mines in the 10,000 to 50,000 tons class in 1931, as compared with 34 in the previous year. The remainder of the 231 mines, those producing less than 10,000 tons each, numbered 178 in 1931, and 177 in 1930.

Among the different coal-producing counties of the state, Appanoose mined the most tons, followed by Polk, Lucas, Marion, Dallas, Boone, Monroe. As is always the case, in value the rank was slightly different; Polk was the leader with these counties following in order — Appanoose, Lucas, Boone, Dallas, Marion, Monroe.

These facts are shown graphically in Table IV.

TABLE IV

Production, Value, Men Employed, Days Worked, and Output Per Man Per Year at Coal Mines in Iowa in 1931.[a]

(Exclusive of product of wagon mines producing less than 1,000 tons)

County	Net tons				Value		Number of employees				Average number of days worked	Average tons per man per year[b]
	Loaded at mines for shipment	Sold to local trade and used by employees	Used at Mines for power and heat	Total quantity	Total (thousand dollars)	Average per ton	Underground: Miners, loaders, and shot firers	Underground: All others	Surface	Total		
Adams	------	13,380	------	13,380	$ 41	$3.06	31	10	8	49	171	273
Appanoose	477,591	66,202	738	544,531	1,248	2.29	1,502	264	153	1,919	120	284
Boone	288,144	74,548	2,994	365,686	1,188	3.25	789	175	69	1,033	141	354
Dallas	356,361	18,031	1,750	376,142	992	2.64	537	97	35	669	149	562
Davis	------	1,254	------	1,254	4	3.19	9	2	4	15	57	84
Greene and Webster	------	18,053	10	18,063	57	3.16	51	10	13	74	97	244
Guthrie	------	9,256	------	9,256	31	3.35	29	12	8	49	146	189
Jasper	------	56,204	3,062	59,266	153	2.58	92	31	18	141	160	420
Jefferson and Keokuk	------	4,420	------	4,420	11	2.49	11	5	3	19	136	233
Lucas	460,380	4,254	6,131	470,765	1,192	2.53	469	157	52	678	142	694
Mahaska	56	48,836	180	49,072	115	2.34	92	24	27	143	143	343
Marion	340,173	44,766	7,723	392,662	918	2.34	578	187	70	835	148	470
Monroe	312,822	29,321	2,772	344,915	731	2.12	502	95	61	658	159	524
Page	1,320	24,376	------	25,696	92	3.58	58	19	8	85	174	302
Polk	156,942	347,405	7,210	511,557	1,273	2.49	703	187	70	960	171	533
Taylor	870	7,772	------	8,642	30	3.47	36	8	5	49	135	176
Van Buren	236	8,685	150	9,071	26	2.87	17	6	5	28	99	324
Wapello	375	78,826	870	80,071	210	2.62	141	35	29	205	144	391
Warren	43,537	37,549	3,580	84,666	215	2.54	145	51	20	216	127	392
Wayne	3,570	14,170	1,500	19,240	48	2.49	48	12	12	72	118	267
Total 1931	2,442,377	907,308	38,670	3,388,355	$ 8,575	$2.53	5,840	1,387	670	7,897	142	429
Total 1930	2,933,518	903,038	56,015	3,892,571	$10,385	$2.67	5,883	1,388	630	7,901	155	493

(a) The figures relate only to active mines of commercial size that produced coal in 1931. The number of such mines in Iowa was 231 in 1931; 233 in 1930; 201 in 1929. Size classes of commercial mines in 1931: There were 2 mines in Class 1 B (200,000 to 500,000 tons); 6 in Class 2 (100,000 to 200,000 tons); 9 in Class 3 (50,000 to 100,000 tons); 36 in Class 4 (10,000 to 50,000 tons); 178 in Class 5 (less than 10,000 tons). Methods of mining in 1931: The tonnage by hand was 402,157; shot off the solid, 1,894,751; cut by machine, 1,055,711; not specified, 35,736.

(b) The output per man per day for the State as a whole, calculated by dividing the tonnage by the product of the number employed at each mine times the number of days worked by the mine, was 3.02 tons in 1931; and 3.18 in 1930.

It is, perhaps, worthy of note that two of the counties in the southwestern Iowa coal field, mining the Nodaway seam, increased their output slightly in 1931. Adams County raised its production from 10,000 to 13,000 tons, and Page County increased its output about 2,600 tons. Taylor County, however, suffered a slight decline of 800 tons. Certainly the field as a whole compared well with the larger field in the Des Moines valley. The list of coal operators for 1931 in Iowa is as follows:

Adams County
- Black Diamond Coal Co., Route 1, Nodaway
- John G. Henton, R.F.D. 1, Carbon
- Larson & Turner, Route 6, Corning
- McKee Coal Co., Route 6, Corning
- Smith & Drake, Carbon

Appanoose County
- Appanoose County Coal Co., Centerville
- Bert Arbogast, Numa
- Armstrong Coal Co., Cincinnati: office Commerce Bldg., Kansas City, Mo.
- Barrett Coal Co., Mystic
- Battle Creek Coal Co., Route 2, Mystic
- Big Slope Coal Co., Route 3, Centerville
- Bradshaw Coal Co., Dean
- Buban Coal Co., Route 1, Mystic
- Frank Casale, 517 E. Walnut St., Centerville
- Center Coal Co., Centerville
- Centerville Block Coal Co., Centerville
- Centerville Coal Co., Centerville
- Citizens Coal Co., Centerville
- Clarke Coal Co., Centerville
- J. A. Colgan Coal Co., Mystic
- Columbus Coal Co., Centerville
- Continental Coal Co., Centerville
- Diamond Lump Coal Co., Centerville
- Domestic Coal Co., Cincinnati
- Duff Coal Co., Mystic
- Curt Ellis, Centerville
- Empire Coal Co., Centerville
- Enterprise Coal Co., Numa
- Enterprise Coal Co., Rathbun
- Fairlawn Coal Co., Centerville
- Friendship Coal Co., Cincinnati
- Guinn Coal Co., Coal City
- Hafner Coal Co., Cincinnati
- Helman Bros. Coal Co., Centerville
- Herr Coal Co., Plano
- Hi-Test Coal Co., Mystic
- Iowa Block Coal Co., Centerville
- Johnson Coal Co., Mystic
- Kincaide Coal Co., Centerville
- J. A. Koontz, Centerville
- Liberty Coal Co., Mystic
- Little Walnut Coal Co., Mystic
- W. W. Lowe, Brazil
- Maddalozzi Coal Co., Mystic
- McConville Coal Co., Centerville
- Monitor Coal Co., Centerville
- New Egypt Coal Co., Mystic
- New Rock Valley Coal Co., Centerville
- New Star Coal Co., Route 1, Centerville
- North Hill Coal Co., Centerville
- Numa Coal Co., Numa
- Old King Coal Co., Centerville
- Peacock Coal Co., Brazil
- Prospect Coal Mine, J. F. Daniels, Exline
- Rathbun Coal Co., Rathbun
- Red Bird Coal Co., Seymour
- Simatovich Coal Co., Route 3, Centerville
- Star Coal Co., Mystic
- Sunshine Coal Co., Centerville
- Thistle Coal Co., Cincinnati
- Byte Coal Co., Centerville
- Walnut Creek Coal Co., Jerome
- Water Lily Coal Co., Rathbun
- White Oak Coal Co., Exline

Boone County
- Benson Coal Co., Boone
- Boone Coal Co., Inc., Boone
- Fort Dodge, Des Moines & Southern R. R. Co., Ogden
- Ogden Superior, Ogden
- Kristianson Bros., Route No. 1, Ogden
- Scandia Coal Co., Madrid: office 606 Grand Ave., Des Moines

Dallas County
- Dallas Fuel Co., Granger: office Insurance Exchange Bldg., Des Moines
- Norwood-White Coal Co., Moran: office 907 Bankers Trust Bldg., Des Moines
- Scandia Coal Co., Des Moines
- Shuler Coal Co., Waukee: office So. Surety Building, Des Moines

Davis County
- Henderson & Goodwin Coal Co., Floris
- Lunsford Bros. Coal Co., Bloomfield
- Mitchell Bros. Coal Co., R.F.D. No. 2, Floris
- Van Patten Coal Co., Floris

Greene County
- Greene County Coal Co., Jefferson
- Harold McElheny Co., Rippey
- Riverside Coal Co., Rippey

Guthrie County
Butler Coal Co., Guthrie Center
John Mansell Coal Co., Guthrie Center
Elmer Renslow Coal Co., Guthrie Center
Lloyd Renslow Coal Co., R.R. 3, Guthrie Center
W. H. Scott, R.R. 5, Guthrie Center
H. M. Sipe Coal Co., Guthrie Center
Thomas Coal Co., Guthrie Center

Jasper County
Colfax Coal Co., Colfax
Hopkins Coal Co., Colfax
Jackson Coal Co., R.F.D. 4, Newton
Newton Coal Co., Newton
Oswalt Coal Co., Colfax
Prairie Coal Co., 904 E. 29th St., Des Moines
Acklin & Peterson, R.F.D. 3, Monroe

