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RICHARD P. ROTHWELL, C.E, M.E., Editor.

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CONTENTS.

THE secretary of the American Institute of Mining Engineers desires us to call attention to a typographical error in his last circular (published by us last week), which will be corrected by another circular, namely, the sessions of the Institute will be held on Monday and *Tuesday* (not Thursday, as printed) September 29th and 30th.

EXTRAORDINARY preparations are being made by the local committees in the several cities which are to be visited by the Iron and Steel Institute of Great Britain during its visit to this country to give it a cordial reception and handsome entertainment. The British engineers in receiving their American brethren last summer made a record as entertainers which it will be difficult to equal, but the American spirit of rivalry, if nothing else, will inspire us to efforts to surpass even that record.

AT the recent meeting of the American Association for the Advancement of Science in Indianapolis, Prof. ORTON, State Geologist of Ohio, stated that there is no doubt that the natural gas supply in the Indiana and Ohio fields is rapidly and surely being exhausted. He said he has yet to find a man conversant with existing facts who does not entirely agree with him. He urges the imperative necessity for cities and States to take action restricting the lavish and wasteful use of gas. We do not suppose that any such action will be taken. The average man and the average legislator believes too strongly in the inalienable right of every man to waste his own resources and those of nature also to make it probable that any restrictions will be put upon such waste.

THE Directors' Liability Act, to which we recently made reference, is making slow progress through the British Parliament. Its object is to hold directors liable to investors if they (the directors) issue prospectuses containing untrue and misleading statements. According to *Engineering*, the bill is likely to be amended to such a degree before final passage that it will offer no more protection to stockholders than the present laws do. It says, concerning the reason why the public is so easily defrauded: "It is plain and notorious that any company can be floated, provided it is backed by a few good or showy names. Given a few peers, baronets, members of parliament and so on, ready and willing to lend their names to an undertaking, and it is a matter of course that the capital should be subscribed. The public refuses to learn wisdom by experience." It is difficult to see how any law can be framed to meet this case. The public is gulled not by the misleading and untrue statements of the prospectuses, but by the mere fact that Lord so-and-so's name is upon them; and no law is apt to be a protection against such folly.

THE article in our last issue about raising water from a shaft by compressed air, was by an oversight headed Novel Plan for Raising Water From a Shaft. In fact, this method has been in use before, although, of course, with modifications required by the special conditions for the application. In *Gluckauf* of May 14th is mentioned a case of a somewhat similar nature. The sump at a mine at Charleroi is several meters below the level and completely separated from it by a strong arch with a layer of concrete on top. The manager of the mine Mr. Ruidant, inserted through this arch into the sump three pipes, of which one is connected with a compressed air plant and is provided with a stop cock. The second pipe reaches far down in the sump and serves as rising-pipe; it is also fitted with a stop cock. The third pipe opens first outside the arch conducting the water that collects there into the sump; this pipe is closed by a lid when water is being raised. When the two cocks are opened and the lid closed, the compressed air raises the water into the bucket without resorting to the irksome bailing.

DIRECT STEAM TO AUSTRALIA.

For many years American manufacturers desiring to establish a more or less reciprocal trade with Australia have labored under the disadvantage which obstruct the spread of American trade with many other countries—lack of shipping facilities. There were sailing ships going, it is true; but while they were hoisting their sails and getting well under weigh English steamers were entering Australian ports. American manufacturers, shipping their products to Australian ports, have been obliged to ship via England and Germany if they desired their merchandise to reach destinations in fair time, which could hardly be expected of sailing vessels leaving here. Even in the business of running sailing vessels there was a competition which was hardly healthy. Vessels left the port with half freights to compete in time; others waited and were over loaded, and accordingly, though realizing more interest on investments, were slow in reaching the port of destination.

The commission agents of this port have, generally, expressed themselves as favoring shipping subsidies. They have not stated any substantial reasons to support their argument, except their desire for subsidies, believing that Government "pap" would encourage American trade.

As we have before contended, government subsidies hinder rather than advance trade progress. Where there is a fair and continuous demand, the supply will always be forthcoming. There has for some years been a pressing demand for better shipping facilities between this port and the ports of South America, South Africa, and Australia. In the latter case, the demand became so pressing that four of the keenest competitors have "got together" and have supplied the demand.

Messrs. R. W. Cameron & Co., Messrs. Mailler & Quereau, Messrs. H. W. Peabody & Co., and Messrs. Arnold, Cheney & Co., who have for years been engaged in the Australian trade, have chartered for Adelaide, Melbourne and Sydney, the "Karlsruhe," which is the first steamship to leave this port for Australian ports as regular "liner."

For a short period the freights may be somewhat high, but after a time, when travelers and shippers inform themselves of the advantages of direct steam communication, the business will so increase that freights and passenger rates will naturally seek their level. American manufacturers and shippers competing with Europeans will appreciate the advantages offered by the new line, and we have no doubt that the promoters will keep their promise to add other steamers as occasion requires. If they do not others will.

WHERE IS ALL THE IRON GOING?

The census statistics of the production of pig iron for the year ending June 30th, 1890, which we published last week, showing the enormous aggregate of 9,579,799 net tons, call renewed attention to the extraordinary development of our iron industry during the last few years, and raise the question, What becomes of all the iron? Previous to 1880 the answer was easy—"the railroads take it;" for the consumption of iron and steel rails alone, not to speak of iron used in other shapes by the railroad companies, constituted more than one-third of the whole iron consumption of the country. Mr. SWANK'S statistics of consumption, which are made by adding to the production the tonnage imported each year, and making proper correction for differences in stocks at the beginning and end of the year, show that from 1864 to 1879, inclusive, the consumption of iron and steel rails was more than one-third the consumption of pig iron, and that in 1871 and 1872 it was more than one-half. In 1880 the proportion of rails to pig iron dropped to less than one-third, overreaching it again, however, in 1881 and 1882, hut dropping below it in 1883, becoming less than a quarter in 1884 and less than a fifth in 1889. The following table shows the consumption of pig iron, iron and steel rails, and the difference between them for the years 1879 to 1889, inclusive.

CONSUMPTION, GROSS TONS.

	Pig iron.	Iron and steel rails.	Difference.	Approximate consumption other than rails.
1879	2,829,429	996,604	1,833,325	1,684,000
1880	4,589,848	1,458,003	3,131,845	2,936,000
1881	4,562,103	1,948,812	2,613,291	2,366,000
1882	5,119,368	1,803,517	3,315,851	3,089,000
1883	5,029,112	1,332,967	3,696,145	3,514,000
1884	4,381,040	1,030,159	3,350,881	3,197,000
1885	4,196,485	981,181	3,215,304	3,069,000
1886	5,945,003	1,611,044	4,333,959	4,094,000
1887	6,836,067	2,216,683	4,619,384	4,298,000
1888	6,815,255	1,540,724	5,274,531	5,064,000
1889	7,780,369	1,546,481	6,233,888	6,005,000

The last column is made from the one headed "Difference," hy subtracting from the latter 15 per cent. of the rail production each year, as an estimated allowance for waste in conversion from the pig iron to the rail. Any error in this estimate will not seriously alter the figures in the last column, which fairly represent the amount of iron used in the United States for other purposes than the manufacture of rails.

The figures for 1879 look small compared with those of the succeeding years, hut they were larger than those of any preceding year, the nearest approach to them being in 1874, when the approximate consumption other than rails was only 1,496,000 tons.

A glance at these figures shows that the consumption of iron for other purposes than rails in 1889 was over four times as great as in 1874, over three times as great as in 1879, and over twice as much as in 1882; that in the eight years from 1874 to 1882 the consumption douhled, and in the seven years from 1882 to 1889 it douhled again. The census figures for the production of pig iron for the year ending June 30th, 1890, indicate that the year 1890 will show a rate of increase even greater than that of any preceding period. This most extraordinary and persistent increase in the use of iron for other purposes than rails is a phenomenon of no trifling importance. It indicates either the progress of a revolution in constructive methods or a tremendous increase in the wealth of the people, or both. We are inclined to believe both causes contrihute to the result.

The country is growing richer at a wonderful rate, and strong, durahle and therefore expensive structures are replacing those of temporary character, used when money was not so plentiful. In years gone by the chief idea of the American engineer in designing structures was to make them light, and to economize iron and steel to the utmost degree. Waste of metal was looked on almost as a crime. Now, however, we seem to be approaching English practice, in making strength the first consideration and cost the last. This tendency of itself is enough to account for a great part of the increase in iron consumption.

But there is also in progress a suhstitution of iron and steel for wood, stone, and brick to an extent hitherto unknown. The era of tall huildings is calling for iron and steel structural shapes to replace the other building materials. We are informed of a 10-story huilding now being erected in New York, in which the walls are only 12 inches thick. Real estate is so exceedingly valuable in New York that floor space must be economized to the utmost, as offices are rented at the rate of $2 and upward per square foot per year. It is estimated that in such a building $5,000 a year more rent can be obtained if the walls are made only 12 inches thick than if they were 24 inches thick. To make such a building with 12-inch walls would be an impossibility with wood, hrick, or stone. Hence the necessity of using steel. The whole framework of the building is made of 12-inch channel and I-heams, and the spaces in the frame filled in with brick. The floors, stairways, etc., are also made of iron, with firebrick filling.

No doubt the greater part of the increase in consumption of iron is due to this demand for high buildings, and the necessity for such buildings being a permanent one, the increase is likely to continue at its present rate for some time to come.

Mr. SWANK'S statistics have been so admirable in every respect that it is difficult to criticise them; but we think it is time, now that rails constitute only one-fifth of the total consumption of iron, that the statistics should show more clearly than they do where the iron goes to. The pig iron might be classified into foundry, forge and steel, and the rolled iron and steel other than rails and nails into plates (say over one-eighth inch thick), sheets (under one-eighth inch), structural shapes, including beams, angles, channels, etc., wire billets or rods, and other shapes. Rails themselves should be divided into ordinary shapes and street and mine rails. If these classifications were made the statistics would be more valuable, and they would furnish an answer to the question, "What becomes of all the iron?"

THE CONSPIRACY OF THE KNIGHTS OF LABOR.

By our Special Contributor.

It seems to me to be the duty of every citizen to speak plainly, without reserve and without qualification, in denunciation of the infamous conspiracy in which the Knights of Labor are avowedly engaged. The revelations which, with amazing stupidity, Mr. Powderly has permitted to be made hy the publication of his letters to Lee, concerning the New York Central Railroad and its employés, ought to leave no decent man the slightest excuse for silence, still less for sympathy with a set of reckless plotters of highway robbery.

It is not a time for clergymen to preach compromise, or editors to blame both sides "impartially," or politicians to devise new concessions to the "labor vote." Every man in his place and sphere should speak out (and a little righteous anger hy way of emphasis would do no harm), contributing his part to that public sentiment, the stern utterance of which is felt hy even the ignorant and mischievous.

The patience with which the community has hitherto submitted to the tyranny of a small minority of its wage-earners, arrogating the title of the representatives of labor, can only be paralleled in a frontier camp of which a band of cowboys on a spree has taken possession, gutting the bar-rooms, and racing, whooping and shooting through the streets, while the peaceable citizens hide themselves until the incident is over. It is regarded as one of the inevitable inconveniences of frontier civilization, and endured with a shrug of the shoulders.

But the pulpit does not state with mild deprecation and half-approval the cow-boys' side; and the press does not prate of cow-boys' rights; and by and by an active sheriff, with the able-bodied population to help him, arhitrates the case beyond appeal. For at least it is well understood on the frontier that the issue is one of brute force. Outlaws are endured only so long as there is not power enough to suppress them; and not a moment longer.

The sooner we learn the same lesson here, the more easily and peacefully we shall be able to suppress our outlaws. They have been coddled and encouraged long enough. The extent to which, under this mistaken policy, they have subjected the business and the industry of this country to a reign of terror, can only be appreciated by the "non union" working man, who is the chief victim. But there is virtue enough in free institutions and equal laws and public spirit to check this evil before it attains the dimensions of universal disorder. In the interests of future peace, let apologists shut up and the friends of liberty and justice speak out.

R. W. R.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.
All letters should be addressed to the MANAGING EDITOR.
We do not hold ourselves responsible for the opinions expressed by correspondents.

Middleborough, Kentucky.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: On the geological map of the United States, prepared hy C. H. Hitchcock for the American Institute of Mining Engineers, Cumberland Gap (now practically in the confines of Middlesborough, Ky.), occupies a position on the southeastern margin of the carboniferous area. This map is doubtless very accurate, since it was projected upon the geodetic map of Major John W. Powell, Director of the U. S. Geological Survey.

By the same excellent authority we see the colors denoting the areas covered by Devonian and Silurian rocks following immediately southeast of the carboniferous. And, then, in less than one and one-quarter degrees to the southeast beyond the entire Silurian and Huronian bands is the color denoting the area of the Laurentian Archean rocks; comprehending a section not quite one hundred miles across, that yields coals, ores, clays and stone equal to that from any other portion of the continent in quality, variety and extent, with the possible exception of magnetic ores, whose quantity, though great, may be exceeded by that of Lake Superior and Lake Champlain.

In coking, steam and gas coals, the nearly horizontal seams, now being opened above water level in the high steep mountain sides just west of Middlesborough, create the impression upon one's mind of excellence and permanency.

As a matter of fact, Connellsville coke derives its excellence not merely from the purity of the coal, but from the uniformity with which all constituents are distributed throughout the great coal seam from which it is taken. Middlesborough coke shows wonderful uniformity of structure made from the coals of its most accessible coking seam over a great extent of its outcrop, and doubtless derives its excellence from the same characteristics ascribed to the Connellsville coke. Its constancy and invariability should, therefore, render it commercially reliable. Some of the drifts in this seam now penetrate 600 feet from the surface; though the coke, the test and assays of which are presented below, was made from coals taking closer to outcrop—probably much of it within 25 feet of surface.

The Testing Works of Pittsburg, Pa. (Messrs. Hunt & Clapp), obtained

the following result from this coke placed in a box eight by six inches by four inches deep; namely, it stood a burden of four thousand pounds applied direct.

T. B. Stillman, Ph. D., F. C. S., Analytical Chemist, Stephens Institute of Technology, says of this coke. It contains:

Moisture	1·60	per cent.
Volatile and combustible matter	0·85	"
Fixed carbon	93·74	"
Sulphur	0·67	"
Phosphorus	0·01	"
Ash	3·13	"
	100·00	per cent.

So extensive is the area of nearly flat dips, in which this principal coking seam above water level is found, that it will take—yielding, as it does, 6,000 of coal per acre—over 300 years to exhaust it mining at the rate of 1,000 tons per day. It is probable the American Association owns about here fully 50,000 acres of coal lands, to which their title is indefeasible.

Add to the above quantity of fine coking coal that which will be derived from four other large bituminous coal seams, one cannel and one splint seam, all above the level of Middlesborough, except one, you will then have to employ the higher numerals in the estimation of totals.

This coal area is separated from the iron-ore bearing belt of the Clinton or No. 5 series on the southeast by the upturned edges of the coal rocks. Thus you may pass 2½ miles air line southeast, either from the furnaces of Middlesborough or the collieries, to the iron ores, which are now being developed in such quantities and of such a character as to merit further particular notice. Messrs. Watts & Reis, who are now constructing two of the large coke furnaces, nearly completed, at Middlesborough, have found the three seams of fossil red iron ores of the Clinton in this locality in numerous openings to be thicker between walls than were reported in a previous letter. One of the three—a constant seam, like the other two—is six feet of ore between walls, dipping at varying angles northwest. This red ore exists in hills 100 to 600 and 2,000 feet on the incline of the seams above water level.

Thirty miles length of these red iron ore seams, if the six furnaces of Middlesborough were to have no other sources of supply, would render the question of the supply of a good red iron ore (over 50 per cent. purity) a certainty for a very long term of years.

It seems superfluous to again give the cost of mining and reduction of these ores. By the side of Lake ores at Cleveland, now costing, for non-Bessemer red ores, $4.25 per ton f. o. b., these ores offer an excellent margin to consumers only 2½ to 5 miles away. And no one, I believe, places the coke, delivered at Middlesborough, at above $1.75 per ton.

The deposits of brown iron ores, while not so certain of a constant yield as the above mentioned fossil ores, are, for all their possible uncertainty, quite numerous and accessible, both in the Devonian and Silurian rocks.

The magnetic iron ores of North Carolina, with their extremely low limit of phosphorus (about ·025), are one hundred miles distance by the railways existing and being constructed. It will be possible to deliver annually 200,000 tons of these ores from the French Broad River that by careful selection will yield over 50 per cent. metallic iron, and this can be continued indefinitely, because the seams for long distances are nearly or quite 75 feet between the walls and go down with dips approaching the vertical. The cost of their mining and delivery will not be nearly that quoted above for non Bessemer red ores at Cleveland. So that the cost of producing pig metal, either foundry or Bessemer, at Middlesborough is exceptionally low. While no positive statement to that effect is here attempted, it is certainly within the domain of most reasonable conjecture that the highest grades of metal will be produced for years at Middlesborough and Cumberland Gap at figures probably below any limit possible to be obtained elsewhere in the South.

This acquisition of well-nigh boundless areas is scarcely two years old to-day. Yet the promoters of Middlesborough have, within that time, carried the place through the embryonic and chrysalis stages and brought it safely into the list of large cities containing many thousands of inhabitants and quite threescore established industries, involving the expenditure of fully $20,000,000, besides the cost of railways that now establish its communications with all the distributing centers of the continent.

The solidity of Arthur's entire movement in realizing for his company the substance of the things hoped for by his people is evidenced by the fact that Middlesborough securities are quoted at 300 on the London stock boards; a thing absolutely impossible at this day without positive resources and positive success resulting from the employment of strict business methods.

Thus has capital and skill and a powerful faculty of co-ordination changed these lately silent hills and plains into the abode of a high and advancing civilization, marked by the presence of the manufacturer, the merchant, the banker, the skilled artisan and the earnest promoters of religious and secular training.

Such abundant and easily accessible raw materials in a country whose forage supply is constant and reasonably cheap would naturally find at this day several large coke and charcoal furnaces approaching completion. The purity of much of the ore might justify the erection of Bessemer steel plants, but the fact exists that Mr. Witherow is perfecting a basic steel plant for the Watts Steel and Iron Company, to cost $530,000. Its construction would have been nearly accomplished now but for a change in the plans of the works. The South Boston Iron Company will erect an important gun plant. The 300 coke ovens are being erected rapidly so as to meet the earliest wants of the furnaces and works. The firebrick works are completed and in operation (daily capacity of 12,000 bricks) belonging to the Middlesborough Steel, Iron and Coal Company. The Eades, Mixter and Herald Zinc Works are progressing. The large tannery ($500,000) is hauling thousands of loads of chestnut oak bark from the surrounding forests to its mill.

The 14 coal and coke lessees are pressing the coal mining and coke making with energy. Eleven saw, planing and handle mills are in full operation.

Fine hotels, with all the most complete appointments, are in full operation, and a hospital sanitarium and casino are fully designed and in process of construction for the neighboring properties beyond Cumberland Gap, in Harrogate and Dillwyn Springs.

It will be of interest to say that belt lines of railway and coal railways are being rapidly completed, upon which trains have been running for some time, that will connect all mines, furnaces and points of interest with each other and with the hotels and business centers of the town,

C. R. BOYD.

MIDDLESBOROUGH, Ky., August 22d, 1890.

BOOKS RECEIVED.

The Tornado. By H. A. Hazen, Assistant Professor of the U. S. Signa Office. Number V. of *Fact and Theory Papers.* Published by N. D. C. Hodges, New York, 1890.

QUICKSILVER MINES AND REDUCTION WORKS.

Mr. J. B. Randol, special agent in charge of the statistics of quicksilver at the eleventh census under the supervision of Dr. D. T. Day, of the United States Geological Survey, has collected the data of main importance in Census Bulletin No. 10, of which we give the following abstract:

During the calendar year 1889 there were 26,464 flasks, or 2,024,496 pounds, or 1,012 short tons of quicksilver produced in California. About 20 flasks, less than $1,000 in value, were produced in Oregon. The product is notably less than the usual yield. In 1888, 33,250 flasks were produced.

In the following table, which includes every establishment in the United States where quicksilver is produced to the amount of $1,000 or more during the period under review, the unproductive mines and furnaces include establishments closed on account of litigation, low prices for quicksilver, or lack of sufficient capital and experience. It is considered probable that all of these establishments will resume work when higher prices for quicksilver can be obtained.

The productive mines and furnaces, with few exceptions, were operated continuously throughout the year, omitting holidays and Sundays.

States.	Counties.	Productive.		Non-Productive.	
		Mines.	Furnaces.	Mines.	Furnaces.
California	Lake	3	12	.....	.....
"	Merced	1	(a)	.....	.....
"	Napa	4	12	.....	.....
"	San Benito	1	3	.....	.....
"	Santa Clara	1	7	1	4
"	Sonoma	1	2	.....	.....
"	Siskiyou	.....	.....	1	(a)
"	Trinity	.....	.....	1	.....
Oregon	Douglas	.....	.....	3	3
Total	.....	11	36	6	7

(a) One retort.

The productive mines and active furnaces employed 937 operatives (among them 4 boys and 1 woman), of whom 416 were engaged on surface work and 521 were employed underground. The other mines and furnaces employed 24 men, making a total of 961 employés.

Of 95,714 tons (2,000 pounds each) of cinnabar ore mined, 92,964 tons were roasted, producing 26,464 flasks of quicksilver, each containing a standard quantity of 76½ pounds avoirdupois. Of the eleven establishments working ore, one reported only 200 tons produced and worked in retorts, with an average yield of 2·295 per cent., the highest percentage returned. The lowest average yield was 0·286 per cent., and the average percentage yield in quicksilver for all the ore roasted was 1·088. The largest quantitie of ore produced and roasted were respectively 28,007 and 28,887 tons, and the quantity of quicksilver produced at the several works ranged from 120 up to 13,100 flasks.

At eleven active establishments there were expended $219,622 for supplies, $626,289 for wages, and $35,490 for other expenses, embracing taxes, rent, interest, etc., making a total of $881,401, showing that 71 per cent. were paid for wages, 25 per cent. for supplies, and 4 per cent. for all other expenses. Of the amount paid for wages the office force absorbed $34,966, and there were paid to foremen, mechanics, miners, furnace hands and laborers $591,323.

The cost per flask of quicksilver produced ranged from $65.74 to $21.66, the average cost for all being $33.31. The monthly quotations for quicksilver in San Francisco during 1889 were:

Months.	Highest.	Lowest.	Months.	Highest.	Lowest.
January	$43.00	$41.50	July	$47.50	$46.00
February	42.00	41.50	August	47.50	46.00
March	41.00	40.00	September	47.50	47.00
April	41.00	40.00	October	47.00	46.50
May	45.00	41.00	November	48.00	46.00
June	50.00	46.50	December	47.50	47.00

For the year the highest price was $50 and the lowest $40, giving an average of $45, which for the year's production, 26,464 flasks, would make a total valuation of $1,190,500. The difference between the cost, $881,401, and value, $1,190,500, is $309,099, which may be regarded as the profit on the year's work, based on the returns collected. The difference between average cost and average sale price was $11.69 per flask.

The one establishment producing quicksilver at a cost of $65.74 per flask met with a serious loss on its output, and no establishment made a profit commensurate with the risks attending the mining of cinnabar, its manufacture into quicksilver, and finding for it a market in competition with establishments carried on by foreign governments.

The wages show considerable variations, depending largely upon the locality of the work, its importance, and the degree of skill required for its performance. On work at surface, foremen (11) were reported to earn daily wages ranging from $10.33 to $2.66; mechanics (63), $3.60 to $2.05;

laborers (186), $2 to $1.18, the latter for Chinamen. Boys under 16 years of age (4), none underground, earned $1 and 75 cents.

For foremen (9) at underground work the average wages ranged from $4.68 to $2.75 daily. Miners (378) earned an average of $2.67 to $1.25, the lowest rate being for Chinamen, of whom a few were employed at small establishments. Laborers (81) earned from $2.17 to $1.35. Of 53 unclassified laborers, 32 Chinese worked at $1.17 per day.

The office force (20) earned $34,966, which, added to all other wages, or $591,323, gives $626,289.

During the census decade, 1880-1889, there were no labor troubles of any kind in any of the mines and works, fair wages being paid for good work.

The active establishments employed 62 steam motors, with a capacity of 2,190 horse power, 54 boilers of 2,438 horse power, one electric dynamo and motor of 4 horse power, and one water wheel of 3 horse-power---a total of 2,197 horse power in motors. Two hundred and forty-seven animals were also reported as employed, but it is probable a greater number was in use.

The following statement gives an estimated valuation of the active mines and works as nearly as the same could be ascertained:

Number of establishments.	Mines and real estate.	Furnaces, houses, and other surface improvements.	Machinery, supplies, tools, and live stock.	Quicksilver unsold.	Bills and accounts receivable.	Other assets.	Estimated total capital.
1.....	$276,530	$50,000	$58,850	$96,660	.....	$108,513	$590,553
1.....	30,000	13,300	2,000	4,700	.....	.....	50,009
1.....	65,000	25,000	10,000	6,460	.....	2,000	108,460
1.....	6,940	14,000	3,300	95	.....	.....	24,335
1.....	20,000	5,000	5,000	2,500	.....	.....	32,500
1.....	100,000	25,000	30,000	.....	.....	.....	155,000
1.....	12,000	5,000	10,000	.....	.....	.....	27,000
1.....	20,000	10,000	5,000	859	$9,664	4,943	50,466
1.....	50,000	25,000	10,000	2,900	25,000	10,000	122,900
1.....	25,000	15,000	10,000	9,900	.....	.....	59,900
a6.....	75,000	35,000	2,000	.....	.....	.....	112,000
16	680,470	222,300	146,150	124,074	34,644	125,456	1,333,114

a Non-productive.

Some mine owners placed a higher valuation on their mines and improvements than is given in the foregoing statement of a conservative opinion of the values as of December 31st, 1889. The original investments in the properties were many times the amounts of present estimates, owing to the extraction of ore for a long period of continuous work.

The earliest records relating to production of quicksilver in California are for 1850, cannibar having been first discovered there in 1845, and but very little quicksilver was produced prior to 1850, when active work was commenced at New Almaden. Outside of California quicksilver has been produced in two localities in the United States: in Oregon to the extent of 2,000 flasks, and in Utah where about 200 flasks were reported.

The two following tables give the production of quicksilver at the principal mines of the world for the last 10 years, and in periods of 10 years, the production in California, the average yearly price per flask in San Francisco, and a valuation, at the average sale price, for each census decade.

YEAR.	Total of all mines, U. S.	Almaden mine, Spain.	Idria mine, Austria.	Italian mines.	Total foreign mines.	Grand total, yearly.
	Flasks.	Flasks.	Flasks.	Flasks.	Flasks.	Flasks.
1880.....	59,926	45,322	10,310	3,410	59,242	119,168
1881.....	60,851	44,989	11,333	3,760	60,082	120,933
1882.....	52,732	46,716	11,663	4.110	62,489	115,221
1883.....	46,725	49,177	13,152	6,065	68,394	115,119
1884.....	31,913	48,098	13,957	7,850	69,915	101,828
1885.....	32,073	45,813	13,503	6,905	66,281	98,354
1886.....	29,981	51,199	14,496	7,375	73,070	103,051
1887.....	33,760	[53,276	14 676	7,075	75.027	108,787
1888.....	33,250	51,872	14,962	9,830	76,664	109,914
1889.....	26,464	49,477	15,295	10,000	74,772	101,236
Total..	407,675	485,939	133,357	66,440	685,936	1,093,611

YEAR.	Yield in California.	Average price for decade.	Approximate valuation.	YEAR.	Yield in California.	Average price for decade.	Approximate valuation.
	Flasks.				Flasks.		
1850....	7,723	$99.45	$768,000	1870....	30,077	$57.37	$1,725,500
1851....	27,779	66.92	1,859,000	1871....	31,686	63 10	1,999,500
1852....	20,000	58.32	1,166,500	1872....	31,621	65.97	2,086,000
1853....	22,284	55.45	1,235,500	1873....	27,642	80.32	2,226,500
1854....	30,004	55.45	1,665,500	1874 ...	27,756	105.17	2,919,000
1855....	33,000	53.55	1,768,000	1875....	50,250	84.15	2,721,000
1856....	30,000	51.65	1,549,500	1876....	75,074	44.00	3,303.000
1857....	28,204	49.72	1,402,000	1877....	79,396	38.30	3,041,000
1858....	31,000	47.82	1,482,500	1878....	63,880	32.90	2,101,500
1859....	13,000	63.12	820,500	1879 ...	73,684	29.85	2,199,500
	242,994	56.45	13,717,000		491,066	49.53	24,322,500
1860....	10,000	53.55	535,500	1880....	59,926	31.00	1,860,000
1861....	35,000	42.10	1,473,500	1881....	60,851	29.80	1,810,000
1862...	42,000	36.35	1,526,500	1882....	52.732	28.25	1,500,000
1863...	40,531	42.07	1,705,000	1883 ..	46,725	27.25	1,275,000
1864 ...	47,489	45.90	1,761,500	1884....	31,913	30.50	975,000
1865....	53,000	45.90	2,433,000	1885....	32,073	30.25	970,000
1866....	46,550	51.62	2,403,000	1886....	29,981	35.50	1,060,000
1867....	47,000	45.90	2,157,000	1887....	33,760	42.25	1,425,000
1868....	47,728	45 90	2,191,000	1888 ...	33,250	42.50	1,415,000
1869....	33,811	45.90	1,552,000	1889....	26,464	45.00	1,190,500
	403,109	44.00	17,738,000		407,675	33.07	13,480,500

HIGH SPEED PADDLE STEAMER ENGINES.

We reproduce from *The Engineer* of 1st inst., the adjoining illustration of the type of engine which is used in the famous high speed passenger steamers on the Clyde. This style of engine is as rare in this country as the familiar beam engine used in river and harbor service in the eastern part of the United States, or the stern wheelers used on the Ohio and Mississippi are in England. We condense from *The Engineer* the following description of the steamers and their engines:

High speed paddle steamers have been produced in considerable numbers by Clyde builders during the past two years, and at the present time many important short sea and river passenger routes around the British coast are thereby benefiting from such enhanced steamboat services. Thus, on the River Clyde, and between Scotland and Ireland, as many as six new steamers have been put on service this year, having average speeds ranging from 16½ to 20½ knots, while similarly swift vessels have been produced for other places. One of the firms taking a leading part in turning out this class of work on the Clyde is Messrs. Wm. Denny & Bros., Dumbarton. This firm has placed itself in a position to guarantee certain results by the speed and resistance experiments they are enabled to carry out in the experimental tank, which forms an important part of their works. Within the past two years they have produced five high speed paddle steamers, all of them doing notable work on their respective services. Two of these are Belgian owned Channel boats employed between Dover and Ostend, and a third is the "Duchess of Hamilton," running between Ardrossan and the Island of Arran. The other two vessels are the "Princess Victoria," engaged in Channel service between Stranraer and Larne, and the "Clacton Belle," employed on the Thames between London and Clacton-on-Sea. Herewith we give an illustration representing the type of engines with which all of the boats are fitted. This is a reproduction of a photograph on a large scale of a remarkably complete working model of the engines shown in the Edinburgh Exhibition. The model is really an exact *fac simile* of the engines fitted into the Dover and Ostend boats.

The following table will show, even more clearly than word description, the principal dimensions of the boats; also particulars as to engines, boilers and speed performances:

	Princess Henriette and Princess Josephine.	Princess Victoria.	Duchess of Hamilton.	Clacton Belle.
Ship:—				
Length.....	300 ft.	280 ft	250 ft.	246 ft.
Breadth.....	38 ft.	35 ft. 6 in.	30 ft.	26 ft. 6 in.
Depth.....	13 ft. 6 in.	14 ft. 0 in.	10 ft. 6 in.	10 ft. 0 in.
Engines:				
Type.....	Two-crank compound diagonal.	Two crank compound diagonal.	Two-crank compound diagonal.	Two-crank compound diagonal.
Diam. of cylinders.....	39 in. & 104 in.	51 in. and 90 in.	34½ in & 60 in.	28 in. and 50 in.
Stroke.....	6 ft. 0 in.	5 ft. 6 in.	5 ft. 0 in.	5 ft. 0 in,
Boilers :—				
Type.....	Admiralty.	Return tube.	Admiralty.	Admiralty.
Number.....	Six.	Four.	Three.	Two.
Pressure.....	120 lbs.	115 lbs.	115 lbs.	115 lbs.
Trial :—				
When	June 7, 1888.	April 19, 1890.	May 28, 1890.	May 2, 1890.
Speed, mean.....	21·28 knots.	19·77 knots.	18·09 knots.	17·07 knots.

It is worthy of note that the breadths of most of these vessels bear an unusually large proportion to the length, especially if the width across the paddle wings be taken. This characteristic, while not so detrimental to speed results as designers have hitherto been prone to believe, is certainly somewhat inimical to the best speeds attainable. On the other hand, it has compensating advantages, such as steadiness of motion, ample deck space, and luxuriousness of appointment generally, all of which, now-a-days, seem to be as essential items of real progress in steam navigation as speed and safety. At all events, the elements of comfort and luxury have been well met in these vessels, the fittings, including the electric lighting, having been carefully designed and carried out in their entirety by Messrs. Denny's own employés.

The engines are of a compound diagonal type, designed by Mr. Walter Brock, of the engineering firm of Denny & Co. The valves, it will be noticed, are placed diagonally on the cylinders, the high-pressure valve being of the piston type, and the low-pressure one of the ordinary slide pattern. Steel and brass are extensively used in the construction of the main engines and adjuncts, with a view to weight saving. In the case of each of the vessels forced draught is used on the closed stokehold system, Brotherhood's fans being employed. The condenser shell is of plate steel, and the circulating water is supplied by Gwynne's and by Drysdale's centrifugal circulating pumps. All the vessels are also provided with distillers for providing fresh water for boiler feed and other purposes.

Electric Manufacture of Potassium Chlorate.---Potassium chlorate is said to be made commercially at Villers-sur-Hormes, in France. A solution of potassium chloride is electrolyzed, and hydrogen is given off at one pole and potassium chlorate at the other. Experiments were made early in 1883, on the electrolytic production of sodium chlorate from brine. The difficulties to be encountered are that there is always a great deal of chloride left, hypochlorites are formed at the anode, and, if the solution is hot, chlorate and chloride are produced. If potassium chlorate is made, it can be separated from the chloride by crystallization.

A New Industry at Kimberley.—What the Chinaman does on the Australian gold fields the unemployed in the Kimberley district have now found themselves in a position to do. The heaps of debris or "tailings" which have accumulated in the neighborhood of the diamond mines have been taken in hand, and a good business is being done in cradling and washing out the diamonds which have been left behind. It is said that many of the people engaged upon this work are making from £10 to £15 a week, and the industry will be doubtless kept up, seeing the Kimberley corporation authorities are doing everything they can to foster and assist it.—*Jewel. Circ.*

INDUSTRIAL PROGRESS IN THE SOUTHWEST.

Written for the Engineering and Mining Journal by Dr. Theo. B. Comstock.

During the field season of 1889 the writer was constantly met with the queries, "Will the work done by the Geological Survey of Texas result in anything practical? Will it induce immigration or interest capital in the development of our mineral resources?" The invariable reply was, "Certainly, if a good showing can be made, development will rapidly follow." This prediction is being realized even more promptly than has been necessary to prove its truth. Already the announcements made through the office of the State Geologist, and by his permission in the columns of this JOURNAL, have stimulated the mining industries to such an extent as to convert a stagnant, struggling district into one of activity and growth. The exact outcome it is not possible to foretell, for very much depends upon the enterprise of towns and cities which shall connect themselves by rail with the heart of the "Central Mineral District."

In former papers I have laid stress upon the absolute necessity of building railroads before the best results can be realized from the natural resources of the region. Until very recently only abortive attempts have been made to secure transportation facilities, although the town of Llano has freely subscribed money for the purpose.

The Austin & Northwestern (narrow gauge) Railroad has for seven or eight years operated a line between Austin and Burnet, and last year regular trains were put on to an extension of 13 miles from Burnet to Marble Falls. Both of these last towns, as well as a mid-station known as Fairland, are between 30 and 35 miles from Llano. This company has surveyed two or three routes to the last named city from points on the extension aforesaid. Each of these requires a bridge across the Colorado River.

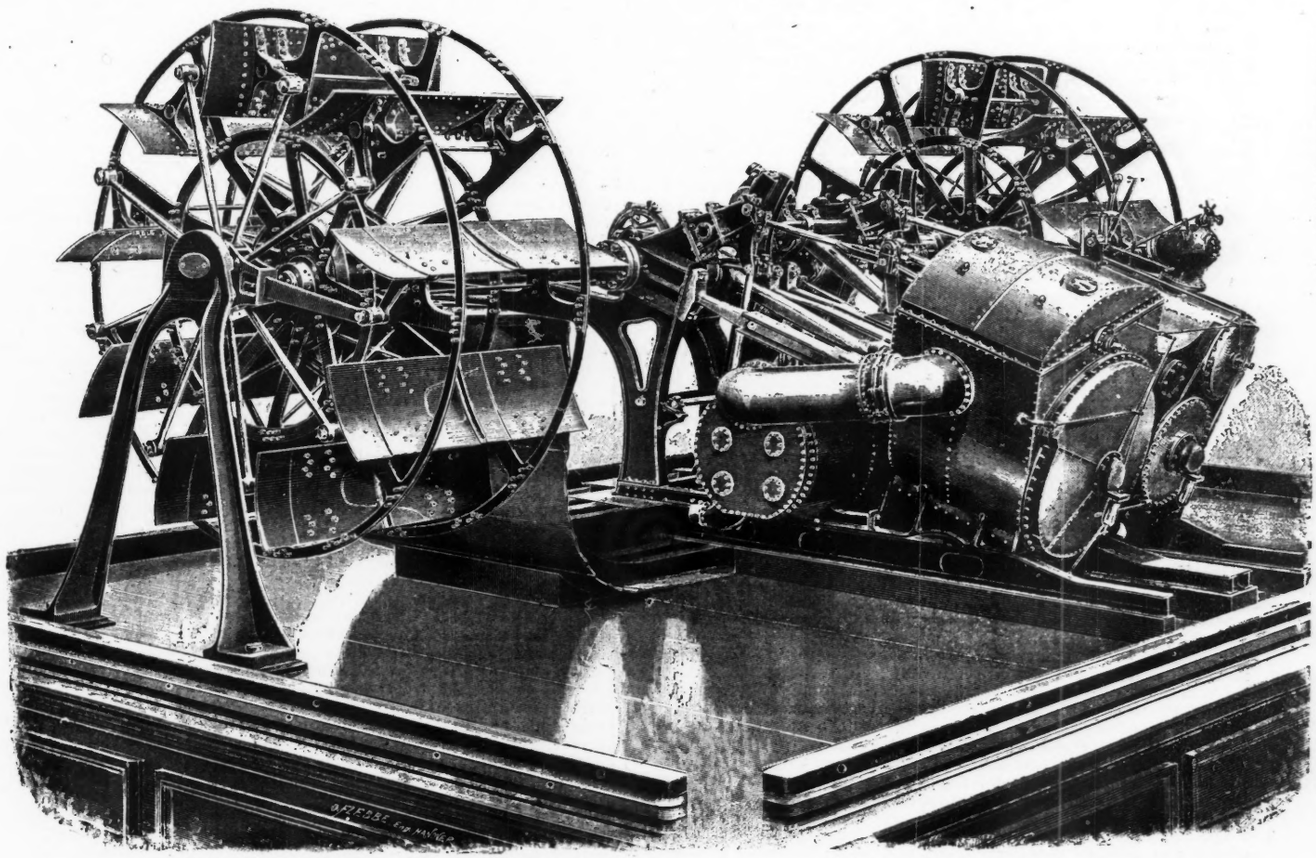
The San Antonio & Aransas Pass Railroad, under promise of ironing and equipping some 35 miles of standard gauge track from Comfort station northward to Llano, induced the citizens to grade the line. This was practically completed last year, with the exception of a long and deep rock cutting, which is abandoned for the present, owing to the appointment of a receiver for the Aransas Pass Railroad recently.

The citizens of Lampasas, after vain but energetic efforts to extend the narrow gauge road from Burnet to their town, a distance of some 25 miles, have now turned their attention to Llano, and are hoping to build across the intervening distance of, perhaps, 35 to 40 miles. Lampasas is a thriving county seat and health resort on the San Angelo branch of the Gulf, Colorado & Santa Fé Railroad, a part of the Atchison system.

The Fort Worth & Rio Grande Railroad has been running trains for a year as far as Dublin, Erath County, and is now extending its track to Comanche, from which point a line has been located to Llano within the past month. This goes southwestward across the Colorado River, via San Saba and Cherokee, in San Saba County.

From an intimate personal knowledge of the topography of the whole region, the writer is able to state that all these routes are practicable, and each has some particular advantage not possessed by the others. A few weeks ago it did not seem probable that any of them would soon be constructed. The policy of all the companies has been, for obvious reasons, non-committal, and there have been the usual mysterious surveys and threats and promises, boasts and apparent inaction. The most business-like step, known to the public, at least, was the construction recently of a telegraph line through the woods over the course adopted as the best route for the extension of the A. & N. W. R., from Fairland to Llano. Some changes in ownership of the stock of that road have been followed by vigorous prosecution of construction, and actual work has begun upon this projected line near Fairland.

To casual observers the building of one or more rail connections to Llano means only the aggrandizement of Llano itself. At least one must judge so from the frequent remarks made to that effect. Few seem to realize the paramount importance of a short line road to a center of fuel supply and a manufacturing point to absorb the products of the smelters to be located there. Some idea of the situation, as it appears to one who has enjoyed exceptional facilities for observation over a wide area, may be gained from the following statements. The history of commercial transactions in the tract denominated the "Central Mineral District" by the present State Geologist has given a most interesting example of the power of human enterprise over natural conditions.



HIGH-SPEED PADDLE STEAMER ENGINE.

In early days, owing, perhaps, as much as anything to the development of the system of frontier outposts along certain lines, but partly also on account of a natural tendency for trade to follow up the valley of the Colorado, Austin monopolized the traffic in this interior region. To-day, with the exception of the hardware business of one firm, that city has apparently abandoned the trade to San Antonio and the small railroad towns upon the north whose merchants have been enterprising enough to make the most of what is there, but without ability or determination enough to stimulate their commerce into a condition of accretion. Austin's inertness has been due to the satisfaction of a certain class of her tradesmen with what dealings are the sure result of the presence of the State capital and the various departments, but there has also been a spirit of ultra-conservatism upon the part of some influential money lenders, who imagine that commercial growth means cheap money and a loss of prestige to themselves. The lesson that inaction is rust and stagnation is retrogression has not been as fully learned in the south as elsewhere, but it will not be long ere its force is fully realized here. Austin is now abreast of the tide, as was shown recently by a practically unanimous vote in favor of bonding the city for a $400,000 dam across the Colorado. Only engineers comprehend as yet the possibilities of that structure. If it does not bring an era of remarkable prosperity to this well-favored city, nothing but the lukewarmness and inactivity of the citizens can be blamed for the results. But Austin has hardly yet put on its working clothes, and it is to be feared that its people do not fully appreciate the prime necessity of railroad communication with the outside world. Many talk as if a dam would of itself compel the influx of manufactures,

regardless of the ready supply of raw materials and the ease of shipment of elaborated products. The trade which Austin has lost upon the frontier has not all gone to points nearer the district, but those cities which supply the area have facilities for in-and-out shipment which enable them to compete successfully for the business. It would appear that San Antonio, content with establishing relations with this section, had followed Austin's example and surrendered much of the plum to Galveston, which city is actually supplying the towns of the upper Colorado Valley to-day—of course by means of its rail connections. Prices of supply at Lampasas, for instance, are on a par with Austin quotations, on some articles even lower. This need not continue, but the extension of one narrow gauge railroad will not prove sufficient to turn the tide.

Marble Falls, in Burnet County, has an abundance of water power which can be utilized at comparatively small expense, and it is, by rail, 73 miles nearer the Central Mineral District. There are natural obstacles to be overcome in road-building, bridging, etc., in the surrounding country, very much of which cannot be cultivated profitably. But its nearness to the vast granite quarries and other mineral resources places it in a position of great advantage should enough capital once be secured to put it into active competition with its rivals.

San Antonio and Galveston, as well as Austin, occupy better positions by reason of the vast additional territory and other interests to which they can cater. There is no present reason why San Antonio should outstrip Austin, except through greater enterprise and superior railroad facilities. As to Galveston, her tidewater facilities cannot be duplicated at any of the other points, although new rivals are liable to give her a hotly contested race for the supremacy. But, in forecasting the future in such cases for any practical conclusions, we must bear well in mind that the Texan frontier is constantly crowding westward, and before many years the Llano and Mason and Brady and San Saba of to day will themselves be aiming for positions equivalent to the Austin and San Antonio of bygone epochs. It, therefore, behooves the latter cities to build for a different order of things, and as they are only 80 miles apart, it is clear that they must be content to divide honors in some degree or to wage bitter warfare for the prizes. The former is the wiser plan from every point of view, and Auston with its dam and other advantages may well expect to hold its own, if its citizens will not lose sight of what is necessary, in addition to cheap power, to make manufactures profitable, viz.: abundant raw material cheaply delivered and easy access to good markets for the output of the factories. For such purposes more and better railroad connections are absolutely necessary, and these can readily be acquired by Austin now, though very much less easily in the future. San Antonio already has advantages over her rival in this particular, but her present connections with the Central District are noto s good.

In all this I have omitted reference to the tribute which the frontier counties may be expected to pay to the more southern cities, in the form of ores and the products from their reduction. My last letter to the JOURNAL, published July 26th, will partly explain this. There is certainly no present prospect that smelting centers can be built up at such points, although heavy demands for pig and bar iron and ingot steel from the Llano ores may come from this quarter eventually. Upon this account railroad connection with the reduction works will be very important in the future. It therefore becomes an interesting question to decide where the ores are most liable to be treated. In dealing with the matter, I assume that, aside from smelting, the reduction of any possible supply of ores of other metals than iron will take place in the mining district itself, although circumstances may throw some of this business even into the southern cities referred to, in processes which do not demand fuel in large quantities.

It requires but little engineering pre-science to foresee that any movement of the Llano iron ores will naturally be in the direction of the coal fields to the northward. Should any charcoal industry be feasible for a time in the timbered localities, the ores will sooner or later seek the coal, either at the mines or in some thriving trade center not very remote from them. The Eagle Pass coals are said to coke well, but from their composition it is not probable that their product will sustain a heavy burden in the furnace. Should this judgment be incorrect, it is possible that a southward movement of ore might follow; but there is very little probability of this.

The only north Texas town which has as yet sufficiently considered the situation to act upon it is Fort Worth, and there has been a very marked change of plans in the location of the line of the Fort Worth & Rio Grande Railroad since the investigations of the Geological Survey in the writer's division have been made public. This road is the only one now under way which is projected to tap both the coal and iron fields. It will, if continued, bring the two together near Comanche, about 100 miles southwest of Fort Worth, after a haul of 75 miles for each; or a continuous haul of 150 miles to Fort Worth would carry the ore within 35 miles, or less, of the coal fields of Wise County. But, if one will consult a map of Texas he will see that more direct connection can be made between Llano or Valley Spring (near Iron Mountain) and the northern coal area. Practicable grades can be secured, although slight engineering difficulties are apparently formidable to investors in Texas railroads. Until, then, both the coal and the iron districts have been more fully developed and connected, it is impossible to say where the smelting may be most economically conducted. What I have written here and published elsewhere comprises the facts as gathered officially by the Geological Survey. What personal interest and the pecuniary ability of capitalists to overcome natural obstacles may induce to do, no one can predict; but it is certain that success in the long run cannot be reached in defiance of the principles here outlined. It is one thing, however, for an engineer to determine the best method of utilizing nature's resources at least expense, as in this instance, but quite another to advise how best to build up an industry at a given point, regardless of cost. The advantages of Fort Worth as a shipping point and as a trade center might, perhaps, readily outweigh the disadvantage of a longer haul. These details are the province of one who is studying a special problem in the interest of individuals, and the work is comparatively easy. What the writer desires is merely to forecast the probabilities as they affect the public, to prevent misapplication of funds and energy which can only result in disaster.

The San Antonio Mining and Milling Company has until lately been working a number of men in its shaft and upon prospecting work in Silver Mine Hollow, Burnet County. This property is described in the writer's report for 1889. Work has been stopped for the present, as the operators, who are also interested in a large amount of property in Llano and other counties, have purchased a Sullivan "C" diamond drill, with which they propose to make test borings. This plan is commendable, and the results will be anticipated with interest. The geologic structure is very complicated, and mining in the lead and copper districts is very uncertain without such detailed information as may be cheaply obtained by boring judiciously. A large amount of useless work of this kind has, however, been done in several instances, owing to ignorance of the structure. In most cases, a preliminary study of the surrounding area will enable a competent geologist or mining engineer to place the bore holes so that a very few will yield far more information concerning the ore bodies than has been given by a score of such tests in some parts of the State heretofore. Under the superintendence of Mr. G. C. Crage the drill will be extensively used, and thus it is to be hoped that a better solution may be reached of the problems connected with the deposition of the ores of the Pecan Creek and Babyhead districts.

The numerous properties of the McGehee estate in the Babyhead tract have all been consolidated under the management of Col. Geo. McGehee, of San Marcos, Tex. An effort is being made to dispose of them in a body, as the owners are not prepared to work the deposits.

The iron ores are being prospected very generally and a large amount of the best territory is held under working options, upon terms varying greatly according to the whims of property holders. The advance in the price of manganese has stimulated prospecting by outsiders, but their attention has been chiefly drawn to the segregated manganiferous iron ores, which are most prominent but not the most valuable in the district. There are very few experienced men at work.

Some desultory prospecting has occurred in Blanco and Gillespie counties, with indifferent results, although there is a showing in a part of the region which merits further investigation.

The shipment of bat guano from the noted cave in Burnet County has been stopped and the mining equipment removed. It is given out that the product contains too little ammonia for use as a commercial fertilizer. An account of the writer's observations will appear in the Second Annual Report of the State Geologist, to be issued late in 1890.

The field work of the Geological Survey this season has been managed for the most part by the same chiefs of division as in 1889, excepting that Dr. Penrose and Mr. Tarr have been occupied only a part of the time and Professor R. T. Hill has given all his time to the work. It is not proper for the writer to speak of others' labors in advance of their reports. As regards his own field in Central Texas, it may be stated that the results are confirmatory of the preliminary announcements in almost every detail. Much new matter of economic interest has been collected, and it is proposed to present in the next report a detailed account of the mineral resources of the area, which cannot fail to attract widespread attention from capitalists desiring good investments. The day of low prices and rapid increase has not passed in this region, and nowhere can money be placed to better advantage, if investments be judiciously selected. The pioneers are moving into new fields in advance of the railroads, and matters are taking on a settled appearance in the older counties. New towns are starting in the outlying areas, and very few of the older places show signs of indifference to progression. It is a pleasure to be able to note that the incoming element thus far has been of the sturdy, up-hill-moving kind, and that comparatively little of the mere adventurous spirit of temporary gain, but ultimate ruin, has acquired a foothold in Texas. Of course, it is fully as necessary to guard against ignorant and prejudiced investment here as elsewhere, and all Texas agents are not immaculate; but if one desires to get fair returns from legitimate investment, and will investigate carefully under competent professional advice, there is less risk than in districts where all the inhabitants are speculators. Those who believe in guesses and "rule of thumb" processes for acquiring wealth may find more fertile fields, but for steady, certain profits, there are no superior investments than in Texas lands and well-planned business enterprises.

WOLF CROSSING, BURNET COUNTY, Tex., Aug. 25, 1890.

A New Grinding Material.—Crushed steel is said to be coming into use for cutting stone. It appears to be made by quenching very high carbon steel in cold water from an excessively high temperature, such as would over-heat steel for most purposes. This renders it not only hard but rather brittle, so that it is possible to pulverize it; it is crushed in a stampmill, and sifted closely to size. It is said to be not only cheaper, but much more effective than emery, giving a better polish and quicker, and lasting much longer.

Street Railways in the United States.—The eleventh census furnishes statistics concerning railways in different cities of the United States. The five leading cities will serve to illustrate. Length of line, Philadelphia, 283·47 miles; Boston, 209·86; Chicago, 184·78; New York, 177·10; Brooklyn, 164·44. These figures do not take into account the length of double track, which is as follows: Chicago, 176·05; New York, 161·90; Brooklyn, 134·84; Boston, 104·54; Philadelphia, 39·99. Boston has 151·15 miles operated by animal power, 49·71 by electricity; Brooklyn, horse-power propulsion, 132·95 miles, 6·30 by electricity, 24·19 elevated roads; Chicago, 160·77 by animal power; 24·01 cable; total, 184·78. New York, 133·53 animal power; 6·87 cable; 32·40 elevated roads; 4·30 surface roads; total, 177·10. Philadelphia, 260·47 animal power; cable, 23·00; total, 283·47. On December 31st, 1889, the United States had 807 street railways in independent operation. Following is given a table of the total mileage of fifty-six principal cities operated by various kinds of motive power:

Motive power.	Miles.	Per cent.
Animal power	2,351·10	74·62
Electricity	260·36	8·26
Cable	255·87	8·12
Steam (elevated roads)	61·79	1·96
Steam (surface roads)	221·81	7·04
Total	3,150·93	100·00

It is stated that the transformation of animal into electric power will continue until the percentages given above will be reversed; that is, 75 per cent. of electric and 8 per cent. of animal motor road.

THE MONARCH ORE SEPARATOR.

The Ball and Norton magnetic ore separator, called the Monarch, is distinguished by simplicity of construction, as will be seen in our illustration, which represents a transverse longitudinal section of the machine, showing the working parts. The finely divided ore is emptied into the hopper at the top of the machine on the right, and runs by gravity down the sides below the hopper until it comes in contact with the surface of the first hollow cylinder of iron magnetic material, which revolves about one hundred times per minute, and within which is placed and rigidly held in one position a powerful electro-magnet, with arms, as shown in the section. The particles of ore coming within the magnet's range of attraction are magnetized and held against the sides of the cylinder, and as the particles are moved by the revolution of the cylinder past the different arms, each of which acts as a separate magnet, the polarity of the particles is reversed and they are caused to change in position and tumble about on the surface of the cylinder, whilst the impurities not being attracted by the magnets drop to the bin for tailings below the separator. As the particles of ore are carried beyond the range of the magnet by the revolution of the cylinder they are thrown off by the centrifugal force of the latter and strike the surface of the second cylinder, similar in construction and operation to the first, except that it revolves at a slightly slower speed; from this cylinder the ore, now cleansed of nearly all impurities, is thrown into the bin at the extreme left of the drawing. The separation of gangue from the ore is facilitated by a strong blast of air, which is introduced at the opening at the upper part of the separator at the discharging end, and, passing from it through the pipe shown at the right, thoroughly sweeps off the surface of the cylinders everything not securely held against them by the magnets. The whole apparatus occupies a cube of 4 feet, and its capacity is said to be 16 to 20 tons per hour.

Regarding the efficiency of this separator, the following analyses seem to call for no comments:

Clover Hill ores containing 42·99 per cent. of iron, 0·153 per cent. of phosphorus and 0·30 of sulphur, were, when treated by this machine, concentrated to 69·86 per cent. of iron, 0·021 per cent. of phosphorus and 0·040 of sulphur. Benson mine ores containing from 35 to 43 per cent. of iron, 0·2 of phosphorus and 0·85 per cent. of sulphur, gave concentrates of respectively 65 to 68 per cent., 0·025 to 0·0106, and 0·121.

Tailings from Conkling water jigs of the Chateaugay Ore and Iron Company's mines at Lyon Mountain, N. Y., containing as crude material Fe 11·8 per cent., gave a concentrate (11 per cent. of original) of Fe 68·36 per cent. This barren material yielded a ton of 68·36 per cent. concentrate from nine tons of crude material.

Ore from the mines of Witherbees, Sherman & Co., Port Henry, N. Y., containing 58·3 per cent. of iron and 2·18 per cent. of phosphorus, showed when concentrated respectively from 70·8 to 71·1 per cent. and from 0·044 to 0·037 per cent.

H. E. Collins & Co., Lewis Block, Pittsburg, Pa., are agents for the introduction of the Ball and Norton process and machines throughout the United States.

GEMS AND PRECIOUS STONES.

The Graphic, of London, says: "The barbaric splendor of gems and jewels has a mighty fascination for most human beings, but we are more accustomed to connect gems with India and Brazil than with North America. However, the Northern Continent has produced a magnificent volume all to itself, "Gems and Precious Stones of North America," by George Frederick Kuntz (New York: The Scientific Publishing Company). The book is the work of an expert, and is most thoroughly and scientifically written, and the colored plates with which it is illustrated are some of the finest ever published in a work of this kind. Naturally, Mexico provides Mr. Kuntz with most of his subjects, and his sketch of the gems and jewels of that country will be of extreme value to the archæologist and historian."

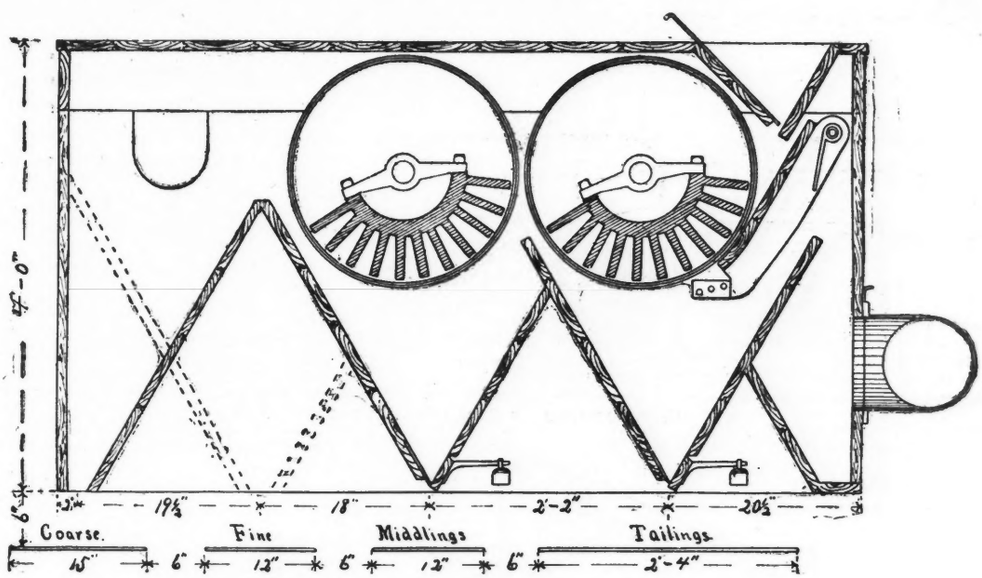
NEW METHOD FOR SUBMARINE FOUNDATION WORK.

Herr Fr. Neukirch, in Bremen, Germany, has devised a new method for foundation works which has proved practically valuable by actual application. His object is to solidify sand under water by introducing into it powdered cement by means of compressed air blasts. An iron tube, somewhat pointed and perforated at the end, reaches the base of the intended foundation, and is connected, through a rubber hose, with a compressed air plant, and can be lowered and raised by means of a windlass. The area to be covered by the foundation works is divided into greater or smaller parts, according to the desired depth, so that the tube to be inserted in each is sunk in distances varying from 20 to 30 centimeters. The quantity of cement to be deposited changes also in proportion to the depth to be attained, and when calculated is filled with a special iron reservoir through an adjustable funnel, and thus ready to be let into the air-current down the tube in a spray-like blast.

The strong air current issuing from the holes in the end of the tube facilitate the sinking of this to such an extent that in a pure sand bottom it will penetrate 4 inches within 30 seconds. On reaching the desired depth, the cement is poured down, and with the air blown into the sand whilst the tube is being slowly raised. The blast gives rise to a boiling movement of the water and sand whereby the cement is thoroughly mixed with the sand and thus solidifies the bottom. The cement remains hard, just as concrete, doing several weeks.

At the Bremen exhibition is shown a block produced by this method.

Yts. d. Ver. Deuts. Ing.



THE MONARCH MAGNETIC ORE SEPARATOR.

