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The Table of Contents will be found at the end of the reading matter, page 516. Advertising rates, page 516.

ELECTRIC WELDING OF PIPES.

What was certain to follow the invention and development of electric welding of solid bodies by Prof. ELIHU THOMSON, was that either he or some other worker in the same field of research would discover a method of making endless pipes by the adaptation of the discovery to that purpose. This has apparently been done by Mr. ELIAS E. RIES, of Baltimore, and patents have been granted covering the process. The main feature of the first patent is that the smooth interior of the pipe is secured by the use of a removable refractory core, made of some insulating material, while in the second case the same object is attained by subjecting the interior of the pipe while being welded to compressed air or fluid pressure. We expect to see this system largely adopted, especially in pipe lines and where the pipes are to be subjected to high pressure, as welded joints must, of their nature and from the tests made of welded bars, be stronger than any ordinary joint and proof against all leakage.

GERMAN COMPETITION IN EXPORT TRADE.

Every day fresh illustration of the keenness of German competition in the export markets of the world is brought before us, and what is usually to be noted at the same time is its thoroughness. In this, as in mining, metallurgy, manufacturing and many of the applied sciences, Germans are most thorough, and as competitors in new markets are more formidable in many ways than the English. Recently the Deutsche Export Bank, in conjunction with Centralverein für Handelsgeographie, have established a line of steamers between Germany and Morocco direct, as a result of the growing trade between the two countries, and as an impulse is expected to be given to the commercial relations between the two nations by this step, the advantages to be gained by instituting a formal and scientific investigation into the general conditions governing Morocco are so clear that a movement has been organized, supported by many of the leading men in Germany:

1. To send a suitable person to Morocco for at least a year, who, after an exhaustive research, and more particularly with regard to the state of civilization there, will make proposals, through the realization of which, the commercial relations and interests of Germany may be capable of becoming more extensive and profitable than has hitherto been the case.
2. To erect stations in the four leading ports on the west coast of Morocco, principally for the purpose of making observations of meteorological and marine appearances most important for navigation.
3. To send to Morocco one or several artisans in order thereby to support the present attempts for the improvement in handicrafts, as well as to introduce German tools and implements, and so lead to their adoption.

We obtain the foregoing information from *Kuhlow's*, which is always on the alert to promote German exporting interests, and the plans projected are so instructive and suggestive that we recommend them to the earnest consideration of our exporters generally, and the Spanish-American Commercial Union in particular.

THE TRUST EPIDEMIC.

In spite of the unqualified success of that Father of Trusts, the Standard Oil, none of its imitators seems to meet with similar results. The last failure in this direction is that of the high explosive manufacturers in Germany, where the principal makers of dynamite combined, and for a time entirely controlled the market, and, when they considered themselves safe from competition, raised the price of the article to an exorbitant figure. The usual result followed; fresh capital was attracted, it became impossible for the Trust to buy up all the new works, and now both the original combination and the new undertakings are suffering from over production and low prices. This must always be the case with any commodity the supply of which is not limited by nature, and for this reason it is well to consider the attempt which is now being made to control the salt industry in this country and England. It is absolutely impossible for any one combination to get possession of all the sources of supply, and anything short of this complete control would simply amount to an invitation to capital to take advantage of the advance in price which it is the object of the Trust to exact.

According to the statistics which have been published in connection with the proposed Trust, it is estimated that the annual consumption of salt in the United States is one bushel per head of the population. Taking the population at 65,000,000, this would be equal to 13,000,000 barrels. With a deduction of 3,000,000 barrels for imported salt and any small home production outside of the Salt Union, there would be a business of 10,000,000 barrels, on which a profit of 20 cents a barrel is counted as certain. The proposed capital of the Trust is $3,000,000 in 6 per cent bonds, and $10,000,000 in stock, so that taking this estimate as correct, it would seem to be a sound business proposition, without any increase of price to the consumers. But following the history of such combinations, and taking the Salt Union in England as a precedent, the immediate result would be a yielding to the temptation to increase profits by raising the price of salt. In England this has stimulated activity in every salt field not already occupied by the Union, and within a year or so the production will be far in excess of the market demand, or the ability of the Trust to control, and a depression in price will necessarily follow. Here this history would be repeated.

If the Salt Union were able to content itself with present prices, and could actually realize a profit of 20 cents a barrel by effecting economies in production, there would be small inducement to others to enter into competition with them. Few salt makers honestly believe in the possibility of earning this estimated profit even under very advantageous conditions, at the present selling price of salt, and it is only by furnishing a cheaper article that such a Trust can hope to live long.

Mr. CARNEGIE truly said in his recent paper on Trusts, "Every factory that the Trust buys is the sure creator of another, and so on *ad infinitum* until the bubble bursts." His contention is that "those factories and managers that can produce to the best advantage eventually close the less competent," when "the growth of demand" or the control of the supply "enables capital to receive an unusual profit. This in turn attracts fresh capital to the manufacture, and we have a renewal of the old struggle, the consumers reaping the benefit." So it has been from the beginning; we have had "consolidations" and "syndicates," and now we have "trusts," but no system has yet been devised which, in the long run, has enabled the producer to secure enormous profits from the consumer, though it must be confessed the run has sometimes been far from short. So it will be with the Salt Trust unless it wisely decides at the outset to share the advantages that it may gain with the people, and by keeping the price down prevent new plants from being organized.

The public is interested in this matter, both in the higher prices for commodities which always accompany Trust control—in fact, are the very *raison d'etre* of the trade Trust—and it is also interested, or is expected to become interested in the bonds and stocks which the Trusts issue. Their organizers are usually far too shrewd to believe in the permanence of the high prices and profits they exact, but these large profits enable them to sell at high prices to the innocent, gullable public the bonds and stocks of the Trusts, and when the reaction comes it is the dear public that suffers, the Trust makers having carefully reaped and housed their harvest.

Moral.—Trust, so-called, securities are far from being secure, and should not be trusted.

THE WORK AND NEEDS OF THE UNITED STATES MINT.

The annual report of Dr. KIMBALL, the director of the mint, for the fiscal year ending January 30th, 1888, and his report upon the production of the precious metals in the United States during the calendar year 1888, are before us. The value of gold deposited at the mints or assay offices in 1888 was $72,225,497 of which $42,405,306.59 was classified, as of domestic production. The value of silver deposited and purchased was at coinage value $41,331,014. of which $37,393,648, or 32,135,165.79 ounces was computed as of domestic production. The coinage consisted of 109,030,547 pieces, of the value of $63,719,242.32, distributed as follows :

	GOLD.	
2,350,534 Pieces	Double eagle	$16,301,740.00
	Eagle	8,998,260.00
	Half eagle	2,995,510.00
	$3 pieces	34,098.00
	Quarter eagle	15,682.00
	Dollar	18,880.00
	SILVER.	
45,702,194 Pieces	Dollars	$32,718,673.00
	Half dollars	2,836.50
	Quarter dollars	94,668.25
	Dimes	219,907.50
	MINOR COINS.	
15,207,173 Nickels		$760,358.65
45,573 Three-cent pieces		1,367.00
45,725,073 One-cent bronze		457,250.73
Total		$1,218,967.57
Total number of pieces		60,977,819
Total in 1888		109,030,547
Value		$63,719,242.32
Total in 1887		98,122,517

The increase of 10,908,030 pieces is an unanswerable argument in favor of additional mint facilities.

Gold and silver bars to the value of $59,313,014 were made, of which	
gold bars to the value of	$46,763,125.75
And silver bars valued at	6,057,364.87
	$52,820,490.58

Issued from the Assay Office in Wall street.

The total expense of the mint service, including the assay offices, was $1,273,053.19. The cost of maintaining the assay offices and the salary accounts of the mint are low, so low that we wonder how gentlemen of the ability and integrity necessary to fill the responsible posts in these institutions can be found willing to work for such salaries. We have never heard a suspicion even hinted against the character of any of them, and therefore, doubtless, the appointments made have been good ones. But it is a pity that the remuneration of men of science should be so low; moreover it is a question whether the government should accept for such services the lowest bid, and not rather fix a rate of remuneration commensurate with the responsibility involved and the skill required.

In his desire to be economical the director seems to keep unnecessarily within the appropriations. For instance there was an appropriation in 1887 of $4000 for collecting mining statistics, but only $2290 were expended, and in 1888 a similar amount was entrusted to him, and he distributed only $3373.83.

Considering the care and caution which should be observed in collecting information where there are such strong motives for misrepresentation, and therefore the amount of labor and incidental outlay that should be expended, it seems to us that $4000 is inadequate, and that spending less is culpable economy.

When we come to compare the work done, with the cost of doing it in the several mints, we find the same disparity as we commented on in our issue of July 14th, 1888.

The Philadelphia Mint coined 88,139,449 pieces of a value of $25,982,957, at a cost of $599,853.99, or deducting repairs of building, $43,001.65, $556,853.34, or ·63c. per piece.

San Francisco coined 8,977,598 pieces of a value of $25,701,284, at a cost of $269,601.86, or 3c. per piece.

New Orleans coined 11,913,500 pieces of a value of $12,035,000, at a cost of $199,535, or 1·6c. per piece.

We appreciate the difference between the cost of minting a gold eagle and a piece of fractional currency or a minor coin, and the wages are higher in San Francisco than in Philadelphia or New Orleans. But nevertheless a comparison, based exclusively on the cost per piece, though inaccurate, is nevertheless approximately reliable; the more so as in 1888 San Francisco, owing to the overcrowding of the Philadelphia Mint, coined 7,024,848 pieces of silver. The comparison, therefore, holds truer than in former years.

Last year we pointed out that the expenditure for salaries in each of the three mints is approximately the same, despite the much greater amount of work done at Philadelphia than at either of the other mints, and drew the conclusion that instead of paying three corps of officials insufficient salaries, the work would be better and more cheaply done by paying good salaries to one staff of first-class men in a single efficiently equipped establishment. In the fact that in the Philadelphia mint, because it coins 88,139,449 pieces, each coin costs for minting only ·63c., as against 3c. in San Francisco, where only 8,977,598 pieces were coined, and 1·6c. in New Orleans, where 11,913,500 are coined, we have a further confirmation of the argument, that all sound business principles require that the coinage of the country be executed in one great central mint. Dr. KIMBALL has done us the honor of referring to our suggestion that the work of the mint be concentrated in one establishment, but he considers that "two mints" are all that are required by the Republic, one on the Atlantic and the other on the Pacific seaboard.

The mints at Philadelphia and San Francisco are, or easily could be, adapted to all requirements for coinage. The increase of this number of institutions entails an unnecessary expenditure for a given coinage and a cost of production high in comparison with what it is in other countries and should be in this Republic, as well as a cost for transportation and distribution of coin quite out of proportion to benefits local to points where other mints have been established." Page 93.

We fail to see any reason for the existence of the San Francisco mint.

During the war gold was the sole currency of California, and for long after the war the gold production of this State far exceeded that of the whole of the rest of the country, but both conditions are now changed.

An assay office in San Francisco would afford the same facilities to the gold producers of the coast that the mint now does, and therefore the mining industry would not suffer.

The real argument for many mints, lies in the increased patronage they afford to the politician. It seems incredible, but it is nevertheless the case, that every officer in the mint service, from the highest to the lowest, is liable to be removed on every change of administration. Dr. KIMBALL'S animadversions on the absurdity and evil of the instability of tenure of such officers, is mild compared to what it might be. He says: "A comparison of the mint practice of the United States with that of advanced countries in Europe, is unequal in several important particulars. While European institutions are favored with permanent organizations, skilled superintendence as well as skilled operatives, the mints of the United States, in common with the whole mint service (with the single exception of the clerical force of this bureau), are subject to quadrennial changes in the whole personnel, a remarkable fact, obviously incompatible with the practical interests and business methods of a high class of manufacturing establishments, as the mints and the assay offices, of the Government should always be considered."

In reality, a wholesale discharge of all hands, on a change of administration, is impossible, and is never executed, for a certain amount of skill and technical experience must be retained if the mint service is to proceed without interruption. But despite the absurdity of the practice. not a few changes are made for political motives. The result is in every way injurious, and the danger of dismissal we know has some detrimental influence peculiar to the mint service; one is, that the really skillful craftsman is chary of imparting his knowledge and experience, feeling, as he must, that it is his only safeguard against replacement. This wretched practice of partisan rotation represses emulation and destroys all *esprit de corps* in the scientific staff as well as the operating department; it excites suspicion and distrust of man against man, and leads those who have special skill to economize rather than display or communicate it. The use made of the mint for political purposes is even more reprehensible than the disregard to the necessities of the mints by Congress, as complained of by Dr. KIMBALL. His requests even for adequate appropriations to meet the growing business are met by no response. Congress cannot, however, much longer continue to do so, and when the subject does come up for argument it is to be hoped the discussion will take a wide and liberal range, and that political exigencies and local interests will not be allowed to determine the decision as to how this nationally important service is to be organized and conducted.

THE WEIGHT PER CUBIC FOOT OF ANTHRACITE BROKEN TO MARKET SIZES.

We have already referred (ENGINEERING AND MINING JOURNAL, January 5th) to the curious fact that there are no reliable records of experiments into to determine the actual weight per cubic foot of anthracite coal broken the different sizes in which it is sent to market. The question is frequently asked, but though the subject has such universal interest the careful tests necessary to answer it satisfactorily, have, so far as we know, not heretofore been made. We are now, through the courtesy of Mr. IRVING A. STEARNS, the General Superintendent of the Pennsylvania Railroad Company's Coal Department, enabled to give the following very exhaustive series of tests recently made under the direction of the Mining Engineer of the company, Mr. J. W. BOWDEN.

The figures here arrived at will undoubtedly now become standard to be referred to. The figures heretofore published seem not to have taken account of the influence of the proportions of coal from different beds which made up the quantity measured, and of their respective specific gravities. Even these more accurate figures do not take full account of the moisture in the coal, always greater in the fine sizes.

The figures of the increase in volume occupied by the coal when

TABLE OF SPECIFIC GRAVITIES OF ANTHRACITE COAL FROM DIFFERENT PORTIONS OF THE SEAMS WORKED BY THE SUSQUEHANNA COAL COMPANY, NANTICOKE, PA.

LOCATION.	Specific gravity.				Average specific gravity and weight per cubic foot.				
	Duck.	Williams.	Dean.	Gay.	Average of Specimen.	Average of bench.	Thickness.	Value of bench in average.	Average of seam.
							Feet.		
MILLS' SEAM NO. 4 SLOPE.									
Upper Bench	1·485	1·4965	1·4928	.....	1·490				
" "	1·468	1·4723	1·4704	.....	1·470				
" "	1·469	1·471	1·4644	.....	1·468	1·4672	1·25	1·8340	.....
" "	1·456	1·462	1·4559	.....	1·458				
" "	1·447	1·4950	1·4500	1·439	1·450				
Middle "	1·423	1·440	1·4318	.....	1·432				
" "	1·442	1·472	1·4484	.....	1·454				
" "	1·472	1·472	1·4690	.....	1·471	1·451	4·0	5·804	.....
" "	1·418	1·429	1·4186	.....	1·421				
" "	1·475	1·4775	1·4878	1·473	1·477				
Lower "	1·440	1·432	1·4384	.....	1·437				
" "	1·445	1·454	1·4450	1·442	1·448	1·441	1·25	1·801	.....
" "	1·453	1·4425	1·4428	.....	1·445				
" "	1·427	1·432	1·4288	.....	1·433				
Averages Mills seam — Specific gravity.	1·451	1·4605	1·455	.....	.....	.....	6·5	9·439	1·452
Averages Mills seam — Weight per cubic foot.	90.39	90·99	90·65	.....	.....	.....	.....	.....	90·46
HILLMAN SEAM NO. 2 SLOPE.									
Rider coal	1·462	1·4645	1·4610	.....	1·462	1·462	0·60	0·8772	.....
Upper Bench	1·518	1·521	1·5125	.....	1·517				
" "	1·478	1·483	1·4820	.....	1·481	1·478	2·0	2·9560	.....
" "	1·446	1·467	1·4645	.....	1·466				
" "	1·441	1·453	1·4498	.....	1·448				
Middle Bench	1·478	1·482	1·4761	.....	1·479				
" "	1·458	1·458	1·4582	.....	1·458	1·4585	2·25	3·2816	.....
" "	1·454	1·454	1·4556	.....	1·454				
" "	1·438	1·447	1·4381	1.448	1·443				
Lower "	1·477	1·477	1·4773	.....	1·477	1·471	0·40	0.5884	.....
" "	1·465	1·465	1·4646	.....	1·465				
Averages Hillman seam — Specific gravity.	1·467	1·4701	1·4672	.....	.....	.....	5·25	7·7032	1·4673
Averages Hillman seam — Weight per cubic foot.	91.39	91·59	91·40	.....	.....	.....	.....	.....	91·41
FORGE SEAM NO. 1 SHAFT.									
Upper Bench Station 187	1·497	1·512	1·4906	.....	1·500				
" " last plug second counter	1·455	1·455	1·4565	1·456	1·4555	1·4772	2·8	4·1062	.....
" " west of No. 1 Plane	1·476	1·476	1·4762	.....	1·476				
Lower " Station 187	1·538	1·542	1·5423	.....	1·541				
" " last plug second counter	1·462	1·460	1·4610	.....	1·461	1·488	2·0	2·976	.....
" " west of No. 1 Plane	1·461	1·4617	1·4600	.....	1·461				
Averages Forge seam — Specific gravity.	1·4815	1·4845	1·4811	.....	.....	.....	4·8	7·1122	1·482
Averages Forge seam — Weight per cubic foot.	92·29	92·48	92·27	.....	.....	.....	.....	.....	92·32
TWIN SEAM NO. 2 SHAFT.									
Upper Bench	1·449	1·4495	1·4490	.....	1·449				
" "	1·467	1·467	1·4714	.....	1·468	1·478	2·0	2·956	....
" "	1·479	1·4786	1·4778	.....	1·478				
" "	1·517	1·5162	1·5160	.....	1·516				
Lower "	1·514	1·512	1·5212	.....	1·527				
" "	1·54503	1·480	1·4912	1·493	1·485	1·482	1·5	2·223	....
" "	1.450	1·450	1·4689	.....	1·456				
" "	1.469	1·469	1·4431	.....	1·460				
Averages Twin seam — Specific gravity.	1·478	1·478	1·4798	.....	.....	.....	3.5	5·179	1·480
Averages Twin seam — Weight per cubic foot.	92·07	92.07	92·19	.....	.....	.....	.....	.....	92.20
BUCK MOUNTAIN SEAM NO. 1 AND 2 SHAFTS.									
Upper Bench	1·539	1·539	1·5394	.....	1·539	1·521	0·4	0·608	.....
" "	1·501	1·5032	1·5032	1·497	1·503				
Second "	1·526	1·526	1·5266	.....	1·526	1·526	0·5	0·763	.....
" "	1·525	1·525	1·5268	.....	1·526				
Third "	1·539	1·539	1·5399	.....	1·539	1·597	1·75	2·672	.....
" "	1·515	1·515	1·5160	.....	1·515				
Lower "	1·505	1·5072	1·5078	.....	1·507				
" "	1·539	1·544	1·5392	1·547	1·540	1·516	2·25	3·411	.....
" "	1·508	1·533	1·1514	.....	1·519				
" "	1·491	1·494	1·5044	.....	1·496				
Averages Buck Mountain seam — Specific gravity.	1·5188	1·5195	1·5219	.....	.....	.....	4·9	7·454	1·521
Averages Buck Mountain seam — Weight per cubic foot.	94·13	94·67	94·81	.....	.....	.....	.....	.....	94·75
General average all seams — Specific gravity.	.....	.....	.....	.....	.....	.....	24.95	36·8875	1·4784
General average all seams — Weight per cubic foot.	.....	.....	.....	.....	.....	.....	.....	.....	92·10

REMARKS.

Specimens taken under the property of John Fairchild by E. A. Rhoads and R. Van A. Norris, April 30th and May 1st, 1888.

Specific gravities referred to water at 60 degress Fahrenheit, weighing 62 3-10 pounds per cubic foot taken by G. F. Duck, Instructor in Mining, Lehigh University, South Bethlehem, Pa.; Edward H. Williams, Jr., Professor of Mining and Geology, Lehigh University, South Bethlehem, Pa.; W. H. Dean, Instructor, Harry Hillman Academy, Wilkes-Barre, Pa.; H. S. Gay, Assistant Engineer, Lykens Valley Coal Company, Lykens, Pa.

broken into different sizes and unpacked over what it required in the solid, varying as they do from about 1·6 to 1·8 will be useful in cut and embankment calculations, where it has been usual to take 1 to 1¾ as the relative volumes.

We are not informed concerning the basis of the allowance of 5 per cent for packing, but no doubt this figure is nearly correct.

Mining and Timber Claims.—Assistant Secretary Chandler has affirmed the decision of the Commissioner of the General Land Office, holding for cancellation in part the entry of John Brennan and others for the Two Sisters No. 2, lode and mill-site claim, situated in Montana mining district, Central City land district. Secretary Chandler holds that under Section 2337 of the Revised Statutes land not used for mining or milling purposes cannot be appropriated for the purpose of securing the timber growing thereon, and it is not alleged that the land applied for as a mill-site has been improved or used and occupied by claimants for the purpose of taking timber therefrom.

WEIGHTS PER CUBIC FOOT OF SUSQUEHANNA COAL COMPANY'S WHITE ASH ANTHRACITE COAL.

Consisting of about:	Pounds.
45 per cent from Mills' Seam, average weight per cubic foot	90·46
15 per cent from Twin Seam, average weight per cubic foot	92·20
25 per cent from Ross Seam, average weight per cubic foot	93·00
15 per cent from Buck Mountain Seam, average weight per cubic foot	94·75
100 per cent all seams, average weight per cubic foot	92·00

From tests made January 27th, 1889, at No. 5 breaker.

Space filled as loaded at breaker without settling. Add 5 per cent for packed spaces or large heaps.

Size.	Size of mesh. Over.	Size of mesh. Through.	Weight per cubic foot. Pounds.	Cubic feet from 1 cubic foot solid.
Lump	4½" to 9"	.....	57	1·614
Broken	2⅜" to 2⅞"	3¼" to 4½"	53	1·755
Egg	1¾" to 2¼"	2⅜" to 2⅞"	52	1·769
Large stove	1¼" to 1⅞"	1¾" to 2¼"	51½	1·787
Small stove	1" to 1¼"	1¼" to 1½"	51¼	1·795
Chestnut	⅝" to ¾"	1" to 1¼"	51	1·804
Pea	⅜" to ⅝"	⅝" to ⅞"	50¾	1·813
No. 1 buckwheat	3-16" to ⅜"	⅜" to ⅝"	50¾	1·813
No. 2 buckwheat	.....	3-16" to ⅜"	50¾	1·813

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.

Value of the Engineering and Mining Journal Export Edition.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: I have to thank you for the 25 copies of the Export Edition of your JOURNAL, which you have sent in response to my request. The prices current are most valuable, embracing as they do really a collection of priced catalogues of all kinds of articles suitable to export trade.

I shall send them to my correspondents in Mexico as the fullest information I can give them. Yours very truly,

JUAN N. NAVARRO,
Merchant and Mexican Consul General.
Per R. WILLIAMS.

NEW YORK, May, 1889.

Cupric Chloride and Russell's Extra-Solution in Silver Leaching.

CORRECTIONS.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: In my article on cupric chloride, etc., in your issue of May 11, in speaking of the decomposition of Russell's solution, I said: "According to Stetefeldt, the sodium hypo does not suffer from oxidation until the copper is all precipitated." This is wrong. The explanation given by Mr. Stetefeldt of the decomposition of a neutral extra-solution calls for the formation of sodium tetrathionate thus:

$Cu_2S_2O_3 + Na_2S_2O_3 + 2O + 2H_2O = 2Cu(HO)_2 + Na_2S_4O_6$, which, I presume, is correct.