Jefferson County
Bonnett Coal Co., Fairfield
Star Coal Co., R.F.D. 7, Fairfield

Keokuk County
Carson Bros., What Cheer

Lucas County
Central Iowa Fuel Co., Williamson: office 1209 So. Surety Bldg., Des Moines
Consolidated Indiana Coal Co., mine near Williamson: office 139 West Van Buren St., Chicago, Ill.
Mederais Coal Co., R. 1, Lacona
Union Coal Co., Lucas

Mahaska County
Charles Ahrweiler, Oskaloosa
Ball & Co., What Cheer
Blomgren Bros. Coal Co., R.F.D., Lovilia
Cromwell & Wilson, Givin
De Frehn & Son, Oskaloosa
Edwards Bros. Coal Co., Oskaloosa
Thomas H. Edwards, Beacon
A. M. Ellis Coal Co., Givin
Evans Bros. Coal Co., Eddyville
Evans Coal Co., Evans
Steve & Joe Gasper, Truax
Givin Coal Co., Givin
Hynick Coal Co., R.R. 1, Givin
Thomas Lewis, Givin
Lockhart Coal Co., R.F.D., Oskaloosa
Mathes Coal Co., Givin
Frank Mathews, Oskaloosa
Mitchell Coal Co., 902 1st Ave. W., Oskaloosa
J. M. Mitrisin, Oskaloosa
Oskaloosa Coal Co., Oskaloosa
Owens & Griffith, Beacon
O. E. Price & E. Snook, University Park
Roberts Bros. Coal Co., Oskaloosa
Swanson & Lewis Coal Co., Oskaloosa
Sweitzer Coal Co., Eddyville
Thatcher Coal Co., Oskaloosa
White Bros. Coal Co., Rose Hill
Williams Coal Co., New Sharon

Marion County
Bishop Coal Co., R.F.D., Knoxville
Bradley Bros. Coal Co., R.R. 1, Knoxville
Consolidated Indiana Coal Co., Melcher: office 139 West Van Buren St., Chicago
Cox Bros., R. R. 3, Knoxville
Deitrich & Clark, Cordova
Chas. Fortner Coal Co., R.F.D., Knoxville
Hamilton Coal Co., Hamilton
Hayes Bros. Coal Co., Knoxville
Horse Shoe Coal Co., Bussey
Johns Bros. Coal Co., Bussey
Walter McElrea, Dallas
McNeish Bros., Knoxville
Pershing Coal Co., Pershing: office 648, Ins. Exch. Bldg., Des Moines
Red Rock Coal Co., Melcher: office 1219 So. Surety Bldg., Des Moines
Riggens Coal Co., Harvey
Ben Rowley, Knoxville
Success Coal Co., Otley

Monroe County
Avery Valley Coal Co., Monroe
Blackstone Coal Co., R.R. 1, Lovilia
Carbon Coal Co., Albia
City Coal Co., Albia
De Ross Coal Co., R.R. 3, Albia
Graham Coal Co., Avery
Lovilia Coal Co., Lovilia
Monroe Block Coal Co., Albia
Midwest Coal Co., Albia
Plainview Coal Co., Albia
Rex Fuel Co., Albia
Smoky Hollow Coal Co., Albia
Smith Bros., Monroe

Page County
Clarinda Coal Co., Clarinda
Evans Coal Co., Clarinda
Pearson Coal Co., Clarinda
Sawmill Coal Co., Clarinda

Polk County
Beck Coal & Mining Co., Des Moines
Bennett Bros. Coal Co., Des Moines
Capital City Coal Co., Box 864, Des Moines
Carbon Mining Co., 907 Bankers Trust Bldg. Des Moines
Central Service Co., 100 E. Maple St., Des Moines
Clover Leaf Coal Co., Des Moines
Des Moines Coal Co., Valley National Bank Bldg., Des Moines
Economy Coal Co., Des Moines
Four Mile Coal Co., 42nd & Easton Blvd., Des Moines
Gibson Coal Co., Rider: office 225 Iowa Bldg., Des Moines

Independent Coal Co., Bankers Trust Bldg., Des Moines
Norwood-White Coal Co., Herrold: office Des Moines
Standard Coal Co., 2456 East Grand Ave., Des Moines
Robert Stanford Coal Co., Des Moines
Urbandale Coal Co., Des Moines

Taylor County
Ankeny Coal Co., New Market
Bean Coal Co., New Market
Carbon Coal Co., New Market
New Market Coal Co., New Market

Van Buren County
Barr & Sons, R.R. 1, Birmingham
R. A. Carmichael, Birmingham
J. Daniels & Sons, Douds
Ratcliff Coal Co., Douds

Wapello County
Airline Coal Co., 415 S. Willard St., Ottumwa
Best Coal Co., R.F.D., Ottumwa
Big Four Coal Co., Ottumwa
Carr Bros. Coal Co., Eldon
Gibb Coal Co., R.F.D., Ottumwa
Glendale Coal Co., 1317 Castle Street, Ottumwa
Happy Hollow Coal Co., R.F.D., Ottumwa
Hartwig Bros. Coal Co., Eldon
Indian Head Coal Co., Ottumwa
Kirkville Coal Co., Ottumwa
Miers & Houk Coal Co., R.R. 8, Ottumwa
Munterville Coal Co., Blakesburg
Henry Rowley, R.R. 3, Blakesburg
Sickles Coal Co., Eldon
Simpson Bros. Coal Co., Ottumwa
Stribling Coal Co., Eldon

Warren County
Great Western Coal Co., Orillia: office Polk Bldg., Des Moines
Indian Valley Gloss Coal Co., Hartford: office Ins. Exch. Bldg., Des Moines
Oak Hill Coal Co., Carlisle
Ridge Block Coal Co., Carlisle
Scotch Ridge Coal Co., R.F.D., Carlisle

Wayne County
L. E. Bennett, R.R. 1, Promise City
Hayhurst Coal Co., R.R. 2, Promise City
Rissler Coal Co., R.R. 3, Melrose
Violet Valley Coal Co., Seymour
Whalen Coal Co., Seymour

Webster County
Marcey Coal Co., Lehigh

Conditions in the United States as a whole were very similar to those in Iowa. Production fell 85 million tons, and the value decreased 207 million dollars. The decrease in value was due partly to the decrease in tonnage and partly to a drop of 16 cents in the average price per ton received at the mines. The average number of workers was less by forty-three thousand in 1931, and the average number of days worked was 27 less. One notes with mixed feelings that the miners in some states produced as high as 1,400 tons per year per man, while in Iowa the average per man per year was 429 tons. This larger tonnage was no doubt due to thicker seams of coal, more use of machinery, or other less laborious working conditions. Certainly there is no reason to suppose that Iowa miners are any less capable or industrious than workers in other states.

Table IV-A gives an analysis of the important statistics of the coal industry in 1931 in the United States.

The seven leading states in coal production in 1931 were in order: West Virginia, Pennsylvania, Illinois, Kentucky, Ohio, Indiana, and Alabama. Iowa ranked 13th. In value they ranked Pennsylvania, West Virginia, Illinois, Kentucky, Ohio, Alabama, and Indiana, with Iowa 11th.

TABLE IV-A

Production, Value, Men Employed, Days Worked, and Output Per Man Per Day at Coal Mines in the United States in 1931.

State	Total quantity net tons	Total value	Average per ton	Number of Employees	Average number of days worked	Average tons per man per year
Alabama	11,998,781	$ 21,866,000	$1.82	22,973	136	522
Alaska	105,900	556,000	5.25	80	277	1,324
Arizona	7,120	42,000	5.90	27	115	264
Arkansas	1,153,555	3,511,000	3.04	4,733	95	244
Calif., Ida., Nev., Ore.	17,385	88,000	5.06	116	86	150
Colorado	6,604,369	15,944,000	2.41	10,028	142	659
Georgia	21,580	45,000	2.09	62	180	348
Illinois	44,303,295	75,527,000	1.70	49,685	136	892
Indiana	14,295,165	20,735,000	1.45	12,311	146	1,161
Iowa	3,388,355	8,575,000	2.53	7,897	142	429
Kansas	1,986,870	3,771,000	1.90	3,813	123	521
Kentucky	39,963,621	50,745,000	1.27	47,766	159	837
Maryland	2,005,773	2,907,000	1.45	3,224	190	622
Michigan	359,403	1,094,000	3.04	1,372	96	262
Missouri	3,620,497	7,248,000	2.00	5,362	142	675
Montana	2,378,052	4,299,000	1.81	1,672	153	1,422
New Mexico	1,552,822	4,597,000	2.96	2,830	145	549
North Carolina	2,363	9,000	3.81	32	83	74
North Dakota	1,519,307	2,155,000	1.42	1,300	166	1,169
Ohio	20,410,995	25,371,000	1.24	25,085	174	814
Oklahoma	1,908,394	4,614,000	2.42	4,634	115	412
Pa. (bituminous)	97,658,698	155,060,000	1.59	116,726	169	837
South Dakota	27,485	64,000	2.33	56	127	491
Tennessee	4,721,548	6,942,000	1.47	7,448	171	634
Texas	716,020	1,070,000	1.49	1,148	140	624
Utah	3,350,044	7,442,000	2.22	3,268	140	1,025
Virginia	9,698,680	14,060,000	1.45	11,357	175	854
Washington	1,846,461	5,800,000	3.14	2,662	170	694
West Virginia	101,473,172	132,762,000	1.31	97,787	176	1,038
Wyoming	4,993,686	11,996,000	2.40	4,759	154	1,049
Total bituminous 1931	382,089,396	$588,895,000	$1.54	450,213	160	849
Total bituminous 1930	467,526,299	$795,483,000	$1.70	493,202	187	948

GYPSUM

Gypsum, like other products in Iowa, experienced a serious decline in 1931. Both the gypsum sold crude and that sold calcined fell off about one third in quantity. The value of the gypsum sold crude declined more than that of the gypsum sold calcined. Table V shows the production of the different classes of gypsum in Iowa in 1930 and 1931.