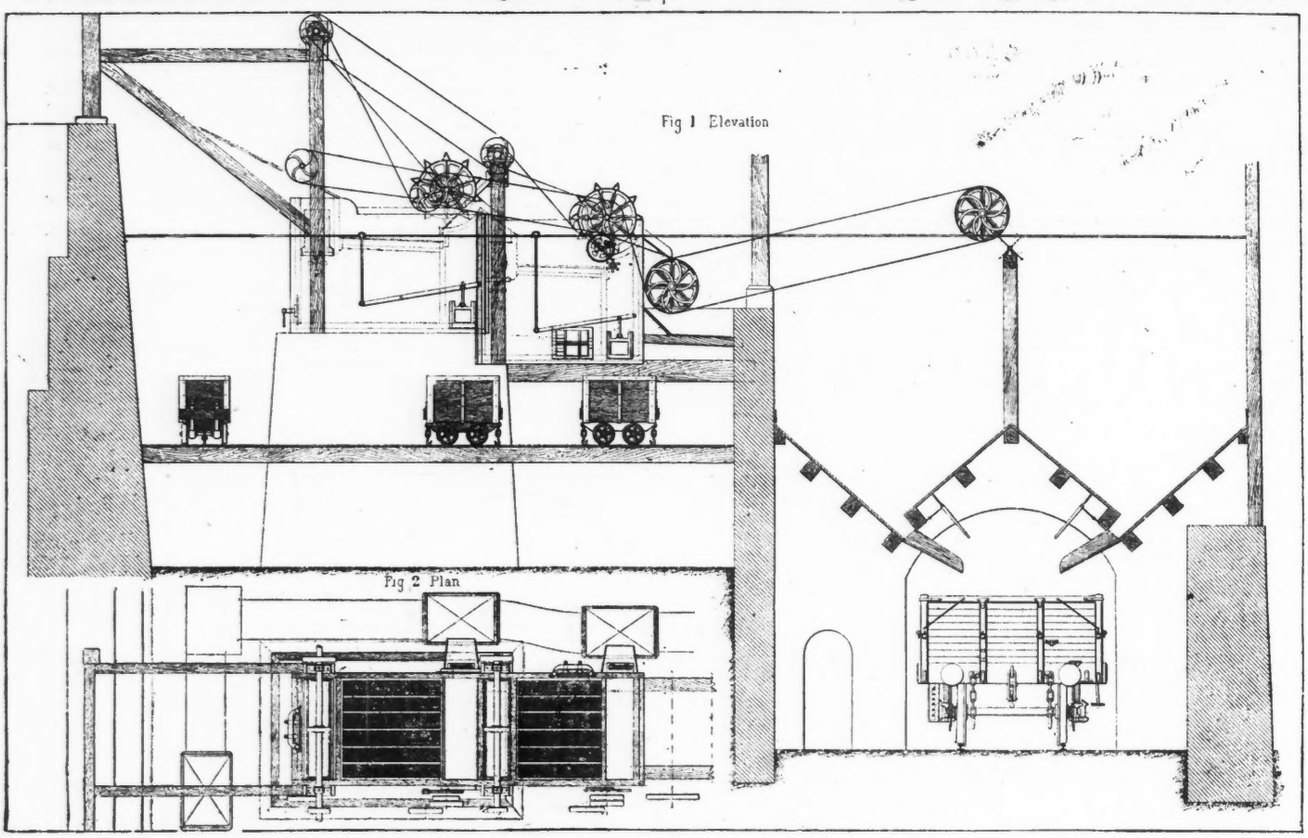
The Sapphires of Kashmir.—Many persons will remember the discovery of a sapphire mine in Kashmir about nine years ago, and the absurdly low prices at which the hillmen who first brought the gems to Simla were willing to sell the precious stones. The Maharaja of Kashmir was not long in placing a guard over the mines and raising a profitable revenue from them, and since then the work of collecting the stones has gone on from year to year. The largest stone found in 1887 weighed about six ounces, and was partly of a very brilliant color. In 1888 the largest stone only weighed 104 grains, and very few were found weighing more than 50 grains. These, however, are not to be compared with the stones brought down when the mine was first discovered. There are at present in the Treasury at Jammu some of the first stones discovered, measuring five inches in length by three inches in breadth, and though none of them are uniformly colored, but are shaded off into white at the ends, some fine gems might be cut from them.—*Jewel. Circ.*

The St. Clair River Tunnel.—The workmen engaged upon the two ends of the St. Clair River Tunnel, between Port Huron and Sarnia, Ontario, shook hands with each other Monday morning under the St. Clair River. When but 100 feet of the tunnel proper remained to be completed, work was suspended and an eight-foot drift was begun to enable the engineers to adjust the massive shields, so that they would form a perfect lining for the tunnel when brought together. The tunnel is practically completed, and every one connected with it is jubilant, for their success has surpassed the most sanguine anticipations of its promoters.

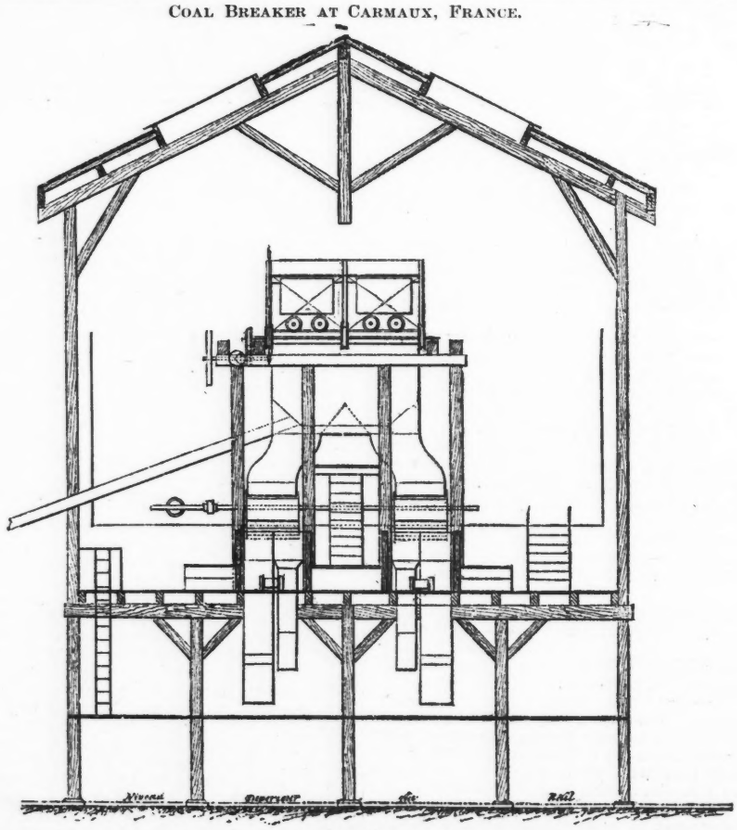
This marks the completion of the greatest river tunnel in the world, and possibly the greatest piece of engineering in the country. The tunnel is 11 feet longer than the Brooklyn Bridge, and the difficulty of underground work compensates for the finer work necessary on that structure. The tunnel will not be in use until some months, as 13,000 feet of approach is to be dug on the Canadian side and one of 9,000 feet on the Michigan. At 9.40 o'clock, August 25th, Mr. Hobson, chief engineer of the tunnel, and Mr. Millman, engineer in charge; Mr. Eames, mechanical superintendent, and Mr. Murphy, who has charge of the excavation, passed through the tunnel, going in on the American side. They made the trip through in 30 minutes, and were greeted upon their arrival on the Sarnia side by all the steam whistles on both sides of the river.

COAL PLANT AT CARMAUX, FRANCE.

We give an illustration from the *Reval Technique* of the Paris Exposition of last year, showing the arrangement of the coal breaker and plant of the Carmaux mines in France. That it is well designed and economical in its operation can be judged from the financial results obtained. The annual output is 325,000 tons and the distribution of profit, after having redeemed the capital invested in the plant, has been, during the ten years from 1877 to 1888, an average of $1.08 per ton extracted.



COAL BREAKER AT CARMAUX, FRANCE.



SECTIONAL VIEW.

THE METALLURGY OF STEEL.

Chemiker-Zeitung, in its issue of 23d ult., says:

"This comprehensive work planned on the largest basis is dedicated to Sir Lowthian Bell. It appeared originally, for a course of about two years, as supplement to the ENGINEERING AND MINING JOURNAL, and is already, in fragments, familiar to the readers of *Chemiker-Zeitung* from the eight abstracts which we have made of the successive installments of the work. The volume is of exquisite style, and is beyond doubt one of

the most important contributions to metallurgical science in modern times. The first chapter is devoted to the classification and constitution of steel, the largest part of the book deals with the chemical, physical and mechanical conditions which affect the qualities of iron and steel. The author has ransacked the extensive technical literature on the subject, and constantly refers to it in his descriptions and explanations of the influence exercised on the properties of the metal by silicon, manganese, sulphur, phosphorus, copper, etc., as well as the different mechanical treatments. Chapter XV. reviews in an elaborate and thoroughly technical manner the numerous direct processes for making wrought iron directly from the ore; Chapter XVI., the crucible steel process, and the closing chapter the apparatus for the Bessemer process. The searching and elucidating treatment of the various processes, although not slighting their chemical aspects, is given from the standpoint of the practical engineer and metallurgist—a point which certainly is an advantage to the work."

The New York *Evening Post*, in its issue of the 28th ult., says: "Mr. Henry Marion Howe's 'Metallurgy of Steel' (New York: The Scientific Publishing Company) is a thoroughly readable treatise, which subserves also the purposes of a manual through its rational topical arrangement and careful index. Having mastered its contents, one may rely upon possessing accurate knowledge of the whole science and craft of practical steel-making. It fills a quarto volume of some 400 pages.

SOCIETIES.

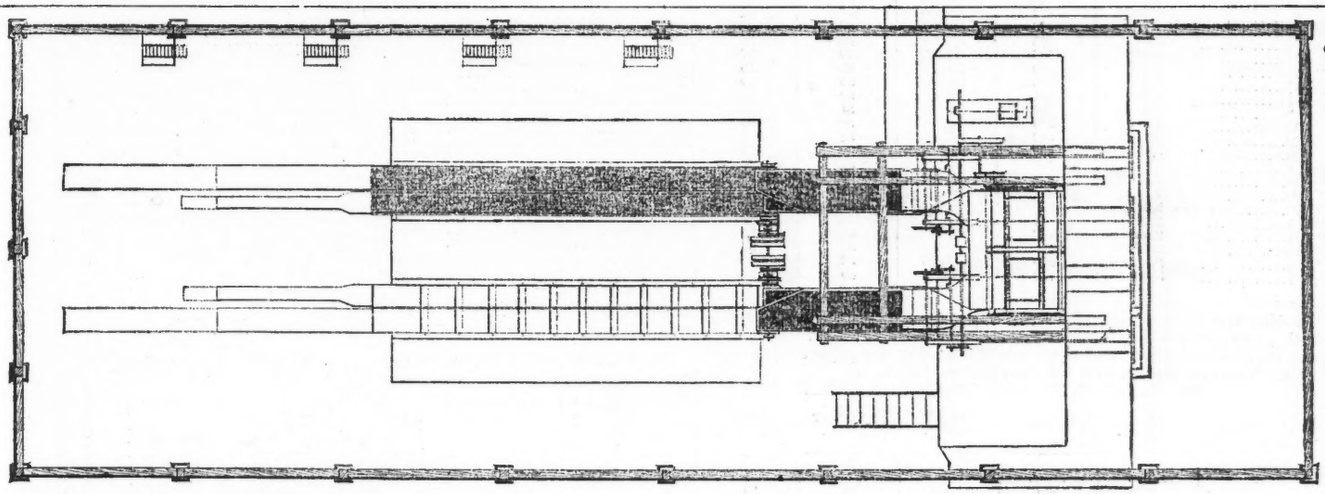
AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.

The annual meeting of the American Association of Railroad Superintendents will be held in this city on October 7.

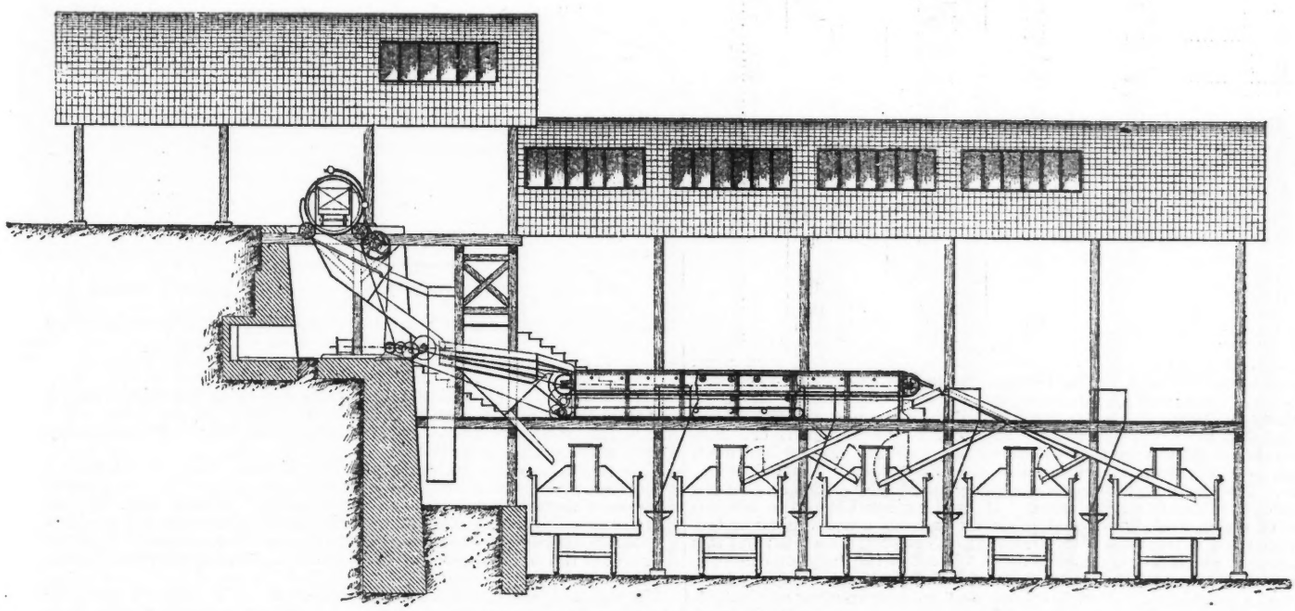
THE BROKEN HILL MINES, NEW SOUTH WALES.

Special Correspondence of the Engineering and Mining Journal, by F. M. Drake.

Many of your readers have heard of the Broken Hill mines, but few know much about them. Silver-lead ores were found and worked in the neighborhood for some months before the present center of attraction was thought much of. Now the old places are forgotten, and if worked at all are worked in a very desultory fashion. The great mine is that of the Broken Hill Proprietary Company. It was first taken up by a boundary rider who thought he had found a mountain of tin. He secured seven blocks, each 20 chains square. They were numbered blocks 10, 11, 12, 13, 14, 15 and 16. The company now holds only blocks 11, 12 and 13. Block 14 was first floated in the colonies, then 15 and 16 were placed in England and called the British Broken Hill Proprietary Company and last block 10 was put on the market. An original share in the Broken Hill Proprietary Company has received to date £148 10s. in dividends and bonuses, and shares of the nominal value of £109. The price at which they were first put on the market was £9 10s. These shares have been divided into 60, which are now salable at £13 each, or £780 for an original share. The first owners of the mine were not very well pleased with their property at the beginning, and, it is said, two who owned one-fourteenth each played a game of euchre to see who would take the other's share and pay up the calls which were being regularly made, the money being spent in sinking a shaft on the immense manganic iron out-crop. The assays made of stuff from this shaft were poor until one day chloride of silver was found and then carbonate of lead. From that time on every development has been good until now the out-put of the furnaces is 400 to 500 tons of lead and 150,000 ounces of silver per week. At the half-yearly meeting held in Melbourne, on July 25, the chairman stated that the total yield to date had been 17,913.518 ounces of silver (545 tons of 2,250 lbs. each), and 71,656 tons of



PLAN.



COAL BREAKER AT CARMAUX, FRANCE.

lead. This has been done in about five years. The following table shows the output for every week in this year.

Week ending.	Ore treated.	Bullion.	Yield silver.	Silver per ton ore.	Lead, per cent.
1890.	Tons.	Tons.	Ozs.	Ozs.	
Jan. 3	3,288	648	143,674	43	20
" 10	3,251	545	138,853	43	17
" 17	3,335	522	148,133	44	16
" 24	3,049	579	143,337	47	19
" 31	3,040	594	127,287	42	19
Feb. 7	3,223	588	133,484	42	18
" 14	3,368	632	136,414	40	19
" 21	3,128	600	131,971	42	19
" 28	2,904	604	138,217	49	21
Mar. 7	2,836	594	140,210	51	20
" 14	3,185	599	140,394	44	19
" 21	3,203	677	139,520	43	21
" 28	3,113	576	143,821	46	18
April 4	3,039	603	142,793	46	20
" 11	2,973	505	143,792	49	17
" 18	3,045	570	151,306	49	19
" 25	3,022	586	151,695	50	19
May 1	3,036	601	151,899	50	20
" 8	2,971	539	152,117	51	18
" 15	3,071	530	155,059	50	17
" 22	2,971	512	154,660	51	17
" 29	3,020	506	156,005	51	16
June 6	2,961	494	152,795	51	17
" 13	3,072	465	152,147	49	15
" 20	2,788	561	152,841	54	20
" 27	2,645	540	152,748	57	20
July 4	2,584	444	151,863	58	17
" 11	2,595	422	151,731	57	16
" 18	2,670	446	152,645	57	16
" 25	2,922	490	152,695	52	16
Aug. 1	3,296	710	152,387	49	21

Besides the Proprietary Company there are other mines producing. North of the Proprietary Company comes Block 14 Company. They have three furnaces working and have lately resumed the payment of dividends. Their outhut for this year has been as follows :

Week ending.	Ore treated.	Bullion.	Yield silver.	Silver per ton ore.	Lead, per cent.
1890.	Tons.	Tons.	Ozs.	Ozs.	
Jan. 2	542	156	11,510	21	29
" 9	592	157	11,375	19	26
" 16	671	162	11,788	17	24
" 23	547	162	11,357	20	30
" 31	702	168	12,046	17	23
Feb. 7	912	190	14,171	15	21
" 14	892	214	13,054	14	24
" 21	1,007	221	14,081	14	22
" 28	831	226	14,109	17	27
Mar. 7	733	221	13,896	19	30
" 14	765	210	13,648	17	27
" 21	835	232	13,911	16	28
" 28	782	214	14,306	18	27
April 4	783	220	14,211	18	28
" 11	687	220	13,254	19	32
" 18	686	214	12,591	19	34
" 25	799	242	14,587	18	30
May 1	796	220	14,380	18	28
" 8	725	204	14,671	20	28
" 15	767	220	15,261	20	29
" 22	936	213	15,403	16	23
" 29	850	173	15,649	18	20
June 6	821	167	15,720	19	20
" 13	780	191	15,935	20	24
" 20	742	236	15,130	20	32
" 27	782	230	13,941	18	30
July 4	769	219	14,358	19	27
" 11	769	207	14,761	19	26
" 18	793	236	15,094	18	29
" 25	795	196	15,752	19	24
Aug. 1	730	185	15,767	21	25

Next to the Block 14 is the British Broken Hill Proprietary Company property. They have a concentrating works on the mine, but their smelting works are at a place called Port Pirie, 250 miles distant. They are not now working, as a cave has taken place, and sufficient ore cannot be taken out to keep their smelters going until the ground is secured. North of the British is the mine of the Broken Hill Junction Company. They have two furnaces at a place called Port Adelaide, a distance of 330 miles from the mine. It was expected that the advantages of cheap fuel, fluxes and labor on the sea coast would counterbalance the disadvantage of the transport of ore such distances; but this is a matter which people disagree about. North of the Junction come the Junction North and the New North. The New North Company have shipped a considerable quantity of ore and are now erecting concentrating machinery. The Junction North has yet to make its first ore shipment, I believe. There are more companies further north, but they are non-producers as yet. Going south, the first mine after leaving the Proprietary is that of Block 10 Company. They have no reduction works as yet, but are sending away about 100 tons a week. Next to the Block 10 is the Central Broken Hill Company's property. They are putting up three furnaces, and will soon be smelting. Their shipments of ore amount to about 12,000 tons of ore to date; the present weekly quantity reaching between 700 and 800 tons. South of the Central is the Broken Hill South Mining Company. They have a large area of land, and are opening out just now into very good stuff, and are making regular shipments of ore. South of the South is Block 5, and further on are other claims.

I have not attempted to give you a list of all the mines, but have merely given the most prominent ones. Americans, or men of American experience, are in charge of the principal mines. John Howell is general manager of the Proprietary. He has on his staff Messrs. Schlapp, Koehler and Harper, the first two as metallurgists and the latter as underground manager. Mr. Howell is also general manager of the British Company. Of the other mines the Block 14 has Z. Lane, the Junction has William Adams, Jr., and F. F. Thomas has charge of both the Central and South mines. I will reserve a description of the different companies' works until some future time. Several customs here astonish people who have had experience with mine management in other places. The mines are open to the inspection of the general public. All of the principal mines, except the Proprietary, have fixed days for visiting. The Proprietary allow visiting any day. Newspaper correspondents and reporters are admitted free, but a fee of five shillings, which goes to the local hospital, is charged to any one else.

It is needless to say that this interferes with the work, but the shareholders wish it and it must be done. If the manager's weekly report to the directors is not promptly published there is a great row. Of course this allows the shareholders to know exactly what is being done, but it has its disadvantages as well. The prices of shares are continually fluctuating, as the different drives, cross-cuts or shafts look well or otherwise from day to day. I don't know that I can finish this letter better than by giving you some returns published by the *Silver Age* July 18th, 1890, showing the exports and imports. Don't fail to notice the beer, spirits, and wine.

EXPORTS.

For six months ending June 30th, 1890:	
Argentiferous lead	£840,877
Silver ore	295,221
Copper ore	8,063
Wool	16,163
Live stock	86,840
Miscellaneous	6,979
Total value	£1,254,143
For the year ending December 31st, 1889:	
Argentiferous lead	£1,525,349
Silver ore	315,979
Tin ore	86
Copper ore	1,0 1
Gold quartz	17
Live stock	107,432
Wool	181,788
Miscellaneous	10,796
Total value	£2,142,528
For the year ending December 31st, 1888:	
Argentiferous lead	£863,467
Gold quartz	182
Copper ore	304
Silver ore	136,800
Tin ore	1,095
Live stock	106,199
Wool	160,927
Miscellaneous	4,605
Total value	£1,273,579
For the year ending December 31st, 1887:	
Argentiferous lead	£462,442
Silver ore	59,472
Copper ore	170
Gold quartz	30
Tin ore	341
Live stock	95,520
Wool	107,175
Miscellaneous	2,122
Total	£727,272

IMPORTS.

For the six months ending June 30th, 1890.	
Coke	£88,414
Timber	78,249
Machinery	40,829
Beer, spirits and wine	24,237
Drapery, wearing apparel, etc	61,975
Coal	£20,145
Dairy produce	22,906
Tea, coffee, flour and sugar	30,378
Tobacco and cigars	4,130
Dynamite	10,269
Boots and shoes	12,279
Miscellaneous	228,546
Total value	£622,357
For the year ending December 31st, 1889.	
Coal	£ 12,083
Coke	113,949
Machinery	47,312
Drapery, wearing apparel, etc	97,804
Dairy produce	32,394
Tea, coffee, flour and sugar	55,178
Beer, spirits and wine	50,910
Tobacco and cigars	8,433
Dynamite	13,501
Boots and shoes	25,160
Timber	78,406
Miscellaneous	477,227
Total value	£1,123,366
For the year ending December 31st, 1888:	
Coal	£1,135
Coke	63,157
Machinery	63,113
Drapery, wearing apparel, etc	96,220
Dairy produce	32,336
Tea, coffee, flour and sugar	48,661
Beer, spirits and wine	64,886
Tobacco and cigars	9,578
Dynamite	13,144
Boots and shoes	12,585
Timber	111,451
Miscellaneous	556,370
Total value	£1,072,636
For the year ending December 31st, 1887:	
Coal	£276
Coke	19,508
Machinery	32,548
Drapery and wearing apparel	27,673
Dairy produce	11,705
Tea, coffee, flour and sugar	28,116
Beer, spirits and wine	18,612
Tobacco and cigars	2,775
Dynamite	5,153
Boots and shoes	12,058
Timber	68,559
Miscellaneous	2 9,169
Total value	£526,152

BROKEN HILL, N.S. W., July 31, 1890.

THE ORE DEPOSITS AND MINES OF MINAS GERAES, BRAZIL.

(Prepared for the Engineering and Mining Journal by R. W. Raymond from the unpublished notes of A. Mezger, M. E.)

(CONCLUDED.)

One of the most interesting mines is the Passagem mine, belonging to the Ouro Preto gold mines of Brazil. The deposit is a bed-vein which can be traced for five miles; and the bed-vein of Dom Pedro, mentioned above, may easily be a continuation.

This vein formed, in and near the city of Ouro Preto, the slope of a mountain, which was simply broken down and stamped for a horizontal distance of about two miles (the operation lasting till about 1840). Beyond this distance the continuation of the vein northward seems to have been previously destroyed by erosion; but the gold must have been left in the débris; for the whole surface of the mountain shows everywhere unmistakable traces of old workings.

The vein continues, with its original dip of 15 to 18 degrees, into the opposite side of the valley or cañon, and has been opened for about three miles in length by many inclines. Very difficult access from the nearly vertical cañon wall, the absence of energy, the impossibility of establishing anything like machinery in a narrow cañon about 200 feet deep, and the encountering of water in the inclines were the difficulties which prevented permanent and extensive work.

Eschwege gives an interesting account of the difficulties he had here in erecting a mill of 12 stamps. He succeeded at last; but after he left, in 1832, the mill was not kept running any more, and fell into ruin. Since then these mines have had owners, all likewise English companies, and all unsuccessful, evidently in consequence of the shortsightedness of the management, which demanded profits much too soon, without the necessary financial foundation and without waiting for a reasonable opening and development of the mines. They are now the property of the Ouro Preto gold mines of Brazil, a London company, the management of which was at first also very shortsighted. The general conditions, however, are so favorable that there can be little doubt of the final success of the enterprise.

The hanging-wall of this vein, like that of the Dom Pedro, is itabirite—a mixture of specular and magnetic iron ore with a little quartz. Near the surface this rock is often (not always) so soft that very light stamping separates the crystals without crushing them. The rock often con-

tains gold throughout its mass, and it has here been the basis of mining to a length of 700 to 800 feet and a depth of 70 to 80 feet, close to the Passagem mine. Right above these quarries I found fortifications, excavated in the itabirite, with an embrasure for a cannon, to be used in keeping control over the slaves working immediately below.

Higher up in the series the stratification of the itabirite is not clearly marked; but the lower parts are more distinctly stratified, and immediately above the bed-vein there are layers a few inches thick composed of strata of a few millimeters' thickness only. These layers are flexible and form the most favorable hanging-wall imaginable in a mine, since they always give warning of danger by bulging down before falling. The hanging-wall forms a pretty regular plane, but the foot-wall shows irregularities, so that the thickness of the bed varies from 4 to 11 meters. The only possible explanation of the formation of these veins is that of the well-known hypothesis of Dr. Volger of Frankfort and Prof. Sandberger of Würzburg, viz., lixiviation of the rock, and crystallization of the contents of the solution in a fissure. Whether electricity or heat was involved in this process, for the case now under consideration, we need not inquire.

The mine is opened by inclines, which have already reached as far as 300 meters from the surface, and ore is extracted by the long-wall system. The quartz is stamped very fine and washed on blanket-tables. The iron pyrites and arsenical pyrites, produced at the same time, are stamped a second time and washed in the *batea*. A very interesting experiment can be made with the arsenical pyrites. If a portion of it as it comes from the stamps is washed in the *batea*, it yields a considerable amount of free gold. When in this way every trace of gold has been taken out, if the pyrites is subjected to a slight grinding in a porcelain mortar, a fresh amount of gold can be washed out, and so on, every new grinding liberating new gold, until all is reduced to a floating slime, which cannot be separated any more. This slime, however, collected, dried and assayed, is still found to contain gold.

The mills are almost suspended on the steep cañon-wall, so that the tailings must run away, because there is no place in which to save them. They still contain $2 and more per ton. The whole arrangement needs many improvements, which, however, could be made without great difficulty, as it is possible to build mills in much more favorable locations close by. The average yield, the year round, is some $8 to $10 per ton.

There can be no doubt that the bed-veins in the slate, so far as I visited them, have exactly the same origin, and that the percentage of gold, at least of the veins which can be traced for such considerable distances, will be found nearly the same, as in the case described.

It seems, however, that there are other bed-veins in the slate of a widely different character. Eschwege describes, for instance, an English mine in most favorable financial circumstances, which produced in its first year (1828) some 1,400 kilogrammes of gold, in the second and third year 600 and 500 kilogrammes, respectively, and in its fourth year a few pounds, and till to-day nothing more, in spite of several later attempts to revive it. I found several mines of the same character which had had, at one time or another, a considerable production, and had suddenly stopped producing. No doubt, in most cases, inadequate financial provision and strong watering of the stock-capital were the sources of failure. It is inconceivable to me that the whole richness of a vein several miles long should be concentrated in a few cubic feet of it at the outcrop, where it was exposed, and that the other parts of the vein should contain nothing; and on this ground alone I should reject such an explanation. I believe that systematic and scientifically conducted work on these deposits would be followed by regular and satisfactory production for many years.

Of an entirely different class are the chimney ore deposits, known in Brazil, so far as I am aware, only in the slate and itabirite regions of Minas Geraes. I give herewith a brief description of the celebrated Morro das Velhas property of the St. John del Rei Company, of London, which produced from 1832 to 1886 on an average some one and a half metric tons of gold per year, and which would have continued this production for many years if an incautious mine management had not led to a destructive caving-in of the whole mine

The dimensions of this deposit are: Along the strike, 18 to 22 meters (60 to 70 feet); from hanging to foot-wall, measured horizontally, 120 meters (390 feet). The dip, like that of the enclosing slate, is 38 to 40 degrees. The structure of the deposit (consisting mostly of quartz, with some magnetic pyrites) shows unmistakably that the strike is the same as that of the slate, notwithstanding the great distance from hanging to foot-wall.*

The mine has been carried to 600 meters (1,970 feet) vertical depth. In 1875, it caved, and was opened again by means of a shaft at one side. Below the level of the break, a part of the deposit was left standing as a safety pillar, under which new stopes were started and continued to a further depth of 120 meters (400 feet).

The necessity of holding two vertical walls, 400 feet long and 400 feet high, with 60 feet of hanging wall exposed between them, was met with timber-constructions more curious and interesting than sound. The superintendence and inspection were in every way insufficient; and at last a loosened mass of several thousand tons of rock fell through everything below it, and smashed everything, putting an end to this magnificent mine.

The process of stamping and washing here practiced was substantially that which I described already. Washing was done on blanket-tables.

Very similar to this is the deposit of Faria and many others. There are, however, in the neighborhood a number of other deposits which, although they have the same outside form, present a very different inner structure. The cross-section of these latter deposits is round, with a diameter of 10 to 20 feet; and each deposit consists of a bundle of tubes of quartz, the interior of which is a soft quartz with iron pyrites and gold. These pipes were worked until 30 or 40 years ago. They present now a very curious appearance, since the miners took only the filling out of the tubes and left them standing. The yield is said to have been about $20 per ton. A great number of chimneys of similar character is known in the large field of Bicas. The dip of all the chimneys is the same as that of the slate. The stratified chimneys consist of quartz rich in magnetite iron, but poor in gold. The needle cannot be used in surveying. I observed local variations up to 26 degrees.

Not far from these deposits are several enormous excavations, like quarries, evidently made by man; but nobody knows when or by whom they were made. It is possible that they belong to a period before the discovery of America. I found in such a quarry, on a vertical wall, some paintings, but was not able to get the slightest indication as to their origin. I may say, however, that I do not believe that the tribe of the Botokudes, which now inhabits the region, had anything to do with it. Stone buildings are nowhere found; therefore the quarries must have been worked for gold.

Another set of chimneys of high interest occurs again on the field of Dom Pedro, opposite the bed-vein mentioned above, on the other side of the valley, in itabirite, with so little quartz that it might be used here (as in many other places) for making iron. The dip is again 15 to 18 degrees, as on the other side of the valley. We find here again bed-veins consisting of quartz with a little oxide of iron. In these veins chimneys are met with which contain the gold in solid bars. In working such chimneys, the bars were literally broken off. During the night holes were drilled, and blasting took place in the morning, in the presence of officials, who collected the gold in boxes. The captain said to me: "We often made 1,000 pounds sterling before breakfast!"

The management for some years exhibited an astonishing incapacity, especially in the acquisition of useless machinery, for which enormous sums of money were spent. One consequence was that the mines were drowned for several years. I myself saw an iron waterwheel, 60 feet high, with 340 meters (1,050 feet) of 4-inch round iron rods running uphill from the wheel to the mouth of the shaft, where they were expected to work the pump-rods. Whatever the trouble was with the counterweights, they did not work; the rods would move down hill only, and the wheel could not push them up again. So a steam engine was erected at the shaft-mouth to pull the rods up hill! It did not occur to the engineers who devised this amazing combination that the steam engine might as well have done the pumping outright. This arrangement soon came to a standstill, and the buckets of the idle wheel had become, at the time of my visit, flower pots, filled and overgrown with tropical vegetation, to the delight of artists and the disgust of engineers.

Since then, turbines with wire-rope transmission have been put up; and, to judge from the market price of the shares, everything is now going well. There are several chimneys known in this bed-vein. At this mine a very rough stamping preceded the washing in the *batea*.

I found several persons washing gold in the river into which the water from the stamps and the washing-places flows. I asked a woman about the yield of the gravel. She said: "At present there is not much in it, *because* the Dom Pedro is not running. When they work again we will have plenty of gold"—an interesting commentary upon the closeness of the extraction in the mills.

Important traces of hydraulic workings are found in the slate regions as well as in the itabirite regions. The alluvium seems everywhere to have been washed over—all by hand. The latirite regions, with their yield of $0.25 per ton, are not very inviting; but the itabirite regions do not appear hopeless, if worked by machinery. The former miners were too easily daunted, as soon as the hardness of the rock became too great for their slight machinery. The same must be said of the well-defined bed-veins of considerable extent in the slate; and it may be safely predicted that serious scientific explorations and tests would be followed by very important results, as well in the slate as in the itabirite, which is far too little known as yet. The coarse gold of the rivers may easily have its origin in this rock. That this is known to be the case only at Dom Pedro is no proof that the same is not true elsewhere, though the actual deposits in place have not been found. Only systematic exploration can discover the outcrop of a chimney a few feet in horizontal length and width: and systematic exploration is unknown to the Brazilians.

* Paralleis may be found among the New Jersey magnetite mines, in some of which the ore-shoots are wider from hanging to foot-wall than they are long from "head rock" to "bottom rock." In these cases, however, the form is probably due to a succession of oblique cross-breaks and movements of the country-rock, separating and disposing *en echelon* the parts of an originally continuous zone. Whether such an explanation could be accepted for the chimney deposits of Brazil, I will not venture to say. The evidence of internal structure to which Mr. Mezger alludes is, unfortunately, not stated in his notes with such definiteness as to permit a discussion of it. If, as I suppose, it consists in a parallelism of structure with the lines of stratification in the enclosing slates, then it would not be conclusive, taken alone, for such parallelism may be produced by pressure. On the other hand, the large number of these chimneys, *all having the same dip as the country-slates*, strongly corroborates the conclusion drawn by Mr. Mezger from their internal structure. R. W.R.

New Fuel Compound.—In Sweden, according to *Zts. d. Ver. d. Ing.*, peat, with a mixture of charcoal or shavings, has proven a successful boiler fuel; 0·87 cubic meters charcoal is required for each 1 cubic meter ready fuel. The mixture went through a Ross peat machine and was spread on the ground in layers of 0·44 meter thickness. After a couple of weeks the water-soaked peat becomes dry. The finished material is found to be but slightly, if at all, inferior to the best English stove coal, of which 0·76 cubic meter corresponds to 1 cubic meter peat fuel.

Membership of Railway Orders.—The *Locomotive Firemen's Magazine* estimates the membership of the various railway orders as follows: Brotherhood of Locomotive Engineers, 20,000; Brotherhood of Locomotive Firemen, 18,000; Brotherhood of Railway Trainmen, 16,000; Switchmen's Mutual Aid Association, 6,000; Brotherhood of Railway Conductors, 2,000. Of these all but the first named are members of the Federation, thus giving that body a membership of 42,000. The Order of Railway Conductors, before the Rochester Convention, estimated its membership at 20,000.

Emery Mines in Greece.—The French Consul at Syria, in a recent report on the emery mines of Naxos, supplies the following information: Naxos emery is universally known and has a high reputation; it is the hardest and finest in the entire world. Its composition is 80 parts aluminum, 3 parts silica, 4 iron, and 1 part not separated. According to the classification adopted by savants, and among others, by M. Tennant, the plain and red Naxos emery, which contains neither gold nor silver, comes from copper mines. It is therefore superior to that met with in iron mines, and which is of a blackish color.

Alloy of Aluminum and Tin.—M. Bourbouze has compounded a very useful alloy of aluminum and tin, by fusing together 100 parts of the former with 10 parts of the latter. This alloy is paler than aluminum, and has a specific gravity of 2·85, that is, it is a little heavier than

the pure metal, but not too heavy to be formed into parts of instruments intended to be very light. The alloy is not as easily attacked by the several reagents as aluminum is, and it can also be worked more readily. Another great advantage is that it can be soldered as easily as bronze, without further preliminary preparations.

Preventing Vibrations of Engines.—Many suggestions have been made for remedying the vibration and noise attendant on the working of the big engines which are employed to run dynamos. A plan which has given great satisfaction is to build hair felt into the foundations of the engine. An electric company has just had one of its 90 horse-power engines removed from its foundations, which were then taken up to the depth of 4 feet. A layer of felt 5 inches thick was then placed on the foundations and run up 2 feet on all sides, and on the top of this the brickwork was built up. The cost of the alterations was about $300.—*Safety Valve.*

Safety Lamp Experiments at Neepsend Gasworks.—The first of a series of public tests of miners' safety lamps took place lately in the metal yard at these works. They were conducted by Mr. W. Clifford, assisted by Mr. F. Hardwick, colliery manager, Eckington, and Mr. H. Crossley, of Barnsley. The lamps which stood, without firing, the severest tests applied, were as follows:—Ashworth's Mueseler, Fumat, Bennett No. 3, Thomas Marshall and Clifford, being two more lamps than could be found to stand the same test three years ago. R. Purdy's "Victoria" lamp fired in a test which it stood well three years ago, and Hepplewhite Gray's lamp was fired in the preliminary or horizontal test.

Cutting Stone with Wire.—A new plan of cutting stone by means of a wire cord has been adopted in many European quarters, says a writer in *Science*. While retaining sand as the cutting agent, M. Paulin Gay, of Marseilles, has succeeded in applying it by mechanical means, and as continuously as formerly the sand blast and band saw, with both of which appliances his system—that of the "helicoidal wire cord"—has considerable analogy. An engine puts in motion a continuous wire cord (varying from five to seven thirty-seconds of an inch in diameter, according to the work), composed of three mild steel wires twisted at a certain pitch, that is found to give the best results in practice, at a speed of from 15 to 17 feet per second.

Testing Coal-Tar Pitch.—Some particulars on the valuation of coal-tar pitch are given in a German paper by F. Muck. He considers the test of placing a sample between the teeth a good one as to consistency. To test the softening point a cylindrical piece of the pitch 0·16 inches in diameter and 4 inches long is bent round the bulb of the thermometer, so that there is a length of ·79 inches on one side and of 3·15 inches on the other. The long limb is fixed parallel with the stem of the thermometer, and the whole is placed in a beaker filled with water and provided with an agitator. The water is then gently heated till the longer limb of the little rod of pitch bends round. This is taken as the "softening temperature" of the sample.

Securing Iron Into Stone.—A new cement for securing iron into stone is described in some of the foreign papers. The cement is made by melting resin and stirring in brick dust, which must be finely ground and sifted, until a sort of putty is formed which, however, runs easily while hot. In using, the iron is set into the hole in the stone prepared to receive it, and the melted putty poured in until the space is filled; then, if desired, bits of brick, previously warmed, may be pushed into the mass, and a little of the cement thereby saved. As soon as the whole is cool the iron will be firmly held to the stone, and the cement is quite durable and uninjured by the weather, while, unlike lead and sulphur, it has no injurious effect upon the iron.

Electrical Properties of Baraga.—Several shipments of baraga have, according to *Marine Review*, been made from an island near the north shore of Lake Superior recently. It is a clay-like mineral used in pottery ware and for foundry facings, but Parrish Brothers, Detroit electrical experts, have found a new use for the mineral that will have a bearing on the production of electricity. The clay, as it comes from the ground, when placed in a cell with common brine and the usual amount of zinc, produces a two-volt current. It is claimed that this current may be utilized for motors, lights and charging batteries, and patent for use in this connection has been granted. After three months the baraga is dissolved and then it is found to be pure graphite and more valuable than before using. A $200,000 stock company has been formed at Detroit.

St. Mary's Canal and Mineral Land Company.—The Boston *Transcript* says that the St. Mary's Canal Mineral Land Company has applied for the listing of its stock on the Boston Stock Exchange. This is the parent company of the various copper mines in the upper peninsula, having sold its lands to many of the most prosperous corporations now producing. It has $1,000,000 capital stock in 20,000 shares of $50 each. Its officers are: President, Nathaniel Thayer; secretary and treasurer, Arthur G. Stanwood; directors, Messrs. John M. Forbes, Charles L. Paine, Albert S. Bigelow, J. Henry Brooks, W. H. Forbes, S. N. Brown, Nathaniel Thayer, H. H. Hunewell and Erastus Corning. The company had unsold January 31st a total of 114,810·96 acres of land, besides owning the mineral rights to 6,150·82 acres, the surface of which has been sold.

Oil on Waves.—Lord Rayleigh has explained the calming action of oil on waves by a contamination of the water which prevents the surface of the wave expanding and contracting as it advances. He compared the film of oil to an inextensible membrane hampering the motion of the water. Touching this subject. Mr. E. W. Shepheard-Walwyn, of Monkton Combe, near Bath, says that he has observed a curious effect of falling rain on the surface of canals, ponds, or rivers, near their mouths, where the water is covered by a thin film of oily matter, due to organic pollution. The drops of rain lighting on the film do not mingle with the oil, but roll upon its surface for a period of several seconds until they find a gap or very thin part of the film, where they disappear. Sometimes the surface of the sheet appears to be sprinkled with minute globules of quicksilver, rolling in every direction.

A Cable Railway in Italy.—A steep cable railway has lately been built up the slopes of Monte San Salvatore, near the Lake of Lugano. The power for working is obtained from a stream in the vicinity, and is transmitted electrically to the operating station half-way up at Pazzallo. The water is led through a long iron pipe to two Girard turbines. To each turbine there is coupled direct an Oerlikon dynamo. One dynamo is a continuous current machine, and is employed to transmit the power required for the railway, and the other is an alternator, which serves for the supply of current for lighting the town of Lugano and the stations of the cable railway. The railway line starts a little above the level of the Lake of Lugano, and passes through Pazzallo to the summit of the mountain, the gradient varying from 17 per cent. to 60 per cent. The total length is a little over a mile. The electric current on arriving at Pazzallo is converted into ordinary tractive power, and moves the endless cable.

The Generation of Electricity by the Flow of the Tide.—A French Engineer, M. Decœur, has elaborated a project by which he proposes to supply electric power to Paris. He would generate the required electricity by utilizing the flow of the ebb and flood on the coast and transmitting it to the French capital. For this purpose he intends to construct, near Havre, two large basins joined to each other, into one of which the sea at flood tide flows over a dam, while during ebb it flows out of the other into the sea again. At the inlet and outlet M. Decœur proposes to erect a number of powerful turbines for transmitting the energy of the water. The mechanical energy thus produced M. Decœur estimates, with a tide of 18 feet, which is the average at Havre, a 6 horse power per hectare of basin area. He intends parting off, by means of a dam 16½ miles long, an area of 7,000 hectares between Havre and Tancarville from the sea and the Seine respectively, and thus creating 42,000 horse power, which power he transforms into electrical energy and transmits to Paris. M. Decœur's scheme is looked upon with favor, and although the estimated net profit of 8½ million francs is too high, there are indications that it will ultimately be carried out.

Some Uses of Asbestos.—Asbestos is now being extensively employed for protection purposes in workshops, foundries and mills, to guard against the danger of burning the hands and face, and generally to make working in hot metals a safer and more comfortable occupation. Asbestos mittens to guard the hands are made for firemen, assayers, refiners, etc., and armed with a pair, the artisan or worker can grasp hot irons, crucibles, and the like without discomfort. Masks, too, for the face are made of asbestos, which are fire-proof, and the heat from the hottest fire is said not to penetrate to the skin. Air is drawn from beneath the mask for breathing, so that the burned or flame and smoke-laden atmosphere is not inhaled. Aprons and insulating coverings for the entire body are also constructed, having like protective qualities, and for firemen complete suits of asbestos fire-proof cloth are made. For domestic use, sad-iron holders of asbestos may be had, and with these the grasp of the iron, however hot it may be, never causes pain or burning. Plumbers are likely to welcome asbestos cloths for joint-wiping, and large holders, intended for use by smelters, molders and workers in metal generally are among the more recent uses of this mineral. The asbestos thus prepared is very flexible, and even the mittens are sufficiently pliable to permit of small objects being readily picked up and held in the hand wearing them.

PATENTS GRANTED BY THE UNITED STATES PATENT OFFICE.

The following is a list of the patents relating to mining, metallurgy, and kindred subjects, issued by the United States Patent Office:

TUESDAY, AUGUST 26th, 1890.

434,918. Wear Plate for Railway Ties. James Churchward, Brooklyn, N. Y., Assignor to the Dunham Manufacturing Company, Boston, Mass.
434,927. Sheet Metal Pipe. Charles L. Hart, Brooklyn, N. Y., and Thomas S. Crane, East Orange, N. J.
434,931. Glass Melting Furnace. Luke Houze, Fostoria, O., assignor of two-thirds to Charles Foster and Leopold Mamhourg, same place.
434,934. Frictional Grip Clutch. Hiland H. Kendric, Fulton, N. Y.
434,969. Device for Raising Water from Wells Alfred C. Witt, Grigsby, Kans.
434,971. Railway Brake. August F. Baatz, Bellingham, Wash.
434,978. Journal Lubricating Device. James B. Glover, Jr., Marietta, Ga.
434,983. Car Coupling. John O. Collins, Farmville, Va.
434,990. Method of and Means for Manufacturing Metal Wheels. Edward P. Lyneh, Davenport, Iowa.
434,995. Means for Cooling Journals and Boxes. Archibald J. Robertson, Chicago Ill., Assignor of one-half to John H. Vogt, same place.
435,004. Railway Cross Tie. Robert Whiteford, Louisville, Ky., Assignor of five-eighths to Patrick Bannon, Dennis Shannahan, Michael O'Sullivan and Matt. O'Doherty, all of same place.
435,009. Apparatus for Burning Hydrocarbon Oils. Jas. H. Bullard and Fred. A. Nickerson, Springfield, Mass.
435,020. Compressed Air Street Car Motor. Frank M. Merrill, Oakland, Cal.
435,025. Means for Securing Push-plates of Coal-Conveyor Belts. Charles S. Schenck, New York, N. Y.
435,034. Automatic Air Compressor. John W. Eloheimo, Red Jacket, Mich.
435,050. Composition of Maganese and Iron for Brake Shoes. William W. Snow, Hilburn, N. Y.
435,074. Anti-Friction Journal Bearing. Robert W. Moffett, Denver, Colo.
435,085. Automatic Lubricator. Francis O. Blackwell, Boston, Mass.
435,110. Electric Forging Machine. George D. Burton, Boston, Mass.
435,111. Electric Car Heating and Feeding Apparatus for Forging Machines. George D. Burton, Boston, Mass.
435,120. Miners' Lamp. Peter J. Miller, Upper Lehigh, Pa.
435,129. Process of Crystallizing Soda-Alum. Eugene Auge, Montpellier, France.
435,139. Rock Drill. Julius Frolich, Barmen, Germany.
435,141. Metallic Steam Packing. David Hanney, Turner, Ill.
435,162. Railway Cross-Tie and Rail Fastening. David Vanaman, Birdsborough, Pa.
435,196. Car Coupling. William J. Walker, St. Louis, Mo., Assignor of one-half to Louis Hammerschmidt, same place.
435,198. Process of Refining Crude Asphaltum. Robert Alexander, Jersey City, N. J.
435,201. Distance Measuring Machine. John S. Blankman, Washington, D. C.
435,221. Combined Railway Chair and Cross-Tie. Marian M. Green, County Line, Tenn.
435,236. Retort Vaporizer and Burner for Oil and Water. Martin D. Miller, Leavenworth, Kans.
435,239. Holsting Machine. Ebenezer McLane, Galena, Kans.
435,269. Apparatus for Burning Hydrocarbons. James H. Bullard, Springfield, Mass., Assignor to the Aerated Fuel Company, same place.
435,270. Hydrocarbon Burning Apparatus. James H. Bullard, Springfield, Mass., Assignor to the Aerated Fuel Company, same place.
435,283. Method of and Apparatus for Welding by Electricity. Charles L. Coffin, Detroit, Mich.
435,284. Process of Heating Metals by Electricity. Charles L. Coffin, Detroit, Mich.
435,322. Piston Valve. Francis H. Richards, Hartford, Conn., assignor to Eckley B. Coxe, Drifton, Pa.
435,323. Valve Gear. John Richardson and Bartholomew R. Howland, Lincoln, England.
435,325. Shaft Coupling. Hippolyte Schneider, Pittsburg, Pa., assignor of one-half to Charles Huff, same place.
435,356. Counter Balance for the Discharge Chutes of Coal or Ore Bins. Elias S. Eaton, Gladstone, Mich., assignor to W. W. Rich, Minneapolis, Minn.

PERSONAL.

Prof. Samuel Cushman has been elected Dean of the Dakota School of Mines, of Rapid City, South Dakota.

The Michigan Mining School, located at Houghton, Mich., will open its fall term September 15th. The attendance of 40 students is expected.

The prize of 10,000 francs offered by M. Cernuschi, of Paris, for the best treatise on bimetalism has been awarded to M. Rothussen, the Prime Minister of Foreign Affairs in Holland.

Dr. Albert R. Ledoux is going to Montana on professional business in a few days and can attend to one or two engagements in the northwest. His address will be 9 Cliff street, New York, or care of Clark & Larrabie, Butte City, Montana.

Lake Superior newspapers are advocating the appointment of J. B. Knight, editor of the Norway *Current*, Norway, Mich., and mine inspector of Menominee County, for the office of commissioner of mineral statistics of the State of Michigan.

E. F. Browne, of Denver, representing Colorado, Nevada and Montana mining interests, has made a proposition to the Columbia Commission to make a great mine exhibit at the World's Fair in Chicago in 1893. The proposition was favorably received and a committee appointed to canvass the matter.

Superintendent W. E. Dickinson, of the Colby Mine, Bessemer, Mich., has resigned. He will leave for Cuba this fall, where he will take charge of certain iron properties, in which Mr. Ely, of Cleveland, is owner. Captain Dickinson has been prominently identified with Lake Superior mining interests for many years. Previous to his connection with the Colby he was superintendent of the New York and Commonwealth mines.

OBITUARY.

Mr. T. Charlton Henry, a director of the Lehigh Coal and Navigation Company, died on the 31st ult., at Germantown, Pa. He was born in Philadelphia in 1828.

John Westinghouse, senior member of the Westinghouse Company, manufacturers of agricultural implements, of Schenectady, N. Y., and elder brother of George Westinghouse, the inventor of the air-brake, died in Schenectady on the 2d inst., aged 50.

John Siddons died suddenly on the morning of August 30th in Rochester. He was born in Kingston, Ont., 64 years ago, and had resided in Rochester since he was 18 years old. At the time of his death he was president of the John Siddons Architectural Copper and Galvanized Iron Works.

Wheeler Beers, who died on the 1st inst., in Bridgeport, Conn., in his 68th year, had been identified all his life with leading manufacturing establishments in that city—the Eagle Spring Company, the Ætna Spring and Axle Company and the Coach Lace Company having been largely aided in their success by him.

James E. Coleman, a prominent mine owner and speculator, 72 years of age, died in this city on the 3d inst. He was the son of Dr. Elijah C. Coleman, of Ashtabula, Ohio, one of the pioneers of that State. With a number of New England capitalists he was interested in the development of salt mines in San Domingo.

ITEMS FOR EXPORTERS.

The Costa Rican Congress has passed a law establishing an export duty of 20 cents per 40 kilos, on coffee.

American roofing slate is gaining so much favor in Australia that the imports for the current year are 100,000 pieces more than in 1889, and the price paid is 15 per cent. better, or within 10 per cent. of that paid for Welsh slates.

A special envoy of the Brazilian government, who is now in Washington, says that Brazil will make concessions to the United States in return for the admission of Brazilian sugar into our ports free of duty. It will let certain American farm products into Brazil free, and also American agricultural implements. In addition to this, it will put down the duty on certain American cotton goods.

Ensilage, or silos, has become a general term for the preservation of vegetation for various purposes, but it is not as generally understood in detail. The E. W. Ross Company, of Springfield, O., have just published a pamphlet of 136 pages on the subject, which will be read with interest and profit by all interested in farming and cattle in any part of the world. As the Ross Company has devoted itself to the machinery and constructions for the ensilage process, their work may be referred to as an authority. Besides a mass of information on the subject, with diagrams and illustrations of first importance to those who use the process, the book contains many portraits of men who have become prominent and popular among agriculturalists all over America. To those to whom ensilage is yet a mystery the following explanation, from the Ross Company's ensilage book will be interesting.

"To very many farmers, and other people as well, the terms 'Silo' and 'Ensilage' are as unintelligible as Greek. These words are of French origin, but they have been adopted in the English Language. What cans and bottles and the vast amount of fruits, meats, vegetables, etc., now preserved in them, are to the human family, Silos and Ensilage are to nearly all kinds of domestic animals. The Silo is the can or bottle, or rather the pit or cistern, or the storage box, or place in which various forage or fodder plants are preserved in a moist, green state. Ensilage means the material put into and preserved in the Silo. (En-, or insilage, is the stuff in the Silo.) The word is now often abbreviated to simply "Silage," and is used both as a noun and verb the doing and the thing done.

The Government of Natal, awake to the importance of establishing new industries, has offered $100,000, it is stated by an exchange, as premiums for the establishment of a score of new industries there.

In China, where kerosene is rapidly coming into popular use, there is a dearth of cheap lamps. The Chinese do not want big lamps—they want to economize even the use of coal oil. One of the American consuls in China recently reported that a large trade could be established if some American manufacturers could supply small hand lamps for something like $1 a dozen. A reporter for the ENGINEERING AND MINING JOURNAL interviewed several manufacturers and exporters of lamps on the matter. They were unanimous in saying that no such lamps could be manufactured, packed and exported at anything like that figure. We learn that in some parts of China the people, with the aid of native tinsmiths, are converting cast-off tins which have contained canned fruit, vegetables, fish, meat, etc., into lamps, by having made a new top with a hole in it, and adding a handle.

An English journal says that "not only are the Chinese developing their mines and railways, and such important industries as those connected with cotton in all its departments, but they are also pushing on many of what may be called the subsidiary industries. The Japanese have established a very large number of paper mills in their country, and now the Chinese are following their example. A company has been formed in Canton, composed entirely of Chinese, under the title of the Canton Paper Manufacturing Company, and they have erected an establishment costing about £30,000, and is estimated that this will turn out about 40 tons of paper per week. At first it is intended to produce only the varieties of brown paper in common use in China, but the plant can, without much difficulty, also be adapted to the manufacture of white paper if necessary. All the employés will be natives, except the manager and engineer, who are British. Several of the Chinese who are engaged in the works have had experience in American paper mills for some years."

Writing to the ENGINEERING AND MINING JOURNAL from Sydney, N. S. W., a commission merchant says: "I sent to the —— Company an order for the largest (rock breaking) machine they make, in December last, giving no limit as to price, and asking them to ship at once, and hand draft with bill of lading to Brown Bros., New York, to be forwarded by them to the E. S. & A. C. Bank here. The —— Company could have discounted the draft with Brown Bros., and charged me with exchange. . . . In March I received a letter from the —— Company saying they could only execute my order on a 'cash basis!' My customer was greatly put out, left me in a huff and went straight to the agent of Baxter, of Leeds, England, who at once cabled for a machine, to be paid for when it had been proved by actual working to be capable of doing the work stated in the catalogue. This transaction cost $27 for cabling and lost me one of my best customers for the time being. I am beginning to think very little of the business capacity of your manufacturers for export trade.

Writing also from Sydney, N. S. W., Mr. T. W. Craven, commission merchant, says: "We people here have a lot of 'go' in us, and we like America and her people, and would do a lot to increase our acquaintance; but, after all, it is a question of dollars. If it pays, we are in it; if it does not, we stand out."

The British Consul at Santos, Brazil, writes to warn shippers to that port of a harassing condition of affairs, adding that it is a common occurrence for a vessel to be detained two months before a berth can be secured. The attention of shipowners is seriously called to this fact, inasmuch as the losses thereby occasioned are tremendous, and practically, whatever the clauses in the charter party to secure the owners against loss, they are without remedy here. Agents of the charterers generally plead *force majaure* or "custom of the port," both most elastic terms, in excuse of non-compliance with the stipulations of the charter party. A shipmaster in these circumstances has but two courses open to him—either to waive his rights by submission, to the prejudice of his owners, or to take legal proceedings against the agents, which would be more prejudicial still. A lawsuit in this country on a contract of affreightment would require at least six months to decide, always subject to an appeal of the same duration, and under conditions unfavorable to the master, as the local influence of the merchants would be greater than his. But even were the decision in favor of the ship, nothing could compensate the owners for the detention (*pendente lite*) and legal costs." Charter-parties of vessels with cargoes for Santos generally contain the following clause: "The charterer's liability to cease on cargo being shipped and advances made, but owners to have a lien on the cargo for all freight, dead freight and demurrage."

Trade in Tuxpan, Mex., seems to have revived somewhat of late, as the exports for the first quarter of 1890 exceed the previous quarter by $53,324.64, and, although the imports can not be correctly obtained, they certainly are much greater than those of the preceding one. The import of lumber has nearly doubled, and employs more vessels in trade between this point and the gulf ports of the United States than formerly. Machinery for the manufacture of ice and other enterprises have been introduced lately, and, if commerce can be put on an easier basis, no doubt trade will increase rapidly, as there is great room for improvement.

"The American merchants can contribute a great deal to facilitate commerce and their own interest, 'writes Consul Drayton,' if they will be more careful in complying with the forms of manifesting goods in their invoices according to Mexican customs, in their tariff regulations, and in the construction of packages in which goods are shipped—they being now very heavy, and for which weights duties have to be paid. The more careful storage of perishable articles aboard ships should also be looked to, as the damages therefrom cause much loss, annoyance and complaint. These defects can be remedied and should be if we wish to continue amicable and prosperous trade between the Republics."

United States Consul, Oscar F. Williams, a Havre, France, has published in the local papers a note to the effect that, with the sanction of his Government, and assisted by several editors, he has opened a bureau of information, where a score of American, several French papers, periodicals, trade reviews, annual reports from chambers of commerce and from the agricultural department, bulletins from transatlantic companies, circulars, catalogues and price lists from manufactured and commercial firms in the United States are accessible to the public free of charge. [THE ENGINEERING AND MINING JOURNAL will hereafter be found on file at the bureau.]

One of the first of the two pioneer steamships sailing direct from New York to Australia carried 100 tons of news paper on the order of an Australian buyer. The order was secured in direct competition with English makers.

Under what conditions, representatives of foreign houses may travel on business in several countries, has been reported on by English consuls. Says the *Iron and Coal Trade Review* (England): "In Chili, Columbia, Ecuador, Egypt, Morocco, Persia and Peru commercial travelers are as free to travel and transact their business as all others; in Japan the position is the same; but, like other foreigners, they are not allowed to go outside treaty limits for purposes of trade. In the Argentine Republic they must conform to the various provincial or municipal regulations, which usually require them to take out broker's licenses, inasmuch as their occupation or business is no other than the itinerant sale of merchandise. The information from Brazil is not complete, the replies from the Foreign Minister referring apparently to peddlers only. The latter have to pay for annual licenses. In Mexico the Federal Government levies no tax, but in certain provinces the local authorities require commercial travelers to notify their arrival and to take out licenses. In two instances the fee of the latter amounts to £20. In Uruguay there is also an annual fee of about £21.

"The foreign demand for American textile machinery," says London *Engineering*, "has of late been more active than ever before, and foreigners are not slow to recognize the merit of the same. In the case of the American loom, this is especially true, for it is generally thought for speed and good workmanship combined, it is superior to all foreign rivals. . . . During the past 12 months the value of cotton and woolen machinery exported from Boston alone has amounted to nearly $325,000, which shows an increase of almost $100,000 in comparison with the year previous."

The cotton crop for the commercial year ending Aug. 31st, 1890, is 7,311,322 bales. This is the largest crop, by 265,489 bales, ever grown in the United States.

INDUSTRIAL NOTES.

The Ajax Forge Company's works in Chicago were burned on the 1st inst. Loss, $25,000.

During one week recently stack No. 4 of the Allentown (Pa.) Iron Works turned out 587 tons of iron, producing one ton of iron to 1·13 tons of fuel.

It is reported that large numbers of Russian mechanics are preparing to emigrate to Brazil, owing to a slackening of the Russian iron industries.

The Thomas Iron Works, Hokendauqua, Pa., has placed an order for 700,000 brick for hot blast stoves. The company is also building a large extension to its stock houses.

The Swift Iron and Steel Works, at Newport, Ky., formerly owned by E. L. Harper, has been bought by the Ironton Steel Works Company. It will be rebuilt and enlarged.

The Edward P. Allis Company, of Milwaukee, has a contract to make nine engines of 1,000 horse power each to furnish the power in operating the West End Street Railway of Boston.

Blackstone & Company, a large engineering firm of Stamford, England, have conceded to their employés a reduction in work of one hour daily and an advance of five per cent. in their wages.

An electric railway from St. Petersburg to Archangel, a distance of 500 miles, is proposed in Russia. It is estimated that the total cost of the road, rolling stock included, will be about $15,000 a mile.