At the end of the second paragraph, second column, the printer has made an "out:" instead of, "still valid as to cupric sulphate, which would convert the sulphate to chloride," should be," still valid as to cupric sulphate, in the absence of salt which," etc. C. H. AARON.

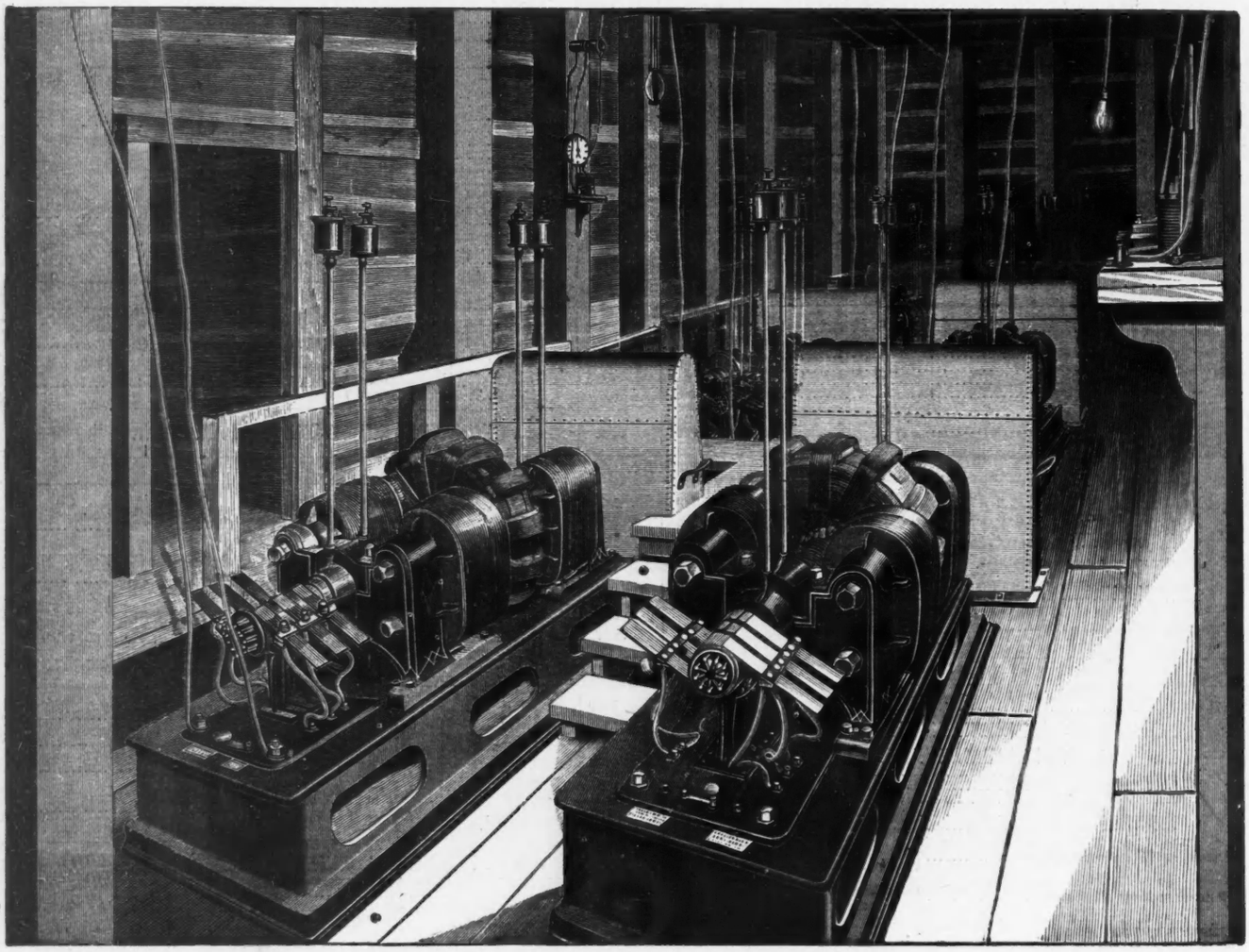
Lixiviation of Argentiferous Blende and Galena Ore.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Articles like Mr. O. Hoffman's, recording results obtained by experiments on the large scale in the field, are the most valuable additions to our technical literature. I am not interested in any particular process, neither do I advocate the use of a certain furnace, and I must say that Mr. Hoffman treated the subject not only thoroughly but also impartially. I agree with him, and think the reverberatory furnace will give the best results, as it does in most cases. The objections to it are clearly stated by Mr. Hoffman, but I believe that if he investigates the automatic reverberatory now being used at the Treadwell works he will be satisfied that this furnace retains all the advantages of the old reverberatory while everything objectionable has been removed. It does not require any more skilled labor than any rotary furnace.

The chemical part of Mr. Hoffman's article is not as clear to me as I would like it. Lime and soda are given in the roasted material entirely as caustic. To analyse material of this kind is one of the most difficult operations in mineral analysis. As simple as the reactions may appear, which take place in the roasting furnace, even if a complicated material like the ore in question is treated, they are in reality very complicated, and a correct explanation is, to say the least, very difficult. Even the reactions taking place in a soda furnace are only partly understood, although only a few of the ingredients contained in the ore in question enter it. A good many of the most able chemists have investigated them, and almost every one obtains different results. The main cause of this seems to be that certain compounds, formed at high temperatures, are decomposed when treated with water. These compounds are yet mostly unknown, and until the time arrives when we have a complete knowledge of them, theoretical speculations will retain a wide field; but every one who investigates them is liable to narrow down this field, and, on that account, I hope Mr. Hoffman and Mr. Sustersic will not only publish the complete analytical method used, but also favor us with their theory on which they base their conclusions.

J. H. BURFEIND.



POWER STATION, 1650-FOOT LEVEL, CHOLLAR SHAFT.

ELECTRIC TRANSMISSION OF POWER AT THE COMSTOCK LODE.

In our issues of April 6th, of this year, and September 22d, 1888, we gave some of the details of the installation of electric transmission of power from the Sutro tunnel level of the Chollar shaft on the Comstock lode to the Nevada Mill, a distance of about 2,800 feet, and we now illustrate the power station, at the 1650 foot level, in which are placed the Pelton wheels and dynamos, and the motor room at the mill. The installation was planned and carried out by the Brush Electric Company, Mr. F. E. Smith being the engineer in charge. The chamber excavated to receive the dynamos and water-wheels is 50 feet in length and 25 feet in width and 12 feet high—clear of all timbers. From the tank containing the waste surface water, two wrought-iron pipes are led to the power chamber, one ten inches and the other eight inches in diameter. At the bottom of the shaft a Y

unites these two pipes into one 14 inches in diameter, and from this six 6-inch run to the nozzles of the Pelton wheels driving the six Brush dynamos. The wheels are inclosed in water-tight covers. These generators are each 130 H. P. and are compound wound for constant current. The current remains of constant strength under all conditions of load. Each generator circuit is provided with a dead-beat ammeter of the Brush pattern, and a Brush voltmeter is also at hand which is capable of measuring up to 3000 volts, The generator circuits are led to a switchboard in the same dynamo-room, where any generator can be thrown on to any one of the outgoing motor circuits.

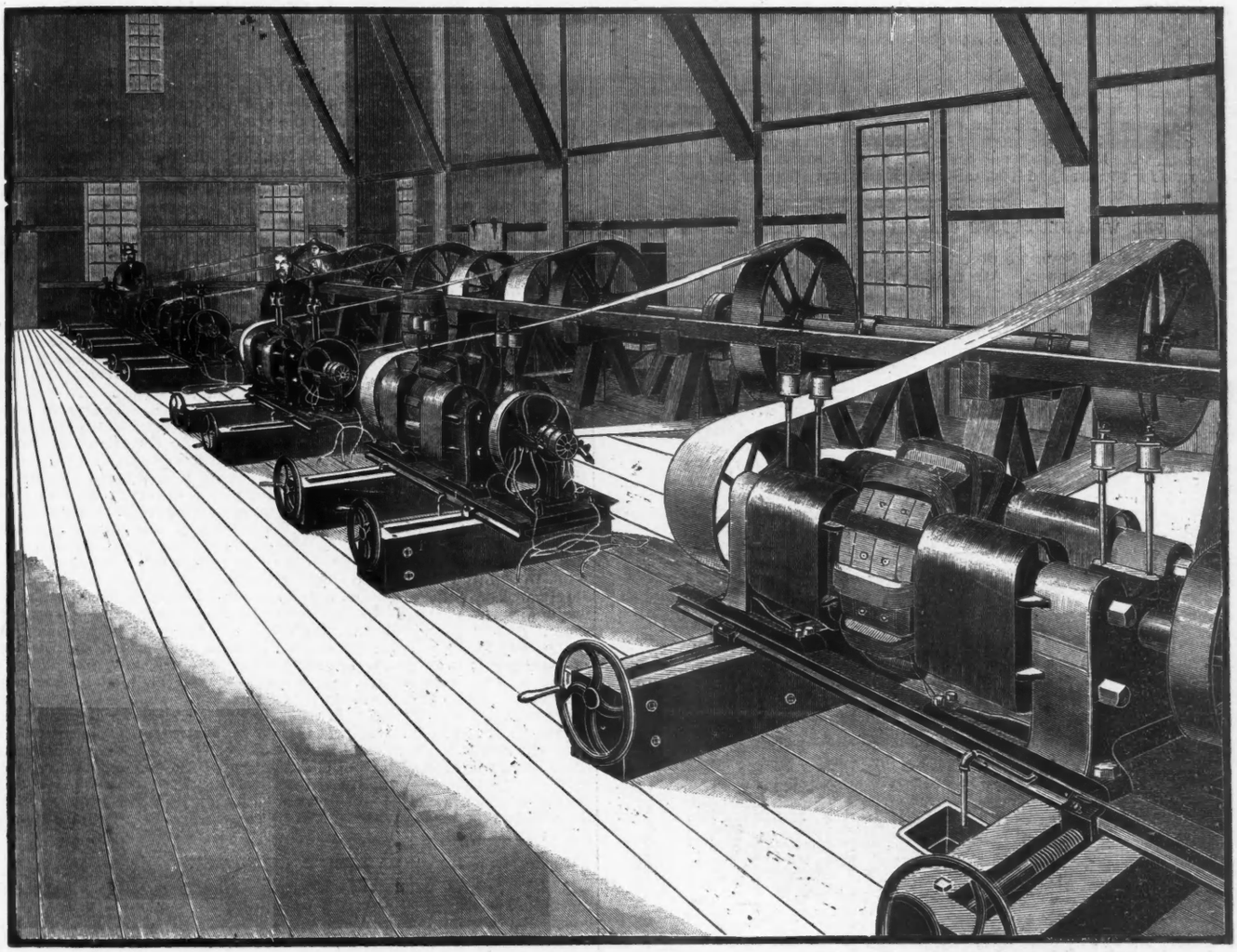
Leaving this subterranean power station and ascending the Chollar shaft are the circuits of copper wire, one to each generator. The wires issue from the mine shaft and are carried above ground to the electric motor room at the Nevada mill. The total length of each circuit is a little more than a mile.

The electric motor room is shown in the second illustration. The six motors are of the regular Brush constant current type, each of 80 H. P. capacity, and are arranged in a single row parallel with the main driving shaft, to which they are all belted in the ordinary manner.

Each electric motor has its own independent circuit fed from one of the generators. The well-known Brush centrifugal governor, with which each motor is fitted, regulates the speed sensitively, and all or any number of the motors work perfectly in a battery together, or with the water-wheel. In the motor room there is also an ammeter for each electric motor, to show at all times the current flowing in each circuit. The motors run at a speed of 850 revolutions per minute. Some difficulty was anticipated in operating the motors together on one shaft in the manner described, but none was encountered. The motors have not given a moment's trouble or annoyance of any kind from the start.

Some idea of the economic value of this electric power plant to the mine-owners may be derived from a statement of the saving effected by it. The surface wheel alone requires 312 miner's inches of water to develop power sufficient to drive 40 of the 60 stamps with which the mill is equipped. Moreover, this amount of water is seldom available. Two of the electric motors, working in addition to the surface wheel, will perform the same service, with but 72 miner's inches of water, thus effecting a saving of about 77 per cent.

The net commercial efficiency of the plant, taking into account all elements of loss, including that in the conducting wires, is about 70 per cent. In other words, 70 per cent of the power applied to the shafts of the generators in the underground chamber is delivered for work at the main shaft in the mill.



MOTOR ROOM, NEVADA MILL.

FIRE-PROOF PAINTS.

The spark of a passing locomotive or the careless throwing aside of an unextinguished match has frequently led to great conflagrations with accompanying loss of life. A sudden gust of wind striking against a jet of gas may result in such frightful catastrophes as the burning of the Brooklyn Theatre or the Ring Theatre in Vienna or the still more recent destruction of the Opera Comique in Paris.

Two substances have long been used in order to prevent wood from burning, namely, chloride of zinc and silicate of soda. Both of these have objectionable features. A paint with chloride of zinc for a constituent volatizes when the material on which it is spread is heated, or exposed to flame, and its vapors are insupportable by human beings, hence it would be difficult, if not impossible, in case of fire to enter places where the wood work was protected by such paints. Paints made with silicate of soda are liable to be washed away when exposed to rain or water of any kind. An English paint is made by grinding asbestos and then regrinding it in aluminate of potash or soda, and silicate of potash or soda. When it is to be exposed to the weather, it is combined with oil, driers, and gummy matters, and in some cases with oxide of zinc and barytes.

The following has been recommended for shingle roofs, and its cheapness at once makes it of value. A wash composed of lime, salt and fine sand or wood ashes, put on in the way of ordinary whitewash, it is said, will render a shingle roof fifty-fold more safe against fire from falling cinders. It has also a preserving influence against the effect of the weather; the older and more weather-beaten the shingles the more benefit derived. Such shingles are generally more or less warped, rough and cracked. The application of wash, by treating the upper surface, restores them to their original or firm form, thereby closing the space between the shingles and the lime and sand, and by filling up the cracks, prevents it warping. By the addition of a small quantity of lampblack the wash may be made of the same color as old shingles, and thus the offensive glare of a whitewashed roof be obviated. The saturating of wood with a fire-proof solution, and preferably well seasoned wood, and then coating with a good paint, is considered very satisfactory, but the expense and inconvenience attending the double process have led to the combination in the way of a paint made in the usual fashion, with a pigment, vehicle, such as white lead, or zinc white, drier, and linseed oil, and containing the fire-proof solution. Of such a nature is the Vulcan fire-proof paint, which it is claimed will retard fire and prevent the spread of flames, and at the same time preserve wood from decay and repel the borer ant and teredo. A report made by three officers of the U. S. Navy on this material by

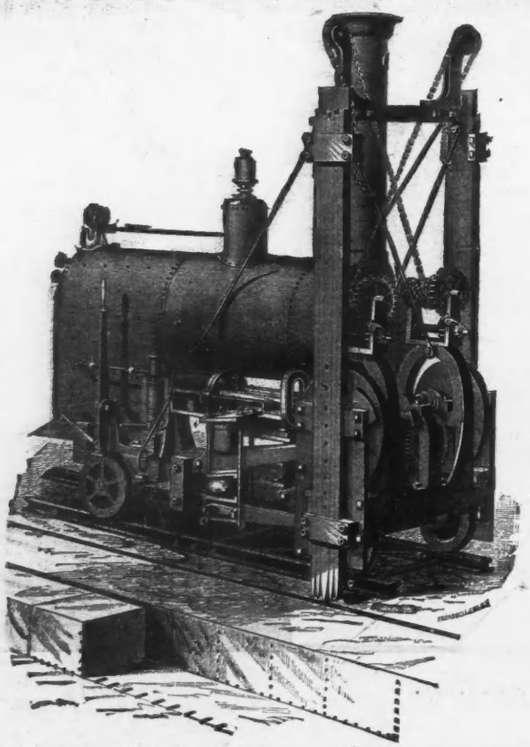
order of Admiral Bancroft Gheradi states that "these preparations would in a great measure prevent conflagration, are satisfactory in retarding the spread of fire, and, as they can be prepared in any color, and give a good finish, are well adapted to inside as well as outside work." A similar report, made by a board of officers to the Quartermaster's Department in Washington, concludes with the statement that "while we do not state that these paints are absolutely fireproof, they are sufficiently so to give ample time for extinguishing a fired building and saving property."

A still later invention is that discovered by Prof. Abel J. Martin, of Paris. His preparation consists of boracic acid, biborate of soda, soluble cream of tartar, sulphate of ammonia, oxalate of potash, and glycerine mixed with glue and incorporated with a paint. It is the result obtained after long experiments in response to a prize of 1000 francs, offered by the Society for the Advancement of National Industry of France. A committee consisting of Professors Dumas, Paliard and Troost, after testing the materials, consisting of painted woods and various fabrics, for seven months, reported in favor of this preparation. The municipality of Paris made its use obligatory in all of the theaters there, and it has stood the test of six years' service in several of them. Its use at Opera Comique was about to be ordered when that unfortunate catastrophe occurred. The application of this invention in other directions is also valuable, for not only is it employed as a paint but the solution can be used separately as a fire extinguishing liquid. It, moreover, has been satisfactorily combined with kalsomine and in the coating of various fabrics, so that the coverings of goods in many of the large stores in Paris are rendered fireproof by treatment with such solution. In this country the new Broadway theatre, in this city, was treated with this paint, and it is claimed that the insurance companies in consequence of its application consented to take that building at the low rate of one per cent a year, whereas previously the lowest rate for theatres had been upwards of two and one-half per cent.

THE WARDWELL STONE CHANNELING AND QUARRYING MACHINE.

In our last issue we described stone quarrying by machinery, as carried on in Belgium. We now have to draw attention to what has been done in this direction in this country.

More than twenty years ago George J. Wardwell began to devote his attention to the quarrying of stone by machinery. His efforts resulted



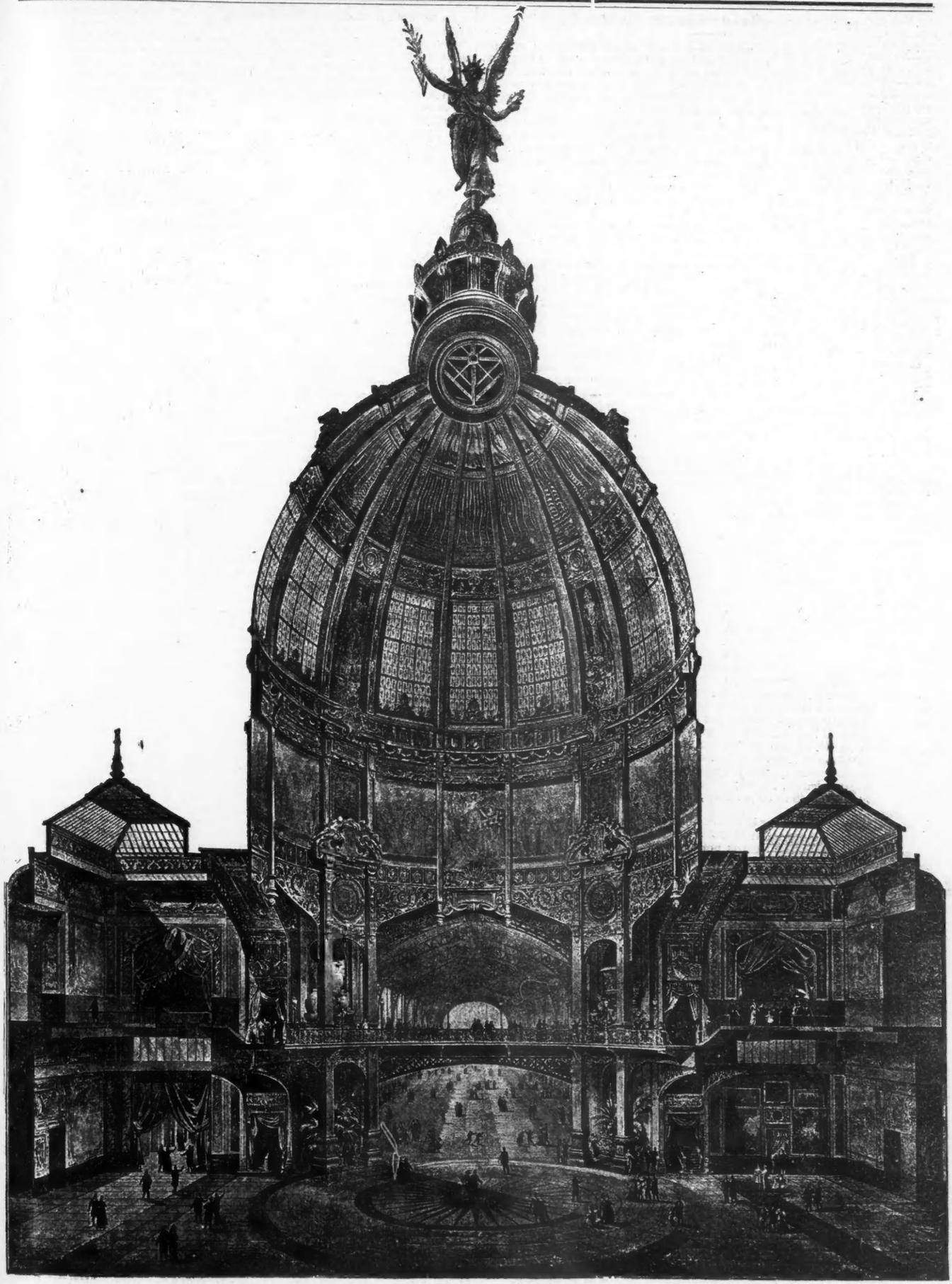
in his securing nearly a dozen patents, until at present, in its accepted condition, the machine devised by him, which we illustrate, is largely in use throughout the marble and stone quarries of New England, and is fast finding its way all over the United States. By its use the cost producing block stone is reduced one half. The frame supporting the boiler engine and other machinery is of one piece of forged iron, and weighs nearly a ton. An engine of six horse-power is mounted on this truck, on each end of whose shaft is a balance wheel. The levers which operate the gangs of cutters are pivoted at their rear ends to an extension of the frame, and motion is communicated from the upper to the lower lever by means of clasps, between which are rubber springs. The free end of the lower lever actuates the gang of cutters, which consists of five bars of the best cast steel, sharpened at their lower ends, and clamped together by head and foot clamps, the whole sliding freely on the standard. Of the five cutters, two have diagonal cutting edges and three have their edges transverse, so that when the machine is moving forward the three cutters, which includes the center one, operate, and while moving in the opposite direction the other two with the center one perform the work. These bars of steel are 7 to 14 feet in length, according to the depth of the channel to be cut. The machine consumes 400 pounds of coal a day, and requires the services of three men. It will cut from 75 to 150 square feet of channel in marble, and 150 to 400 square feet of limestone and sandstone a day, which is equivalent to the work of fifty men.

THE PARIS EXPOSITION—THE CENTRAL ENTRANCE.