The list of gypsum companies operating in 1931 is given below.

United States Gypsum Co., Centerville.
Certainteed Products Corp., Fort Dodge. Office 100 E. 42d St., New York.
Universal Gypsum & Lime Co., Fort Dodge. Offices 1535 Conway Bldg., Chicago.
United States Gypsum Co., Fort Dodge. Offices 300 W. Adams St., Chicago.
Hawkeye Gypsum Products Co., Fort Dodge.
Wasem Plaster Co., Warden Apts., Fort Dodge.
Cardiff Gypsum Plaster Co., 903 Central Ave., Fort Dodge.

TABLE V

Production of Gypsum in Iowa in 1930 and 1931.

	1930		1931	
	Tons	Value	Tons	Value
Crude gypsum mined	484,047		321,627	
Sold crude — cement mills	154,860	$ 211,645	85,700	$ 112,312
Other purposes (a)	902	4,057	12,774	21,816
Total sold crude	155,762	215,702	98,474	134,128
Sold calcined — neat and sanded plaster	22,178	208,341	13,194	113,936
Base coat plaster (e)	------	------	116,002	917,793
Finished and molded plasters (e)	------	------	11,590	79,773
Plaster board and wall board	66,900	1,671,805	41,438	1,114,861
Partition tile (d)	31,022	224,083	18,473	139,241
Other building (b)	9,174	141,211	5,812	58,906
Plate glass works	------	------	6,349	26,219
Terra cotta and pottery works (c)	------	------	1,781	54,266
Total sold calcined	303,230	3,525,617	210,726	2,453,998
Total sold	458,992	$3,741,319	309,200	$2,588,126

(a) Other Purposes: The figures for 1931 include the gypsum sold for agriculture, but the figures for 1930 are for agriculture alone.
(b) Includes: Roofing tile, insulating materials, and other tiles. The 1930 figures include plate glass, but tbis is given separately in 1931.
(c) Includes: Calcined gypsum sold for other purposes than those listed.
(d) 1930: Equals 83,312,425 square feet, or 1912 acres or 2.99 square miles. 1931: 54,209,044 square feet, or 1.94 square miles.
(e) Figures for these plasters were not given for 1930.

Production of gypsum in the United States showed a decline similar to that experienced in Iowa. The amount of gypsum sold crude decreased a little over one fifth, while that sold calcined decreased almost one third. The total sales decreased from 3,180,000 to 2,300,000 tons.

TABLE V-A

Gypsum Production in the United States in 1930 and 1931

	1930		1931	
Plants active	56		54	
	Tons	Value	Tons	Value
Total mined	3,471,393		2,559,017	
Sold crude	989,591	$ 1,886,254	773,185	$ 1,565,367
Sold calcined	2,191,376	25,165,230	1,593,753	19,235,990
Total sales	3,180,967	27,051,484	2,366,938	20,801,357

Table V-A summarizes production of gypsum in the United States. Iowa holds third place among the states, New York being first and Michigan second.

LIMESTONE AND LIME

The story of limestone production in 1931 is very similar to that of other branches of the mineral industry — sharp declines in every class of material, both in tonnages and in values. For instance, riprap production decreased from 98,000 tons to 31,000 tons, a decline of over two thirds; in value the decline was a little less. Limestone for concrete and road metal declined from 1,160,000 tons to 1,020,000 tons,

while the values dropped from nearly $1,300,000 to a little less than $1,000,000. Railroad ballast declined nearly three fourths in tonnage and about four fifths in value. Agricultural stone suffered a decrease of about one half in tonnage and value. The decline in general was a little over one fourth in tonnage, and about one third in value.

The production of different classes of stone and lime in 1931 is shown in Table VI, while the production by counties is shown in Table VII.

TABLE VI

Production of Stone and Lime in Iowa in 1930 and 1931.

Kind	1930			1931		
	Plants	Tons	Value	Plants	Tons	Value
Building stone	2	10,108[a]	$ 10,959	1	4,730	$ 5,046
Rubble	8			3		
Riprap	9	98,780	85,704	8	31,850	31,176
Concrete and road metal	27	1,160,385	1,297,836	34	1,020,030	994,608
Railroad ballast	6	258,787	217,727	5	66,360	38,320
Agriculture	27	268,721	197,788	26	126,610	105,554
Flux	1	33,539	43,397	1	22,030	36,001
Sugar and glass factories	1			2		
Other uses	2			2		
Totals		1,830,320	$1,853,411		1,271,610	$1,210,705

(a) Curbing, flagging, and paving are included in building stone in the figures given in 1930. Curbing, flagging, and paving figures are not included in building stone for 1931 as none was reported.

Table VI-A gives the production of limestone in the United States in 1931.

TABLE VI-A

Production of Limestone in the United States in 1931

Building stone (cut stone)—cubic feet	8,973,080
Value	$10,540,845
Average value per cubic foot	$1.17
*Other limestone, value	$699,453
Total value	$11,240,298

* Includes rough construction stone, rubble, curbing, and flaggings.

As in 1930, Madison County again had the largest tonnage and value, with the Hawkeye Portland Cement Co. of Des Moines again the leading producer. Madison County added another producer in 1931 — the Winterset Stone Co. The other leading counties in order of tonnage were Scott, Marshall, Linn, Black Hawk, and Johnson; in value they ranked: Linn, Scott, Black Hawk, Marshall, and Johnson. Linn County, which was a minor producer in 1930, almost doubled its production in 1931 and more than doubled its value. This brought it up to fourth place in tonnage and second place in value in 1931.

The Hurst estate at Hurstville, Jackson County, was the sole pro-

TABLE VII

Production of Limestone and Lime in Iowa in 1931.

Counties	Plants	Building stone, rubble, riprap, lime		Concrete, road metal		Other uses (a)		Total	
		Tons	Value	Tons	Value	Tons	Value	Tons	Value
Allamakee (2), Clinton (3), Winneshiek (2)	7			55,898	$ 50,365	500	$ 800	56,398	$ 51,165
Black Hawk (2), Bremer (1), Floyd (1), Woodbury (1)	5			167,501	165,906	18,528	15,741	186,029	181,647
Buchanan (1), Cerro Gordo (1), Dubuque (2)	4			90,886	92,219	30,680	42,775	121,566	134,994
Clayton (3), Jackson (2), Madison (2)	7	20,142	$19,882	252,881	283,554	9,799	6,199	282,822	309,635
Hardin (1), Keokuk (1), Lee (3), Mahaska (1)	6			87,829	96,916	26,619	25,481	114,448	122,397
Johnson (1), Marshall (2), Van Buren (1)	4	7,019	6,946	137,913	113,355	68,539	35,656	213,471	155,957
Jones (3), Scott (2)	5	9,812	11,344	126,823	83,941	40,193	29,593	176,828	124,878
Linn	5			100,298	108,352	19,850	21,680	120,148	130,032
Totals for 1931	43	36,973	$38,172	1,020,029	$ 994,606	214,708	$177,925	1,271,710	$1,210,705
Totals for 1930	43	101,177	$86,371	1,168,817	$1,308,278	544,497	$456,183	1,814,291	$1,850,832

(a) Includes: Railroad ballast, flux, sold to sugar factories, agricultural limestone, railroad fills.

ducer of lime in this state in 1931. The figures for production are combined with those for limestone.

The list of limestone companies operating in 1931 is given below.