The Ellis & Lessig Steel and Iron Company, of Pottstown, Pa., has commenced the erection of a new building to enlarge its puddling department. Two more furnaces will be added to the mill, making 22 in all.

The Cambridge Iron and Steel Company, Cambridge, Ohio, have recently equipped a machine shop for the purpose of doing their own repair work, and have also placed a contract for two new 10-ton cranes of improved design.

A company has recently been organized at Anaconda, Mont., to manufacture fire brick. The plant will have a capacity of 25,000 fire brick a day, and will cost $35,000. The company is capitalized at $50,000. J. B. Losee is the president and Harvey Mahan, secretary.

Messrs. Troemnor & Co., of Philadelphia, are supplying balances to the various mints which record accurately the 6,912,000th part of a pound. This discounts their former achievement in scale-making, whereby they could show the difference in a number of blank cards and the same number with pencil writing on a few of them.

A dispatch from Santa Barbara, Cal., states that the trial of the new cruiser "San Francisco" took place in the Santa Barbara channel, August 27th. In a run of four consecutive hours the cruiser maintained an average speed of $19\frac{51}{68}$ knots per hour, winning a premium of $100,000 for her builders, the Union Iron Works, of San Francisco.

The Shenandoah Furnace Company, D. W. Flickwir, president, will build an extensive rolling mill plant at Shenandoah, Va. Frank C. Roberts. C.E., Philadelphia and Pittsburg, has been engaged by the company as the engineer of the new works, and will prepare all plans and specifications, as well as supervise the work both in the shops and in the field.

The Clinton Fire Brick Works has been organized in Ashland, Ky., with an authorized capital of $50,000. Work will be commenced at once in the erection of buildings, and it is expected that the plant will be in operation by the first of February, 1891. The officers are: E. C. Means, president; D. A. Leffingwell, superintendent, and R. C. Richardson, secretary. Fireclay from Boyd and Carter Counties, Kentucky, will be used.

The secretary of the Pennsylvania Steel Company has called a special meeting of the stock holders, to be held October 1st, to make arrangements for increasing the capital stock from $2,767,800 to $5,000,000. The company has just constructed an establishment at Sparrow Point, on Chesapeake Bay, at a cost of $2,500,000. A mortgage for $1,000,000, at five per cent., has been placed upon the property, and the balance of the money will be provided by the proposed stock issue.

The paper of the Worcester, Mass., Steel Works has gone to protest in Boston, in consequence of the Potter Lovell failure. The steel works managers say: "The suspension of the banking house in Boston may incommode the Worcester Steel Works and compel them to largely increase their stock under a new name, say the Worcester Steel, Coal and Iron Company, limited, and possibly to remove their works to Narragansett Bay, where their coal mine is and near where their iron mine is."

Last week's bulletin of the American Iron and Steel Association gave the total production of pig iron in the United States for the first six months of 1890 as 5,169,737 gross tons, or 4,615,837 net tons. This is an increase of 754,643 tons over the production for the last six months of 1889. Each half year except one since July 1st 1885, has witnessed an increase over the production of the six months preceding, but the increase first noted has eclipsed all previous half yearly increases.

One of the largest traveling cranes in the world has just passed a successful test at Washington. It was built for the purpose of handling the 110-ton steel guns which are being constructed at the navy yard. Its weight, independent of the frame-work and tracks, is 185 tons; the main pulley block weighs five tons. The girders which span the shop in which it is located are 62 feet in length and high enough to give a 40-foot hoist. It will lift 110 tons gross one foot per minute. The crane complete cost $100,000.

Ground was broken at McKeesport, Pa., last week for the foundations of the new iron mill projected by a company which has purchased the Allikanna (O.) Rolling Mill. The Allikanna mill machinery will be transferred to the new site. The new company will be known as the Boston Iron and Steel Company, and is composed of Messrs. E. C. Converse, C. Chandon, T. B. Murray, Horace Croshy, Jos. Jackson and other officials of the National Tube Works Company. The mill will be run as one of the associate branches of the National Tube Works. A steel plant will be added later on.

A dispatch from Pittshurgh, Pa., says that two of the largest gas wells ever developed in that district have been found. One of the wells is located near Bellevernon and is owned hy the Philadelphia Company. The other is the property of the Bridgewater Gas Company and is in the Wildwood Field. When the wells were brought in they blew out the casings. It is estimated that both are good for 800 pounds rock pressure. The gas from these wells would be sufficient to run half the mills in the city and disposes of the stories that the gas was giving out.

Messrs. Totten & Hogg, of Pittsburg, Pa., are actively engaged in filling orders for rolls made expressly for the manufacture of tin plate for parties who are anticipating the speedy passage of the tariff hill. They have quite a number of orders of this kind. They have also just completed a 16-inch bar train for the Fort Payne Rolling Mill Company, of Fort Payne, Ala., consisting of three sets of three-high and two sets of two-high rolls, so constructed that structural iron can be rolled in the same train without making the changes that usually have to he made.

The progress of the work by Messrs. McCormick & O'Meara, contractors for the Mississippi Tunnel at Chain-of-Rocks, St. Louis, Mo., during the thirty days ending June 30th, was 295 feet 10 inches. The material is very hard limestone, and the work was carried on hy two ten hour shifts, the excavated material heing hoisted 90 feet to the surface.

The tunnel is 10 feet in diameter and about 2,300 feet long. This excellent tunneling record was made with a 16 inch × 24 inch Ingersoll-Sergeant compressor, running five "E" Eclipse drills, two in the heading, one drill on the hench and the other two in the shaft. The average progress per day was 10 feet 7 inches.

The Pennsylvania Rolled Steel Car Wheel Company and the Continental Steel Company have been merged into the Norristown Steel Company. After the transfer had been made and by-laws adopted, an election was held which resulted in the selection of 15 directors of the old hoard of the Pennsylvania company with the exception of Col. Theo. W. Bean, who was elected to the vice-presidency of the new corporation. The new board, consisting of Lewis Royer, Theo. W. Bean, S. M. Moore, J. M. Cranston, E. M. Daniels, Daniel E. Houpt, Wm. B. Rambo, Benjamin Thomas, Geo. W. Grady, Chas. C. Highley, E. S. Stahlnecker, Isaac W. Smith, B. F. Richardson, then held a meeting, and President Hawley appointed H. H. Haines, Dr. Lewis Royer and S. M. Moore as the finance committee and E. M. Daniels, L. K. Passmere and Lewis T. Brooke as the executive committee. The company has discharged a number of men. It is reported that Ex-Treasurer Slingluff will be proceeded against hy civil action.

The Chicago *Times* says the organization of the American Shot and Lead Company or trust has been completed in that city. The capital stock is $3,000,000. One concern in each of the larger cities of the Union has been merged in the new company, and each has a representative in the Board of Directors chosen, which is as follows: Edward A. Leroy, of the Leroy Shot Works, of New York; Walter T. Harvey, E. H. Murdock, Alexander Euston, Hugh Merrie, of the Merrie Shot Works, of Cincinnati; Nathaniel H. Blatchford, of the Chicago Shot Works; Gideon W. Chadbournem, of the Collier Shot Tower Company of St. Louis, the largest concern of the kind in the country; John Fanell, of Fanell & Co., shot manufacturers of Pittsburg, and Frank B. Lawrence. The Northwestern Shot and Lead Company, of Omaha, is also in the purchase. The company has invested almost $3,000,000 in the manufacturing plants, and about $10,000,000 more will be required for the purchase of the stock in the hands of those who will dispose of their business to the new company. The annual meeting of the stockholders convened at Chicago on the 2d inst. A portion of the business transacted was the election of officers and directors for the ensuing year, resulting in the selection of John Farrell. of Pittsburg, Pa., president; Alexander Euston, St. Louis, Mo., vice-president, and N. H. Blatchford, of Chicago, Ill., secretary and treasurer. An additional organization was formed for the mutual benefit of the firms comprising the membership. So far 12 of the principal manufacturers have joined and sold their plants, trade, factories and realty to the new combination, retaining the management as before, but with a view of more economical management and a uniformity of prices. In speaking of the new venture President Farrell said:

"It is not a trust nor in the nature of one, hut by reason of the very low prices which have prevailed for several years and the strong competition, many of the weaker members of our association have gone to the wall, some being even sold out hy the sheriff, and we hope by this move to protect our business and realize at least a reasonable profit on our capital. There will be no material advance in prices."

CHICAGO INDUSTRIAL NOTES.

(From our Special Correspondent.)

The following incorporations have been recorded: American Copper, Brass and Iron Works, Chicago; to manafacture brewery and distillery apparatus; capital, $25,000; incorporators, Otto Mainshausen, Major McGregor, Fred Whitfield.

Illinois Sears Matrix Machine Company, Chicago; to manufacture Sears matrix machines. capital, $300,000; incorporators, O. H. Mann, Henry J. Suhr. C. L. Graham.

Thwing Electric Company, Chicago; to manufacture and deal in electric lamps and supplies; capital, $100,000; incorporators, Wilber J. Andrews, Chas. Thwing, Chas. E. Piper.

Standard Matrix Machine Company, East St. Louis; to manufacture machines for forming matrixes; capital, $1,000,000; incorporators, A. J. Hlerzker, H. H. Wernse, George Keller.

Illinois Valley Coal Company, Pekin; for mining coal and manufacturing coke; capital, $500,000; incorporators, Charles A. Worth, Joseph V. Graff, Henry Clay.

Gold Belt Mining Company, East St. Louis; capital, $?,000,000; incorporators, John Hartman, W. M. Anderson and J. A. King.

The Wise Mining and Milling Company, East St. Louis, changed its name to the Missouri Gold-Placer Mining Company. The Calumet Gas Company, Chicago, increased its capital stock to $1,000,000.

SOUTHERN INDUSTRIAL NOTES.

(From our Special Correspondent.)

The Durham Consolidated Land and Improvement Company has been organized at Durham, N. C., with a capital of $1,000,000. The officers chosen were: President, Julian Carr; vice-president, A. B. Andrews, third vice-president of the Richmond & Danville Railroad Company; secretary and treasurer, R. H. Wright; and general manager, John Yancey, Jr.

The company has hought the lands of the Durham Land and Security Company, the West Durham Land Company, and the Enterprise Land and Trust Company, in all about 815 acres. part of it being in the city limits The present company proposes to make many improvements, among which may be mentioned, to operate street cars and extend the lines, build telegraph and telephone lines, establish a system of water-works, erect cotton mills, knitting mills, &c. These and other industries will require an outlay of about $600 000. They are to be completed in 18 months from date.

The Ohio Manufacturing and Investment Company has been organized at Florence, Ala., with a capital of $1,000,000. The officers elected are: A. W. Stockell, president; E. R. Carlisle, vice-president; J. R. Sheridan, secretary and treasurer. The object of the company is the general development of the industrial enterprises of Florence.

CONTRACTING NOTES.

Michael S. Coleman has heen awarded the Carmel Dam contract for $397,262.50. The engineer's estimate of the work was $418,810.

An English telegraph company has secured the contract for manufacturing 1,750 miles of cable for the Central and South American Telegraph Company.

The Roanoke (Va.) Iron Company has let the contract for the construction of the muck and har mill. It is to have 30 puddling and heating furnaces and cost $500,000. The main huilding is to he 382×300 feet.

It is reported that the final contract was signed in London, England, last week for the steel plant of the Watt Iron and Steel Syndicate, of Middleborough, Ky. J. P. Witherow, who has been in England for some time, secured the contract. The plans have been materially altered from the original design which caused the delay in closing up the deal.

MACHINERY AND SUPPLIES WANTED AT HOME AND ABROAD.

If any one wanting Machinery or Supplies of any kind will notify the "Engineering and Mining Journal" of what he needs, his "Want" will be published in this column.

Any manufacturer or dealer wishing to communicate with the parties whose wants are given in this column can obtain their addresses from this office.

No charge will be made for these services.

We also offer our services to foreign correspondents who desire to purchase American goods, and shall be pleased to furnish them information concerning American goods of any kind, and forward them catalogues and discounts of manufacturers in each line, thus enabling the purchaser to select the most suitable articles before ordering.

These services are rendered gratuitously in the interest of the subscribers and advertisers; the proprietors of the "Engineering and Mining Journal" are not brokers or exporters, nor have they any pecuniary interest in buying or selling goods of any kind.

GOODS WANTED AT HOME.

1,045. A combination dimension and flooring machine, a resaw, ripsaw and molding machine. Louisiana.

1,046. Street car rails and street cars; also dummy engine. Mississippi.

1,047. Complete equipment for foundry. Georgia.

1,048. Complete set of tools for machine shop. Georgia.

1,049. Engine and boiler for machine shop. Georgia.

1,050. An engine lathe, 15 or 16-inch swing. North Carolina.

1,051. A combined steam engine and boiler 2 to 5 H. P. North Carolina.

1,052. Complete outfit for making brick, 15,000 to 20,000 a day—engine, brick machine, etc. Louisiana.

1,053. Drainage pipe. Texas.

1,054. Machinery for a large stove foundry. Tennessee.

1,055. 1,000 tons of Nova Scotia land plaster. North Carolina.

1,054. An engine about 4 H. P., an upright boiler, a pump for hydraulic mining and a lot of hose and a nozzle. Missouri.

1,059. One heavy car tenoner, one car mortiser, one planer and matcher that will dress four sides of a piece of timber up to six inches, one automatic knife grinder, one swing cut-off saw, one car cut-off saw and one self-feed rip saw. Virginia.

1,060. Belting, pulleys, etc. Virginia.

1,061. Slate roofing. Virginia.

1,062. A five-ton ice-making machine. Louisiana.

1,063. A ten-ton ice plant. Mississippi.

1,064. A 500-electric light plant. Missippi.

1,065. Bids on cast iron and cement water pipe. Colorado.

1,066. Plans and estimates on water-works. Colorado.

1,067. One three-pound mixer, one brake, one former, one cracker-cutting machine, and one reel oven with eight shelves for a steam power cracker bakery. Maryland.

1,068. A small saw mill and carriage; also shafting and belting. Florida.

1,069. Correspondence with parties able to furnish artesian water under quarantee. Texas.

1,070. A large iron cylinder saw 3 feet at one end, 2½ feet at the other and 4 feet long. Florida.

AMERICAN GOODS WANTED ABROAD.

1,008. Prices and particulars of a plant for a meat canning factory. Canada.

1,009. Prices and particulars of a plant for a beet sugar factory. Canada.

1,010. Prices and particulars of a plant for a tannery. Canada.

1,034. Agencies wanted of American goods. Australia.

1,057. Information concerning improved rice mills, such as "Brotherhood" patent iron pastles and "Engelbrecht" patent rice cleaner. Peru.

1,058. A ten-stamp gold mill with Frue Vanner concentrators, necessary engine and boiler. Blake's or Marsden's rock breaker, ore feeders, diamond core drill for prospecting, etc., complete; also the equivalent of the above with Huntington Mill in place of stamps. Chlorination plant for the foregoing with Bruckner's roasting furnace. China.

1,071. A circular saw about 24 inches in diameter to be driven by one or two mules. Mexico.

1,072. Communication with manufacturers of agricultural implements; also catalogues and price lists of same. Australia.

1,073. Prices on cotton hose pipe for hydraulic gold mining up to eight inches in diameter, and to carry pressure up to 40 pounds per square inch. Brazil.

1,074. Estimates on plant for granite quarrying and polishing machinery. Canada.

GENERAL MINING NEWS.

Shipments of iron ore from the mines of the districts mentioned below for the season up to and including August 27th were as follows:

		Tons. 1890.	Tons. 1889.
Marquette, Marquette District		861,302	942,398
St. Ignace,	" "	15,911	30,560
Gladstone, Marquette District		6,183	10,366
" Menominee	"	37,893	16,195
Escanaba, Marquette	"	827,210	616,108
" Menominee	"	1,268,403	1,044,253
" Gogebic	"	186,734	185,225
Ashland,	"	1,377,399	974,032
Two Harbors' Vermillion District		556,998	577,060
Total, tons		5,138,033	4,396,197

CALIFORNIA.

A case of great importance, as affecting the titles to mineral lands within the limits of railroad grants, has just been decided adversely to the Central Pacific Railroad in California. The controversy over these lands in that State is almost identical in character to that between the people of Montana and the Northern Pacific Railroad. The case in point is thus stated by the San Francisco *Chronicle*:

"In July, 1862, the United States granted to the Central Pacific Railroad Company all the odd sections of public land within 10 miles of the line of its road on each side, saving and excepting mineral lands. In Feb., 1890, the company sold to one Francoeur a tract of land in Nevada County, on which is situated the Eagle Bird mine. This mine was, and is held by one Newhouse under a mining patent issued in 1887. Francoeur brought an ejectment, relying on his railroad deed, and on Wednesday the judge of the Circuit Court in which the action had been tried charged the jury that all such land as was readily ascertainable as mineral land in 1862, or at the date of the definite location of the railroad, must be considered as excepted from the grant. Under this instruction a verdict was rendered for the defendant—that is, the mineral claim prevailed over the railroad claim.

It is said that in the Sacramento land district alone there are 750 patented mineral claims located on odd sections directly affected by this decision.

The following sales of Californian properties are reported: A half interest in the Helvetia mine was sold for $16,000; the Richmond mine, at Julian, brought $2,000, and the Fraction and Vulture mines were sold for $4,000. The Stanislaus gravel mine, near Byrns Ferry, which was bought by J. B. Haggin and Senator Hearst 16 years ago for $7,000, was sold by them two weeks ago to Mr. Wheaton for $10,000. Wheaton gave a bond of $1,000 and began work on the mine at once.

Most economical quartz mining and milling is being carried on at Herman Tripp's claim on the Mokelumne River. The ledge yields an average of only $1.45 a ton. The first clean-up is said to have yielded $1,740, and the total expense of mining, hauling and milling was only $725, leaving a profit of $1,000 for the month. The situation of Tripp's ledge and his facilities for hauling and milling must be very favorable and involve little labor.

AMADOR COUNTY.

AMADOR GOLD MINE.—The mill of the Amador gold mine is running at about half its capacity. A large quantity of sulphurets has accumulated—from 50 to 60 tons. It is reported that they will be kept for treatment on the ground, which means the erection of chlorination works.

KENNEDY.—This company has taken steps toward the erection of chlorination works. The site has been selected on the hill above the office, and grading has already commenced. G. F. Deakin has secured the contract for the erection of the works, and he expects to have them in running order about September 10th. The outside building is to be a frame structure, and the ovens are to have a capacity of 2½ tons per day. The mine continues to look well. The sinking operations in the north shaft are considerably retarded on account of the large volume of water encountered. The mill is running to its full capacity on rock from the south shaft.

NEVADA COUNTY.

BRUNSWICK CONSOLIDATED GOLD MINING COMPANY.—Mr. H. R. Lounshery, the Treasurer of this company, has received the following letter, dated the 28th ult., from Superintendent Fitzgerald: "Work at the mine is progressing and everything running smoothly. I still have the ledge in the shaft; it looks well, and the rock is better than I expected. From the change from hard formation I find the rock contains ore and sulphurets, the sulphurets being high grade. I know I have a wide ledge of quartz in the west drift toward the Idaho mine, and all I want is for the mine to hold as good as I go down. I have some alterations to make in my pumping machinery on account of the sudden change in the dip of the ledge, it being much steeper. It will not cause any delay in work, but it will not allow me to sink so fast as I wished to. I have employed during the week ending August 28th four miners and two engineers at $3 per day, and one blacksmith at $2.50. I am now figuring to see if I cannot do my mining cheaper by contract than by day's work. I could not do it before, because I was not ready to go right along without any break of time, and contract labor requires the company to fix everything for no delay. The sheriff's deed for the mining property will be forwarded to you in a few days; it is now being made out."

PLACER COUNTY.

HATHAWAY MINE.—This mine, formerly known as the Butts mine, and purchased by the Hathaway Company for $12,500 (see ENGINEERING AND MINING JOURNAL, Oct. 27, 1888), yields ore, it is said, that will pay $6 per ton in gold and $2 in sulphurets. Mining and milling cost but $3 per ton. The shaft is down 250 feet, and the mine is opened up 1,200 feet on the vein, giving enough ore in sight to keep the mill in operation for three years. About 1,200 tons per month are crushed. The mine and plant cost but $42,500. Thirty-five men are employed.

COLORADO.

A Denver exchange states that President Taylor is in the East for the purpose of placing the bonds for the mining exchange building. These bonds have been sent to the Mercantile Trust Company of New York. President Taylor has the promise of the money at any time, but he does not want the entire $250,000 at once. The building committee has decided that it only needs about $80,000 every three months, as it will require about twelve months to complete the building. By securing the money in installments $9,000 interest will be saved.

PARK COUNTY.

BROWNLOW MINING COMPANY.—The property of this company is located in Mosquito Gulch, 14 miles northeast of Leadville. We learn the following facts from the company's statement: It owns ten claims, viz.: Robert Keeley, Montgomery, Silver Leaf, Gold Leaf, Illinois, Iron Duke, Eva Olin, Winchester, No. 2, Brownlow and North Side. The five first named are patented. There are two large parallel fissure veins of ore on the property, besides several smaller ones. The first named is the one which is being worked. It has been opened to a depth of 200 feet. About $50,000 of ore has been stoped from the vein, coming from a depth of 70 feet or less. Geo. F. Batchelder is president of the company.

PITKIN COUNTY.

ASPEN MINE.—This mine has produced a larger tonnage during the month of August than during any other month in its history. It has been shipping continuously for nearly two and one-half years. The average daily shipments ran up to the very large figure of 183 tons, or a total of 4,758 tons for the 26 working days of the month. During the month of August the company's assay department put 3,200 samples through the furnace.

RIO GRANDE COUNTY.

(From our Special Correspondent.)

DEL NORTE, Aug. 26.

Considerable prospecting is being carried on, and will in time develop more of the extent and direction of the ore chutes of this region.

BOBTAIL MINE.—Operations in this property are opening into ore averaging from $70 to $80 per ton. Developments are steadily progressing.

GOLCONDA MINE.—Very fine shipping ore is being continually taken from this mine. The Cropsy mill is running day and night on free gold quartz. About three carloads are shipped every week to Denver markets.

REVENUE MINE.—The miners are penetrating the ore-body. Water from the surface causes more or less trouble.

GEORGIA.

(From our Special Correspondent.)

CHEROKEE COUNTY.

The Piedmont Marble Company is going to establish large marble works near Canton. Civil Engineer B. M. Hall is making a survey of the location, water power, etc. This promises to become an important industry, as the marble is said to be of good quality.

THOMAS COUNTY.

It is reported on good authority that Atlanta capitalists have bought up a large amount of phosphate lands in the vicinity of Thomasville, and are to erect a $150,000 phosphate plant. The land is of easy access to the railroad.

WHITE COUNTY.

Captain R. R. Asbury is reported as making arrangements to form a large mining property of several lots on Cavender's Creek, by cutting a 17-mile ditch with which to develop them.

INDIANA.

SHELLEY COUNTY.

Recently near Waldron, eight miles southeast of Shelbyville, Ind., an explosion set fully ten acres of the earth in commotion. Geysers were shooting up to the height of six and eight feet, and gas was blazing from ten to 15 feet above the water of the geysers. The river bed Flat Rock was torn up and the water had stopped running below the graveyard and is turning down into the caverns caused by the upheaval.

The county had not been considered in the gas-belt, although local companies have sunk many wells. At Waldron a sufficient flow of gas was found to supply the citizens with fuel. The fifty or more fountains of fire burst from the earth were interspersed with six or eight geysers.

Within the bend of the river and for one-eighth of a mile along the stream great rents, one of which is a quarter of a mile long, were seen in the earth and river bed, which is of limestone, and stones the size of a house have been hurled from their places. Gas flows freely from the entire surface of the ten acres.

The gas is odorless, like the Pennsylvania natural gas. It is now discovered that the soil for many miles around is impregnated with the combustible, and by piercing the soil with a crowbar the gas may be ignited and a blaze produced large enough to cause considerable illumination. In Van Buren township, twenty-four miles north, the gas has broken into the water wells, and the use of water from them has been abandoned. Some of the farmers cased the wells, and are using the gas from them for fuel.

The gas from the wells has apparently found its way below the limestone, and in many places fractures in the stone permit it to escape into the sand and gravel immediately below the surface soil, which partially prevents its escape into the air.

KANSAS.

CHEROKEE COUNTY.

A special report shows that during the week ending August 30 the output of ore from the mining district of Galena and Empire City was: Rough ore, pounds milled, 1,626,300; zinc ore, pounds sold, 585,000; lead ore, pounds sold, 64,840. Sales aggregated, total value, $7,763.50. Total value of output, $8,996.50.

KENTUCKY.

(From our Special Correspondent.)

BOYD COUNTY.

The Ashland steel plant is one of the latest enterprises in this section. The organization of the company has been effected, and the Norton Iron Works, the Belfast Nail Works, and the Kelly Nail and Iron Works are the operators. An expensive plant is to be erected with capacity for an output of 300 tons of steel per day, costing about a half a million dollars.

MICHIGAN.

HOUGHTON COUNTY.

COPPER MINES.

Mr. J. T. Whiting, general agent Lake Superior Transit Company, has received a dispatch from Senator Stockbridge, Washington, that the bill for the purchase of the Portage Lake canals has been agreed to unanimously in conference. The purchase by the government means that the canal will be a public highway, and therefore a direct benefit to all Lake Superior copper mines, as well as to iron mining interests tributary to the north shore.

ALLOUEZ MINING COMPANY.—The August output was 115 tons against 126 tons in July. Mr. Stanton, treasurer of the company, states that the Calumet conglomerate has not been cut on the Allouez property, reports to the contrary notwithstanding. In order to reach this lode the Allouez must crosscut to it.

ATLANTIC MINING COMPANY.—The product of this company was 218 tons 1,000 pounds in August, against 207 tons in July and 206 tons in August of last year.

CALUMET & HECLA MINING COMPANY.—The published output was 3,537 tons, against 3,531 tons in July. Since January 1st the product was 27,051 tons, against 16,957 tons for the corresponding time last year. The product for the week ending Aug. 30 was 825 tons. The Red Jacket vertical shaft was sunk 109 feet for the month ending August 17.

CENTENNIAL MINING COMPANY.—The Marquette *Mining Journal*, of Sept. 1st is authority for the following: At the Centennial Mine, Saturday morning, the drift between Nos. 3 and 4 shafts in the ninth level was holed. In this level there is a stretch of the vein of over 400 feet long that is very rich in copper. No. 6 shaft is now down to the second level. The vein in this shaft made a sharp curve up toward the hanging, and was virtually lost for a short distance. It has now come in on its regular course again, but up to the time of this writing they had not gone far enough into it to know its width. As far as exposed, it is as rich as it was above.

PACIFIC COPPER COMPANY.—Articles of association of this company have been filed. The capital stock is stated as $1,250,000 in $25 shares, of which the following are set down as holding 1,000 shares each: Nathaniel Thayer, A. S. Bigelow, S. N. Brown, Charles J. Paine, J. Henry Brooks, William H. Forbes, all of Boston, and Rufus R. Goodell, of Houghton, Mich. The directors are N. Thayer, J. H. Brooks, A. S. Bigelow, John H. Forbes, S. N. Brown, Charles J. Paine, William H. Forbes, H. H. Hunnewell and R. R. Goodell. For particulars concerning this property see ENGINEERING AND MINING JOURNAL, issues of August 9th and 23d.

PEWABIC MINING COMPANY.—The last step in the protracted litigation of the Pewabic Copper Mining Company, of Hancock, Mich., has been taken. United States Judge Severens, holding court at Grand Rapids, last week carried out the mandate of the United States Supreme Court by ordering the property sold to the highest bidder, after being advertised six weeks. Peter White, of Marquette, has been appointed Special Master in Chancery. This last-named gentleman claims that he knows of a bidder who will start the auction at $150,000, and it is his belief that the figure will easily run up to $500,000. The property lies between the Quincy and Franklin mining companies property, each of which has been a contestant for its control. It is safe to say that one of the two will be the purchaser. The Franklin Company's levels open into the Pewabic and the man-engine in the latter mine has, for a number of years, been used by the former company. It is generally understood that the Quincy stockholders own a greater portion of the Pewabic stock.

QUINCY MINING COMPANY.—Quincy produced 451 tons of mineral in August, against 300 tons in the same month last year, and 451 tons in July. The total product for the eight months to Aug. 31 was 3,155 tons, comparing with 2,189 tons for the same period of 1889.

TAMARACK MINING COMPANY.—The dividend declared by this company (see notice under head of "Dividend notices") of $4 is an advance of $1 per share over the July dividend, and makes a total of $13 for the fiscal year. The July and October dividends are on 50,000 shares; the previous dividends have been on 40,000 shares. The total dividends for 1890 amount to $590,000, for 1889, $640,000, and for 1888, $440,000, making total paid since beginning $1,670,000.

ONTONAGON COUNTY.

The Ontonagon *Miner* has reliable information to the effect that there is to be a general revival of the copper mining industry in Ontonagon County. English, Boston, Cleveland, Detroit and Chicago parties are applying for options and purchase prices on many of the abandoned mines. Properties which in all probability will be picked up are the Carp Lake, National, Mars, Ridge, Adventure, Aztec, Belt and Winona mines. The advent of a railroad into the heart of the mineral belt has reduced the cost of transporting the copper to the smelting plant at Hancock from 400 to 800 per cent. Years ago certain of these mines were the largest producers in the Lake District. Operations were suspended before the power drill, improved hoisting machinery and high explosives were known. Since then many of the properties have been allowed to fill with water, while others have been worked in upper levels by tributors. There is plenty of copper in this section. Well-directed mining is going to make fair returns.

MASS AND KNOWLTON MINES.—A Lake paper states that reports of a consolidation of these two properties are in circulation. In case of such arrangement they would be brought into line with the producers. Each of the mines has a small territory, and each has been very productive, considering the available ground. The Mass has a fair equipment; the Knowlton has nothing in this line.

NATIONAL MINING COMPANY.—This property is one of the few in the section which has been operated during recent years. It was closed early in the spring. Advices from the Lake state that the mine is being unwatered and will be sunk deeper and given a good trial under competent management.

RIDGE MINING COMPANY.—Work on this property is making an encouraging showing; a west drift is passing through good copper ground. It is expected that an extension of this drift will open considerable good stoping ground. At the north mine, which was opened thirty-five years ago on the Butler & Champion vein, a hoisting engine and boiler has been put in, and hoisting operations commenced. The mine is being cleared of water and waste rock accumulated by the tributor. After the property is put in shape it will be leased to tributors until some other disposition of it can be made.

WINONA MINING COMPANY.—A force of men is engaged in cleaning out the old shafts in this property, and in exploring new ground. Some rich out-croppings have been opened. The property is controlled by Messrs. Hubbell and Jones.

MISSOURI.

COAL.

Coal miners in the Belleville district went on strike on the 2d inst. for two cents a bushel for digging coal. Six mining companies are affected. The ruling price in the district has heretofore been one and one-half cents a bushel. The Crown Coal Company, operating two mines, granted the advance. The others have made no settlement.

JASPER COUNTY.

(From our special Correspondent.)

JOPLIN, Sept. 1.

There was but little change in the ore market during the past week. The sales at the Joplin mines were large, but in the other camps of the district, in comparison to the output, light. The following are the sales as far as reported from the different camps: Joplin mines, 1,565,540 pounds of zinc ore and 213,480 lead; value, $23,540.

Webb City Mines, 909,160 pounds zinc ore and 79,570 lead value; $12,514.54.

Casterville mines, 540,340 pounds zinc ore and 33,340 lead; value $6,975.

Zincite mines, 371,980 pounds zinc ore and 1,290 lead; value $4,494.

Galena Kans Mines, 585,000 pounds zinc ore and 54,840 lead; value $7,763.50.

The total value of the product in all districts was $55,271

The Bay State, on the Oswego Mining Company land, turned in 22,030 pounds zinc ore.

The old Dittmar Company, on the Interstate land, sold 14,370 pounds zinc ore.

Mefford & Klotz and the Little Josie mines, on the Windsor Mining Company land, turned in 63,760 pounds zinc ore. This is an 80-acre tract of land recently purchased from the Interstate Mining Company by Howard M. Hatden and others, of Kansas City, for $50,000. They are now receiving their regular weekly dividends from royalties of the mines.

Thos. C. Clary, of Kansas City, purchased the Turk farm, two miles east of the city of Joplin, containing 52 acres, for $7,800. The farm is undeveloped. The writer understands that Mr. Clary will commence sinking a shaft at once.

A wealthy syndicate, representing almost an unlimited amount of capital, have purchased a 600-acre tract of undeveloped land northeast of the city of Joplin at $125 per acre. Before purchasing, it made very thorough investigations as to the lead and zinc resources of the Joplin district. Prospecting will be commenced at once.

The value of the Sterling and Zinc Company's output for the week was $757.36. This company is operated and managed by a lady, Mrs. Mary Proudfoot.

The Atlas Company of East Hollow, produced 38,000 pounds zinc ore in four days last week.

The Diamond Mining Company has not less than 250,000 pounds zinc ore in sight.

The most important event of the week was the arrival, Wednesday morning, of 60 prominent business men and capitalists from Kansas City.

The party was headed by H. B. Pain and Frank N. Chick. Later the members of the party were driven to the Pichu Lead Works, where they saw the crude lead ore fed into the furnace, molded into pig lead and the fumes from the Jumbo furnace conducted in large pipes to the blue room, there condensed into sublimed white lead paint, by what is known as the Lewis-Barlet process. These are the only works of the kind in the United States. Next the visitors were taken to the zinc smelter and shown the *modus operandi* whereby the crude zinc ore was reduced to a zinc spelter. Next a number of mines were visited.

The afternoon was spent in viewing the 1,000 acre tract of land and its surroundings. The visit closed with a banquet.

The Hermatage Mining Company, a new organization, has just commenced operations and is producing lead ore at a depth of 16 feet. The property lies three and one-half miles east of Joplin.

The Chilhowa Land and Zinc Company, operating the old Pinkard mines, is now running in good mining. Last week one shaft produced 6,200 pounds of lead. This property is under the able management of Capt. Nesbit, an old-time Western miner.

Prof. John C. Jacksen, a Chicago metallurgical engineer, called at the ENGINEERING AND MINING JOURNAL office at Joplin. The Professor is here in the interest of Chicago parties investigating certain lead and zinc mines with a view of investment.

Mr. M. S. Porter, owner of the Porter mine at Carthage, called at the Joplin ENGINEERING AND MINING JOURNAL office. He reports his mine turning out large quantities of zinc ore.

MONTANA.

MEAGHER COUNTY.

NEIHART CUMBERLAND MINING COMPANY.—This company has been incorporated to develop and operate the Cumberland mine at Neihart. The incorporators are John Lend, Dunc. McDonald, Dunc. McCowan, and E. R. Clingan, and they are also the trustees. Mr. McDonald has been elected president of the company, Mr. McCowan vice-president, and Mr. Clingan secretary and treasurer. The capital stock is $600,000, in shares of $1 each. The Cumberland is one of the first locations in Neihart, and was first known as the Deadwood. It is developed by a tunnel 220 feet and a shaft 50 feet in depth. In the tunnel the ore body is from 18 inches to four feet in width, and the ore of good grade. It runs from 40 to 60 ounces in silver, and contains besides a good percentage of lead. The Cumberland lies west of the Moulton, east of the Queen of the Hills, and south of the Galt, being wedged in among these properties. There are three separate veins on the ground. The company intends to begin further development of this mine at once.

SILVER BOW COUNTY.

BANNISTER MINING COMPANY.—This company, which was organized in Butte some months ago (see ENGINEERING AND MINING JOURNAL, June 14th) upon the Vulcan mine, is now on a dividend paying basis. Notice has been given to the stockholders of the payment of a dividend of four cents per share, or $12,000, the latter part of this month. The capitalization is 300,000 shares. The company is shipping about 15 cars of high-grade ore per month to Denver. They have shipped 20 cars since the 10th of July and have received returns from three, which netted $4,000 per car after paying all expenses. One of the other cars since sent sampled over $600 per ton and will return them about $12,000 net. The company has three veins opened and a quantity of ore in sight on each.

BOSTON AND MONTANA MINING COMPANY.—This company produced 2,400,000 pounds of fine copper in August, against 2,150,000 pounds in July. The August silver product has not been reported.

NEVADA.

LINCOLN COUNTY.

PIOCHE CONSOLIDATED MINING & REDUCTION COMPANY.—This company has been organized in Salt Lake City, with $20,000,000 capital, in 2,000,000 shares. The new company is the consolidation of the Pioche and Yuba Mining Companies. It is reported to control 25 claims with $1,000,000 worth of smelting and milling machinery.

STOREY COUNTY.

BELCHER.—The 200 level north drift from the crosscut is advanced 231 feet. The face is in favorable looking ground composed of quartz, porphyry and clay. The 300 level west crosscut from the shaft is out 535 feet and has reached what is believed to he the footwall. It has passed through a ledge of low-grade quartz, about 25 feet wide, during the past week. Lateral drifts in the quartz will be started at once. The south drift from the 1,300 east crosscut is out 36 feet in a mixture of quartz ond porphyry.

The 1,300 level joint winze is down 97 feet; the bottom is in a mixture of quartz and porphyry. The 1,400 south drift is out 199 feet; face all in porphyry. So far as opened the 1,000-level south stope looks poor on the second floor. An under stope will he started there this week to ascertain what is helow. There was shipped to the Vivian mill during the past week 306 tons and 1,270 pounds of ore, the average assay of which was $22.82 per ton.

CHALLENGE AND CONFIDENCE.—The joint Confidence-Challenge and Imperial west cross-cut No. 2 on the 1,000-level is about 384 feet; in the 24 feet made during the week the face showed quartz of no value. The joint Confidence-Challenge-Imperial north lateral drift on the same level is in 545 feet, and has been connected with the Imperial new shaft.

HALE & NORCROSS.—Stoping operations have been commenced on the 900 level. It shows considerable ore, hut most of it is low grade. A stope is heing carried on from the 1,200 and 1,300 levels. On the 1,250 level, the west cross-cut started opposite the south upraise from the 1,300 level has reached the west wall, and has been stopped. This cross-cut shows a large body of low grade quartz. On the 1,300 level 60 feet north of the station, a west prospecting drift has been started, and the same is advanced 15 feet.

JUSTICE.—The main shaft has been sunk 15 feet during the week: total depth, 148 feet; the bottom is in good working ground. The 622 level winze was snnk 10 feet during the week; the bottom is in low-grade ore. No work has been done on the 622 north drift during the past week. There was shipped to the mill during the past week 192 tons of ore, the average battery assay of which was $26.54 per ton.

POTOSI MINING COMPANY.—F. J. Medina has bought out the interest of President W. H. Nicholson in the Potosi, and now has the controlling stock. At a meeting of the stockholders held recently F. J. Medina was elected president and F. J. Medina, Jr., secretary and treasurer. It is understood that a big force will be put at work at once.

SAVAGE.—At this mine the work of stoping in the ore found east of any of the former workings, on the 1,300 level, is very much retarded hy heat. Three sets of timbers in height above the sill floor of the level have heen put in, and they are extracting only enough ore from this point to average up the milling grade of the ore shipped from other parts of the mine. To remedy this difficulty, arising from the heat, the north drift on the 1,300, sent from the Hale & Norcross shaft, is heing pushed ahead, and a southwest drift from the Savage shaft is being sent out to meet it. The faces of the drifts are now about 140 feet apart. The drift from the Hale & Norcross has left the ore on the west, and that from the Savage shaft has struck a fine body of quartz, carrying bunches of good ore. It is not believed that the ore struck by the northeast drift is a continuation of the ore developed by the north drift from the Norcross, because the course of the ore found in the north drift from Norcross is northwest, and the course of the late development in the southeast drift of the Savage s southeast.

If this be true, the Savage has found another ore body that prospecting may develop lnto goodly proportions. The work in the southeast 1,300 level drift will therefore be watched with interest.

Yesterday a large flow of very hot water was struck in the face of the north drift on the 1,300 from the Norcross. This is the first hot water that has been tapped in the mine since deep mining was discontinued.

The tapping of a body of hot water at this point proves almost conclusively that this part of the mine has never been touched by a pick; it is considered a favorable indication.

On the 300 level No. 1 west crosscut is advanced 33 feet, making its total distance 155 feet. No. 2 west crosscut from the face of the north drift is advanced 37 feet, making its total distance 65 feet; face in low-grade ore. On the 1,300 level the east drift from the Savage shaft was advanced 44 feet, making its total distance 200 feet. The face of this drift is entering a fine looking body of quartz that gives some fair assays.

During the previous week there was hoisted from the several levels, 654 cars of ore Of this amount there was shipped to the Rock Point mill, 499 tons, and milled, 456 tons; average battery assay, $19.20 per ton. There is hullion on hand and at the mill to the amount of $20,400.

NEW MEXICO.

GRANT COUNTY.

The sicolite and green onyx, quarried in western Grant County, has the form of true fissure vein 50 feet wide and over a mile in length, and it is taken out in massive blocks. The stone is susceptible of a very high polish, and of a variety of colors—dark green and cream, striped and mottled, also pink and salmon. In fact, it carries what are termed the "lost colors" in stone. It is very tough, is superior to the Mexican onyx, and is the only stone of the kind in the world that can be carved. Contracts have been signed to supply it to the new Alhambra theater and hotel and other public buildings in Chicago for decorative purposes. Mrs. Caldwell, the owner of the quarries, offers blocks of it to be used in the construction of the New Mexico exhibit pavillion at the world's fair. —*Stone.*

NORTH CAROLINA.

(From our Special Correspondent.)

GUILFORD COUNTY.

Located on the land of Mr. J. J. Phœnix, of Greensboro, about a half-mile from the city, is reputed to be a newly discovered oil well. It has been sunk about 30 feet, and the oil shows very freely. Mr. J. J. Thornton, for some years a member of the Pittsburg Petroleum Exchange, and now a correspondent of the Oil City *Derrick*, visited the well, and says that the underlying stratum is sandstone, and that he is certain oil will be struck in quantity with depth. The outcome of this test is watched with much interest, as oil is something entirely new in this section.

STANLY COUNTY.

PARKER GOLD MINES, LIMITED.—Captain Judd, manager, was in Charlotte on the 2d inst., with the production of his property for August. The fine gold was deposited at the United States Assay Office in that city, while the coarse gold nuggets was shipped to the London office. The latter was a fine lot of nuggets of from 95 dwts. down, there being several of over 20 dwts. The new mill is soon to he completed.

PENNSYLVANIA.

Advices from Mt. Pleasant say that preparations are being made in anticipation of a long strike at the Standard Coke Works of H. C. Frick & Co. There are no indications of a speedy settlement, and a convention of colliers and miners of the entire region has been called for Sept. 9th. At this convention it is likely that a general strike will be declared until the difficulties at the Standard Works are settled. The strike will affect 9,000 men.

COAL.

A press dispatch conveys the intelligence that the miners of Central Pennsylvania, to the number of 15,000, threaten to strike September 15. Their grievance is said to arise from the unfavorable reception of the proposed new scale for dead work, which provides, among other things, that boys from 12 to 16 years be required to work only a half turn, and that the scale for mining he advanced in proportion to the advance in the price of coal. The strikers will meet again September 10 at Altoona.

The striking miners at Amsboy, Cambria county, have grown desperate. On the 3d inst, most of the strikers armed themselves, marched ln a body into the mine, and compelled the men at work to leave at the muzzle of their guns. Fourteen of the men who had taken part have been arrested. All is now quiet, and the miners have resumed work.

OIL.

Exports of refined, crude, and naphtha from the following ports, from January 1st to August 29th, were as follows:

	1890. Gals.	1889. Gals.
From Boston	1,982,169	3,128,707
Philadelphia	98,991,090	96,552,312
Baltimore	7,911,360	3,733,371
Perth Amboy	9,329,533	12,431,761
New York	276,166,906	293,392,792
Total	394,381,058	409,238,943

SOUTH DAKOTA.

(From our Special Correspondent.)

PENNINGTON COUNTY.

The Dakota school of mines at Rapid City will open early in October. Samuel Cushman, a resident of the Hills since '78, has been selected by the trustees for Dean. This gentleman graduated as civil engineer from Brown University of Rhode Island in 1854. For six years afterwards he followed his profession in Illinois and Missouri. For fifteen years after that he was superintendent of various mines in Colorado.

ADDIE.—At this tin mine the new hoisting works are erected and will steam up about Sept. 1st, with a capacity to hoist 1,000 feet.

GLENDALE.—This tin mining company has closed down their mill and mine. The pay for the miners failed to appear when due and a strike occurred. The superintendent has been East for some time past, and when notified sent on checks sufficient, so the men claim, to pay only a portion of the wages due, so they refused to return to work.

TENNESSEE.

Six months ago a suit for something like $1,000,000 was brought against Mr. John H. Inman, by officers of the Tennessee Coal and Iron Company, it being alleged that Mr. Inman had imposed upon that corporation. See ENGINEERING AND MINING JOURNAL, December 14th, 1889, and February 8th, 1890.

The suit never came to trial, although Mr. Inman urged that it be brought to such an issue promptly. Mr. Platt had a good deal more of accusation than evidence. There was, therefore, no great surprise in Wall Street yesterday when it was officially announced that all the charges against Mr. Inman had been withdrawn and full apologies made to him. A card signed by Thomas C. Platt and other directors was made public, saying that "in our opinion Mr. Inman and his colleagues acted honorably and fairly" in the hitherto disputed transaction "which greatly benefited the Tennessee Coal and Iron Company," and they are "completely exonerated from all blame."

UTAH.

During the seven months ending July 31, 1890, the receipts of bullion at Salt Lake City aggregated $2,111,718.

UTAH COUNTY.

ALAMO MINING COMPANY.—This recently organized company is making active preparations to begin work on its property in Bingham cañon, in West Mountain district. It is both gold and silver bearing, and is already partially developed, there being a shaft 40 feet in depth and two tunnels, 60 and 100 feet in length. The assay of one vein is reported to show from 10 to 30 ounces in gold, and from 18 to 300 in silver. The claim was patented in 1883, and is said to he in the same vein as Stewart No. 1 and No. 2.

VIRGINIA.

(From our Special Correspondent.)

ROCKINGHAM COUNTY.

Considerable excitement exists near Harrisonhurg over the reported discovery of oil. It is said that it was discovered while prospecting for coal. The discoverer and others who have seen the find pronounce it to be of good quality and apparently existing in quantity. Several test wells are to he put down at once.

WASHINGTON.

The following press despatch from Richmond, Va., has been received: "Messrs. James B. Pace, James H. Dooley, E. D. Christian and T. M. Logan control one-half of the $5,000,000 capital stock of a company just formed to develop the ore beds about 35 miles from Seattle. These gentlemen recently made over $100,000 each by the sale of a railroad in Washington in which they were largely interested. These mines were found, the land purchased and the company formed before anybody except those interested knew what was going on. The lode has been traced four and a half miles and all of this has been taken. In width it averages about fourteen feet. It is claimed that the ore will assay 50 ounces of silver and 60 per cent. lead to the ton. The company will spend the winter developing the ledge, and next spring the reduction works will be started."

FOREIGN MINING NEWS.

AUSTRALIA.

It appears from a publication recently issued by the Government Statistician of New South Wales that many descriptions of gems have been discovered in various parts of the Australian colonies, hut no systematic search has been made for any but the diamond. Diamonds are found in New South Wales, Victoria and Queensland, but only in the first named colony have any attempts being made to work the diamond drifts. The principal diamond fields are situated at Bingera, near Inverell, in the New England district. The government of New South Wales has, on various occasions, ohtained the services of experts to report upon the fields, and these reports, it is said, have generally been of encouraging nature. The number of diamonds found in the colony to the end of 1887 is estimated at 75,000, the largest one being of 5¾ carats, or 16.2 grains. The diamonds occur in old tertiary river drifts, and in the more recent drifts derived from them. The deposits are extensive and have not yet been thoroughly prospected. The New South Wales diamonds are harder and much whiter than the South African diamonds, and are classified on a par with the best Brazilian gems. During the year 1887 the diamond companies at Cope's Creek, near Bingera, produced about 23,000 diamonds, weighing 5,151 carats; but in 1888, owing to the severe drought which occurred, the search for diamonds had to he temporarily abandoned.

BELGIUM.

Advices from Mons state that 8,000 miners in the Borinage district have struck. Socialist leaders are fomenting discontent among the men, and it is expected that the movement will spread.

A cablegram from Brussels dated on the 22d inst., and received as we go to press, says: "The strike in the Borinage district is spreading. Today 3,500 miners quit work, making a total thus far of 11,500 men on strike in the district. Meetings have been held at Jemmappe, Guesmes, Quaregnon, and Frameries, at which the miners decided to continue the strike. The police were not allowed to he present at the meetings."

A late cahle dispatch says that reports to the effect that the coal miners' strike was over prove to have been premature. The strike is still spreading, and though in one or two districts the men have returned to work, the movement has extended to many other districts which hitherto had not been affected.

CANADA.

ONTARIO—PORT ARTHUR DISTRICT.

PORT ARTHUR, Sept. 1.

THE BADGER SILVER MINING COMPANY.—Drifting is being continued on the West End vein. The drift is now in 200 feet, 60 feet of which is on the vein. The breast of the drift is now about 100 feet from the intersection of the old or No. 1 vein. A shaft will be sunk at the point of intersection. The last forty feet of the vein has had a uniform width of four feet six inches, and has had well-defined walls. The gangue is well mineralized with leaf silver, argentiferous blende and pyrites. No. 3 adit level started some time ago. The vein was struck at 140 feet. At the point of opening it has a width of four feet. The gangue is composed principally of quartz and calcite, giving an average assay of 140 ounces of silver to the ton. On the top of the bluff, 150 feet further east, the outcroppings of this vein gave average assays of 200 ounces of silver to the ton. A drift will be commenced at once easterly on the vein.

No. 4 shaft is now down 80 feet, the last 30 of which was bonanza ore. One shot blew out 800 pounds that would average 2,500 ounces to the ton. A drift was commenced west from the bottom of the shaft to connect with No. 1 adit level. The ground in the adit continues to be of identical character and richness with the last 30 feet of the shaft, and averages 2,100 ounces to the ton. The company has 39 tons of smelting ore and concentrates ready for shipment; it is valued at $66,300.

THE BEAVER MINING AND MILLING COMPANY.—Two carloads of concentrates valued at $56,500, are now ready for shipment to Balbach & Son, Newark, N. J. The stopes are all turning out good ore, and the mill running night and day. At present the product of the mine and mill is about $60.000 per month. It is estimated that there is sufficient ground blocked out to keep the mill running for three years. Some exploratory work is being done on the North Bluff and Big Hardy veins, the results of which are very encouraging.

MCKELLAR'S ISLAND.

THE UNITED STATES BARYTA COMPANY.—This company has just made another shipment of 800 tons of baryta to Buffalo, N. Y. Its first shipments turned out to be of an excellent quality, and as this deposit is practically inexhaustible a large and prosperous trade will doubtless be established.

WHITEFISH LAKE DISTRICT.

R. R. Paulison, in company with a large party of explorers, is examining his iron and silver properties along Whitefish and Arrow Lakes. Some valuable discoveries in iron and silver have been made. One spar lode in particular, carrying native silver on the surface, can be traced for half a mile. This lode is in the vicinity of Little Gull Lake.

Mr. Brandon, an experienced Colorado miner, is examining several Whitefish Lake silver properties for a Michigan syndicate, and is highly impressed with the general topography and surface outcroppings in that section.

PROVINCE OF NOVA SCOTIA.

(From our Special Correspondent.)

During the past week much activity has existed in forming mining companies in the Province. Among the last formed are The Battye Freestone Company, to work quarries at Wallace; Geo. Batty, of Wallace; E. Lombard, of New York, and I. C. Gillies, of Boston, being among the incorporators. Mr. H. K. Fisher, of Isaacs Harbor; Mr. Geo. Whittaker, of Mason, N. H., and others, have incorporated the North Star Mining Company. And Mr. Annand and others, of Halifax, have incorporated the Halifax Mining and Prospecting Company. Messrs. Gilbert Parker, H. B. Prindle and R. R. McLeod have become interested in the following new companies: The Mining and Development Company of North America, The Queens County Mining Company, The Coldstream Mining Company and The Rossignol Mining Company, under the laws of the State of Maine.

COXHEATH COPPER MINES.—Advices from this property up to September 2d have been received at the Boston office of the Eastern Development Company.

The winze from the 184 feet level of vein "B" is in high grade ore and is down 40 feet; in sinking the last 10 feet the vein has widened over 3 feet, making the vein at that depth 13 feet wide. Vein "B" is so powerful a fissure that it is more than likely it will maintain its width at this point for a considerable depth and length. The cross-cut at 260 feet from the shaft towards vein "B" is looking promising, and has cut several narrow stringers of good ore. The pipe line for air drills, is completed up to the new vein on the mountain, also down to No. 1 shaft, and is connected with the tunnel into the hill, which is halfway between shafts Nos. 1 and 2. The two shafts being 1,000 feet apart, this tunnel is designed to cut veins "C" and "D," and prove their continuance eastward. A tunnel to be driven south into the mountain will soon be started 2,000 feet to the west of shaft No. 2 to prove the strength of the western extension of the parallel veins, that have been cut underground by the main cross-cut from shaft No. 2, and which have been traced westward by promising surface croppings. When this work is completed and the south cross-cut from No. 1 shaft driven into the mountain, as recommended by Messrs. Francis and Humbert in their recent reports, the strength of the four parallel veins "A," "B," "C" and "D" will be thoroughly demonstrated for a distance of 3,500 feet. The new vein opened on the surface for nearly 1,000 feet is in addition to the above, and is also a powerful fissure, showing ore on surface at several points from 6 to 13 feet in width. The prospects of the Coxheath are bright. For a full description of this property see ENGINEERING AND MINING JOURNAL, April 19th, 1890.

COAL.—The sale of the Joggins coal mine is stated to be definitely closed, the price named being $230,000. It is reported that the purchasers are interested in the Canadian Pacific Railway.

The Mullins seam of North Sydney is reported as yielding five feet six inches of good coal, and already extensive rights have been secured along its line of outcrop.

The Terminal City Company is reported as closing a bargain with Mr. Justice Tremaine, of Baddeck, for some of his extensive coal areas in Richmond County.

The Sydney and Louisburg Coal and Railway Company is stated to have found the Carrol seam underlying several square miles of its territory. Further details as to its size, quality, etc., are not yet available.

IRON.—In iron mines the New Glasgow Coal, Iron and Railway Company has its slope at Bridgeville, Pictou county, down 300 feet in good limonite ore. An English engineer is expected to examine its extensive properties.

GOLD.—The July returns from Montaga show 146 ounces from 100 tons of quartz. The Salmon River mines are to have a new 25-stamp mill, with crackers, automatic feed, etc., and calculated to more than equal the capacity of the 30-stamp mill. The Brunswick mine, of Tangier, is offered at sheriff's sale. This property has made small returns in the hands of the present company.

ENGLAND.

WALES.

The night workmen in the Plymouth Merthyr colliery have quit work. Eighteen hundred persons are affected by the strike.

DIVIDENDS.

Caledonia Gold Mining Company (Black Hills), dividend No. 22, of eight cents per share, payable on the 15th inst., at the office of Messrs. Laidlaw & Company, 14 Wall Street, New York City. Transfer books close in New York on the 8th inst. and in San Francisco on the 12th inst.

The Tamarack Mining Company has declared a dividend of $4 per share, payable October 1st, to stock of record at close of business September 10th. The transfer books will be closed from September 11th to September 18th, both days inclusive.

ASSESSMENTS.

COMPANY.	No.	When levied.	D'l'nq't in office.	Day of Sale.	Amn't per share.
Barnes Sulphur, Utah		July 17	Aug. 25	Sept. 13	.02
Best & Belcher, Nev.	47	Aug. 21	Sept. 25	Oct. 17	.25
Big Hole Placer, Nev.		July 31	Sept. 4	Sept. 25	.01
Con Imperial, Nev.	28	July 17	Aug. 20	Sept. 11	.05
Goodman, Nev.	8	July 23	Aug. 25	Sept. 25	.05
Iron Hill, S. Dak.	18	July 21	Aug. 23	Sept. 13	.03
Kentuck	22	Aug. 18	Sept. 22	Oct. 14	.30
Locomotive	8	Aug. 13	Sept. 18	Oct. 7	.05
Mayflower, Gravel, Cal.	48	Aug. 4	Sept. 6	Sept. 29	.20
Occidental	7	Aug. 5	Sept. 11	Oct. 7	.25
Peer	9	ug. 7	Sept. 12	Oct. 3	.10
Peerless	15	Aug. 14	Sept. 23	Oct. 14	.15
Teresa, Mex	2	Aug. 13	Sept. 18	Oct. 8	.05
Union Con., Nev.	41	July 21	Aug. 26	Sept. 15	.25
Utah Con.	10	Aug. 5	Sept. 15	Oct.	.25

MINING STOCKS.

For complete quotations of shares listed in New York, Boston, San Francisco, Baltimore, Denver, Kansas City, Minneapolis, St. Louis, Pittsburg, Birmingham, Ala.; London and Paris, see pages 287 and 288

NEW YORK, Friday Evening, Sept. 5.

The week under review was not as interesting as the preceding one, despite the fact that a greater number of shares were sold. The excitement was less, and "bullish" tendencies were not so openly displayed. Nevertheless, as the tone and volume of business was much better than those to which we have been accustomed, the prospects of Fall activity are fair. The greatest number of shares sold this year, during any one week, 156,715, were sold as against 151,805 last week.

The Reward Mining and Smelting Company, a copy of whose application for listing we published in this column in our issue of July 10th, has been listed this week, but has not yet been traded in. The public knows little or nothing of this company. The applicants stated that they proposed to dispose of some of their treasury stock at $5 per share. This figure is regarded as a high one to pay for an unknown stock, although there are only 50,000 shares.

Of the Black Hills stock we note sales of Sullivan Consolidated at $1. Mr. C. M. Sprague, the treasurer of this company, writes as follows to the Chairman of the Committee on Mining Securities of the Consolidated Stock and Petroleum Exchange: "On October of 1889 this company voted to assess each share of stock sold at 50c. to pay for the mill and machinery which was then ordered and is now at the mines. On December, 1889, 7,406 shares were sold for non-payment of assessment and were bought in by the company. All stock issued prior to this date must bear the stamp of assessment paid No. 1 and my signature to be genuine."

Of Caledonia only 100 shares at $1.90 were sold.

The Colorado stocks continue favorites and in point of shares sold they lead all others. Catalpa, which had not been traded in at the exchange for a long time, appeared this week and was sold at 45c.@48c. Chrysolite was steady at 39c.@40c. Freeland was well traded in at 38c.@39c. Of Leadville Consolidated 23,300 shares at 14c.@15c were sold. Little Chief declined during the week from 59c.@49c. Silver Cord had one transaction at 40c., as did also Small Hopes at 95c. Crescent at 20c.@21c. was in some demand, and Lacrosse at 8c.@9c. was traded in to the extent of 15,100 shares.

Of the California stocks Mono was quiet at 60c. to 65c. Quicksilver, common, was traded in to the extent of 1,300 shares, and declined during the week from $9.13 to $8.88. Standard advanced still more, and under sales of 2,000 shares closed at $1.85. Brunswick Consolidated shows the largest transactions, 27,200 shares having been disposed of at 11c. to 13c. Sutter Creek was stationary at $1.40 and 22,300 shares of Astoria were sold at from 8c. to 12c., as well as 700 shares of Bulwer at 30 cents.

Of the Comstocks, Alpha declined during the week from $1.60 to $1.30; Alta advanced from $1.20 to $1.40; Andes was higher at $1.50 to $1.85; Best & Belcher had a solitary transaction at $3.55; Bullion declined from $3.60 to $2.70, but rallied, and closed at $3.50; Challar was neglected at $3.40; Comstock Tunnel was sold at 18c. and the bonds at 27; Consolidated Imperial had one sale at 45c.; Exchequer was quiet at $1.05@$1.10; Julia opened at 25c. and closed at 35.; Mexican was quiet at $3.20@$3.40; Occidental declined from $1 to 90c., and was moderately traded in; Oriental & Miller was dealt in to the extent of 5,500 shares at from 6c. to 7c.; Potosi declined from $7 to $6.50; Scorpion shows a solitary transaction at 30c.; Union Consolidated was quiet at $3@$3.15; Utah was neglected at 80c.; Belcher was traded in at $3.30; Consolidated California and Virginia declined from $5.13 to $4.80, and Crown Point from $3 to $2.80; Gould and Curry was quiet at $2.40@$2.45, and Hale & Norcross at $2.65@$2 75; Ophir declined from $5.25 to $4.85; Savage was stationary at $4; Sierra Nevada was quiet at $2.85@$3; Yellow Jacket was in some demand at $3.35@$3.50.

Of the Tuscarora shares we note sales of Belle Isle at $1.05; Navajo at 40c.@45c., and North Belle Isle at $1.15.

El Cristo was traded in to the extent of 1,200 shares at 75c.@80c.; Rappahannock was sold at 7c.@8c.; Silver King was stationary at 50c., and of Minnesota Iron Company 220 shares at $86.50 were disposed of.

Argenta, of Michigan, was this week traded in at 15c.

Among the Montana stocks we note sales of 1,500 shares of Alice at $2.50. Moulton, which has not been traded in for some months, was sold this week at 60@65c.

Horn Silver was steady at $3.50@$3.60. Ontario was quiet at $45@$46.50.