The principal entrance to the exhibition is by a portal beneath a dome 200 feet in height, and 98 feet in diameter. This is situated exactly in the axis of the Champ de Mars, and therefore immediately opposite the Eiffel Tower and the Trocadero. To the right and left of the dome are pavilions which are built in two stories; on the ground floor these give direct entrance to the Miscellaneous Industries Court, while the first floor is occupied by large salons, which will probably be used for conferences during the Exhibition. Access to the first floor is gained by means of four staircases which also communicate with a gallery 33 feet above the ground, running around the dome, and in front widened out into a balcony from which a view of the central gardens is obtained. Our illustration gives an idea of the proportions and arrangements of the dome and flanking pavilions; it will be seen that while the lines of construction are preserved, the ironwork is concealed beneath a mass of decoration. The cupola is enriched with stained glass, which forms the exhibits of different manufacturers; the body of the dome is painted with panels and enriched with tapestry and draperies, which are also exhibits. Porcelain and other ceramics enter largely into the decorations. On each side of the portal are monumental figures typical of Industry and Commerce, and around the entrance are painted shields with the arms of different towns in France and those of foreign countries taking part in the exhibition. The architect of the dome and entrance is M. Bouvard, and the work was executed by M. Moisant. The work of erecting a dome of such proportions and in so short a time as was at the disposal of the contractor was one of no small magnitude. The dome is supported upon eight great columns 131 feet high, arranged in a circle 98 feet in diameter, and connected together at different heights by circular girders. The dome itself is framed of eight half principals and eight intermediate half principals; these latter rest upon a curb secured to the top of the circular columns; the eight main principals are practically a curved continuation of the columns themselves. All the framing of the dome meets near the centre in a ring which also serves as the base of the crowning decoration, an allegorical group of figures over 30 feet in height. The construction of the side pavilions calls for no special mention here; the total amount of ironwork in these and the central dome is 867 tons. London *Engineering* describes the method of erecting this great work as extremely interesting. The main scaffolding employed consisted of an annular sixteen-sided polygon, about 150 feet high and 12 feet deep, and the diameter being such that the outer face of the staging lay just within the standards carrying the dome. The scaffolding was divided into eight stories, connected by stairways, and the top of the stage was boarded over its whole width and protected by inner and outer handrails; this top platform was made wider than the main body of the stage, and was therefore carried on corbles. As the whole of this structure was extremely light, it was necessary not only to reduce the weights of ironwork to be lifted, but also to avoid throwing any great strain upon the staging. The crane employed for raising the ironwork, the weight of each piece of which was limited to three tons, consisted of a carriage mounted on coned wheels and a light braced arm about 40 ft. long. This crane was free to traverse around the annular platform on the top of the staging; in raising weights the crane was operated from below in the center of the open space, and in order to keep the load always central, the hoisting chains passed over carriers rolling on the main arm of the crane, and the position of which could be shifted, according to requirements, in such a way that they were always at equal distances from the center. Above the staging we have described, a second conical scaffolding was erected for the construction of the dome, making the temporary structure about 220 feet in height. The ironwork for this latter part of the erection was first raised by means of the crane we have described to the main platform, and thence it was lifted by means of a light traveling crane to any required point of the dome.

An Improved Mode of Making Phosphorus.—An improved method of producing phosphorus has lately been patented in Paris. It consists in treating bones or powdered mineral with nitric acid. A large proportion of the calcium is then removed from the solution—on the addition of potassium sulphate to liquid—in the form of calcium sulphate. The liquid then contains phosphoric acid and potassium and calcium nitrates. After removing the precipitated calcium sulphate by means of filtration, sufficient mercurious nitrate is added to precipitate the phosphoric acid as mercury phosphate. The phosphate of mercury so obtained is collected and dried, and afterwards distilled with carbon, when mercury and then phosphorus are distilled over. The mercury may be re converted into nitrate to serve as a second charge, and the liquors after removing the mercury phosphate, yield on adding more potassium sulphate a solution from which potassium nitrate can be crystallized.

The Separation of Zinc and Cobalt.—H. Baubigny states that the separation of these two metals by sulphureted hydrogen in an acid solution is only accurate when there is little cobalt—5 to 6 per cent—in proportion to the zinc. Otherwise some of the cobalt is precipitated with the zinc, and takes a watery green color from the presence of a compound of the two sulphides of zinc and cobalt. Better results are obtained if at the beginning of the treatment there is a decided amount of free sulphuric acid present. Cobalt and zinc, even as sulphates, cannot be accurately separated by hydrogen sulphide in the presence of a small excess of sulphuric acid, unless the cobalt present be relatively small, or unless there be little zinc. He promises later to give the details of a method of separation of zinc from nickel and cobalt in the dry way, that depends upon the absolute fixity of nickel and cobalt chlorides at the boiling point of sulphur, while zinc chloride has a considerable vapor tension at the same temperature.—*Comptes Rendus* 108, 450.



THE PARIS EXPOSITION, DOME AND MAIN ENTRANCE.

COMPARATIVE COST OF STEAM AND WATER POWER.*

The circumstances under which steam and water come into competition as motive powers vary so widely with geographical situation, purpose to which the power is to be put, and other conditions too numerous to mention in a short paper, that I shall confine myself pretty closely to the condition of things in cotton and woolen manufacturing along the valley of the Merrimack River.

Along this stream are situated Lawrence, Lowell and Manchester, three of the leading textile manufacturing cities of New England, and cities, too, which were created by their water powers; so that, if we can show that steam can compete successfully with water here, it surely can elsewhere in the same lines of production.

The history of the development of the cotton and wool industries of this country includes with it the development of the great water powers; for when these industries commenced to assume large proportions, the stationary steam engine was in its infancy, so that there was at that time no question as to what motive power it was best to adopt.

To get a fair understanding of the cost of the water-power we must remember, first, that where a large power is improved and made available, the cost per unit of power is decreased proportionally, as well in maintenance as in first cost. Again, these large water powers, more especially those at Lawrence and Manchester, were developed by companies owning large extents of land made valuable by the sale of water powers at low figures, the companies making their profits by the sale of lands rather than by the water-power.

The water power at Lawrence is owned and controlled by the Essex Company, and has been sold in mill powers, together with mill sites, to the extent of about 130 mill powers. This unit of water power varies slightly in the different places, that in Lawrence being thirty (30) cubic feet of water per second on a fall of twenty-five (25) feet, whilst at Manchester it is thirty-eight (38) cubic feet per second on a fall of twenty (20) feet, the first being equivalent to 85.23 H. P. gross, and the latter to 86.36 H. P. gross.

The original cost of a mill power at Lawrence was ten thousand dollors, subject to an annual rental of three hundred dollars more, bringing the real cost to fifteen thousand dollars.

These tenants have also the right, under certain restrictions, to draw surplus water, paying for the first twenty per cent additional, four dollars per day per mill power; for the next thirty per cent, or from twenty per cent to fifty per cent, eight dollars per mill power per day; above fifty per cent it drops back to four dollars per day again. At the present time the Essex Company leases mill powers at twelve hundred dollars per annum, instead of the former method of a cash payment and rent. To summarize the foregoing:

Cost, per gross H. P. per annum, of water at Lawrence: Under original leases, $10.55; surplus water up to 20 per cent, $14.51; surplus water from 20 per cent up to 50 per cent, $29.02; under recent leases, $14.08.

At Lowell, "The Proprietors of The Locks and Canals" continue to charge themselves three hundred dollars per annum rent on all mill powers granted in the original leases, and charge five dollars per day per mill power for surplus water up to forty per cent.; exceeding forty and up to fifty per cent, ten dollars per day; from fifty to sixty per cent, twenty dollars per day; and when any one exceeds sixty per cent, they must pay twenty dollars per day per mill power for the entire surplus.

On the original leases cash payments of ten thousand dollars per mill power were made, so that on original leases the cost per gross horse-power is the same at Lawrence, or, summarizing as before:

Cost, per gross horse-power per annum, of water at Lowell:

Under original leases, $10.55; surplus water up to 40 per cent, $18.14; surplus water from 40 to 50 per cent, $36.28; surplus water from 50 to 60 per cent, $72.56.

At this latter price water becomes an expensive luxury.

The original leases amount to about one hundred and forty mill powers, or nearly twelve thousand gross horse power, which at the present time is supplemented by about eighteen thousand horse power of steam.

At Manchester the water power is owned by the Amoskeag Manufacturing Company, who made original grants at about the same terms as Lowell and Lawrence, except that, as the mill power is a trifle greater, it makes the cost per gross horse power a few cents less. For some years tenants were allowed to use surplus water without charge, but when the capacity of the power at low stages of the river was reached, a charge of $5 per mill power for surplus water was made. This was the means of causing several of the mills to substitute auxiliary steam power for surplus water; but still later the Amoskeag Company having reduced the charge to $2 per day per mill power, tenants who are equipped to do so use surplus water whenever allowed.

We will summarize now for Manchester.

Cost per gross H. P. per annum at Manchester,

Under original leases	$10.42
Surplus water	7.15

It is usual in computing water powers to subtract one foot from the head as measured from still water, which is an allowance for loss of head in the water entering and leaving the wheel.

The efficiency of a first class turbine should be about eighty-five per cent of the net fall, so that, if we consider that the average wheel that would be put in to-day will deliver to the shaft seventy-five per cent of the gross power paid for, we shall not be far wrong.

Under these circumstances the net H. P. would cost $\frac{10.50}{.75} = 14.00$ for water under the original leases.

The cost of the plant will vary largely per H. P. inversely with the head under which it is used, as the greater the head the smaller the wheel for a given amount of power; but under a head of about thirty feet, the cost of a modern plant of about 1000 H. P. would be as follows:

Feeder head-gates, rack, etc	$3.70 per net H. P.
Steel pen-stocks	14.60 per net H. P.
Wheel-pits, piers, etc	11.20 per net H. P.
Wheels, casings, draft-tubes and shafting	22.00 per net H. P.
Total cost of plant	$51.50 per net H. P.

To be able to maintain speed during freshet times, an extra allowance of wheel power is made, except where the wheels are placed between two canals, and this varies from twenty-five to fifty per cent, so as an average we will allow thirty-three and a third per cent, bringing this cost to $51.50 \times 1.33\frac{1}{3} = 68.67$. To this must be added for a sinking fund for renewals, four per cent; repairs, one and a half per cent; proportion of general expenses, such as insurance, taxes, interest, etc., six per cent.

Summing these up:

Sinking fund	$2.75
Repairs	1.03
General expenses	4.12
Total	$7.90

Wages of a wheelman, at $2 per day for three hundred and nine days a year, would be $618, and supplies, such as packing, oil and waste, $100 per annum, or about .72 per H. P. per annum.

Total cost per N. H. P. per annum under original grants:

Cost of water	$14.00
Sinking fund, etc	7.90
Attendance and supplies	.72
Total	$22.62

If the water is supplied from surplus at four dollars per mill power per day, this must be increased by $\frac{4 \times 309}{65} - 14 = 5.01$, making the cost $27 63; and by a similar computation, if the water is "surplus" at $2, the cost decreases to $16.20.

We now come to the consideration of the steam side of the question, which is a more complex matter. The cost of steam power varies greatly with the uses to which a portion or the whole of the exhaust steam may be applied.

In a cotton mill, where only white cloth is produced, there is very little use for exhaust or back pressure steam, except for slash the year around and heating for from five to seven months, and undoubtedly the compound engine, using steam of 150 pounds pressure or over and cylinders so proportioned as to allow a portion of the steam from the intermediate receiver to be used for heating, etc., is the best type.

In woolen mills, and cotton mills producing colored goods, there are large demands the year around for low-pressure steam for dyeing and drying purposes, and where such a mill is driven entirely by steam there will in winter time be use for at least three quarters of all the exhaust steam in the various processes.

If one-half of the mill is driven by water power, the engine to drive the remainder should be a simple engine, running always against a back pressure, in which case the power will be obtained at a very small cost.

We will consider only these two extreme cases, and in both we will consider 1,000 N. H. P.

A well-designed compound engine should, when using high steam, say of 150 pounds gauge pressure, deliver to the shafting 93 per cent of the H. P.; therefore, to deliver 1000 N. H. P. the engine should indicate $\frac{1000}{.93} = 1075$; but, to be liberal, we will make the calculation for 1100 H. P. The engine is to run ten hours a day on speed, and, allowing for stopping and starting, this will amount to ten and one-quarter hours per day for three hundred and nine days a year. An engine of this type should be run on one and three-quarter pounds of coal per H. P., including all coal used for starting and banking, and we will take the average cost of such coal at $4.50 per ton. This brings the cost per H. P. per annum for coal to $12.25, allowing no credit for exhaust steam used in heating, etc.

If the average use of steam from the receiver throughout the year is one fourth of the whole, the engine should be charged with about one tenth of the heat supplied by the fuel to this one fourth; in other words, we must credit the engine with nine tenths of one fourth of cost of coal, which reduces the cost of coal to $9.49.

Engineer, at $3, oiler, at $1.50; two firemen, at $1.50 each, and one coal-passer, at $1.20, will make an annual pay-roll of $2,688.30, or $2.44 per H. P. per annum. Engine-room supplies, $250 per annum, or .23 per H. P. per annum.

Summing up we have:

	Per H. P.
Net coal chargeable to engine	$9.49
Attendance	2.44
Supplies	.23
Total running expenses	$12.16
COST OF PLANT.	
Engine, including piping and foundation	$27.00
Engine-house	5.00
Boilers ready for use	10.00
Feed-pumps, injectors, etc	1.50
Boiler-house, chimney and flues	6.00
Coal-shed, tracks, etc	3.00
Total	$52.50
AS IN THE WATER PLANT.	
Sinking fund at 5 per cent	$2.62
Repairs, 2½ per cent	1.31
General expenses, insurance, taxes, interest, etc., 6 per cent	3.15
Total	$7.08
COST PER H. P. PER ANNUM.	
Running expenses	$12.16
Charges on plant	7.08
Total	$19.24

The cost per net horse-power per annum will be eleven-tenths of this, or $21.16, which may justly be reduced by the proportion of fire room expenses and boiler charges equivalent to the portion of the steam used for heating and slashing.

The other case which we will consider is where all the exhaust steam is used at a pressure of about 10 pounds above the atmosphere, for other than power purposes. Under these circumstances the engine becomes the simple non-condensing engine corresponding to the high-pressure cylinder of the compound engine: or for very large powers the com-

* Paper by Charles H. Manning, Manchester, N. H. Read at the Erie meeting of Mechanical Engineers.

pound engine may be used, the low-pressure cylinder then being under much the same conditions as the intermediate of a triple-expansion.

In such an engine, single cylinder, the cost of coal per H. P. is three pounds per hour, charging all the coal to the engine; but this can be reduced to two and a half; but we will take the larger amount.

If the efficiency of the boiler plant is 80 per cent, and the engine works between the limits of 150 pounds per gauge initial pressure, and 10 pounds per gauge back pressure, it will convert about one-tenth of the total heat required from the fuel by the steam into useful work, or ·3 of a pound of coal per H. P., which may be increased to ·5 by the condensation in cylinder.

The boiler plant for such an engine will cost more than for the first engine considered, as there is a greater weight of water to be evaporated; but this is fully offset by the decreased cost of engine, especially if the single cylinder type is chosen. The running expenses and charges on plant will be practically the same as in the former case, but a much larger deduction from fire-room expenses and boiler charges can justly be made from the cost of power.

Our cost of fuel chargeable to power is reduced in this case to $3.50 per H. P. per annum, and, other charges remaining the same, brings the total cost per H. P. per annum down to $13.25, and per net H. P. to $14.58.

At the Amoskeag Mills there is a pair of Corliss engines fitted to run this way, with an initial steam pressure of 100 pounds per gauge running against 10 pounds back pressure, and these engines can be started at any time, and run at 1200 horse-power without its being felt in the boiler-house by merely turning the steam for the dye houses through the engine.

The cost in coal is so small that it falls within the daily variation from other causes, as frequently the consumption will decrease instead of increase when these engines are started.

To sum up, we have the cost per net horse-power per annum:

Water power under original leases	$22.62
Surplus water at $5 per M. P. per diem	27.63
" $2 "	16.20
Compound engine, one-quarter exhaust, used for heater, etc	21.16
Single cylinder, all exhaust used	14.58

As the governing conditions varying in different localities, these computations must be changed accordingly; but when the increased facility of the steam engine for close regulation of speed is weighed on the one hand, and the liability of water powers to flood, drought and ice, I think most will decide in favor of the steam power.

ICE MAKING MACHINERY.

The value of first class machinery in comparison with cheap machinery is in no case more apparent than in ice making. The usual result of the adoption of one of the so-called cheap systems is the total abandonment of the plant, and there are many places to-day without ice because of a bad start being made, and the thousands of dollars invested being now represented by so much scrap iron. In the first place it is necessary to remember that to perform economic duty it is necessary to employ economic motive power, and for that reason the engines used in ice making or refrigerating plant can not be too good. Corliss compound condensing engines of the highest class should be used, and any one who has seen the beautiful vertical Corliss engines at Peter Doelger's brewery, in this city, built by Fraser & Chalmers, and put in by the Consolidated Ice Machine Company of Chicago, will appreciate and understand the style of machinery we recommend.

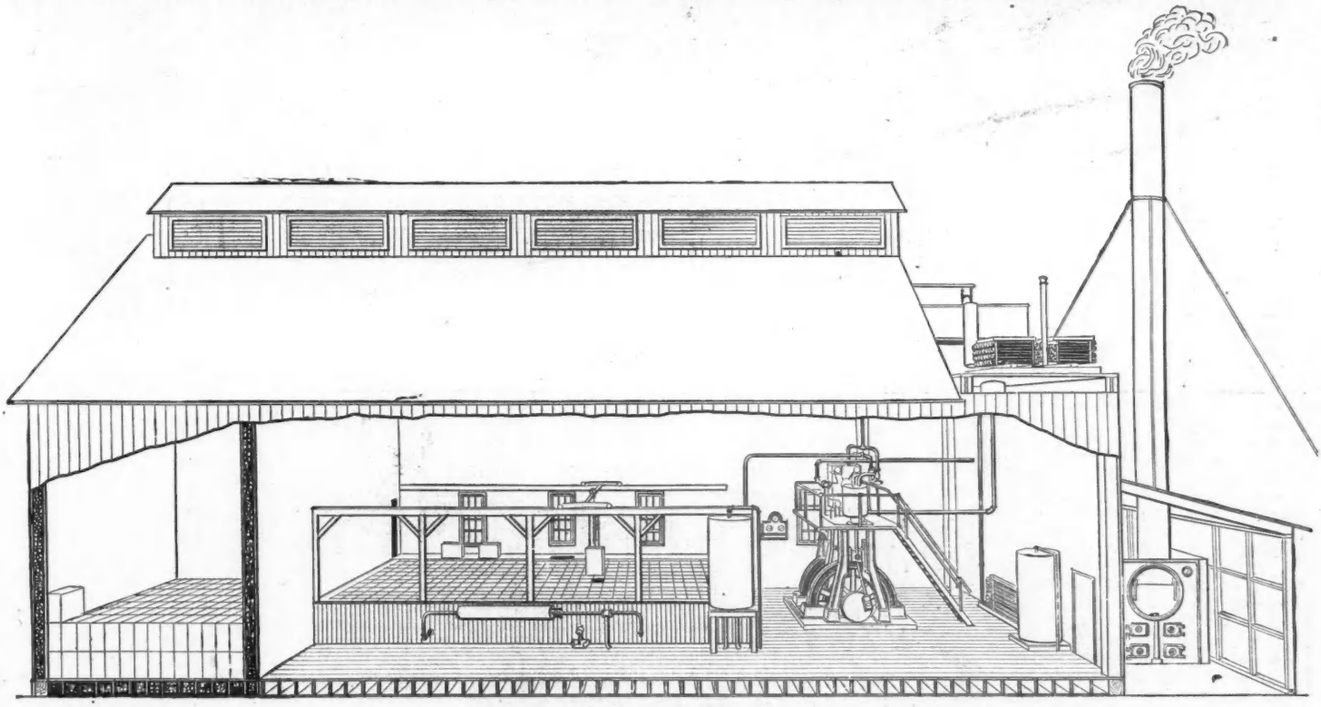
During the past few years it has been found more economical to manufacture cold air in place of buying ice, and indeed the dry cold air can be utilized in many cases successfully where ice would be of little service. Again, in many localities it is almost an impossibility to procure ice by transport, or, if possible, only at such a cost as to render the use of it prohibitive.

The development of the various forms of ice machines have made their adoption a necessity. Ether, air, ammonia and other substances are used as refrigerating agents, but it is accepted that for economy and practical results ammonia is the most satisfactory compound to use. Anhydrous ammonia is a gas which at a temperature of 60 degrees Fahr. is converted into a liquid by a pressure of 125 pounds to the square inch. It has the valuable property of lowering the temperature to about 40 degrees below zero by its rapid evaporation, and it is this quality that is taken advantage of in making artificial ice.

The two forms of refrigerating machines most generally used are known as anhydrous and absorption machines. In the former machines anhydrous ammonia is used, which is conveyed by pumps to the refrigerating chambers, where the expansion takes place. The ammonia passes from a liquid to a gaseous form and the gas is converted again into a liquid by means of a compression pump, and so made to do its work indefinitely, it only being necessary to supply to the machines the small amount of ammonia lost by leakage.

In the absorption machines a strong solution of ammonia in water is used in place of the anhydrous ammonia. The ammonia in this solution is liberated from the water by heat, converted into liquefied ammonia by the pressure produced from its own expansion, and on returning again to its gaseous state is reabsorbed in water and so made to do work for an indefinite number of times.

The pipes leading from the freezing chamber to the pumps and filled with the expanded ammonia are freezing cold, covered with frost; while the pipes leading away from the pumps and containing the condensed ammonia are burning hot. To remove this heat the condensed ammonia is passed through iron pipes surrounded by cold water.



INTERIOR VIEW OF AN ICE FACTORY.

So perfectly are these refrigerator machines constructed that they run with almost no loss of ammonia and with so little labor that almost the only expense is in the fuel or the power used. It is claimed by the manufacturers of ice machinery that they can produce ice for from 50 cents to $1.25 per ton according to the price of fuel, etc., in different localities. When they do the cooling without making the ice, as in breweries, in the cold pressing of oils, cold storage rooms, etc., work can be done which would be equivalent to the work done by a ton of ice for about half the cost of making the ice, as about half the cost of making ice is in the cost of the water and the expense of handling.

Cold storage rooms are becoming very common in large cities. They are buildings divided into small rooms where the temperature is kept below the freezing point by refrigerating machines.

On the walls of these rooms are suspended the pipes in which the cooling is done. These pipes soon become coated with ice by the freezing of the moisture which is condensed on them, oftentimes becoming a solid wall of ice, so thick and heavy as to necessitate stopping the machines to let it melt off

Frequently the cooling is done with brine reduced to a temperature of about 17 degrees above zero and made to circulate by means of a pump, through pipes placed in the different rooms.

We illustrate herewith the interior appearance of an ice factory, showing the general view of an apparatus that was built by the Consolidated Ice Machine Company, of Chicago. On the right hand of the cut is shown the boiler, engine, and ice machine, and in the center is the tank where the distilled water is frozen, while in the left is the storage room surrounded by non-conducting walls where the blocks of ice are kept until required. The question of cost is an important one, and one which naturally depends very largely upon local conditions, but in a general way it is estimated that the cost of the plant will average about $1000 a ton—that is, a plant producing 10 tons a day will cost $10,000.