Allamakee County
Hess Bros., Lansing
H. L. Leas, Elkader
Appanoose County
Wm. B. Swan, Plano
Black Hawk County
The Builders Material Co., Cedar Rapids. Brandon (Hawkeye Quarry)
Waterloo Dredging Co., W. Mullan Ave., Waterloo
Bremer County
Schild Bros., Waverly
Buchanan County
Lewis V. T. Francis
Cerro Gordo County
Stoddard Stone Products Co., Mason City
N. W. States Portland Cement Co., Mason City
Clayton County
Elmer J. Krozel
E. C. Schroeder & Co., McGregor
U. S. Engineer Office, Box J, Commercial Sta., St. Paul, Minn. Quarry at McGregor
Clinton County
C. T. Hanrahan, Charlotte
J. R. Kane, Charlotte
John Ponolishta
Dubuque County
Dubuque County, Highway Dept., Dubuque. Quarry at Waupeton
Dubuque Stone Products Co., Dubuque
Hardin County
Iowa Limestone Co., 907 Bankers Trust Bldg., Des Moines. Quarry at Alden
Jackson County
Isaac Voepell, Baldwin
A. A. Hurst, Maquoketa. Quarry at Hurstville (near Maquoketa)
Johnson County
River Products Co., 20-21 Schneider Bldg., Iowa City. Quarry at Coralville (Conklin Quarry)
Jones County
Men's Reformatory, Anamosa
Columbia Quarry, Cedar Rapids. Quarry at Stone City
H. Dearborn Sons, Stone City
Keokuk County
Keokuk County Engineer, Sigourney
Lee County
Driscoll & Hayes, Belfast, via Farmington
McManus Quarries Co., Inc., 112 Masonic Bldg., Keokuk. Quarry at Ballinger Station
Keokuk Quarry & Constr. Co., 1325 Main St., Keokuk
Linn County
Builders' Material Co., Cedar Rapids
Dewees & Whitney, Springville
Lanning & Fulkerson, Marion
Larimer & Shaffer, Inc., Cedar Rapids
Linn County Engineer, Cedar Rapids
Madison County
Hawkeye Portland Cement Co., 802 Hubbell Bldg., Des Moines. Quarry at Earlham
Winterset Stone Co., Winterset
Mahaska County
Mahaska County, County Engineer, Oskaloosa
Marshall County
Chicago & North Western Ry. Co., 400 W. Madison St., Chicago, Ill. Quarry at Le Grand
Le Grand Lime Stone Co., Le Grand (Main office, 29 S. La Salle St., Chicago, Ill.)
Scott County
Dolese Bros. Co., 205 W. Wacker Drive, Chicago, Ill. Quarry at Buffalo
Linwood Cement Co., 713 Kahl Bldg., Davenport. Quarry at Linwood
Van Buren County
Douds Stone Co., Douds
Winneshiek County
Orlando Bakke
M. O. Weaver, Webster City. Quarry at Decorah
Woodbury County
Interstate Construction Co., Sioux City

In the United States, constructional limestone was produced to the amount of 8,973,000 cubic feet, with a value of $10,540,000, a decline from 15⅔ million cubic feet and 18½ million dollars in 1930.

SAND AND GRAVEL

The sand and gravel industry in Iowa showed the same decrease that was recorded in other branches of the mineral industry. Serious

declines are to be noted in the production of building sand, of paving and road sand, of building gravel, and of paving and road gravel. Some compensations are found in the increase of the output of railroad ballast sand, of other sands, and of other gravel. However, the total output dropped 1,118,000 tons and $1,087,000. This amounts to a decline of nearly 25 percent in tonnage and more than 40 percent in value.

Table VIII gives the production of sand and gravel by classes in 1930 and 1931. The production in county groups is shown in Tables IX and X. The counties that produced the most sand and gravel in

TABLE VIII

Summary of Sand and Gravel Production in Iowa, 1930 and 1931.

Materials	1930				1931			
	Pits	Tons	Value	Ave. Price	Pits	Tons	Value	Ave. Price
Sand								
Molding	5	28,343	$ 27,030	$ .95	3	11,321	$ 9,917	$ .88
Building	49	583,949	292,721	.50	40	360,907	144,373	.40
Paving and roads	39	1,397,207	562,809	.40	31	825,061	277,210	.34
Grinding, polishing, and blast sand	3	2,788	4,137	1.48	1	(a)		1.66
Engine	10	31,184	15,396	.49	10	22,356	9,182	.41
Filter	4	3,172	1,939		2	(a)		
Railroad ballast	4	56,260	18,670	.33	5	59,638	73,660	
Other	4	7,433	1,710		4	15,539	6,017	
Total sand		2,110,336	$ 924,412			1,294,822	$ 469,208	
Gravel								
Building	54	485,792	496,261	1.02	40	209,288	190,256	
Paving and roads	50	1,749,235	1,113,549	.64	42	1,496,078	778,051	
Railroad ballast	6	(b)		.36	8	(b)		.18
Other	1	176,608	64,885			403,208	73,763	
Total gravel		2,411,635	$1,674,695			2,108,574	$1,042,070	
Total output		4,521,971	$2,599,107			3,403,396	$1,511,278	

(a) Included in other sand.
(b) Included in other gravel.

1931 were in order: Polk, Dickinson, Emmet, Sac, Cerro Gordo, and Pocahontas; in value, Dickinson and Pocahontas dropped out of the first six, and the list included: Emmet, Polk, Cerro Gordo, Mahaska, Sac, and Muscatine. The largest producers in tonnage were: Chicago, Milwaukee & St. Paul Railway Co. in Dickinson County, Concrete Materials Corporation of Emmet County, and Pocahontas County Highway Department; in value the leaders were: Co-operative Concrete Materials Corporation of Emmet County and Concrete Materials Corporation of Mahaska County.

It is worthy of note that, as the southern part of the state is approached, gravel is of much less importance, and most of the material

TABLE IX

Production of Sand and Gravel in 1931 — Sand

Counties	Producers	Structural sand		Paving sand		Other sand [a]		Total sand	
		Tons	Value	Tons	Value	Tons	Value	Tons	Value
Allamakee (1), Clayton (1), Dubuque (2), Fayette (0)	4	27,030	$ 12,248	65,825	$ 20,550	(c)	(c)	92,855	$ 32,798
Appanoose (1), Muscatine (3)	4	16,657	10,103	46,629	12,632	(c)	(c)	63,286	22,735
Black Hawk (3), Tama (1)	4	24,990	13,028	43,943	24,382	(c)	(c)	68,933	37,410
Boone (2), Calhoun (0), Crawford (0), Story (1)	3	22,882	14,182			(c)	(c)	22,882	14,182
Buena Vista (0), Clay (1), Lyon (1), Sioux (2)	4	14,705	5,027					14,705	5,027
Butler (3), Hancock (1), Humboldt (1)	5	22,412	9,950	101,695	16,094			124,107	26,044
Cerro Gordo (2), Floyd (1), Mitchell (0), Wright (0)	3	105,737	37,119	(c)	(c)	(c)	(c)	105,737	37,119
Cherokee (2), Sac (3)	5	41,804	12,553	146,706	44,743	(b)	(b)	188,510	57,296
Clinton (2), Jackson (1), Scott (1)	4	33,607	16,045	33,712	13,844	(c)	(c)	67,319	29,889
Des Moines (1), Lee (2), Mahaska (1), Marion (1)	5	20,309	6,899	74,077	30,623	(b) (c)	(b) (c)	94,386	37,522
Dickinson (0), Harrison (0), Pocahontas (0)	0								
Emmet (2), Palo Alto (0), Plymouth (1)	3	154,951	54,883	(c)	(c)	(c)	(c)	154,951	54,883
Johnson (2), Linn (2)	4	42,736	19,089	38,346	22,683	(c)	(c)	81,082	41,772
Polk	5	90,338	31,911	125,731	40,620	(b) (c)	(b) (c)	216,069	72,531
Totals for 1931	53	618,158	$243,037	676,664	$226,171			1,294,822	$469,208
Totals for 1930	66	934,118	$449,786	1,155,798	$466,146	$ 20,420	$ 7,480	2,110,336	$924,412

(a) Includes: Molding, cutting and grinding and blast, engine, filter, railroad ballast, and other sands.
(b) Included with paving sand.
(c) Included with structural sand.

TABLE X

Production of Sand and Gravel in 1931 — Gravel

Counties	Producers	Structural gravel		Paving and other gravel (f)		Total sand and gravel		Total quantity washed	
		Tons	Value	Tons	Value	Tons	Value	Tons	Value
Allamakee (0), Clayton (0), Dubuque (2), Fayette (1)	3	32,855	$ 16,193	(e)	(e)	115,820	$ 43,057	67,205	$ 20,848
Appanoose (0), Muscatine (3)	3	14,606	10,851	81,941	$ 52,386	159,833	85,972	159,632	85,622
Black Hawk (3), Tama (1)	4	6,430	11,720	12,819	12,474	88,182	61,604	87,983	61,557
Boone (2), Calhoun (1), Crawford (2), Story (1)	6	3,712	3,056	142,440	18,320	169,034	35,558	26,869	17,458
Buena Vista (2), Clay (1), Lyon (2), Sioux (0)	5	(d)	(d)	15,236	6,376	195,671	22,453	19,045	9,303
Butler (2), Hancock (1), Humboldt (1)	4	9,381	10,359	46,276	25,798	179,764	62,201	81,889	53,326
Cerro Gordo (2), Floyd (0), Mitchell (1), Wright (1)	4	24,456	21,996	92,096	84,102	222,289	143,217	213,743	141,656
Cherokee (2), Sac (5)	7	9,700	6,995	221,520	135,393	419,730	199,684	347,605	175,934
Clinton (3), Jackson (1), Scott (0)	4	47,373	30,230	22,560	12,451	137,252	72,570	137,107	72,515
Des Moines (1), Lee (1), Mahaska (1), Marion (1)	4	13,836	15,323	86,507	109,617	194,729	162,462	193,229	161,362
Dickinson (1), Harrison (1), Pocahontas (1)	3			558,155	64,097	558,155	64,097		
Emmet (2), Palo Alto (2), Plymouth (1)	5	2,981	3,157	296,436	222,479	454,368	280,519	439,909	276,320
Johnson (2), Linn (1)	3	18,287	14,854	(e)	(e)	99,369	56,626	99,369	56,626
Polk	4	45,185	55,094	147,946	93,633	409,200	221,258	406,377	220,986
Totals for 1931	59	228,802	$199,828	1,723,932	$ 837,126	3,403,396	$1,511,278	2,279,962	$1,353,513
Totals for 1930	76	485,645	$496,238	1,925,990	$1,178,457	4,521,971	$2,599,107	3,541,970	$2,339,134

(d) Included with paving gravel.
(e) Included with structural gravel.
(f) Includes paving and roadmaking, railroad ballast, other gravels.

is fine river sand. An inspection of Tables IX and X will show the truth of this statement.