Phœnix of Arizona was dealt in to the extent of 5,100 shares at $1.05@$1.20. Of Mutual Smelting and Mining Company, 400 shares were sold at $1.40.

Boston. Sept. 4.

(From our Special Correspondent.)

The market the past week has been irregular, with alternate strength and weakness, the latter finally prevailing in the later dealings. On Tuesday after the holiday there was a disposition to buy stocks, a good many orders coming in, and the market responded with higher prices for nearly everything on the list. The money market has been an important factor, and as it is very difficult to get loans on copper stocks, some weak holders have been obliged to sell, and as a result we have lower prices and a dull market to-day.

Allouez had quite a spurt on Tuesday on a report that they had struck the Calumet conglomerate, selling up to $9½, but later, on a dispatch from Treasurer Stanton that the report was incorrect, the market sold off to $8½; at this figure there is a good demand for it, and it will doubtless go higher as soon as conditions are more favorable.

Atlantic has been fairly strong, selling up to $25, but losing the advance later.

There has been good buying of Boston & Montana, which sold up to $60½, but later declined to $58⅜.

Butte & Boston also advanced to $23 declining to $21¾ to-day.

Calumet & Hecla has been very quiet, selling in a small way at $310@$309.

Centennial advanced from $24 to $27¾, reaching to $26½. The advance is attributed to the improved condition of the mine, as per latest reports. The new shafts are both showing copper in the bottom.

There has been considerable activity in Franklin, which advanced from $25 to $28, losing only one-half from the highest figure. The production shows a marked increase, owing to better ore

from the working portion of the mine and a better outlook for the future.

Kearsarge has ruled dull, and with very little change in price—$20⅛ as the highest, and $19½ as the lowest.

Osceola touched $46, but declined with the rest of the market to $44½.

Quincy sold at $130.

Tamarack is very strong, selling up to $218, an advance of $8. The directors have declared a dividend of $4 per share, payable Oct. 1. This is a gain of $1 per share for the quarter, and makes $1,670,000 paid in dividends from the beginning.

Tecumseh sold at $4½, a gain of $½ over last week.

National sold up to $2¾ on the report that the mine had been opened and was to be worked for all it is worth.

Pewabic sold at $14, an advance of $4 over last sale, July 28th.

Santa Fe sold down to 55c., advanced to 62½c., and closed at 60c.

Huron sold at $8⅛ and declined to $7¾.

In the low-priced speculative list there is little doing. They are biding their time, which sooner or later is sure to come.

Silver stocks have been quiet this week, Catalpa selling at 40c. and Crescent at 18c.

3 P. M.—After the noon hour the market was inclined to weakness and closed lower. Boston & Montana sold down to $58⅝, Franklin to $27, Osceola to $43½. Centennial offered at $26. Huron sold at $7⅝.

By Telegraph.—Calumet & Hecla, $302; Tamarack, $210; Osceola. $43; Franklin, $26; Centennial, $25 bid and $26 asked; Kearsarge, $19¼; Butte & Boston, $21¼; Boston & Montana, $59; Atlantic, $23¼.

Kansas City. Sept. 1.

Company.	Opening.	H.	L.	Closing.	Sales.
Argonaut	30‡†	....	....	29†	.....
Bates-Hunter	46	48*	46	48*	700
Big Six	9¾	9¾	9¾	9¾	1,000
Brownlow	....	....	....	....	.....
Cash Gold	14	14½*	12	12	3,600
Clay County	38‡	42‖	38‡	42‖	100
Diamond B	5*	5	5*	5	3,800
Hard Money	4¼	5½	5¼	5½	1,700
Hunki Dori	15½‖	15½‖	10	12½*	2,500
Iron Clad	17	17	17	17	1,500
Kansas City M. & M. Co	2.55	2.57½*	2.55	2.55	370
King Jack	5†	....	....	75‡	.....
Little Nugget	72	85*	72	80	700
Little Rule	60	60½	60	60†	200
May Mazeppa	73	73	73	73	500
Minnequa Zinc M. Co	28	28½	28	28	4,500
Monte Cristo	5	5	5	5	400
Morning Glim	25§	25	25§	30‡	200
Pay Rock	6	8‖	6	6	400
Pelican	25	27	25	27	1,000
Potosi	12*	12*	12*	12*	100
Running Lode	18	18	18	18	200
Sylph	16§	16½§	16§	16½§	300
Total					23,770
Pit sales					.....

†Bid. ‡Asked. * Buyer 30. § Seller 30. $* Seller 60. ‖ Buyer 60.

Lake Superior Iron and Gold Stocks.

(Special Report by David M. Ford, Houghton, Mich.)

IRON MINING STOCKS.

Name of Company.	Par value.	Bid.	Asked
Ashland Iron Co	$25.00	$55.00	$60.00
Aurora Iron Co	25 00	7.50	8.50
Champion Iron Co	25 00	115 00	125.00
Chandler Iron Co	25.00	40.00	45.00
Chapin Iron Mining Co	25.00	....	....
Chicago & Minn. Ore Co	100.00	115.00	118 00
Cleveland Iron Co	25.00	17.50	18.50
Germania	25.00	11.50	12.0
Jackson Iron Co	25 00	110.00	125.00
Lake Superior Iron Co	25 00	68.00	72.00
Milwaukee Iron Co	25.00	5.50	6.50
Minnesota Iron Co	100.00	87.00	89.00
Montreal Iron Co	25.00	9.00	10.00
Norrie (Metropolitan)	25.00	70.00	75.00
Odanah Iron Co	25.00	20.00	22 00
Pittsburg Lake Angeline Co	25.00	175.00	185.00
Republic Iron Co	25.00	41.50	42.50

GOLD MINING STOCKS.

Name of Company.	Par value.	Lowest.	High.
Gold Lake Mg. Co	....	....	....
Grayling Gold & Silver Co	$25.00	....	....
Michigan Gold Co	25.00	*$1.35	....
Peninsula Gold & Silver Co	25.00	....	.50
Ropes Gold & Silver Co	25.00	1.75	$2.00

* Assessment paid.

Denver. Sept. 1

(From our Special Correspondent.)

During the past week there was very little trading on the Mining Exchange. The inclination to hammer down some particular stock seems to have been the characteristic feature. State mining matters are improving, and it is somewhat singular that this advance is not felt upon the floor of the Exchange.

Perfect reports of the listed properties, giving details of all expenditures, describing developments, stating the number of men employed, amount of ore exposed or shipped, surplus of development found on hand, in fact making a regular business statement, so that holders of stocks and would-be buyers could see for themselves the xact standing of different properties, would marially assist in increasing the volume of business. is rule of the Exchange should be strictly enced. Miners are in demand, wages are increasing, and orders for machinery all indicate prosperous times.

Company.	Opening.	H.	L.	Closing.	S.
Alleghany, Colo	13b	13b	13b	13	.....
Amity, Colo	05¼	*05¼	04¾	04½	400
Bangkok, C. B., Colo	09¼	09½	09¼	09½	1,800
Bates-Hunter, Colo	45	45	45	44	200
Brownlow, Colo	09b	09¼b	09b	09¼	.....
Calliope, Colo	32b	32b	32b	32b	.....
Cash	10b	10b	10b	10	.....
Clay County, Colo	39½	39½	39	39	1,100
Hard Money, Colo	05½b	05¼	05¼	05	100
Little Rule, Colo	62	62	62	62	200
Matchless, Colo	200b	200b	200b	200	.....
May-Mazeppa, Colo	74	*79	74	76	8,600
Mollie Gibson, Colo	45a	50a	45a	....	.....
Oro, Colo	200b	200b	200b	200	.....
Pay Rock, Colo	06	06	05¾	06	2,300
Peabler, Colo	13½b	13½b	13b	13	.....
Reed-National, Colo	72b	72b	72b	72	.....
Running Lode	18½	18½	18½	17½	100
Silver Cord, Colo	27b	28b	27b	28	.....
Whale, Colo	22½b	22½b	22b	22	.....
Prospects:					
Argonaut, Colo	32b	32b	32b	32	.....
Aspen United, Colo	05b	05b	05b	05	100
Big Indian, Colo	11½b	11½b	11	10½	100
Big Six, Colo	063½b	07	07	07	500
Century, Colo	20¼	20¼	20¼	20½	2,500
Claudia J. Colo	09b	09	09	08¾	100
Nat. G. & Oil Co	16b	17b	16b	17	.....
Diamond B., Colo	04	04	04	03¾	2,600
Emmons, Colo	23½b	25	25	24	100
Golden Treasure, Colo	16b	17	17	17	200
Ironclad, Colo	17½b	17½b	17b	17	.....
John Jay, Colo	18b	18b	18b	18	.....
Justice	13b	13b	13b	13	.....
Legal Tender, Colo	03½b	03½	03¼	03½	1,000
Morning Glim, Colo	50a	47b	47b	47	.....
Park Consolidated	20b	20	20	20	100
Potosi, Colo	07½	08b	07½b	08	.....
Rialto, Colo	40b	40b	40b	40	.....
Total for the week					22,100

*Buyer 30 days. †Buyer 60 days. ‡Seller 60 days. ‡Seller 30 days. a Aked. b Bid.

Minneapolis. Sept. 2.

Company.	Bid.	Asked.
Algoma	.30	$1.00
Aurora I. M. Co	7.50	....
Badger Silver Mg. Co	5.00	10.00
Black Hills Tin M. Co	....	1.50
Canada G. Mg. Co	20	.50
Carbonate Hill Mg. Co	.50	1.00
Clingstone I. Mg. Co	....	....
Crescent I, Mg. Co	1.00	....
Deer Lodge Mg. & Sm. Co	....	....
Derwood Con. Mg. & M. Co	....	....
Dot Iron Mg. Co	....	....
El Dorado I. Mg. Co	....	1.00
Fairview S. Mg. Co	....	.50
Glengary S. Mg. Co., Mont	....	....
Gogebic Iron Co	....	....
Iron Duke Mg. Co	1.00	1.50
Kakabeka Mg. Co	.25	1.00
Keystone Mg. Co	.20	1.00
La Belle I. Mg. Co,	1.00	1.50
Marquette Iron Synd.	....	3.50
Minnehaha M. Co	....	2.00
North Pabst I. Mg. Co	....	....
N. W. Coal Mg. Co	3.25	3.75
Stengle L. & M. Co	1.00	1.50
Thunder Bay G. & S. M Co	.75	1.00
White Spar Mica Mg. Co	1.15	2.00

Salt Lake City. Sept. 5.

Company.	Opening.	Highest.	Lowest.	Closing.	Sales.
Alice, Mont	2 60 b	2 60 b	2.60 b	2.60 b	.....
Anchor, Utah	.....	.....	.....	.....	.....
Alliance, Utah	2.00 a	2.00 a	2.00 a	2.00 a	.....
Apex, Utah	.18 b	.19 b	.18 b	.19 b	4,350
Barnes, Utah	.12½ b	.17 a	.12½ b	.12½ b	.....
Crescent, Utah	.33 a	.33 a	.32 a	.32 a	.....
Cent.-Eureka, Ut.	22.00 b	22.50 b	22.00 b	22.50 b	.....
Congo	.12½ b	.12½ b	.12½ b	.12½ b	1,000
Daly, Utah	22.00 b	22.00 b	22.00 b	22.00 b	.....
Glencoe, Utah	3.00 a	3.00 a	1.50 a	1.50 a	.....
Horn Silver, Utah	.....	.....	.....	.....	.....
King of West, Id.	.....	.....	.....	.....	.....
Mammoth, Utah	3.75 b	4.50 a	3.75 b	3.75 b	.....
Malad Con., Id	.12½ a	.12½ a	.10 a	.10 a	.....
Northern Spy	.....	.....	.....	.....	.....
Ontario, Utah	.....	.....	.....	.....	.....
Stanley	.....	.....	.....	.....	.....
Utah L. & C. Co.	8.00 b	8.20 b	8.00 b	8.20 b	.....
Utah Oil Co., Utah	.34 b	.34b	.34 b	.34 b	1,000
Woodside, Utah	.....	.....	.....	.....	.....
Total					6,350

*Buyer, 30 days. †Seller, 30 days. ‡Assessment paid a Asked, b bid.

St. Louis. Sept. 3.

(From our Special Correspondent.)

Prices and sales for the week ending Sept 3d:

Company.	Opening.	H.	L.	Closing.	Sales.
American & Nettie	$1.70	....	1.50	1.52½	100
Bi-metallic	32.50	....	....	32.50	.....
Central Silver	.18¾	.21¼	....	.17½	3,000
Cleveland-Colo	.05½	....	....	.04½	200
Cleveland-Idaho	.16¼	....	....	.15	100
Gold King	.05½	.04	....	.03½	.....
Granite Mountain	44.75	....	....	46.00	.....
La Union	.08½	.09	....	.08¼	410
Little Albert	.32½	.37½	....	.38¾	.....
Montrose Placer	.50	.62½	....	.53¾	1,000
Major Budd	.11	.11½	....	.11	.....
Mountain Key	.52½	....	....	.51¼	100
Nellie	.25	....	....	.26¼	.....
Pat Murphy	.14½	....	.14¼	.15¼	800
Richmond Hill	.37½	.45	.35	.43¾	2,000
Silver Age	1.45	1.60	1.40	1.55	2,000
Small Hopes	.80	.87½	....	.85	.....
Tourtelotte	.03	.04	....	.03½	1,000
West Granite	.95	1.00	....	1.00	200
Yuma	.58¾	.60	....	.50	500
(St, Louis Correspondence) Total					11,410

PIPE LINE CERTIFICATES.

(Specially reported by Messrs. Watson & Gibson.)

The oil market has been utterly neglected. There has not been any outside interest whatever shown in it and no power has asserted itself in attempting to manipulate it. The result has been stagnation. The statistical situation of the commodity remains strong, but until some speculative interest appears on the scene to give the market a whirl, dullness is likely to continue to reign supreme.

NEW YORK STOCK EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
Aug. 30	83¾	83¾	83	83	12,000
Sept. 2	83¼	83⅝	8 3¾	82¾	23,000
3	82¾	82⅞	82¾	82⅞	18,000
4	82⅞	83⅜	82½	82½	23,000
5	82⅞	83	82¼	82⅞	28,000
Total sales in barrels					104,000

CONSOLIDATED STOCK AND PETROLEUM EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
Aug. 30	83½	83½	82¾	83	62,000
Sept. 2	84¾	84¾	83½	84	95,000
3	83½	84½	83¼	84	57,000
4	84	84	83¾	84	16, 00
5	84	84¼	84	84	18,000
Total sales in barrels					251,000

BUCKEYE PIPE LINE CERTIFICATES.

NEW YORK STOCK EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
Aug. 30	33⅜	33⅜	33⅜	33⅜	5,000
Sept. 1	**	....	....	....	.....
2	34	34	33	33	11.000
3	32¾	33½	32¾	33½	15,000
4	33½	34	33½	34	33,000
5	34	34	33¾	34	7,000
Total sales in barrels					71.000

CONSOLIDATED STOCK AND PETROLEUM EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
Aug. 30	*	....	....	....	.....
Sept. 1	**	....	....	....	.....
2	33¾	34½	33¼	33⅜	11,000
3	33⅜	33¾	33½	33⅝	4,000
4	33⅞	34⅛	33⅞	34⅛	3,000
5	34¼	34¾	34¼	34¾	22,000
Total sales in barrels					40,000

* No sales.
** Labor Day.

COAL TRADE REVIEW.

Statistics.

NEW YORK, Friday Evening, September 5.

Mr. John H. Jones, chief of the Bureau of Anthracite Coal Statistics, furnishes us the following statement of shipments of anthracite coal (approximated) for the week ending August 30th, 1890, compared with the same period last year:

Regions.	Aug. 30, 1890.	Aug. 31, 1889.	Difference.	
Wyoming Region.	Tons	409,263	461,626	Dec. 52,363
Lehigh Region	"	151,967	148,346	Inc. 3, 21
Schuylkill Region	"	260,214	255,173	Inc. 5,041
Total		821,444	865,145	Dec. 43,701
Total for year to date		21,935,982	22,400,408	Dec. 464,426

PRODUCTION OF BITUMINOUS COAL for week ending August 30th and year from January 1st:

EASTERN AND NORTHERN SHIPMENTS.

	1890. Week.	1890. Year.	1889. Year.
Phila. & Erie R.R	2,143	88,747	46 497
Cumberland, Md	*81,175	2,486,040	2,018,723
Barclay, Pa	*3,176	99,919	74.675
Broad Top, Pa	9,257	333,483	209,715
Clearfield, Pa	60,983	2,506,054	2,035,991
Allegheny, Pa	19,337	870, 19	516,713
Beach Creek, Pa	37,453	1,239,610	98?,646
Pocahontas Flat Top	31,316	1,265,623	1.141,817
Kanawha, W. Va	*36,171	1,337,658	1,151,290
Total	281,611	10,227,783	8,183,967

* Estimated.

WESTERN SHIPMENTS.

Pittsburg, Pa	11,221	552,821	410,035
Westmoreland, Pa	14.996	811,539	948,322
Monongahela, Pa	12,506	325,937	269,557
Total	38,723	1,690,597	1,627,914
Grand Total	320,334	11,918,380	9,811,881

PRODUCTION OF COKE on line of Pennsylvania R. R. for the week ending August 30th, and year from January 1st, in tons of 2,000 lbs.: Week, 97,579 tons; year 3,536,959 tons; to corresponding date in 1889, 2,842,008.

Anthracite.

At present there is every indication that coal "bears" will find themselves on the wrong side of the market. In many quarters there has of late been a decided inclination to depreciate the market. The reason of this movement is not very clear. Whether the approaching winter is to be mild or severe will make little difference this month. People must get coal in or pay the difference in price later on.

The coal yards are stacked high, as high as high can be, and still the retailers are buying coal. Generally speaking, the retailer is a fair market

barometer. At this stage he controls the market. He is slow in coming forward, because the consumer is slow in coming to him; but the latter will come with a rush at the first sign of cold.

One company, during the past week, discarded contracts for over 50,000 tons at August prices.

At present, considering the conservative course of the sales-agents, there is every reason to suppose that October will bring an increase of at least 10 to 15 cents a ton, and with no increased output.

In the words of the sales-agent of one of the largest companies: "Coal men who are holding back in expectation of a third mild winter are no wiser than the optimists who are stocking up on a gamble for a cold winter. The wise housekeeper will get in his coal."

The prices agreed upon at the last meeting of the sales agents now prevail, and none of the large operators will shade for even large orders. Stove, $4.15; egg, $3.90; chestnut, $3.75; broken, $3.50.

The large stocks of coal on hand have so weakened pea and buckwheat that they can be bought for cost, and here and there for less.

Bituminous.

The fact that cars are more plentiful has helped the market considerably. Operators are not looking for orders, as they have their hands full. They are expecting to compete successfully with hard coal this winter, and government and other contracts signed indicate that there is some substance in their claims. The market for the week has been a little more active than for some time past, and prices agreed upon which have not been lived up to during the summer season are stiffening to that degree which makes those who have kept faith feel better satisfied. The labor troubles in Cambria, Blair, Jefferson, Clarion and Huntingdon counties (Pa.) will, it is expected, be settled during the coming week, when there is to be a conference between delegates representing 20,000 miners and the agents of the owners of the mines.

It is now pretty well understood that the scale submitted by the men in June, under which they demanded five cents a ton advance, will be withdrawn. This is due, as much as anything else, to the judicious appeal of the president of the Cresson and Clearfield Coal and Coke Company to the miners, which will be published in these columns next week. The miners realized and admitted that their demands would practically close the mines. Nominal prices are: At Baltimore, $2.40@$2.50 f. o. b.; Philadelphia, $2.50@$2.60; in New York harbor, $3.25; alongside, $3.50.

Boston. Sept. 6.

(From our Special Correspondent.)

The anthracite coal market is quiet. The feature of interest this week has been advance in tidewater quotations of egg and stove coal. Broken is left unchanged at $3.65, but egg is made $3.90 and stove $4.15. This means, of course, that the companies do not expect to sell any coal for a week or two. Dealers who have been buying stove coal at $3.70 will not pay 45 cents more per ton right at one jump by any means. Still the companies are firm in their views, and would not cut prices to-day, knowing very well that they would sell no more coal if they did. Some individual coal can be had at $4 or less, for stove, but the market is stronger and the company agents here are quite strong in the hope of being able to do a good business later in the month at, or very near, circular prices. Not much money has been made on anthracite coal this year, and it is believed that a strong effort will be made to aintain prices when trade does open.

Bituminous coal is inactive at $2.25@$2.40 f.o.b. Every one seems to be well supplied with coal, and while there is some detention on Cumberland, no serious complaint is made.

The freight situation continues to be noteworthy for low rates. Vessels and barges are plenty at New York at the lowest figures of the season, say at 55@60 cents. At Philadelphia 75 cents is about the rate, and at Baltimore 90 cents to $1.00 rules.

Retail trade is a little better, though still slow. Prices are unchanged and no advance is likely at present. It would be a good time for retailers to buy coal if the combination were strong, as, under ordinary circumstances, prices are as low as they would be this season. Whether the Boston public hold off on their coal purchases because they expect a break, I cannot say, but for some reason they are more backward than usual in placing orders.

Buffalo. Sept. 4.

(From our Special Correspondent.)

The freight traffic of the railroads at this center is now being handled with usual dispatch, the strike of the switchmen being over. In a few days all shortcomings will be made good, and coalmen will be happy again.

There are no changes to note in the quotations for anthracite or bituminous coal or coke. Trade is very light for anthracite and brisk for bituminous coal, as manufacturers using the latter are working full time. The supply of coal of both kinds is fully adequate for the requirements of the trade.

Now for some items of interest generally and a budget of statistics for consideration and reference.

The "Emily P. Weed," the new steel propeller, took from this port to Chicago on her last trip 2,840 net tons of coal, which was unloaded there in 17½ hours time. The vessel returned yesterday with the largest cargo of grain ever brought to this or any other port on the lakes, viz: 109,049 bushels of corn—equal to 3,058 net tons. Draft of water 16 feet. To-day she again leaves for Chicago with 2,800 tons of coal. Marine men and others praise her shapely appearance, fine machinery and elegant appointments.

The tunnel under the mouth of the St. Clair River, between Port Huron and Sarnia, is almost finished. It will be used by railroad companies early next year, thereby avoiding ferriage of cars, etc., and saving considerable time.

If the River and Harbor bill becomes a law, Buffalo harbor will have expended on it $300,000 and Tonawanda harbor $75,000 during the next fiscal year.

Rather than be subjected to the annoyances experienced at Milwaukee in consequence of the trouble between union and non-union sailors, many vessel owners have lately refused to take 50 or 60c. coal freight to that port, and have gone to the head of Lake Superior at 45c. instead.

During the past week there was a good demand for vessels for coal cargoes, but few craft were available and arrivals were light. Shippers would not offer any advance in quotations to secure vessel room. The movement, as will be seen, was meagre, comparatively to principal ports, but it will be noticed that many small places had their annual supply forwarded.

The shipments of coal from this port from August 28th to September 3d, both days inclusive, were 52,425 net tons, distributed about as follows: 12,760 to Chicago, 15,660 to Milwaukee, 2,460 to Toledo, 10,600 to Superior, 500 to Kincardine, 430 to Sarnia, 45 to Portage, 700 to Detroit, 690 to Sault Ste. Marie, 2,150 to Lake Linden, 290 to Huron, 1,100 to Marquette, 400 to Saginaw, 700 to Houghton, 2,300 to Fort William, and 1,640 to Racine; total thus far this season 1,127,435 net tons. The rates of freight were 60c. to Chicago, 50c. to Milwaukee, Kincardine, Green Bay, Lake Linden and Portage, 60c. to Sault Ste Marie, 30c. to Sandusky, Toledo and Detroit; 40c. to Superior, Duluth, Saginaw, Ashland, Sarnia, Gladstone and Marquette, 50c. to Houghton, 45c. to Fort William, 60c. to Racine and 30c. to Huron.

Canal receipts at Buffalo of coal for 4th week in August, 2,603 net tons; shipments, 1,246 net tons. The engagements hence for past 14 days were: 12 loads to Syracuse, averaging 60 cents per net ton, free on and off, and one load to Illion at 75 cents free on and off.

Statistical.—Railroad receipts and shipments at this port of coal not reported by request. Receipts of coal by lake thus far this season none. Shipments by lake Westward for month of August 269,900 net tons, as compared with 378,920 tons in 1889 and 347,360 tons in 1888; for season to September 1st 1,111,190 net tons, as compared with 1,297,850 tons in 1889 and 1,507,190 tons in 1888. The receipts of coal by canal for the month of August 7,966 net tons, as compared with 11,962 tons in 1889 and 28,041 tons in 1888; the shipments 2 658 tons as compared with 2,231 tons in 1889 and 883 tons in 1888. Total receipts by canal this season to September 1st, 16,146 net tons as compared with 42,910 tons in 1889 and 75,733 tons in 1888; the shipments 6,148 net tons as compared with 5,174 tons in 1889 and 4,961 tons in 1888. The aggregate shipments by lake this year to date, show a decrease of 186,660 net tons as compared with 1889, and 396,000 net tons as compared with 1888. The rates of freight hence to points named were as follows during the month of August: 60c. to Chicago, 50c. to Milwaukee, 40c. to Duluth and Lake Superior ports, and 30c. to Toledo and Detroit. A year since the rate to Chicago was 60c. and in 1888, 75c. per net ton.

The shipments of coal by lake from Buffalo thus far this season to September 1st were distributed about as follows:

Buffalo to	Net tons.	Buffalo to	Net tons.
Chicago	438,930	St. Clair	1,650
Milwaukee	207,040	Pt. Burwell	10
Toledo	62,320	Bay City	2,980
Racine	24,950	Fort William	4,250
Green Bay	11,660	Serpent River	35
Saginaw	11,440	Lake Linden	550
Kenosha	2,900	Marquette	13,750
Manitowoc	1,840	Ontanogon	100
Menominee	600	Detroit	20,470
Ludington	1,150	Cheboygan	1,030
Kincardine	500	Owen Sound	500
Gore Bay	305	Ashland	1,150
Hancock	2,800	Washburn	7,700
Escanaba	3,060	Houghton	3,100
Marine City	920	Pt. Arthur	2,170
Sarnia	430	Michigan City	1,150
Charlevoix	100	Sandusky	500
Wallaceburg	200	Pt. Colborne	300
Duluth	54,540	Gladstone	18,680
Sault Ste. Marie	1,540	Windsor	650
Alpena	600	Huron	290
Au Sable	250	Vessels from Tonawanda not reporting at "Custom House"	75,180
Superior	120,650		
Sheboygan	1,600		
Oscoda	550		
Pt. Huron	3,290		

Chicago. Sept. 3

The recent advance made by those in authority as to prices in connection with anthracite coal trade from this point is not unexpected, but the advance has been made, and consumers have to tumble to the market. The wisdom of this course is, to say the least, "questionable," and the action taken subject to criticism. To talk about a short supply is nonsense; to drag into the matter labor troubles and all that connected therewith is equally nonsensical. These facts would seem to indicate a large and increased business expected by those in authority.

We therefore have to quote retail prices as follows: large egg, $6.25; small egg, range and chestnut, $6.50.

On cars f. o. b. Chicago, grate, $5.25, stove, range and chestnut, $5.25@$5.50; Lehigh lump, $7.

As to the market for bituminous coal the demand and inquiry remains about the same with unchanged prices.

They are, per ton of 2,000 pounds: Green and Sullivan County (Ind.), shaft, $2.25@$2.40; Jackson Hill, $3.25; Hocking Valley, $3; Ohio Central, $3; Erie, Briar Hill, $4.15@$4.20; Indiana Block, $2.35; Youghiogheny, $3.35; Sunday Creek, $3.

For coke the demand is steadily increasing, but a delay in filling orders is still occasioned by a continued scarcity of cars; the prospects of this industry is excellent.

Prices unchanged. Seventy-two-hour Connellsville, $5.20; crushed (domestic), $4@$4.25; Elk Lick, $4.25@$4.50

Pittsburg. Sept. 4.

(From our Special Correspondent.)

Coal.—So far as values are concerned in this market, we have no change to record. The coal run noted in our last was a successful one; the run caused a decline in the Cincinnati market of one cent. per bushel. The shortage of natural gas continues, and when cold weather sets in we may look for an increased demand and higher prices.

Nominal rates in pools:

	Per 100 bushels.		Per 100 bushels.
1st pool	$4.75	3d pool	$3.90
2d pool	4.50	4th pool	3.25

Railroad coal, $5.00@$5.50.

Connellsville Coke.—This market is firm with good demand; the scarcity of cars, however, is a serious drawback, trade in coke in most of the yards is steadily increasing, wanting cars for shipment, and may cause a suspension of operations until a supply of cars can be obtained; notwithstanding this fact many of the companies are running to their fullest capacity.

The idle ovens number about 2,350, against 2,280 last week; the active ovens in the region number 12,823. Shipments exceed the previous week 375 cars. To points west of Pittsburg, 4,000 cars; east of Pittsburg, 1,200; to Pittsburg, 1,500; total, 6,700. The rates were for 2,000 pounds f.o.b. cars at ovens: Blast furnace coke, $2.15; foundry coke, $2.45; crushed coke, $2.65.

Freights to Pittsburg 70c. per ton; Mahoning and Shenango Valleys, $1.35; St. Louis, $3.35; Cleveland, $1.70; Chicago, $2.75.

METAL MARKET.

NEW YORK, Friday Evening, Sept. 5.

Prices of silver per ounce troy.

Aug.	Sterling Exch'ge.	Lond'n Pence.	N. Y. Cts.	Sept.	Sterling Exch'ge.	Lond'n Pence.	N. Y. Cts.
30	4.85¾	54½	1.18⅜	3	4.85¾	54⅝	1.18¾
Spt *1	Holiday.	....	..	4	4.85¾	54⅝	1.17½
2	4.85¾	54½	1.18¾	5	4.85¾	54	1.16½

* Labor Day.

Notwithstanding steady and higher tone of London market prices here for silver have suffered a sharp reaction of 2c. an ounce, due to large amounts of silver being pressed for sale and limited buying by our government of amounts offered. The stock of silver held in New York is constantly increasing, and large amounts of foreign coin are coming in to be melted up.

The sharp fluctuations in prices are also due to changing policy of the government regarding purchases of silver, having now three times changed date limits of monthly purchases.

Council bills advanced ⅜ and have been decreased 5 lacs for next week.

The United States assay office at New York reports total receipts of silver for the week to ba 500,000 ounces.

We learn from the Treasury Department that the coinage executed at the mints of the United States during the month of August, 1890, was as follows:

Denominations.	Pieces.	Value.
Double eagles	122,000	$2,440,000
Total gold	122,000	$2,440,000
Standard dollars	2,852,000	2,852,000
Dimes	2,020,000	202,000
Total silver	4,872,000	$3,054,000
Five cents	856,000	42,800
One cent	1,380,000	13,800
Total minor	2,236,000	$56,600
Total coinage	7,230,000	5,550,600

Silver Bullion Certificates.

NEW YORK STOCK EXCHANGE.

	Price. H.	Price. L.	Sales.
Aug. 30	119¼	119⅛	40,000
Sept. 1	*	....	
Sept. 2	119¼	119	400,000
Sept. 3	119¼	118⅝	370,000
Sept. 4	118½	117½	835,000
Sept. 5	117¾	116¾	576,000
Total sales			2,221,000

*Labor Day.

Foreign Bank Statements.

The governors of the Bank of England at their weekly meeting on Thursday made no change in its rate for discount and it remained at 4 per cent. During the week the bank gained £23,000 bullion, and the proportion of its reserve to its liabilities was reduced from 45·17 to 44·90 per cent., against a decline from 41·72 to 40·83 per cent. in the same week last year, when its rate for discount was 4 per cent. On the 4th inst. the bank lost £5,000 bullion on balance. The weekly statement of the Bank of France shows a loss of 9,325,000 francs gold and a gain of 2,775,000 francs silver.

Domestic and Foreign Coin.

The following are the latest market quotations for American and other coin:

	Bid.	Asked.
Trade dollars	$ .90	$ .92
Mexican dollars	.90	.92
Peruvian soles and Chilian pesos	.82	.84
English silver	4.84	4.88
Five francs	.94	.95
Victoria sovereigns	4.84	4.93
Twenty francs	3.86	3.90
Twenty marks	4.74	4.78
Spanish doubloons	15.55	15.70
Spanish 25 pesetas	4.78	4.85
Mexican doubloons	15.55	15.70
Mexican 20 pesos	19.50	19.60
Ten guilders	3.96	4.00
Bar silver	1.16¾	1.18

Copper.—We have no alteration to report from last week. The market remains firm but quiet. We do not hear of any lower offers for lake copper than 17c. Consumption continues good and the look-out for this article is hopeful. For Arizona copper the quotation is unaltered at 15¼@15½c., and casting copper remains steady at 14⅝@14¾c.

Our London cable reports a further decrease in visible supplies for the second half of August of 1,100 tons, making the total decrease in August 2,500 tons. Advices from London report a decidedly firm tendency, with good consumption going on; in spite of this, however, G. M. B.'s have declined about 10s., which is evidently due to to realizations of speculators, it being known that heavy prompts would become due during the second half of August and the first half of September, and until these are settled the market will likely be disposed to fluctuate. Most of the decline was recovered to-day. The charters from Chili continue moderate, and shipments from Australia will show a falling off on account of the strikes.

We close to-day with spot £60@£60 2s. 6d., three months £60 5s.@£60 7s. 6d. For refined and manufactured sorts, we quote as follows: English Tough, £63@£64; Best Selected, £66@£66 10s.; India Sheets, £67@£68; Strong Sheets, £70@£71, and Yellow Metal, 6½d to 6¾d.

The exports of copper during the past week were as follows:

To Liverpool.	Copper.	Lbs.	
S. S. Cufic	98 pigs	32,000	$3,560
To Bremen.			
S. Trave	20 casks	25,000	4,250

Tin.—The market has heen very strong during the week, and advancing. It is quite evident the stocks here are very light, and we are assured that of all the recent arrivals, hardly anything was stored, the bulk being shipped direct to consumers. The shipments afloat for this port are much lighter than usual, and advices from London are to the effect that spot tin is very scarce there. Considerahle business has been done throughout the week at rising prices, and we close to-day with spot at 22¼, Septemher at 22¼, October at 22.20, Novemher at 22.15, and December at 22.15.

Since our last report the London market for spot tin gave way quite suddenly on account of the realizations which took place, spot receding from £98 12s. 6d., the top value of last week, to £97, last Tuesday, but a reaction set in, and a large business was done throughout the week. At the close to-day prices were spot £98 10s.@£98 12s. 6d.; three months, £98 10s.@£98 12s. 6d.

Shipments for the second half of August from the Straits were only 450 tons for the United States, and 600 tons for England.

Lead.—The upward movement which we had to report last week has continued, and prices again show a pretty good advance. This is not, however, due to speculative operations, hut simply to the scarcity of the metal, which is such that consumers find it difficult to supply their current wants.

It is quite evident that under the new regulations of the Treasury a large amount of Mexican lead has heen shut out of this country; hesides, Western production seems to have fallen off somewhat, and with good consumption going on for all purposes, the small stocks which were held in this city have been gradually absorbed. Lead sales have been reported as 4·85c. for September and October delivery, and there is nothing further to be had even at this price; 4⅛ to 4·90 is now asked.

The foreign market has shown a marked improvement, prices having advanced from £13 for Spanish lead to £13 10s., and English lead is quoted at £13 15s.

Nothing can be laid down from the other side to this country below 5·10 duty paid.

The St. Louis Lead Market.—Messrs. John Walsh & Company telegraph us as follows: "Lead is very scarce at present. Prices are still advancing, and at the close the metal is worth 4·62½ cents. Owing to the limited offerings transactions have heen light."

The Chicago Lead Market.—Messrs. Everett & Post telegraph us as follows: "The market has ruled very firm and prices have further advanced to 4·65@4·70 cents. Our local trade has taken lead liberally and the demand for shipment has also been large. Sales altogether foot up over 800 tons. The closing is very firm at 4·70c. asked, and offerings light."

Spelter.—With little metal oftering the market has advanced, and we quote 5·50c.@5·55c. Western smelters seem to be entirely sold out for September.

Antimony.—Is quiet, hut steady. We quote Cookson's at 22½c.@23c., L. K., 21c. and Hallett's, 20@20¼c.

Nickel.—The market remains as last quoted, viz.: 80c.@65c.

Qnicksilver.—There is a fair business doing in this metal. London prices have advanced to £10 10s., and in sympathy with this advance, New York quotations are also higher at $56 to $57.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, September 5.

According to men well posted in the iron market, trade is about one month overdue. There is no more doing now than there was a month ago. According to all precedents, business should now be active, whereas it is unmistakably dull and featureless. The expected sympathetic stiffening, through the English rise in price, has not materialized. Foreign values do not seem to affect this market. There is a well-founded expectation that the English colliery strikes will terminate shortly, when it is only a question of time for values to reach their normal level.

A cable dispatch dated London, September 5th, announces that the West German iron factories have reduced the price of sheet iron twenty marks per ton.

American Pig Iron.—The market is very quiet, no one reporting any transactions of any note. Quotations vary, mainly because of the absence of *bona fide* transactions. Beyond filling contracts, the business in pig iron amounts to nothing. Prices remain unchanged: No. 1 Southern, $17@$18; $16.25@$16.50 for No. 2, and $15.25 for No. 3. Southern carwheel iron, Nos. 3 and 4, brings $20.25, with nothing doing of any importance. In Northern pig iron little is doing, but quotations are made of $18@$18.50 for No 1, and one dollar less for No. 2.

Scotch Pig Iron.—The reports of the proceedings of the Anglo-American Syndicate to the contrary, notwithstanding the market for Scotch iron is weak. American pig seems to he getting to he good enough for American people, and the recent "rig" in the English market has had not the slightest effect on this market. As a matter of fact, Scotch pig iron is hecoming such an insignificent factor in this market that its ups and downs have little, if any, echo here. Prices, in the absence of any transactions, are nominally quoted: No. 1 Coltness, $24.50@$25; Dalmellington, $21.50@$22; Eglinton, $20.75@$21.

Spiegeleisen and Ferro-Manganese.—Little is doing at present and importers report the market firm and decidedly dull. For 20 per cent. German spiegeleisen $32.50 is quoted, hut there is so much eagerness to secure business that this figure would he shaded from 25 cents to 50 cents for an order of any account. English runs 75 cents higher, with a decided preference for offerings at $33. For 80 per cent. ferro-manganese $73 is offered and refused, and no business is reported. The price asked is $74 and no one can huy an order for less than that.

Steel Rails.—The market is firm, what there is of it, at $30.50. It has heen rumored round the trade that "some one" contracted for 4,000 tons at $31.25, hut no one seemed inclined to father the joh, when the market is full of rails waiting buyers at 50 cents a ton less.

Rail Fastenings.—Business has not yet commenced to pick up. Prices remain: Spikes, 2c.; angle plates, 1·75@1·80c.; bolts and square nuts, 2·70c.; hexagonal nuts, 2·95@3c.; complete joint, iron and steel, according to weight.

Tubes and Pipes.—Business continues brisk, and manufacturers are guarded about taking work, as the fall season is expected to develop several large contracts, one of them for 300 miles of 8-inch pipe. Prices have not changed during the month, and there is every reason to believe that the combination will keep them where they are for some months; ruling discounts on car lots: 47½ per cent. on hutt, blacn.; 40 on galvanized; 60 on lap, black, and 47½ on lap, galvanized; 40 on 1¾-inch boilers; 50 for 2 to 4-inch and 52½ on larger than 4-inch casing, all sizes, 50 per cent.

Merchant Steel.—Little is doing and prices quoted are hased on past rather than on present business. Most of the mills have opened and are now running on stock-making orders, getting ready for the fall and winter trade. We quote: Best English tool steel, 15c. net, American tool steel, 7½@10c.; special grades, 13@20c.; crucible machinery steel, 5c.; crucible spring, 3¾c.; open-hearth machinery, 2¾c.; open hearth spring, 2¾c.; tire steel, 2¾c.; toe calks, 2¾c.; flat file, 4¾c.; mill file, 5½c.; taper file, 7½c.. first quality sheet, 10c.; second quality sheet, 8c.

Old Rails.—There is a good demand for these, and a very short supply on the market. Some few thousand tons are known to he in this market, and two or three concerns control at least 25,000 tons in Europe, but they hold on for a price near $26.75, while all concerned quote the price as $25.75. No one is looking for husiness at that figure, and any one who is holding several thousand tons and desires to sell can find plenty of huyers at $26.

Structural Iron and Steel.—Building operations are not as active as they were in the early and middle summer, and though husiness in structural iron and steel has not fallen off to any great extent, the effect of labor trouhles, and the closing of the huilding season, is perceptibly felt. Prices remain: Universal plates, 2·20@2·28c.; bridge plates, 2·15@2·20c.; angles, 2·10@2·15c.; tees, 2·65c.; beams, 3·10c.

Chicago. Sept. 3.

(From our Special Correspondent).

Very many large consumers of iron in its various shapes, looking to the Chicago market for supplies, have as yet not placed their orders for their requirements in full for the present season, the result of which is a very perceptible increase in inquiry, some of which is for far extended delivery. Silveries and soft irons are in good demand, and some grades of the former are reported scarce. Little activity has been noticed in Lake Superior charcoals during the past week, but large contracts have been placed with these furnaces of late. In Southern irons the leading furnaces are well supplied with orders, and at present are not pushing for future business. Some slight cuttings in prices are reported, hut of moment too small to affect this market. Foundries are generally well supplied with work as per our former reports in this direction, and the outlook continues good in every way, notwithstanding "hear" reports as to shortages in crops predicted for the purpose of lessening values. There is an under current of strength in pig iron, which is more noticeahle on account of the ahsence of large transactions; full prices are obtained on all grades, to say nothing of stiffening prices all round. Prospects for a big fall trade was never better, as viewed from this standpoint.

Pig Iron.—Nearly all options that were set to expire September 1st have heen accepted hy purchasers, and the market shows a good condition, an improved one as to this staple product; a good demand is reported from outside parties, and several large transactions are said to be mysteriously pending for lots of many thousands of tons. We quote to-day for cash per ton of 2,240 pounds, f.o.h. Chicago, for Nos. 1 and 2, Lake Superior charcoal No. 3, for car wheels, Nos. 4 and 5 for malleable, $20.50@$21; Lake Superior coke Bessemer, $18.50; Lake Superior coke Bay View No. 1, $17@$17.50; No. 2, $16@$16.50; No. 3, $15.50@$16; Southern coke No. 1, $16.50@$17; No. 2, $15.50@$16; No. 3, $15@$15.50; Southern charcoal, $19@$19.50; standard Southern car wheel, $24@$25; Ohio softeners, Hanging Rock, $18.50@$19; Jackson County, $18@$19; Hanging Rock cold hlast, $26@$28; warm blast, $23@$25; No. 1 Scotch, according to brands, $26@$27; American Scotch, $19@$20; Bay View Scotch No. 1, $17; No. 2, $16; Chicago Scotch No. 1, $17; No. 2, $16; Emma Scotch, $19@$19.50; Black band, Hubbard Scotch, $19.50: Haselton, $20.25; soft Silvery, $18; Wellston No. 1, $19; No. 2, $18.50@$19; Hamilton No. 1, $18; Norton No. 1, $17.75@$18.25; Zanesville No. 1, $18.75@$19.25.

Structural Iron.—As expected trade has been very heavy during the past week. Any one viewing the enormous huilding operations now going on in Chicago can scarcely realize the same without going into the matter more fully than consistent with a report of this nature. All prices are fully maintained and the market is one of the strongest. The expected carpenters' strike has come and gone, leaving a not very perceptihle influence hehind, so the progress in huilding matters undertaken by Chicago enterprise has reason to fear nothing from that direction for the future—neither from labor strikes threatened from everywhere. Prices are firmly held up, of course, with the prospect of an early advance which, it would seem, should have taken place at an earlier day. We quote: angles, iron and steel, in car lots, f. o. b. Chicago, $2.30@$2.40; universal plates, $2.55; sheared plates, $2.50; tees, $2.70@$2.80; beams and

channels, $3.20. Store prices are: angles, $2.50@$2.60; tees, $2.80; beams and channels, $3.70.

Bar Iron.—The advance in railroad freights coupled with heavy consumption results in stiffened prices, with a good prospect of an early increase in values, taking into the account a good demand, heavy consumption. The average figures at which contracts are now placed are $1.85@$1.88 f. o. b. Chicago quotations from stores are strong at $2.10@$2.20; rates with extras according to quality and quantity.

Black Sheet Iron.—A majority of mills, being fairly well employed, are unable to assume new business; those which can are accepting orders upon a very firm basis—figures as follows: $3 25 f. o. h. for No. 27. Stores very firmly maintain the recent advance, viz.: $3.20 for No. 24, $3.30 for Nos. 25 and 26 and $3.40 for No. 27. Smooth sheets at stores also maintain the schedule of 60c. per hundredweight.

Galvanized Sheet Iron.—Although there is no quotable change in last week's prices, the large demand increases with a steadiness of rates of discount; a feature perhaps remarkable in this market is an advance in raw material. We continue to quote last week's discounts, which for both cheap and standard brands are now 62½ per cent. Juniatta and 62½ and 5 per cent. on charcoal from store.

Merchant Steel.—This week has been an exceptional one, recording a better business than any previous week this summer. We quote the following firm prices: Tool steel, $7.75@$8; specials, $12 and upward; open-hearth machinery, $3; Bessemer machinery, $2.50@$2.60; open-hearth spring steel, $2.60@$2.65; tire, $2.50@$2.60; toe calk, $2.70@$2.80; sleigh shoe, $2.40@$2.50; cutter shoe (T. & B.), $2.65@$2 70; crucible sheet steel, $7@$10; crucible spring, $3.75.

Plates, Tubes, Etc.—The supply has somewhat improved, and now keeps fairly abreast with the prevailing active demand. We quote as follows: tank iron, $2.70; tank steel, $2.90; heavy sheets from 10 to 14, $2.90@$3; steel sheets 10 to 14, $3.25@$3.50; shell iron, $3@$3.25; flange iron, $4@$4.25; flange steel, $3.50; shell steel, $3 25; boiler rivets, $4@$4.25; fire box iron and steel, $4.75@$5.50; boiler tubes, 4½ inches and larger, 52½ per cent.; 2 to 4 inches, 50 per cent., and 1¼ inches and smaller, 45 per cent.

Nails.—The increase on freights on nails under recent regulations has its effect as to keeping the prices of last week up to a good degree of strength and firmness. Sales are abundant; mills had all they could do before the advance in freights; some may now be running slack, but most are very well employed; as it is, supply and demand are fairly well sustained. We quote f. o. b. mill $1.85 at stores, $2.03½@$2.05 per car lots, $2.10 for smaller quantities; wire nails are very firm at $2.65; the average increase taking it as a whole is about 2½ cents; manufacturers do not consider this fact with kindness.

Steel Rails.—In this market two roads are figuring, it is said, combining a very large tonnage, which may be distrihuted among the larger mills for small amounts; $34@$34.50 is the quotation for to-day, which is subject to terms as to delivery.

Railway Track Supplies.—A good demand is noticed with unchanged prices. We quote: Iron fish plates, $1.95@$2; steel, $2.10@$2.25; bolts, square nuts, $2.86@$2.96; hexagon, $2.95@$3; spikes, $2.05@$2.10, according to quantity. As this is about the time for railroad managers to look after track repairs an increased inquiry may be anticipated.

Cleveland. Sept. 4.

There are no special features to report this week in the iron ore market. Sales have been less in quantity than during the previous three weeks, and inquiries correspondingly fewer, the immediate demand having been largely satisfied. What inquiry there is is principally for non-Bessemer, although a furnace in the Mahoning Valley last week was in the market for 10,000 tons of Bessemer ore. Rumor has it that they bought Republic. It has been generally thought that there was no more Republic for sale. It is generally the case, however, that iron ore companies, like banks, always try to be in shape to take care of their regular customers.

There is nothing doing yet in lake freights. Quotations are nominal at $1.05 from Ashland, $1 from Marquette, 85 cents from Escanaba.

Repeat last week's quotations as follows:

Specular and Magnetic Ores.

Bessemer	66@69	per cent	$6.50@$7.25
"	60@61	"	5.25@ 6.25
Non Bessemer	66@69	"	6 00
" "	62@65	"	5.00@ 5.25
" "	57@60	"	4.00@ 4.65

Soft Hematites Dried at 212 Degrees.

Bessemer	62@65	per cent	$5.25@$6.00
"	58@61	"	5.00@ 5.25
Non-Bessemer	55@63	"	3.50@ 4 50

Above prices are delivered on docks at Lake Erie ports.

Louisville. Sept. 2.

(Special report by HALL BROS. & CO.)

A fair amount of orders has been entered for pig iron during the week, though inquiries have exceeded offerings. Much buying and selling now is to secure low freights, confirming the belief that an advance is approaching, though some cutting has been done. Vanderbilt furnace, Birmingham, blew in on the 23d ult., and two De Bardelehen on 22d ult. All help to swell the output, and must necessarily find a market for their new makes. Bar iron has preceded pig in price, which is doubtless occasioned by the facilities for the manufacture of bar iron being inadequate to the demand, and this, as one feature, tends to strengthen pig. Money is getting easier, and business generally is improving as the fall months come on, and it is reasonable to believe business will continue to improve. Some special brands of coke iron are largely in demand at good prices. One of our special coke furnaces has advanced its price 50 cents per ton on account of the demand for that quality of metal. Generally, there is no improvement in prices, but furnaces hold firm as last, viz.:

Hot Blast Foundry Irons.—Southern coke, No. 1, $15@$15.25; No. 2, $14.25@$14.50; No. 3, $14@$14.25. Mahoning Valley, lake ore mixture, $17.75@$18.75; Southern charcoal, No. 1, $17@$17.50; No. 2, $16.50@17. Missouri charcoal, No 1, $18@$18.50; No. 2, $17@$17.50.

Forge Irons.—Neutral coke, $13.75@$14; cold short, $13.75@14; mottled, $12.75@$13.25.

Car Wheel and Malleable Irons.—Southern, standard brands, $22@$23; other brands, $18@$19. Lake Superior, $22.50@$23.

Philadelphia. Sept. 5.

(From our Special Correspondent.)

The receipts and offerings of pig iron in eastern Pennsylvania, though large and frequent, are by no means such as to weaken prices. A few holders that were half inclined to lower their quotations have been encouraged by the developments of the past few days to ask strong prices. Sales of 100 to 500 ton lots of forge have been made at $15 to $15.25 and some brands at $15.50. The foundry makes have been quiet for a few days, though as much as ever is being worked up. No. 1 is strong at $18@$18.50; No. 2 is $16.50@$17; Bessemer $19. Large buyers are still looking at the market.

Speigel is quoted at $30 for German, and ferromanganese $71.50. Steel billets are often asked for, and the usual quotations are $33@$33.50. Muck bar makers refuse to accept business for good bars at $31, and ask $31.50. Merchant bar is active from the poorest quality to the best. Large lots have been contracted for by car builders at $1.70. Refined is selling at 1·80@1·90. Nails are going at 1·75@1·85. Skelp is 1·90 for grooved and 2·25 for sheared. The sheet iron makers are oversold, especially on galvanized. The pipe iron makers are not able to meet the demand.

Plate iron is very active. Bridge builders have recently closed large contracts, and are now anxious to close for the raw material. Structural iron makers have plenty of business, and good prices are the rule on all business done. Steel rails are $30.50@$32. Business for the week 12,000 tons. Large orders are held back. The mills are not in need of business for the present, and will not shade quotations. Old rails are $25.50, and scarce. The fall and winter outlook is excellent. A great deal of building will be prosecuted during the winter calling for iron and steel.

Pittsburg. Sept. 4.

(From our Special Correspondent.)

Raw Iron and Steel.—The market since our last report shows few changes. Those that have taken place will be noted below. While some descriptions of iron and steel are weaker and less inquired for other kinds may be said to fully make up the deficiency. It will not be long before consumers will have disposed of the large blocks of iron that were purchased for July, August and September deliveries. When fresh supplies must be obtained, then we may expect a more active market and better prices to rule; at the present rate of consumption it cannot be long before consumers will be in want of a fresh supply of the raw material. Indications point unmistakably to an active fall and winter trade.

There has been a falling off in the demand for Bessemer. Buyers are less numerous, while those in the market are asking larger concessions than holders are disposed to grant, and certain makers prefer not to sell unless last week's prices are paid. The result is Bessemer sales don't show up as well as usual. Grey Forge—There seems to be a variety of grades offering, as well as a variety of prices. Standard brands attract the most attention.

Muck bar is both firm and active, the demand being fully up to the supply, with several liberal sales made for future delivery at 40@50 cents advance. Blooms and billets are not so firm as last week, with sales of certain lots at a slight decline; others again commanded full prices, the latter figures being for October and November delivery.

Skelp iron is held firmly, and the demand is fully up with the supply, last week's advance being fully maintained. Old iron rails are very firm, a further advance being demanded. The demand exceeds the supply. Scrap material very firm; certain grades show a further advance. Foundry irons not so much fancied, prices being shaded for 500 ton lots. There has been no diminution in the demand for finished iron; on the contrary, the consumption shows a steady increase, and every indication points to a continuance of the demand. Upon this basis the pig iron men figure out a brisk business for the next few months. Eastern prices generally are $1 per ton above those that govern this market. There is an entire absence of the speculative element, however, and so long as that continues fluctuations are not likely to be important. Ordinarily it would be reasonably safe to predict more or less of an advance under such conditions as now prevail; but the resources of the country are so immense that it would be a pretty hard matter to persuade the trade that iron is likely to be scarce.

Coke Smelted Lake and Native Ores.

3,000 Tons Bessemer at City Furnace	18.50 cash.
3,000 Tons Bessemer, Oct. to Jan	18.00 cash.
1,500 Tons Grey Forge	15.25 cash.
1,500 Tons Bessemer, Oct., Nov	18.65 cash.
1,200 Tons Grey Forge	15.50 cash.
1,000 Tons Grey Forge	15.25 cash.
1,000 Tons Bessemer, Sept., Oct	18.50 cash.
1,000 Tons Bessemer, Sept., Oct	18.50 cash.
750 Tons Grey Forge, Sept	15.25 cash.
500 Tons Bessemer, Sept., Oct	18.50 cash.
500 Tons Grey Forge	15.25 cash.
500 Tons Grey Forge, all ore	16.50 cash.
500 Tons No. 2 Foundry	16.25 cash.
500 Tons No. 2 Foundry	16.50 cash.
250 Tons Grey Forge	15.25 cash.
100 Tons No. 1 Foundry	17.25 cash.

Charcoal.

200 Tons Warm Blast Southern	22.00 cash.
150 Tons Cold Blast	26.00 cash.
50 Tons Cold Blast	27.00 cash.
50 Tons No. 2 Foundry	22.50 cash.

Muck Bar.

2,000 Tons Neutral	30.00 cash.
1,500 Tons Neutral, Oct., Nov	29.87½ cash.
1,500 Tons Neutral, Sept., Oct	30.50 cash.
1,000 Tons Neutral, Oct., Nov	30.50 cash.
1,000 Tons Neutral	30.00 cash.
1,000 Tons Neutral, Sept., Oct	30.00 cash.
750 Tons Neutral, Sept., Oct	30.60 cash.

Steel Billets and Slabs.

2,000 Tons Billets	30.75 cash.
1,500 Tons Billets, Sept., Oct	31.00 cash.
1,000 Tons Billets, Sept., Oct	31.25 cash.
1,000 Tons Billets, Oct., Nov	30.50 cash.
1,000 Tons Billets, Sept., Oct	30.25 cash.
500 Tons Nail Slabs	30.00 cash.
500 Tons Nail Slabs	30.50 cash.

Steel Wire Rods.

550 Tons American Fives	45.00 cash.

Ferro-Manganese.

250 Tons 80 per cent., New York	69.50 cash.
200 Tons 80 per cent., Baltimore	69.85 cash.
100 Tons 80 per cent., Pittsburg	72.50 cash.

Bloom and Rail Ends.

1,000 Tons Bloom Ends	22.50 cash.
400 Tons Bloom Ends	22.75 cash.
300 Tons Bloom Ends	23.00 cash.

Spiegel.

100 Tons 20 per cent., seaboard	31.50 cash.
100 Tons 10 and 12 per cent., seaboard	29.50 cash.

Old Iron Rails.

850 Tons American T's, spot	29.00 cash.

Scrap Material.

500 Tons Crucible Steel, net	28.00 cash.
200 Tons No. 1 W. Scrap, extra, net	23.50 cash.
200 Tons Iron Axles, net	30.50 cash.
150 Tons No. 1 W. Scrap, extra, net	23.30 cash.
150 Tons Iron Axles, extra, net	35.00 cash.
100 Tons Leaf Steel, net	24.00 cash.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, Sept. 5.

Heavy Chemicals.—The condition of this market has undergone no change. The various chemicals are steady and strong at the prices quoted last week. No further news of the Chemical Union has been received, and matters remain in *statu quo*.

Caustic soda is very strong at the following quotations: 60 per cent., 3·20@3·25c.; 74 to 76, 3·05c. for shipment, and 3·12½c. on the spot.

Caustic Soda Ash.—There is not much of this article here. We quote for shipment, 1·45@1·50c.

Carbonated soda ash, 48 per cent., is 1·50@1·55c.; 58 per cent., 1·45@1·5c. The market is firm.

Sal soda is in better condition, with 1·10@1·12½ quoted. There is a fair demand.

Bleaching powder is quiet but firm at 1·57½c. on the spot, and 1·52½@1·55c. to arrive.

Acids.—The state of the market for acids remains as previously reported. A good volume of business is doing, and on this score dealers express themselves as well satisfied. In regard to prices, we can only repeat the list which we have printed in this column for a month past: Acid, per 100 pounds in New York and vicinity: Acetic, $1.75@$2.25; muriatic, 18-degree, 80c.@$1.25; muriatic, 20-degree, 90c.@$1.50; muriatic, 22-degree, 90c.@$1.75; nitric, 36-degree, $2.75@$3.50; nitric, 40-degree, $3.25@$4.50; nitric, 42-degree, $3.75@$4.75; sulphuric, 60-degree, 70@80c., and sulphuric, 66-degree, 80c.@$1.

Fertilizing Chemicals.—There has been some inquiry for ammoniates, but otherwise the market for fertilizers has been without features. In a short time the fall season will open and business will become brisk. Prices remain unchanged from last week, and we accordingly repeat our quotations: High grade dried blood, $1.75@$1.80. For the low grade the price is $1.70; Azotine, $1.90@$1.95. Tankage, high grade, 9 to 10 per cent. ammonia and 15 to 20 per cent. phosphate, $19@$20 per ton, and low grade 7 to 8 per cent. ammonia

and 25 to 30 per cent. phosphate, $18@$18.50. Fish scrap, $20@$20.50 per ton f. o. b. factory. Sulphate of ammonia, prime gas liquor, $3.35; prime bone liquor, $3.15. Concentrated tankage, $1.67½@$1.70. Refuse, bone black, guaranteed 70 per cent. phosphate, $18 per ton. Dissolved bone-black is nominally 95c. per unit for available phosphoric acid, although on large lots prices might be somewhat reduced, and acid phosphate 80c. per unit for available phosphoric acid. Steamed bones, unground, $20@$23; ground, $25@$26.

Charleston rock, undried, $5.75 per ton; kiln-dried, $7@$7.25 per ton, f. o. b. vessels and cars respectively at the mines. Freights by sail from Charleston to New York, $2.75@$3.50 per ton. Charleston rock, ground, $11.50@$12, ex-vessel at New York.

Quotations are for 48 to 52 per cent. sulphate of potash, $1.12½ per 100 pounds for shipments from date; high grade manure salts, basis 90 per cent. sulphate of potash, $2.37½ per 100 pounds.

Muriate of Potash.—There is a fair demand and only a small stock on hand. Sales of 200 tons to arrive occurred during the week, and 300 tons arrived, all of which went into consumption. Quotations are: $1.77½@$1.82.

Kainit.—In last week's issue we made a statement that has been misunderstood. We did not mean that only 1,700 tons of kainit were sold during the season, but that 1,700 tons which had been sold during the season were in port last week and were being delivered. No more kainit will arrive for some months. Quotations remain $9.75 and $10 for invoice and actual weights, respectively.

Nitrate of Soda.—Mr. F. B. Nichols, of this city, sends us the following interesting statistics issued under date of the 2d inst.:

	1890.	1889.	1888.
Stocks in store and afloat in Atlantic ports, Aug. 15, bags	50,488	64,358	95,833
Arrivals	15,015	21,002	18,918
	65,503	85,360	114,751
Previously reported, 455,883; total arrivals to date, 470,898; same time, '89 351,216; same time '88, 375,008.			
Stocks	52,754	69,178	93,498
To arrive, 380,000; visible supply, 432,754; same time '89, 320,678; same time, '88, 303,498.			
Stocks with dealers in store and afloat here:			
Deliveries fortnight ending Sept. 2	12,749	16,182	21,253
Previously reported	457,121	351,856	303,327
Total deliveries to Sept. 2	469,870	368,038	324,580
Sales spot	1.67½@1.70	1.80@1.85	2.00@2.05

"The total deliveries in August were about 36,000 bags, which is a falling off from the previous months, but without significance. It is usually a dull month, and buyers avoid the delivery as much as possible. The consuming interests are all in good condition, and a large business to the close of the year is reasonably expected.