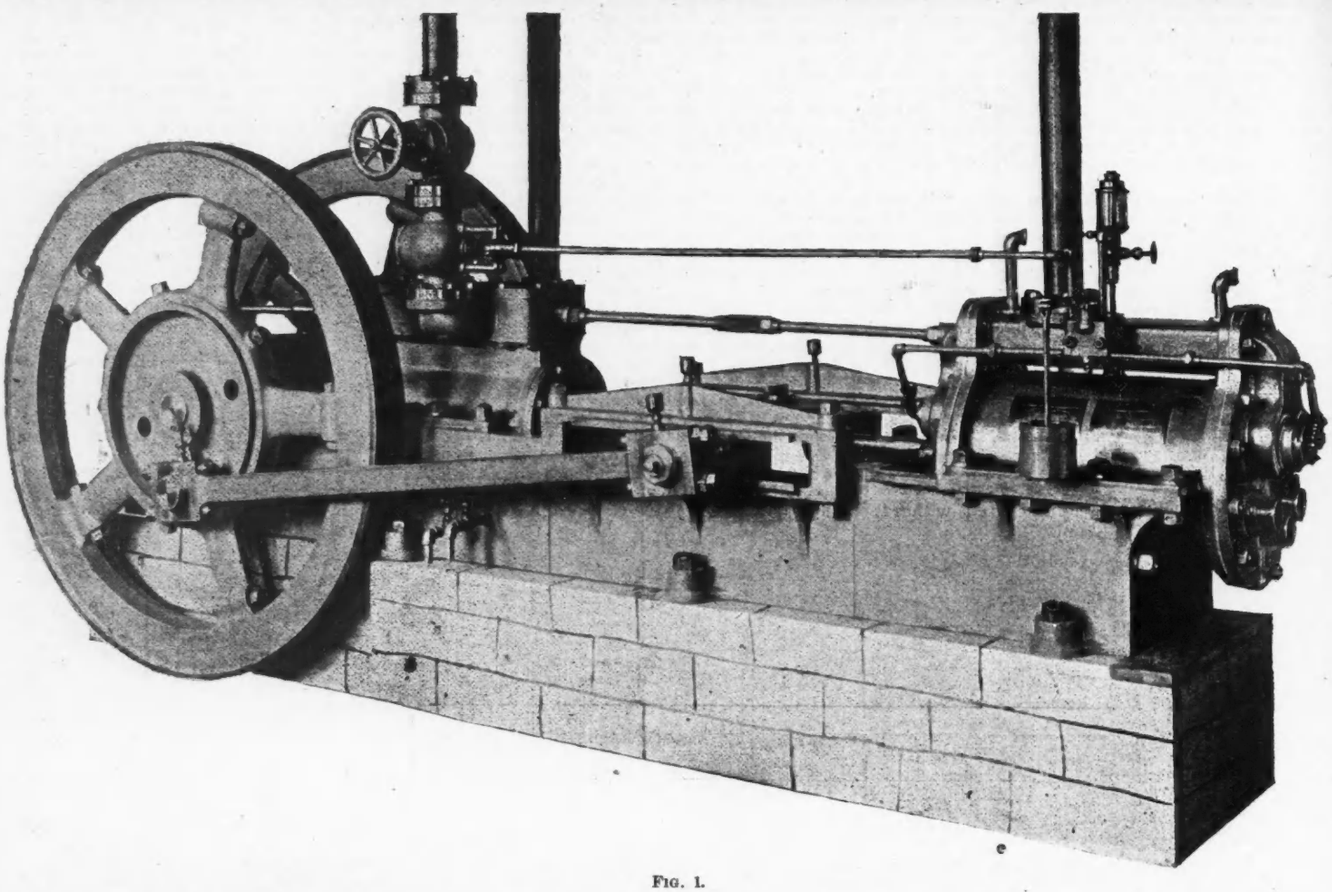


FIG. 1.

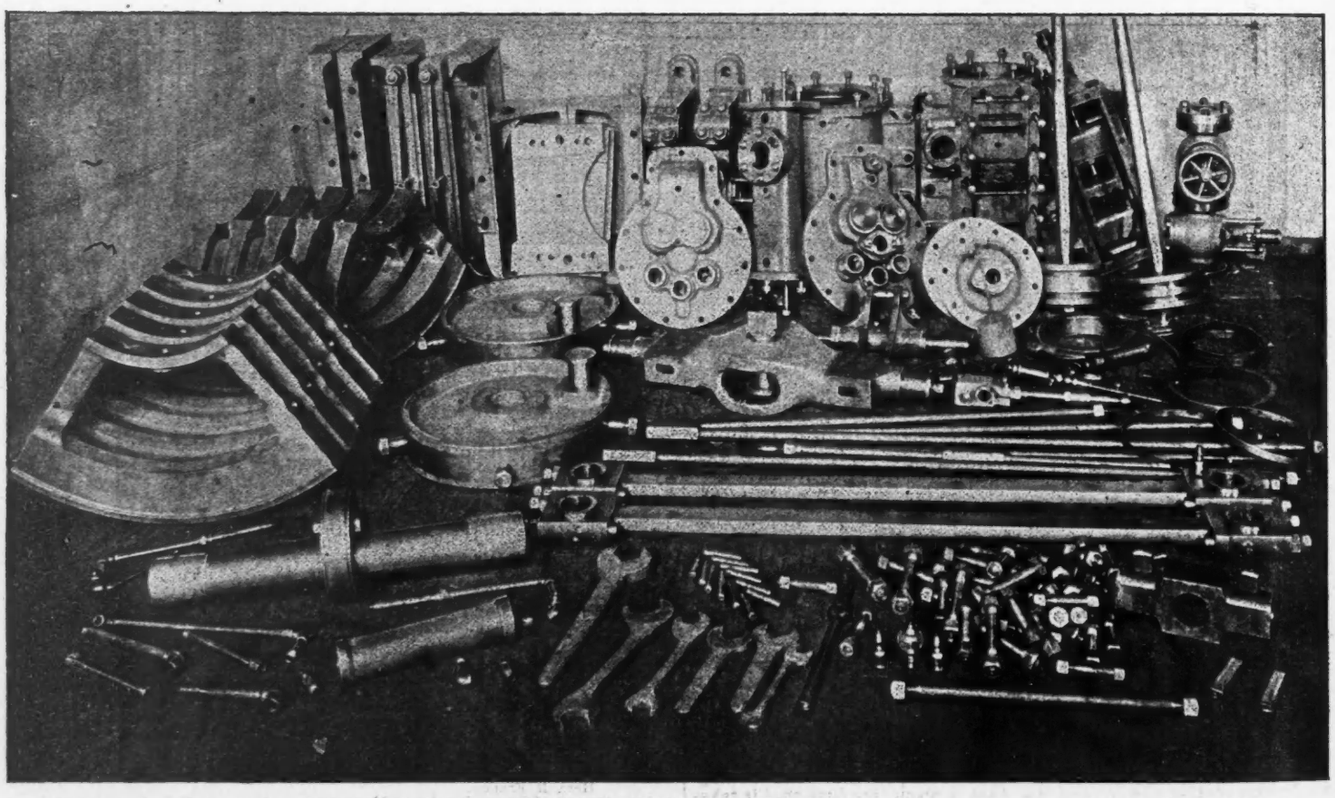


FIG. 2.
INGERSOLL SECTIONAL AIR COMPRESSOR.

This air compressor, which we illustrate herewith, has been especially designed for transportation in mountainous countries on mule back, where wheeled vehicles cannot penetrate. Fig. 2 gives a very good idea of its portability, while Fig. 1 gives a just impression of its solidity. In making sectional machinery it is easy enough to cut it up, but it is not so easy to do so, retaining its strength and durability when bolted together again. This strength and solidity we may say are the most important and especial features of this air compressor, and are strong recommendations for its use when such conditions exist as necessitate a sectional machine. Recently there have been shipped three plants of this description, one to Mexico on the Pacific Coast, near San Blas, another to the "El Christo" mine, and a third to the Zancudo mines, in the Republic of Colombia. The two formerwere exaclty of the pattern that we have illustrated fitted for steam, while the last was for duplex water power.

LIXIVIATION OF SILVER ORES.

Prof. Jas. M. Safford, Professor of Geology and Mineralogy, in charge of Metallurgy, Vanderbilt University, Nashville, Tenn., writes: "Mr. Stetefeldt has given us a most useful work and one well up with the times. We shall have use for it in the near future. The publishers are to be commended likewise for the superior make up of the volume, its handsome exterior being quite in harmony with its contents."

Prof. B. W. Frazier, of Lehigh University, Bethlehem, Pa., in a letter just received, says, in reference to Mr. C. A. Stetefeldt's book: "This work, combining, as it does, a full presentation of the chemistry of the processes of lixivation with hyposulphite and extra solutions, so far as it has yet been elucidated, with a detailed description of the modern type of plant, and of the methods of working, and with statistics giving the actual results obtained in recent practice, by a writer of the scientific attainments and practical experience of Mr. Stetefeldt, cannot fail to be of great value to the student or the practicioner in this branch of metallurgy. The instruction in metallurgy at this University is given chiefly by lectures, but I shall have pleasure in recommending this work to those of my pupils who desire to make a more extended study of the wet treatment of silver ores."

Hints to Exporters.—The last number of *Kuhlow's* (Berlin) states that "with the object of promoting the erection of new factories in Turkey, the Ottoman government is prepared, during a period of fifteen years, to admit duty free such machines and tools as are required for fitting up a factory, worked by steam or other power. Those manufacturers who desire to avail themselves of this concession must state to the customs authorities the number and sort of such machines or tools."

American Rapidity in Pipe Making.—On a recent Thursday afternoon the American Tube and Iron Company, at Middletown, Pa., received a cable message from Russia, ordering 30,000 pounds of casing to be sent to a particular point in the Russian oil territory, as soon as possible. When the cablegram was received, the iron for the tubing was in the rough, at the rolling mill in York, and it was at once forwarded to Middletown. The rolls that make the pipes were speedily changed, the mill men set to work with a will, and so successful were the superintendent's efforts that the pipes were delivered at the ship's side on Friday night, and on Saturday morning were in the vessel *en route* to Russia. This is the quickest work ever done at the Middletown works.

Another Big Telescope.—Active negotiations have been entered into with Alvan G. Clark, the celebrated telescope maker, of Cambridge, Mass., for the construction of a 40-inch lens, to be erected on top of Wilson's Peak, an elevation some thirteen miles east of Los Angelos, Cal. It is to be made for the University of Southern California, and the Hon. E. F. Spence, of Los Angelos, has already given funds sufficient to guarantee the price ($100,000) asked by Mr. Clark for his work. The glass plate from which the lens is to be ground is now being made in Paris, by M. Mantois, and it is hoped that the lens will be completed some time in 1892, and so form a feature of the great celebration of that year. The site chosen is considered more accessible than that of the Lick Observatory, owing to the situation of the city of Pasadena, at the base of the mountain, in fact not more than three miles from the summit in a direct line. Prof. Edward C. Pickering, of the Harvard Observatory, spent some time there during the spring in making a series of severe tests of the conditions of the atmosphere on top of the mountain. His results showed that the air was very steady. Mr. Clark is famous throughout the world for his lenses, and he made the 26 inch lens at the United States Naval Observatory, in Washington, the 26-inch lens at the University of Virginia, the 30-inch lens at the Imperial Observatory at Pulkowna, Russia, and the 36-inch lens at the Lick Observatory at Mount Hamilton, which is now the largest in the world.

The Pendulum Proves the Earth's Rotation.—The longest pendulum on this continent, says the Philadelphia *Times*, swings in the technological school at Atlanta. It is a heavy pear-shaped piece of iron attached to a brass wire 42 feet long. The upper end of the wire is pivoted in a steel point which rests on the center of a steel plate so as to cause the least possible friction. The swinging of the pendulum gradually describes a circle on the floor in a direction following the sun, showing in this way that "the earth do move." Directly under the pendulum is a large circle divided into 24 parts, of 15 degrees each, to correspond with the hours of the day. The North Pole is placed directly under the pendulum, and the meridians of longitude meet there. The parallels of latitude make smaller circles inside the first. Dr. J. S. Hopkins, president of the school, who made and put up the pendulum, performs the experiment as follows: The iron is brought to the edge of the circle in the meridian of Atlanta and let swing across. Apparently it goes straight across, but gradually it traverses the circles in the direction taken by the sun, and opposite to the revolution of the earth. The pendulum not being directly over the axis of the earth, does not move in exactly the same time as the sun, but falls behind some hours a day. It is said that if it were at the North Pole, where it would be immediately over the axis, it would traverse the circle in exactly 24 hours, and at the equator it would not traverse it at all, for gravity would operate to prevent.

Feats of a Chimney Repairer.—William Wallace, the chimney repairer, is never out of work. He sets up his own peculiar device for staging, which enables him to complete a job in about the time that it takes to erect an ordinary staging. "Steeple Jack," as he is called, first places a long light ladder against the chimney that is to be operated on. Then mounting it, he drives a peculiarly shaped iron pin into the brickwork and binds the top of the ladder fast to this pin. Standing on the top round of this ladder, he drives another pin into the chimney as high above his head as he can reach. A rope is then passed over this pin and made fast to a round in a second ladder about three feet from its bottom round. This ladder is then hoisted up until it rests on top of the first ladder. It is then made fast to the lower pin, and then "Steeple Jack" mounts to the top of it, and, driving in another pin, secures the top round to that. From this ladder a third is hoisted as before, and Jack and the ladders, as many of them as may be necessary, continue to rise as far as may be desired. It is estimated that he has climbed about fifteen miles up into the air in this way. The only accident he ever met with was at Mansfield, Mass., when he fell from a chimney with a ladder. He landed in a tree, however, and escaped injury. His set of ladders is his only staging, and he can mount a 180-foot chimney in three hours. He raises his own brick and mortar by standing on top of the chimney and pulling them up. He learned his trade with the original "Steeple Jack Davis," in England, and has traveled extensively through Europe with his ladders, besides working in most of the large cities in this country.

DIVIDENDS PAID BY MINING COMPANIES DURING MAY AND SINCE JANUARY 1ST, 1889.

Name of Company.	Paid in May.	Paid since Jan. 1st.	Name of Company.	Paid in May.	Paid since Jan. 1st.
Alaska, Ala.	.....	25,000	Mammoth, Utah.	.....	10,000
Alma, Idaho	.....	15,000	Mt. Diablo, Nev.	.....	30,000
Aspen, Colo.	40,000	200,000	Monitor, Dak	12,500	12,500
Atlantic, Mich.	.....	80,000	Montana Lt., Mont.	.....	41,250
Boston & Mont., Mont.	100,000	300,000	Morning Star, Colo	25,000	25,000
Caledonia, Dak.	8,000	40,000	Napa, Cal.	.....	10,000
Calumet & Hecla, Mich.	.....	500,000	Navajo, Nev.	.....	40,000
Central, Mich.	.....	40,000	N.Y. & Hond. R., C.A.	.....	30,000
Colorado Central, Colo.	.....	27,500	Ontario, Utah	75,000	375,000
Confidence, Nev.	.....	24,960	Osceola, Mich.	.....	50,000
Cons. Cal. & Va., Nev.	108,000	432,000	Pamlico, Nev.	.....	9,000
Copper Queen, Ariz.	.....	70,000	Parrot, Mont.	.....	36,000
Daly, Utah	37,500	187,500	Plumas-Eureka, Cal.	.....	70,372
Dunkin, Colo.	.....	20,000	Poorman, Colo.	.....	15,000
Evening Star, Col.	.....	12,500	Silver Cord, Colo	.....	50,000
Granby Mg. & Sm., Mo.	20,000	20,000	Sierra Nevada, Idaho	20,000	20,000
Granite Mt., Mont	200,000	800,000	Tamarack, Mich.	.....	200,000
Homestake, Dak.	12,500	100,000	Quicksilver, Cal., Pref.	64,365	128,738
Hecla, Mont.	15,000	75,000	Quincy, Mich.	.....	200,000
Idaho, Cal.	15,500	93,000	Young America, Cal.	.....	10,000
Illinois N. M.	.....	20,000	Ward Cons., Colo.	10,000	10,000
Iron Silver, Colo	.....	100,000	Webb City, Mo.	.....	2,200
Jay Gould, Mont.	.....	44,000			
Lookout, Dak.	10,000	50,000	Total, 46 companies.	773,369	4,651,460

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.

PATENTS GRANTED MAY 28TH, 1889.

403,907. Safety Guide for Railway Cars. John G. Blau, Philadelphia, Pa.
403,916. Pipe Coupling. James I. Collins, Amsterdam, N. Y.
403,918. Die for Hammering Sheet Metal. Isaac E. Craig, Camden, Ohio.
403,940. Machine for Coiling Spiral Springs. John W. Kerr, Chicago, Ill., Assignor of one-half to F. M. Atkinson, same place.
403,952. Drilling Tool for Wells. Hiram H. McLane, San Antonio, Tex.
403,961. Shears for Cutting Metal Bolts. William Robinson, Churdan, Iowa.
403,963. Hydrocarbon Burner and Combined Super-Heater. Edward Shallow, Philadelphia, Pa., Assignor by mesne assignments to the United States Gas and Fuel Company.
403,969. Trolley for Electric Railways. Thomas Streat, Richmond, Va., Assignor to himself and Edward Whitlock, same place.
403,980. Anvil Shears for Cutting Metal. William H. Adams, Franklin, La., Assignor to Independence Alpha, same place.
403,983. Brake Lever. George W. Barnes, Philippi, W. Va.
403,989. Screening Mechanism. Eckley B. Coxe and Samuel Solmon, Drifton, Pa., said Salmon Assignor to said Coxe.
403,997. Crushing or Grinding Mill. Edwin C. Griffin, Brooklyn, Assignor to the Griffin Manufacturing Company, New York, N. Y.
404,000. Ore Roasting Furnace. Isaac B. Hammond, Chicago, Ill.
404,011. Ore Concentrators. Walter McDermott, Morristown, N. J.
404,012. Elevator-Controlling Mechanism. William E. Nickerson, Cambridge, Mass.
404,017. Substructure for Elevated Railways. Stillman W. Robinson, Columbus, Ohio.
404,043. Metallic Sleeper for Railroads. Pierre Kolgraf, Brussels, Belgium.
404,054. Car Brake. George B. Quigg, Thornton, Assignor to himself and John N. Young, Chicago, Ill.
404,067. Electric Motor. Warren S. Belding, Chicago, Ill., Assignor to the Belding Motor and Manufacturing Company, same place.
404,098. Oil Burner. Frank M. Mahan, Chicago, Ill., Assignor of one half to Charles H. Morse, same place.
404,139. System of Electrical Distribution. George Westinghouse, Jr., Pittsburg, Pa.
404,148. Hydro-carbon Burner. John Adams, Nashville, Tenn.
404,149. Trolley for Electrical Railways. David A. Ainslie, Richmond, Va.
404,153. Friction Clutch. George A. Barnes, New Haven, Conn.
404,159. Apparatus for Converting Crude Iron into Malleable Iron or Steel. John W. Bookwalter, Springfield, O.
404,181. Reduction of Iron Ore. Charles J. Eames, New York, N. Y.
404,182. 404,183. Process of Reducing Iron Ore. Charles J. Eames, New York, N. Y.
404,184. Reducing Ore. Charles J. Eames, New York, N. Y.
404,199. Process of Making Artificial Stone. Paul Jochum, Ottweiler, Prussia, Germany.
404,220. Method of Rendering Nickel and Nickel Alloys Non-Magnetic. Heinrich Ostermann and Charles Lacroix, Geneva, Switzerland, Assignors to the Usine Genevoise de Degrossissage d'Or, same place.
404,237. Air Engine. James A. Woodbury, Winchester, and Joshua Merrill, George Patten and Edward F. Woodbury, Boston, Mass.
404,253. Apparatus for the Manufacture of White Lead. Arthur C. Bradley and Stephen R. Bradley, Brooklyn, N. Y.
404,263. Conveyer for Piling Coal. James M. Dodge, Philadelphia, Pa., Assignor to the Dodge Coal Storage Company, Naugatuck, Conn.
404,278. Manner of Jointing Railroad Rails. Charles R. Hastings, Buffalo, N. Y.
404,292. Apparatus for Equalizing the Strain on Winding Gear. George Lansell Sandhurst, Victoria.
404,306. Process of Electric Riveting. Elias E. Ries, Baltimore, Md.
404,328. Process of Separating Precious Metals from Ores. Jules Weirich, Bexiers, Herault, France.
404,332. Process of Separating Ore by Magnetism. Clinton M. Ball, Troy, and Sheldon Norton, West Troy, Assignors of one-third to Alexander T. Porter, West Troy, N. Y.
404,333. Magnetic Ore Separator. Clinton M. Ball, Troy, and Sheldon Norton, West Troy, Assignors of one-third to Alexander T. Porter, West Troy, N. Y.
404,334. Process of Separating Ores. Clinton M. Ball, Troy, and Sheldon Norton, West Troy, N. Y., Assignors of one-third to Alexander T. Porter, West Troy, N. Y.
404,335. Stone-Sawing Machine. Rufus L. Barney, Swanton, Assignor of one-half to John N. Baxter, Rutland, Vt.
404,344. Apparatus for Deoxidizing Iron Ores. Michael R. Conley, Brooklyn, Assignor to Wm. Bell, New York, N. Y.
404,369. Metallurgical Furnace. Wm. Stubblebine, Bethlehem, Assignor to the Stubblebine Patent Company, Philadelphia, Pa.

PERSONALS.

Mr. William L. Lockhart, a mining engineer of San Francisco, has been appointed manager of the Burmah ruby mines, recently floated in London.

Mr. John J. Endres, Chief Engineer of Hudson County Elevated Cable Railroad, Hoboken, N. J., died suddenly on the 24th ult., aged forty-seven years, at Hoboken, N. J.

Mr. William Hainsworth, for many years superintendent of the Pittsburg Steel Casting Company, of Pittsburg, Pa., and President of the Hainsworth Steel Company, has resigned both his positions and withdrawn from the firms.

The West Superior Chamber of Commerce has issued invitations to all the leading commercial bodies of the East and Northwest to send delegates to a water-ways convention, to be held in West Superior, Wis., on August 6th next. This convention will present a memorial to Congress to make larger appropriations for the deepening of harbors in the great lakes.

A course of electrical engineering has now been formally established at Columbia College. Mr. Francis B. Crocker has been appointed head of the new course, and Mr. Michael Pupin has been appointed as his assistant. The instructorship will be in the department of the School of Mines, under Professor Trowbridge.

Mr. Samuel L. Jones, so long the efficient superintendent of the Crown Point and Belcher mining companies and of late years superintendent of the Segregated Belcher Mining Company, Virginia City, Nev., it is reported, intends to resign from those positions. Ill-health and consequent inability to be at his post of duty are the attributed causes of this action.

Messrs. Wellington Burt, of Michigan, and Charles Burger, of New York, who have been visiting England as representatives of the movement to unify American salt interests, sailed from Liverpool, England, on the 25th ult. It is stated that the English salt union entered into an alliance with them which assures harmonious relations between the English and American markets.

The "Federation Nationale," with headquarters at Paris, France, has extended an invitation to the leaders of all labor organizations in this country to be present at a convention to be held in Paris from July 14th to 21st. It is stated that General Master Workman Powderly, of the Knights of Labor, will attend the Paris Exposition next month, and may be present at the convention; but he is not going over for that purpose.

As the government has taken no steps towards sending American workingmen to the Paris Exposition with a view to examining the advance of the mechanical arts, the Scripps' League of Western newspapers will send out during the coming July an expedition. They propose to spend anywhere up to $25,000 in paying all the expenses of fifty American workingmen chosen from St. Louis, Cincinnati, New York, Boston, Detroit, Cleveland, Chicago and other manufacturing points. All the mechanic trades will be represented.

Mr. Nathan Corwith, for many years one of the best known citizens of Chicago, died there on the 29th ult. He came to Chicago in 1864, from Galena, where for many years he had been a dealer in lead, and with his brother Henry began to deal in land. He accumulated about $1,500,000, and about three years ago retired from business. Last year his son Gurdon, who was a metal broker in New York, persuaded his father to try to effect a corner in the lead market. In a few months the old man's money was all gone.

COLOMBIA WANTS EMIGRANTS.—Mr. Edmund W. P. Smith, for eight years United States Consul at Carthagena, republic of Colombia, but for the past two years engaged in business there, is in this city. He says that there is a great field for American enterprise in the republic of Colombia. Electric lights, water-works, railroads, and ice machines are particularly wanted. The Government is disposed to be liberal. Concessions will be given to bona fide capitalists for twenty-five years, and in the case of the water-works the Government will guarantee 7 per cent on the capital invested for twenty-five years. Emigration is particularly desired, and in order to infuse new blood into the republic the government will pay the passage of an emigrant, give him $6 a month, 250 acres of land, a cow, two pigs, a plow, and help him build his house and transport him free from the seaport to the point where he desires to locate.

On Saturday last there were more engineers on the North River at one time than have ever been before at one time, the departure of the "Alvena" with the first contingent of the Nicaragua Canal construction staff taking place but a short time before that of the "City of Richmond," which steamer carried the larger number of the engineers visiting Europe and the Paris Exhibition.