The list of sand and gravel companies operating in 1931 is given below.

Allamakee County
Northeastern Iowa Sand & Gravel Co., Harpers Ferry
Appanoose County
A. M. Houser, Centerville
Black Hawk County
Black Hawk County, County Engineer, Waterloo
Concrete Materials Corp., 504 Lafayette Bldg., Waterloo
Iowa Foundry Sand Co., 106 Western Ave., Waterloo
Waterloo Dredging Co., 85 W. Mullan, Waterloo
Waterloo Sand & Gravel Co., P. O. Box 553, Waterloo
Boone County
McHose Sand & Tile Co., Boone. Pit at Fraser
Markey River Sand Co., Boone
Buena Vista County
Buena Vista Highway Dept., County Engineer, Storm Lake
L. L. Walton, Linn Grove
Chicago & North Western Ry. Co., 226 W. Jackson St., Chicago, Ill. Pit at Sioux Rapids
Butler County
Aplington Cement Tile & Block Works, Aplington
Concrete Materials Corp., 504 Lafayette Bldg., Waterloo. Pit at Clarksville
Waverly Gravel & Tile Co., Waverly. Pit at Shell Rock
Calhoun County
Calhoun County Highway Dept., Rockwell City
P. C. Fulkerson
Cerro Gordo County
Clear Lake Sand & Gravel Co., Clear Lake
Ideal Sand & Gravel Co., Mason City
Cherokee County
Iowa Gravel Products Co., 3330 Maynard St., Cleveland, Ohio. Pit at Cherokee
Northwestern Gravel Co., Lake View. Pit at Cherokee
Clay County
Spencer Cement Block Works, Lock Box 344, Spencer
Clayton County
Langworthy Silica Co., 902 Federal Bank Bldg., Dubuque. Pit at Clayton
Clinton County
A. F. Barber, R.D. 2, Grand Mound
Camanche Sand & Gravel Co., United Light Bldg., Davenport
Clinton Sand & Gravel Co., 604 Wilson Bldg., Clinton
Crawford County
James Ballantine, Arion
Crawford County, County Engineer, Denison
Des Moines County
Burlington Sand & Gravel Co., Burlington
Dickinson County
Chicago, Mil. St. P. & P. R. R. Co., New Union Sta., Chicago, Ill. Pit at Milford
Dubuque County
Dubuque Stone Products Co., Dubuque
Molo Sand & Gravel Co., Foot of 3d St., Dubuque
Emmet County
Cement Products Co., Estherville
Concrete Materials Corp., Lafayette Bldg., Waterloo
Fayette County
Clermont Brick & Sand Co., Clermont
Floyd County
Iowa Foundry Sand Co., Waterloo. Pit at Floyd
Hancock County
Hancock County Highway Dept., Garner
Harrison County
Rogers Brothers, Dunlap
Humboldt County
Concrete Materials Corp., Waterloo. Quarry at Humboldt
Jackson County
Bellevue Sand & Gravel Co., Bellevue
Johnson County
Hawkeye Material Co., Iowa City
Schmidt Sand & Gravel Co., R.F.D. 4, Iowa City
Lee County
Jos. Jaeger, Montrose. Pit at Fort Madison
Keokuk Sand Co., Ft. of Bank St., Keokuk
Linn County
Kings Crown Plaster Co., 98 First Ave., NW., Cedar Rapids
Larimer & Shaffer, 931 1st St., NW., Cedar Rapids
Lyon County
Lyon County, County Engineer, Rock Rapids

Miller Sand & Gravel Co., Box 101, Doon
Mahaska County
Concrete Materials Corp., Eddyville
Marion County
Wilson Sand & Gravel Co., Harvey. Pit at Tracy
Mitchell County
Burton Stacy, Osage
Muscatine County
Automatic Gravel Products Co., Box 34, Muscatine
Hahn Sand & Gravel Co., 207 W. Front St., Muscatine
Pearl City Gravel Co., Muscatine
Palo Alto County
County Highway Dept., Emmetsburg
Chicago, Rock Island & Pacific Ry. Co., Chicago, Ill. Pit at Graettinger
Plymouth County
Big Sioux Gravel Co., Akron
Pocahontas County
Pocahontas County Highway Dept., County Engineer, Pocahontas
Polk County
Coon River Sand Co., 501 Hubbell Bldg., Des Moines
The Des Moines Sand & Fuel Co., 510 Grand Ave., Des Moines
Doty Sand & Gravel Co., Des Moines
Hawkeye Co-operative Sand & Gravel Co., 822 W. 9th St., Des Moines
Flint Crushed Gravel Co., Des Moines. Pit at Granger
Sac County
Lake View Concrete Tile Co., Lake View
Le Grand Limestone Co., 29 S. La Salle St., Chicago, Ill. Pit at Sacton (Lake View)
Northwestern Gravel Co., Lake View
Sac County, County Engineer, Sac City
W. H. Schnirring, Sac City
Scott County
Builders Sand & Gravel Co., 626 W. Front St., Davenport. Pit at Buffalo
Sioux County
D. A. Sorgdrager, R. D. 1, Alton
Alton Cement Works, Alton
L. G. Everist, Inc., 2100 E. 4th St., Sioux City. Pit at Hawarden
Story County
R. E. Carr Sand & Gravel Co., E. 16th St., Ames
Story County, County Engineer, Nevada. Pit at Ames
Tama County
Standard Gravel Co., 907 Bankers Tr. Bldg., Des Moines. Pit at Tama
Wright County
Chicago, R. I. & Pacific Ry. Co., 902 La Salle St. Sta., Chicago, Ill. Pits at Belmond
Chicago Great Western R. R. Co., Chicago, Ill. Pit at Belmond

TABLE VIII-A

Sand and Gravel Industry in the United States in 1931

Sand sold or used by producers, by uses:		
Glass	short tons	1,677,882
Molding	do	2,138,305
Building	do	25,178,572
Paving	do	27,459,581
Grinding and polishing	do	607,589
Engine	do	1,604,123
Fire or furnace	do	88,189
Filter	do	55,319
Other (a)	do	5,683,266
Gravel sold or used by producers, by uses:		
Building	do	21,426,814
Paving	do	56,716,230
Railroad ballast (b)	do	10,843,174
Total sand and gravel		153,479,044

(a) Includes some sand used for railroad ballast, fills, and similar purposes.
(b) Includes some gravel used for fills and other purposes; in 1931, 8,814,907 tons of gravel, valued at $2,898,598 were used exclusively for ballast.

The production of sand and gravel in the United States in 1931 is given in Table VIII-A. It amounted to 153,479,044 tons; this is to be compared with 197,051,726 tons produced in 1930.

MINERAL PRODUCTION IN 1932

OUTLINE

In studying the record of mineral production in Iowa in 1932, we find the general aspect less discouraging than that of 1931. While there was still a decrease in value of production, the decline was very much less than that of the previous year. There were lowered values in the output of cement, clay, clay wares, and gypsum, but in contrast with these there were increased values in coal, limestone, and sand and gravel. Whereas the decrease in 1931 was about 35 percent, the lessening of values in 1932 was only about 14 percent. The sale of bituminous coal is considered an indication of industrial activity, and in the United States as a whole it dropped 20 percent from the previous year; 42 percent from 1929; and, in fact, the demand was less than it had been for about a quarter century. In contrast with this, it is pleasing to note that Iowa showed a substantial increase in the tonnage of coal produced. Mineral production in Iowa declined about 14 percent, while it dropped about 22 percent in the United States. Table I and Table I-A show summaries of mineral production in Iowa and throughout the nation.

TABLE I

Mineral Production in Iowa in 1931 and 1932

	Unit	1931			1932		
		Producers	Quantity	Value	Producers	Quantity	Value
Cement	bbl.	5	5,790,087	$ 5,453,320	5	4,373,642	$ 3,907,427
Clay Wares	ton			2,287,903			805,375
Coal	ton	231	3,388,355	8,575,000		3,862,435	9,254,000
Gypsum	ton	6	309,200	2,588,126	7	169,719	1,468,414
Limestone and Lime	ton	43	1,271,710	1,210,705	45	1,591,235	1,389,465
Sand and gravel	ton	75	3,403,396	1,511,278	87	5,230,562	1,706,874
Totals				$21,626,332			$18,531,555

TABLE I-A

Mineral Products of the United States, 1931 and 1932

Summary	1931 Value	1932 Value
Total value of metallic products	$ 567,200,000	$283,700,000
Total value of nonmetallic products (exclusive of mineral fuels)	699,700,000	430,700,000
Total value of mineral fuels	1,892,400,000	1,722,600,000
Total value of "unspecified" (metallic and nonmetallic) products (partly estimated)	7,300,000	6,000,000
Grand total approximate value of mineral products	$3,166,600,000	$2,443,000,000

CEMENT

The cement industry in 1932 continued the downward trend which was so serious in 1931. Production fell off 1,500,000 barrels and shipments dropped almost as much in amount and more than that in value. The average price per barrel was five cents less than in 1931. The production was only slightly more than 40 percent of the annual capacity. The number of plants was the same in both years. The Gilmore City plant, being the smallest in the state, is operated less economically than the larger plants, and therefore is shut down whenever business conditions do not permit operations at a profit. This plant is owned by the Northwestern States Portland Cement Co. at Mason City, and naturally operations are conducted more economically at one plant than at two during times like those prevailing in the last two years. Table II summarizes the cement industry in Iowa.