"For forward, there was no cargo business. The coast market advanced during the month, and was strong at the close; the labor excitement had subsided, and a better confidence restored exchange."

Brimstone.—This market is very quiet. Cable advices report higher prices and advancing freights. Quotations are, on the spot, best unmixed seconds, $21.50, and $21 for third; to arrive, $21 and $20.50 for best seconds and thirds respectively.

The total stock at the producing districts on July 31 was reported at 900,000 cantars (13 cantars one ton) which is said to be a decrease from last year of 182,000 cantars. The total shipments from January 1 to July 31 has been 2,912,000 cantars, of which America has taken 773,000 cantars

Liverpool. Aug. 27.

[Special Report by Messrs. J. P. Brunner & Co.]

Since our last, caustic soda has been in active request, while there is little of interest to report in other lines.

Soda ash continues in limited supply, but there is not much actual business passing, and quotations are unchanged at 1 3-16d.@1¼d. for caustic. and 1¼d.@1½d. for carbonated, according to brands.

Soda Crystals are well maintained at £3 5s.@£3 7d. 6 per ton, and there is little to be had for prompt delivery.

Caustic Soda.—Large orders have been in the market, and a good business done in 70 per cent. up to £10 7s. 6d. Manufacturers are now fully sold for some weeks ahead, and with the exception of a few small second-hand lots offering at £10 10s., there is nothing to be had for prompt delivery. Sixty per cent., £9 7s. 6d.@£9 10s.; 74 per cent., £11 10s.@£11 15s.; 76 per cent., £12 5s.@£12 10s.

Bleaching powder, in the absence of business, is rather weaker, and although makers talk of £6 some could probably be had from resellers at £5 15s., or possibly even 2s. 6d. less money.

Chlorate of potash is quoted at 5d. per pound, and makers are well sold.

Bicarb soda is in request at £5 15s. per ton and upwards for one cwt. kegs, according to brand and quantity, with usual allowances for larger packages.

Sulphate of ammonia in small compass and £12 is nearest spot value for good grey 24 per cent., f.o.b., here, in double bags. There is still some inquiry from the States, but the demand from this quarter is not so active.

With reference to the proposed "Chemical Union" the position is unsatisfactory. It is understood that the promotors have not been able to get the arrangements settled as early as anticipated, and have had to approach manufacturers with a view to getting the present agreements (which expire toward the end of next month) extended for a longer period. The scheme is meeting with scant favor on the part of the newspaper press generally throughout the country, and there are also rumors that some of the chemical makers themselves are proving refractory.

It was expected that the scheme would have been ready by the end of next month, but a postponement is now talked of and, in fact, strong doubts are now being freely expressed as to the undertaking being carried through at all.

BUILDING MATERIAL MARKET.

NEW YORK, Friday Evening, Sept. 5.

Bricks.—The market continues unsettled, and it is as difficult to get quotations as it is to procure brick in any quantity. In our notes of the week will be found mention of the troubles. We quote nominally: Haverstraws, $6.25@$7; Uprivers, $6@$6.75; Jerseys, $5.50@$6.50, and Pale, $3@$3.25.

Lime.—Arrivals aggregating some 10,000 barrels came in during the week, and were speedily taken. It is probable that twice this quantity could have been disposed of, but shippers decline to forward their product till the element of uncertainty in the market for building materials created by the brick troubles has disappeared. The majority of the kilns in the Maine district is burning no lime at present. There is a very limited supply on the way and scarcely any here. Quotations remain for Rockland, common and finishing, 90c.@$1.20; St. John, common and finishing, 85@95c.; Glen Falls, common and finishing, 85c.@$1.10.

Cement.—There is a fair demand for the various brands of cement. Quotations have undergone no change since last week, and we accordingly repeat them: Rosendale, 90c.@$1; Portland, American, $2.15@$2.45; foreign, $2.40@$2.50; special brands, $2.60@$2.85; Roman, $2.75@$2.95; Keene's coarse, $4.50@$5.50; Keene's fine, $7.25@$8.50 per barrel.

NOTES OF THE WEEK.

Between 300 and 400 more of the striking carpenters at Chicago returned to work on the 4th inst., and the strike is practically at an end. Various questions, however, are mooted among the strikers. It is hinted that the non-union men will be persuaded to join the union in order to get better wages, and that the fight will be renewed within ten days. It is generally thought, however, that the trouble is over till next spring, when a general "walk-out" is looked for.

The brick troubles show no change for the better. Both sides appear determined to hold out as long as possible. On the 4th inst., the Executive Committee of the Brick Manufacturers' Association decided to cut down all contracts with dealers in New York by 60 per cent. This will reduce the contract supply from 4,000,000 to about 1,600,000 bricks per week. The Fisher's Island Brick Company, which had been shipping brick to this market, promised not to do so in the future if the manufacturers on this side would agree to ship no bricks to the vicinity of New London, where the company does business. The agreement was made. Mr. W. K. Hammond, a well known brick manufacturer stated that no contract brick had been received to-day (Friday) and that none would be received this week.

IMPORTS AND EXPORTS OF METALS AT NEW YORK FROM AUGUST 23 TO AUGUST 30 AND FROM JANUARY 1.

IMPORTS.

Spelter.	Week. Tons.	Year. Tons.
Amer. Metal Co		297
Hendricks Bros		50
La Marche's Sons, H		5
Lewisohn Bros		100
Meyer, G. A. & E.		9
Milne & Co		74
Muller, Schall & Co		123
Total		658
Corres. date, 1889	10	657

Pig Lead.	Lbs.	Lbs.
Bruce & Cook	25	25
Caswell, E. A	100	211
Hendricks Bros		100
Naylor & Co		10
Schultz & Co., A		98
G. W. Sheldon		149
Total	125	593
Corres. date, 1889		140

Tin.	Tons.	Tons.
Abbot, Jere, & Co		125
Amer. Metal Co		2,125
Bidwell & French	25	840
Bruce & Cook		10
Carter, Hawley & Co		75
Cohen, H		20
Cort & Co., N. L		125
Crooks & Co., R		85
Davol & Son		34
Hendricks Bros		32
Knauth & Kuhne		10
Lehmaier, S., & Co.	10	122
Lewisohn Bros		20
Merchant & Co		40
Muller, Schall & Co		620
Naylor & Co	75	1,271
Nissen, Geo		10
Phelps, Dodge & Co	200	2,696
Thomson, A. A. & Co		50
Thomson, D. & Co		70
Townsend, & Co., J. R		50
Trotter & Co., N		75
Total	310	8,505
Corres. date, 1889		6,960

Tin Plates.	Boxes.	Boxes.
Bruce & Cook	1,957	92,542
Byrne & Son		1,000
Central Stamp, Co.	234	49,530
Coddington & Co	1,586	96,291
Cohn & Co		14,487
Con. Fruit Jar Co		120
Cordiere F. & Co		7,707
Cort & Co	9,646	140,443
Crooks & Co	2,674	66,148
De Milt & Co., H. R.	527	6,577
Dickerson, V. D. & Co	8,764	265,988
Fenton, D. E		3,640
Haberman, F		66
Herring, Chas. E		1,000
Iron Clad Mfg. Co		489
Lalance & G. M. Co		8,788
Lazard Bros		1,048
Lehmaier, Schw'z & Co		200
Merchant & Co	778	22,322
Mersick & Co		8,642
Morewood & Co	1,522	38,739
Newell Bros		416
Payne, S. H. & Co		784
Pratt Mfg. Co	821	93,849
Phelps, Dodge & Co		592,482
Schneider & Co., J		3,365
Shepard & Co	2,958	7,707
Taylor, N. & G		1,229
Thomson & Co., A. A	4,156	80,528
Warren, J. M		4,320
Wheeler & Co	604	23,794
Whittemore & Co		12,953
Wolff & Reesing		2,077
Wright, Peter & Co		227
Total	36,227	1,649,498
Corres. date, 1889	35,416	1,610,487

Pig Iron.	Tons.	Tons.
Abbott & Co., Jere	25	225
Baldwin & Co., A		807
Baldwin Bros. & Co		170
Crocker Bros	200	1,400
Crooks & Co., R		5
Dana & Co		150
Drummond & Co		400
Geisenheimer & Co		76
Hagermeyer & Brun		30
Henderson Bros		100
Irvin, R. L. & Co		300
Lillienberg, N		1,909
Naylor & Co		150
Perry & Reyer	53	53
Pierson & Co		30
Sheldon, G. W. & Co		200
Stetsson & Co., G. W	250	2,375
Williamson, J. & Co		1,600
Total	475	9,980
Corres. date, 1889	1,975	22,222

Steel Blooms, Billets, and Slabs.	Tons.	Tons.
Abbott & Co		5
Baldwin Bros. & Co		2
Dana & Co		1,670
Dolge & Co., A	1	1
Downing, R. F. & Co		107
Henderson Bros		1
Martin & Co		80
Milne, A., & Co		68
Naylor & Co	110	449
Pope, Jas. E., Jr		61
Richards & Co., C. B		1
Roebling's Sons, J. A		2,074
Wolff, & Co., R. H		60
Total	111	4,579
Corres. date, 1889		21,395

Bar Iron.	Tons.	Tons.
Abbott & Co., Jere	25	766
Bacon & Co		1,155
Crocker Bros		77
Dickerson, Van Dusen & Co		6
Downing & Co		285
E. J. Jacobus		8
Fuller, Dana & Fitz		11
Holt, H. N		180
Lillienberg, N		447
Lundberg, G		2,171
Milne & Co		1,016
Muller, Schall & Co		289
Naylor & Co		576
Page, Newell & Co	101	1,755
Plenty, J		14
Wilson, J. G		3
Total	126	8,759
Corres. date, 1889	1,491	7,634

Scrap Iron.	Tons.	Tons.
Crossman & Co., W. H		30
Frankfort, M	100	100
Muller, Schall & Co		18
Samper & Co., S		186
Stevens, Corvin & Co		30
Ward, J. E. & Co	170	737
Total	270	1,101
Corres. date, 1889	1,578	2,866

Steel and Iron Rods.	Tons.	Tons.
Abbott & Co	519	7,850
American S. Co		665
Bacon & Co		469
Bunnell & Co., F. H.	25	25
Carey & Moen		431
Cooper, Hewitt & Co		371
Dana & Co		803
Downing & Co		129
Galpin, S. A		1,206
Greely & Co. C. S		35
Hazard Mfg. Co		370
Holt & Co., H. N		3
Jacobus, E. Y		2
Lee, James & Co		1,554
Lillienberg, N		300
Lundberg, G		126
Lundell, C. G		5
Milne & Co		1,304
Muller, Schall & Co.	20	752
Naylor & Co	230	4,687
Page, Newell & Co		1,229
Roehling's Sons, J. A		2,277
Schulze & R		1
Temple & Lockw'd		6
Wessel & Co		21
Wiehusch & Hor		4
Wood & Niebuhr		25
Wolf & Co., R. H		2,955
Total	794	27,605
Corres. date, 1889		33,722

Old Rails.	Tons.	Tons.
Bowring & Archibald		340
Dana & Co	14	764
Frankfort, M	94	5,115
Henderson Bros		300
Hernsheim, L		350
Mosle Bros		123
Naylor & Co		1,968
Sawyer, Wallace & Co		610
Wiechers, J. F		150
Total	108	9,720
Corres. date, 1889	564	9,699

Spiegeleisen.	Tons.	Tons.
Ahbott, Jere & Co		2,725
American Metal Co		100
Blakely & McLellan		1,684
Crocker Bros	1,141	19,192
Crooks & Co. R		106
Dana & Co		15,900
Foley, F		50
Geisenheimer & Co.	50	693
Henderson Bros. & Co		14
Hernsheim, L	597	17,132
Holt, H. N		200
Naylor & Co		10,026
Perkins, C. L	5	1,427
Sachs & Richmond		2
Whittemore, H. & Co		55
Total	1,793	69,306
Corres. date, 1889	3,426	50,820

Iron Ore.	Tons.	Tons.
Balz, Jacob		67
Bowring & Archibald	600	4,692
Earnshaw, A		3,517
Ennis, Andrew		438
Flores & Co., R. de		14,143
Johnson & Co., L		5,030
Total	600	27,887
Corres. date, 1889		8,660

EXPORTS.

Copper.	Pounds.	Pounds.
Abbott & Co., Jere		2,545,103
Amer. Met. Co., La		940,385
Barber & Co		13,750
Belmont, Aug. & Co		1,763,974
Boker, C. F	33,750	33,750
Burgass & Co		227,290
French, Edye & Co		135,374
Heidelbach, Sicheheimer & Co		672,608
Muller, Schall & Co		16,250
Sawyer, W'l'ce & Co		22,793
Seamen, S. H		66,950
Ward, J. E. & Co.		100,000
Wil'ms & T'hune		112,004
Total	33,750	6,655,234
Corre. date, 1889	1,133,937	6,285,290

Copper Matte.	
American Metal Co	3,072,979
Lewisohn Bros.	1,703,846
Nichols, Geo. H	267,202
Paulsen, Wm	1,039,428
Wil'ms & T'hune	2,848,706
Total	8,931,261
Corres. date 1889	1,883,566 21,884,63

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Par	Assessments. Total levied	Date and amount of last.			Dividends. Total paid.	Date and amount of last.		
1	Adams, s. l.	Colo.	$1,500,000	150,000	$10					$555,000	Jan.	1887	.10
2	Alice, s. c	Mont	10,000,000	400,000	25	*				850,000	July	1890	.06¼
3	Alma&Nel Wood C., g	Idah	300,000	30,000	10	*				60,000	Jan.	1889	.50
4	American & Nettie, c.	Colo.		300,000						150,000	Nov.	1889	10
5	Amy & Silversmiths, s.	Mon.		341,419						247,530	Aug.	1887	12½
6	Atlantic, c	Mich	1,000,000	40,000	25	$280,000	Apl.	1875	$1.00	660,000	Aug.	1890	1.00
7	Argenta, s	Nev.	10,000,000	100,000	100	335,000	July	1889	.10	40,000	Feb.	1880	.20
8	Aspen Mg. & S. s. l.	Colo.	2,000,000	200,000	10	*				480,000	Aug	1890	.10
9	Aurora, i	Mich	2,000,000	100,000	20					155,000	Oct.	1887	1.87½
10	Badger, s	Ont.	250,000	50,000	5					37,500	Mar.	1890	.25
11	Bassick, g. s.	Colo.	10,000,000	100,000	100	*				400,000	Mar.	1884	1.00
12	Belle Isle, s	Nev.	10,000,000	100,000	100					300,000	Dec	1879	25
13	Belcher, g. s.	Nev.	10,400,000	104,000	100	2,028,000	Apl.	1890	.50	15,397,000	Apl.	1876	1.00
14	Bellevue Idaho, s. l.	Idah.	1,250,000	125,000	10	120,000	Dec.	1889	25	200,000	Jan.	1887	10
15	Bodie Con., g. s.	Cal.	10,000,000	100,000	100	575,000	Nov	1889	25	1,602,572	Apl.	1885	50
16	Boston & Mont, g.	Mon.	2,500,000	250,000	10	*				520,000	Jun.	1886	15
17	Boston & Mont., c. s.	Mon	2,500,000	100,000	25	*				1,450,000	Aug.	1890	1.50
18	Breece, s	Colo	5,000,000	200,000	25	*				2,000	Feb.	1880	.01
19	Brooklyn Lead, l. s.	Utah	500,000	50,000	10					127,000	July	1887	.05
20	Bulwer, g	Cal.	10,000,000	100,000	10	130,000	Aug.	1889	.25	175,000	Jan.	1884	.10
21	Bunker Hill & Sull.	Idah.	3,000,000	300,000	10	*				150,000	Oct.	1883	.06¼
22	Caledonia, g	Dak.	10,000,000	100,000	100	505,000	May	1885	.15	176,000	Aug.	1890	.03
23	Calliope, s	Colo.	1,000,000	¶	1					90,000	Apl.	1890	.01
24	Calumet & Hecla, c.	Mich	2,500,000	100,000	25	1,200,000				34,350,000	May	1890	5.00
25	Carbonate Hill s. l.	Colo.	1,500,000	200,000	10	*				80,000	Apl.	1884	.05
26	Carlisle, g	N. M.	1,000,000	200,000	5					175,000	Dec.	1888	.12½
27	Castle Creek, g	Idah.	100,000	100,000	1					51,000	Oct.	1883	.03
28	Catalpa, s. l	Colo.	3,000,000	300,000	10	*				270,000	May.	1884	.10
29	Central, c	Mich	500,000	20,000	25	100,000	Sept	1861	.06	1,950,000	Feb.	1890	1.00
30	Chrysolite, s. l.	Colo.	10,000,000	200,000	50	*				1,650,000	Dec	1884	.25
31	Colorado Central, s. l	Colo.	2,750,000	275,000	10	*				406,250	Aug.	1889	.05
32	Confidence, s. l.	Nev.		24,960		306,160	Mar.	1890	.75	199,680	Apl.	1889	1.00
33	Cons. Cal. & Va., g. s.	Nev.	21,600,000	216,000	100	108,000	Jan.	1885	.20	3,466,800	Apl.	1890	.25
34	Contention, s	Ariz.	12,500,000	250,000	50					†2,587,500	Dec.	1884	.25
35	**Cop. Queen Cons, c.	Ariz.	1,400,000	140,000	10					210,000	Feb.	1889	.50
36	Crescent, s. l. g.	Utah	15,000,000	600,000	25	*				228,000	Oct.	1888	.03
37	Crown Point, g. s.	Nev.	10,000,000	100,000	100	2,850,000	Sept	1889	.50	11,588,000	Jan.	1875	2.00
38	Daly, s. l.	Utah	3,000,000	150,000	20					1,612,500	Aug.	1890	.25
39	Deer Creek, s. g	Idah.	1,000,000	200,000	5	*				20,000	Jun.	1889	.05
40	Deadwood-Terra, g.	Dak.	5,000,000	200,000	25	*				§1,000,000	Nov.	1887	.10
41	Derbec B. Grav., g. s.	Cal.	10,000,000	100,000	100	90,000	Dec.	1881	.10	210,000	Oct	1889	.10
42	Dunkin, s. l.	Colo.	5,000,000	200,000	25	*				390,000	Oct.	1889	.05
43	Dunstone, g. s. l.	Mont	1,000,000	200,000	5	*				6,000	Nov.	1888	.03
44	Eclipse	Colo.	100,000	100,000	1					20,000	Nov.	1887	.10
45	Elkhorn, g. s.	Mont	1,000,000	100,000	10	50,000	July	1883	.50	850,000	July	1887	.05
46	Empire Lt., g.	Mont	500,000	100,000	5					70,500	Oct.	1887	.37½
47	Eureka Con., g. s. l.	Nev.	5,000,000	50,000	100	550,000	Jun.	1889	.50	4,980,000	Sept	1890	.25
48	Evening Star, s. l.	Colo.	500,000	50,000	10	*				1,45[illegible],000	Dec.	1889	.25
49	Excelsior, g	Cal.	10,000,000	100,000	100	560,000	Sept	1885	1.00	875,000	Oct.	1880	.25
50	Father de Smet, g.	Dak.	10,000,000	100,000	100	200,000	Nov	1878	1.00	1,125,000	Dec.	1885	.20
51	Franklin, c	Mich	1,000,000	40,000	25	220,000	Jun.	1871		960,000	Jan.	1889	2.00
52	Freeland, g. s. c.	Colo.	5,000,000	200,000	25	*				190,000	July	1886	.10
53	Garfield Lt., g. s.	Nev.	500,000	100,000	5					95,000	Apl.	1888	.12½
54	Gould & Curry, g. s.	Nev.	10,800,000	108,000	100	4,465,500	Apl.	1890	.30	826,800	Oct.	1870	10.00
55	Grand Prize, s	Nev.	10,000,000	100,000	100	715,000	Nov.	1889	.30	525,000	Jan	1890	.30
56	Granite, s. l.	Idah.	500,000	500,000	1	*				28,400	Oct.	1889	.02
57	Granite Mountain, s.	Mont	10,000,000	400,000	25					9,200,000	July	1890	.50
58	Green Mountain, g.	Cal.	1,250,000	125,000	10	*				212,000	Nov.	1881	.07½
59	Hale & Norcross, g. s	Nev.	11,200,000	112,000	100	5,086,000	July	1887	.50	1,162,000	July	1888	.50
60	Hecla Con., s. g. l. c.	Mont	1,500,000	30,000	50					1,509,000	Apl.	1889	.50
61	Hel'a Mg & Red, g. s. l	Mont	3,315,000	663,000	5	*				197,979	July	1886	.06
62	Holmes, s	Nev.	10,000,000	100,000	100	325,000	Mar.	1890	.25	75,000	Apl.	1886	.25
63	Holyoke, g	Idah.	200,000	200,000	1					27,000	Feb	1883	.10
64	Homestake, g	Dak.	12,500,000	125,000	100	200,000	July	1878	1.00	5,581,250	Aug.	1890	.10
65	Honorine, s. l.	Utah	500,000	250,000	2	37,500	Apl.	1889	.05	125,000	Sept	1887	.05
66	Hope, s	Mont	1,000,000	100,000	10	*				233,252	Apl.	1888	.25
67	Horn-Silver, s. l.	Utah	10,000,000	400,000	25	*				4,150,000	Jun.	1890	.12½
68	Hubert, g	Colo.	1,000,000	1 mil'n	1	*				247,000	Dec.	1889	.00½
69	Idaho, g	Cal.	310,000	3,100	100					5,235,900	Dec.	1889	5.00
70	Ideal, s. l.	Colo.	1,500,000	50,000	10					15,000	Oct.	1886	.05
71	Illinois, s	N. M.	100,000	100,000	1	*				45,000	Apl.	1889	.20
72	Independence, s	Nev.	10,000,000	100,000	100	340,000	Oct.	1886	.20	225,000	Sept	1879	.25
73	Iron Hill, s	Dak.	2,500,000	250,000	10	134,000	July	1889	.03	156,250	Nov	1887	.07½
74	Iron-Silver, s. l	Colo.	10,000,000	500,000	20	*				2,500,000	Apl.	1889	.20
75	Jackson, g. s	Nev.	5,000,000	50,000	100	237,500	Nov	1880	.20	55,000	Jun	1889	.10
76	Jay Gould	Mont	2,000,000	40,000	5	*				459,000	May	1890	.04
77	Jocuistita, g	Mex.	2,500,000	250,000	10					1,200,000	Feb.	1886	.50
78	Jumbo, g	Colo.	2,000,000	200,000	10					35,000	Oct.	1887	.02½
79	Kearsarge, c	Mich	1,250,000	50,000	25	190,000	Oct.	1887	1.00	100,000	Jan.	1890	2.00
80	Kentuck	Nev.	3,000,000	30,000	100	369,000	Dec.	1889	.30	1,350,000	Dec.	1886	.10
81	La Plata, s. l.	Colo.	2,000,000	200,000	10					610,000	Sept	1882	.30
82	Leadville Cons., s. l. l.	Colo.	4,000,000	400,000	10	*				‡123,000	Apl.	1889	.05
83	Lexington, g. s	Mont	4,000,000	40,000	100	*				609,000	Jan.	1885	2.00
84	Little Chief, s. l.	Colo.	10,000,000	200,000	50	*				810,000	Jan.	1890	.05
85	Little Pittsburg, s. l	Colo.	20,000,000	200,000	100	*				1,050,000	Mch.	1889	.50
86	Little Rule	Colo.	500,000	500,000						30,000	Jun.	1890	.02
87	Mammoth	Utah			1					480,000	Aug.	1890	.10
88	Martin White, s.	Nev.	10,000,000	100,000	100	100,000	Feb.	1890	25	140,000	Dec.	1886	.25
89	Mary Murphy, g. s.	Colo.	350,000	3,500	100	*				175,000	May	1888	5.00
90	Matchless, s.	Colo.	500,000	500,000	1	*				15,000	Feb.	1890	.00½
91	May Mazeppa	Colo.	1,000,000	100,000	1					20,000	Aug.	1890	.01
92	Minnesota, c	Mich	1,000,000	40,000	25	420,000	Apl.	1886	1.00	1,820,000	Mar.	1876	
93	Mono, g	Cal.	5,000,000	50,000	100	102,850	Nov.	1889	.25	12,500	Mar.	1886	.25
94	Montana, Lt., g. s.	Mont	3,300,000	660,000	5	*				3,515,306	Aug.	1890	.06
95	Morning Star, s. l.	Colo.	1,000,000	100,000	10					850,000	Dec.	1889	.20
96	Moulton, s. g.	Mont	2,000,000	400,000	5	*				380,000	Dec.	1887	.07½
97	Mount Pleasant, g.	Cal.	150,000	150,000	1	*				150,000	Feb.	1887	.30
98	Mt. Diablo, s	Nev.	5,000,000	50,000	100	137,500	Jun.	1880	2.00	160,000	Oct	1889	.20
99	Napa, q	Cal.	700,000	100,000	7					370,000	July	1890	.10
100	Navajo, g. s.	Nev.	10,000,000	100,000	100	485,000	Apl.	1888	.30	365,000	Apl.	1889	.10
101	New Guston, s	Colo.	500,000	100,000	5					337,500	Apl	1890	.50
102	N. Hoover Hill, g. s.	N. C.	300,000	120,000	2½	*				30,000	Dec.	1885	.06¼
103	Northern Belle, s	Nev.	5,000,000	50,000	100	425,000	Jan.	1884	8.00	2,400,000	Apl.	1883	.50
104	North Belle Isle, s.	Nev.	10,000,000	100,000	100	400,000	Sept	1889	.20	230,000	May	1888	.50
105	North Star, g	Cal.	1,000,000	100,000	10					250,000	Dec.	1889	.50
106	Ontario, s. l.	Utah	15,000,000	150,000	100					11,225,000	Aug.	1890	.10
107	Ophir, g. s.	Nev.	10,000,000	100,000	100	4,159,440	May	1889	.50	1,595,800	July	1882	1.00
108	Original, s. c.	Mont	1,500,000	60,000	25	*				123,000	July	1888	.05
109	Oro	Colo.								60,000	Jun.	1890	.20
110	Osceola, c	Mich	1,250,000	50,000	25	480,000	Apl.	1876	1.60	1,372,500	Sept	1890	1.00
111	Oxford, g	N. S.	125,000	125,000	1	*				73,500	Sept	1888	.02
112	Paradise Valley, g. s.	Nev.	10,000,000	100,000	100	57,000	Apl.	1888	.15	150,000	Apl.	1887	.10
113	Parrot, c	Mont	1,800,000	180,000	10					642,000	Jun.	1890	.03
114	Peacock, s. g. c.	N. M.	2,000,000	200,000	10	*				60,000	Nov.	1886	
115	Plumas Eureka, g.	Cal.	1,406,250	140,625	10					2,548,046	Oct.	1889	.37½
116	Plutus, g. s. c. l.	Colo.	2,000,000	200,000	10	*				20,000	Feb.	1886	.10
117	Plymouth Con., g.	Cal.	5,000,000	100,000	50	*				2,280,000	Feb.	1888	40
118	Quicksilver, pref., q.	Cal.	4,300,000	43,000	100					1,705,791	Aug.	1890	1.50
119	" com., q.	Cal.	5,700,000	57,000	100					643,867	July	1882	.40
120	Quincy, c	Mich	1,000,000	40,000	25	200,000	Dec.	1862		5,570,000	Aug.	1890	5.00
121	Republic, c	Mich.	5,000,000	100,000	50	400,000	Dec.	1889	.30	4,312,587	Jun.	1887	1.25
122	Richmond, s. l.	Nev.	1,350,000	54,000	25	*				99,785	Feb.	1880	.50
123	Ridge, c	Mich.	500,000	20,000	25	219,939	Mar	1886	.50	585,000	Mar.	1886	.05
124	Robinson Con., s. l.	Colo.	10,000,000	200,000	50	*				100,000	Dec.	1882	.50
125	Robert E. Lee, s. l.	Colo	10,000,000	500,000	20					4,460,000	July	1869	3.00
126	Savage, s	Nev.	11,200,000	112,000	100	6,542,000	July	1889	.50	7,500	Apl.	1883	.01
127	Shoshone, g	Idah.	150,000	150,000	1					1,568,145	Apl.	1888	.12½
128	Sierra Buttes, g	Cal.	2,225,000	122,500	10					102,000	Jan.	1871	1.00
129	Sierra Nevada, g. s.	Nev.	10,000,000	100,000	100	6,250,000	Oct.	1889	.50	270,000	Apl.	1889	.10
130	Sierra Nevada, s. l.	Idaho	1,000,000	¶	1					40,000	May	1889	.02
131	Silver Cord, g. s. l.	Colo.	4,500,000	450,000	10					270,000	Apl.	1889	.10
132	Silver King, s	Ariz.	10,000,000	100,000	100	80,000	Jan.	1890	.30	1,950,000	July	1887	.25
133	Silver Mg. of L. V.	N. M.	500,000	500,000	1					150,000	Aug.	1890	.05
134	Silverton, g. s. l.	Colo.	2,000,000	200,000	10	*				50,000	Jan	1881	25
135	Small Hopes Cons., s.	Colo.	5,000,000	250,000	20	*				3,137,500	Jun.	1889	.10
136	Spring Valley, g	Cal.	200,000	200,000	1	50,000	Oct.	1886	.25	3,596,000	Jun.	1888	.05
137	Standard, g. s.	Cal.	10,000,000	100,000	100	50,000	Feb.	1890	.25	155,000	Nov.	1881	.05
138	Stormont, s	Utah	500,000	500,000	1	*				644,000	Dec.	1887	.20
139	St. Joseph, l	Mo.	1,500,000	150,000	10	*				9,000	Apl.	1888	.02½
140	Swansea, g	Colo.	600,000	60,000	10	*				100,000	Nov	1881	20
141	Tamarack, c	Mich.	1,000,000	40,000	25	520,000	Apl.	1885	3.00	1,620,000	Oct.	1890	4.00
142	Tombstone, g. s. l.	Ariz.	12,500,000	500,000	25	*				1,250,000	Apl.	1882	.10
143	United Verde, c	Ariz.	3,000,000	300,000	10	*				[illegible]	Feb.	1884	[illegible]
144	Valencia, m	N. H.	150,000	1,500	100	*				41,250	Apl	1886	2.50
145	Viola Lt., s. l.	Idah.	750,000	150,000	5					272,500	Oct.	1887	.37½
147	Ward Cons., s. l.	Colo.	2,000,000	200,000	10					20,000	Dec.	1889	.15
148	Yankee Girl	Colo.	2,500,000	250,000	10					1,275,000	July	1887	10
149	Yellow Jacket, g. s.	Nev.	12,000,000	120,000	100	5,50[illegible],000	Mar.	1889	.50	2,184,000	Aug.	1871	1.50
150	Webb City, l. z.	Mo.	55,000	11,000	5					4,400	July	1889	.10
151	Woodside	Utah								25,000	Oct	1889	.25
152	Young America	Cal.								175,000		1889	.10

NON-DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares No.	Par Value.	Assessments Total levied	Date & amount of last.		
1	Agassiz Cons., s. l.	Colo.	$2,500,000	50,000	$50	*			
2	Alleghany, s	Colo.	5,000,000	500,000	10				
3	Allouez, c	Mich	2,000,000	80,000	25	$737,000	Jan.	1890	7-
4	Alpha Con., g. s.	Nev.	3,000,000	30,000	100	568,750	July	1889	.50
5	Alta, s	Nev.	10,080,000	100,800	100	2,248,800	Sept	1888	.50
6	Amador, g	Cal.	400,000	200,000	2	*			
7	American Flag, s	Colo.	1,250,000	125,000	10	300,000	Jan	1877	
8	Amity, s	Colo.	250,000	250,000	1				
9	Anglo-Montana, Lt	Mon.	600,000	120,000	5				
10	Astoria, g	Cal.	200,000	100,000	2				
11	Barcelona, g	Nev.	5,000,000	200,000	25	*			
12	Bechtel Con., g	Cal.	10,000,000	100,000	100	173,500	Jan.	1883	.1
13	Belmont, s	Nev.	5,000,000	50,000	100	735,000	Apl.	1886	.1
14	Best & Belcher, g. s.	Nev.	10,080,000	100,800	100	2,180,590	Jan.	1890	.2
15	Big Pittsburg, s. l.	Colo.	20,000,000	200,000	100	*			
16	Bi-Metallic, s	Mon.	5,000,000	200,000	25	*			
17	Black Oak, g	Cal.	3,000,000	300,000	10	*			
18	Boston Con., g	Cal.	10,000,000	100,000	100	170,000	Nov	1883	.2
19	Bremen, s	N. M.	5,000,000	500,000	10	*			
20	Brownlow, s	Colo.	250,000	250,000	1				
21	Brunswick, g	Cal.	2,000,000	400,000	5	*			
22	Bullion, g. s.	Nev.	10,000,000	100,000	100	4,007,000	Aug.	1888	.50
23	Calaveras, g	Cal.	500,000	500,000	1	*			
24	Carisa, g	Wy.	500,000	100,000	5	*			
25	Carupano, g. s. l. c.	Ven.	200,000	100,000	2	*			
26	Cashier, g. s.	Colo.	500,000	250,000	2	*			
27	Charles Dickens, g. s.	Idah.	1,250,000	250,000	5	*			
28	Cherokee, g	Cal.	1,500,000	150,000	10				
29	Chollar, s	Nev.	11,200,000	112,000	100	1,484,000	July	1889	.50
30	Cleveland, t	Dak.	1,000,000	500,000	2	*			
31	Colchis	N. M.	500,000	50,000	10				
32	Commonwealth, s	Nev.	10,000,000	100,000	100	170,000	Nov	1888	.50
33	Comstock, g. s	Nev.	10,000,000	100,000	100	30,000	Mar.	1887	.15
34	Con. Imperial, g. s.	Nev.	5,000,000	50,000	100	1,802,500	Nov.	1889	.05
35	Con. Pacific, g	Cal.	6,000,000	60,000	100	192,000	Oct.	1889	.10
36	Cons. Silver, s	Mo.	2,500,000	250,000	10				
37	Crescent, s. l	Colo.	3,000,000	300,000	10	*			
38	Crocker, s	Ariz.	10,000,000	100,000	100	135,000	Jan.	1890	.1
39	Crowell, g	N. C.	500,000	500,000	1				
40	Dahlonega, g	Ga.	250,000	250,000	1	*			
41	Dandy, s	Colo.	5,000,000	500,000	10				
42	Decatur, s	Colo.	1,500,000	300,000	5	*			
43	Denver City, s. l	Colo.	5,000,000	500,000	10	*			
44	Denver Gold, g	Colo.	300,000	60,000	5				
45	Durango, g	Colo.	500,000	500,000	1	*			
46	Eastern Dev. Co., Lt.	N. S.	1,500,000	150,000	10	990,000	Mar.	1886	1.0
47	El Cristo, g. s	U.S.C	1,000,000	500,000	2	*			
48	El Dorado, g	Cal.	1,000,000	250,000	4				
49	El Talento, g	U.S.C	1,000,000	500,000	2				
50	Empire, s	Utah	10,000,000	100,000	100	*			
51	Eureka Tunnel, s. l.	Nev.	10,000,000	100,000	100				
52	Exchequer	Nev.	10,000,000	100,000	100	515,000	Apl.	1889	.25
53	Found Treasure, g. s.	Nev.	10,000,000	100,000	100	30,530	Apl.	1889	2½
54	Gogebic I. Syn., i	Wis.	5,600,000	200,000	25				
55	Gold Cup, s	Colo.	500,000	500,000	1	*			
56	Golden Era, s	Mon.	2,000,000	200,000	10	*			
57	Gold Placer, g	Colo.	5,000,000	200,000	25	229,314	Dec.	1885	.25
58	Gold Rock, g	Cal.	1,000,000	500,000	2	*			
59	Goodshaw, g	Cal.	10,000,000	100,000	100	*			
60	Grand Belt, c	Tex.	12,000,000	120,000	100				
61	Grand Duke	Colo.	800,000	80,000	10				
62	Great Remance, g	U.S.C	1,000,000	500,000	2	*			
63	Gregory-Bobtail, g	Colo.	550,000	550,000	1	*			
64	Gregory Con., g	Mon.	3,000,000	300,000	10				
65	Harlem M. & M. Co., g.	Cal.	1,000,000	200,000	5				
66	Head Cent. & Tr. s. g.	Ariz.	10,000,000	100,000	100				
67	Hector, g	Cal.	1,500,000	300,000	5	45,000	Jan.	1889	.15
68	Highland, c	Mich	500,000	25,000	20				
69	Hollywood	Cal.	200,000	100,000	2				
70	Hortense, s	Colo.	2,000,000	200,000	10				
71	Huron, c	Mich	1,000,000	40,000	25	280,000	May	1887	3.0
72	Iron Gold & Silver, s	N. M.	2,000,000	200,000	10	*			
73	Ironton, i	Wis.	1,000,000	40,000	25				
74	Iroquois, c	Mich	1,250,000	50,000	25				
75	J. D. Reymert	Ariz.	10,000,000	100,000	100				
76	Julia Cons., g. s.	Nev.	11,000,000	110,000	100	1,660,000	Jan.	1889	.10
77	Lacrosse, g	Colo.	1,000,000	100,000	10	*			
78	Lee Basin, s. l.	Colo.	5,000,000	500,000	10	*			
79	Mayflower Gravel	Cal.	1,000,000	100,000	10	585,000	Mar.	1890	.56
80	Medora, g	Dak.	250,000	250,000	1				
81	Mexican, g. s	Nev.	10,000,000	100,000	100	2,800,760	Dec.	1889	.25
82	Middle Bar, g	Cal.	400,000	200,000	2	*			
83	Mike & Starr, s. l.	Colo.	1,000,000	200,000	5	*			
84	Mollie Gibson	Colo.	2,000,000	100,000	2				
85	Monitor, g	Colo.	100,000	1,000,000	1	*			
86	Mutual Mg. & Sm.	W'sh	100,000	100,000	1	*			
87	Native, c	Mich	1,000,000	40,000	25				
88	Neath, g	Colo.	1,000,000	100,000	10				
89	Nevada Queen, s	Nev	10,000,000	100,000	100	250,000	Oct.	1889	.25
90	New Germany, g	N. S.	100,000	100,000	1	*			
91	New Pittsburg, s. l.	Colo.	2,000,000	200,000	10	*			
92	N. Commonw'h, s	Nev.	10,000,000	100,000	100	60,000	Apl.	1889	
93	North Standard, g	Cal.	10,000,000	100,000	100	20,000	Nov		
94	Noonday	Cal.	600,000	60,000	10	203,000	Dec	1881	10
95	Oneida Chief, g	Cal.	500,000	125,000	100	*			
96	Oriental & Miller, s.	Nev.	10,000,000	400,000	25				
97	Osceola, g	Nev.	5,000,000	500,000	10	*			
98	Overman, g. s.	Nev.	11,520,000	115,200	100	3,823,400	Dec.	1889	
99	Park, s	Utah	2,000,000	200,000	10				
100	Peer, s	Ariz.	10,000,000	100,000	100	155,000	Sept	1889	.10
101	Peerless, s	Ariz.	10,000,000	100,000	100	370,000	Mar.	1889	.25
102	Phœnix	Ariz.	500,000	500,000	1	*			
103	Phœnix, g. s.	Ark.	5,000,000	200,000	25	*			
104	Phœnix Lead, s. l.	Colo.	100,000	100,000	1	*			
105	Pilgrim, g	Cal.	600,000	300,000	2	*			
106	Potosi, s	Nev.	11,200,000	112,000	100	1,461,600	Sept	1889	.50
107	Proustite, s	Idah	250,000	250,000	1				
108	Puritan, s. g	Colo.	1,500,000	150,000	10	*			
109	Quincy	Colo.	3,000,000	300,000	10				
110	Rappahannock, g. s.	Va.	250,000	250,000	1	*			
111	Red Elephant, s	Colo.	500,000	500,000	1	*			
112	Ropes, g. s.	Mich	2,000,000	80,000	25	147,200	July	1887	.50
113	Russell, g	N. C.	1,500,000	300,000	5				
114	Sampson, g. s. l.	Utah	10,000,000	100,000	100	288,157	July	1888	1.00
115	San Sebastian, g	San. S	1,600,000	320,000	5	*			
116	Santa Fe, c	N. M.	5,000,000	500,000	10				
117	Santiago, g	U.S.C	400,000	200,000	2	*			
118	Security, s	Colo.	10,000,000	1,000,000	10				
119	Sheridan	N. M.	2,000,000	200,000	10				
120	Silver Queen, c	Ariz.	5,000,000	200,000	25	*			
121	South Bulwer, g	Cal.	10,000,000	100,000	100	100,000	May	1881	.25
122	South Hite	Cal.	10,000,000	100,000	100	195,000	Jan.	1883	.05
123	South Pacific	Cal.	500,000	100,000	5				
124	Stanislaus, g	Cal.	2,000,000	200,000	10				
125	St. Kevin, g. s.	Colo.	100,000	100,000	1	*			
126	St. Louis & Mex., s.	Mex.	5,000,000	500,000	10	*			
127	St. Louis & St. Elmo	Colo.	2,000,000	200,000	10				
128	St. L. & St. Felipe, g. s.	Mex.	1,500,000	150,000	10				
129	St. L. & Sonora, g. s.	Mex.	1,500,000	150,000	10				
130	St. Louis-Yavapai	Ariz.	3,000,000	300,000	10	*			
131	Sunday Lake, i	Mich	1,250,000	50,000	25				
132	Sullivan Cons. g.	Dak.	600,000	200,000	3	*			
133	Sutter Creek, g	Cal.	500,000	100,000	5				
134	Sutro Tunnel	Nev.	20,000,000	2,000,000	10				
135	Sylvanite, s	Colo.	5,000,000	500,000	10	*			.10
136	Taylor-Plumas, g	Cal.	1,000,000	200,000	5	10,000	Feb.	1888	.25
137	Tioga Cons., g	Cal.	10,000,000	100,000	10	295,000	May	1888	
138	Tornado Cons. g. s.	Nev.	100,000	100,000	1	*			
139	Tortilita, g. s.	Ariz	1,000,000	100,000	10	*			
140	Tuscarora, s	Nev.	10,000,000	500,000	20	160,000	Oct.	1889	.25
141	Union Con., g. s.	Nev.	10,000,000	100,000	100	3,280,000	Feb	1890	.20
142	Utah, s	Nev.	10,000,000	100,000	100	195,000	Mar.	1890	
143	Whale, s	Colo.	500,000	500,000	1				
144	Washington, c	Mich	1,000,000	40,000	25				
145	West Granite Mt., s.	Mon.	5,000,000	500,000	10	*			
146	Yuma, c. s. g	Ariz.	10,000,000	400,000	25				
147	Zelaya, g. s	C. A.	600,000	300,000	2	*			

G. Gold. S. Silver. L. Lead. C. Copper. * Non-assessable. † This company, as the Western, up to Dec. 10th, 1881, paid $1,400,000. ‡ Non-assessable for three years. § The Deadwood previously paid $275,000 in eleven dividends, and the Terra $75,000. Previous to the consolidation in Aug., 1884, the California had paid $31,320,000 in dividends, and the Con. Virginia, $40 [illegible] ** [illegible] of the Copper Queen with the Atlanta, Aug., 1885, the Copper Queen had paid $1,350,00 in dividends. ¶ 1,000,000.

NEW YORK MINING STOCKS QUOTATIONS.

DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Aug. 30.		Sept. 1		Sept. 2.		Sept. 3.		Sept 4		Sept. 5.		SALES.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Alice	....	.....	....	....	....	....	....	....	....	....	2.50	....	1 500
Argenta, Mich	....	.....	....	....	....	....	....	....	.15	....	....	....	200
Belcher, Nev	....	.....	....	....	....	....	....	....	3.30	....	....	....	200
Belle Isle	....	.....	....	....	....	....	....	....	1.05	....	1 05	....	300
Bodie Cons., Cal	....	.....	....	....	....	....	....	....	1.30	....	1.30	....	400
Bos. & Mont., Mont	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Breece, Colo	.30	.....	....	....	....	....	.30	....	....	....	.30	....	700
Bulwer, Cal	....	.....	....	....	....	....	....	....	....	....	1 90	....	100
Caledonia	....	.....	....	....	....	....	.48	....	.45	....	.45	....	1,100
Catalpa Colo	....	.....	....	....	.40	.39	.40	.39	.40	....	....	....	3,300
Chrysolite	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Colorado Central	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Confidence, Nev	....	.....	....	....	....	....	....	....	....	....	....	....	100
Cons. Cal. & Va., Nev	5.13	....	....	....	4 80	....	4.80	....	....	....	....	....	300
Crown Point, Nev	3.00	.....	....	....	....	....	2.80	....	....	....	....	....	200
Deadwood, Dak	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Dunkin, Colo	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Eureka Con	....	.....	....	....	....	....	....	....	4.75	....	....	....	100
Franklin	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Freeland, Colo	.39	.38	....	....	.39	.38	.39	.38	.38	....	.38	....	8,500
Gould & Curry, Nev	....	.....	....	....	....	....	....	....	2 45	....	2 40	....	30
Hale & Norcross, Nev	....	.....	....	....	....	....	....	....	2.75	....	2 65	....	200
Holyoke	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Homestake, Dak	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Horn-Silver, Ut	....	.....	....	....	....	....	....	....	3 55	3.50	3.60	....	1,100
Independence, Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Iron Silver	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Kearsarge	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Leadville C., Colo	.15	.14	....	....	.15	.14	.14	....	.15	.14	.14	....	24 300
Little Chief, Colo	.59	.58	....	....	.59	.58	.58	....	.50	....	.54	.49	7,200
Mono, Cal	....	.....	....	....	....	....	.65	.60	.60	....	.60	....	900
Moulton, Mont	....	.....	....	....	....	....	.60	....	.65	....	....	....	500
Navajo, Nev	....	.....	....	....	.40	....	.40	....	.45	....	....	....	500
N. Belle Isle, Nev	....	.....	....	....	....	....	....	....	....	....	1.15	....	100
Ontario, Ut	....	.....	....	....	46 50	....	45.00	....	....	....	....	....	95
Ophir, Nev	....	.....	....	....	....	....	....	....	5.25	....	4.85	....	400
Osceola, Mich	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Plymouth, Cal	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Quicksilver, Pref	....	.....	....	....	....	....	....	....	....	....	....	....	.....
" Com	9.13	9.00	....	....	9 00	....	8 88	....	8 88	....	8.88	....	1,350
Quincy, Mich	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Robinson Cons. Colo	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Savage	....	.....	....	....	....	....	....	....	4.10	....	4.00	....	300
Sierra Nevada, Nev	....	.....	....	....	....	....	3 0	....	....	....	2.85	....	503
Silver Cord	....	.....	....	....	....	....	....	....	....	....	.40	....	5 0
Silver King, Ariz	....	.....	....	....	.50	....	....	....	....	....	.50	....	1,400
Silver Mg. of L. V	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Small Hopes	....	.....	....	....	....	....	....	....	....	....	95	....	250
Standard	1.60	....	....	....	1.75	1 65	1.75	1.6	1 85	....	....	....	2,000
Stormont, Utah	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Tamarack, Mich	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Yellow Jacket, Nev	....	.....	....	....	3.35	....	....	....	3.50	....	3.40	....	600
	....	.....	....	....	....	....	....	....	....	....	....	....	100

NON-DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	Aug. 30.		Sept. 1		Sept. 2.		Sept. 3		Sept. 4		Sept. 5.		SALES.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Alpha, Nev	1.60	..	....	....	....	....	....	....	1.30	....	....	....	250
Alta, Nev	1.20	....	....	....	....	....	....	....	1.40	....	....	....	200
Andes, Nev	1.50	....	....	....	1.50	....	....	....	1 85	....	....	....	600
Amador, Cal	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Astoria, Cal	.09	.08	....	....	.08	....	.08	....	.08	....	.12	.08	22,300
Barcelona, Nev	....	.....	....	....	....	....	....	....	....	....	.30	....	100
Best & Belcher, Nev	....	.....	....	....	....	....	....	....	....	....	3 55	....	100
Bonanza King, Cal	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Brunswick, Cal	.13	.11	....	....	.13	.11	.13	.12	.13	.11	.12	.11	27,200
Bullion, Nev	3.60	....	....	....	3.70	....	3.50	....	....	....	....	....	400
Butte & Bost, Mont	....	.....	....	....	....	....	3.60	....	....	....	....	....	200
Castle Creek, Id	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Chollar, Nev	....	.....	....	....	....	....	....	....	....	....	3.40	....	100
Col. & Beaver, Id	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Commonw, Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Comstock T., Nev	.18	....	....	....	.18	....	.18	....	.18	....	....	....	1,000
" bonds	....	.....	....	....	....	....	....	....	....	....	.27	....	500
" scrip	....	.....	....	....	....	....	....	....	4.75	....	....	....	100
Con. Imperial, Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Crescent, Colo	....	.....	....	....	....	....	....	....	....	....	.45	....	200
El Cristo, Rep. of Col	....	.....	....	....	....	....	....	....	....	....	.21	....	1,200
Exchequer	1 05	....	....	....	....	....	....	....	....	....	.80	.75	1,200
Hollywood, Cal	....	.....	....	....	....	....	....	....	....	....	1.10	....	300
Huron, Mich	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Julia, Nev	.25	....	....	....	....	....	....	....	....	....	.35	....	1,000
Kingst'n & Pemb'ke	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Kossuth	....	.....	....	....	....	....	....	....	....	....	.10	....	700
Lacrosse, Colo	.09	.08	....	....	.09	.08	.08	....	.08	....	.08	.07	15,100
Lee Basin, Colo	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Mexican, Nev	....	.....	....	....	3 20	....	....	....	3.40	....	3.30	....	350
Minn Iron Co., Mich	....	.....	....	....	....	....	....	....	85.50	....	85.50	....	220
Monitor	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Mutual Sm. & M. Co	....	.....	....	....	....	....	....	....	1.4	....	1.40	....	400
Nevada Queen, Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
N. Com'nw'th, Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Occidental, Nev	....	.....	....	....	....	....	....	....	....	....	....	1.00	.90	1,300
Oriental & Mill, Nev	.07	....	....	....	....	....	.07	....	.07	....	.07	.06	5,500
Overman, Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Phenix of Ariz	1.20	....	....	....	....	....	....	1.10	1.05	1.15	1.10	1 17	1.10	1 15	....	5,100
Potosi, Nev	....	.....	....	....	....	....	....	....	....	....	....	7.00	....	6.80	....	150
Rappahann'k, Va	.08	.07	....	....	....	....	.07	....	.07	....	....	....	.07	....	6,600
Santa Fe, Ariz	....	.....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Santiago, U. S. C.	....	.....	....	....	....	....	....	....	....	....	....	....	....	....	.....
S. Sebastian	....	.....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Scorpion	.30	.....	....	....	....	....	....	....	....	....	....	....	....	....	100
Shoshone	....	.....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Silver Hill	....	.....	....	....	....	....	....	....	....	....	....	....	....	....	2,400
Silver Queen	....	.....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Sullivan Con., Dak	1 00	....	....	....	....	....	....	1.00	....	1 00	....	1.00	....	1,100
Sutro Tunnel, Nev	....	.....	....	....	....	....	....	....	....	....	....	....	....	....	.....
Sutter Creek, Cal	1 40	....	....	....	....	....	1.40	....	1.40	....	1.40	....	1.40	....	3,060
Union Cons., Nev	....	.....	....	....	....	....	....	....	....	....	3.15	....	3.00	....	600
Utah, Nev	....	.....	....	....	....	....	....	....	.80	....	....	....	....	....	100

*Ex. dividend. †Dealt in at the New York Stock Ex. Unlisted securities ‡Assessment paid. §Assessment unpaid ||Labor Day. Dividend shares sold, 58,445, Non-dividend, 98,270 shares sold, 93,270 Total New York, 155,715.

BOSTON MINING STOCK QUOTATIONS.

NAME OF COMPANY.	Aug 29.		Aug. 30.		Sept. 1.*		Sept 2.		Sept. 3.		Sept. 4.		SALES.
Atlantic, Mich	24 75	24 63	....	....	....	....	25.00	24 13	24 88	24 50	24 50	24 00	736
Bodie, Cal	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Bonanza Developm't	....	.....	....	....	....	....	.88	....	.88	....	....	....	200
Bost. & Mont., Mont	60 50	59 50	60.00	....	....	....	60.50	60.00	60 00	59 25	59 25	58.50	1,445
Breece, Colo	.50	.48	....	....	....	....	....	....	....	....	2.85	....	300
Calumet & Hecla, Mich	310	....	....	....	....	....	310	309	....	....	310	306	184
Catalpa, Colo	.46	.40	....	....	....	....	.46	.43	.45	.30	....	....	3,195
Central, Mich	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Chrysolite, Colo	....	.....	....	....	....	....	....	....	.40	....	....	....	150
Con. Cal. & Va., Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Dunkin, Colo	.60	.....	....	....	....	....	.63	.60	....	....	....	....	700
Eureka, Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Franklin, Mich	26 50	25.63	27.00	26.75	....	....	28.00	27.50	27.75	27.50	27.50	27.00	3,506
Honorine, Utah	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Horn Silver, Utah	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Kearsarge	20.00	19.50	....	....	....	....	20 13	20.00	20.00	19 50	20.00	19 75	865
Little Chief, Colo	.60	.....	....	....	....	....	.60	.58	.60	.58	....	....	2,300
Little Pittsburg, Colo	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Moulton	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Napa, Cal	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Ontario, Utah	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Osceola, Mich	45 88	45.75	46.00	....	....	....	46.00	....	....	....	45.00	43 13	1,635
Pewabic, Mich	....	.....	....	....	....	....	14 00	....	14 .0	....	....	....	610
Quincy, Mich	....	.....	....	....	....	....	....	....	130	....	....	....	9
Ridge, Mich	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Sierra Nev., Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Silver King	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Stormont, Utah	.09	.08	....	....	....	....	....	....	....	....	....	....	1,100
Tamarack, Mich	212	....	210	....	....	....	218	215	217	....	218	215	190

NAME OF COMPANY.	Aug. 29.		Aug 30.		Sept. 1*		Sept 2.		Sept. 3.		Sept. 4.		SALES.
Alloues, Mich	8 75	8 50	9 00	8.63	....	....	9 50	9.13	9 13	8.25	9.00	8 38	8,478
Arnold, Mich	1 61	....	....	....	....	....	....	....	....	....	....	....	200
Astec, Mich	.13	....	....	....	....	....	....	....	....	....	....	....	2.0
Brunswick, Cal	....	.....	....	....	....	....	....	....	....	....	.15	.13	1,500
Butte & Bost., Mont	23 0	21 50	22 75	....	....	....	23 00	22 75	22 75	22 00	22 00	21 50	1,210
Centennial, Mich	25.25	24 00	26.00	....	....	....	27 13	25.50	27 75	27.00	26 75	26.50	2,123
Comstock, T., Nev	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Copper Falls Mg	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Crescent, Colo	.18	.17	....	....	....	....	.19	....	.18	....	....	....	2,600
Dana, Mich	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Don Enrique, N. M.	....	.....	....	....	....	....	....	....	....	....	....	....	.....
El Cristo, S. A	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Hanover, Mich	....	.....	....	....	....	....	.23	....	....	....	....	....	200
Humboldt, Mich	.58	.55	....	....	....	....	.58	....	.58	....	....	....	1,100
Hungarian, Mich	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Huron, Mich	7 75	....	....	....	....	....	8.13	7.88	....	....	7 88	7.63	800
Mesnard, Mich	....	.....	....	....	....	....	....	....	....	....	....	....	.....
National, Mich	2.25	....	....	....	....	....	2.75	2.25	2 88	2.63	....	....	1,900
Native, Mich	.23	....	....	....	....	....	.24	....	.22	....	....	....	1,000
Oriental & M., Nev	.06	....	....	....	....	....	....	....	....	....	....	....	1,200
Phoenix	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Pontiac	....	.....	....	....	....	....	.43	....	....	....	....	....	200
Rappahannock, Va	.07	....	....	....	....	....	....	....	....	....	....	....	200
Santa Fe, N. Mex	.63	.55	.60	....	....	....	.63	.60	.64	.63	.60	....	3,825
Shoshone, Idaho	....	.....	....	....	....	....	....	....	....	....	....	....	.....
South Side, Mich	....	.....	....	....	....	....	....	....	....	....	....	....	.....
Star	....	.....	....	....	....	....	....	....	.35	....	....	....	100
Tecumseh Mg. Co	....	.....	....	....	....	....	4.50	....	4.50	....	....	....	450
Washington, Mich	....	.....	....	....	....	....	....	....	....	....	....	....	.....

*Labor Day. Boston: Dividend shares sold, 16,425. Non-dividend shares sold, 28,595 Total Boston, 45,020.

COAL STOCKS.

NAME OF COMPANY.	Par val. of sh'rs.	Aug. 30.		Sept. 1.*		Sept. 2.		Sept. 3.		Sept. 4.		Sept. 5.		Sales.
		H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
American Coal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cambria Iron	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cameron Coal & Iron Co	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Ches. & O. RR	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chic. & Ind. Coal RR	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do. pref	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Col., C. & I	100	50½	.....	.....	.....	51¼	50¾	50½	.....	51¼	49¾	50	49¼	1,450
Col. & Hocking C. I	100	28½	.....	.....	.....	29¼	28½	29	28⅞	28⅛	27¾	28¾	28⅝	2,725
Consolidation Coal	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Del. & H. C	100	.....	.....	.....	.....	.....	.....	163	162	162	.....	.....	.....	525
D., L. & W. RR	50	145	144¾	.....	.....	145½	144⅞	144⅛	144½	144¼	143¼	143¾	143¼	24,865
Hocking Valley	100	32	31⅝	.....	.....	32¾	32	32⅛	31⅞	32	31	31	30½	7,355
Hunt. & Broad Top	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do. pref	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Illinois Coal & Coke Co	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Lehigh C. & N	50	.....	.....	.....	.....	.....	.....	51⅞	51⅝	51⅞	.....	.....	.....	259
Lehigh Valley RR	50	52⅛	52⅝	.....	.....	52⅞	.....	52⅛	52¾	52⅝	52½	.....	.....	455
Lehigh & Wilkesb. Coal	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Mahoning Coal	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Marshall Con. Coal	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Maryland Coal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Morris & Essex	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
New Central Coal	50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
N. J. C. R. R.	100	121¾	.....	.....	.....	122	.....	.....	.....	121	120	120½	.....	545
N. Y. & S. Coal	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
N. Y., Susq. & Western	100	.....	.....	.....	.....	.....	.....	7	6¾	.....	.....	.....	.....	105
Do. pref	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	30¾	.....	56
N. Y. & Perry C. & I	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Norfolk & Western R.R.	50	.....	.....	.....	.....	.....	.....	20	.....	.....	.....	.....	.....	100
Do. pref	50	.....	.....	.....	.....	64¼	64	.....	.....	63⅞	.....	.....	.....	1,000
Penn. Coal	50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Penn. RR	50	53⅜	53¼	.....	.....	53⅜	53	53¼	53⅛	53¼	52¾	.....	.....	2,546
*Ph. & R. RR	.....	45	42⅝	.....	.....	43⅛	42⅝	43	42⅜	42⅛	42	42⅜	42⅛	**22,978
Sunday Creek Coal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Do. pref	100	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tennessee C. & I. Co	.....	.....	.....	.....	.....	.....	.....	.....	.....	45½	44¼	45¼	.....	531
Do. pref	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Westmoreland Coal	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

*Labor Day. **Sales in New York, 11,240; in Philadelphia, 11,738. Total sales, 65,495.

San Francisco Mining Stock Quotations.

COMPANY	CLOSING QUOTATIONS.					
	Aug. 29	Aug. 30.	Sept. 1.	Sept. 2.	Sept. 3.	Sept. 4.
Alpha	....	....	....	....	....	....
Alta	1.10	1.10	1.00	1.05	1.00	1.10
Belcher	....	....	....	....	....	....
Belle Isle	1.05	1.05	1.05	1.05	.95	.95
Best & Bel	3.75	3.50	3.25	3.45	3.60	3.40
Bodie	1.25	1.38	1.30	1.30	1.20	1.20
Bulwer	.25	.25	.25	.25	.25	.25
Chollar	3.30	3.30	3.05	3.15	3.30	3.10
C'm'weal'h	3.10	3.05	....	....	2.90	....
Con. C. & V	5.00	4.75	4 65	4.70	4.90	4.75
Con. Pac	....	....	....	....	....	....
Crown Pt	2.85	2.70	2.65	2.60	2.80	2.75
Eureka C	4.50	4.50	....	....	....	....
Gould & C	2.40	2.35	2.25	2.25	2.30	2.25
Grd. Prize	....	....	....	....	....	....
Hale & N	2.70	2.60	2.45	2.35	2.60	2.50
M. White	....	....	....	....	....	....
Mexican	3.40	3.25	3.15	3.20	....	3.15
Mono	.50	.50	.50	.50	.50	.50
Mt. Diablo	2.50	2.60	2.70	2.75	2.50	3.00
Navajo	.40	.40	.35	.35	.35	....
Nev. Queen	.35	.80	.70	.75	.75	....
N. Belle I.	1.05	1.05	1.05	1.00	....	1.00
Occidental	....	....	....	....	....	....
Ophir	5.13	4.90	4.80	5.25	5.25	4.80
Potosi	6.38	6.00	6.13	6.00	6.75	6.25
Savage	4.00	3.90	3.75	3.80	3 90	3.80
Sierra Nev	2.90	3.00	2.75	2.85	2.95	2.70
Union Con.	3.00	2.90	2.85	2.90	3.00	2.85
Utah	.80	.80	.75	.75	.80	.70
Yellow Jkt	3.35	3.30	3.30	3.40	3.40	3.30

STOCK MARKET QUOTATIONS.