About one o'clock the steamship "Alvena," of the Atlas line, sailed for Greytown, having on board a force of 47 engineers and other employés of the Nicaragua Canal Construction Company. She also took a considerable amount of material for the commencement of the work at Greytown. The expedition is in charge of Capt. Harris and Lieut. N. R. Usher, U. S. N. The "Alvena" was accompanied down the Bay by the steamer "H. E. Bishop," on board of which was a large party of those connected with the canal and their well-wishers and the friends of those leaving. Among those present were Mr. Hiram Hiscock, President of the Maritime Canal Company of Nicaragua; A. C. Cheney, President of the Canal Construction Company; Mr. A. G. Menocal, Chief Engineer; Capt. H. C. Taylor, U. S. N, General Manager; Dr. Horatio Guzman, the Minister for Nicaragua; Don Jose M. Muñoz, the Consul-General for Costa Rica; Rear-Admiral Ammen, U. S. N., and many other well known people.

The "City of Richmond" was chartered by the committees of the American Institute of Mining Engineers and the American Society of Mechanical Engineers, and the list of representatives of these two bodies, who left for Europe in her, is as follows: W. H. Adams, Robert Allison, Geo. I Alden, Thos. W. Bakewell, D. L. Barnes, Geo. H. Barrus, Jerome L. Boyer, Morgan Brooks, W. F. Barnes, Chas. S. Beach, Giles Beach, W. H. Baldwin, Stephen W. Baldwin, Matt. A. Beck, C. M. Collins, Ralph E. Curtis, W. D. Cadwell, Barton Cruiksbank, Jas. Christie, Fred'k A. Canfield, Wm. H. Dodge, F. H. Daniels, Fred'k P. Dewey, Victor E. Edwards, W. V. Fairbairn, Wm. Forsyth, Robt. Fraser, John R. Freeman, A. C. Fowler, H. Manning Fisb, Edward O. Goss, Geo. A. Gray, Stanley D. Gifford, E. L. Gould, Geo. H. Hewitt (N. Y.), W. O. Hildreth, W. Hill, H. D. Hibbard, Edwin T. Howard, Wm. M. Hablishton, Sumner Hollingsworth, John T. Hawkins, Edward J. Hall, Edward J. Hall, Jr., Chas. E. Hyde, Alfred E. Hunt, O. S. Harmon, O. J. Harmon, Geo. H. Hewitt (Col.), Jno. C. Humphrey, E.V. D'Invilliers, D. S. Jacobus, H D. Johnson, E. P. Jennings, Frank E. Kirby, Chas. Kirchhoff, Jr., William Kent, G. Lavagnino, Thos. H. McCollin, Edw. McIlvain, Howard McIlvain, Edwin Mickley, A. S. Mahoney, E H Mumford, W. T. Magruder, John H. Milholland, Allyne H. Merrill, Edward F. Miller, H. M. Montgomery, Aug. W. Newell, Edw. Nichols, John D. Ormrod, John C. O'Connell, Bernard O'Connell, Walter Phillips, C. D Parker, Geo. P. Putnam, Andrew J. Provost, H. Roberts, Edgar Richards, Theo. W. Robinson, Walter S. Russell, D. W. Robb, Francis H. Richards, C. S. Ridgway, Henry I. Snell, Oberlin Smith, Archy A. Stevenson, Jesse M. Smith, F. F. Sharpless, Ambrose Swasey, Chas. Sperry, T. Jackson Shaw, Joseph Shaw, Geo. R. Stetson, H. H. Suplee, Peter Schwamb, Newell Sanders, W. P. Todd, J. Archie Taylor, Jas. A. Tilden, Leonard Thompson, Edgar B. Thompson, Henry R. Towne, William N. Taintor, Starr Taintor, F. H. Underwood, E. A. Uehling, W. M. Whitney, Baxter D. Whitney, Maunsel White, Chas. Wilbraham, Wm. C. Williamson, J. D. Williamson, Jones Wister, Horace Wyman, H. Winfield Wyman, Geo. W. Weeks, Joseph J. White, Wm. Webster, C. J. H. Woodbury, V. F. Worcester, Walter Wood, John P. Zane.

On Wednesday, the 29th ult., the steamship "City of New York" took a further contingent as follows:

Chester B. Allere, Jas. Archbald, Julius Baier, Geo. A. Barnard, Geo. M. Bond, Wm. F. Booth, Fred. Brooks, W. A. Brackenridge, Robt. Cartwright, Thos. C. Clarke, Prof. C. L. Crandall, Frank G. Darlington, Sr. F. Degraw, A. Dempster, E. A. Doane, S. B. Downes, N. M. Edwards, Chas. E. Emery, John T. Fanning, W. L. Ferguson, Clark Fisher, Prof. R. Fletcher, C. E. Fogg, William Fox, M.D., Jas. B. French, Wm. Gibson, Jr., Prof. Lewis M. Haupt, J. D. Hawks, John J. Hawks, Prof. J. V. Hazen, Arthur Hider, A. B. Hill, Chas. J. Hilliard, John J. Hopper, Prof. W. W. Johnson, Washington Jones, T. D. Lovett, Arthur S. Mahony, C. C. Martin, D. E. McComb, Geo. W. Miller, Chas. J. Morse, Arthur Pou, H. G. Reist, Wm. Roberts, Fred. A. Schaffer, Max E. Schmidt, Wm. H. Searles, Wm. Starling, John Thomson, T. K. Thomson, Herbert G. Torrey, Prof. L. L. Tribus, Chas. E. Wait, Prof. Wm. Watson, Wm. White, D. J. Whittemore, John F. Wilcox, W. H. Wiley.

INDUSTRIAL NOTES.

Mr. Henry R. Worthington, the well-known pump manufacturer of New York, has just opened a branch office in St. Paul, Minn. Mr. Worthington has now established branch offices in Boston, Philadelphia, Chicago, St. Louis, San Francisco and St. Paul.

The Westinghouse Electric Company, of Pittsburgh, Pa., received an order from Oklahoma, which is for a plant of 750 incandescent and 35 arc lights for the town of Guthrie, and is signed by a St. Louis syndicate. This plant will be the first of its kind in the Indian Territory.

The Iron Gate Land and Improvement Company of Virginia, which was organized a few months ago, and to which we referred at the time in the JOURNAL, is employing men to grade for the side track to the rolling mill to be erected at that place. The town lots are being laid out and will be sold in June.

The Pittsburg Reduction Company has been organized in Pittsburg, Pa. It is formed for the purpose of reducing refractory ores and producing bronze and commercial alloys. The capital stock is $20,000, shares $100 each. The directors are A. E. Hunt, H. W. Lash, Robert J. Scott, Willard Hunsiker and W. S. Sample.

Lucy Furnace, No. 1, of Carnegie Bros. & Co., Limited, at Pittsburg, Pa., was blown out last week after a very successful blast of 2 years, 11 months and 14 days. In that time it has cast over 192,000 tons of pig-iron. The furnace will be relined and otherwise thoroughly repaired, and will be ready for blast again about July 15th next.

Mr. Frank Clergue, of Bangor, Maine, has organized the Bank of Persia, the Persian Railway and Construction Company, the Persian Electric Light Company and the City of Teheran Water-Works Company, each with $1,000,000 capital, and has started for St. Petersburg, where, it is stated, he will complete his negotiations with the Shah of Persia and Czar of Russia, during their meetings there early in June.

Assistant Secretary Tichenor has instructed the Collector of Customs at New York in the case of all merchandise imported from Manilla to accept the value of the currency of that port, as certified by the United States Consul there at the time of the exportation of the merchandise. This action is due to the fluctuating value of the currency in question, it having no fixed value, and being regulated altogether by the state of trade.

What is said to be the largest window-glass tank in the world, located at Jeannette, near Pittsburg, was put in operation early last week. The first working of the tank, more or less in the nature of an experiment as it was, proved a success. The tank measures 120 feet in length and 20 feet in width. It has a capacity of 670 tons of melted glass. The weekly production of the tank is expected to be 6192 boxes. The number of men employed on the tank is 48.

An explosion occurred on the 30th ult., at the New Jersey Copper Extraction Works, near Tremley Point, N. J. One man was fatally burned, and three others were severely injured. A new cupola furnace for melting copper, which had been in operation only a week, exploded with great force, wrecking part of the building in which it was situated, and blowing the furnace itself to fragments. It is stated that the damage caused by the explosion to the works is $6,000. An investigation will be made as to the causes which led to the accident.

The patent case of the Consolidated Roller Mill Company against William A. Coombs, which has excited wide interest among millers, was decided on the 21st of May by United States Judge Brown at Detroit, Mich. The Dowling patent, a device for stirring flour as it goes into the mill, and the Marmon patent on a device for loosening the bolt of the countershaft, were declared invalid by Judge Brown for lack of novelty. The Gray patent, the most important, a device for the adjustment, horizontal and vertical, of the movable roller of a mill, was sustained. The case was defended by a syndicate of five manufacturers.

The appraisement of the Reading Iron Works, Reading, Pa., which failed nearly three months ago, and to which we referred at the time, was filed in court at Reading, Pa., on the 24th ult. The personal property is appraised at $566,567.93 and the real estate at $715,042.50, a total of $1,281,610.43. The personal property includes all the material on hand, finished goods, etc. There is a mortgage of $600,000 on the works, and after the payment of this, according to the appraiser's figures, there will be left $681,610.43 for the creditors. The estimated claims of all the creditors are over $1,500,000. It is now believed, that the affair will be wound up with all possible speed. All the material that will not sell to advantage will be worked up into salable goods, but staple merchandise, pig iron and the like will be sold as rapidly as possible. An effort will also be made to dispose of the plant. There seems to be no prospect of reorganizing the concern.

The Western Iron Association and Association of Manufacturers of Iron and Steel are not the only organization of manufacturers which have disbanded, and it is said that the Bessemer Steel Association and the Merchant Steel Association have also lapsed. Of these last two organizations the former was organized almost two years ago to control prices in Bessemer steel, but there has not been a meeting of the manufacturers connected with it since last November. The Merchant Steel Association controlled the open-hearth and crucible steel trade. The organization was to meet monthly, but has not met since January. A member of the association stated recently that when the depression in the metal market began the manufacturers made several futile efforts to maintain card prices, but were unsuccessful and the association went to pieces, and as a consequence of this every mill owner is now selling for almost any prices he can get. The disorganization of these steel associations leaves but one manufacturers' organization in the United States—the American Iron and Steel Association.

CONTRACTING NOTES.

Our list of machinery and supplies wanted will be found on page xii. Manufacturers of machinery, engineers and contractors should also consult our directory of "Contracts Open" on the same page. This week, proposals are invited for the following new contracts: No. 1420, Construction of Water-Works System; No. 1421, Furnishing and Delivering Cut Granite; No. 1422, Rock Excavation; No. 1423, Extension of Water-Works; No. 1424, Removing Bar and River Obstructions; No. 1425, Bridge Building; No. 1426, Dredging; No. 1427, Bridge Masonry Work; No. 1428, Dredging; No. 1429, Building Iron Bridge.

The Navy Department, Washington, D. C., has issued proposals for the construction of three new cruisers for the navy. Bids will be opened August 1st, 1889. These vessels are to be of

2000 tons displacement and are to exhibit a maximum speed of at least 18 knots an hour for four consecutive hours. They are to be finished within two years from the date of contract, and payments will be made in 20 equal installments as the work progresses. The cost of the vessels, excluding any premium that may be paid for increased speed and the cost of armament, but including equipment, is limited to an amount not exceeding $700,000 each. The proposals are divided into four classes, the first being for a vessel in accordance with the plans of the Secretary of the Navy; the second for the plans of the contractor: the third being for the Secretary's hull and the contractor's machinery, and the fourth for the contractor's hull and the Secretary's machinery. This last class is an innovation in naval advertisements.

GENERAL MINING NEWS.

THE ENGINEERING AND MINING JOURNAL earnestly requests mine owners and secretaries of mining companies throughout the country whenever a dividend is declared to promptly inform us of the fact, in order that our record of dividends paid by American mines may be as accurate as possible. Envelopes and forms for this purpose will be mailed from this office on application.

Shipments of iron ore from the mines of the districts mentioned below for the season up to and including May 22d, as reported by the Marquette *Mining Journal*, were as follows:

	Tons. 1889.	Tons. 1888.
Marquette, Marquette District	202,769	*
St. Ignace, " "	5,507	.....
Escanaba, " "	146,728	.....
" Menominee District	274,398	.....
" Gogebic District	33,583	.....
Ashland, " "	188,269	.....
Two Harbors, Vermillion District	.....	.....
Total tons	851,123	215,012

*The apportionment of the total tonnage of 215,012 tons to May 22d was not published.

TALISMAN & STALWART CONSOLIDATED SILVER MINING COMPANY.—This company has filed articles of incorporation in Utah. The company will operate in Washington, Utah, Idaho, Wyoming and Montana. The capital stock is $1,000,000, shares $10 each. The incorporators are J. F. McNaught, H. Hefner, G. W. Young, G. F. Yeaton and M. Dishon, of Seattle, where is the company's headquarters. J. C. Mather is appointed agent for Utah, with headquarters at Salt Lake City.

ALASKA.

[From our Special Correspondent.]

If improvements contemplated, spoken of, and already under construction, are made, this season will be the best Alaska has seen.

To judge from your columns, as well as from other journals, I see that considerable interest is shown in the Treadwell property. I consider this due entirely to curiosity. In one of your numbers you state that a gentleman who you know is well informed places the amount of free gold in the Treadwell ore at, I believe, $3.57 per ton. Now let him kindly add the amount in the sulphides, which he certainly knows if he knows the amount of free gold, and his sum total will be even larger than that stated in the ENGINEERING AND MINING JOURNAL. Notwithstanding the reports of the San Francisco *News-Letter* that the mine is a big one on paper only, it keeps running, makes its regular monthly shipments, and I believe that I am not far out of the way when I state that a handsome monthly dividend is paid.

On Sheep Creek more or less work has been done all winter. On one of the claims there a shaft some 40 feet deep has been sunk. It started on a paystreak of a few inches in width; when down 10 feet 2500 pounds of the ore was shipped to San Francisco, and returned net $156 per ton. At present the paystreak is fully 16 to 18 inches wide, and the owners say that assay returns indicate that the ore now is of a better grade than that first shipped, but in order to be certain a shipment of 5 to 10 tons will be made shortly again.

Other claim owners there, to judge from reports, meet with equally good success.

It is also stated that Thos. S. Nowell and the Eastern Alaska Mining and Milling Company will each erect a 10-stamp mill.

Work has already commenced in the Berner Bay district, and I hope it will be pushed, as some of the properties there look very promising.

Owing to the little snow the prospectors are out already in full force, and of late ores carrying a large per cent of copper are making their appearance.

Transmission of power by electricity has been under serious consideration by our substantial companies.

ALASKA GOLD MINING COMPANY.—This company has already ordered a 120-stamp plant. Mr. Grant, the millwright who added the 120 stamps last season to the Treadwell plant, is on the ground with his assistants and carpenters, and although he has been here only a few weeks things are taking shape already. Mr. I. B. Hammond, who I hear is in charge of the company's affairs, will be up as soon as he has finished his business in San Francisco. The Risdon Iron Works received the contract for mill, furnace, etc. Mr. Buybee in the meantime is pushing the tunnel ahead.

EASTERN ALASKA MILL AND MINING COMPANY.—A wagon road is being built by this company from Juneau to Silver Bow Basin, which will be a good thing for Juneau and the owners of property in the Basin. It appears that this company has taken an interest in the high line properties of Garside and Sanders.

TAKON UNION MINING COMPANY.—This company, whose property is situated a few miles west of Juneau, has started its mill up a few days ago, it is said, on good ore.

ARIZONA.

MARICOPA COUNTY.

PHŒNIX SAMPLING AND MILLING COMPANY.—Messrs. Herbert Strickland, William A. Ross and David I. Ezekiel, all of St. Louis, have applied for articles of incorporation for this company at Phœnix, Ariz. The capital stock will be $20,000, shares $1 each.

PINAL COUNTY.

MAMMOTH GOLD MINES, LIMITED.—This company has been organized in London with a capital of £500,000, shares £1 each, to purchase the properties known as the Mammoth, Mars, Raven and Remnant, and the Santa Catalina mill site, and all J. Doyle's right, title and interest in certain mines known as Remnant Extension, Jenny Lind, Nightingale and Mammoth Wedge, with all rights and property thereto, and all the buildings, structures, machinery, implements and personal property upon the said premises.

ARKANSAS.

MARION COUNTY.

BUFFALO ZINC AND COPPER COMPANY.—A correspondent advises us that the large land interests of this company have been consolidated with the St. Louis Zinc Company and the Kansas Zinc and Lead Company.

CALIFORNIA.

AMADOR COUNTY.

AMADOR GOLD MINE, LIMITED.—This company has been organized in London with a capital of £250,000 in £1 shares. The objects are to acquire and work mines, minerals and mining rights, lands, hereditaments, etc., in Amador County.

The directors are F. Lean, R. A. Brutton and F. M. Eden. J. J. Minnear, of Jackson, Amador County, is the first superintendent of the company, with a salary of £1,500 per annum, and he shall reside at the mine and manage the business thereof. The remuneration of the directors shall be — chairman £200; other directors £100 per annum each, with further 5 per cent upon net profits after 20 per cent dividend. The Amador *Ledger* of the 25th ult. says that deeds were placed on record this week, transferring the property of the Amador Gold Mine to the Amador Gold Mine, Limited, that Mr. A. P. Minear has been in London for several months negotiating this sale. There will be no change in the management.

MARIPOSA COUNTY.

[From our Special Correspondent.]

COULTERVILLE, May 20.

The Big Oak Flat ditch, which brings water from near the head of the Tuolumne River to this property, has lately been acquired by the Cook Estate, and can furnish ample water-power for a large number of stamps.

This reminds me of one of the greatest drawbacks we have to deal with here. Wood is scarce in the foot hills and consequently high. Steam power is too expensive for most of the ores. Water can only be secured by building long and expensive ditches, which are beyond the means of all but very wealthy companies. California is a good field for the electrical transmission of power, the application of which will make many properties now idle and worthless very valuable.

Many small prospects are being continually opened and many look very well, but cannot be worked for lack of capital.

On the Mariposa Grant, nothing but prospecting and development work is being done, as I understand, preparatory to very extensive working.

The Compromise, Banderita and Hasloe mines are all idle at present, and have all produced largely and been in bonanza. The main cause for idleness is, I believe, pinching out of ore chute and failure to look for other chutes.

HATHAWAY BONDURANT GOLD MINING COMPANY.—This company is opening up its property and doing dead work mostly. It has a 10-stamp steam mill and a few months ago completed hoisting work. The plan is to ascertain what the property amounts to. When that is determined the property will be equipped for working accordingly.

HITES COVE.—This mine, with a 40-stamp water-power mill, shut down two months ago. This mine has turned out well in the past and paid handsomely.

RED CLOUD.—This mine, with 22 stamps steam-power, shut down at the beginning of the year and is reported sold to an English company. The mine is down 500 feet and has produced some remarkably rich rock. Lack of development ahead is the main cause for the shut-down.

SETH COOK.—This property, near Coulterville, which embraces about 5 miles of claims on and parallel to the *mother* lode, and which can furnish immense quantities of low grade quartz, is now being negotiated for by a company of London capitalists, who have had it examined by four or five different experts during the last few years.

VIRGINIA.—Parties from New York bonded this mine, which Senator Coe, of New York, worked very successfully some years ago. Having pumped out the water and cleaned out an old level, and not finding the gold they expected, they abandoned the mine without firing a blast.

MONO COUNTY.

BULWER CONSOLIDATED MINING COMPANY.—The company has determined to fight the Standard Consolidated Mining Company in the courts to regain possession of the ground in dispute, and has engaged eminent counsel for this purpose.

COLORADO.

BOULDER COUNTY.

INGRAM MINING AND MILLING COMPANY.—This company, whose property is located in the Gold Hill District, has been listed at the St. Louis Mining Exchange.

ST. JOE.—The final payment of $10,000 on this mine have been made in St. Louis and the property is now free of debt. Reports on this mine by W. H. Nicholson and George Teal are said to be favorable.

CHAFFEE COUNTY.

MICHIGAN.—This mine, which has been idle for some time, has been leased within the past month by J. J. Brown, who is moving the old Maysville smelter to Pass Creek and converting it into a concentrator. Five men are already at work on the mine, and the lessee expects to take out considerable ore this season. In the early days the country around Maysville was overrun with prospectors. Most of these men had but little experience in mining, and consequently were not successful. After a lapse of six or seven years of almost entirely inactivity there are indications that quite profitable and extensive work will soon be done in this section.

GILPIN COUNTY.

NEW CALIFORNIA, LIMITED.—The production in April amounted to 615 tons, yield 710 ounces; value at $12,500; mining costs, $6,000; expenditure on mine development and exploration, $1000. Ten thousand dollars were sent to England on account of profit up to the present.

LAKE COUNTY.

ADAMS MINING COMPANY.—At a meeting of the stockholders, held in Denver, the lease of the property to the Maid of Erin people was ratified. This was done because the floating debt was pressing for payment, and at the present price of lead it was impossible to meet this obligation, and the company was entirely without means and in no shape to handle the ore in the mine. The gentlemen connected with the Maid of Erin, upon the west, contracted with the company to further develop the property, and pay a royalty of 20 to 25 per cent. on all smelting ores of $20 and over, and 10 per cent. on the mine concentrates. The other conditions are that the lessees should pay off the floating debt, the taxes past due, and which the Sheriff was ready to seize the property for, had the company failed to come to an understanding with the Maid of Erin people, and the interest on the $31,000 worth of bonds, which was also past due, all of which aggregated over $37,000.

HENRIETT AND MAID CONSOLIDATED MINING COMPANY.—This company, which now, with the leased and allied mines, forms the largest consolidation in Colorado, is about making preparations for the more economical shipment of its ore, says the Leadville *Chronicle*. A spur track is to be built from the Denver & Rio Grande switches by that railway company, to the Henriett and Maid property, and in the future its ore will be shipped by railway directly. The spur track will probably run from the Chrysolite track along the foot of Yankee Hill to the foot of Carbonate. The mining company will effect a large saving in that manner, probably as much as 40 cents per ton, and the ore haulers will suffer a corresponding loss.

LITTLE CHIEF MINING COMPANY.—We are officially informed that this company has now become the owner of the Little Pittsburg property. The time for the redemption of the latter expired on Saturday last. Secretary Edward Earle says that the Little Chief company has about $13,000 in its treasury.

ST. KEVIN MINING COMPANY.—The St. Kevin mine is reported to be looking better than for a long time, and some rich ore has been found in the 150-foot level, east. The concentrating mill is running regularly.

OURAY COUNTY.

Articles of consolidation of the United States Depository Mining Company of Ouray, and the Chief Deposit Company of the same district have been filed with the Secretary of State.

PITKIN COUNTY.

CELESTE.—The mine has at present a hoisting capacity of about 80 tons. This capacity will soon be increased to double its present figure when connections are made with the old shaft. A plant of machinery has just been erected over the shaft.

EDISON.—A sixteenth interest in the Edison lease has been sold to Senator Gelder and George Arthur Rice of Glenwood, for $65,000, but the purchase carries the May dividend with it. The lease has four months yet to run. The mine is now loading 34 teams each day. The wagons bring from three to four tons at a load, thus running the shipments up to more than 100 tons daily. The mine is looking better than ever before.

SAN JUAN COUNTY.

NEPTUNE MINING AND MILLING COMPANY.—The property of this company, which has just been organized, is located in the Eureka mining district, is known as the Neptune, an extension of the Sunnyside gold mine. The capital stock is $250,000; shares $1.00 each, non-assessable. Among the gentlemen interested are Ben Eisman, Moritz Rich, Julius Rothschilds, J. J. Henry, Dr. H. Tuholski, Edward S. Roberts and Jonathan Rice, who will comprise the board of trustees for the first year.