TABLE II

Production of Cement in Iowa

	1931	1932
Production, bbls.	5,804,462	4,270,739
Stock, December 31, bbls.	1,414,375	1,311,472
Shipments, bbls.	5,790,087	4,373,642
Shipments, value	$5,453,320	$3,907,427
Average price per bbl.	$0.94	$0.89
Annual capacity, bbls.	10,293,900	10,293,900
Plants active	5	5

When we compare conditions in Iowa with those prevailing over the United States, we find some cause for congratulating ourselves. As compared with a decline of 24 percent in shipments in this state, there was a decline of 36 percent the country over — from 127 million barrels to 80 million. Throughout the nation the decline in value was almost 43 percent. This was caused by the combination of smaller shipments with an average decline in value of 11 cents per barrel. This

was in spite of the fact that the government was making a great effort to relieve unemployment by appropriations for highways and public works. One optimistic feature was a slight increase in price during the latter half of the year. A comparison of the industry in the United States for 1931 and 1932 is shown in Table II-A.

TABLE II-A

Production of Cement in the United States

	1931	1932	Percent Change	
			1932 from 1931	1932 from 1923-25 Average
Production, bbls.	125,429,071	76,509,000	—39.0	—48.8
Shipments, bbls.	127,150,534	80,579,000	—36.6	—45.0
Shipments, value	$140,976,450	$80,835,000	—42.7	—69.7
Stock, December 31, bbls.	24,177,159	20,205,000	—16.4	—40.0

CLAY AND CLAY PRODUCTS

In 1932 six companies produced raw clay in Iowa; these companies were located in Dallas, Hardin, and Webster Counties, three of them being in Webster County, two in Dallas, and one in Hardin. Their output amounted to 3,433 tons, valued at $9,354. Part of this was fire clay, and the rest was classified as miscellaneous clay.

TABLE III

Annual Census of Clay-Products Industries — 1932

Production, by Kind, Quantity, and Value, for Iowa

	Number of establishments	Quantity (Thousands)	Value	Stocks on hand Dec. (Thousands)
Common brick	24	11,059	$112,272	14,216
Face brick	19	8,065	112,074	7,386
Hollow building tile:		(Tons)		(Tons)
Partition, etc.	20	58,541	294,535	48,974
Floor arch, silo, etc.	8	4,337	28,787	3,037
Draintile	23	13,632	82,805	16,811
Sewer pipe	3	7,558	104,622	16,621
Flue lining	3	1,763	17,027	845
Clay sold, raw or prepared, including fire-clay dust	5	1,150	8,930	-----
Other clay products:				
Vitrified brick	4	(a)	(a)	(a)
Hollow brick	1	-----	------	(a)
Roofing tile	1	(a)	(a)	(a)
Wall coping	3	(a)	(a)	(a)
Clay products (not specified)	1	-----	(a)	-----
Red earthenware	1	-----	(a)	-----
Art pottery	1	-----	(a)	-----
Saggers	1	-----	(a)	-----
Total of other clay products			$ 44,323	
Total			$805,375	

(a) Withheld to avoid disclosing, exactly or approximately, data reported by individual establishments.

In the United States, as well as in Iowa, the industrial depression caused continued decrease in both the quantity and value of clay produced. The production in the entire United States for 1932 was 1,618,380 tons, with a value of $5,636,000, a decrease of about one third from the output of 1931.

Table III shows the production of clay wares in Iowa for 1932. A study of a similar table for 1931 will show that the decrease in value of production in 1931 from that of 1930 was a little over one half; the decrease in 1932 amounted to nearly two thirds. In common brick the drop was from 33 million to 11 million; face brick from 16 million to 8 million; partition tile from nearly 113 thousand tons to 58 thousand; drain tile from 34 thousand tons to 13 thousand; and other clay products dropped in value from nearly $75,000 to $44,000. Data are not available for giving the output of clay wares by counties. It will be seen that the clay wares industry has been cut by the financial depression more drastically than any other mineral in Iowa.

COAL

The coal industry presents a pleasing contrast with other parts of mineral production in Iowa. In comparison with these other minerals, coal showed a noteworthy increase, both in the quantity produced and in its value. The number of workers was larger by 189, and there was an increase of nine in the average number of days worked. Production increased 474 thousand tons, and this sold at the mines for an increase of $679,000. This increase is all the more noteworthy because of the fact that it occurred in the face of a drop of 13 cents per ton.

The same counties produced in 1932 as in 1931, with the addition of Webster County, which produced less than a thousand tons in 1931, but over 21,000 tons in 1932. The increase is partly accounted for by the opening of a large mine near Fort Dodge by Beck Bros., who have operated for many years near Des Moines.

The leading counties in production in 1932 were: Appanoose, Marion, Polk, Lucas, Boone, Monroe, and Dallas.

In value the counties ranked: Appanoose, Boone, Polk, Lucas, Marion, Dallas, and Monroe.

The details of coal production in Iowa are shown by Table IV, and Tables IV-A and IV-B show similar statistics for the coal industry in the United States. Production of coal in the United States decreased over 70 million tons, and the value decreased 180 million dollars. The

TABLE IV

Production, Value, Men Employed, and Days Worked at Coal Mines in Iowa in 1932 [a]

(Exclusive of product of wagon mines producing less than 1000 tons)

County	Net Tons					Value		Number of Employees			
	Loaded at mines for shipment	Trucked to distant points	Sold to local trade and used by employees	Used at mines for power and heat	Total quantity	Total (thousand dollars)	Average per ton	Underground	Surface	Total	Average number of days mine was active
Adams		4,000	11,733	127	15,860	$ 48	$3.03	56	9	65	132
Appanoose	540,079	15,991	55,624	790	615,238	1,419	2.31	1,584	234	1,818	133
Boone	296,147	14,300	89,498	3,650	403,595	1,320	3.27	983	67	1,050	143
Dallas	349,765	5,556	24,472	1,984	381,777	928	2.43	611	38	649	156
Davis and Lucas	479,433		6,084	4,228	489,745	1,112	2.27	636	48	684	155
Greene		16,000	14,008	270	30,278	85	2.81	85	11	96	99
Guthrie			9,784	51	12,435	44	3.54	58	8	66	148
Jasper		35,231	26,920	2,055	64,206	147	2.29	143	20	163	192
Jefferson and Keokuk		280	9,528	30	9,838	20	2.03		28	28	126
Mahaska	8,005	8,100	44,152	1,139	61,396	119	1.94	109	54	163	155
Marion	465,947	8,564	50,438	4,956	529,905	1,082	2.04	694	99	793	157
Monroe	357,933	3,043	32,343	2,238	395,557	860	2.17	616	61	677	187
Page	400	26,424	11,059		37,883	116	3.06	89	10	99	215
Polk	117,628	1,463	390,625	4,308	514,024	1,234	2.40	896	83	979	152
Taylor	450	8,000	4,355	28	12,833	38	2.96	73	7	80	125
Van Buren	147	1,350	5,023	110	6,630	16	2.41	23	5	28	143
Wapello	1,715	14,665	66,801	2,072	92,700	192	2.07	200	44	244	166
Warren	28,985	52,680	45,912	3,839	139,463	342	2.45	206	41	247	154
Wayne	5,120	11,200	10,829	350	27,499	61	2.22	94	15	109	117
Webster		530	21,016	27	21,573	71	3.29	27	21	48	142
Total, 1932	2,651,754	227,377 [b]	930,204	32,252	3,862,435	$9,254	$2.40	7,183	903	8,086	151
Total, 1931	2,442,377		907,308	38,670	3,388,355	$8,575	$2.53	7,227	670	7,897	142

(a) The figures relate only to active mines of commercial size that produced coal in 1932. The number of such mines in Iowa was 212 in 1932; 231 in 1931; 233 in 1930.

(b) In addition 20,848 tons was mined which went less than ten miles from the mines.

TABLE IV-A

Bituminous Coal Industry in the United States

	1931	1932
Production ----------tons	382,089,396	309,709,000
Value at mines----------	$588,895,000	$406,677,000
Average value per ton----------	$1.54	$1.31
Stocks on hand: (a)		
January 1----------tons	37,200,000	35,500,000
December 31---------- do	35,500,000	29,666,000
Consumption (calculated)---------- do	371,869,000	306,917,000

(a) Figures represent consumers' stocks.

TABLE IV-B

Production Summary of Coal Produced, Value, Men Employed, Days Operated, and Output Per Man Per Day, by States, in 1932.