Baltimore, Md.

COMPANY.	Bid. L. H.	Asked. L. H.
Atlantic Coal	....	$1.50
Balt. & N. C.	04	@10
Big Vein Coal	....	1.30
Conrad Hill	....	10
Cons. Coal	26	28
Diamond Tunnel	25	....
George's Crk. C.	1.10	1.18
Lake Chrome	....	....
Maryland & Charlotte	....	....
North State	10	....
Silver Valley	40@45	55@60

Prices bid and asked, lowest and highest, during the week ending Sept. 4.

Birmingham, Ala.

COMPANY.	Bid. L. H.	Asked L. H.
Ala. Coal & I. Co.	....	$100
Ala Conn. C. & C. Co.	....	$23
Ala. R. Mill Co.	$60	....
*Alice Furnace	$103	....
Anna Howe G. Mg. Co.	$⅜	$⅞
Bess'mer Land.	....	$ 95
Bir. Mg. & Mfg.	$40	....
Cahaba Coal Mg. Co.	....	$70
Camille Gold Mg. Co.	$½	....
De Bardeleben C. & I. Co.	....	$76
Decat. L. Imp.	$13½	$14¼
Decatur Min. L.	....	$22¾
Ensley Land	....	$16
*Eureka	**$99	$102½
Florence L. & Mg. Co.	....	$22½
Gadsen Land	$¾	$5
Hecla Coal Co.	$10	....
Hen. S. & M. Co	$80	....
Jagger-Townl'y C. & C. Co.	$8½	$10
Mag-Ellen	$100	....
Mary Lee C. & R. Co.	$20	....
Sheffield C. & I. Co.	$55	....
Sloss I. & S.	....	$45
†Sloss I. & S.	....	$91¼
††Sloss I. & S.	....	$65
Tuscaloose C. I. & L. Co.	$22½	....
Tenn. C. & I. Co.	....	$45½
" pref.	$100	$105
Vulcan C. & C. Co.	$5	....
Woodstock I. Co.	....	$35

Prices, highest and lowest, bid and asked during week ending Sept. 1.
* Bonds. † First mortgage. †† Second mortgage. ** Without interest.

Pittsburg, Pa. Sept. 3.

COMPANY.	B.	A.	Closing
Allegheny Gas Co.	....	....	....
Bridgewater Gas Co.	$45.00	$65.00	$50.00
Cbartiers Val. Gas	....	41.00	41.00
Columbia Oil Co.	2.00	3.50	2.88
Consolidated Gas Co.	....	....	....
East End E. Light Co.	....	....	....
East End Gas Co	....	....	....
Forest Oil	....	....	....
Hazlewood Oil Co.	50.00	51.50	50.50
La Noria Mining	.17	.19	.18
Luster Mg. Co.	*26.75	*29.25	*28.75
Mansfield C. & C. Co.	....	....	....
Manufacturers Gas Co.	....	18.00	18.00
Nat. Gas Co. of W. Va	....	....	....
N. Y. & Clev. Gas Coal.	31.50	38.00	35.50
Ohio Valley Gas	....	....	....
Pennsylvania Gas	14.00	15.25	14.25
People's Natural Gas.	....	....	....
People's N. G. & P. Co.	15.25	16.00	15.25
Philadelphia Co.	*29.88	*30.25	*30.13
Pine Run Gas Co.	....	....	....
Pittsburg Gas	....	....	1.00
Silverton Mg. Co.	1.00	....	....
South Side Gas	....	....	....
Tuna Oil Co.	....	....	....
Union Gas	....	....	....
Washington Oil Co.	....	....	....
W'house Brake Co.	70.00	75.00	72.00
W'house A. B. Co.	115.25	120.90	116.00
W'house E. Light.	*38.25	*40.00	*38.50
W'moreland & Camb.	....	....	....
Wheeling Gas	....	23.00	23.00
Yankee Girl Mg	....	....	....

* Actual selling price.

Prices bid and asked and sales during week ending Sept. 3:

Luster Mining	10 shs.	$27¼@29
Philadelphia Gas Co.	180 "	$30@$30¼
West. Electric	30 "	@$38⅝

St. Louis. Sept, 3.

CLOSING PRICES.

COMPANY.	Bid.	Asked.
Adams, Colo.	$1.65	....
American & Nettie	1.52½	$1.65
Aztec, N. Mex.	....	....
Bi-Metallic	....	....
Central Silver	.17½	.18¾
Cleveland, Colo.	.04½	.05½
Cleveland & An'r.	.15	.20
Cœur d'Alene	.85	.95
Elizabeth	....	....
Gold King	.03½	....
Granite Mountain, Mont.	46.00	46.50
Hope	....	....
I. X. L. Colo.	....	....
La Union	.08½	.05½
Little Albert	....	.40
Montrose Placer, Colo.	.53¾	.62½
Major Budd, Mont.	.11	.12½
Mexican Imp.	....	.15
Mickey Breen.	1.22½	1.27½
Mountain Key	.51¼	....
Nellie	.26¼	....
Pat Murphy, Colo.	.15½	.16¼
Puzzle	....	....
Richmond Hill	.43¾	.45
Samoa	....	....
Silver Age, Colo.	1.55	1 60
Small Hopes, Colo.	.85	.91¼
Tourtelotte	.03½	.04
West Granite, Mont.	....	1.00
Wire Patch	.15	....
Yuma, Ariz.	.50	.53¾

Trust Stocks. Sept. 5.

The following closing quotations are reported to-day by C. I. Hudson & Co., members of New York Stock Exchange:

CERTIFICATES.

Am. Cotton Oil. Tr. Repts.	$26½@$27
Cattle Trust	13 @ 15¼
Distillers' & Cattle Feeders'.	45 @ 45⅝
Linseed Oil	49 @ 51
National Lead	21½@ 21⅝
Standard Oil	165 @167
Sugar Refineries.	80¾@ 80⅞

Sales at the New York Stock Exchange week ending Sept. 5:

	Sales.	Price H.	Price L.
*American Cotton Oil	10,525	27⅜	24
National Lead	27,744	22⅝	21½
Sugar	97,440	82¼	78½

* Trust receipts.

Foreign Quotations.

London.

COMPANY.	Highest.	Lowe-
Almada, Mex.	1s. 3d.	9d.
Amador, Cal.	18s. 9d.	13s. 3d.
Appalachian, N. C.	9d.	3d.
Canadian Phos. Canada.	£⅛	£¼
Carlisle, N. Mex	3s 6d.	3s.
Colorado, Colo.	£¼	£⅛
Comstock, Utah	....	....
Cordova	....	....
Cons. Esmeralda, Nev.	2s. 6d.	2s.
Denver Gold, Colo.	6d.	....
Dickens Custer. Idaho.	1s. 6d.	1s.
East Arevalo, Idaho	2s.	1s
El Callao, Venezuela	£2⅜	£2⅛
Elmore, Idaho	2s.	1s. 6d.
Empire, Mont	1s. 3d.	9d.
Garfield, Nev.	1s 6d.	6d.
Jay Hawk Mont	1s.	6d.
Josephine, Cal	1s. 6d.	6d.
Kobinoor, Colo.	2s. 3d	1s. 9d.
La Luz, Mex.	1s. 9d.	1s. 3d.
La Valera, Mexico	17s. 6d.	12s. 6d.
Montana Lt., Mont	20s.	19s.
New California, Colo	6s. 6d.	5s. 6d.
New Consolidated	9d.	3d.
New Eberbardt, Nev.	1s. 3d.	9d.
New Emma, S., Utah	4s. 6d.	3s. 6d.
New Flagstaff, Utah	3s. 3d.	2s. 9d.
Newfoundland, N. F.	3s. 6d.	3s.
N Gold Hill, N. C.	1s	9d.
New Guston, Colo.	£4¼	£4¼
New Hoover Hill, N. C.	1s. 3d.	9d.
Old Lout, Colo.	£11-16	£9-16
Palmarejo, Mex	17s 3d.	14s. 9d.
Pinos Altos, Mex	£9-16	£⅛
Pittsburg Cons., Nev.	£⅜	£5-16
Richmond Con., Nev.	£⅛	£⅜
Ruby & Dunderberg, Nev	1s. 6d.	1s.
Sam Cbristan, N. C.	1s.	6d.
Sierra Buttes. Cal.	3s. 6d.	2s. 6d.
" Plumas Eur.	£13-16	£11-16
Sonora Mex	1s.	6d.
United Mexican, Mex.	7s.	6s.
U. S. Placer, Colo.	1s. 3d.	9d.
Viola Lt., Idaho	1s. 3d.	9d.

Highest and lowest prices during the week ending August 23.

Paris. August 21.

	Francs.
Belmez, Spain	735.00
Callao, Venez.	62 50
Callao Bis, Venez.	6 50
East Oregon, Ore.	7.75
Forest Hill Divide, Cal	100.00
Golden River, Cal	350.50
" " parts	30.00
Lexington, Mout.	121 25
" parts	3 75
Rio Tinto, Spain	595 00
Tharsis, Spain	150.00

CURRENT PRICES.

These quotations are for wholesale lots in New York.

CHEMICALS AND MINERALS.

Acid—Acetic, ₰ 100 lbs. $1.75@$2.00
Muriatic, 18°, ₰ 100 lbs. 1.00@1.50
Muriatic, 20° ₰ 100 lbs. 1.12½@1 75
Muriatic, 22° ₰ 100 lbs. 1.37½@2.00
Nitric, 36°, ₰ 100 lbs 4.00@4.20
Nitric, 42°, ₰ 100 lbs 6.00@6.25
Oxalic, ₰ 100 lbs .6.50@10.50
Sulpburic, 60°, ₰ 100 lbs. 80@1.25
Sulpburic, 66°, ₰ 100 lbs. 1.00@1.75

Alkali—
Refined, 48 p. c @2¾
Refined. 58° 2¾@3
Alum—Lump, ₰ lb 1¾
Ground, ₰ lb. 1¾@2
Lump ₰ ton, Liverpool £4 17 6
Sulpbate of Alumina, ₰ ton £4 10
Aqua Ammonia—18°, ₰ lb. 4¼
20°, ₰ lb. 6
22°, ₰ lb. 6@7
26°, ₰ lb. 10@11
Ammonia—Sul., ₰ 100 lbs. 3.15
Carb, per lb. 7½@8¼
Arsenic—White, powdered, ₰ lb. 3¼@3½
Red. ₰ lb 5¾@6¾
White, at Plymouth, ₰ ton. £12 2 6d.
Asbestos—Am., p. ton $50@$300
Italian, p. ton, c. i. f. L'pool. £18@£66
Asphaltum—P. ton 13.00
Prime Cuban. ₰ lb. 4½@5½c
Hard Cuban, ₰ ton $28.00
Trinidad, refined, ₰ ton $30.00
Barytes—Sulph., Am. prime white 17@20
Sulph., foreign, floated, p. ton 19½@21.50
Sulpb., off color, p. ton 11.50@14.00
Carb., lump, f.o.b. L'pool, ton £6
No. 1, casks, Runcorn " " £4 10 0
No 2, bags, Runcorn " " 3 15 0
Bleach—Over 35 p.c., ₰ lb. 2@2½
Borax—Refined, ₰ lb. 9½@9⅝
Concentrated 7¾@8⅜
Refined at Liverpool, ₰ ton £29
Brimstone—*See Sulphur.*
Bromine—₰ lb 37@38
Chalk—₰ ton 1.75
Precipitated, ₰ lb. 4¾@5
China Clay—English, ₰ ton 13.50@18.50
Southern, ₰ ton 13.50
Chrome Yellow—₰ lb 10@2
Cobalt—Oxide, ₰ lb. 2·60@2·90
Copper—Sulph. English Wks, ton £20@£21
Copperas—Common, ₰ 100 lbs. 70
Best, ₰ 100 lbs. 75@1.00
Liverpool, ₰ ton, in casks £1 15s.
Cream of Tartar—Am. 99⅝ 22½
Powdered, 99 p. c. 23
Emery—Grain, ₰ lb 4½@5
Flour, ₰ lb 2¾@3½
Feldspar—Ground, ₰ ton. 15.00
Fuller's Earth—Lump, ₰ bbl. .90@95
Powdered, ₰ lb. 1⅝@2
Gypsum—Calcined, ₰ bbl. 1.25@1.50
Iodine—Resublimed 2.75
Kainit—₰ ton $8.25@$9.75
Kaolin—*See China Clay.*
Lead—Red, ₰ lb. 6¾@9
White, American, in oil, ₰ lb. 6¾@7½
White, English, ₰ lb 8½@8¾
Acetate, or sugar of, white 12@13
Lime Acetate—Amer. Brown. .95@1.00
" Gray 1.75@1.87½
Litharge—Powdered, ₰ lb. 6½@6¾
English flake, ₰ lb. 9@9½
Magnesite—Greek, ₰ ton. 20.00
Manganese—Crude, per unit. .23@.28
Oxide, ground, per lb 2½@6½
Mercurie-Chloride—(*Corrosive Sublimate*) ₰ lb. 70@72
Mineral Wool—₰ lb. 2
Mica—In sheets according to size.
1st quality, ₰ lb. 25@$6.00
Ochre—Yellow, "B. F.," ₰ ton, f.o.b. mill 30.00
"J. F. L. S.," ₰ lb. ex dock 2½
Phosphate Rock—S. Carolina, per ton, o. b. Charleston. 5.75@7.00
Ground, ex vessel New York. 11.00
Canadian Apatite, lump, f. o. b. at Montreal, ₰ ton 16.00
Phosphorus—₰ lb. 70@75
Plumbago—Ceylon, ₰ lb. 4@5
American, ₰ lb. 5@7
Potassium—Cyanide, ₰ lb. 39@40
Bromide, ₰ lb. 33
Chlorate, ₰ lb. 13@10
Carb. ₰ lb. 4.70@5.54
Caustic, ₰ lb. 7½@8
Iodide. 2.65@2.70
Muriate, ₰ 100 lbs. 1.77½@1.80
Nitrate, refined, ₰ lb. 6@8
Bichromate, ₰ lb. 10½@11
Sulphate, ₰ 100 lbs. 2.30@2 35
Yellow Prussiate, ₰ lb. 17½@18
Red Prussiate, ₰ lb. 42@43
Pumice Stone—Select lumps, lb. 3¼
Original cks., ₰ lb. 1¾@2
Powdered, pure, ₰ lb. 2¼@2½
Pyrites—Non-cupreous, p. units 10d
Quartz—Ground, ₰ ton. 14.00@16.00
Rotten Stone—Powdered, ₰ lb. 3¼@3½
Lump, ₰ lb. 6@10
Salt—Liverpool, ground ₰ sack. 75@80
Turk's Island, ₰ bush 25@28
Salt Cake—₰ lb. 60@62½
Saltpeter—Crude, ₰ lb. 5¼@5½
Refined. ₰ lb. 6@8
Soda Ash—Carb., 48 ⅌ 100 lb. 2¾
Caustic, 48 ⅌ 2¼@2½
Soda Caustic, 60⅌ 3.25@3.35
" 70⅌ 3.00
" 74–76⅌ 2¾
Sal. English, ₰ 100 lbs. 1⅛@1⅜
Sal, American, ₰ 100 lbs .90
Nitrate. 100 lbs. 1.70
Strontium—Nitrate ₰ lb. 9@9½
Sulphur—Roll, ₰ lb. 1¾
Flour, ₰ lb. 20
Crude Brimstone, 2s., ₰ ton. 19 00@19 29
Crude Brimstone, 3ds, ₰ ton. 18.50@18.70
Talc—Ground French, ₰ lb. 1¼@1½
Domestic, ₰ ton $18@$20
c. i. f. Liverpool, ₰ ton £4 5
Vermillion—American, ₰ lb. 61
English, ₰ lb. 82@85
Vitriol—(Blue), Ordinary, ₰ lb. 5½@5¾
Extra, ₰ lb. 7
Zinc Oxide—Am., Dry, ₰ lb. 4½
Antwerp, Red Seal, ₰ lb. 6@6½
Paris, Red Seal, ₰ lb. 6½@7
* Spot.

THE RARER METALS.

Aluminum—(Metallic), ₰ lb. $2.@$2.50
Sheet, per lb. 2.50
Arsenic—(Metallic), per lb. .40
Barium—(Metallic), per gram. $4.00
Bismuth—(Metallic), per lb. 2.75
Cadmium—(Metallic), per lb. 1.00
Calcium—(Metallic), per gram. 10.00
Cerium—(Metallic), per gram. 7.50
Chromium—(Metallic), per gram 1.00
Cobalt—(Metallic), per lb. 6.00
Didymium—(Metallic), per gram 9.00
Erbium—(Metallic), per gram. 7.50
Gallium—(Metallic), per gram. 140.00
Glucinum—(Metallic) per gram. 12.00
Indium—(Metallic), per gram. 9.00
Iridium—(Metallic), per oz. 7.00
Lanthanum—(Metallic), per gr. 10.00
Lithium—(Metallic), per gram. 10.00
Magnesium—Per lb. 4.50
Manganese—Metallic, per lb. 1.10
Chem. pure, per oz. 10.00
Molybdenum—(Metallic), per gm. .50
Niobium—(Metallic), per gram. 5.00
Osmium—(Metallic), per oz. 65.00
Palladium—(Metallic), per oz. 35.00
Platinum—(Metallic), per oz. 15.00
Potassium—Metallic, per lb. 28.00
Rhodium—(Metallic), per gram. 5.00
Ruthenium—(Metallic), per gm. 5.50
Rubidium—(Metallic), per gram 2.00
Selenium—(Metallic), per oz. 1.80
Sodium—(Metallic) per lb. 2.50
Strontium (Metallic) per gm. .60
Tantallum—(Metallic) per gram 9.00
Telurium—(Metallic) per lb. 5.00
Thallium—(Metallic) per gram. .25
Titanium—(Metallic) per gram. 2.25
Thorium—(Metallic) per gram. 17.00
Tungsten—(Metallic) per oz. 2.25
Uranium—(Metallic), per lb. 5.00
Vanadium—(Metallic), per gm. 22.00
Yttrium—(Metallic), per gram. 9.00
Zirconium—(Metallic), per oz. 65.00

BUILDING MATERIAL.

Bricks—Pale, ₰ 1,000 3 00@3.25
Jerseys, ₰ 1,000 4.50@5.00
Up Rivers, ₰ 1000 5.00@5.50
Haverstraw seconds, ₰ 1000. 5.25@5,50
Haverstraw firsts ₰ 1,000. 5.50@6.00
Fronts, nominal, ₰ 1000.
Croton 14.00@16.00
Wilmington 20.00@21.00
Philadelphia @22.00
Trenton @22.00
Baltimore
Building Stone—Amherst freestone, ₰ cu. ft. 95@1.00
Brownstone, ₰ cu. ft. 1.00@1.35
Granite, rough, ₰ cu.ft. 45@1.25
Granite, Scotch ₰ cu ft. 1.00@1.15
Cement—Rosendale, ₰ bbl .85@1.10
Portland, American, ₰ bbl. 2 15@2.45
Portland, foreign, ₰ bbl. 2.40@2.50
Portland, " special brands. 2.60@2.85
Roman, ₰ bbl. 2.75@2.90
Keene's coarse, ₰ bbl. 4.50@5.50
Keene's fine, ₰ bbl. 7.25@8.50
Slate—Purple and green roofing. ₰ 100 ft. 7.00@7.50
Red roofing, ₰ 100 sq. ft. 12.00
Black, roofing, ₰ 100 sq. ft. 4.25@5.50
Lime—Rockland, common ₰ bbl. 1.00
Rockland, finishing, ₰ bbl. 1.20
St. John, com. and finish, ₰ bbl. .90@.95
Glens Falls, com. and fin., ₰ bbl .85@1.10
Labor—Ordinary, ₰ day 1.50@2.00
Masons, ₰ day 4.00
Plasterers, ₰ day 4.00
Carpenters, ₰ day 3.50
Plumbers, ₰ day 3.50
Painters, ₰ day 2.50@3.50
Stonesetters, ₰ day 3.50@4.00
Tilelayers, ₰ day 3.50@4.50
Bricklayers, ₰ day 4 00

THE ENGINEERING AND MINING JOURNAL will thank any one who will indicate any other articles which might with advantage be quoted in these tables or who will correct any errors which may be found in these quotations.

NEW YORK PRICES CURRENT. SEPT. 6, 1890.

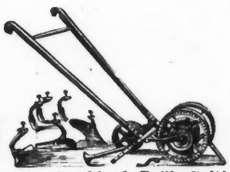
Discounts are for Export Only.

In the interest of the extension of the markets for American manufactures the ENGINEERING AND MINING JOURNAL has secured the services of gentlemen thoroughly acquainted with the export trade and with foreign markets, and it offers its services to foreign buyers who may desire information concerning any article whatever of American manufacture. No charge will be made for these services, either directly or indirectly through commissions on goods purchased. The proprietors of the ENGINEERING AND MINING JOURNAL are neither commission merchants nor exporters, but they have many sources of information, both at home and in foreign countries, and place these at the service of manufacturers and exporters here and of importers and consumers in other countries.

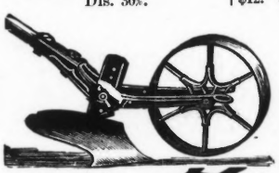
The name and address of the manufacturers of goods quoted in this list can be obtained from us.

Agricultural Implements.

"Planet, Jr." No. 2 Seed Drill, $9. Dis. 30%.



Combined Drill Cultivator Rake, Plow, etc., $12. Dis. 30%.

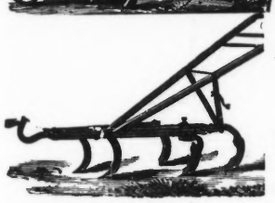


"Fire Fly" single-wheel Hoe, Cultivator and Plow, $5.

"Fire Fly" Hand Plow, $2.50.

30 % discount, f.o.b. New York.

All Steel Horse Hoe and Cultivator combined, with wheel, $6 75-100 net.



All Steel Plain Cultivator.

With wheel, $4.50; without wheel, 60c.

HAY FORKS.

Gold Finish, Patent Overcaps.

Three Tine Forks.

No.	Tine.	Handles.		Per doz.
30	10 in.	4½ ft.	Boy's	$7.75
32	12 "	4 to 6 ft.		9.00
32 S	12 "	"	Strapped	10.50
32 B	12 "	"	Bent	9.50
32 B S	12 "	"	Bent & St'pd	11.00
33	12 "	"		9.50
33 S	13 "	"	Strapped	11.00
33 B	13 "	"	Bent	10 00
33 B S	13 "	"	Bent & St'pd	11.50
34	14 "	"		10.25
34 B	14 "	"	Bent	10.75
35	15 "	"		11.25
35 B	15 "	"	Bent	11.75
42 B	12 "	"	Bent	12.50
42 B S	12 "	"	Bent & St'pd	14.00

Manure Forks, Solid Steel Shanks, Gold Bronze Finish, Patent Overcaps.

No. 44, oval, 4 tine, 12 in. tine, 4 ft. handle, plain ferrules, $12.50 per doz.

No. 44 S, oval, 4 tine, 12 in. tine, 4 ft. handle, strapped ferrules, $14.

No. 44½, oval, 4 tine, 12 in. tine, 4½ ft. handle, plain ferrules, $12.50.

No. 44½ S, oval, 4 tine, 12 ft. tine, 4½ ft. handle, strapped ferrules, $14.

No. 54, oval, 5 tine, 13 in. tine, 4 ft. handle, plain ferrules, $19.50.

No. 54 S, oval, 5 tine, 13 in. tine, 4 ft. handle, strapped ferrules, $21.

No 64, oval, 6 tine, 13 in. tine, 4. ft. handle, plain ferrules, $22.50.

No. 64 S, oval, 6 tine 13 in. tine, 4 ft. handle. strapped ferrules, $24.

PLOWS.

Reversible Oneonta Clipper.

16. Oneonta Clipper, Reversible, Iron beam Cutter $14
" Oneonta Clipper, Reversible, Iron Wheel and Cutter 15
18. Oneonta Clipper, Reversible, Iron Beam Cutter 15
" Oneonta Clipper, Reversible, Iron Beam, Wheel and Cutter 16
17. Hard Metal, Reversible, Iron Beam Cutter 1

17. Hard Metal, Reversible, Iron Beam, Wheel and Jointer 17
19. Hard Metal, Reversible, Wood Beam Cutter 16
" " " " " " Wheel and Jointer 17
20. Steel Mould Board, Reversible, Wood Beam Cutter 15
" " " " " " Wheel and Cutter 16

Iron Beam Plows.

Two-horse Sod and Stony Land .... 8.50 plain.
Curtis's Sod Two horse ..... 11.50 "
" " " " ..... 13.00 cutter.
" " " " ..... 14.25 wheel & cutter.

Subsoil Plows.

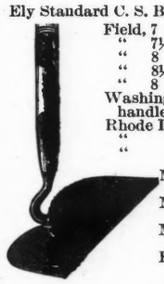
Two-horse 9.50 Draft Rod.
" " 11.00 Wheel and Draft Rod.

Hitchcock's Potato Digger and Shovel Plow.

Improved adjustable handle shovel plow 7.00
Hitchcock's Potato Digger 8.00
" " " and shovel plow 10.50
Dis. 30%.

HOES.

Ely Standard C. S. Blade Solid Shank Hoes.

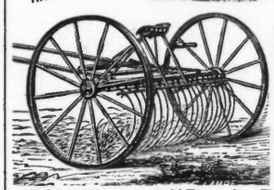


Field, 7 × 5 in., selected handles .. $8.00
" 7½ × 4½ " " " .. 8.00
" 8 × 4¾ " " " .. 8.00
" 8½ × 4½ " " " .. 8.00
" 8 × 5 " " " .. 8.00
Washington County Pattern, spring handles 10.00
Rhode Island, 7 to 9 in., spr'g handles 9.00
" " 9½ in. " " 9.25
" " 10 " " " 9.50
Meadow, 9 × 4 in., selected handles 8.00
Meadow, 9½ × 3½ in., " handles 8.25
Meadow, 10 × 3½ in., " handles 8.50
Field, 7½ × 4½ in., selected handles 8.00
Dis., 60%.

RAKES.

The S. R. N. Improved.

22 Teeth Rake, $32.00
26 " " 34.00
25% dis.



Chieftain Lock Lever
No. 1 ..... $30.00
No. 2 ..... 30.00
No. 5 ..... 29.00
Iron wheels, $2 extra. With Pole, Double Tree and Neck Yoke, $2 extra. 22 cubic feet packed, 400 lbs. gro., 225 lbs. net.

Golden Farmer Self-Dumping Rake, $37.00; 22 cu. ft., 430 lbs. gro., 250 lbs. net.

Chieftain Hay Tedders, $59.00; 700 lbs. gro., 450 lbs. net.

Potato Diggers, $7.00; 100 lbs. gro., 60 lbs. net; dis., 40% f.o.b. ship New York or Boston.

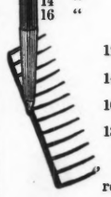
RAKES (GARDEN).

Braced steel garden rakes. Per doz
8 teeth $8.00
10 " 9.00
12 " 10.00
14 " 11.00
16 " 12.00

Braced malleable garden rakes.
10 teeth $5.50
12 " 6.00
14 " 6.50
16 " 7.00

Ten-Teeth Malleable Garden.	Plain.	Braced.	Steel Garden. Plain.	Braced.
10-Teeth	$5.50	$6.00	$9.00	$10.50
12 "	6.00	6.50	10.00	11.50
14 "	6.50	7.00	11.00	12.50
16 "	7.00	7.50	12.00	13.50

Dis. 70 and 5%.



Cast steel garden rakes.
Per doz.
10 teeth, polished, tapering bar, tempered rake. $9.00
12 " " " " " " " 10.00
14 " " " " " " " 11.00
16 " " " " " " " 12.00

Cast steel lawn rakes.
12 teeth, polished, tapering bar, tempered rake $10.00
14 teeth polished tapering bar, tempered rake 11.00
16 teeth polished tapering bar, tempered rake 12.00
18 teeth polished tapering bar, tempered rake 13.00
Dis. 70% from Standard Association list.
Prices made where XX handles, etc., are required.

SCYTHES (GRASS).

Waldron's pattern, oiled $8.50
Silver steel, painted 8.50
Western dutchman, bronzed and painted 9.00
Clipper, poiished web 9.00
Fine cutlery steel, full polished 10.00
All steel, full polished 11.00

Grain Scythes.

Waldron's pattern, oiled 11.25
Silver steel, painted 11.25
Clover, oiled 11.25
Clipper, bronzed and painted 11.50

Lawn Scythes.

Clipper, bronzed and painted 9.00
Dis., 40 and 10%.

SOWER, BROADCAST SEED.

Per dozen ..... $36 f.o.b.
Gross wt., 110 pounds per dozen
Net wt., 75 pounds per dozen.

Anvils.

"Eagle anvils.

	Weight about				Weight about	
No. 000	½ lb.	$1 00		No. 4	40 lbs.	$4.25
" 00	4 "	1.70		" 5	50 "	5.05
" 0	10 "	2.20		" 6	60 "	5.50
" 1	15 "	2.75		" 7	70 "	6.00
" 2	20 "	3.00		" 8	80 "	7.00
" 3	30 "	3.75		" 9	90 "	8.00

Anvils weighing 100 to 800 lbs., 10 cts. per lb. Discount 20 and 10 %.

Arms and Ammunition.

Wood Powder.

	Kegs, 25 lbs.	¼ kegs. 6¼ lbs.	1 lb. cans.
Trap for first quality arms only	$19.50	5.00	.85
A, for large bore. C, for general use. D, fine for small bore and rifles. E, very fine for small bore rifles and gallery shooting	17.00	4.35	.75

	Discount. Per cent.	
Bullet-Breech Caps ..... per lb.	1.60	10
Corticai Bullet Caps ..... "	1.75	10

	Discount. Per cent.	
Rim Fire Cartridges	60	10
Military Rim Fire Cartridges	15	10
Central Fire Pistol and Rifle Cartridges	40	10
Central Fire Metallic Cartridges for Target and Sporting Rifles	30	10
Military Cartridges, Central Fire	30	10
Lefaucheux Cartridges		6

		Special
Gatling Cartridges		
Primed Shells and Bullets	25	10
Friction Cannon Primers	20	10
Primers		10
Percussion Caps, F. C ..... per M.	33c.	
U. M. C. " .	42½c.	
Musket " .	45c.	
Brass Shot Shells, U. M. C., 1st qual.	60	10
Club brand	65	10

Paper Shot Shells.

14, 16 and 20 ga.. First quality, 30, 10 and 10 per cent; 4, 8, 10 and 12 ga., First quality, 25, 10 and 10 per cent.

14, 16 and 20 ga. Club brand, 30, 10 and 10 per cent.
10 and 12 ga. Club brand, 33⅓, 10 and 10 per cent.
Gun Wads, 20 and 5 per cent.

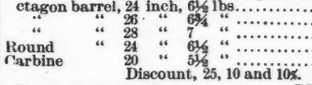
RIFLES.

Colts' Lightning Magazine.

			Discount 10 per cent.
40/60 and 45/60 calibre octagon barrel	10 lbs.		$15.38
" " " " round	"	9¼ "	14.25
" " " " carbine	"	9 "	14.25
32, 38, and 44 calibres, octagon	"	7¼ "	13.50
" " " " round	"	6¾ "	12.38
" " " " carbine	"	6¼ "	12.38
" " " " baby carbine	"	5¼ "	12.38
22 calibre, rim fire, octagon barrel			15.38
" " round			14.25

Remington Light (Baby) carbines. 44 cal., nick.. $7.50.

MARLIN RIFLE. MODEL, 1889.

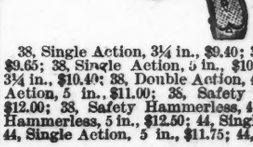


The best in the market, embodying all latest improvements.

38 and 44 calibres, using the same cartridges as Winchester rifles of the respective sizes.

Octagon barrel,	24 inch,	6¼ lbs.		$19.50
"	" 26 "	6¾ "		21.50
"	" 28 "	7 "		23.50
Round	" 24 "	6½ "		18.50
Carbine	20 "	5½ "		17.50

Discount, 25, 10 and 10%.



REVOLVERS.
S & W

32, Single Action, 3, 3½ in., $8.00.
32, Double Action, 3½ in., $9.35.
32, Safety Hammerless, 3, 3½ in., $11.0

38, Single Action, 3¼ in., $9.40; 38, Single Action, 4 in., $9.65; 38, Single Action, 5 in., $10.00; 38, Double Action, 3¼ in., $10.40; 38, Double Action, 4 in., $10.65; 38, Double Action, 5 in., $11.00; 38, Safety Hammerless, 3¼ in., $12.00; 38, Safety Hammerless, 4 in., $12.25; 38, Safety Hammerless, 5 in., $12.50; 44, Single Action, 4 in., $11.50; 44, Single Action, 5 in., $11.75; 44, Single Action, 6, 6½

in., $12.00; 44, Double Action, 4 in., $12.50; 44, Double Action, 5 in., $12.75; 44, Double Action, 6½ in., $13.00; 44, Double Action Favorite, 5 in., $12.75.

Colts.

Discount, 10 per cent from following prices.

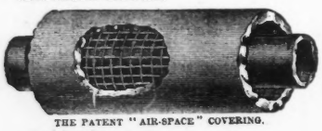
Double Action Army, 44 and 45 calibre, 4¾, 5½, 7½ inch bbl., $13.00.
Double Action, 41 calibre, 2½ to 6 inch bbl., $11.20.
" " 38 " 2½ to 6 " " $10.00.
Single " Army, 45 calibre, 4¾, 5½, and 7½ inch bbl., $12.00.
Single Action Army, 44 calibre, "Frontier," 4¾, 5½, and 7½ inch bbl., $12.00.
New Line, 41 calibre, blued or nickeled, $4.00.
" " 32 " " " 4.00.
" " 30 " " " 2.00.
" " 22 " half or full plate, 2.10.
Old Model, 22 calibre, by the hundred, half or full plate, $1.50.
Colt Deringer, 41 calibre, per pair half or full plate, 5.50.

American Bull Dog

Double Action 32, 38 and 44 calibre, 2½ inch barrel, $1.60; Double Action 32, 38 and 44 calibre, 4½ inch barrel, $1.85; Double Action 32, 38 and 44 calibre, 6 inch barrel, $2.10.

F. & W. British Bull Dog revolvers, 32 and 38 calibre 2½ inch bbl., $1.80.
F. & W. Automatic revolver, 32 and 38 calibre, 3¼ inch bbl. $5.50.
H. & R. Automatic revolver, 32 and 38 calibre, 3¼ inch bbl., $4.75.
Defender revolvers, Single Action, 22, wood handle, 65.
" " " " 22, rubber " 70.
" " " " 32, wood " 85.
" " " " 32, rubber " 90.
Remington Army revolver, Single Action, 44 cal., frontier cartridge, 5¾ inch barrel, $6.50.
Remington Army revolver, Single Action, 44 cal., frontier cartridge, 7½ inch barrel, $6.00.
Remington Double Deringers, 41 cal., rim fire, $4.05.
National Deringers, 41 calibre, per pair, half or full plate, $4.00.
New House, 41 or 38 calibre, blued or nickeled, $5.00.
" Police, 38 callbre, 6 in., " " 7.00.
" " 38 " 4½ in., " " 7.00.

Asbestos Goods.



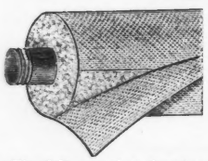
THE PATENT "AIR-SPACE" COVERING.

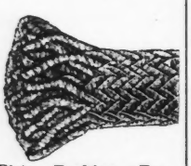
Patent air-space coverings. Per sq. ft., 25c. Discount, 20%.

Wick packing, per pound, 50c. Discount, 20%.

Removable pipe coverings. } Sq. ft. 20c. Disc., 20%.

Tube cleaner, "The National." Per inch, $1. Discount, 50%.



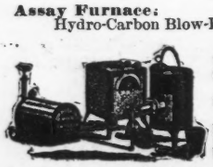


Fire felt covering for steam pipes. Per sq. ft., 25c. Discount, 20%.

Piston Packing. Per pound, 50c. Discount, 20%.

Asbestos Fibre for filtering	per	lb.	40c.	disc 20%
" Cord and Sewing Twine	"	"	$1.50	" 20%
Asbestos cloth, 36 inches wide	per	yard	2.00	" 20%
" cement for boilers	per	bbl.	4.00	" 25%
" sheathing	per	lb.	.18	" 20%
" building felt	"	"	.14	" 20%
" hair felt for hot and cold water pipes	per	sq. ft.	.10	" 25%
Asbestos mill board	per	lb.	.18	" 20%
" soldering blocks	per	doz.	6.25	" 25%

Assay Furnace:
Hydro-Carbon Blow-Pipe Assay Furnace.



No. 2, Muffle Furnace taking C Battersea Muffle 8x4¾x3 in. $10.00
No. 3, taking F Muffle, 10x6x4 in. 15.00
No. 1, Crucible Furnace, taking Battersea, U or Colorado B Crucible, 4 in. dia. 5¼ deep.. 4.00
No. 2, taking Battersea E, round, 5 in. dia., 6¼ deep 5.00

Blow-Pipe No. 1, with half gallon tank, made of plain, strong sheet metal 18.00
Blow-Pipe No. 2, with half gallon tank, made entirely of seamless brass 23.00
Blow-Pipe No. 3, with one gallon tank, otherwise same as No. 2 ..... 26.00
Blow-Pipe No. 1, Muffle Furnace No. 2, and Crucible Furnace No. 1 ..... 32.00
Blow-Pipe No. 2, Muffle Furnace No. 2, and Crucible Furnace No. 1 ..... 37.00

Axes, etc.
Axes, Handled.

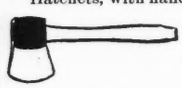
Brands,	Collins. doz.	Sharp. doz.	Pecks. doz.
Dis., %	10	35	Net
3½@4½ lbs.	$10.75	$15.00	9.50
4½@5¼ lbs.	11.00	15.50	9.50
4¼@6 lbs.	11.50	16.00	10.00
5@7 lbs.	12.50	17.50	11.00

Brands,	Hurd. doz.	American Ideal. doz.	Blair. doz.	Freeman. doz.
Dis., %	Net	Net	Net.	Net
3½@4½ lbs.	$8.50	$11.00	$8.00	$6.50
4½@5¼ lbs.	8.50	11.00	8.00	7.00
4½@6 lbs.	8.75	11.25	8.25	7.00
5@7 lbs.	9.00	11.50	8.50	7.50

Brands,	Collins. doz.	Hunt. doz.	Sharp. doz.	Pecks. doz.
Dis., %	10	45	50	50
Three-quarter axe	$8.00	$13.50	$13.50	$13.50
Brands,				
Boys' axe, No. 2	8.00	13.50	13.50	13.50
Half axe	7.00	12.50	12.50	13.00
Quarter axe	6.50	10.00	10,00	11.00

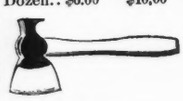
Brands,	Collins. doz.	Hurd. doz.	Freeman. doz.
Dis., %	60 5	50 5	25
Three-quarter axe	$13.50	$13.50	$7.50
Boys' axe, No. 2	13.50	13.50	7.50
Half axe	12.50	12.50	6.50
Quarter axe	12.00	12.00	6.00

Hatchets, with handles.



AXE PATTERN. HUNTER'S.
Both patterns, same price.

	Collins.	Hunt.	Sharp.	Pecks.	Simmons.	Hurd.
Dis., %	10	45	50	45	50	50.5
Dozen	$6.00	$10,00	$10.00	$9.00	$9.00	$10.00

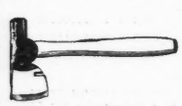


SHINGLING.
Shingling.

Brands,	Collins.	Sharp.	Pecks.	Mann.	Hurd.
Dis., %	10	50.5	50	50.5	50.5
No. 1 Doz.	$4.75	$8.00	$8.00	$8.00	$8.00
No. 2 "	5,25	8.50	8.50	8.50	8.50
No. 3 "	5.75	9.00	9.00	9.00	9.00

CLAW.
Claw.

Brands.	Collins.	Sharp.	Blair.	Mann.	Hurd.
Dis., %	10	50, 5	60, 5	50, 5	50, 5
No 1. Doz.	$5.25	$9.00	$9.00	$9,00	$9.00
No. 2. "	5.75	9.50	9 50	9.50	9.50
No. 3. "	6.25	10.00	10.00	10.00	10.00



LATHING. BROAD.
Lathing.

Brands.	Collins.	Sharp.	Pecks.	Blair.
Dis., %	10	50, 5	50	60, 5
No. 1. Doz.	$4.75	$6.75	$8.00	$8.00
No. 2. "	5.25	7.50	8.50	8.50
No. 3. "	5.75	8.25	9.00	9.00

Broad.

Brands.	Collins.	Hunt.	Sharp.	Pecks.	Blair.
Dis., %	10	45	50	50	60, 5
No. 2. Doz.		$11.50	$11.50	$11.00	$11.50
No. 3. "	7.50	13.00	13.00	13.00	13.00
No. 4. "	8.00	14.50	14.50	14.50	14.50
No. 5. "	9.00	16.50	16.50	16.50	16.50
No. 6. "	10.00	18.00	18.00	18.00	18.00

Broad Axes. Steel polls.

Brands.	Collins.	Hunt.	Sharp.	Pecks.
Dis., %	10	45	50	45
Dezen	$20.00	$30.00	$29.00	$32.00

YANKEE. OR OHIO. PENNSYLVANIA. NEW ORLEANS.

Brands.	Collins.	Hunt.	Sharp.	Pecks.	Blair.	Mann.	Hurd.
Dis., %	10	45	50	45	60, 10	50	50, 5
Dozen	$19.00	$32.00	$32.00	$32.00	$32.00	$32.00	$32.00

Handled, extra, $4.

Adzes.

RAILROAD.	SQUARE HEAD.		SHIP CARPENTER'S	
Brands.	Collins.	Hunt.	Sharp.	Pecks. Hurd
Dis., %	10	45	50	50 50, 50
Railr'd, heavy, doz.	$14.00	$26.00	$26.00	$26.00 $26.00
Flat head "	15.00	24.00	24.00	24.00 24.00

Brands.	Collins.	Hunt.	Sharp.	Pecks.	Hurd.
Dis., %	10	45	50	50	50, 100
Square head, doz.	$12.50	$24.00	$24.00	$24.00	$24.00

Brands.	Collins.	Hunt.	Sharp.	Pecks.
Dis., %	10	45	50	45
Ship Carpenter's or Spur Head, doz.	$13.00	$25.00	$25.00	$25.00

Brands.	Collins.	Hunt.	Sharp.
Dis., %	10	45	50
Cooper's, handled and bolted, doz.	$16.00	$27.00	$25.00

Axle Grease.
Frazer's (2-lb. tins), per gross $18.00
2-lb. wooden boxes, " 12.00
Discount, 25 and 5 %.
Dixon's Everlasting, boxes 1 lb., per doz. $1.20
" " 2 lbs., " 2.00
See Oils, page 10.

Bellows.

Miner's Bellows: 24 in., $8.50; 26 in., $9.75; 28 in., $11.00; 30 in., $11.25; 32 in., $13.50. 60 and 5% dis.
Standard, each: 18 to 24 in., $10; 28 in., $12; 32 in., $14; 34 in. $16; 36 in., $18; 38 in., $20; 40 in., $23; 44 in., $32. 60 and 5% dis.
Hand Bellows, per doz.: 6 in., plain, $10; fancy, $20; 7 in., plain, $12; fancy, $24; 8 in., plain, $14; fancy, $28; 9 in., plain, $16; fancy, $32; 10 in., plain, $18; fancy, $36. 50% dis.

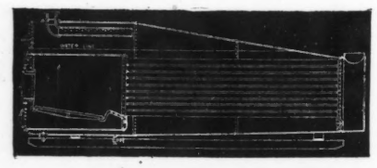
Belting. LEATHER BELTS.
Standard Manufacturers List.
Single belts per foot.

Width.		Width.		Width.	
1 inch	10	6 inch	.76	20 inch	2.84
1¼ "	13	7 "	.90	21 "	3.02
1½ "	17	8 "	1.02	22 "	3.20
1¾ "	20	9 "	1.15	23 "	3.37
2 "	23	10 "	1.29	24 "	3.54
2¼ "	26	11 "	1.42	26 "	3.92
2½ "	30	12 "	1.55	28 "	4.30
2¾ "	33	13 "	1.68	30 "	4.64
3 "	36	14 "	1.82	32 "	5.00
3½ "	43	15 "	1.98	34 "	5.35
4 "	50	16 "	2.14	36 "	5.70
4½ "	56	17 "	2.31	40 "	6.40
5 "	63	18 "	2.49	44 "	7.10
5½ "	70	19 "	2.66	48 "	7.80

Double belts twice the price of single.
Dis. single and double belts, cemented, 50 and 5%.
Dis. single and double belts, riveted and cemented, 50 and 5%.
Dis. single belts, cemented and lacesewn, water proofed, 50%.
Dis. double belts, cemented and lacesewn, water proofed, 45%.
See Rubber Belting, page 7.
See Link Belting, page 9.

Boiler (Scotch Flue).

Self-contained. Portable.



Economical. Durable.

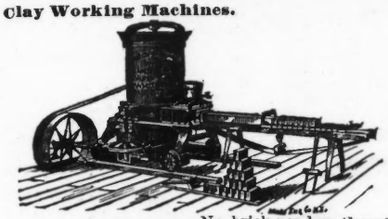
Horse power	8	10	15	20	25	30	35
Diameter	28"	32"	32"	36"	40"	40"	44"
Length, feet	9½	10	12½	13½	14¾	16½	16¾
Weight, pounds	3500	4000	4500	5 00	6500	6900	7500
Price, $	....	....	387	487	580	634	767
Horse power	40	45	50	55	60	70	80
Diameter, inches	44	48	48	52	52	56	56
Length, feet	17½	16½	18	17½	18½	18	19
Weight, pounds	8000	8500	8800	9500	10,000	11,000	2,000
Price, $	827	920	1027	1147	1227	1387	1500

Discount, 15%.

Brick Machinery.

Heavy Steam Power Machine	$525.00
Horse-Power Machines	300.00
Additional Horizontal Pugmill	225.0
Brick Moulds	$2.50 to $3.00
Brick Trucks	5.00 to 13.50
Brick Barrows	7.25
Brick Barrows with Springs	8.20
Sand Barrows, steel tray	6.40

Clay Working Machines.



	No. brick per day.	Compl'te.
No. 10 D brick machine	50,000	$1,500
No. 10 S " "	30,000	1,200
No. 4 " "	40,000	1,100
No. 7 S " "	20,000	650
No. 6 S " "	15,000	575
No. 2 E. H. P. "	6,000	3,360

Brushes.

PAINT BRUSHES.
Intermediate prices not quoted.
Prices per dozen.

	No. 6.	4.	2.	0.	3-0.	5-0.	7-0.	Dis
X	$1.15	$1.80	$2.50	$3.15	$4.00	$5.25	$6.75	25%
Atlantic	1.25	2.15	3.80	5.25	7.00	10.00	13.00	25%
Standard	1.60	2.60	4.00	6.00	8.00	11.00	16.00	25%

VARNISH OVAL.

	No. 6.	4.	2.	0.	3-0.	5-0.	7-0.	Dis.
Globe	$1.15	$1.80	$2.50	$3.25	$4.60	$6.00	$8.00	25%
Crown	1.25	2.00	2.75	4.00	5.25	7.00	10.00	25%

VARNISH FLAT.

	No. 1.	1½.	2.	2½.	3.	Dis.
X	$0.48	$0.72	$0.96	$1.20	$1.40	25%

SASH BRUSH.

	No. 1.	3.	5.	7.	9.	Dis.
X	$0.25	$0.40	$0.60	$0.85	$1.20	25%
XX	0.40	0.75	1.10	1.40	2.00	25%

WHITE-WASH.

	No. 6.	7.	8.	Dis.
Brown	$1.25	$1.60	$2.00	25%
Pure	2.40	4.00	6.00	25%

SHOE

Per gross.

8.	9.	25.	15.	26.	Dis.
$10	$11.50	$12.50	$15	$18	25%

Per gross dis., 25%.

No. 23.	27.	32.	29.	35.
$11.50	$20.00	$24.00	$28.00	$33.00

HORSE.

Patent.
Per gross, dis., 25%.
$18.00 $20.00 $24.00 $30.00

Per gross, dis., 25%.

Wood back $12 $15 $18 $21
Per gross, dis., 25%.
Leather back.$21 $31.50 $42 $54

SCRUB.

Patent.
Per gross, dis., 25%.
$10.00 $12.00 $16.00 $18.00

Per gross, dis., 25%.
$6.50 $8.50 $12 $14 $18

SHAVING.

Per doz., dis., 25%.
$0.36 $0.60 $1.00 $1.50 $2.50

COUNTER.

Per doz., dis., 25%.
$2.00 $3.00 $4.00 $5.00

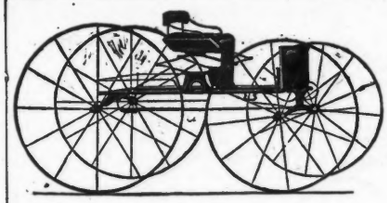
Carriages, Etc.

Windsor Surrey.
Open, $150.
Canopy top, $180.
Leather extension top, $210
Pole or shafts.

Cut under Surrey.
Canopy top, $185.
Leather extension top, $220

Brewster Spring.
Open, $35.
Rubber top, $80.
Leather top, $110.

Runabout, $65.



Buckboard. $30 ; shafts.

No. 0. Cart, top and fenders	$150
No. 1. Cart, top and fenders	90
No. 2. Cart, one man cart, open	65
No. 2. Cart, one man, top.	86
No. 2. Cart, one man, top and fenders	90
No. 3-H. Cart, two man, open	54
No. 4. Cart, two man, top.	86
No. 5. Cart, two man, top and fenders	90
No. 6. Cart, two men, top and fenders	90
No. 7. Two man combination cart	110

Wide track 5 feet.
Narrow track 4 feet 8 inches.
Discount 33⅓ per cent. off.

Crucibles.

Battersea Crucibles, Triangular.

No.	Height. Inches.	Width. Inches.	Crucibles. Per doz.	Covers. Per doz.
S	4½	4½	$1.00	$0.50
T	4	3¾	0.80	0.50
U	3½	3¼	0.60	0.40
V	3¼	2⅞	0.45	0.40
W	2⅞	2⅝	0.35	0.30
X	2½	2¼	0.30	0.30
Y	2⅛	2⅛	0.25	0.30
Z	1¾	1¾	0.20	0.30

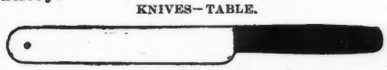
Battersea Muffles, any size, made to order.
See Illustration in advertisement.

No.	Long. Inches.	Wide. Inches.	High. Inches.	Price. Each.
A	7	3½	2½	$ .60
B	7½	4⅜	2⅞	.75
C	8	4¾	3	.85
D	8½	5	3¼	1.00
E	9	5½	3⅝	1.15
F	10	6	4	1.25
G	11	4	3½	1.00
H	10½	5¼	3⅞	1.00
J	12	6	4	1.25
K	14	8	5	1.75
L	15	9	6	2.00

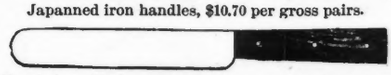
Export discount 15 %.

Cutlery.

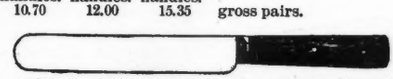
KNIVES—TABLE.



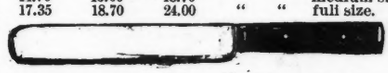
Japanned iron handles, $10.70 per gross pairs.



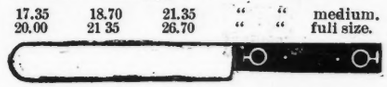
Cocobola handles.	Ebony handles.	Bone handles.	
10.70	12.00	15.35	gross pairs.



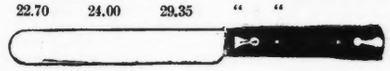
14.70	16.00	18.70	"	"	medium size.
17.35	18.70	24.00	"	"	full size.



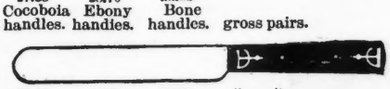
17.35	18.70	21.35	"	"	medium.
20.00	21 35	26.70	"	"	full size.



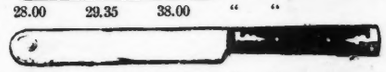
22.70 24.00 29.35 " "



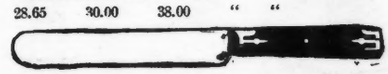
27.35	28.70	36.00	
Cocobola handles.	Ebony handles.	Bone handles.	gross pairs.



28.00 29.35 38.00 " "

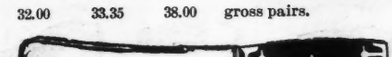


28.65 30.00 38.00 " "

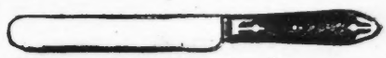


28.65 30.00 38.00 " "

32.00 33.35 38.00 gross pairs.

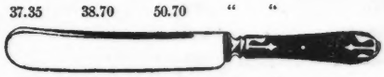


34.70 36.00 48.00



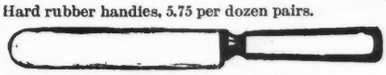
33.35 34.70 46.70 " "

37.35 38.70 50.70 " "

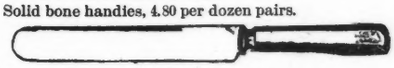


40.00 41.35 53.35 " "

Hard rubber handles, 5.75 per dozen pairs.



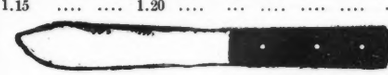
Solid bone handles, 4.80 per dozen pairs.



Celluloid handles, 7.35 per dozen pairs.
Forks are made to match all above patterns, with either three or four prongs.
Discount 25 %.

BUTCHERS'—COCOBOLA HANDLES.

4 and 4½ in.	5 in.	5½ in.	6 in.	6½ in.	7 in.	8 in.	9 in.	10 in.	Per dozen.
1.15	....	....	1.20	....	....	....	....	....	....



1.40 ... . 1.50 ....

1.15 1.20 1.30 1.40 1.70 1.90 2.35 3.00 3.70 5.35

.... 1.45 1.60 1.70 2.00 2.35 2.80 3.25 4.00 6.00

2.00 2 15 2.30 2.35 2.70 3.00 3.50 4.25 5.00 7.50

2.45 2.70 2.95 3.15 3.45 3.70 4.35 5.00 6.00

2.10 2.20 2.35 2.50 2.80 3.40 4.35 5.30 6.85 ....

3.40 3.55 3.70 4.10 4.60 5..30 7.00 8.75 11.00

.... 4.10 4.25 4.40 4.80 5.30 6.00 7.75 9.50 12.50

2.00 2.15 2.30 2.35 2.70 3.00 3.50 ....

Discount 25 and 10 %.

HUNTING—EBONY HANDLES.

5½ in.	6 in.	6½ in.	7 in.	8 in.	9 in.	Per Dozen.
2.00	2.20	2.35	2.75	3.00	3.60	4.30 5.25

2.10 2.20 2.35 2.75 3.00 3.60 4.30 5.25

2.55 2.70 3.00 3.30 3.55 4.00 5.00 6.0

2.55 2.70 3.00 3.30 3.55 4.00 5.00 6.00

Discount, 25 and 10 %.
Per Dozen.

Putty knives, cocobola handles..... ..... $1.30@$1.50

SHEARS.

TAILORS'—JAPANNED OR NICKEL HANDLES.

	Per pair.		
12 in.....	6.00		
12½ in.....	7.00		
13 in.....	8.00		
13½ in.....	9.00		
14 in.....	10.00		
14½ in.....	11.00		
in 12.00	16 in.....		14.00

Discount, japanned, 60 %; nickle, 45 %.

BENT TRIMMERS.

Per dozen.

6 in.....	13.00	10 n.....	27.00
7 in	15.00	11 in.....	30.00
8 in	17.00	12 in.....	33.00
9 in . ..	22.00		

STRAIGHT TRIMMERS.

Per dozen,

6 in.....	12.00	10 in.... . .	25.00
7 in.....	14.00	11 in.....	30.00
8 in.....	16.00	12 in.....	33.00
9 in.....	19.00		

LADIES' SCISSORS.

Per dozen.

4½ in.....	10.00	6 in.	11.00
5 in.	10.00	6½ in.....	12.00
5½ in.....	10.50	7 in.....	13.00

PAPER AND BANKERS'.

Per dozen.

9 in...	18.00	13 in....	36.00
10 in...	25.00	14 in....	42.00
11 in...	27.00	16 in....	54.00
12 in...	32.00	18 in ...	20.00

BARBERS—Per dozen.

7½ in.....	15.00	9 in.....	18.00
8 in.....	16.00	9½ in.....	20.0
8½ in	17.00		

SCISSORS.

BUTTON-HOLE.

5 and 5½in., 14.00 per dozen.

Discount, japanned, 70 and 10 % nickel, 60 and 10 %

PRUNING.

1 B., 9 in., 24 per dozen; 2 B. 3½ in., 21; 3 B., 7¾ in., 9.80.

No. 110, 10 in., $30 per doz.

PRUNING SHEARS FOR LONG HANDLES.

No. 1, $36 per dozen; No. $30 per dozen.

Discount, 35%.

Cutters.

FEED.

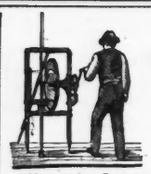
No. of cutter.	No. of knives.	Length in inches of knives.	Length in inches of feed cut.	Price.
1	2	6½	⅛, ¾ and 1½	$18.00
2	2	7¼	⅛, ¾ and 1½	21.00
2½	1	7¼	⅝, ⅞, 1¼ and 1⅝	21.00
2½	2	7¼	⅛, ⅞, ⅝ and ⅞	23.00
3	1	8½	⅝, ⅞, 1¼ and 1⅝	25.00
3	2	8½	⅛, ⅞, ⅝ and ⅞	27.00
4	1	10	⅝, ⅞, 1¼ and 1⅝	30.00
4	2	10	⅛, ⅞, ⅝ and ⅞	33.00
5	2	10	⅛, ⅝, ⅞ and 1¼	35.00
6	2	11	⅛, ¾, 1¼ and 2	45.00
6½	2	11	⅛, ¾, 1¼ and 2	45.00
7	2	13	⅛, ¾, 1¼ and 2	60.00
7½	2	13	⅛, ¾, 1¼ and 2	60.00
10	2	16	⅛, ¾, 1¼ and 2	80.00
12	2	20	⅛, ¾, 1¼ and 2	100.00
11	2	11	⅛, ¾, 1¼ and 2	45.00
13	2	13	⅛, ¾, 1¼ and 2	60.00
16	2	16	⅛, ¾, 1¼ and 2	80.00
0	2	20	⅛, ¾, 1¼ and 2	100.00

The knife arbors for all sizes are made of machinery steel. 30 per cent. dis.

VEGETABLE—GALE'S.

Size.	Weigbt of Fly Wheel. Pounds.	Will cut per hour. Pounds.	Price
No. 1½	20	1,500	$12
No. 2½	32	1,700	15
No. 3½	32	1,700	15
No. 4	42	2,000	18
No. 5	50	3,000	25
No. 10	65	8,000	35

30% dis.

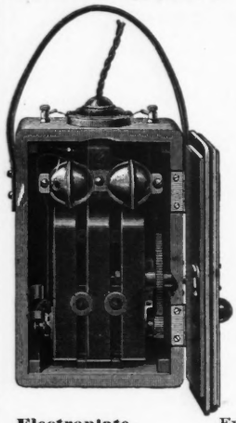


Drill—Portable Hand Rock.

Price, $225.

Dis., 20%.

Electrical Appliances.



20,000 ohm Testing Generator..... $10.00

Pony Magneto Bell..... 6.00

Standard Magneto Bell 7.50

Standard Extension Bell..... 4.00

Pony Extension Bell..... 3.00

Discount 40 per cent.

Electroplate.

Dis. 60 and 2%.

	Extra plate, per doz.	Double plate, per doz.	Triple plate, per doz.
Oyster forks	7.00	9.00	11.00
Sugar shells.....	9.00	11.00	13.00
Sugar tongs	25.50	31.50	37.50
Butter knives, twist or reversed handles.....	10.50	12.50	14.50
Nut picks.....	4.75	6.00	7.25
Pie knives, engraved blades.	42.00	51.00	60.00
Soup ladles	48.00	60.00	72.00

Aesthetic medium fork.

Tea spoons.	Table spoons.	Medium forks.
7.50	15.00	15.00 per gross.

Discount, 30 and 5 %.

Children's sets *on cards*. 3 pcs. 4 pcs.

Leader pattern, as per cut....	21.00	24.00 doz.	60 and 5 %
Aesthetic pattern, as per cut...	5.75	7.25 doz.	30 and 5 %

SPOONS, FORKS, ETC., BEST PLATE ON HARD WHITE METAL

Tipped Tea Spoon.

Oval Tea Spoon.

Perfect Tea Spoon.

Leader Tea Spoon.