SUMMIT COUNTY.

In the suit of Henze et al. vs. R. W. Foote et al., which has been on trial for several days in the United States Court, at Denver, a verdict was given for the plaintiffs. The contest is between the Boss lode and Fuller placer, both gold mining properties near Breckenridge. The owners of the Boss lode claim to have taken out $70,000 or $80,000 in gold.

DAKOTA.

LAWRENCE COUNTY.

PORTLAND MINING COMPANY.—According to local papers this company owning property in Bald Mountain district is making arrangements to build a plant to use the Newberry-Vautin process and that negotiations are pending for a "sale of the territory" to the company.

SEABURY CALKINS MINING COMPANY.—The company has recently shipped a carload of ore to Omaha, the assay value of which is said to be 3000 ounces silver per ton. It is stated that the ore-body on the 100 foot level is extensive. The returns from this shipment will enable the company to obtain necessary machinery and apparatus for a more systematic method of handling the output.

PENNINGTON COUNTY.

HARNEY PEAK TIN MINING, MILLING AND MANUFACTURING COMPANY.—This company has purchased the Swanson tin locations, owned by the Swanson Brothers. The property is situated a few miles from Harney City. The price, according to the Rapid City *Journal*, paid for it is $31,000, $1000 down and $30,000 in six months. The company has also purchased the Black Diamond group of mines located in the Bismarck district, paying therefor $11,000—$1000 down and $10,000 in six months.

IDAHO.

ALTURAS COUNTY.

ALTURAS MINING COMPANY, LIMITED.—According to the Hailey *News-Miner*, contracts have been let for sinking the shaft some 500 feet, for building new hoisting works, for building a new road to the hoisting works, and for wood.

WASHINGTON COUNTY.

PORPHYRITE SILVER MINING COMPANY.—A 30-ton smelter, with engines, boilers, etc., is being built for this company by Mr. F. L. Bartlett, of Portland, Maine. The company's property is located at Mineral.

ILLINOIS.

There has been considerable trouble with the striking miners at the Chicago, Wilmington and Vermillion Coal Company at Braidwood, and the troops have been called upon to protect the company, and the men who have gone to work. Ninety men were at work on the 30th ult., and J shaft hoisted ninety tons of coal. Unless the men regularly employed in this shaft go to work on the 1st inst., the company says it will bring in new men. When this is done, trouble is expected, and the militia remaining on duty may have to be reinforced. The miners were to hold a meeting on the 31st ult. to appoint a relief committee to aid destitute families of the striking miners. The men say they will never go to work at the reduced price, but will compromise on a 5 cent instead of a 10 cent reduction.

KENTUCKY.

BOYD COUNTY.

A correspondent writes us that Mr. John Russell, President of the Means & Russell Iron Company, has offered to sell to Detroit parties 1400 acres of oak timber lands in this county at $10 per acre. He has also offered the entire tract of 30,000 acres for $8 per acre. The cause is said to be the low price of iron.

MAINE.

CUMBERLAND COUNTY.

Mr. Bartlett, of the Portland Smelting Works, is making, it is reported, one ton daily of his zinc and lead paint, and it is said that in Boston two hundred buildings have been painted with this paint.

MICHIGAN.

CHAPIN IRON MINE.—The biggest hoist ever made out of one shaft, says the *Menominee Range*, in the Chapin iron mine since it was opened, was made last week. During ten hours 628 tons were hoisted, or an average of about 62½ tons an hour, which is considered the largest lift during the same period in any mine in the State of Michigan.

LAKE SUPERIOR SHIP CANAL RAILWAY AND IRON COMPANY.—Several months since the United States Court directed a large batch of writs of ejectment to issue against squatters on the timber and mineral land of this company, situated in the Upper Peninsula. There were twenty-three of them, but that was only a small part of the lot desired. Marshal Waters went up to serve the papers and found such an organized determination to disobey the mandate of the court to vacate or to move back as soon as the marshal's back was turned that it was thought advisable to call a halt, and by agreement the service of the writs was postponed, as all of the judgments were by default, none of the defendents being represented in court. It was finally arranged, with the consent of the company, that a new trial should be granted in one of the cases, and this one made a test case, the decision to apply to all the squatters, who, if finally ordered to leave, will quietly do so, or make terms with the company. Judge Severens has since made the order granting a new hearing. This is an important piece of litigation, as there are hundreds of squatters on the land, which is the most valuable timber land in Michigan. They are wholly irresponsible, and are creating inestimable waste. The present company is the successor to the Portage Lake Canal Company, and many of the settlers were on the land before the transfer occurred.

SUPERIOR GOLD AND SILVER MINING COMPANY.—It is stated that this company was so well pleased with the showing on section 33, where a gold-bearing quartz vein was recently found, that the company has secured eighty acres, the southwest half of the northwest quarter, upon which the quartz vein was struck. It will be worked actively. An assessment of ten cents has been levied to secure funds for a start.

COPPER MINES.

AMYGDALOID MINING COMPANY.—The mortgage given by this company, December 12th, 1881, at two years, for $10,000, is overdue and unpaid, and all the company's lands and property under the same are advertised to be sold June 18th, next. The company's office is at Room 7, 629 Walnut street, Philadelphia, Pa.

MONTANA.

DEERLODGE COUNTY.

ELIZABETH MINING COMPANY.—A meeting of this company, which is a reorganization of the West Granite Mountain Mining Company, was recently held in Helena. The proposition to incorporate this new company was carried by over 470,000 shares of stock being voted in its favor. By the agreement stockholders in the West Granite can transfer their stock for Elizabeth stock at the rate of two shares of the former to one of the latter. In our issue of March 30th we already referred to the organization of the company, but the capital stock is $5,000,000, and not $500,000 as stated then, and the shares have a par value of $10. The following trustees have been elected for the first three months: L. M. Rumsey, H. M. Parchen, Paul A. Fusz, Charles Clark, John J. Taussig, A. B. Ewing, Chas. D. McClure, Chas. A. Wall and A. M. Holter. The company's office will be in St. Louis. Mr. L. A. Coquard, of St. Louis, who was one of the parties opposed to the reorganization (see circular referred to in our issue of April 27th), was present at the meeting and made threats to begin legal action to prevent the transfer.

JEFFERSON COUNTY.

GREGORY CONSOLIDATED MINING COMPANY.—This company has leased the tailings from its concentrator to H. B. Nye, who is concentrating them over again, running about six tons to one, and running the value up to $50 per ton; about 20 gold, 20 to 25 ounces in silver, and from 12 to 20 in lead. He is making about 20 tons of concentrates per day.

HELENA MINING AND REDUCTION COMPANY.—The Wickes smelter is running in full blast, with a supply of ore on hand. From the Alta mine the company is extracting over 200 tons of ore per day. This is shipped to the Corbin concentrator and concentrated to about 65 or 70 tons, and the Comet mine is still furnishing a part of the supply.

SILVER BOW COUNTY.

AMY AND SILVERSMITH MINING COMPANY.—The Amy and Silversmith is under lease to the Anaconda Company until July 1st, with a year's privilege. Stock in the mine has ruled low of late, some transfers having been made as low as 10 cents.

NEVADA.

ESMERALDA COUNTY.

It is firmly believed that a new era of prosperity is about to dawn upon Candelaria, mainly through the indefatigable energy of Col. W. J. Sutherland, says the Walker Lake *Bulletin:* The Holmes and all the leading properties in the district have been bonded, it is said, and will be incorporated in one company, under the auspices of the Candelaria Water and Milling Company. This enterprise, which also owes its existence to Col. Sutherland, has been the mainstay of the town for some years past, and the new investment is intended to enlarge the scope of that company. The Georgene, Princess, General Thomas' locations Holmes and the Callison mines will be included in the new deal; also the mills at Belleville and other property in the vicinity.

GARFIELD MINING COMPANY, LIMITED.—The production for April amounted to $7500, and the revenue expenses, to $7115; capital and development expenditure to $1680; tons crushed 280.

STOREY COUNTY—COMSTOCK LODE.

ALTA MINING COMPANY.—A point of interest to mining companies was involved in the decision rendered by Judge Hunt in San Francisco, on the 22d ult., in granting the motion for a nonsuit in the case of Eyre against Hirschfeld. The suit was brought to recover $1,000 damages because of the failure of the directors of the Alta Mining Company to post statements of receipts and disbursements in their office. The plaintiff contended that the statute contemplated that there should be an itemized account posted in the office, and that a mere balance sheet was not sufficient. The Court said that the words, "itemized account" or "balance sheet," as they were used in the statute, were utterly inconsistent. The meaning of the two terms was directly opposite, one being a detailed account of disbursements and the other merely a compendium or résuné of accounts. As the statute was penal in its character and must be construed strictly, the Court was of the opinion that if the balance sheet of receipts and disbursements of the directors were posted in the office of the company the law was substantially complied with.

HALE & NORCROSS MINING COMPANY.—The following statement shows the production of this compang for the quarter ended March 31st, according to the statement filed at the County Assessor's office: 9963 tons of ore, yielding bullion valued at $175,027.32; cost of extraction, transportation, and reduction, $177,894.25; cost of production above yield, $2866.93; average bullion yield per ton, $18. On the 700-foot level of this mine a west crosscut has reached a point 250 feet beyond the most westerly discovery of ore in the mine without encountering the west wall. Slips of clay and bunches of ore are in the face of this crosscut, and assays of ore show it to range in value from $16 to $72 per ton.

SAVAGE MINING COMPANY.—The following statement shows the production of this company for the quarter ended March 31st, 1889, according to the sworn statement, filed at the County Assessor's office: 5940 tons of ore yielding bullion valued at $82,502.24; cost of extraction, transportation and reduction, $95,169.50; cost of production above yield, $12,697.26; yield in bullion per ton, $13.95. The quarterly statements of a number of other leading Comstock mining companies were published in our issue of May 18th.

WASHOE COUNTY.

The business part of the town of Reno was destroyed by fire on the 26th ult.

NEW MEXICO.

GRANT COUNTY.

MOUNTAIN VIEW MINING COMPANY.—This company, recently organized at New Orleans and operating at Pinos Altos, is pushing the work of development upon its mine. The old shaft is being extended, and a new one, designed to be the main shaft, is being sunk on the ledge seventy feet west of the former.

SANTA FE COUNTY.

SANTA FE MINING COMPANY.—The Hon. Jay A. Hubbell has gone to Santa Fe, and is in consultation with the company's officers, on the subject of enlarging the company's smelter plant, so that the product of the galena and carbonate mines recently opened can be treated on the ground.

OHIO

A new eight-inch pipe line is now being laid from Parker, Pa., to Signet, Wood County, Ohio, where it will connect with the Lima Line, and thence run to Chicago. From Parker a six-inch line will be laid to Coal Grove, McKean County, Pa., where, according to reports, it will connect with a six-inch line to be laid to New York City. It is said that the oil will be pumped from the Ohio field to New York, where gas will be manufactured from it to supply the city with fuel and light.

Dispatches report that Judge Burke will soon begin a suit for $800,000 against President Shaw, of the Hocking Valley Railroad, and against the Hocking Valley Coal and Railroad Company to recover securities conditionally surrendered two years ago.

OREGON.

BAKER COUNTY.

MONUMENTAL.—Development work at the mine continues and ten more stamps are being added to the mill.

OREGON GOLD AND SILVER MINING COMPANY.—The Eureka Excelsior mine has already developed sufficiently to warrant the erection of a 20-stamp mill, the machinery of which is awaiting shipment from Baker City to the property.

MULTNOMAH COUNTY.

According to reports excavations for smelting works below Portland have been completed, and the Northern Pacific Railroad has nearly completed a switch to the works. The company expect to have a smelter running by August 1st, by which time the Oregon Railway and Navigation Company's road across Cœur d'Alene reservation will be completed, giving Portland direct communication with the mines.

PENNSYLVANIA.

COAL.

Extensive operations have been started near Pottsville, on a tract of land owned by Calvin Pardee, of Philadelphia, and the foundations have been laid for a new town to be called Blackwood. The tract lies principally in Reilly township, and covers an area of several thousand acres. A number of years ago private parties drove a tunnel on what was known as the Dundas tract. The tunnel was pushed in a southwardly direction into the Sharp Mountain, and struck two good veins of coal, the Primrose and the Holmes. These parties operated the mine for some time. A large breaker was built, which was totally destroyed, and since that time the place has lain idle.

There now three tunnels on the property, the Blackwood, Woods and Dundas Tunnels. The Blackwood is the lowest of the three, being 810 feet above the level of the sea. The Dundas is 175 feet higher, and the Woods is 320 feet higher. They are all driven in a horizontal direction, and from them the gangways will be driven at right angles into the veins of coal. Although the plans have not fully matured it is expected that a large breaker will be erected and, according to the present idea, it will be situated on the flat opposite the mouth of Blackwood tunnel. Railways will be built

from the other two tunnels and all the coal mined will go through this breaker.

The town of Blackwood is situated on the Tremont branch of the Pennsylvania & Reading railroad, and lies about one-quarter of a mile east of the tunnel from which it gets its name.

OIL.

Exports of refined, crude, and naphtha from the following ports, from January 1st to May 24th:

	1889. Gals.	1888. Gals.
From Boston	1,579,929	926,006
Philadelphia	46,212,820	43,916,142
Baltimore	1,277,883	1,323,053
Perth Amboy	7,238,854	8,418,215
New York	153,433,953	136,104,440
Total exports	209,743,439	190,687,856

Judge McIlvaine has granted an injunction restraining the drilling of two oil wells in Washington Borough—one on the Suartz lease and the other on the Gantz-Brownlee property, both in the vicinity of the Johnston gusher. The borough ordinance against drilling within the city's limits will be enforced and will shut off a number of wells already located.

UTAH.

SUMMIT COUNTY.

ALLIANCE MINING COMPANY.—The contract to run the 4800 foot tunnel on this company's property at Park City has been let to John Judge at $18 per lineal foot. The work will be done in two years.

VIRGINIA.

STAFFORD COUNTY.

We understand that negotiations are now pending which, if consummated, will result in the revival of mining operations in this district. Those interested assert that there are properties here which would pay well for development.

WASHINGTON TERRITORY.

PIERCE COUNTY.

It is stated that the Ryan smelter at Tacoma will be ready to begin operations in about a month.

FOREIGN MINING NEWS.

CANADA.

PROVINCE OF QUEBEC.

EXCELSIOR COPPER COMPANY, LIMITED.—This company has ordered a 30-ton smelting plant of Mr. T. J. Bartlett, of Portland, Me.

CENTRAL AMERICA.

HONDURAS.

LOS ANGELES MINING AND SMELTING COMPANY.—This company property is situated at Fastoria, which is a new American settlement, founded by F. R. Fast, the present manager of the company. Only a few months ago not a human habitation was to be seen. Now great activity reigns, and a number of houses on the American plan are being built. A water jacket smelting furnace has just been completed by the company.

NEW YORK & HONDURAS ROSARIO MINING COMPANY.—The new Rand duplex air compressor plant was started by the president, General Bogran, on the 6th ult., and is now in successful operation. The drills are now working and additional ones will soon be started. This is the first air compressor plant in Honduras.

SAN SALVADOR.

SAN SALVADOR SPANISH IRON ORE COMPANY LIMITED.—This company has been organized in England with a capital stock of £60,000, divided into 35,000 Preference Shares of £1 each, entitling the holders to a Preferential Dividend of 20 per cent per annum out of the profits available for dividends in each year, with participation in further profits, and 25,000 Ordinary Shares of £1 each, which will entitle the holders to a dividend of 10 per cent per annum, after the dividend of 20 per cent has been paid on the Preference Shares.

This company proposes to purchase a lease or leases of, and to work, certain deposits of hæmatite iron ore, contained in the following concessions granted by the Spanish Government in perpetuity and subject only to the local taxes, and known as Eureka No. 1, Eureka No. 2, Eureka No. 4, Rubi, Manolita, Carolina, and Alicia, all situated in proximity to each other and within two miles from the port of San Salvador, within the Port and Bay of Santander, covering about 1,740,000 square metres, equal to about 500 English acres. These concessions have been examined and reported on by Mr. Jeremiah Head, M. Inst. of C. E., and Mr. F. Kensington, C.E., both of London, who, it is said, have had considerable experience of the iron deposits of this district.

MEXICO.

ZACATECAS.

The Asturiana Mining Company, chiefly owned in the city of San Luis, paid its 35th dividend of $1000 per share last Thursday. This makes an aggregate of $840,000 of dividends paid to date, or in less than a year and a half of time. Ninety per cent of the ores mined by this company are from the Los Campos property located midway between the city of Zacatecas and Villa de Guadalupe. Since the output of Los Campos, which is a new mine, increases weekly, while the old Asturiana, located 6 miles north, in Veta Grande, holds it own, often showing up immense bodies of ruby and native silver, it is considered that a share—one twenty-fourth—in this company is worth intrinsically at least $250,000. Estimating June dividends as paid (and the company having a very large surplus, it is assured) there are, for eighteen months, dividends amounting to $864,000, an amount representing 8 per cent interest on $7,200,000, which would make each share worth $300,000.

Col. A. I. Porter, general manager of the Cabezon mine, is putting in new machinery, including a 175 horse-power engine.

The exploring shaft Lete, of the great San Rafael bonanza, has a depth of 1377½ feet and will not be driven any deeper. The Sergeant-Ingersoll rock drills will now be set at work drifting and cross-cutting.

The coinage of the Zacatecas mint for the first four months of the current year is $1,655,200, which is a much larger amount than that coined by any other state mint of Mexico for the same period.

Don Fernando Calderon informs us that he has bonded his gold and tin concession to Luis Liebes, Esqr., and associates, of San Francisco. The immense property comprises 244·64 square miles, including gold, silver, and tin lodes, rivers, and lesser streams, also abundance of timber.—*La Epoca, of Zacatecas.*

SOUTH AMERICA.

REPUBLIC OF COLOMBIA.

EL CRISTO GOLD AND SILVER MINING COMPANY.—The treasurer of this company informs the ENGINEERING AND MINING JOURNAL that 248 sacks of "first-class" ore by steamer from Honda were received in New York this week. Telegraphic advices state that 600 sacks were shipped on the 25th inst. The treasurer says that the sacks yield about $15 net each.

SPAIN.

Notwithstanding the depression in the copper markets, there are copper mines in Spain which can be worked with profit even at the present low rates. Such mines as La Caridad, near Aznalcollar, would pay a fair dividend with copper as low as £32. The unworked mine of Carracedo contains ore with 12 per cent of copper and some silver, and its situation is good. This could probably be made profitable at a time when many other mines would have to be closed. Work has been suspended in the Mazanon silver-lead mines, which have been flooded. Pumping is being carried on. The government has made no attempt to carry out the decree against the roasting of the ores in the Rio Tinto district, and the company continues the old process, and has agreed to pay for damages within a larger radius than before.

MEETINGS.

Amygdaloid Mining Company, of Lake Superior, office of M. H. Hoffman, 629 Walnut street (Room No. 7), Philadelphia, Pa.. June 5th, 1889, at twelve o'clock noon. M. H. Hoffman, Secretary.

Baltimore Gold and Silver Mining and Milling Company, of North Carolina, Thomasville, N. C., June 4. J. S. Weaver, Secretary.

Empire Copper Company, Room 7, No. 629 Walnut street, Philadelphia, Pa., June 7th, at twelve o'clock noon. M. H. Hoffman, Secretary.

Union Mining Company, of Alleghany County, Md., Room 46, No. 115 Broadway, New York City, June 3d, at twelve o'clock noon. Jas. S. Mackie, President.

DIVIDENDS.

The Batopilas Mining Company, of Mexico, will pay coupons on bonds due June 1st on and after that date at the Knickerbocker Trust Company, New York.

Seattle Coal and Iron Company will pay coupons on first mortgage bonds due June 1st on and after that date at the Manhattan Trust Company, No. 10 Wall street, New York city.

ASSESSMENTS.

COMPANY.	No.	When levied.	D'l'nq't in office.	Day of Sale.	Amn't per share.
Belle Isle, Nev	12	Apr. 19	May 23	June 13	.10
Bulwer Cons., Cal.	5	Apr. 10	May 15	June 12	.25
Bodie, Cal	10	Mar. 27	Apr. 13	June 4	.50
Cora, Dak	4	Apr. 27	June 1	June 25	.05
East Jackson, Mich.	....	Apr. 19	May 1	....	.25
Equitable T., Utah.	34	May 14	June 20	July 15	.05
Found Treasure, Nev.	5	Apr. 10	May 16	June 6	.12½
Gould & Curry, Nev	62	May 1	June 5	June 27	.30
Honorine, Utah	....	Apr. 2	May 2	June 1	.05
Kentuck, Nev.	18	Apr. 26	May 29	June 19	.30
Locomotive, Ariz.	4	Apr. 25	May 25	June 18	.05
North Rapidan, Nev.	3	May 1	June 10	July 10	.01½
Occidental Cons., Nev.	4	Apr. 8	May 13	June 5	.50
Pinal Cons., Ariz.	8	Apr. 13	May 20	June 12	.10
Potosi, Nev.	32	Apr. 10	May 15	June 5	.50
Ophir, Nev.	55	May 11	June 13	July 2	.50
Rainbow, Dak	4	May 6	June 7	June 26	.01
Silver Hill, Nev.	24	Apr. 20	May 23	June 13	.20
Sierra Union, Cal.	1	Apr. 10	May 13	June 5	10.00
Trinity River T. & Mg., Cal.	1	Apr. 11	May 14	June 3	.07½
Union Cons., Nev.	38	May 13	June 19	July 10	.25
Weldon, Ariz.	13	May 13	June 18	July 1	.10
Yellow Jacket, Nev.	46	Mar. 28	May 1	June 1	.50

*Delinquent day and day of sale postponed to dates given above.

MINING STOCKS.

New York.

FRIDAY EVENING, May 31.

The business in the mining share market during the past week was small, owing to the intervening holiday and the extreme dullness of the market.

There was more activity in the Colorado stocks. Aspen shows only one sale at $10.50. Plutus was active at from 85@95c. Lacrosse shows again large sales at from 9@10c. Cashier ruled at 4@5c. Considerable business was done in Little Chief at prices ranging from 29 to 35c. Iron Silver shows transactions of 1800 shares, and was firm at from $1.95 to $2.10. Dunkin was only dealt in on Saturday, when there were a few sales at from $1.25 to $1.30. Adams sold at from 44 to 50c.

Iron Hill was quite active, at from 30 to 35c. Deadwood Terra ruled at $1.50, Caledonia at $3.05, and Homestake at $9.50. Sullivan Consolidated sold all week at $1.25.

There was an upward movement in Horn-Silver, the price of which went from $1 to $1.20.

El Cristo showed an upward tendency, again advancing from $1.30 to $1.60.

There was no change in the price of Mutual, which remained at $1.45.

Attention was directed to United Copper and the price advanced from $1@$1.25, but later declined again to $1.10.

The Comstocks show the usual business, with but little change in price.

Sutro Tunnel stock records one sale at 9c. and the Trust Certificates a few at from 50 to 52c.

Martin White appeared again on the list and was dealt in at from 65 to 75c.

The business in the Tuscaroras amounted to a sale in Navajo at .65c. and one in North Belle Isle at $1.50.

Plymouth Consolidated declined from $10.63 to $10.25.

The Bodie Consolidated was more active than for some time past; the price ruled at from $1.85 to $2.

Bulwer shows one sale at 60c., and Mono was firm, at from $1.75 to $1.80.

The Amador gold mine has been floated in London, and in our mining news we give particulars about the new company. There were no sales of the stock in this market. Astoria remained at 20c. Middle Bar declined from 29 to 25c.

There seems to have been considerable inquiry for Phœnix of Arizona, of which some 7800 shares changed hands at from 20 to 25c.

Rappahannock remained unchanged at 7c.