State	Total quantity net tons	Total value	Average per ton	Number of employees	Average number of days worked	Average tons per man per day
Alabama----------	7,856,939	$ 12,138,000	$1.54	20,443	107	3.60[a]
Alaska----------	102,700	514,000	5.00	120	189	4.53
Arizona----------	6,877	33,000	4.80	17	251	1.61
Arkansas----------	1,033,471	2,831,000	2.74	4,325	92	2.61
Calif., Ida., Ore.----------	16,319	60,000	3.68	141	69	1.69
Colorado----------	5,598,721	12,237,000	2.19	8,749	142	4.51
Georgia----------	27,208	48,000	1.76	64	208	2.04
Illinois----------	33,474,553	51,316,000	1.53	47,597	112	6.30
Indiana----------	13,323,573	17,267,000	1.30	10,639	145	8.65
Iowa----------	3,862,435	9,254,000	2.40	8,086	151	3.17
Kansas----------	1,952,885	3,420,000	1.75	3,591	130	4.19
Kentucky----------	35,299,582	34,892,000	.99	42,267	155	5.41
Maryland----------	1,428,937	1,827,000	1.28	3,105	150	3.07
Michigan----------	446,149	1,219,000	2.73	940	159	2.98
Missouri----------	4,069,598	6,654,000	1.64	5,677	161	4.45
Montana----------	2,125,225	3,527,000	1.66	1,525	145	9.64
New Mexico----------	1,263,386	3,321,000	2.63	2,602	127	3.82
North Carolina----------	1,900	6,000	3.16	26	55	1.33
North Dakota----------	1,739,658	2,200,000	1.26	1,311	186	7.12
Ohio----------	13,909,451	15,418,000	1.11	23,280	127	4.71
Oklahoma----------	1,255,466	2,646,000	2.11	3,063	120	3.40
Pa. bituminous----------	74,775,862	100,361,000	1.34	104,532	154	4.66
South Dakota----------	49,074	87,000	1.77	84	126	4.65
Tennessee----------	3,537,882	4,670,000	1.32	7,525	148	3.18
Texas----------	636,590	904,000	1.42	699	152	6.00
Utah----------	2,852,127	5,685,000	1.99	2,842	176	5.69
Virginia----------	7,692,180	9,280,000	1.21	10,376	144	5.16
Washington----------	1,591,426	4,759,000	2.99	2,816	161	3.51
West Virginia----------	85,608,735	90,786,000	1.06	85,765	168	5.93
Wyoming----------	4,170,963	9,317,000	2.23	4,173	150	6.65
Total bituminous, 1932----	309,709,872	$406,677,000	$1.31	406,380	146	5.22
Total bituminous, 1931----	382,089,396	$588,895,000	$1.54	450,213	160	5.30

(a) Using a "calculated" method.

average price per ton decreased 23 cents, and the total number of employees was less by about 44 thousand. As usual, Pennsylvania and West Virginia were again leaders both in tonnage and value. Iowa ranked twelfth in tonnage and eleventh in value, though Wyoming and

Virginia were only slightly higher in value. Considering the industry as a whole, it will be seen that conditions in Iowa were much above the average.

GYPSUM

Like most other mineral products in Iowa, gypsum experienced a serious decline in 1932, as it had in the previous year. Table V shows that the amount of crude gypsum mined was reduced from 321,000 tons to 178,000 tons, a drop of somewhat less than 50 percent. The gypsum sold crude, however, showed a somewhat smaller decline, amounting to about one third in both tonnage and value. The gypsum sold calcined in 1932 was almost exactly one half of that sold calcined in the previous year, and its value was a little more than one half. Figures are not available showing the different classes of gypsum ware. Seven operators were active in the state in 1932.

TABLE V

Production of Gypsum in Iowa in 1931 and 1932.

	1931		1932	
	Tons	Value	Tons	Value
Crude gypsum mined	321,627		178,087	
Sold without calcining	98,474	$ 134,128	63,931	$ 91,267
Sold calcined	210,726	2,453,998	105,788	1,377,147
Total sold	309,200	2,588,126	169,719	1,468,414

Gypsum is used almost entirely in connection with building enterprises, and so the demand for it varies in direct ratio to the building business. Since building has been sharply curtailed during the recent financial stringency, it was to be expected that the production of gypsum would suffer a similar lessening. As soon as business conditions improve we may expect an increase in gypsum production both in the amounts sold and in the prices received.

In the United States the gypsum industry experienced the greatest recession in tonnage output since the beginning of the century. A decrease of 47 percent was reported in the production of crude gypsum. This is a reflection of a drop of 56 percent in the value of building contracts since 1931 and 79 percent from those of 1926. In the latter part of the year there was a slight increase due to repairs and remodeling urged by civic organizations, but these could have little effect in counterbalancing the very great decline in large building projects.

Iowa was again third in the United States in the production of crude gypsum, New York and Michigan again leading. These three states,

with Texas and Nevada, reported 71 percent of the total production for 1932.

Table V-A shows the condition of the gypsum industry in 1931 and 1932.

TABLE V-A

Gypsum Production in the United States in 1931 and 1932.

	1931		1932	
Plants active	53		54	
	Tons	Value	Tons	Value
Total mined	2,559,017		1,355,219	
Sold crude	773,185	$ 1,565,367	437,808	$ 919,085
Sold calcined	1,593,753	19,235,990	836,428	11,488,534
Total mined	2,366,938	20,801,357	1,274,236	12,407,619

LIMESTONE

In 1932 the production of limestone showed an encouraging increase. While there was a decrease in some of the smaller items, this was more than counterbalanced by road metal, concrete, and railroad ballast, which showed an increase of 389,328 tons with an increased value of $250,785.

The total increase in tonnage and value of limestone was 319,625 tons and $178,760. The operators increased in number from 43 to 54.

The production of building limestone in the United States declined from nearly nine million cubic feet to six and one-half million; and the value declined from ten million to six million dollars. Rough con-

TABLE VI

Production of Limestone in Iowa in 1932.

Kind	Plants	Tons	Value
Building	4	1,672	$ 1,929
Rubble and flux (a)	3	2,329	3,088
Riprap	9	23,686	19,069
Road metal and concrete, and railroad ballast	47	1,475,718	1,283,713
Agriculture	24	67,663	50,983
Other Limestone (b)	4	20,167	30,683
Total	45	1,591,235	$1,389,465

(a) One operator produced flux, and two operators produced rubble.
(b) Other limestone includes that sold to sugar factories.

TABLE VI-A

Production of Limestone in United States in 1931 and 1932.

	1931	1932
Limestone:		
Building stone (cut stone) — cubic feet	8,973,080	6,640,000
Value	$10,540,845	$6,535,000
Average value per cubic foot	$1.17	$0.98
Other limestone, value (a)	$699,453	$433,700
Total value	$11,240,298	$6,968,700

(a) Rough construction stone, rubble, curbing, and flagging.

TABLE VII

Production of Limestone in Iowa in 1932.

Counties	Producers	Building stone, rubble, riprap		Road metal, concrete, railroad ballast		Other uses (a)		Total	
		Tons	Value	Tons	Value	Tons	Value	Tons	Value
Allamakee (1), Louisa (1), Winneshiek (1)	3	-----	-----	34,501	$ 33,000	------	------	34,501	$ 33,000
Black Hawk (5), Bremer (1)	6	-----	-----	95,781	74,842	5,150	$ 4,448	100,931	79,330
Buchanan (1), Clayton (4), Floyd (2)	7	(b)	(b)	94,684	77,305	5,758	6,303	100,442	83,608
Cerro Gordo (1), Hardin (1), Marshall (2)	4	-----	-----	139,259	118,790	29,098	34,027	168,357	152,817
Clinton (2), Scott (3)	5	(b)	(b)	145,792	101,704	20,788	13,828	166,580	115,532
Dubuque (4), Jackson (1), Van Buren (1)	6	(b)	(b)	129,657	116,837	7,053	8,873	136,710	125,710
Johnson (2), Mahaska (1)	3	-----	-----	154,853	127,544	------	------	154,853	127,544
Jones (3), Washington (1)	4	4,289	$ 4,266	25,820	20,643	7,078	5,372	37,187	30,281
Keokuk (1), Madison (2), Pottawattamie (1)	4	(b)	(b)	124,429	109,090	3,104	1,862	127,533	110,952
Lee (3)	3	6,080	6,577	55,972	64,946	10,956	8,830	73,008	80,353
Linn (6)	6	-----	-----	167,553	129,155	(b)	(b)	167,553	129,155
Webster (1), Woodbury (2)	3	-----	-----	323,580	321,183	------	------	323,580	321,183
Totals for 1932	54	10,369	$10,843	1,491,861	$1,295,039	89,005	$ 83,583	1,591,235	$1,389,465
Totals for 1931	43	36,693	$38,172	1,020,029	$ 994,606(c)	214,708	$177,925	1,271,610	$1,210,705

(a) Includes: Flux, sold to sugar factories, agricultural limestone, and railroad fills.
(b) Included in road metal and concrete for purpose of concealment.
(c) In 1931 railroad ballast was included in other uses, but in 1932 it was included with road metal and concrete. In comparing the total figures this must be taken into consideration.

struction, including rubble, curbing, and flagging, showed a somewhat proportionate decline.

Tables VI and VII show the production of limestone in Iowa, and Table VI-A summarizes the limestone statistics for 1932 in the United States.

SAND AND GRAVEL

There were four more companies producing sand in Iowa in 1932 than in 1931, but their output on the whole was less by about one fifth; this was not so serious a drop as that which took place in many industries. A large decrease in structural sand was partly counterbalanced by an increase in paving sand. Grouping of counties to conceal individual production prevents a comparison of the ranking of the different counties.