	5 oz. or extra plate. Tipd	Oval.	Perfect and Leader.
Tea spoons.	4.25	4.50	4.75 per doz
Dessert spoons.	7.50	8.00	8.50 " "
Table spoons...	8.50	9.00	9.50 " "
Coffee spoons...	4.25	4.50	4.75 " "
Dessert forks...	7.50	8.00	8.50 " "
Medium forks..	8.50	9.00	9.50 " "

Discount, 60 and 5%.

Spoons and forks, German silver, tipped pattern.

Tea spoons.	Table spoons.	Medium forks.
22.50	45.00	45.00 per gross.

Discount, 60 %.

Spoons and forks, made from brass, and silver plated a coating of bard, white nickel.

CASTERS.

1,200—Dinner.

232—Breakfast.

Dinner Casters.

No. 1,200. 17½ in. high, $8.00, quadruple plate.
No. 80. 17 in., $6.00, quadruple plate.
No. 140. 16 in., $7.50,
No. 830. 16 in., $5.00, Plain, 50 cents less.
No. 25. 16 in., $4.00, double plate.
No. 33. 16 in., $3.75, " "
No. 53. 15 in., $3.00, " "
No. 15½. 14½ in., $2.00, single plate.
No. 19. 14½ in., $1.85, " "
No. 40. 14 in., $1.75, " "

FLAT WARE.

Calla Lily, Empress, Windsor and Olive Patterns, 18 Per Cent Nickel Silver Base.

PICKLE DISHES

No. 146.

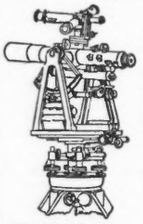
No. 144. 12 in. high, $3.50
No. 66. 10½ in. high, $2; assorted colored glass.
No. 155. 12 in. high, $4; assorted colored glass.
No. 146. 12½ in. high, $9; hand decorated glass.
No. 156. 12½ in. high, $6; hand decorated glass.

No. 255.

TEA SETS.

No. 255. 6 pieces, $35, quadruple plate.
No. 301. 4 pieces, $23, quadruple plate.
No. 1847. 6 pieces, $42, quadruple plate.

Engineering Instruments.



Full Engineer's Standard Transit.
7 in. graduated circle.....$255
6 in. " " 245
5 in. " " 235
4 in. " " 225
Standard Engineer's Level, improved centre and seat attachment, 18 in. telescope 140
Plain railroad level, 18 in. telescope..... 125

Explosives.

Dynamite, 75%	Nitro-Glyceine, per lb.....		.32
" 60%	" "		.25
" 40%	" "		.20
Blasting powder A, per keg 25 lbs.....			$2.40
" B, " "			1.90
Sporting powder, standard brands, per keg 25 lbs...			5.00
" " " " "	12½ lbs.		2.75
" " " " "	6¼ lbs.		1.50
" " high grades "	6¼ lbs.		3.00
" " " per can 1 lb....			60
" " fancy brands "	1 lb....		1.00

Discounts special for quantity.

Safety fuse, cotton, 12 M ft. in case.....		$2.85 per M ft.
" " single tape, 6 M ft. in case....	4.25	" "
" " double tape " "	5.40	" "
" " triple tape " "	6.50	" "

Discount 17½%.

Detonating caps, triple force, 25 M. in case..		$5.00 per M.
" " quintuple force, 25 M. in case.....		7.50 per M.
Electrical exploders, 4 ft. wires.....		$3.00 per 100
" 6 "		3.54 "
" " 8 "		4.08 "
" " 10 "		4.62 "

Discount 15%. Long lengths to order.

	No.	Capacity.	
Magneto Blasting Machines....	1 V.	8 holes	$17.00
" " "	2 V.	20 "	25.00
" " "	3 L.	20 "	25.00
" " " ...	3 V.	30 "	30.00
" " "	4 V.	60 "	50.00

Discount 15%.

Blasting cables..... ...	$5.00 each, discount 40%
" reels.....	5.00 " " 20%

Flouring Mill Machinery.

20-inch New Era Mill for Wheat, Corn, and Middlings.

Size. Incb.	Power. H. P.	Pulley. Inch.	Capacity Bush.
20	4 to 10	14×7	12 to 40

Speed.	Weight. Lbs.	Price.
500 to 800	660	$150

Farm and Plantations Mills.

Diameter of burrs.	Power to drive. H. P.	Size of pulley.	Capacity per hour.	Revolutions per minute.	Weight.	Price
18 in.	2 to 4	9×5½	4 to 14 bushels	600 to 1200	370 lbs.	
14 in.	4 to 10	11×6½	8 to 40 busbels	400 to 700	600 lbs.	

The Dixey Mill—Stiff Spindle Style.

Size.	Power.	Capacity.	Weight.		Pulley.	Iron gear.	Mortise gear.
			Pulley.	Geared			
18	4 to 6H.P.	8 to 25 bu	560 lbs	650	$130	$165	
22	6 to 8 "	12 to 30 "	800 "	1000	165	200	
26	8 to12 "	16 to 40 "	1100 "	1500	185	220	
30	10 to15 "	25 to 60 "	1300 "	1700	215	255	

Grinding Mills.

"Daisy," without Shaking Bolt, 170 pounds, 9 cubic feet, $40.

"Daisy," with Shaking Bolt, 185 pounds, 9 cubic feet, $48.

} Discount 25 per cent.

"The Union Mill."

Diameter of Buhr Stones	Size of Pulleys	
	Diam.	Face.
12 in.	8 in.	6¼ in.
16 "	9 "	7½ "

Horse Power	Capacity in B'sh's	Speed	Without Bolt	With Bolt	Sacking Elevator, Extra	Extra Metal Buhrs
8 to 10	12 to 30	1200 to 1500	$90.00	$105.00	$15.00	$1.20 pair
10 to 15	20 to 50	1000 to 1600	160.00	178.00	17.50	1.50 "

Flour Mills.

For grinding corn, feed, rye, etc,
Gray's pat. noiseless belt roller-mills, porcelain rolls.

		Price	H. power required.	Revolutions per minute.	Width.	Length.	Height.	Size of Rolls.
With corrugated chilled iron rolls.		$600.00	2½	200 to 300	4' 5"	3' 2"	5' 7"	14" × 16"
		800.00	4	200 " 300	5' 10"	5' 6"	5' 10"	14" × 16"
		580.00	2½	300 " 400	4' 10"	3' 10"	5' 1½"	9" × 14"
With Wegmann's patent porcelain rolls.		$800.00	2½	300 to 400	3' 10"	3' 10"	5' 1½"	9" × 14"
		$650.00	2½	300 to 400	3' 10"	3' 10"	5' 1½"	9" × 14"
Divided four roller machines.		$590.00	2½	300 to 400	10"	10' 3"	1½"	14" × 14"
		615.00	2½	300 to 400	10"	10' 3"	1½"	14" × 14"
		625.00	2½	300 to 400	10"	10' 3"	1½"	14" × 14"

Size.	Height.	Width.	Length.
6" × 12"...	4' 6"	3' 5"	2' 7"
9" × 14"...	5' 8"	3' 10"	3' 5'
9" × 18"...	5' 8"	4' 9"	3' 5'
9" × 24"...	5' 8'	5' 6"	3'

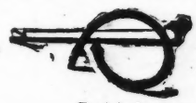
The Nordyke Bradford Portable Mill.

Size of stones, In.	Grinding capacity. Corn, bu. per hour.	Grinding capacity. Wheat bu. per hour.	Horse-power.	Weights. Sing'l gear.	Weights. Double gear.	Pulley mill.	Geared mills. Iron wh'ls.	Geared mills. Mortise wh'ls.
18	8 to 10	.....	4	550	625	$130	$165	$180
20	10 to 12	.....	5	600	700	140	175	190
22	12 to 15	.....	5	700	850	160	190	210
24	15 to 18	.....	6	900	1050	175	210	225
26	18 to 20	8 to 10	8	1200	1400	185	225	250
30	20 to 25	10 to 12	10	1500	1700	225	265	290
36	25 to 30	14 to 17	12	1800	2100	315	355	380
42	35 to 40	19 to 21	15	2000	2300	390	435	460

Driving pulley.	Revolutions per minute.	Length of belt above floor.	Approximate shipping weight	Price.
10" × 5¼"	400 to 500	14'	.....	$500.00
14" × 6¼"	350 to 450	18'	2600 lb.	600.00
14" × 7¼"	350 to 450	18'	3050 lb.	650.00
14" × 8¼"	350 to 450	18'	3350 lb.	735.00

Flue Cleaner.

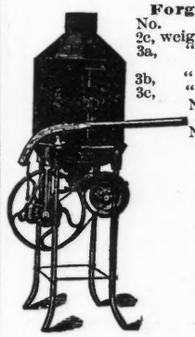
Hurley's Automatic Steam Flue Cleaner.



No.	Outside diam. of tubes.	With hose clamps.	Globe Valves.	Best 4-ply steam hose. Per foot.
1	1½ to 2	$5.00	½, 95 cents	¾, 67 cents.
2	2 to 2½	6.25	½, 95 cents	¾, 67 cents.
3	2½ to 3	7.50	¾,$1.30	¾, 67 cents.
4	3 to 3½	8.75	1, 1.75	1¼, 83 cents.
5	3½ to 4½	10.00	1¼ 2.90	1¼,$1.04

Dis. on flue cleaners, 60 and 10%.
Dis. on steam hose, 50%, good to 90 lbs steam.

Forges (Portable).



No.
2c, weight, 155 lbs. 21×27 hearth ..$42.00
3a, " 80 " 18 in. diam. hearth..... 27.00
3b, " 75 " 18 " 24.00
3c, " 85 " 18 " 30.00
No. 6a, weight 45 lbs., 14 in. diam. hearth..... 18.00
No. 6B, weight 45 lbs. 14 in. diam. hearth..... 16.00
Dis. 60%.

Light work, 12 × 17; height, 15 in., $16.00.
Same, with Hood, 12 × 17; height, 28 in., $20.00.
Bridge, Boiler or Railroad work, Pan, 17 × 19; height, 29 in.; Fan, 8 in., $27.00.
Same, with Hood, $30.00.
Water Tank, $4.00 extra.
Iron Fire Ring Round Tuyere, $1.00 extra.
50 % dis.

No. 1, 18 in. bellows, $20; No. 2, 20 in. bellows, 25; No. 3, 22 in. bellows, $30.
20% dis.

Stationary.
27 in. bellows, $21; 30 in. bellows, $25; 33 in. bellows, $33; 36 in bellows, $45.
20% dis.

Riveting Forges.
Bellows, 18 in.. 20 in., $8.00. $10.00. 22 in., 24 in., $13.00. $17.00.
20 % dis.

Fruit Evaporator.

No. 1. Evaporator..... $30
No. 2. Fruit Drier and Baker, with Bleacher attachment. Weight, 225 lbs. Capacity, 5 to 7 bushels apples per day; 24 in. deep, 26 in. wide, 5½ ft. high; 12 trays, 22 × 22; 40 square feet drying surface. Complete..... $50
No. 3. Capacity, 15 to 20 bushels per day..... 100
No. 4. Capacity, 20 to 30 bushels per day..... 160
Dis., No. 1, 3 and 4 = 20%. No. 2 = 30%.
Boxing, extra:
No. 1, $3.00; No. 2, $5.00; No. 3, $7.50; No. 4, $12.50.
Freight to New York:
No. 1, $4.00; No. 2, $6.00; No. 3, $12.00; No. 4, $18.00.

Gaskets.

Corrugated Copper.

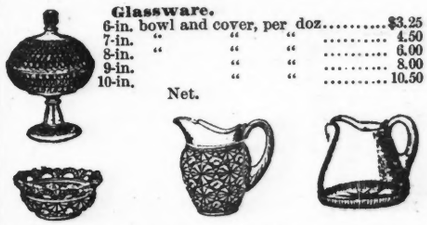
Price, 2 cents per square inch, less 30 per cent. discount for home trade.
Less 60% discount for export trade.

Glass Tube Cutters.

One Arm Carries Rotary Cutter Price, $2.50 each.

Glassware.

6-in. bowl and cover, per doz.....$3.25
7-in. " " " 4.50
8-in. " " " 6.00
9-in. " " " 8.00
10-in. " " " 10.50
Net.



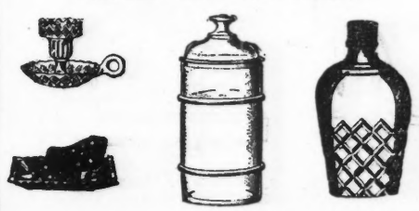
Nappy, 4½-inch., per doz., 50c.; 6-inch., per doz., $2 nch ,, per doz., $3: 8-inch., per doz $4.
Cream Pitcher, 1 pint, per doz., $1.25; one quart, per doz., $3.50; 3 pints, per doz., $4.50.
Pint Pitcher, per doz., $1.50; quart pitcher, per doz., $2; ½ gallon pitcher, per doz., $3; 3 quart pitcher per doz., $4.50.

Flange Butter and Cover, per doz., $1.75.
Water Set, perdoz., sets of 60 pieces, $7.50.

Cheese Dish and Cover, 8 in. per doz., $4.50.
Quart Water Bottle, per doz., $4.50.

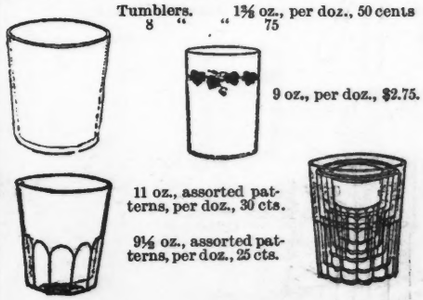
Ind. Salts; per gross, $2.00. Assorted patterns.
4 Bottle Castors, per doz., $7.50; 3 bottle, per doz., $4.50.

Berry Dish, 4½-inch , per doz., 50c.; 10-inch, per doz. $4.
Butter Dish and Cover, per doz., $1.25.
Butter Dish and Cover, per doz., 75c.



Candlesticks, per doz., $2.00. Glass Slipper for Flowers, per doz., 50 cents; slipper and tray, per doz., $1. Jam Jar and Cover, 1 qt., per doz., $2.50; ½ gal., per doz., $3.25; ¾ gal., per doz., $4; 1 gal., per doz., $5; 1½ gals., $9; 2 gals., per doz., $12. Pocket Flask, 1 pint, $1.

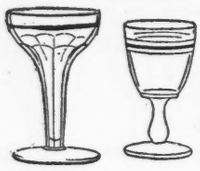
Tumblers.
8 " " 1⅜ oz., per doz., 50 cents
" " 75



9 oz., per doz., $2.75.

11 oz., assorted patterns, per doz., 30 cts.

9½ oz., assorted patterns, per doz., 25 cts.



1 oz. to 12 oz., nested for shipping, per doz. nest, $2.

Goblets, banded, per do 65 cents.
Claret to match, per doz., 55 cents.
Wines, to match, per doz., 50 cents.
Cordials, to match, per 45 cents.

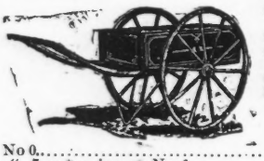
Goblets, per doz., 50 cts.
Claret, " 50 "
Wine " 35 "

Banded, open, hollow stem.

Champagne, per doz., $1.25.

½ Pt. tumbler, per doz..55 cts.
½ Pt. mug to match, " ..65 "
Goblet, " " ..50 "
Spoon holder, cream pitcher, sugar
butter dish to match.
Sets of 4 pieces, per doz. sets, 48 pieces, $3.75.

Hand Carts



No. 0 42 wheel in. tread, 1 in. axle-box 48x28x10 deep, $10.50.
No. 1, 36 wheel, 1 in. tread, ⅞ in. axle, box 40x23x10 deep, $9.00.
No. 2, 30 wheel, ¾ in tread, ¾ in. axle, box 32x20x9 deep, $8.25.
With Wagon-Seat Spring.
No. 6, same sizes as

No 0.....$12.00
" 7, same sizes as No. 1 ..... 10.50
" 8, " " " No. 2..... 9.75

With Third Wheel, Without Springs.

No. 3, same sizes as No. 0.....$12.00
" 4, " " " No. 1..... 10.50
" 5, " " No. 2..... 9.50

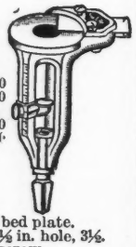
Hardware Specialties.

AUGERS.

Patent Adjustable Hollow.

Cuts from ¼ to 1¼, pivoted jaws, graduated scale to 1-16ths, per doz., $60.00

Discount, 15 and 10%.

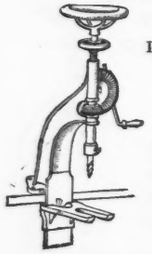


Patent Hollow Auger.

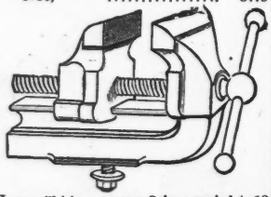
Inch.....	5-16	⅜	7-16	½
With bits....	12.00	12.00	12.00	12.00
Without bits	8.00	8.00	8.00	8.00
9-16	⅝	¾	⅞	1	1⅛
14.00	14.00	14.00	16.00	16.00	20.00
9.00	9.00	9.00	13.00	13.00	14.00
1¼	1⅜	1½			
20.00	24.00	24.00			
14.00	16.00	15.00			

Discount, 15 and 10%.

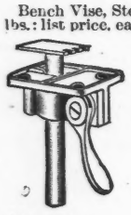
BENCH DRILL.



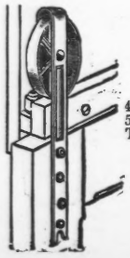
Adjustable bed plate.
26½ high drills to ½ in. hole, 3½ run of screw.
List price, each.....$10.00
Net, " 3.75



Bench Vise, Steel Jaws, 3½ in., opens 3 in.; weight, 12 lbs.; list price, each, $4.00.; net price, each, $1.60.



BENCH HOOK.
Patent, adjustable and reversible
List $9 dozen, ½ dozen in box.
Discount, 20 and 10%.



BARN DOOR HANGER.

4 in., per doz. pairs.....$12.00
5 " " " 14.40
Track, per foot..... .08
One dozen pairs in case.
Dis., 50%.

BLACKSMITH'S TONGS.
Swivel Jaw.

No. 1, 16 in., per doz.....$10.00
" 2, 18 " " 10.00
Dis. 20%.

CASTERS.
Swivel Store Truck

No. 20, japanned, 4 in. wheel, each..... .55
No. 25, " 5 " " " ..... .75
Noiseless turned wheel.
No. 30, japanned, 4 in. wheel, each..... 1.30
No. 35, " 5 " " " 1.60
Discount, 25%.

CLOTHES REEL.

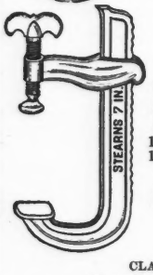
Extra heavy, gray iron, japanned.
List per doz.....$15.00
Net " 7.00

JACK SCREWS.
New pattern wrought iron screw.

No.	Rise of screw.	High.	Diameter screw.	Price.
20	4½ in.	10 in.	2 in.	$4.50
25	6½ "	12 "	2 "	5.25
30	8½ "	14 "	2 "	5.75
35	11½ "	16 "	2 "	6.50

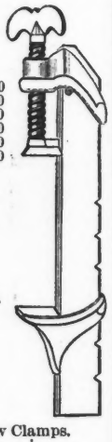
Discount, 40%.

Store Truck, stationary.
No. 50, 5-inch wheel, 1¼ inch wide each, $1.05.
No. 60, 5-inch, extra heavy, 1½ inch wide, each $1.50.
Discount, 25%.



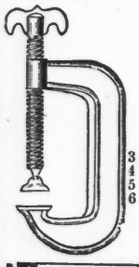
SCREW CLAMPS.
Adjustable.

3 in., per doz.....$4.00
5 " " 6.50
7 " " 9.00
9 " " 10.50
12 " " 15.00
16 " " 20.00



½ doz. in box.
Discount, 20 and 10%.

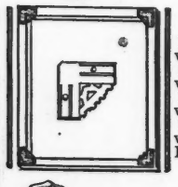
CLAMPS.
New Door Frame.
3 ft. long, per doz., $8 list; $5 per doz. net.



Malleable Iron Screw Clamps.

Per Doz.		Per Doz.	
3 in.	$7.00	7 in.	$20.00
4 "	10.00	8 "	25.00
5 "	12.00	9 "	27.50
6 "	16.00	10 "	30.00

3, 4, 5, 6 in., ½ doz. in box.
Dis., 70%.



WINDOW SCREEN FRAMES.
Patent Japanned Corners.
No. 25, 36 by 36 corners and screws, without bead, per doz., $2.50.
No. 25, 36 by 36 corners and screws, with bead, per doz., $2.90.
No. 35, 42 by 42 corners and screws, without bead, per doz., $2.90.
No. 35, 42 by 42 corners and screws, with bead, per doz., $3.30.
Black satin stain, sticks ⅞ by 1 in.
Dis., 20 %.

PULLEYS.
Side, No. 45, Japanned.

Inches...	1	1½	2	2½	3	4	5
Per doz..	.90	1.00	1.60	2.40	3.50	9.00	15.00

2 inch and under, 2 dozen in box: 2½, 3 and 4, 1 dozen in box; 5 inch, ½ dozen in box.
Discount, 50%.

HAY FORK PULLEY.
New pattern.

No. 15, 5 in. iron wheel.....per doz. $4.50
25, 5 in. wood " ..... " 4.50
66, 6 in. " " ..... " 6.00
4 dozen in case, 8 dozen in barrel.
No. 15, per dozen, $2 net.

PULLEY HOOK (New Floor.)
Deep cut thread, forged point.

	Per doz.
¾ in. wrought iron, 8 in. long, list.....	$1.90
net.....	1.00

WELL WHEEL.
New pattern.
Japanned.

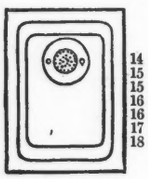
In.	8	10	12	14	16
Pr.d.	7.00	9.50	12.50	20.00	30.00

Discount, 70%.

SHEAVES.
Patent Common
Turned and polished iron wheels, round corners, brass pin, one set in box.

2½ inch.....	$1.50
3 "	1.60
4 "	2.00
5 "	2.60

Discount, 50%.



SINKS.
All 6 inch deep.

14 × 20 in....	$1.50	18 × 30 in....	$2.50
15 × 25 in....	1.75	18 × 32 in....	3.00
15 × 27 in....	2.00	18 × 36 in....	3.00
16 × 24 in....	1.80	20 × 30 in....	3.00
16 × 28 in....	2.10	20 × 36 in....	3.70
17 × 30 in....	2.25	20 × 40 in....	4.00
18 × 24 in....	2.10		

Discount, 60%.

SPOKE POINTERS.

Per doz.
No. 1, points 1⅞ in. diameter, $9.00
No. 2, points 2⅝ in. diameter, $15.00
Discount, 15 and 10%.
½ dozen in box.

VISE.
(Bench Vise, Steel Jaws.)
3½ in. opens 5 in., weight 12 lbs.
List price, each..$4.00
Net " " .. 1.60

Silent Saw Vise.
No. 10., 10 in. jaw, per doz....$15.00
Dis., 33⅓%.

No.	per dz.	gr., lbs.
1 Amateur vise.....$2.25	70	
Anvil.		
2 ..... 3.75	200	
3 .....11.25	615	
4 .....18.00	1,350	
10 .....24.00	1,675	

No. Clamp.	per dz.	gr., lbs
1½.....	3.00	80
2½.....	5.00	220
3½.....14.25		700
4½.....21.00		1,425
Combination hand..... ...	5.25	85

Spot cash discount, 33, 20 and 2, f.o.b.

Nos. 1, 1½, 2 and 2½ are packed in dozens; Nos. 3 and 3½ in half dozens; Nos. 4, 4½ and 10 in quarter dozens, and No. 20 singly. Each hand vise is put up in neat box and packed in half dozen lots.

1 Hinge pipe vise, 0 to 2 in. pipe.....Each $10.00
2 " " " 0 to 4 in. pipe..... 20.00
1 Malleable pipe vise, 0 to 2 in. pipe..... 8.00
1 Combination pipe and bench vise, 0 to 2 in. pipe...16.00
Discount, 50%.

WRENCHES.

Coes' Knife Handle Wrenches.

BLACK.

Size.	℔ doz.	Size.	℔ doz.	Size.	℔ doz.
6 inch.....	$9.00	10 "	12.00	15 inch.....	24.00
8 "	10.00	12 "	14.00	18 "	30.00
21 inch.....			36.00		

BRIGHT.

4 inch.....	$10.00	10 inch.....	14.00	18 inch	32.00
6 "	10.00	12 "	16.00	21 "	38.00
8 "	11.00	15 "	26.00		

Discount, 50, 10, 7½ and 3 %.

Coes Mechanics' Screw Wrenches, same list, less 50 10, 10, 7½ and 3 %.

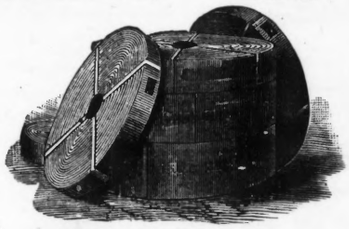
A. G. Coes & Co. Pat. Screw Wrenches, same list as above. Discount, 50, 10, 7½ and 3%.

Ice Machines (Family).

No. 1, Ice machine, ice and ice cream molds, 1 lb. ice, $15.00.
No. 2, Ice machine, ice and ice cream molds, 1½ lbs. ice, $20.00.
No. 3, Ice machine, ice and ice cream molds, 1 carafe 1 bottle holder, 2 lbs ice, $26.50.
No. 4, Ice machine, ice and ice cream molds, 2 carafe 1 bottle holder, 4 lbs. ice, $33.00.
No. 5, Ice machine, ice and ice cream molds, 3 carafe 1 bottle holder, 6 lbs. ice, $40.00.
No. 6, Ice machine, ice and ice cream molds, 4 carafe 1 bottle holder, 9 lbs. ice, $46.50.

India Rubber Goods.

MECHANICAL.

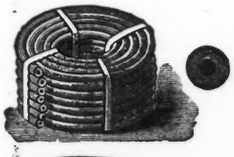


RUBBER BELTING.

Inches.	2 ply per foot.	3 ply per foot.	4 ply per foot.	5 ply per foot.	6 ply per foot.
1	$0.07	.....	.....	.....	.....
1¼	0.09	.....	.....	.....	.....
1½	0.11	.....	.....	.....	.....
2	0.15	$0.17	$0.21	.....	.....
2½	0.18	0.22	0.26	.....	.....
3	0.22	0.26	0.31	.....	.....
3½	0.26	0.30	0.37	.....	.....
4	0.30	0.34	0.42	.....	.....
4½	0.33	0.39	0.47	.....	.....
5	0.36	0.43	0.52	.....	.....
6	0.43	0.52	0.62	.....	.....
7	0.51	0.60	0.73	.....	.....
8	0.59	0.70	0.84	$1.05	$1.25
9	0.67	0.80	0.95	1.18	1.42
10	0.75	0.90	1.07	1.33	1.60
11	0.83	1.00	1.18	1.47	1.77
12	0.91	1.08	1.30	1.62	1.95
13	1.00	1.18	1.42	1.77	2.13
14	1.08	1.28	1.54	1.92	2.31
15	1.16	1.38	1.66	2.07	2.49
16	1.25	1.50	1.78	2.22	2.67
18	1.41	1.70	2.02	2.52	3.03
20	1.58	1.90	2.26	2.82	3.39
22	1.76	2.12	2.52	3.15	3.74
24	1.96	2.36	2.80	3.50	4.20
26	2.18	2.60	3.08	3.85	4.62
28	2.42	2.84	3.36	4.20	5.04
30	.....	.....	3.64	4.55	5.46
32	.....	.....	3.92	4.90	5.88
34	.....	.....	4.20	5.25	6.30
36	.....	.....	4.48	5.60	6.72
38	.....	.....	4.76	5.95	7.14
40	.....	.....	5.04	6.30	7.56
42	.....	.....	5.32	6.65	7.98
44	.....	.....	5.60	7.00	8.40
46	.....	.....	5.88	7.35	8.82
48	.....	.....	6.16	7.70	9.24
50	.....	.....	6.44	8.05	9.66
52	.....	.....	6.72	8.40	10.08

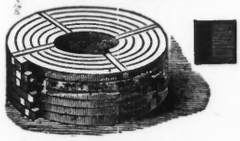
Dis. Reliance, 60 and 5. Dis. Royal, 60, 10 and 10. Dis Manhattan. 70 and 5. See Leather Belting, page 3; Link Belting, page 9.

PACKING.



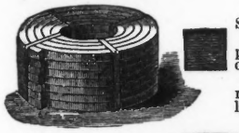
Piston Packing.

Round Piston Packing Per lb. 85c. Discount, 60, 10 and 5 per cent.



Square Piston Packing.

Price same as above. Round and square piston packing is made in lengths of twelve or twenty-four feet.



Square Piston Packing. Rubber back, per pound $1. Discount 60 der cent. Best only. Square piston packing rubber back is made in lengths of twenty feet.

Steam Packing.
Cloth Insertion, Rubber Outside.
Cloth Insertion, Cloth on one or both sides.

Thickness.	1-Ply.	2-Ply.	3-Ply.	4-Ply.
1-64 inch	70 cts.	.....	.....	.....
1-32 "	65 cts.	.....	.....	.....
1-16 "	60 cts.	63 cts.	66 cts.	.....
3-32 "	55 cts.	58 cts.	61 cts.	.....
1-8 "	55 cts.	55 cts.	58 cts.	61 cts.
3-16 "	55 cts.	55 cts.	55 cts.	58 cts.
1-4 "	55 cts.	55 cts.	55 cts.	55 cts.

One-ply of cloth to every 1-16 inch thickness.
Three cents per pound additional will be charged for each extra ply of cloth. Each cloth, whether insertion or on outside, to count as one ply.
All cloth insertion or plain packing is one yard wide, and any length desired.
Wire insertion packing, all thicknesses, per lb, 50 cents.
Discounts: Reliance, 70 & 10; Royal, 60, 10 & 10; Manhattan, 60 per cent.
See Packing, page 10.

HOSE.

Improved "Smooth Bore" Rubber Suction Hose.
On spiral flat or round tinned steel wire.

In. Diam.	Per ft.	Per. Diam.	Per ft.
inch	6.50	7 inch	$13.50
4½ "	7.50	7½ "	15.00
5 "	8.50	8 "	16.50
5½ "	9.50	9 "	19.50
6 "	10.50	10 "	22.50
6½ "	12.00	12 "	27.50

Suction hose discount: Reliance, 50 and 10%; Royal, 60, 10 and 5%; Manhattan, 70 and 5%.

SUCTION HOSE.

On spiralbrass or iron wire

Int. Diam.	Per. ft.
¾-inch	$ .77
1 "	1.00
1¼ "	1.25
1½ "	1.65
1¾ "	2.10
2 "	2.50

RUBBER HOSE.
Conducting Hose—Two-ply.

Int. diam.	Per ft.	Int. diam.	Per ft.	Int. diam.	Per ft.
½ in	$0.20	2 in	$0.66	5 in	$1.65
¾ in	25	2¼ in	75	6 in	1.98
1 in	33	2½ in	83	7 in	2.31
1¼ in	42	2¾ in	92	8 in	2.64
1½ in	50	3 in	99	9 in	2.97
1¾ in	58	4 in	1.32	10 in	3.33

HYDRANT HOSE—THREE-PLY.

½ in	$0.25	1½ in	$0.60	2½ in	$1.00
¾ in	30	1¾ in	70	2¾ in	1.10
1 in	40	2 in	80	3 in	1.20
1¼ in	60	2¼ in	90	3½ in	1.40
				4 in	1.60

Discount—Reliance, 60; Royal, 70; Manhattan, 70 and 10 per cent.

GASKETS AND RINGS.

Fibrous.
¼ inch thick, or less, per lb $0.90
5-32 inch thick, and upwards, per lb $0.80
Cloth Insertion.
1-16 inch thick, or less, per lb $1.25
3-32 inch thick, and upwards. per lb $1.00
There is one ply of cloth to every 1-16 in thickness.
Five cents per pound additional for each extra ply of cloth. Dis., 60, 10 and 5%.

CORRUGATED RUBBER MATTING.

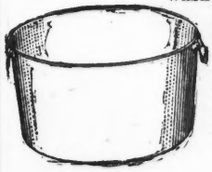
Rolls 1 yard wide, 30 yards long, cut to any size required.

Indurated Fibre Ware.

SPITTOONS.

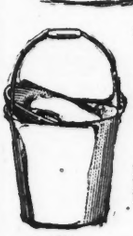
	Doz.
16 in. dia., 8 in. high	$24.00
12¼ in. dia., 5½ in. high	10.80
9 in. dia., 5 in. high	7.80

WASH TUBS.



No. 0, 23 in	½	12	27.00
Nos. 0, 1, 2 and 3, nested	1	n. 3½	22.50
No. 1, 21 in	½	10½	24.00
No. 2, 19¼ in	½	9	21.00
No. 3, 18½ in	½	9	18.00
Nos. 1, 2, and 3, nested	½	9¾	21.00

CHAMBER PAILS.



12 in. dia., 9 in. decp, 3 gal, ... 16.00

WATER COOLERS.

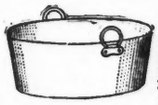
	Doz.
3 gal	$32.00
4 "	40.00
5 "	44.00
6 "	48.00
8 "	64.00
10 "	80.00
12 "	96.00
15 "	120.00

WATER COOLERS AND FILTERS.

	Doz.
4 gal	$96.00
5 "	108.00
6 "	120.00
8 "	144.00
10 "	192.00
15 "	288.00

Dis. on all 25 and 20%.

Pails.	No. doz. in crate.	Cubic feet.	Price per doz.
Ladies' or Weaver's pails, 6 qt	1	2¾	$5.35
Half or buggy pails, 6 qt	1	3	4.80
Star pails (standard plain), 12 qt., stenciled "for fire only" without extra charge	1	3½	6.00
Deck or Mason's pails (same size as Star, but heavier, with heavy wire bail)	1	4	6.60
Railroad or fire pails, 14 qt. (also stenciled "fire" without extra charge)	½	3½	7.80
Fire pails, round bottoms	1	4	7.80
Milk pails, 14 qt	1	4	7.80
Stable pails, flush bottom, heavy wire bail, 14 qt	1	4	7.80
Stable pails, 16 qt., same as above	½	3½	8.40
" 18 " "	½	3¾	10.70
" 20 " "	½	4	12.00
Covers for fire or star pails		1	3.35



KEELERS.

			Doz
A—20 in.	7 in.	deep	16.20
B—19 "	"	"	15.00
C—18½ "	"	"	14.00
1—17½ "	"	"	13.20
2—15½ "	6 in.	"	12.00
3—13¾ "	5 in.	"	10.20
4—12 "	4 in.	"	9.00

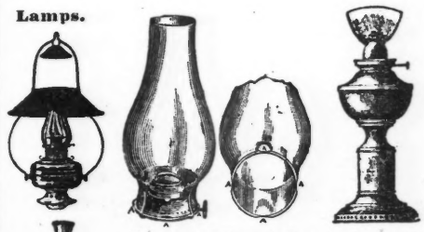
MILK OR VEGETABLE PANS.

13½ in. dia 3¼ in. deep, 6 quarts, $3.60 per doz.

WASH BASINS.

	Doz.
12½ in	$4.80
12½ in	4.20
11½ in	3.60

Lamps.

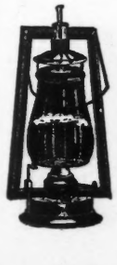


Drummond Electric Hanging Lamp, 300 candle power, complete, each $3.50.
The electric lamp, 60 candle-power.
With decorated shades, nickel, per doz. $22.00
With opal plain shades, nickel, per doz. 18.00.
With decorated shades, brass, per doz. 21.00.
With opal plain shades, brass, per doz. 17.00.
Lamp chimney patent for Sun burners.
Per doz. No. 0, 50 cents. No. 1, 60c. No. 2, 75c.
Hitchcock nickel table lamp (No. 654), each $3.25
" " hanging " 656 " 7.25
" " bracket " 651 " 3.50
" " " with reflector 653 " 3.75
" French bronze bracket, with reflector, No 653, each $3.75.

Miners'.
Brass, Collar and Breast in one piece, Spout and Body in one piece.
Price, $9 per gross net.

Demmler Bros.

	Doz.
"Cherry" Miners' Lamps, double spout	$2.00
" Drivers' " " "	2.75
" " " single "	2.50



Harp, complete, with square tin shade, per doz., $9.50.
Complete, with Burner and chimney. per doz., $1.50.
Hurricane lanterns 25 cents extra with guards.
875, ⅝ wick, without guards, per doz., $5.00.
876, square safety lifting globe, per doz., $5.50.
877, ⅝ wick, safety lifting globe, per doz., $6.75.
Nickel plated diamond reflector reading lamp, 30 candle-power, $13.50 per doz.
Net.
Illuminated night clock, per dos., $27.

PAPER LAMPS.
Lined with oil proof composition.

	No. 0.	No. 1.	No. 2.
Height,	2⅛ in.	3 in.	3¾ in.
Diameter,	3½ in.	2½ in.	2½ in.
Weight, ℔ doz.,	3¾ lbs.	1¾ lbs.	2 lbs.
Price, $2.75 per doz.		$2.25	$2.75

	No. 0.	No. 3.	No. 4.
Height,	2⅛ in.	5 in.	6½ in.
Diameter,	3½ in.	3½ in.	4 in.
Weight, ℔ doz.,	3¾ lbs.	3½ lbs.	7 lbs.
Price, $2.75 per doz.		$3.25	$4.50

Dis., 20%.

Laundry Appliances.

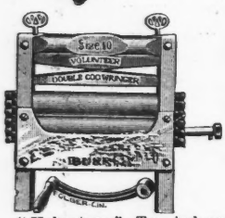
Washing Machine.

THE CATARACT.

All Metal.

Cubic Measurement 15 ft.

Price $20.



Rolls.

"Volunteer." Length, 10 in. x 1¾ in. dia. $40 doz.

"Volunteer." Length 11 in. x 1¾ in. dia. $50 per doz.

"Volunteer." Length 12 in. x 1¾ in. dia. $60 per doz. Dis., 40%.

"Volunteer." Two independent pressure screws,

"Daisy." Length, 10 in. x 1¾ in. dia. $30 per doz.

"Daisy." Length, 12 in. x 1¾ in. dia. $18 per doz. Dis., 40%.

"Empire." Length, 10 in. x 1¾ in. dia. $63 per doz.
"Empire." Length, 11 in. x 1¾ in dia. $74 per doz.
"Empire." Length, 12 in. x 1⅞ in. dia. $84 per doz.
"Empire." Length, 12 in. x 1⅞ in. dia. $87 per doz.
"Empire." Length, 14 in. x 2¼ in. dia. $156 per doz.
"Empire." Length, 14 in. x 2¼ with pulleys. $220 per doz.
"Empire." Length, 16 in. x 2½ with pulleys. $360 per doz.
Dis., 40%.

EMPIRE CLOTHES DRYING BARS. $10 per doz. Dis., 40%.

Closed.

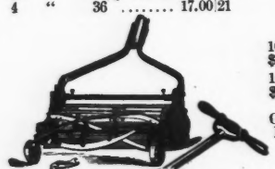
Open for use.

Lawn Mowers.

Forward Cut Mowers.

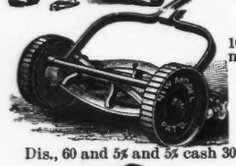
In.	Lbs.		In.	Lbs.	
0	Weight, 30¾	$13.00	16	Weight, 38	$19.00
2	" 31½	15.00	18	" 41	21.00
4	" 36	17.00	21		34.00

Dis. 60 and 5%.



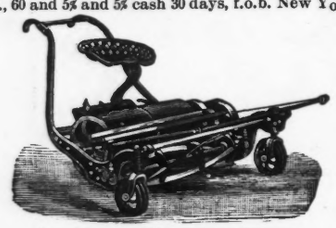
10 in.	12 in.	14 in.
$13.00	$15.00	$17.00
16 in.	18 in.	20 in.
$19.00	$21.00	$23.00

24 in., $30.00.
Geared at both ends.
Dis. 60 and 5 and 5%.



10 in. Croquet, 18 pound, mower..... $11.00
10 in..... 13.00
12 in..... 15.00
14 in..... 17.00
16 in..... 19.00
18 in..... 21.00
20 in..... 23.00

Dis., 60 and 5% and 5% cash 30 days, f.o.b. New York.



New Excelsior Horse Lawn Mower.

25 in. cut, without shafts or seat	$65.00
30 " with shaft and seat	110.00
5 " " " " "	135.00
0 " " " " "	170.00
Horse boots, per set	12.00

Dis. 50%.

Excelsior Three-Blade Mower and Roller.
8 in., $11.00; 10 in., $13.00; 12 in., $15.00; 14 in., $17.00; 16 in., $19.00; 18 in., $21.00; 20 in., $23.00.
Dis. 60% and 5% cash 30 days f.o.b. New York.

Link Belting.

Price per running foot, net.

No.	Price.	No.	Price
25	$0.13	78	$0.40
32	.13	83	.45
33	.12	85	.50
34	.13	88	.50
35	.14	95	.60
42	.16	103	.75
45	.16	105	.70
51	.20	106	.90
52	.25	107	.80
55	.22	108	.80
57	.24	109	.90
62	.30	114	1.10
66	.30	122	1.50
67	.30	124	1.30
75	.35	146	1.40
77	.35		

Sprocket wheels..... 25%

Locks.

YALE PATENT. RIM STORE LATCH.

	Per doz.
3 × 5 in., 4 keys	$48.00
2½ × 4 in., 3 keys	39.00

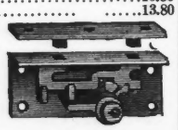
RIM NIGHT LATCH.
Spring lock, 3 keys..... 18.00
Dead lock, 3 keys..... 25.00

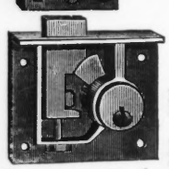
NIGHT LATCH.
Escutcheon..... 39.00
" 36.00

MORTISE DEAD LOCK.
4⅝ × 3½..... 45.00
2⅜ × 3½..... 21.00

CUPBOARD LOCKS.
Plated Nose..... 13.20
Brass Nose..... 12.00

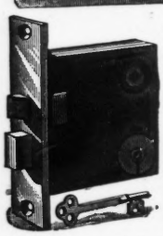
CUPBOARD
Dead Lock..... 10.80
Spring Lock..... 13.80





CHEST LOCKS.
Plated nose..... 19.20
Brass " 18.00

DRAWER LOCK.
Plated nose..... 10.20
Brass " 9.00



KNOB LOCKS.

5 × 3⅜	22.50
5 × 3⅜	20.00
4¼ × 3⅜	13.25
3½ × 3⅜	10.50

STANDARD LATCHES.
Dead locks.

3¾ × 2¾	24.00
2½ × 3⅜	14.00
1¾ × 2⅜	12.00

NIGHT LATCHES.

3¼ × 3⅜	20.00
2½ × 3¾	18.00

DRAWER LOCKS.
2 × 1⅝, two tumblers.
Plated nose..... 7.50
Brass " 6.00
Three tumblers.
Plated nose..... 9.00
Brass " 7.50

RIM FLUSH DRAWER LOCK.
2 in. diameter.

	2 tumblers.	3 tumblers.
Plated nose	7.50	9.00
Brass "	6.00	7.50

BRONZE SPRING PADLOCK.
2 flat steel keys.

In.	
1	11.00
1¼	12.00
1½	13.50
1¾	14.50
2	16.00
2¼	17.50

Subject to special net prices; no discount.

YALE KEYS.

Machinery—Foot Power.

Engine Lathes

8 in. swing, 20 in. bet. centers, 36 in. bed, 240 lbs. weight, $60.
8 in. swing, 30 in. bet. centers, 46 in. bed, 260 lbs. weight, $70.
8 in. swing, 36 in. bet. centers, 52 in. bed, 280 lbs. weight, $75.

Boxing for export, $2.50 extra; f.o.b. at Cincinnati. 25 % dis.

SAWS AND LATHES

Victor Scroll Saw, Cuts to 3 Inches.

24-inch swing, with 12 saw blades.... $4
Dis., 20%.

Empire Scroll Saw, Cuts to 3 Inches.

24-in. swing, drill and tilting table.
Price, boxed..... $25
Dis., 20%

The Acme Combination Saw.

Hand or steam power.
Adjustable table and gauges.

Price, boxed	$40
Scroll saw attachment	7
Boring attachment	10
Moulding attachment	10

Dis., 20%.

Paragon Self Feed Rip Saw.

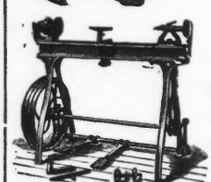
Two changes of speed; three changes of feed.
Price, with one 10 in. saw, $50.00
Dis., 20%.

Diamond Mortising Machine.

With mortise ¼ to 1 in. wide, 3 in. deep.
" cut tenons ¼ to ¾ thick, 3 in. wide.
Price, with 3 chisels..... $25.00
Dis., 20%.

The "Star" Lathe.

Swings 9 × 25 in., back geared screw cutting.
Feeds in or out, right or left. Adjustable Tail Stock for Tapers.
Price..... $75.00
Dis., 15%.



The Crown Lathe.

Swings 10 × 36 in.

Price, boxed	$45.00
Compound slide rest	15.00
Countershaft	10.00

Dis., 20%.

Rival Scroll Saw, with six extra saw blades, twist drill and wrench.
Price..... $10.00
Lathe attachment..... $3.00
Dis., 25%.

The Challenge Scroll Saw, for shell, bone wood, or metal.
Nickel Plated, with six extra saws, twist drill and wrench.
Boxed..... $20.00
With lathe attachment..... $5.00
Dis., 25%.

Hand Circular Rip Saw.

Cuts 3¾ thick, 19 in. wide.

Price $50.00.

Dis.,

Scroll and Circular saw Combined.
Combined Machines.
Combined circular scroll saw and boring attachment—2 circular saws, 12 assorted scroll saws, boring attachment, and self-centering drill chuck..... $50.00
Combined circular and scroll saw—2 circular and 12 scroll saws..... 40.00
Circular saw—1 extra rip and 1 cross-cut saw..... 35.00
Scroll saw—12 assorted scroll saws..... 32.00
Counter shaft for steam power..... 10.00
Dis., 35%.

Foot Power Former.
$20.00; Knives extra, $1.00 each.
Dis., 35%.

Mortising Machine.
$22.00; Chisels, $1.00 each.

Dis., 35%.
Blind Slat Chisels, 3 set bits, $5.00.
Dis., 20%.

Tenoning Machine,
Price, $25.
Dis., 35%.

Velocipede Scroll Saw,

Without boring attachment..... .....$20.00
With " " 23.00
1 doz. saw blades, 1 3-16 bit. } Included. Dis., 35%.

Lathe.

centres, 1 spur, 2 tool rests and sockets, 1 turned face-plate, $35.

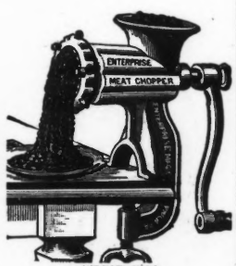
Dis., 30%.

Lathe.

One turned face-plate, two pointed and one spur center, two rests, with sockets and plate for hand tools, slide rest-wrench, belting, etc., $40.

Dis., 25%.

Meat Cutters.



American.				Enterprise.					
1	2	3	4	10	12	22	32	42	
each, $5.00	7.00	10.00	25.00	each, $3.00	2.50	4.00	6.00	15.00	
Dis. — —.				Dis., 30%.					

Motors (Water).

Size No. 8, for Sewing Machines, etc , $18 each.

No. 9, ⅛ horse-power (30 lbs. pressure), ¼ h. p. (50 lbs.), ½ h. p. 100 lbs.), ¾ h. p. (150 lbs.), 1 h. p. (200 lbs.), $30.

No. 10, ¼ horse-power (30 lbs. pressure), ½ h. p. (50 lbs.), 1 h. p. (100 lbs.), 1½ h. p. (150 lbs.), 2 h. p. (200 lbs.), $50.

No. 10½, ½ horse-power (30 lbs. pressure), 1 h. p. (50 lbs), 2 h. p. (100 lbs.), 3 h. p. (150 lbs.), 4 h. p. (200 lbs.), $75.

No. 11, 1 horse-power (30 lbs. pressure), 1½ h. p. (50 lbs.), 3 h. p. (100 lbs.), 4½ h. p. (150 lbs.), 6 h. p. (200 lbs.), $100.

No. 12, 2 horse-power (30 lbs. pressure), 3 h. p. (50 lbs.), 6 h. p. (100 lbs.), 9 h. p. (150 lbs.), 12 h. p. (200 lbs.), $175.

No. 13, 3 horse-power (30 lbs. pressure), 5 h. p. (50 lbs.), 10 h. p. (100 lbs.), 15 h. p. (150 lbs.), 20 h. p. (200 lbs.), $285.

Dis., 40%.

Governors for 11 and 12, $25 extra; for No. 13, $35 extra.

Concentrating Machinery.

Blake Improved Crusher: 10x7, weight 7,500; $410.00.

Blake Improved Crusher: 15x9, weight 9,000; $580.00.
Discount 25%.

Cornish Crushing Rollers: 20 diameter, 10 face, weight 5,400; $450.00.

Cornish Crushing Rollers: 20 diameter, 14 face, weight 6,000; $500.00.

Cornish Crushing Rollers: 22 diameter, 14 face, weigbt 9,500; $625.00.

Cornish Crushing Rollers: 27 diameter, 14 face, weight 13,000; $750.00.

Cornish Crushing Rollers: 30 diameter, 14 face, weight 15,000, $850.00.

Discount 25%.

Complete Sizing Arrangement, consisting of Revolving Screens of Steel Sheet and Hydraulic Classifier.

For Concentrator, 25 tons capacity, $250; 50 tons capacity, $350; 75 tons capacity, $450; 100 tons capacity, $800. Discount, 10 per cent.

Automatic working Jig Machines, all complete, woodword included, with slidemotion; 2 sieves, $310; 3 sieves, $360; 4 sieves, $450,

With Eccentric Motion, all complete, woodwork included: 1 sieves, $200; 2 sieves, $270; 3 sieves, $320; 4 sieves, $330.

Automatic working Double Jig Machines, all complete, woodwork included: 4 sieves, $210; 6 sieves, $335; 8 sieves, $425. Discount, 25 per cent.

Single Rittinger Percussion Tables, all the iron parts, $350; Double Rittinger Percussion Tables, all the iron parts, $500. Discount, 10 per cent.

Improved Rotary Tables, all the iron parts and pipes, $200. Discount, 25 per cent.

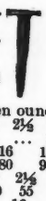
Nails and Tacks.

Swedes. Tacks.

Per doz.	½	¾	1	1½	2	2½	3	
½ wt..	35	40	46	50	55	60	65	75
6	8	10	12	14	16	18	20	24 oz.
85	1.00	1.20	1.40	1.60	1.75	1.85	2.15	2.55
Doz.full	½	¾	1	1½	2	2½	3	4
weight	60	70	80	90	1.00	1.10	1.20	1.40
6	8	10	12	14	16	18	20	24 oz.
1.60	1.90	2.30	2.70	3.10	3.40	3.80	4.20	5.00
lb., bulk	¼	¾	1	1½	2	2½	3	4
or paper	1.60	1.25	1.00	80	66	58	52	46
6	8	10	12	14	16	18	20	24
36	32	31	30	29	28	28	28	28

Discount, 67½, 10 and 2%.

O. H. Swedes.
Price, same as Swedes.
Swedes steel tacks same list price as iron.



Upholsterers.

Discounts, 72½, 10 and 2%.

Price, same as Swedes.

Cut Tacks. Price per dozen ounces.

	1	1½	2	2½	3	4	6	8	10
¼ wt.....	..	..	..	..	35	40	45	50	55
	12	14	16	18	20				
	60	70	80	90	1.00				
⅛ wt.	1	1½	2	2½	3	4	6	8	10
	45	50	50	55	60	65	70	80	95
	12	14	16	18	20				
	1.10	1.25	1.40	1.55	1.70				
Full wt ..	1	1½	2	2½	3	4	6	8	
	80	90	90	1.00	1.10	1.20	1.30	1.50	
	10	12	14	16	18	20			
	1.80	2.10	2.40	2.70	3.00	3.30			

Discount, 70, 10 and 2%.

Carpet Tacks, flat and oval heads.

Blued, doz. oz.	4	6	8	10	12	14	16	18	20
¼ wt.	35	40	45	50	55	65	75	85	95
	22	24							
	1.05	1.15							
" ⅛ wt.	4	6	8	10	12	14	16		
	65	70	80	95	1.10	1.25	1.40		
	18	20	22	24					
	1.55	1.70	1.85	2.00					
Tinned, doz. ¼ wt.	4	6	8	10	12	14	16		
	50	55	60	75	85	1.00	1.10		
	18	20	22	24					
	1.20	1.35	1.45	1.60					
Tinned, doz. ⅛ wt.	4	6	8	10	12	14			
	95	1.05	1.15	1.40	1.60	1.85			
	16	18	20	22	24				
	2.10	2.35	2.60	2.85	3.10				

Discount, 72½, 10 and 2%.

Finishing Nails.

Inch....	⅝	3½-8	4-8	4½-8	⅝	5½-8	6-8	7-8	1
Per lb...	48	40	32	28	26	24	22	20	18

1½ and larger. 16

Discount, 60, 10 and 2%.

Chair Nails.
Doz. ½ wt. ; doz. full wt.; pound B. or P.

Inch..	⅝	3½-8	4-8	4½-8	⅝	5½-8	6-8	7-8
Per lb.	51	43	35	31	29	27	25	23
	1	1½						
	21	19						

Discount, 60, 10 and 2%.

Common and patent brads.

inch.	Price per doz. ½ wt.	Price per doz. full wt.	Price per lb. in papers or bulk.
2-8.....	.50	1.00	1.25
3-8.....	.60	1.20	.80
4-8.....	.65	1.30	.58
5-8.....	.72	1.44	.48
6-8.....	.80	1.60	.36
7-8.....	.90	1.80	.30
1.....	1.00	2.00	.26
1⅛.....	1.12	2.24	.25
1¼.....	1.26	2.52	.24
1½.....	1.82	3.64	.22
1¾.....	2.25	4.50	.20
2.....	2.43	4.86	.18

Dis. 60, 10 and 2%.

Oils. LUBRICATING.

Lubroleine A cylinder oil 50 in. barrels.
Lubroleine D cylinder oil 40 in. barrels.
Lubroleine A machine oil 45 in. barrels.
Lubroleine B machine oil 35 in. barrels.
Lubroleine A engine oil 50 in. barrels.
Lubroleine B engine oil 40 in. barrels.
In cases 5c gal. extra.
Crescent Axle Grease.—Barrels, 3c per lb; 100-lb. kegs 3½c lb.; 2-lb. decorated tins, $12, gross less 5 per cent.
Texas Star Axle Grease.—Barrels, 2½c per lb.; 100 l kegs, 3c per lb.
See Axle Grease, page 2.

Packing.

Eureka, 75c. per lb. Dis., 40%.
Soapstone—Standard, 8c. per lb.
XX. 11c. per lb.
Crown—No. 1, 23c. per lb.
No. 2, 26c. per lb.
Climax, 9c. per lb. Net.
SELDEN'S PATENT.
For Steam, Air, Water and Ammonia.
With Rubber Core, 60 cents per lb.
Dis., 25 and 5%.
With canvas core, 50 cents per lb.
Dis., 30 and 5%.
See Rubber Packing, page 7.

Portable Houses.

Weight, 450 lbs.

Price, $150.

Closes securely.

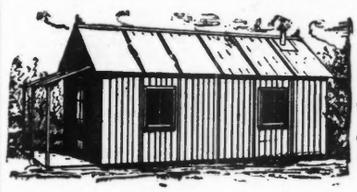
Dis., 10%.

Weight, 85 lbs. per section.

Price, $220.

Dis., 10%.

No. 10.—26 × 33 ft.. including veranda and rear extension. Main part, 19 × 26 ft.....$500.00



F. o. b. Cars Chicago or New York

Size.	Doors.	Windows.	No. porch.	End porch	Side porch.
7 × 9	1	2	$64.00	$71.00	$73.00
7 × 12	1	2	75.00	82.00	87.50
7 × 16	1	2	90.00	97.00	106.00
7 × 19	2	4	117.00	124.00	136.00
10 × 9	1	2	70.00	80.00	79.00
10 × 12	1	2	92.00	102.00	104.00
10 × 16	1	4	108.00	118.00	124.00
10 × 19	2	4	134.00	144.00	153.00
10 × 26	2	4	172.00	182.00	198.00
10 × 32	2	6	203.00	213.00	235.00
12 × 12	1	2	102.00	114.00	114.00
12 × 16	2	4	138.00	150.00	154.00
12 × 19	2	4	160.00	172.00	179.00
12 × 26	2	4	193.00	205.00	219.30
12 × 32	2	6	245.00	257.00	277.00

Post Hole Diggers.

Little Giant.....	$36.00	doz 11 cu
Hercules.....	30.00	" " "
New Champion....	20.00	" " "
Scheidler.....	36.00	" " "

Dis. 40% f.o.b. New York or Boston.

Press.

Combined press for cutting, forming, horning and seaming.

Particulars of flat front presses, including beds, slides, bolsters, plates, etc.

Prices are net, delivered on steamers in New York, including insurance, etc.

Nominal size of press.....	41	42	43	41	450
Price, including et ceteras.....	$130	$200	$260	$420	$660
Weight, about.....lbs	600	1050	1900	3600	7200
Greatest diameter that can be wired.....ins	5	7	10	14	20
Greatest depth that can be wired.....ins	8	10	13	16½	20
Hole through bed—circle intersecting.....ins	4½	6	8½	12	17
Hole through back—width.....ins	8	9½	12	15½	20½
Width between die clamps—clear.....ins	8	11	15	20	27
Distance back from center of slide bar.....ins	4½	5½	7	9	12
Height to slide-bar, when up..ins	5¼	6½	7½	8½	9
Stroke of slide-bar.....ins	1	1¼	1½	1¾	2
Adjustment of slide-bar.....ins	1	1¼	1½	1¾	2
Diameter of fly-wheel.....ins	20	26	32	38	44
Width of fly-wheel.....ins	3	4	5	6	7
Weight of fly-wheel, about.....lbs	125	250	420	725	1100
Speed per minute, about.....rev	120	110	100	90	80
Cubic feet boxed, about.....	30	40	50	60	70

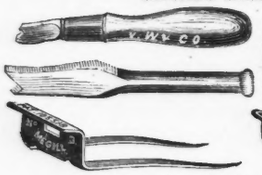
Printers' Sundries.

Wood rules, 12 cents per yard.
Wood rules, on end wood, 15 cents per foot.

EUREKA STAND.
12 full cases.

Price without cases.....$12.50
Boxing and cartage..... 1.25

SHOOTING STICKS.



Each.
No. 1, 75c.
No. 2, $1.
No. 4, 45c., black.
No. 4, 60c., bright.
No. 5, 60c., black.
No. 5, 75c., bright.

GAUGE PINS—ALL SIZES.

Brass, 40c. doz. | Steel, 60c. doz.
Wire, 25c. doz. | Golden, 40c. doz.

MITRE BOXES.

Regular size, 2 in., 50c. each.
Extra size, 3½ in., 75c. each.

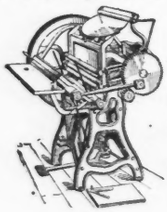
LEAD CUTTER.

Curtis' Lead Cutter $2.00

PROOF PRESS, "OUR OWN."

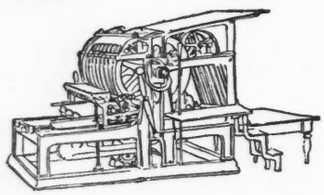
9 × 32, complete, with Brayer $28.00

THE GLOBE PRESS.



8 x 12 in. inside clear, with throw-off $150.00
9 x 13 in. inside clear, with throw-off 175.00
10 x 15 in. inside clear, with throw-off 200.00
11 x 17 in. inside clear, with throw-off 250.00
Steam fixtures 15.00
Fountain 12.50

Dis. 20%.



THE "LIBERTY" CYLINDER PRESS.

For Newspaper and Job Printing.

	Bed.	Form.	
No. 5	29 × 42	24 × 40	$1,200
6	33 × 47	28½ × 45	1,300
7	37 × 51	33 × 49	1,600

Dis., 20 and 5%.

THE "LIBERTY" JOB PRINTING PRESS.

Size of chase.

No. 2	— 7	× 11	$200
2a	— 9	× 13	250
3	—10	× 15	300
3a	—11	× 17	350
4	—13	× 19	400
5	—14½	× 22	500

Dis., 12½ and 5%.

Two sizes built extra strong for boxmakers, embossing, etc.

No. 3a	—11	× 17	$375
4	—13	× 19	425

Dis., 12 and 5%.

Fountains, either size, $25 extra, if ordered with press. Steam fixtures, either size, $15 extra.

THE AMERICAN CARD AND BILL HEAD PRESS.

No. 5	—4 ×	6	$11
	7—6 ×	9	37
	8—8 ×	12	61

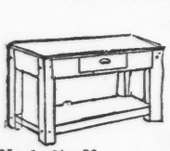
Dis., 20% and 5%.

THE "LIBERTY" PAPER CUTTER.