Moulton went up to 37c.

Kingston and Pembroke advanced from $1.25 to $1.50.

Boston. May 29.

[From our Special Correspondent.]

This has been a very dull week in copper stocks, but prices have been well maintained and there is a strong undertone to the market. Calumet & Hecla has ruled firm, with but little stock offered. Early in the week a lot was forced upon the market which sold at $215 @$215½, but later sales were at $217 and closed at $216 bid, $218 asked.

Quincy dropped on small lots to $51, but recovered to $54, and is quite firm.

Boston & Montana, although quiet, is strong, and touched $33, and firm at that.

Franklin and Atlantic steady at $10. Osceola sold at $9½. Tamarack declined from $109 to $107, and Kearsarge to $5.

Allouez steady at $1. Bonanza sold at 80c. Santa Fe declined to 55c., and this tells the whole story. Tomorrow being Memorial Day, there is no board, and our report is made up to to-day's closing.

We still believe in higher prices for copper stocks within the next six months, and stocks bought now on any decline will pay a good percentage on the money invested.

In silver stocks there is very little doing. Dunkin is firm at $1¼, and the reports from the mine continue of a satisfactory character. Napa Quicksilver sold at $3¼ as before. Catalpa sold at 15c., and at this figure it is certainly cheap. With a little new life in the management it undoubtedly could be made a paying mine.

(*By Telegraph*)—May 31st, one o'clock P. M.—Calumet & Hecla, 218; Tamarack, 105 bid; Montana, 33; Kearsarge, 5¼; Santa Fe, 57c.; West End Land, 28; Lamson, 61¼; Eastern, 91½ bid.

Baltimore, Md.

COMPANY.	Bid.	Asked.
Atlantic Coal	$1.00	$1.90
Balt. & N. C.	.25	.30@ .35
Big Vein Coal	....	1.50
Conrad Hill	.05	.15
Cons. Coal	.23	.26
Diamond Tunnel	....	.50
George's Crk. C.	....	115
Lake Chrome	.10	....
North State (Balt.)	.20	....
Silver Valley	.45	.09

Prices bid and asked during the week ending May 30th.

St. Louis. May 29.

The board of directors of the Mining Exchange has decided to re-list the Gold King, Wire Patch, Pine Grove and Montrose placer properties, which they had ordered taken off the list owing to their insisting upon

charging transfer fees. The board also adopted the following resolution:

In view of the fact that certain mining companies listed on our Exchange, that were not listed under our regular listing rules, are disposed to take advantage of the ruling of the directors regarding charges for transfers, to have same removed from the list, it is hereby resolved that said ruling be and the same is hereby rescinded, and the stocks of the companies that were removed from the list by reason of said rulings are hereby restored to the list and will be called and traded in in the usual way. But with this understanding, that members of the Exchange shall add any charge or charges that may be so made to the regular commissions provided for in the rules of the Exchange.

CLOSING PRICES.

	Bid.	Asked.
Adams, Colo	$ .40	$ .50
Anderson, Mont	.15	.20
Aztec, N. Mex	.40	.45
Bi-Metallic, Mont	39.00	40.00
Black Oak, Cal	.37½	.42½
Carriboo, Idaho	.13	.15
Central Silver	.18¾	.27½
Concepcion, Mex	.08	.09
Dinero, Colo	.05	.08¼
Golden Era, Mont	.20	.25
Go'den King	.37½	.40
Golden West	1.05	1.10
Granite Mountain, Mont	47.50	49.00
Hope, Mont	4.07½	4.50
I. X. L., Colo	.06	.08½
Jumbo, Colo	.09	.09½
Mary Foster, Colo	.01½	.02
Major Budd, Mont	.06	.09
Mexican Imp., Mex	.62½	
Mountain Key	1.40	1.42½
Pat Murphy, Colo	.35	.36¼
Neath, Colo	.28¾	.30
Phillips, Colo	.85	1.00
San Francisco, Mont	.40	.42½
Small Hopes, Colo	1.15	1.30
Silver Age, Colo	4.00	5.00
West Granite, Mont	1.02½	1.05
Wire Patch	.30	
Yuma, Ariz	.31½	.37½

San Francisco. May 31.

To-day's quotations by telegraph to the Consolidated Stock and Petroleum Exchange were as follows: Best & Belcher, $3 95; Belle Isle, 35c.; Bodie, $1 85; Bulwer, 50c.: Cons. Cal. & Va., $7.75; Challar, $2.20; Eureka, $2; Gould & Curry, $2.25; Hale & Norcross, $3.85; Mexican, $3.40; Mono, $1.60; Navajo, 55c.; Ophir, $4¾; Savage, $2¾; Sierra Nevada, $2.65; Union, $3.45; Yellow Jacket, $3.95.

Kansas City. May 20.

Company	Par value.	Bid.	Asked.
Burch, L. & S., Mo	$ 1	$...	$ .40@
Ida Hill, S., N. Mex	100	...	100.00
K. C., Colo	...	...	1.00
Kentucky, Z., Mo	1	.20	.25
La Motte, Mo	100	98.00	100.00
Maverick, S., Colo	10	.97	1.00
Sonora, G. & S., Mex	10	1.00	1.00
Standard, S., Colo	1	1.10	....
Templar, S., N. Mex	1	.15	.35
Webb City, L. Z., Mo	5	5.75	5.75@5.85
Wichita, L. C., Kan	100	...	40.00
*Granite	...	...	...

Sales during the week ended May 4: Webb City, L. Z., Mo., 200 shares at $5.75.

Auction Sales of Stocks.

The following securities were sold at auction in New York this week:

50 shares Brush Electric Illuminating Company of New York, $100 each — $74½
$2,000 Colorado Coal and Iron Company 6 per cent mortgage bonds — $99
13 shares the Woods & Wright Oil Creek Company (unassessable), $100 each; 5 shares Hermann Mining Company of New York, $100 each — $6 lot

Pipe Line Certificates.

[Special report by Messrs. WATSON & GIBSON.]

NEW YORK EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
May 25	84¼	84¼	83½	83¾	141,000
27	83⅝	84¾	83⅝	84⅜	303,000
28	84⅜	84⅝	83¾	84½	258,000
29	84¼	84⅜	83½	83¾	369,000
*30	....	....	....	....	....
31	83⅝	83⅝	82	82½	388,000

Total sales in barrels.... 1,459,000

CONSOLIDATED STOCK AND PETROLEUM EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
May 25	84	84¾	83⅞	83⅞	135,000
27	83½	84⅝	83½	84⅜	320,000
28	84½	84¾	83½	84⅜	403,000
29	83¾	84⅛	83½	83⅝	305,000
*30	....	....	....	....	....
31	84	84	82¼	82⅝	450,000

Total sales in barrels.... 1,613,000

*Decoration Day.

Trusts Stocks. May 31.

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

American Cotton Oil Certificates		$59⅞@$60
Sugar Refineries	"	96⅝@96¾
Distillers' & Cattle Feeders' Certificates		31½@33
Linseed Oil	"	44¼@45½
Natural Gas	"	103
Standard Oil	"	169 @171
National Lead	"	26⅝@26¾

Electric Stocks. May 31.

The following closing quotations are reported to-day by J. Heron Crosman, New York City:

Stocks.	Par value.	Market price.
Brush	$ 50	$80 @ $80
" Illuminating	100	75 @ 80
Daft	100	45 @ 55
Consolidated	100	75
Edison	100	190 @ 200
" Illuminating	100	87 @ 92
Julien	100	20
" Traction	..	13 @ 16
United States	100	50 @ 60
" " Illuminating	100	50 @ 60
Westinghouse	50	56 @ 57
Thomson-Houston	..	.....
" " Welding Co.	..	.....

COAL TRADE REVIEW.

NEW YORK, Friday Evening, May 31.

Statistics.

PRODUCTION OF ANTHRACITE COAL for week ended May 25th, and year from January 1st.

	1889. Week.	1889. Year.	1888. Year.
Tons of 2240 lbs.			
P. & Read. R.R. Co	160,312	2,274,815	2,018,587
Cent. R.R. of N. J	126,550	2,003,266	1,952,136
L. V. R.R. Co	160,708	2,627,237	2,171,989
D., L. & W. R.R. Co	106,191	1,522,948	2,545,863
D. & H. Canal Co	70,414	1,344,038	1,707,952
Penna. R.R	64,732	1,312,718	1,587,029
Penna. Coal Co	39,574	334,592	572,691
Penna. Canal Co	17,529	107,862	92,675
N. Y., L. E. & W	22,000	450,628	364,114
Total	768,110	11,978,104	13,013,036
Decrease	....	1,034,932	....

The above table does not include the amount of coal consumed and sold at the mines, which is about six per cent of the whole production.

Production for corresponding period:

1884	11,430,860	1886	11,669,469
1885	9,964,872	1887	13,232,307

PRODUCTION OF BITUMINOUS COAL for week ended May 25th, and year from January 1st:

EASTERN AND NORTHERN SHIPMENTS.

	1889. Week.	1889. Year.	1888. Year.
Tons of 2240 lbs.			
Phila. & Erie R.R	1,087	33,386	24,500
Cumberland, Md	56,127	1,191,018	1,371,185
Barclay, Pa	2,000	46,503	73,282
Broad Top, Pa	4,415	158,370	154,738
Clearfield, Pa	49,391	1,222,328	1,396,814
Allegheny, Pa	14,954	371,063	337,708
Beach Creek, Pa	26,981	529,577	632,368
Pocahontas Flat Top	23,855	602,960	587,587
Kanawha, W. Va	30,474	628,513	678,029
Total	209,284	4,783,718	5,256,211

WESTERN SHIPMENTS.

Pittsburg, Pa	11,877	244,385	284,485
Westmoreland, Pa	28,721	595,754	645,058
Monongahela, Pa	10,933	92,627	125,541
Total	51,531	932,766	1,055,084
Grand total	260,815	5,716,484	6,311,295

PRODUCTION OF COKE on line of Pennsylvania R. R. for week ending May 18th and year from January 1st, in tons of 2000 lbs.: Week, 86,747 tons; year, 1,792,673 tons; to corresponding date in 1888, 1,575,428.

Anthracite.

There is a good deal more coal moving and buyers are beginning to feel as if the time had arrived to take more coal. They have concluded that the present are the lowest prices they are going to get. This is particularly so with New York City buyers and vicinity. Freights have "stiffened up" considerably. The freight to Boston now is about $1.20. There seems to be a better feeling in the trade, both among producers and buyers, and all anxiety as to a "break-up" or disruption has passed away. Stocks are not increasing. It is simply a question now of producing the quantity of coal that the market absolutely requires.

Bituminous.

There are no particular changes to note in this market. The situation is chiefly affected by the vessel supply, vessels being very scarce, and freights have ruled firm and somewhat higher in consequence; $2 40 to $2.60 f.o.b. at Baltimore may be quoted as prices obtained for coal, and here in New York $3.25 to $3.50 alongside.

BOSTON. May 31.

[From Our Special Correspondent.]

The movement in anthracite coal is a very fair one. The advance ordered for June 1st is proving a successful move and parties who have until now hung back are beginning to take stock in the strength of the anthracite situation. Whether it be due to the growth of the country, or chiefly to an excellent understanding upon the matter of restriction of mining, the season of 1888-89 was a model one in many respects—satisfactory alike to producers and dealers—and it now looks as if 1889-90 would prove another good season. Naturally business has fallen off within a day or two, and to-day is observed as a close holiday. The trade are now willing to buy at current rates for June delivery, but do not want to pay the advanced prices, and as a rule jobbers will not sell save at the advance. Individual coals are stronger in sympathy with the advance ordered by the companies.

The bituminous market is featureless. Jobbers are devoting all their energies to the securing of vessels at the lowest freights obtainable, notwithstanding all pool coal is supposed to be sold at an f.o.b. quotation. However, the pool has worked fairly well this year—that is to say, it has been a help rather than a hindrance. An immense amount of bituminous is being shipped. To this port receipts of bituminous are nearly as large as those of anthracite, quite in contrast with the situation five years ago. The f.o.b. price of bituminous continues nominally at $2.50@$2.60, with the freight as potential in making price now as any other factor. Those who bought early appear to have bought safely and well.

The freight situation is unchanged. There appears to be not enough vessels in the coasting trade to allow freights to go as low as they have for several seasons past. Present rates, though high in comparison for this season, are only fair rates after all, quoting New York, 90c.; Philadelphia, $1.10@$1.15; Baltimore, $1.25@$1 35; Hampton Roads, $1.15@$1.20.

There is the usual spurt in retail trade here in the city occasioned by the stocking up on part of those who like to get this job out of the way before shutting up their houses for the summer. Retail prices are strong, but are not likely to advance right away.

Receipts for the week were 32,597 tons anthracite and 24 045 tons bituminous. Since January 1st receipts have been 400,391 tons anthracite and 371,211 tons bituminous.

BUFFALO. May 30.

[From our Special Correspondent.]

The appearance of a paragraph in local newspapers, stating that hard coal would be advanced on June 1st caused quite a lively movement of consumers to retail dealers to talk about or order their family supplies. Whether there was any truth in the item remains to be seen. The secretary of the Coal Exchange was asked: "Will coal go up on the first of the month?" "Ask me something easier," replied Mr. Stowitz. "I don't know yet whether the price will be raised, but it ought to be. Retail dealers get just 70c. margin on a ton of coal now, 40c. of which goes for teaming. They can't live on that margin. If 25c. were added to the retail they would have a decent show. A meeting of the Exchange will be held next Friday (May 31), and some decision will be made. In any event the wholesale price to dealers will not be raised."

The bituminous coal trade is in better shape, in consequence of good demand and stronger feeling among dealers and producers. The large surplus stock in the yards here has been worked off to a considerable extent, and the cutting policy seems to have been abandoned. The trade has no news to tell, as usual. "Prices are ruinously low," said a retailer, "but if higher rates can not be obtained at present they may in the near future; therefore, what is the use of being put down as a chronic grumbler, as many of our fraternity are. Make the best of the situation; await the course of events, and be ready to take advantages when they occur."

A suit has been commenced in Chicago against the Pennsylvania Coal Company by the owners of the schooner "Henry W. Sage," to recover $1545, the amount claimed to be due for coal freight. The "Sage" was chartered for coal from Buffalo to Chicago, in October, 1888, at $1 per ton. Barring the damages of navigation, collision, and fire, that cargo was to be delivered before the close of navigation. The schooner was sunk by collision at St. Clair Flats. The contract specified should the cargo not be delivered within the required time limit, the damages above cited being ample excuse for non-fulfillment of the agreement, the cargo was to be carried at the going rate at the opening of the ensuing season. The present season the rate opened at 45 cents. The "Sage's" cargo not being delivered in 1888, the coal company now refuses to pay the dollar rate. The "Sage's" owners hold that the clause touching the perils of navigation lets them out, and demand the full freight.

The weather has been very changeable since last letter; extreme heat to severe cold, with two frosty nights; rain storms with wind for several hours blowing 54 miles; to-day, clearing and warmer. Many vessels left port and had to return. Disasters on the lakes now being reported. Navigation at all points hindered, and entirely stopped at many ports. Freights to Lake Michigan ports on coal advanced 5c. last Monday and another advance of 5c. was obtained yesterday. Vessels to some other ports, which shippers desired to reach, also benefited by a rise in rates. Lake Superior points' quotations were nominal in the absence of any inquiry.

The shipments of coal hence by lake from May 23d to 29th, both days inclusive, were 56,200 net tons, namely: 28,000 to Chicago, 15,550 to Milwaukee, 1200 to Duluth, 2200 to Superior, 1030 to Racine, 700 to Detroit, 250 to Bay City, 1120 to Saginaw, 900 to Port Arthur, 1800 to Gladstone, 2200 to Sheboygan, 600 to Green Bay, and 650 to Windsor; total for season to date, 315,760 net tons.

The rates of freight were 50@55@60c. to Chicago and Milwaukee, 75c. to Muskegon, 55@60@65c. to Racine, 55@60c. to Sheboygan, 45@50c. to Saginaw, 50c. to Gladstone and Green Bay, on p.t. to Port Arthur, nominally 40c. to Duluth and Superior, and 25c. to Detroit, Windsor, and Bay City, closing firm.

PITTSBURG. May 30.

[From our Special Correspondent.]

Coal.—Trade on the river continues dull, prices weak and unsatisfactory—the principal firms are doing very little—the mining at present being carried on for local purposes; the May shipments by river have been unusually light, the outlook is, to say the least, not very

promising. The result we must leave to the future to decide.

The nominal rates are:

PRICE OF COAL PER 100 BUSHELS = 7600 LBS.

First pool	$4.75	Fourth pool	$3.25
Second pool	4.50	Railroad coal	5.00@6.00
Third pool	3.90		

Connellsville Coke.—Trade is reported active, the demand increasing, production shows quite an increase, without an improvement in values. Of the 13,266 completed ovens 10,884 are in blast, 2382 idle; increase over previous week 299 ovens. Week's shipments, 6195 cars, previous week, 6156, increase, 39 cars.

Quotations are as follows:

Furnace coke	$1.05@$1.10	Crushed	$1.50
To dealers	1.15	Foundries	1.25

Freight rates from the ovens to Pittsburg, 70c. per ton; to the Mahoning and Chenango valleys, $1.35; East St. Louis, $3.50; Cleveland, $2.80; Chicago, $2.75.

Ten leading coal shippers of Pittsburg, engaged in the river trade to New Orleans and intermediate points, have been consolidated into the Pittsburg & Southern Coal Company, and propose to buy out all the little operators, their steamers and barges, coal mines and tipples, by an expenditure of about $12,000,000, and secure a monopoly by which they can dictate prices to consumers

FREIGHTS.

The following rates per ton of 2240 lbs. for coal charters are reported:

From Baltimore to: Bangor, 1.25; Bath, Me., 1.25; Boston, Mass., 1.15; Bridgeport, 1.00; Charleston, .75; Fall River, 1.00; Galveston, 3.00; New Bedford, 1.00; Newburyport, 1.35@1.40; New Haven, 1.00; New London, 1.00; New York, 1.00; Portland, 1.15; Portsmouth, N. H., 1.20; Providence, 1.05; Quincy Point, 1.15; Richmond, Va., .70; Salem, Mass., 1.15; Savannah, .80; Somerset, Williamsburg, N. Y., 1.00.

From Philadelphia to: Bath, Me., 1.15*; Baltimore, .60; Boston, 1.15*; Charleston, .70; Chelsea, 1.20*; East Cambridge, 1.05*; Fall River, .80@.90*; Georgetown, D. C., .85†; Gloucester, 1.10*; Lynn, 1.20@1.30*, New Bedford, .80@.90*; Newburyport, 1.15@1.20*; New York, .90†; Norfolk, Va., .55; Portland, 1.10@1.15*; Portsmouth, N. H., 1.10*; Providence, .80@.90*; Richmond, Va., .60; Salem, 1.05*; Savannah, .80; Washington, .85.

* And discharging. † Alongside.

METAL MARKET.

NEW YORK, Friday Evening, May 31, 1889.

Prices of silver per ounce troy.

May	Sterling Exch'ge.	Lond'n Pence.	N. Y. Cts.	May	Sterling Exch'ge.	Lond'n Pence.	N. Y. Cts.
25	4.88½	42¼	92⅜	29	4.88½	411 5-16	91⅝
27	4.88½	42 3-16	92¼	30	Holiday.	....	....
28	4.88½	42 1-16	92	31	4.88½	42	91⅞

Owing probably to the large shipments to London market and sudden cessation there of the demand for Japanese and mint orders, silver developed great weakness on 27th and fell rapidly till it touched 41⅛ on 29th, council bills declining ⅝d. per rupee on same day. In August of 1888 silver fell to the same price and excepting May of same year, when it touched 41⅛, is as low as it has ever fallen. Market closes with a slight re-action towards higher prices.

United States Assay Office at New York reports total receipts of silver for the week 60,000 ounces.

Domestic and Foreign Coin.

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

	Bid.	Asked.
Trade dollars	$ .72	$ —
Mexican dollars	.73	.73¼
Peruvian soles and Chilian pesos	.72½	.73½
English silver	4.85	4.89
Five francs	.94	.95
Victoria sovereigns	4.87	4.89
Twenty francs	3.90	3.93
Twenty marks	4.75	4.80
Spanish doubloons	15.60	15.75
Spanish 25 pesetas	4.80	4.85
Mexican doubloons	15.55	15.70
Mexican 20 pesos	19.50	19.65
Ten guilders	3.96	4.00

Copper.—During the last few days there has been a very good demand for copper, and deliveries have been better than for a considerable time past. This may be mainly attributed to the reported understanding arrived at between the producing companies in this country and the European holders of the stocks of Lake copper stored in warehouses. Details of the reported settlement have not yet been made public, but the strength of the London market for Chili bars and G. M. B.'s seems to indicate that there is some foundation for the current rumors on this subject.

The demand in Europe for all kinds of copper seems to be very satisfactory, and smelters and manufacturers are reported to be well booked with orders and working full swing to meet the current demand. This condition of affairs is in strong contrast with what has prevailed during the past year and a half or so during the period of the high prices, when most of the works were working short time. Our latest cables also advise that the total deliveries for the month of May have been very large, and a heavy reduction in the statistics of visible supplies must be looked for.

On Monday last Chili bars and G. M. B.'s opened in London at £40, from which point values advanced rapidly to £42, but during the last two or three days about £1 5s. of the rise has been lost again, and our last cable advices report the market as steady at £40 15s. to £40 17s. 6d. spot, and £40 10s. to £40 15s. three months. Tough cakes are quoted £44 to £44 10s. Best selected £45 to £46, and strong sheets £50 to £51. Some comparatively small lots of furnace material have been sold during the week at higher prices than were realized for the large parcel of Anaconda matte referred to last week. Here in our own market values have shown a decidedly firmer tendency, and in the open market Lake copper is held for 12¼c. to 12½c. Casting descriptions are also held for from 11⅜c. to 11⅝c., according to brand and quantity.

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

To Havre—	Copper.	Lbs.	
By S. S. La Normandie	14 bars	2,277	$250
To Hamburg—	Old copper.		In transit.
By S. S. Bohemia	40 packages	48,296	$3,703
To Hamburg—	Copper ore.		In transit.
By S. S. Gellert	333 bags		$1,500

Tin has been fairly steady, but New York prices are still below the figure at which importations of the metal are profitable. A few small lots have been sold during the week at 20·50@20·60, but even these low prices have failed to attract much attention. In London the market has continued very firm with very slight fluctuations, and the closing quotations received by cable to-day are: Spot, £91 17s. 6d. to £92; three months, £92 12s. 6d. to £92 15s.

Lead.—The firm feeling continues, and offerings of the metal are very light. During the week higher prices have been reported from Western markets, which naturally influenced holders here also to hold out for more money, and the few orders in the market could only be placed at full values. It is reported that Congress will probably have an autumn session, and if such is the case, it may be fairly assumed that the Secretary of the Treasury will not take up on himself the responsibility of giving a decision on the question of the proposed new classification of imported silver-lead ores.

Our closing quotations are 3·87½ to 3·92½.

St. Louis, Mo.—Messrs John Wahl & Co. telegraph us to-day as follows: A slightly improved feeling is perceptible, as a result of more inquiry. Some sales at 3·65c. in the early part of the week. The market closes at 3·70@3·72½c. for chemical and refined. Sales of 200 tons chemical have been made at 3·72½c.

Spelter is in improved demand, and prices have risen rapidly to 4·90@4·95, and even at these figures very little is obtainable. It appears that comparatively higher prices than those quoted have been paid out West, and large sales are reported at 4·70 in St. Louis. In Europe the production of spelter has been seriously affected by the great strikes in Westphalia and Upper Silesia.

Antimony is still advancing in price and late cables from Europe report another sharp rise there, Cookson's being now quoted in London at £60 to £62, whilst Hallett's is not obtainable below £56 10s., and then only for July and August shipment. Demand has been strong here and dealers are now obtaining full prices for the small quantities which they have in stock. We quote Cookson's 14½ to 14¾ and Hallet's 13½ to 13⅝.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, May 31, 1889.