The number of gravel producers increased by 19; the tonnage of structural gravel increased about one third, and there was an increase of $28,000 in value; the tonnage of paving and other gravel was more than doubled, and the value increased over $300,000. The total sand and gravel produced was 1,727 thousand tons larger in 1932 than in 1931, and 700 thousand tons larger than in 1930. The value was less than in 1930, but $195,000 more than in 1931. This picture seems

TABLE VIII

Summary of Sand and Gravel Production in Iowa, 1932.

Materials	Pits	Tons	Value
Sand			
Molding (a)	1		
Structural (b)	39	289,666	$ 119,666
Paving and roads	39	827,883	204,192
Cutting, grinding	5	6,111	8,315
Engine (c)	12	24,909	18,266
Filter (d)	2		
Railroad ballast	3	45,054	14,933
Other	6	10,545	3,279
Total sand, 1932		1,204,168	$ 368,651
Total sand, 1931		1,294,822	469,208
Gravel			
Structural	35	289,349	$ 219,651
Paving and roads	55	3,422,195	1,063,008
Railroad ballast	4	308,059	52,806
Other	3	6,791	2,758
Total Gravel, 1932		4,026,394	$ 1,338,223
Total Gravel, 1931		2,108,574	1,042,070
Total Output, 1932		5,230,562	$1,706,874
Total Output, 1931		3,403,396	1,511,278

(a) Included with structural sand.
(b) Includes molding sand.
(c) Includes filter sand.
(d) Included with engine sand.

especially prosperous when compared with sand and gravel production in the United States as a whole.

Table VIII shows the production of sand and gravel in Iowa by classes, and Tables IX and X show the production by counties.

The large decrease in building and highway construction in the United States was reflected in the output of sand and gravel in 1932. The total sale of sand dropped 44 percent, while that of gravel dropped 41 percent. For the last ten years gravel has formed an increasing part of the sales of sand and gravel. The total value of sand and gravel sold or used by producers declined 46 percent from that of the previous year. The production of sand and gravel in United States is given in Table VIII-A.

TABLE VIII-A

Sand and Gravel in the United States for 1931 and 1932.

		1931	1932	Change, percent
Sand sold or used by producers, by uses:[a]				
Glass	Short tons	1,677,882	1,330,000	–21
Molding	" "	2,138,305	1,100,000	–49
Building	" "	25,178,572	11,200,000	–56
Paving	" "	27,459,581	17,000,000	–38
Grinding and polishing	" "	607,589	400,000	–34
Engine	" "	1,604,123	1,300,000	–19
Fire or furnace	" "	88,189	52,000	–41
Filter	" "	55,319	38,000	–31
Other	" "	5,683,266	3,830,000	
Gravel sold or used by producers, by uses:[b]				
Building	Short tons	21,426,814	10,500,000	–51
Paving	" "	56,716,230	36,250,000	–36
Railroad ballast[c]	" "	10,843,174	6,000,000	–45
Total		153,479,044	89,000,000	

(a) Figures for 1932 estimated from data available on consuming markets; checked by preliminary reports from producers.
(b) Includes some sand used for railroad ballast, fills, and similar purposes.
(c) Includes some gravel used for fills and other purposes; in 1931, 8,814,907 tons of gravel, valued at $2,898,598, were used exclusively for ballast.

TABLE IX

Production of Sand and Gravel in 1932 — Sand

Counties	Pits	Structural Sand		Paving Sand		Other Sand (a)		Total Sand	
		Tons	Value	Tons	Value	Tons	Value	Tons	Value
Allamakee (1), Black Hawk (3), Winneshiek (1)	5	11,954	$ 5,527	45,481	$ 43,558	(b)	(b)	57,435	$ 49,085
Appanoose (1), Des Moines (1), Lee (2), Van Buren (1)	5	19,994	10,140	(b)	(b)	(b)	(b)	19,994	10,140
Boone (2), State of Iowa (0), Story (1), Webster (1)	4	2,825	1,669	-----	-----	(b)	(b)	2,825	1,669
Buena Vista (0), Dickinson (0)	0	-----	-----	-----	-----	-----	-----	-----	-----
Butler (3), Grundy (0), Hardin (1), Tama (1)	5	3,550	1,450	44,127	16,867	-----	-----	47,677	18,317
Cerro Gordo (2), Hancock (1), Mitchell (0), Wright (0)	3	(c)	(c)	179,349	35,349	-----	-----	179,349	35,349
Cherokee (2), Sac (3)	5	7,320	2,360	66,610	21,325	(c)	(c)	73,930	23,685
Clay (2), Lyon (1), Plymouth (1), Sioux (0)	4	(d)	(d)	(e)	(e)	-----	-----	-----	-----
Clayton (1), Clinton (1), Jackson (1)	3	34,640	7,672	64,172	11,718	-----	-----	98,812	19,390
Crawford (0), Harrison (0), Woodbury (1)	1	-----	-----	(e)	(e)	-----	-----	-----	-----
Dubuque (2), Fayette (1)	3	9,037	2,084	17,000	3,145	-----	-----	26,037	5,229
Emmet (1), Humboldt (1), Palo Alto (0), Pocahontas (0)	2	(d)	(d)	(e)	(e)	-----	-----	-----	-----
Johnson (2), Linn (2)	4	23,700	14,100	19,158	12,721	(c)	(c)	42,858	26,821
Mashaska (1), Marion (1), Wapello (1)	3	34,886	20,058	62,183	22,748	(c)	(c)	97,069	42,706
Muscatine (4), Scott (1)	5	31,620	25,451	273,160	21,211	(b) (c)	(b) (c)	304,780	46,662
Polk (5)	5	54,208	24,014	34,227	10,249	(b)	(b)	88,435	34,263
Total 1932 (f)	57	233,734	$114,525	805,467	$198,891	-----	-----	1,039,201	$313,316
Total 1931	53	618,158	$243,037	676,664	$226,171	-----	-----	1,294,822	$469,208

(a) Includes molding, cutting and grinding, engine, filter and railroad ballast sand.
(b) Included with structural sand.
(c) Included with paving sand.
(d) Included with structural gravel.
(e) Included with paving gravel.
(f) Totals for sand do not exactly agree with totals by classes, because some sand is included with gravel for purpose of concealment.

TABLE X

Production of Sand and Gravel in 1932 — Gravel

Counties	Pits	Structural gravel [a]		Paving and other gravel		Total sand and gravel		Total quantity washed	
		Tons	Value	Tons	Value	Tons	Value	Tons	Value
Allamakee (1), Black Hawk (4), Winneshiek (0)	5	2,545	$ 1,876	60,837	$ 21,170	120,817	$ 72,131	61,718	$ 53,856
Appanoose (0), Des Moines (1), Lee (2), Van Buren (0)	3	4,140	2,940	-----	-----	24,134	13,080	24,105	13,078
Boone (2), State of Iowa (2), Story (1), Webster (3)	8	3,938	3,115	1,444,968	452,886	1,451,731	457,670	7,131	5,065
Buena Vista (2), Dickinson (1)	3	-----	-----	477,642	57,504	477,642	57,504	5,000	400
Butler (2), Grundy (1), Hardin (1) Tama (2)	6	4,835	2,730	57,052	37,138	109,564	58,185	98,199	56,614
Cerro Gordo (2), Hancock (1), Mitchell (1), Wright (1)	5	(c)	(c)	173,677	112,311	353,026	147,660	241,288	134,979
Cherokee (3), Sac (6)	9	7,622	6,061	257,210	74,117	338,762	103,863	206,410	82,353
Clay (2), Lyon (2), Plymouth (1), Sioux (1) [d] [e]	6	14,246	6,453	82,095	26,393	96,341	32,846	35,493	22,079
Clayton (0), Clinton (2), Jackson (1)	3	59,907	19,526	154,191	53,250	312,910	92,166	312,660	92,075
Crawford (1), Harrison (1), Woodbury (2) [e]	4	-----	-----	237,204	42,060	237,204	42,060	117,104	38,060
Dubuque (2), Fayette (1)	3	13,081	4,137	-----	-----	39,118	9,366	4,618	2,976
Emmet (2), Humboldt (1), Palo Alto (2), Pocahontas (1) [d] [e]	6	154,779	103,944	363,007	109,610	517,786	213,554	239,357	153,739
Johnson (2), Linn (1)	3	12,440	9,550	(b)	(b)	55,298	36,371	55,298	36,371
Mahaska (1), Marion (1), Wapello (2)	4	19,919	17,345	15,883	12,255	132,871	72,306	128,581	71,856
Muscatine (4), Scott (1)	5	13,081	9,751	413,612	108,293	731,473	164,706	711,868	157,625
Polk	5	36,055	41,450	107,395	57,793	231,885	133,406	216,315	126,398
Total, 1932	78	346,588	$228,878	3,844,773	$1,164,780	5,230,562	$1,706,874	2,465,145	$1,047,524
Total, 1931	59	228,802	$199,828	1,723,932	$ 837,126	3,403,396	$1,511,278	2,279,962	$1,353,513

(a) Structural gravel includes some paving gravel and paving gravel includes some structural gravel.
(b) Included in structural gravel.
(c) Included in paving gravel.
(d) Includes some structural sand.
(e) Includes some paving sand.