Cuts 30 inches $140.00
Extra knife 18.80

Dis., 12% and 5%.

THE "LIBERTY" IMPOSING TABLES



Marble top.

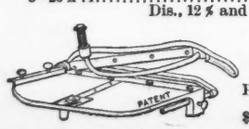
No. 1	—24 × 36		$24
	2—32 × 48		38
	3—26 × 74		44
	4—36 × 48		48

Dis., 12½ and 5%.

Slate Top.

No. 1	—24 x 36		$18
	2—32 x 48		25
	3—26 x 74		32

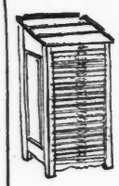
Dis., 12½ and 5%.



Kelsey & Co.,

The Eagle card and Paper Cutter, 24½ inch, $12 each, $100 per doz.

THE "LIBERTY" TYPE CABINETS.



Number of cases.	Stained. Flat.	Stained. Galley.*	Grained. Flat.	Grained. Galley.*
	$	$	$	$
12⅔	12.00	14.50	14.00	17.00
16⅔	15.00	17.50	17.00	20.00
18⅔	16.50	19.00	18.50	21.50
20⅔	18.00	20.50	20.00	23.00
12¾	15.00	17.50	17.00	20.00
16¾	18.00	20.50	20.00	23.00
18¾	19.50	22.00	21.50	24.50
20¾	22.00	24.50	23.00	26.00
12 full	18.00	20.50	20.00	23.00
16 "	22.00	24.50	24.00	27.00
18 "	24.00	26.50	26.00	29.00
20 "	26.00	28.50	28.00	31.00

Number of cases.	Pine. Flat.	Pine. Galley.*	Cherry. Flat.	Cherry. Galley.*	Napanoch. Flat.	Napanoch. Galley.*	Walnut. Flat.	Walnut. Galley.*
	$	$	$	$	$	$	$	$
12⅔	18.00	21.00	20.00	23.00	22.00	25.00	23.00	26.00
16⅔	22.00	25.00	24.00	27.00	26.00	29.00	27.00	30.00
18⅔	24.00	27.00	.....	.....	.....	.....	.....	.....
20⅔	26.00	29.00	28.00	31.00	30.00	33.00	31.00	34.00
12¾	21.00	24.00	23.00	26.00	25.00	28.00	26.00	29.00
16¾	25.00	28.00	27.00	30.00	29.00	32.00	30.00	33.00
18¾	27.00	30.00	.....	.....	.....	.....	.....	.....
20¾	29.00	32.00	31.00	34.00	33.00	36.00	34.00	37.00
12 full	24.00	27.00	26.00	29.00	28.00	31.00	29.00	32.00
16 "	28.00	31.00	30.00	33.00	32.00	35.00	33.00	36.00
18 "	30.00	33.00	.....	.....	.....	.....	.....	.....
20 "	32.00	35.00	34.00	37.00	36.00	39.00	37.00	40.00

—*Furnished with galley top and extra drawer for copy.

Dis., 20 and 5%.

THE "LIBERTY" CASE STANDS AND RACKS.

Stands.

Single, without racks	$3.75
" with racks for 8 full cases	4.00
Single, with racks for 10 full cases	4.25
Single, with racks for 12 full cases	4.50
Single, with racks for 14 full cases	4.75
Double, without racks	4.25
" with racks for 8 full cases	4.50
Double, with racks for 16 full cases, and gal. rest	6.25
Double, with racks for 20 full cases and gal. rest	6.50
" " " " 24 " " " " "	6.75
" " " " 24 ⅔ cases	5.25
" " " " 8 full and 8 ⅔ cases	5.00
" " " " 8 " " 8 ¾ "	5.25
" " " " 10 " " 12 ⅔ "	5.55
" " " " 12 " " 16 ⅔ "	5.70
" " " " 12 " " 16 ¾ "	6.05
Stands with closed ends, extra	2.00
Extra slides for stands, each	.00

GALLEY RACKS.

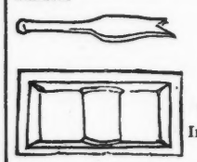
From $3 up.

LEAD CUTTERS,
From $2 up.
D[illegible] and 5%.

THE "LIBERTY" TYPE CASES.

Name.	Outside Measurements.
Full size	32¼x16⅛x19-16
Rooker size	28⅛x14¼x1 9-16
¾ size	26x16⅛x1⅝
⅔ size	22⅝x16⅛x1⅝
Enlarged size	32¼x23x2 3-16
Wood type "	32¼x23x1 9-16
Mammoth "	44x23x1 9-16

Cabinet case sides extend 1½ to 3 inches. In ordering cabinet cases, state whether high or low fonts are wanted.



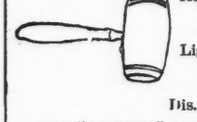
THE "LIBERTY" STEEL SHOOTING STICKS.

Bright, $1 each.
Nickelplated, $1.25 each.
Dis., 40%.

STANDARD METAL FURNITURE

25c. a pound.
In fonts of 25, 50, 75 and 100 lbs.
Dis., 15%.

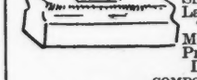
THE "LIBERTY" MALLETS.



Hickory, small	$.20
" medium	.25
" large	.30
" iron bound	1.00
Lignum Vitæ, No. 4	.30
" " No. 3	.40
" " No. 2	.50
" " No. 1	.70

Dis. 20 and 5%.

THE "LIBERTY" PLANERS AND PROOF PLANERS.



Midget planer	10c.
Small Maple	20c.
Large "	25c.
" b'k'd with leather	30c.
Midget " " "	12c.
Proof planer, faced with cloth	50c.

Dis., 40%.

COMPOSING STICKS.

GROVER'S PATENT AND UNION.

	Screw or News.
6 in.	1.10
8 "	1.20
10 "	1.40
12 "	1.60
14 "	1.80
16 "	2.00
18 "	2.20
20 "	2.40

Composing rules, 14 ems pica and under, 25 cents.

THE "LIBERTY" COMPOSING STICKS.

Grover.

6 in., Steel	$ .90	16 in., Steel	$1.80
8 "	1.00	18 "	2.00
10 "	1.20	20 "	2.20
12 "	1.40	Extra Clasp	.10
14 "	1.60	Extra Knee	.40

Screw.

6 in., Steel	$ .75	16 in., Steel	$1.45
8 "	.80	18 "	1.60
10 "	1.00	20 "	1.75
12 "	1.15	Extra Knee	.30
14 "	1.30	" Screw and Nut.	.10

Dis., 40%.

Yankee.

6-in., Steel	$ .75	12 in., Steel	$1.15
8 "	.80	Extra Knee	.30
10 "	1.00	" Clamp and Screw	.15

Other Sizes to Order.
Dis., 40%.

Albion.

6-in., Steel	$1.00	6-in, German Silver	$1.50
8 "	1.10	8 " " "	1.75
Extra Knee	.40	Extra Screw and Nut.	.10

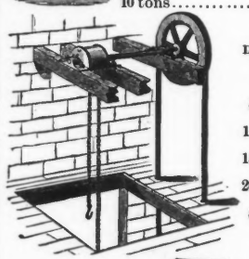
Pulley Blocks.

WESTON DIRECT.

	Each.
⅛ ton	$10
¼ ton	13
½ ton	15
1 ton	20
1½ tons	25
2 tons	30
3 tons	40

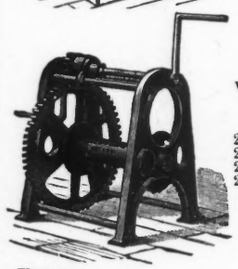
Geared.

1 ton	45
2 tons	35
3 tons	60
4 tons	80
5 tons	110
6 tons	150
8 tons	210
10 tons	250



DOUBLE LIFT HOISTS FOR HATCHWAYS, ETC.

500 lbs	$25.00
1000 "	50.00
1500 "	65.00
2000 "	80.00
500 "	30.00



WESTON CRAB SAFETY BRAKE, HANDLES CANNOT FLY BACK.

	Each.
21	$35.00
22	45.00
23	65.00
25	100.00

Pumps.

Prices on all pumps include cylinders.

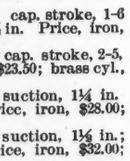
No.	Dia. Cyl.	Suction.	Cap. stroke.	Price—Iron.	Price—Brass cyl.
0	2 in.	1 in.	1-15 gal.	$3.50	.....
1	2¼ "	1 "	1-12 "	4.00	$6.00
2	2⅝ "	1¼ "	1-11 "	4.50	7.00
3	2½ "	1¼ "	1-10 "	5.00	8.00
4	3 "	1¼ "	1-6 "	5.50	10.00
5	3¼ "	2 "	1-5 "	6.50	14.00
6	3½ "	2 "	1-4 "	8.00	18.00
7	4 "	2½ "	1-3 "	12.00	20.00

Dis., 65%.

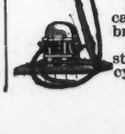
1	2½ in.	1¼ in.	1-10 gal.	4.25	.....
2	3 "	1¼ "	1-7 "	4.75	.....
3	3½ "	1¼ "	1-5 "	5.25	.....
4	4 "	1½ "	1-4 "	5.75	.....
5	4½ "	1½ "	1-3 "	6.25	.....

Dis., 70%.

Standard and Cylinder for 1½ in. Iron Pipe, $16.00. Dis., 55%



No. 6½, standard and cylinder, 1¼ in. pipe, $13.00.
No. 7½, standard and cylinder, 1¼ in. pipe, $15.00.
No. 8½, standard and cylinder, 1½ in. pipe, $18.00.
With hose and discharge pipe, add $3.00 to list price.
Dis., 55%.



No. 1, diam. cyl., 2½ in.; cap. stroke 1-8 gal.; size pipe, 1¼ in. Price, iron, $12.50; brass cyl., $17.50.
No. 2, diam. cyl., 3 in.; cap. stroke, 1-6 gal.; size pipe, 1¼ or 1½ in. Price, iron, $14.50; brass cyl., $18.50.
No. 3, diam. cyl., 4 in.; cap. stroke, 2-5, gal.; size pipe, 1½ or 2 in. Price, iron, $23.50; brass cyl., $34.50. Dis., 55%.

No. 1, diam. cyl., 3 in.; suction, 1¼ in. cap. stroke, 3-10 gal. Price, iron, $28.00; brass cyl., $58.00.
No. 2, diam. cyl., 4 in.; suction, 1½ in.; cap. stroke, 1-2 gal. Price, iron, $32.00; brass cyl., $60.00.
No. 3, diam. cyl., 5 in.; suction, 2 in.; cap. stroke, 6-7 gal. Price, iron, $35.00; brass cyl., $90.00.
No. 4, diam. cyl., 6 in.; suction, 2½ in.

cap. stroke, 1 1-5 gal. Price, iron, $45.00; brass cyl. $120.00. Dis., 45%.

No.	Diam. cyl.	Cap. stroke.	Stroke.	Pipe.	Price.
0	2 in.	1-11 gal.	7 in.	1 in.	$21.50
00	2½ "	1-7 "	7 "	1 "	23.00
1	3 "	1-5 "	7 "	1½ "	25.25
2	3½ "	1-3 "	7 "	1½ "	27.25
3	4 "	4-10 "	7 "	2 "	30.50
3½	4½ "	1-2 "	7 "	2 "	37.50
4	5 "	8-10 "	10 "	2½ "	44.00
4½	5½ " 1	"	10 "	2½ "	47.00
5	6 " 1	1-5 "	10 "	3 "	50.00

Dis., 40%.

No.	Diam. cyl.	Cap. stroke.	Diam. pipe.	Price. Iron.	Br's cyl.
1	2 in	1-5 gal.	1 in.	$39	$51
2	2½ "	1-3 "	1¼ "	41	56
3	3 "	1-2 "	1½ "	45	62
4	3½ "	6-7 "	2 "	51	81
5	4 "	7-8 "	2 "	63	114
6	4½ " 1	"	2 "	80	155

Dis., 40%.

With Tight and Loose Pulleys.

No. 1, cap. per rev., 1-6 gal.; size of pipe, 1¼ in.; price, iron, $26; bronze, $45.

No. 2, cap. per rev., 1-5 gal.; size of pipe, 1½ in.; price, iron, $31; bronze, $55.

No. 4, cap. per rev., 1-3 gal.; size of pipe, 2 in.; price, iron, $48; bronze, $75.

Pulleys on Nos. 1 and 2 are 8 in. diam., 2½ in. face; on No. 4, 12 in. diam., 3½ in face.

Balance wheels for above pumps. $1, $2, and $3, according to size. Dis., 45%.

No. 2, ½ to 2 gal. per min.; length of drive pipe, 25 to 40 ft.; calibre of pipes, drive, ¾ in.; discharge, ⅜ in.; price, $9.

No. 3, 1 to 4 gal. per min.; length of drive pipe, 25 to 40 ft.; calibre of pipes, drive, 1 in.; discharge, ½ in.; price, $11.

No. 4, 2 to 8 gal. per min.; length of drive pipe, 25 to 40 ft.; calibre of pipes, drive 1½ in; discharge ½ in; price $14

No. 5, 3 to 14 gal, per min.; length of drive pipe, 25 to 40 ft.; calabre of pipes, drive 2 in; discharge 1 in; price $22.

No. 6, 4 to 25 gal. per min.; length of drive pipe, 30 to 40 ft.; calibre of pipes, drive, 2½ in.; discharge, 1¼ in.; price, $40.

No. 7, 8 to 60 gals. per min.; length of drive pipe, 30 to 40 ft.; calibre of pipes, drive, 4 in.; discharge, 2 in.; price, $75.

No. 8, 12 to 120 gal. per min.; length of drive pipe, 30 to 50 ft.; calibre of pipes, drive, 6 in.; discharge, 2½ in.; price, $125. Dis., 45%.

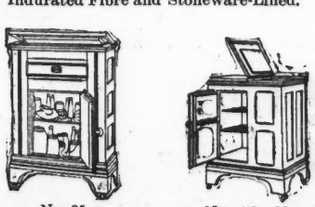
Railroad Dumping Cars and Carts.

Cars.	Gauge.	Cap.	Net	Cap.	Net	Cap.	Net.
Side Dumping	24"	1 c. y.	$55	2 c. y.	$65	3 c. y.	$75*
End "	"	"	55	"	65	"	75*
Revolving "	"	"	70	"	80	"	90*
Bottom "	"	"	80	"	90	"	100*
Tunnel.	"	"	55	"	65	"	75*
Mine.....	"	"	50	"	60	"	70*
Plantation.....	30"		43				
Logging.	36"		170				
"	4' 8½"		185				
Hand.....	36"		45				
"	4' 8½"		50				
Push.....	36"		40				
"	4' 8½"		45				
R.R. Construction	36"		60				
"	4' 8½"		65				
Carts.							
Plantation and Railroad.....			45 to 75				
Wagons.							
McEwen Patent Dumping.....		1 "	175	1½ "	200		

*These cars built of any gauge from 18" to 56½" and of ny capacity from ½ to 6 cu. yd.

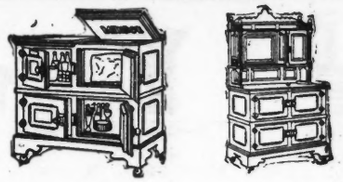
Refrigerators.

Indurated Fibre and Stoneware-Lined.



No. 35. Nos. 75, 85.

No.	High.	Wide.	Deep.	Price.
35.....	46¼	28¾	20¼	$20.00
75.....	44¼	33¾	23½	28.00
85.....	47¾	38	23½	34.00



No. 2. No. 6.

No.	High	Wide.	Deep.	Price.
2.....	41	46	26	$36.00
6.....	84	46	26	60.00

Mirror 16 by 18 in. Dis., 30 and 5%.

Rat Traps.

1 doz. in box.

1 gross in case.

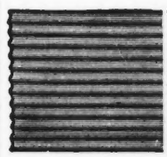
$30 per gross.

Dis. 50 and 10%.

Roofing.

CORRUGATED IRON.

2½ inch corrugations.



Gauge.	Per square.
No. 18, painted red.....	$9.10
No. 20, " "	7.60
No. 22, " "	6.50
No. 24, " "	5.35
No. 26, " "	4.65
No. 27, " "	4.35
No. 28, " "	4.00
No. 18, galvanized.....	13.30
No. 20, "	10.60
No. 22, "	9.10
No. 24.	7.45
No. 26, galvanized.....	7.05
No. 27, "	6.95
No. 28, "	6.75

Dis., 10%. F. o. b. N. Y.

Sash Chains.

No. A. "Giant" metal, 15c. p ft., wts. not over 125 lbs.

No. 1. "Giant" metal, 12c. pr. ft., wts. not over 75 lbs.

No. 2. "Giant" metal, 10c. pr. ft., wts. not over 40 lbs.

No. 0. "Giant" metal, 8c. pr. ft., wts. not over 25 lbs.

No. 1. Red metal, 10c. pr. ft.. wts. not over 40 lbs.

No. 2. Red metal, 8c. pr. ft., wts. not over 30 lbs.

No. 0. Red metal, 6c. pr. ft. wts. not over 15 lbs.

No. 1. Steel, 8c. pr. ft., wts. not 75 lbs.

No. 2. Steel, 6c. pr. ft., wts. not over 30 lbs.

No. 0. Steel, 4c. pr. ft., wts. not over 15 lbs.

No. 1. Steel, black enameled, 9c. pr. ft., wts. not over 75 lbs.

No. 2. Steel, black enameled, 7c. pr. ft., wts. not over 30 lbs.

No. 0. Steel, black enameled, 5c. pr. ft., wts. not over 15 lbs.

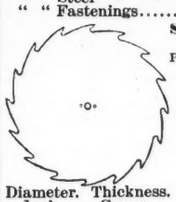
Fastenings for hanging a window of 2 sashes for Nos. 1 and 2 chains, consisting of 4 hooks, 4 rings, 4 sash irons, a set, 18c. per set.

Fastenings for hanging a window of 2 sashes for No. 0 chains, 14c. per set.

Dis. on				
"Giant" metal chain	40	10	10%	
" " Red metal chain.....	40	10	10	10%
" " Steel " "	40	10	10	10%
" " Fastenings.....	40	10	10%	

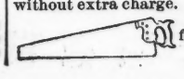
Saws.

PATENT GROUND AND TEMPERED SOLID TOOTH CIRCULAR SAWS.



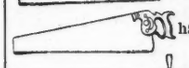
Diameter. Inch.	Thickness. Gauge.	Size of hole—Inch.	Price each.	Extra for each additional gauge, heavier.	Prices for beveling new saws (grinding or beveling old saws, extra). Per gauge.
1	24	⅜	$0.50	$0.01	$0.06
2	23	⅝	.60	.01½	.08
3	21	½	.70	.02½	.10
4	19	¾	.90	.03	.14
6	18	¾	1.30	.05	.18
8	18	⅞	1.75	.08	.22
10	16	1	2.30	.12	.28
12	15	1	3.00	.17	.35
16	14	1½	5.50	.25	.50
20	13	1 5-16	8.50	.35	.70
24	11	1⅝	12.00	.55	.90
28	10	1½	16.00	.80	1.20
32	10	1⅝	20.00	1.00	1.40
36	9	1⅞	25.50	1.40	1.70
40	9	2	35.00	2.00	2.00
44	8	2	52.50	3.00	2.40
48	8	2	70.00	4.00	2.80
52	7	2	90.00	5.00	3.25
56	7	2	115.00	7.00	3.75
60	6	2	145.00	9.00	4 25
64	6	2	180.00	12.00	5.00
68	5	2	225.00	18.00	5.75
72	5	2	290.00	24.00	6.55
76	5	2	375.00	30.00	7.50

Circular saws to cut metal or ivory, 50% advance. No extra charge for saws one gauge thicker than list. Circular saws beveled one gauge without extra charge up to 44 inches; 44 inches and larger, beveled two gauges without extra charge.



Hand—London Spring Steel; four brass screws.
26 in. $30.00 per doz.

Hand—Skew Back Saw, Apple Handle; 5 screw.
26 in. $22.00 per doz.



Hand—Grained Blade, Beech handle, polished edge; 4 screws.
26 in. $20.00 per doz.

One man Cross-Cut—Supplementary Handle.

	3 ft.	3½ ft.	4 ft.	4½ ft.	5 ft.	5½ ft.	6 ft.
Great American,	$2.75	$3.00	$3.50	$4.00	$4.50	$5.00	$5.50
Champion Tooth,	2.35	2.60	3.15	3.50	3.85	4.25	4.65

One man cross cut handles, $4.50 per doz.

Saw Set.

Adjustable ball and socket saw clamp,

Japanned, $14 per doz.

Scales.—Discount on all scales 50 and 10 per cent.

Postal scales.

No 1, capacity ½ to 9 oz. $3.00.
No. 2, capacity ½ to 12 oz. $4.00.
No. 3, capacity ½ to 34 oz. $6.00
No. 4, capacity ½ oz. to 4 lbs., $8.00

Butter Trip Scales, slab, weights and scoop.

No. 7, ½ oz. to 10 lbs., 10 in. slab,	without side beam		$10.50
" " " " " "	with "		11.50
" 8 " " 20 lbs., 12 in. "	without "		12.50
" " " " " "	" "		13.50

Tea Scales—All Seamless Scoops.

Capacity.	Scoop.	Capacity.	Scoop.
¼ oz. to 10 lbs. Tin	$8.00	¼ oz. to 10 lbs. Brass	9.00

Druggists.

Capacity.	Scoop.	Capacity.	Scoop.
1-16 oz. to 8 lbs. Tin	$10.00	1-16 oz. to 8 lbs. Brass.	$11.00

Even balance trip scales, seamless scoop, with weights.

No. 1, capacity ½ oz. to 2 lbs., tin scoop, $5.50 brass scoop, $6.50.
No. 2, capacity ½ oz. to 4 lbs., tin scoop, $6.50; brass scoop, $7.50.
No. 2½, capacity ½ oz. to 18 lbs , tin scoop, $11; brass scoop, $12.50.

Counter.

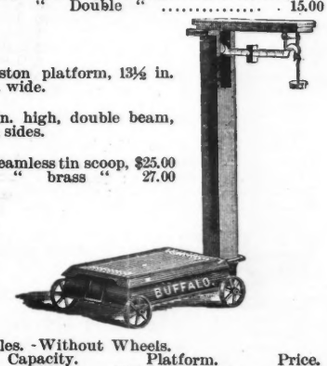
Capacity.	Scoop.	Capacity.	Scoop.
½ oz. to 36 lbs. Tin	$10.00	½ oz. to 36 lbs. Brass.	$12.00

Grocer.

Capacity.	Scoop.	Capacity.	Scoop.
½ oz. to 62 lbs. Tin	$12.00	½ oz. to 62 lbs. Brass.	$14.00

Meat or Butter Scales, with Slab.

½ oz. to 62 lbs.,	with Single Beam	$14.00
" " " "	Double "	15.00



Patent Boston platform, 13½ in. long by 10 in. wide.

Pillar, 18 in. high, double beam, marked both sides.

With large seamless tin scoop, $25.00
" " " brass " 27.00

Platform scales. -Without Wheels.

No.	Capacity.	Platform.	Price.
1.....	400 lbs.	21½ by 15 inches.	$23.00
2.....	600 lbs.	25 by 16 "	30.00
3.....	800 lbs.	25 by 17 "	34.00
4.....	1,000 lbs.	26 by 17 "	39.00
5.....	1,200 lbs.	28 by 20 "	45.00
6.....	1,600 lbs.	29 by 21 "	55.00
7.....	2,000 lbs.	32 by 23 "	70.00

With Wheels.

No.	Capacity.	Platform.	Price.
1.....	400 lbs.	21½ by 15 inches.	$26.00
2.....	600 lbs.	25 by 16 "	33.00
3.....	800 lbs.	25 by 17 "	38.00
4.....	1,000 lbs.	26 by 17 "	43.00
5.....	1,200 lbs.	28 by 20 "	49.00
6.....	1,600 lbs.	29 by 21 "	60.00
7.....	2,000 lbs.	32 by 23 "	75.00

Brass sliding poise at same price if so specified in order

No.	With Wheels and Drop Lever. Capacity.	Platform.	Price.
4	1,000 lbs.	26 by 17 inches.	$51.00
5	1,200 lbs.	28 by 20 "	59.00
6	1,600 lbs.	29 by 21 "	70.00
7	2,000 lbs.	32 by 23 "	82.00
8	2,500 lbs.	33¼ by 24¾ "	94.00
9	3,000 lbs.	38 by 30 "	125.00

Shears. The Patent "Eureka

No. 1 cuts round metal up to ¼ in. steel to ⅛, $12.

No. 2 cuts round metal up to ½ in., steel to 3-16, $20.

Discount, 25%.

Steel Wire Mats.

Galvanized Steel Wire.			(Style A) "Hartman Flexible."
No. 2.	Size	16x24.	Each ..$1.50
No. 3.	"	18x30.	" 2.00
No. 4.	"	22x36.	" 3.00
No. 5.	"	26x48.	" 4.50
No. 6.	"	30x48.	" 5.25
No. 7.	"	36x48.	" 6.50
No. 8.	"	36x60.	" 8.00
No. 9.	"	36x72.	" 10.00

Brass mats "list" double the price of galvanized (Style A) for similar sizes.
3 doz. lots, dis. 33 1-3%.
6 doz. lots, dis. 40%.
12 doz. lots, dis. 40 and 5%.

Screws.

STEEL SCREWS ADD 50% TO LIST.
Prices are per 100.
Hexagon Cap Screws.
Heads on Steam-tight Screws not polished, unless so ordered. Can make these 12 inches long.

Diam. head.	7-16	½	9-16	⅝	¾	13-16	⅞	1	1⅛	1¼	1⅜
Length head.	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1	1⅛
Diam. screw.	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞		1⅛
¾	3.00	3.25	3.75	4.40	5.50	7.00					
1	3.25	3.50	4.00	4.70	5.70	7.00	9.50				
1¼	3.50	3.75	4.25	5.00	6.00	7.50	9.50	12.20			
1½	3.75	4.00	4.50	5.30	6.30	8.00	10.00	12.20	16.00		
1¾	4.00	4.25	4.75	5.60	6.60	8.50	10.60	12.80	16.60	21.20	
2	4.25	4.60	5.05	5.95	7.00	9.10	11.20	13.40	17.20	22.30	29.00
2¼		5.00	5.40	6.35	7.50	9.70	11.90	14.10	17.90	23.60	30.50
2½			5.80	6.80	8.00	10.40	12.70	14.90	18.89	25.10	32.30
2¾				7.30	8.60	11.20	13.60	15.90	20.00	26.90	34.40
3					9.30	12.10	14.70	17.00	21.80	29.00	37.00
Length under head. Thread to in.	20	18	16	14	12	12	11	10	9	8	7
Add for each ¼ in.	30	40	50	60	80	1.00	1.30	1.60	2.00	2.40	3.00

Dis., heads ground, 60%; dis., heads black, 60 and 5%; dis., heads extra finish, 50%; dis., heads case-hardened, 5%; dis., heads polished after hardening, 45%.

SQUARE CAP SCREWS.

Diam. hehd.	⅜	7-16	½	9-16	⅝	11/16	¾	⅞	1⅛	1¼	1⅜
Length head.	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1	1⅛
Diam screw.	¼	5-16	⅜	7-16	½	9-16	⅝	¾	⅞	1	1⅛
¾	2.40	2.75	3.20	3.80	4.40	5.75					
1	2.60	2.95	3.40	4.00	4.70	5.75	7.70				
1¼	2.75	3.10	3.65	4.20	4.95	6.05	7.70	10.50			
1½	2.90	3.30	3.85	4.45	5.25	6.35	8.25	10.50	14.00		
1¾	3.05	3.50	4.10	4.70	5.55	6.65	8.80	11.10	14.80	18.00	
2	3.25	3.70	4.35	4.95	5.90	7.05	9.40	11.80	15.70	19.00	22.50
2¼		4.00	4.65	5.25	6.30	7.55	10.10	12.60	16.70	20.20	24.00
2½			5.00	5.60	6.75	8.15	10.90	13.50	17.80	21.50	25.80
2¾				6.00	7.25	8.85	11.80	14.60	19.10	23.10	27.90
3					7.80	9.65	12.80	15.90	20.60	25.00	30.50
Length under head. Thread to in.	20	18	16	14	12	12	11	10	9	8	7
Add for each ¼ in.	25	35	45	55	65	90	1.20	1.50	1.80	2.30	3.00

Dis., heads ground, 65%; dis., heads black, 65 and 5%; dis., heads extra finish, 55%; dis., heads case hardened, 60%; dis., heads polished-hardened, 50%.

MILLED HEADS, COLLAR SCREWS

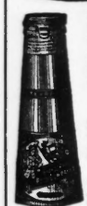
Diameter of Collar.	¼	11/32	7/16	½	⅝	11/16	13/16	⅞	1	1¼
Diameter of Screw.	⅛	3/16	¼	5/16	⅜	7/16	½	9/16	⅝	¾
¾	2.50	2.80	3.10	3.75	4.40	5.00	6.25			
1	2.80	3.10	3.40	4.05	4.70	5.30	6.60	8.25		
1¼	3.10	3 40	3.70	4 35	5.00	5.60	7.00	8.60	11.25	
1½	3.45	3.70	4 00	4.70	5.30	5.95	7.40	9.00	11.90	15.00
1¾		4.05	4.35	5.05	5.65	6.35	7.80	9.45	12.60	15.60
2			4.70	5.45	6.25	6.85	8.40	10.00	13.35	16.25
2¼				5.95	6.85	7.40	9.00	10.60	14.15	17.10
2½					7.50	8.10	9.60	11.25	15.00	18.00
2¾						8.75	10.30	11.90	15.90	19.00
3							11.00	12.60	16.85	20.00
Length under Head to Point. Threads to inch	40	30	20	18	16	14	12 or 13	12	11	10
Add for each ¼ inch	30	40	50	60	80	1.00	1.30	1.60	2.00	2.40

MILLED FROM SOLID BAR.

Fillister.				Bevel Head.					Button Head		
Diam. Head	3-16	¼	⅝	7-16	9-16	⅝	¾	13-16	⅞	1
Length Head	⅛	3-16	¼	5-16	⅜	7-16	½	9-16	⅝	¾
Diam. Screw	⅛	3-16	¼	5-16	⅜	7-16	½	9-16	⅝	¾
¾	2.00	2.25	2.50	3.00	3.50	4.00	5.00			
1	2 25	2.50	2.75	3.25	3.75	4.25	5.30	6.60		
1¼	2.50	2.75	3.00	3.50	4.00	4.50	5.60	6.90	9.00	
1½	2.75	3.00	3.25	3.75	4.25	4.75	5.90	7.20	9.50	12.00
1¾		3.25	3.50	4.00	4.50	5.00	6.20	7.50	10.00	12.50
2			3.75	4.35	5.00	5.50	6.75	8.00	10.75	13.00
2¼				4.75	5.50	6.00	7.25	8.50	11.50	13.75
2½					6.00	6.50	7.75	9.00	12.00	14.50
2¾						7.00	8.25	9.50	12.75	15 25
3							8.75	10.00	13.50	16.00
Length under Head. Threads to inch.	40	30	20	18	16	14	12	12	11	10

Head on Bevel and Button Head Screws, 1-16 larger in diameter than above specifications.
Price, according to size of head.
Discount, 50%; case hardened, 45%; case hardened and polished, 35%.

Soups (French).



	Per dozen. In Cans—Quarts.	Pints.	In Glass. 1½ pt.
Green turtle.....	$3.00	$4.32	$9.00
Terrapin.....			
Chicken	3.75	2.25	
Mulligatawny..			
Mock turtle.....			
Ox tail.....			4.50
Consommé.....			
Tomato.....			
Julienne.....			
Printanier.....	3.50	2.10	
French bouillon.....			
Mutton broth.....			None in glass.
Vegetable.....			
Beef.....			
Pea.....			

Packed in cases of..... 2 doz. 4 doz. 1 doz.
Regular Assorted Cases. In Cans—Quarts.
2 Chicken, 1 Mulligatawny, 3 Mock Turtle, 3 Ox Tail, 2 Consommé, 2 Tomato, 3 Julienne, 1 Printanier, 1 Mutton Broth, 1 Vegetable, 1 Beef, 2 French Bouillon, 2 Pea. Per doz., $3.55.
In Glass.
11 Chicken, 1 Mulligatawny, 2 Mock Turtle, 1 Ox Tail, 2 Consommé, 2 Tomato, 1 Julienne. Printanier, 1 Mutton Broth.
Terms cash Discounts: 5% for lots of 10 cases, 10% for lots of 25 cases. 15% for lots of 50 cases.

Spades and Shovels.

JONES

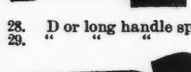
Patent plain black solid cast-steel shovels and spades.

Patent solid steel shovel.

No.		No. Black.	Per Doz. Black.	Per Doz. Pol's'd
20.	D. or long handle sq.-point shovels.	2	$15.50	$16.50
21.	" " " " " "	3	16.25	17.25
22.	" " " " " "	4	17.00	18.50
23.	" " " " " "	6	17.50	19.00
24.	" " " " charcoal.	8	20.50	22.00

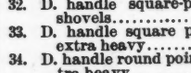
Pt. plain back solid cast steel shovel.

25.	D or long handle round-point shovels.	3	16.25	17.25



Patent solid cast steel spade.

28.	D or long handle spades.....	2	16.00	17.00
29.	" " " "	3	16.50	18.00



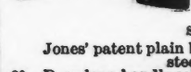
Patent plain back solid cast steel.

26.	Long round joint shovel No. 2.....	15.50	16.50
27.	" square " " No. 2.....	15.50	16.50
32.	D. handle square-point molders' shovels.....	2	.....	17.00
33.	D. handle square point railroad, extra heavy.....	2	15.75	
34.	D. handle round point railroad, extra heavy.....	3	16.50	
35.	L. handle round point shovel, with foot cap.....	2	16.00	17.00

GRAY'S CAST.

Patent plain back solid-steel shovels and spades.

50.	D. or long handle sq.-point shovels.	2	$12.00	$13.00
51.	" " " " "	3	12.75	14.00
52.	" " " round point "	3	12.75	14.00
55.	D. handle spades.....	2	12.25	13.25
56.	" " "	3	13.00	14.25



Patent solid corrugated cast steel scoop.

SCOOPS.

Jones' patent plain back solid corrugated cast steel scoops.

90.	D. or long handle solid cast steel...	2	$13.50	$14.50
91.	" " " " " ...	4	14.50	15.50
91½.	" " " " " ...	6.	16.50	17.50
92.	Cast steel D. or long handle...	2	13.50	14.50
93.	" " " " "	4	14.50	15.50
94.	" " " "	6	16.50	17.50
			Half polished.	
95.	" " "	8		$20.00
96.	" " "	10		22.50
97.	" " " Loco-motive or coal (heavy).....	6	17.50	
98.	" Long or D. handle for salt heavy).....		17.50	
99.	" D. handle flour and house furnace.....		10.50	
100.	" D. handle r'd-pt. for coal (extra heavy).....	6	20.00	
101.	" ash pit, furnace L. handle.....	2		Polished. 13.00
102.	" " " 32 in. D..	2		13.50
103.	" " " 42 " iron D. handle.....	2		14.00

Ditching spade.

124.	D handle ditching (flat).....	18.00	19.50
125.	D handle post hole (concave).....	18.00	19.50
126.	D handle Alcock (for clay and brick)....	16.00	17.00

Discount on shovels and spades, 50 and 10.
" " scoops, 50.
Boxed f.o.b. New York, Boston or Montreal.
The solid shovels, spades and scoops are made from cast steel bars by a recently patented process, the blade and strap being in one piece, not welded. All goods are American patterns.

Stencil Inks.

Black.

No.	Per can.	Per cake.	No.	Per can.	Per cake.
1	7 cents	3 cents	3	20 cents.	12 cents
2	10 "	5 "	4	30 "	20 "

Blue.

1	10 cents.	6 cents	3	30 cents.	22 cents
2	15 "	9 "	4	50 "	40 "

Red and Green.

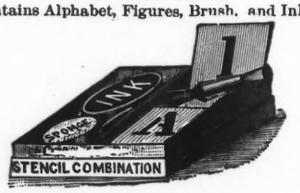
1	12 cents	8 cents	3	50 cents.	42 cents
2	20 "	15 "	4	90 "	80 "

Per doz. cans or cakes, net, per gross, 10% less.

Indelible Ink.

Small bottles per	100	$2.75
" "	500	12.00
" "	1,000	20.00

STENCIL COMBINATIONS.
Contains Alphabet, Figures, Brush, and Ink.



½ inch, per doz		$5.00
¾ " "		5.40
1 " "		5.75
1¼ " "		7.50
1½ " "		8.40
2 " "		10.00
2½ " "		15.00

Dis., 10%.

Tools. ARTISANS.

Chisel (Mason).

Stone, 5 and 8c. lb., net.

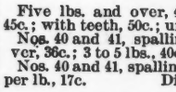
Mill Picks.
Cast steel, 2 to 3 l $22 per doz.
Dis., 60 and 5%.

Stone Axes, Cast Steel.

All sizes, 50c. per lb.

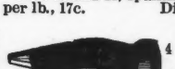
Dis., 70 and 10%.

Five lbs. and over, 40c.; with teeth, 45c.; 3 to 5 lbs., 45c.; with teeth, 50c.; under 3 lbs., 50c.; with teeth, 55c.
Nos. 40 and 41, spalling or stone hammer, 5 lbs. and ver, 36c.; 3 to 5 lbs., 40c.; under 3 lbs., 45c. per lb.
Nos. 40 and 41, spalling hammers, 9 to 20 lbs., steel face, per lb., 17c. Dis., 70 and 10%



Ship or Top Mauls, Steel Face, 4 to 8 lbs., 28c. per lb.

Dis., 50, 10 and 5%.



Steel Wedges, wood, 1st qual., 5c. lb.

Cooper Frocs.

8 in..	doz. $13.00
10 in..	doz. 13.50
12 in..	doz. 14.00
14 in..	doz. 14.50
16 in..	doz. 15.00

Discount, 60%.

60 days, 2% 10 days.

Vise.

No 1. Solid Box Vises.

	Each.
No. 25, 3⅜ in. Jaw	$12.00
" 30, 3¾ "	11.00
" 55, 3⅞ "	10.00
" 40, 4 "	10.50
" 45, 4¼ "	11.00
" 50, 4½ "	11.50
" 55, 4⅝ "	12.00
" 60, 4¾ "	13.00
" 65, 4¾ "	14.00
" 70, 5 "	15.00
" 75, 5 "	16.00
" 80, 5¼ "	17.50
" 85, 5¼ "	18.50
" 90, 5½ "	20.00
" 95, 5¾ "	21.00
" 100, 6 "	22.00
" 105, 6 "	23.00
" 110, 6¼ "	24.00
" 115, 6¼ "	25.00
" 120, 6½ "	26.00
" 125, 6½ "	27.50
" 130, 6¾ "	29.00

	Each.		Each.
No. 135, 6¾ in. Jaw	$31.50	No. 170, 7¼ in. Jaw	$44.50
" 140, 7 "	33.00	" 180, 8 "	47.00
" 145, 7 "	35.00	" 190, 8 "	53.00
" 150, 7 "	36.00	" 200, 8 "	56.00
160, 7¼ "	41.50		

Dis., 60 and 10%.

MINERS.

Adze Eye Coal Picks.
Same list and dis. as No. 16.

Anthracite Coal Picks.
Same list and dis. as No. 16.

Stone Picks, per doz.
No. 18, 6 to 7 lbs... $16.50.
No. 18, 7 to 8 lbs... 17.50.
No. 18, 8 to 9 lbs... 18.50.
Dis., 60 and 5%.

Coal Picks.

No.			Per doz.
16,	Weight, 2	lbs	$8.50
16,	" 2½	"	9.00
16,	" 3	"	9.50
16,	" 3½	"	10.00
16,	" 4	"	10.50
16,	" 4½	"	11.00
16,	" 5	"	11.50
16,	" 5½	"	12.00
16,	" 6	"	12.50
16,	" 6½	"	13.00
16,	" 7	"	14.00

Packages chiarged at cost. Dis., 60%.

Adze Eye Miners Picks—Surface, Drifting and Poll.

No.			Per doz.
19,	Surface.	No. 1, 4 lbs:	$14.00
19,	"	No. 2, 4½ "	15.00
19,	"	No. 3, 5 "	16.00
19,	"	No. 4, 5½ "	17.00
19,	"	No. 5, 6 "	18.00
19,	"	No. 6, 6½ "	19.00
19,	"	No. 7, 7 "	20.00
20,	Drifting,	No. 1, 3 "	12.50
20,	"	No. 2, 4 "	14.00
20,	"	No. 3, 4½ "	15.00
20,	"	No. 4, 5 "	16.00
20,	"	No. 5, 6 "	17.50
21,	Poll,	No. 1, 3½ "	15.00
21,	"	No. 2, 4 "	16.00
21,	"	No. 3, 4½ "	17.00
21,	"	No. 4, 5 "	18.50
21,	"	No. 5, 6 "	20.00
21,	"	No. 6, 6¾ "	21.50

Dis., 60, 10 and 5%.

Tamping Picks.

Adze eye, 6 to 7 lbs., per doz., $17.
Adze eye, 7 to 8 lbs., per doz., $18.
Adze eye, 8 o 9 lbs., per doz., $19.
Hunt eye, 6 to 7 lbs., per doz. $17.
Hunt eye, 7 to 8 lbs., per doz., $18.
Hunt eye, 8 to 9 lbs., per doz., $19.
Dis., 60 and 10%.

Ore Picks.

No.			
54,	Adze Eye,	5 to 6 lbs.	₰ doz. $12.00
54,	"	6 to 7 "	" $13.00
54,	"	to 8 "	" $14.00

56, Steel Lake Superior Mining Pick'

(Special Price and Quality.)

Dis, 60 and 10

Steel Face Hammers.

No. 43, hand drilling hammers, 2 to 5 lbs.; No. 45, napping hammers, 2 to 5 lbs.; No. 39, mason hammers, 3 to 8 lbs.; No. 42, smiths' hand hammers, 2 to 5 lbs.; No. 44, smiths' striking hammers, 2 to 5 lbs., all steel face, per b., 26c. Dis.. 70 and 10%.

No. 43, hand drilling hammer, 5 lbs. and over, 36c.; 3 to lbs.. 40c.; under 3 lbs., 45c. per lb.
Dis., 70 and 10%.

Steel Face Sledges.

No. 34. Smiths' sledges, 6 to 30 lbs., steel face, 17c. per lb.
No. 35. Stone sledges, 6 to 30 lbs., steel face, 17c. per lb.
No. 36. Striking sledges, 6 to 30 lbs., steel face, 17c. per lb.
No. 37. Coal sledges, 5 to 10 lbs., steel face, 18c. per lb.

Cast Steel Sledges.

No. 34. Blacksmiths' sledge. 5 lbs. and over, 30c.; 3 to 5 lbs., 36c.; under 3 lbs., 45c. per lb,
No. 35. Stone sledge, 5 lbs. and over, 30c.; 3 to 5 lbs., 36c.; under 3 lbs., 45c. per lb.
No. 36. Striking sledge, 5 lbs. and over, 30c.; 3 to 5 lbs., 36c.; under 3 lbs., 45c. per lb.
No. 37. Coal sledge, 5 lbs. and over, 30c.; 3 to 5 lbs. 36c.; under 3 lbs., 45c. per lb.

Cast Steel.

No. 42, blacksmiths' hand hammer, 5 lbs. and over 30c.; 3 to 5 lbs., 34c.; under 3 lbs., 45c. per lb.
No. 44, drilling or striking hammer, 5 lbs. and over, 30c.; 3 to 5 lbs., 36c.; under 3 lbs., 45c. per lb.
No. 45, napping hammer, 5 lbs. and over, 30c.; 3 to 5 lbs., 35c., under 3 lbs., 45c. per lb.
Dis., 70 and 10%.

RAILROADS.

Railway Track Punch

Round Point.
15c. lb., net.

Track Wrench.
7¾c. lb., net.

Rail Fork.
9c. lb., net.

Crow Bars.
Wedge Points, 3½c. lb., net.
Pinch Point, 3 ½c. lb., net.

65 Tamping Bar, 6c. lb., net.

66 Claw Bar, 7c. lb., net.

Railroad Spike Mauls
6 to 16 lbs., Steel Face 18c. lb.

Steel Track Chisel, 15c. per lb., net.

Dis., 50, 10, and 5%.

Railroad or Clay Picks.

No.			Per doz.
11,	Adze eye,	4 to 5 lbs	$11.00
11,	"	5 to 6 "	12.00
11,	"	6 to 7 "	13.00
11,	"	7 to 8 "	14.00
11,	"	8 to 9 "	16.00
11,	"	9 to 10 "	18.00
12,	Hunt eye,	4 to 5 "	11.00
12,	"	5 to 6 "	12.00
12,	"	6 to 7 "	13.00
12,	"	7 to 8 "	14.00

Dis., 60 and 10%.

Mattocks—Price per doz.

2, Adze Eye, Long Cutter, 6 lbs., $16.00.
3, Adze Eye, Short Cutter, 5½ lbs., $15.50.
2, Adze Eye, Long Cutter, Light, $15.00.
3, Adze Eye, Short Cutter, Light, $15.00.
4, Hunt Eye, Long Cutter, 6 lbs., $16.00.
5, Hunt Eye, Short Cutter, 5½ lbs., $15.50.

Adze Eye Pick Mattocks.....$16.

Hunt Eye Pick Mattocks.....$16

Dis., 60 and 10%.

Grub Hoes.

Western Pattern, No. 0, 3 lbs., ₰ doz., $10.50.
Western Pattern, No. 1, 3½ lbs., ₰ doz., $11.
Western Pattern, No. 2, 4 lbs., ₰ doz., $11.50.
Western Pattern, No. 3, 4½ lbs., ₰ doz., $12.
Baltimore Pattern, No. 1, 3½ lbs., ₰ doz., $11.
Baltimore Pattern, No. 2, 4½ lbs., ₰ doz., $11.75
Baltimore Pattern, No. 3, 5 lbs., ₰ doz., $12.75.
Baltimore Pattern, No. 4, 5¾ lbs., ₰ doz., $13.75.
Dis., 60 and 10%.

CARPENTERS'.

BOXWOOD RULES.

Two feet, four-fold, 1 inch wide.

Plate.	Middle.	Edge.	Bound.
Round joint	$4	...	...
Square "	5	$7	$15
Arch "	6	8	16

Two feet, four-fold, 1¾ inches wide.

Plate.	Middle.	Edge.	Bound.
Square joint	$7	$9	$18
Arch "	9	11	20

Two feet, two-fold, 1½ inches wide.

Square joint.	Arch.	Arch Bound.
$5	$7	$16
12	14	24

Gunter's Slide.
Dis. 80, 10 and 10%.

LEVELS.

	10 to 16 in.	18 to 24 in.
Arch top plate, 2 side views	$9.00	$12.00

PLUMBS AND LEVELS.

Arch top plate, 2 side views.

	12 to 18 in.	18 to 24 in.	24 to 30 in.
Polished	$14.00	$16.00	$18.00
Mahogany	....	16.50	22.50
Mahogany tp'd and lp'd	27.00	.....	.....
Polished and lipped	.....	.....	24.00
Polished and tipped	.....	.....	28.00
Polished, lip'd and tip'd	.....	.....	35.00

	in.	
Mason's level, 2 plumbs, polished,	36,	$30.00
Mason's level, 2 plumbs, p'd and t'd,	36,	36.00
Mason's level, 2 plumbs, polished,	42,	36.00

PATENT ADJUSTABLE PLUMBS AND LEVEL.

Arch Top plate, 2 side views	26 to 30 in.
Polished and lipped	$27.00
Polished and tipped	30.00
Polished, lipped and tipped	39.00
Mahogany	27.00
Mahogany, lipped	33.00
Mahogany, lipped and tipped	48.00
Polished, triple stock, lipped and tipped	48.0
Mahogany " "	60.
Rosewood, lipped and tipped	90.

Dis., 70, 10, 10%

POCKET LEVELS.

Iron top, Japanned	2 00
Brass top	3.00

Dis., 70, 10, 10%.

SCREWDRIVERS.

Varnished handles, pat. metallic fastening. Size 1½, $1 per dozen; 2, $1.50; 3, $2; 4, $2.50; 5, $3; 6 $3.50; 7, $4; 8, $4.75; 10, $6; 12, $8. Dis., 75 %.

BAILEY'S PATENT WOOD PLANES.

Smooth.	Handle smooth.	
9 × 8¾ in.	8 × 2 in.	9 × 2 in.
$2	$2	$2.50 each

Jack.	Fore.	Jointer.
15 × 2⅛ in.	20 × 2⅜ in.	26 × 2⅜ in.
$2.50	$2.75.	$3.25 each

Dis., 40, 10 and 10%.

PLANES, BAILEY'S PATENT IRON.

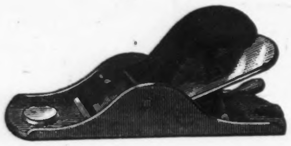
With pat. lateral adjustment.

Smooth, 8 in. × 1¾ in., $3; 9 in. × 2 in., $3.25; 10 in. × 2⅜ in., $3.75 each.
Jack, 14 in. × 2 in., $3.75.
Fore, 18 in. × 2⅜ in., $4.75
Jointer, 24 in. × 2⅜ in., $6.50 each.
Dis., 40, 10 and 10 %.

STANLEY IRON BLOCK PLANES.

3½ × 1 in. 20c.
5½ × 1¼ in. 40c.
7½ × 1¾ in. 60c. each.

ADJUSTABLE.



5½ × 1¾ in. 60c.

7½ × 1¾ in. 85c. each.

Dis., 40, 10 and 10%

STANLEY'S BEADING, RABBET, SLITTING AND MATCHING PLANE.

Eighteen Tools, Bits, etc.

$8 each. Dis., 20, 10 and 10%.

STANLEY "ODD JOBS."

Embraces in combination with ordinary Carpenters' Rule:

(1) Try square.
(2) Mitre square.
(3) T—— square.
(4) Marking gauge.
(5) Mortise gauge.
(6) Depth gauge.
(7) Mitre level.
(8) Spirit level and plumb.
(9) Beam compass.
(10) Inside square for making boxes and frames.

Price 75 cents.
Dis., 20, 10 and 10%.

Double Gate Brass Valves.

Gland in packing box.

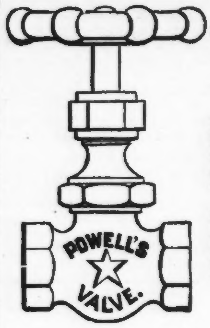
Size.	Screw socket.	Flange.	Diameter of Standard Flange.	Face to face of Screw socket	Face to face of Flanges.	Extra for slide stem and lever subject to discount.
In.	$	$	In.	In.	In.	
½	1.25	.....	....	2¼	....	$1.00
¾	1.65	.....	....	2½	....	1.00
1	2.15	.....	....	2⅞	....	1.00
1¼	3.15	.....	....	3⅜	....	1.00
1½	4.25	.....	....	3¾	....	1.00
2	6.25	11.50	6	4⅛	4⅝	1.00
2½	11.50	18.00	6½	4 13-16	5⅜	1.25
3	16.00	22.00	7	5	6¼	1.25
3½	21.00	31.00	7½	....	....	1.25
4	35.00	43.00	9	....	7 1-16	1.25
5	52.00	64.00	10	....	....	1.25
6	78.00	90.00	11	....	9	1.25
8	.....	.....	....	....	....	....
10	.....	.....	....	....	....	....
12	.....	.....	....	....	....	....

Rubber-Faced Slide Gate Fire Hydrant.

Diameter of pipe connection.	Diameter of stand pipe.	Diameter of seat ring.	One 2½ nozzle.	Two 2½ nozzles.	Three 2½ nozzles.
Inches.	Inches.	Inches.			
3 or 4	4⅝	3	$28	......	......
3–4–6	5¾	4	31	$33.00	$35.00
4 or 6	7	5	....	38.50	40.50
6 or 8	8	6	....	49.00	51.00
8 or 10	10	8	....	......	......

Four 2½ nozzles.	Six 2½ nozzles.	One steamer nozzle.	One steamer and one 2½ nozzle.	One steamer and two 2½ nozzles.	Frost case, standard length.
......	......	......	....	....	$4.50
......	......	$33.00	$35.00	$37.00	5.00
......	......	38.50	40 50	42.50	6.50
$53.00	......	49.00	51.00	53.00	7.50
......	......	......	....	....	....

For each 6 inches more or less than standard length of stand pipe, add or deduct from list.	For each 6 inches more or less than standard length of frost case, add or deduct from list.	Extra charge for hub.	Independe't nozzle gates each.
$0.60	$0.44	....	....
.75	.50	6 in. $0.50	$3.50
.85	.70	No ch'ge	3.75
1.00	.90	8 in. $1.25	3.75
....	....	....	4.50



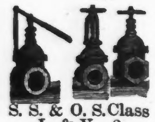
Star Radiator Valves, with Brass T Handles or Wood Wheels.

Size, inches....	½	¾	1
Plain brass....	$1.60	$2.00	$2.50
Plated trim'gs.	1.80	2.25	2.80
Rough & Plat'd	2.00	2.45	3.05
Finish'd & Pl't.	2.50	3.00	3.65

Size, inches....	1¼	1½	2
Plain brass....	$3.60	$4.80	$7.50
Plated trim'gs.	3.95	5.20	8.00
Rough & Plat'd	4.20	5.50	8.50
Finish'd & Pl't.	4.95	6.50	9.75

Dis., 40, 10 and 5%.

EDDY VALVES.



S. S. & O. S. Class
L. & Y. 2.

Class 3 and 4. Cl'ss 4.

Class 2.			Class 3.	Class 4.	Class 5.		
Iron, brass mounted.			All ir'n for gas. Hub. ends.	Water works valves. Hub ends.	Quick opening valves with rack and pinion stem. Iron, brass mounted.		
Size.	Screw, or flange ends.	Add for S S&L			Hub ends.	Screwed.	Flanged.
2	$7.00	$1.00	$8.00	$10.00	$10.00	$9.00	$9.00
2½	10.50	1.30	....	....	15.00	14.00	14.00
3	13.00	1.40	10.00	15.00	20.00	17.00	17.00
3½	16.50	1.50	....	....	25.00	21.00	21.00
4	18.00	1.70	15.00	18.00	30.00	25.00	25.00
4½	22.00	1.80	....	....	....	....	....
5	25.00	2.00	20.00	25.00	35.00	31.00	31.00
	31.00	2.30	25.00	31.00	40.00	37.00	37.00
	37.00	2.70	30.00	37.00	....	....	....
	45.00	3.00	35.00	45.00	55.00	55.00	55.00
	60.00	3.50	48 00	60.00	....	....	....
	80.00	4.00	65 00	80.00	....	....	....

All Iron Valves, Classes 2 and 5, 10 per cent. less than Brass Mounted.

Varnish.

E.S. 1827 &Co.

For Finishing Coats. gal.

Wearing body varnish	$5.50
Medium drying body	5.50
One coat coach varnish	4.50
Wearing carriage	4.50
Heavy gear varnish	4.00
Coach body "	4.00
No. 1 coach "	2.25

For Under Coats.

Hard drying body	$4.50	Black rubbing varnish	$4.00
Rubbing body varnish	4.00	Priming (1st coat)	2.50
Quick rubbing "	3.50	Filling (2d coat)	2.50
		Rough stuff	2.50

For Inside Work.

Best flowing varnish	$4.50	Hard oil finish light	$2.7
Best polishing "	4.50	" dark	2.25
Cabinet "	3.00	White copal	4.05

Dryers.

Japan gold size	$3.59	Brown japan	$1.25
Coach japan	1.75	Liquid dryer	1.25

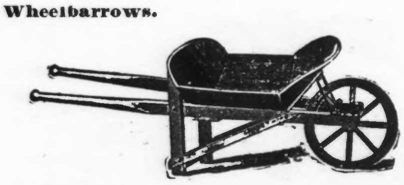
Discount, 40 per cent. f.o.b. N. Y.

Preservative Coatings.

Spar coatings	$4.00	Exterior car coating	$4.00
I. X. L. No. 1	2.50	Interior car coating	3.25
I. X. L. No. 2	4.00	Locomotive coating	4.00
Floor finish	2.50		

Discount, 35 per cent. f.o.b. N. Y.

Wheelbarrows.



Climax Bolted Barrow, with Wood Wheel per doz. $22.50. 1½ tire of iron.

Common Nailed Barrow per doz. $18.50.
" Bolted " " " 18.75.

Lansing's Patent Iron-Bolted Barrow,	per doz.,	$25.50
Capital Patent Bolted Dirt	" " "	30.00
Red oak or Government	" " "	40.50
Wharf	" " "	72.50
Mortar	" " "	30.00
Bent Handle Stone	" " "	48.00
Coal or Ore	" " "	31.50
Pig Metal or Casting	" " "	40.50
Brick Yard 20 inch Iron Wheel	" each	10.50

Globe Patent Bolted Garden Barrow, Box 30 by 24 by 12 deep, wood wheel } per doz., 42.50.

Capita Patent Barrows

With Iron Tray, A, per doz., ... $39.00
" " " B, " " 42.00

The Leader Iron and Steel Barrows.
Gas-pipe Legs and Handles in one price.

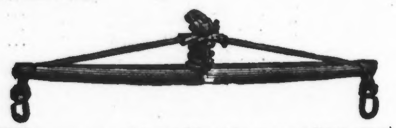
No. 1 Tray of 16 iron, capacity 3 cu. ft. of earth, each $12.
No. 2 " " 14 " " 5 " " " "
or 250 lbs. of coal .... " 15
Galvanized 18 iron, capacity same as No. 2...... " 15

Water Wheels. Pelton.

	Under pressure of 30 Lbs.	60 Lbs.	100 Lbs.
No. 1, $25	⅛ H. P.	1 H. P.	2 1-10 H. P.
No. 2, $50	¾ "	2⅛ "	5 "
No. 3, $90	1½ "	4 "	8⅛ "
No. 4, $140	2½ "	7 "	14¾ "
No. 5, $190	4½ "	12½ "	26 "

Dis. 15%.

Whiffletree.



Willson spring Jeffery Manufacturing Company.

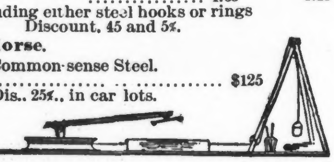
	Single.	Double.
No. 1, 34 or 36 inches long	$1.25	$2.50
No. 2, " " "	1.40	2.75
No. 3, " " "	1.50	3.00
No. 4, " " "	1.65	3.25

Including either steel hooks or rings
Discount, 45 and 5%.

Whims—Horse.

Common-sense Steel.

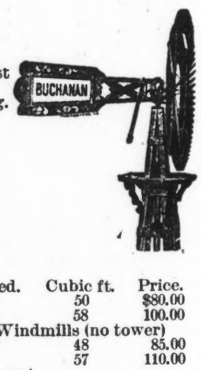
F. O. B. $125
Dis., 25%, in car lots.

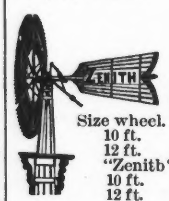


Windmills.

10 ft. pumping	$75	Plus cost of packing.
12 ft. "	95	
14 ft. "	140	
16 ft. "	225	

Dis., 50 per cent.





"Stover" Pumping Windmills (no tower).

Size wheel.	Wt. packed.	Cubic ft.	Price.
10 ft.	650	50	$80.00
12 ft.	750	58	100.00
"Zenith" Pumping Windmills (no tower)			
10 ft.	650	48	85.00
12 ft.	750	57	110.00
Dis., 50 per cent.			
14 ft.	1,400	108	160.00
16 ft.	1,600	114	250.00
Dis., 45 per cent.			
20 ft.	2,950	220	400.00
25 ft.	4,225	280	600.00
Dis., 40 per cent.			

"Zenith" Geared Windmill (no tower).

Prices include upper set of Gears and about 5 feet vertical extra heavy shaft in windmill head.

14 ft.	1,550	178	260.00
16 ft.	1,780	198	300.00
20 ft.	3,170	216	500.00

Dis., 40 per cent.

Wire Rope.

Circumference in inches.	Diameter in inches.	Price in cents per foot best crucible cast steel rope.		Price in cents per foot best bright iron rope.		Price in cents per pound galvanized iron rope.	
		19 wires to strand.	7 wires to strand.	19 wires to strand.	7 wires to strand.	12 wires to strand.	7 wires to strand.
5½	1¾	100	....	69	....	11	10½
5¼	....	90	....	64	....	"	"
5	1⅝	80	....	58	....	11½	"
4¾	1½	71	....	53	....	"	"
4½		65	....	48	....	"	"
4¼	1⅜	60	60	43	39	"	"
4	1¼	50	50	36	34	"	"
3¾	....	46	....	33	....	"	"
3½	1⅛	41	40	29	27	12	10¾
3¼	....	....	....	....	....	"	11
3⅛	1"	34	32	26	23	....	....
3	....	33	....	24	....	"	11
2¾	⅞	27	25	20	19	....	12
2½	....	23	....	18	....	....	13
2¼	¾	21	19	16	14	....	14
2	⅝	18	14	14	10½	....	15
1¾	9-16	17	11	12	8	....	16
1½	½	15	8	10	7	....	16
1¼	⅜	....		8	5	....	17
1	5-16	....		....	4	....	18

Discounts, for export in bond, requiring from four to six weeks time, 55%.