Pig Iron.—An improved business has been done this week, and a more liberal inquiry is uniformly reported. Sales of Southern iron that will aggregate from seven to nine thousand tons have been made, and prices, temporarily, at least, seem to have reached bottom. The Thomas Iron Company has blown in two more furnaces, and is now fully engaged with orders for some time ahead. At present, according to the company's officers, they are refusing orders, in fact, have practically withdrawn from the market. Quotations are unchanged for Northern irons; $16.50@$17 50 is asked for No. 1 Foundry, and proportionately lower for other grades. Southern brands are quoted from $16.25 to $17.25, and $15.50 @$16 for No. 2. As an instance of the growing popularity of American Scotch iron, we hear this week of a sale of the Melrose brand amounting to 500 tons, for which $18.50 was obtained.

Scotch Pig—Transactions continue very light, consumers restricting their purchases to immediate requirements. None of the brands has changed in price from our former figures.

Spiegeleisen.—Only the usual contract business is reported. For ferro-manganese there has been more inquiry, and sales of 100 tons have resulted. We quote $28 for spiegeleisen, 20 per cent, and $57@$58 for ferro-manganese.

Steel Rails.—The increased inquiry reported in this column last week has now developed into transactions of more than usual proportions. A more confident feeling is therefore apparent. The Lackawanna Iron and Coal Company informs the ENGINEERING AND MINING JOURNAL that it has closed contracts for over 32,000 tons to go principally to the South, and expects to sell 12,000 tons more before the close of business to-day. Moreover, according to President B. G. Clarke, there are now buyers in the market for much larger quantities, perhaps 57,000 tons. The Bethlehem Iron Company has secured the Oregon Pacific contract, which will amount to about 40,000 tons. This sale was virtually effected a month ago, but the sellers have till now declined to allow the information to be given to the public.

The Eastern mills uniformly report that they are well booked with orders for some time to come; one in particular asserts that it has sold to the limit of its capacity up to the first of January, 1890. We continue to quote $26 50@$27 at Eastern mills.

Structural Material.—Architectural iron work still supplies plenty of business in this line. During the week the contract for the iron work of the Union Trust Company's building on lower Broadway has been placed. This will require about a thousand tons of beams and columns. Proposals have also been invited for several bridge superstructures, particulars concerning which may be found in our column of Contracts Open. Prices are unchanged.

Merchant Steel.—No improvement has taken place in this branch of business, and prices are, if anything, a shade lower than last week, though manufacturers are indisposed to admit this openly. For prices see our usual list.

Old Rails.—The only sale to record is one of 500 tons Ts at $22. Double heads are quoted at $23.

Scrap Iron.—There have been some fair amounts of wrought scrap dealt in at $20, delivered at Jersey City and Brooklyn. Cast scrap is quoted $15@$16. Other descriptions of manufactured iron are without change in quotations, and with little activity to note in transactions.

CLEVELAND. May 30.

[From our Special Correspondent.]

The iron ore market during the past week has presented no startling features. It is given out that the Ashland mine has sold 100,000 tons at $5.25, or 50 cents higher than last year. The Aurora, which has also been holding at $5.25, has dropped to $5, or 25 cents higher than last year. The Norrie's product is all sold, its price at Lake Erie ports having been $4 75, or 25 cents above that of last year. The enormous sales of ore apparently indicate a strong undercurrent of confidence in the coming autumn and winter business. This ore is not for present but for future use. Lake freights are very firm and the indications are good for an advance on ore in the near future. The water is so low that many large boats are carrying from 200 to 300 tons less than they did a year ago. This decrease in carrying capacity of 10 per cent is likely to largely counterbalance the increase in vessels.

LOUISVILLE. May 27.

[Special Report by Messrs. HALL BROTHERS & Co.]

Generally speaking, the market has been quiet during the past week. Some sales of fair sized quantities are reported at prices which it was not supposed would be accepted by any furnace; this appears to be mainly with three or four furnace companies. There is considerable business being figured on, but buyers appear each day to get lower figures and are slow in closing trades. Some furnaces prefer to pile up their iron, thinking they will get better prices later on, but the prevalent opinion is that the outlook for the immediate future is not encouraging for any advance. Accurate quotations cannot be given, so varied are the views of the different furnaces. They will be found in our weekly register of prices.

PHILADELPHIA. May 31.

[From our Special Correspondent.]

During the past six days a few transactions in crude iron of an exceptional character have served as a basis for rumors and predictions that a heavier demand will shortly set in very soon; in fact, that it has already set in. The instances that have occurred do not justify brilliant expectations concerning a heavy demand. There are a few parties buying forge iron who have been holding enough to secure work that will keep them busy a few weeks on finished iron. The prices paid run from $14.50 to $15. The better brands of forge are better sold up than they have been for many months. The inferior and ordinary brands of forge move very slowly and practically are not contracted excepting at prices which leave no margin to Southern or Northern makers. There were a few orders yesterday for one thousand ton lots of forge, but two to three hundred ton lots is the extent of ordinary purchases. Most purchasers are buying in a hand-to-mouth way. Blooms and slabs are under fair inquiry, and there are prospects of a good demand. Muck bars are selling sluggishly at about $27 in small lots for best makes. The bar mills are picking up business all through the interior of the State. Sheet-iron makers are doing a big business. Card rates remain about where they were, although, it was intimated that the large contracts entered into were the result of extremely low prices. The facts cannot be ascertained. It was stated that there are inquiries on the market for a good many large lots. Next week may develop a sharp demand all around. Skelp iron is selling very well, although buyers are not covering beyond thirty days. Wrought iron pipes and tubes are also selling very well, but not in large lots because consumers prefer to break their orders up. All the reports given concerning plate and tank iron last week can be repeated with truth this week. Negotiations have been entered into with three or four mill owners that will, it is said, result in the placing of three or four large lots which will secure mills a fair amount of work till September. If the rank and file follow up it will enable them to hold prices where they are, at least. There are inquiries for two or three good round lots of structural iron. Two or three contradictory rumors were afloat yesterday concerning large transactions in steel rails in this State, but rail makers are not selling more than small lots, but they state that large orders could be had if they would cut prices down to the Pittsburg level. Old rails are wanted, but buyers refuse to pay sellers' terms. The scrap dealers report a duller d

mand for No. 1 scrap this week. Other kinds are neglected this week.

PITTSBURG. May 30.

[From our Special Correspondent.]

Raw Iron.—Last week we reported an unsettled market. The present week is even more so. There seems to be a lack of confidence in regard to the future. The iron scale question will soon be up for adjustment, and until that is satisfactorily arranged we do not look for heavy transactions. In regard to the scale there is, a wide difference of opinion. There are several firms that are outside the amalgamated association who will not be governed by its action. One large firm has demanded a reduction in wages of ten per cent and will refuse to sign unless this request is complied with. What the other firms will want has not yet transpired. Of course if the reduction is made it will become general. On the other hand, the iron workers say they will ask an advance of ten per cent on last year's scale. We must look to the future for a decision in these important questions. There is another report in circulation, viz.: The iron workers say the scale is not properly adjusted. That certain workmen are receiving more than their just proportion, while others are not receiving what they are entitled to. This, however is a family dispute and will be adjusted by the men themselves. In regard to values prices show a wide range. City furnace pig is held at last week's prices, while outside lots and unknown brands have been shaded in order to find sellers. Prices in the East have been well maintained, but business declined for deliveries later than July; consumers seem to be figuring in buying for deliveries as far ahead as possible.

Coal and Coke Smelted Lake Ore.

2000 Tons Bessemer, Spot	16.00 cash.
1500 Tons Bessemer, Spot	15.85 cash.
1000 Tons Gray Forge	14.00 cash.
1000 Tons Gray Forge	13.90 cash.
1000 Tons Gray Forge, City Furnace	14.00 cash.
1000 Tons Gray Forge, City Furnace	14.00 cash.
500 Tons Gray Forge, City Furnace	14.00 cash.
200 Tons Open Mill	14.75 4 mo.
1000 Tons Bessemer, June	15.65 cash.
500 Tons Gray Forge	14.75 cash.
100 Tons No. 2 Foundry, City Furnace	15.50 cash.

Coke Native Ore.

200 Tons Gray Forge	14.00 cash.
200 Tons Gray Forge	14.00 cash.
50 Tons Silvery	15.50 cash.
50 Tons No. 2 Mill	13.75 cash.
50 Tons No. 2 Mill	14.00 cash.
25 Tons Gray Forge	14.50 4 mo.
25 Tons Silvery Extra	19.00 cash.

Charcoal.

75 Tons No. 1 Foundry	23.00 cash.
50 Tons Cold Blast	22.50 cash.

Muck Bar.

800 Tons Neutral	26.50 cash.
500 Tons Neutral	26.25 cash.

Steel Slabs and Billets.

1000 Tons Rod Billets	27.00 cash.
500 Tons Rod Billets	27.00 cash.
500 Tons Nail Slabs	27.00 cash.
2000 Tons Billets	26.75 cash.

Bloom Ends.

4000 Tons Bloom Ends	18.00 cash.
1000 Tons Bloom Ends	18.00 cash.

Ferro-Manganese.

100 Tons 80 per cent	58.00 cash.

Skelp Iron.

2500 Tons Sheared, per 100 lbs	1.92½ 4 mo.

Speigel.

100 Tons 10 and 12 per cent	27.50 cash.
50 Tons 20 per cent	30.00 cash.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, May 31.

Heavy Chemicals.—The situation is virtually unchanged. Both at home and abroad there are still disturbing factors which prevent any material improvement in values, and place the market in an unsettled condition. The demand is fair in a jobbing way, but there is not enough business to give much strength to the market. In England, the caustic soda makers are still earnestly engaged in disagreeing among themselves, but there are those who think that when the returns for recent consignments to the United States are received, they will begin to realize that unless they take immediate action for their mutual relief they will be forced to accept heavy losses on their American trade. It is generally agreed that 2·15c. is the lowest figure at which high test caustic soda can be profitably imported into this country under a duty of a cent a pound, while the American producers freely offer to sell at 2·10c. Importers say that the American quotations are by no means the basis of sales and are quoted more for the purpose of depressing the market than for securing business. However this may be, we have the declaration of the American sellers that they will sell "to any one at 2·10c." They say that it can be made and sold at a profit at this figure. The Solvay Company, it is claimed, is now producing from twelve to thirteen hundred tons per month. At this rate they are turning out about one-third of the annual consumption. It is believed by many that the American makers have adopted their present course to compel the English makers to make some harmonious effort to advance prices. The Solvay Company, with its present facilities, cannot, of course, supply the entire American market, and there is little doubt that it would gladly welcome higher prices.

Caustic soda this week is quoted at 2·10@2·15c. for all the higher tests. No important sales are reported. Bleaching powder still wants buyers. In a large way it is quoted at 1·60c. with jobbing prices up to 1·87½c.

Soda ash, both carbonate and caustic, is quiet. Little business is reported and prices remain at about 1·20c., with perhaps some caustic ash offering in a large way at slightly lower figures.

Sal soda is quoted at ·85c. for English makes and ·80c. for American.

Refined alkali is quiet and unchanged. Hyposulphite of soda remains as before.

Acids.—We have to report a continuance of the improved feeling which has pervaded this market during the past few weeks. Prices are unchanged, and transactions have not risen above jobbing orders. There is, however, considerable diversity in the quotations obtained for muriatic acid. The average quotation for 18 degrees is in the neighborhood of 1·10@1·15c.; what are the extreme prices is difficult to say. Acetic and oxalic are both dull and afford little opportunity for comment. Nitric is moving steadily in moderate quantities. Manufacturers, it is needless to say, are not at all dissatisfied with the decline in nitrate of soda. Sulphuric is selling well and little surplus stock is being offered.

Fertilizing Chemicals.—The United States District Court has rendered a decision in the suit of a well-known firm of importers of crude fertilizing material against the government for the amount of duties paid, under protest, on several consignments of high-grade sulphate of potash. The decision is favorable to the plaintiffs and is regarded as an important victory by those who are endeavoring to obtain a repeal of the duty on manure salts containing a high percentage of potash. The decision of the court, as well as the general sentiment of those best informed on the subject, we are pleased to note, is in accord with the opinions expressed in these columns some weeks ago. We understand, however, that an appeal will be taken. A gentleman who is known to be in favor of the maintenance of the duty, asserts that if the duty is removed the German sales syndicate will assuredly raise the price of sulphate of potash to such a figure that no advantage will be obtained from the removal of the duty. His reasons for this assertion are these: The associations or syndicates of German makers, which practically control the production of both muriate of potash and sulphate of potash, are identical, the same manufacturers being interested in both syndicates. On account of the comparatively high price of sulphuric acid on the Continent, the makers would much rather increase their sales of muriate of potash than to make larger quantities of sulphate. In the United States, because of the relatively low price of muriate of potash, it has been found profitable to import and convert it into sulphate by the application of sulphuric acid. It is claimed that sulphate can thus be secured at a lower figure than the present quotation for the directly imported article, and as the German syndicate desires to "push" muriate of potash, they will encourage this custom by sustaining the present high prices for sulphate of potash. This is

IMPORTS AND EXPORTS OF METALS AT NEW YORK MAY 13 TO MAY 21, 1889, AND FROM JANUARY 1.

IMPORTS.

Spelter.	Week. Tons.	Year. Tons.
Amer. Metal Co		67
Hendricks Bros	28	28
Lamarche's Sons, H		5
Naylor & Co		61
Total	28	133
Corres. date, 1888		313

Nickel.	Lbs.	Lbs.
McCoy & Sanders		11,240
Total		11,240

Antimony.	Casks.	Casks.
Total	50	1,358
Corres. date, 1888	50	1,423

Pig Lead.	Lbs.	Lbs.
Caswell, E. A	10	10
Erie Dispatch		
Foley, E		4
Henderson Bros		11
Hendricks Bros		56
Total	10	129
Corres. date, 1888	100	200

Tin.	Tons.	Tons.
Amer. Metal Co	112	402
Bidwell & French	6	351
Bruce & Cook		14
Carter, Hawley & Co.	11	46
Cohn & Co., H		11
Crooks & Co	84	172
Daval & Son, John		21
Hendricks Bros	30	128
Knauth, N. & Kuhne		10
Lehmarer, S. & Co.	7	64
Mendel & Tompkins		1
Muller, Schall & Co	11	917
Naumann, F		1
Naylor & Co	140	1,166
Phelps, Dodge & Co	168	1,597
Pope, J. E., Jr	28	202
Schmarer & Co		11
Thomsen, A. A		151
Thomsen, D	28	131
Townsend, J. R		122
Wheeler & Co		1
Total	623	5,555
Corres. date, 1888		3,914

Tin Plates.	Boxes.	Boxes.
American Metal Co		44
American Metre Co		290
Brown & Co., V. H		350
Bruce & Cook	2,355	48,182
Byrne & Co., J	409	8,392
Central Stamp. Co.	3,175	43,431
Coddington & Co	3,312	76,686
Cohen, S. M		272
Cohn & Co., H	2,211	7,985
Con. Fruit Jar Co	483	786
Cort & Co., N. L	5,316	54,367
Corbier, F. & S		1,455
Crooks & Co	1,518	47,333
De Mitt & Co		7,349
Dickerson, V. D	12,426	157,752
Downing & Co		231
Erie Dispatch	119	222
Foley, E		39
G. L. N		72
Holder & Herrick		271
Iron Clad M. Co		283
Ismay, J. B	150	4,500
Lalance & G		6,152
Lazard Bros		2,356
Lombard, Ayres		3,000
Merchant & Co	157	7,280
Mersick & Co		4,775
Morewood & Co		7,030
Mulholland & H		767
Newell Bros		150
Payne & Son		208
Phelps, Dodge & Co	26,198	274,503
Pratt Mfg. Co	11,592	104,973
Sanders Bros		479
Shepherd & Co	601	14,985
Somers Bros		569
Taylor Co., N. & G	108	322
Thomsen, A. A	7,522	102,366
Warren & Co., J. M	300	3,434
Wheeler & Co	467	8,918
Whittemore & Co	1,250	14,556
Wolff & Reesing	525	2,532
Total	80,194	994,825
Corres. date, 1888		629,245

Pig Iron.	Tons.	Tons.
Bartlett, N. S		500
Crocker Bros	200	2,920
Crooks & Co		500
Henderson Bros		166
Godwin & Son, A. G		390
Irwin & Co., R		100
Martin, W. T		150
Naylor & Co		50
Page, Newall & Co		60
Perry & Ryer		125
Pierson & Co	190	500
Pope, J. E., Jr		250
Sheldon & Co., G. W		200
Stetson & Co	100	2,800
Walbaum & Co		250
Williamson & Co	100	1,425
Total	590	10,236
Corres. date, 1888	351	2,797

Steel Sheets, Billets, Forging, etc.	Tons.	Tons.
Abbott & Co	4	2,450
Ames, W. T		253
Baldwin Bros. & Co		15
Belcher, H. W	14	95
Boker, C. F	9	131
Carey & Moen		118
Carter, G. F		200
Coddington & Co		21
Crenshaw, Hugh		27
Crooks & Co		292
Cortis, R. J		408
Curran, J		5
Dana & Co		2,470
Downing & Co	29	171
Erie Despatch		40
Galpin, S. H		497
Hugill, Chas		95
Ismay, J. B		174
Lalance, & G		106
Lazard Bros		6
Leng's Sons, J. S		114
Lublin & Estey		7
Lundberg, G		51
Mersick & Co		5
Milne & Co	309	1,557
Montgomery & Co		5
Naylor & Co		2,444
Newton & S	5	35
Oelrich & Co		389
Pierson & Co		323
Pilditch, F. S	8	75
Power, C. W		36
Prosser, Thos	35	496
Roebling's Sons		112
Schulze & R	6	13
Standard Oil Co	10	222
Stetson & Co		11
Strouse & Co., M	19	25
Temple & L	3	15
Wagner, W. F	16	373
Wallace & Co		5
Wetheral Bros		2
Whitney & W		30
Wiel Elie		44
Wiell & Co		7
Williams & W		95
Wolff, R. H	53	347
Total	520	21,425
Corres. date, 1888		4,342

Bar Iron.	Tons.	Tons.
Abbott & Co., J		850
Bacon & Co		87
Downing & Co	13	243
Jacobus, E. G		17
Milne & Co		89
Muller, Schall & Co		10
Naylor & Co	50	50
Ogden & W		7
Page, N. & Co	54	54
Plenty, John		2
Trement, F		440
Wells, F., & Co		15
Total	117	1,869
Corres. date, 1888	80	1,998

Steel and Iron Rods.	Tons.	Tons.
Abbott & Co., J		1,251
American S. Co	100	550
Bacon & Co		50
Boker, H		3
Bruce & Cook		8
Carey & Moen	26	430
Cooper, H. & Co		40
Crabb & Co., W	2	17
Dana & Co		1,915
Downing & Co	110	690
Fuller, D. & T		11
Galpin, S. H		401
Hazard Mfg. Co		20
Heyn, A		1,154
Lilienberg, N		56
Lundberg, G		56
Lundell, C. G		50
Milne & Co	10	311
Montgomery & Co		16
Muller, Schall & C		202
Naylor & Co	103	7,951
Nichols, B. J		10
Page, N. & Co		274
Pratt Mfg. Co		30
Roebling's Son		769
Wheeler & Co., E. S		120
Whitney & Co		70
Williams & W		5
Wolf & Co	137	2,455
Wright, P. & Co		3
Total	588	19,678
Corres. date, 1888	547	23,538

Old Rails.	Tons.	Tons.
Baldwin Bros. & Co		240
Bowring & A		57
Crossman & Bro		1,298
Henderson Bros		150
Neumark & Gross		3,186
Perkins, C. L		433
Perry & Ryer		177
Sheldon & Co		203
Ward & Co., J. E		21
Total		5,735
Corres. date, 1888		5,602

Scrap Iron.	Tons.	Tons.
Burgass & Co		162
Downing & Co	71	321
Funch, E. & Co		397
Spaulding & Co		172
Ward & Co., J. E		269
Watjen, F. & Co		152
Total	71	1,473
Corres. date, 1888	70	2,102

Sheet Zinc.	Lbs.	Lbs.
Crooks & Co	165,346	441,814
Lemarch's S's, H		1,554
Total	165,346	443,368

Sheet Iron.	Tons.	Tons.
Coddington & Co	65	456
Downing & Co		16
Kelly, Hugh		5
Total	65	477
Corres. date, 1888	30	626

Charcoal Iron.	Tons.	Tons.
Bacon & Co		97
Downing & Co		671
Lilienberg N		6
Milne & Co		94
Muller, S. & Co		135
Naylor & Co		45
Page, N. & Co	50	754
Total	50	1,802

Spiegeleisen.	Tons.	Tons.
Abbott & Co		751
Blakely & McLellan		2,101
Crocker Bros	566	7,222
Dana & Co	570	4,506
Farris & Co		325
Geisenheimer & Co		85
Jansen, J. A		8,110
Naylor & Co	250	8,189
Perkins, C. L		1,401
Walbaum Bros		675
Total	1,386	33,768
Corres. date, 1888	1,230	19,168

Iron Ore.	Tons.	Tons.
Earnshaw, A		4,971
Total		4,971
Corres. date, 1888	1,935	12,125

EXPORTS.

Copper.	Pounds.	Pounds.
Abbott & Co		463,109
Amer. Metal Co		697,250
Hurst, F. W. J		113,000
Naylor & Co		1,197,024
Orford, C. & S Co		112,013
Piper, D. & Co		3,898
Seaman, Sam'l H		141,800
Total		2,728,094
Corres. date, 1888		18,076,885

Copper Matte.	
Abbott & Co	427,613
Amer. Metal Co	3,101,170
Am. & Paterson	134,220
Clark, W. A	879,019
Henriott, F	5,083,269
Seaman, Sam'l H	13,000
Williams, Terhune	692,494
Total	10,330,783
Corres. date, 1888	22,375,111

Old Copper.	
Burgass & Co	32,460
R. J. Cortis	34,100
Total	66,560
Corres. date, 1888	181,

CURRENT PRICES.

These quotations are for wholesale lots in New York.

CHEMICALS.

Acid—Acetic, ℔ 100 lbs........ 2.00
Muriatic, 18°, ℔ 100 lbs .... .. 1.10@1.20
Muriatic, 20°, ℔ 100 lbs........ 1.35@1.50
Nitric, 36°, ℔ 100 lbs........ 4.00@5.50
Nitric, 42°, ℔ 100 lbs ...... 5.50@7.00
Oxalic, ℔ 100 lbs.............. 9.50@10.50
Sulphuric, 60°, ℔ 100 lbs. ...... 90@95
Sulphuric, 66°, ℔ 100 lbs .... 95@1.25
Alkali—36 p. c. .... 1.20 @1.25
Refined, 48 p. c. .... 1.22½@1.25
Refined, 58° .... 1.15@1.20
Alum—Lump, ℔ lb.......... 1¾
Ground, ℔ lb.................. 1⅞@2
Lump, ℔ ton, Liverpool £4 17 6
Sulphate of Alumina, ℔ ton...... £4 10
Aqua Ammonia—18°, ℔ lb 4¾
20°, ℔ lb 6
22°, ℔ lb .... 6@7
26°, ℔ lb .... 10@11
Ammonia—Sul., ℔ 100 lbs... 3.15@3.20
Carb., per lb .... 7½@8½
Muriate per lb .... 6¼@8
Arsenic—White, powdered, ℔ lb... 3@3¼
Red, ℔ lb .... 7@8
White, at Plymouth, ℔ ton. £12 2
Asbestos—Am., p. ton .... $50@$300
Italian, p. ton, c. i. f., L'pool .. £18@£60
Asphaltum—P. ton 13.00
Prime Cuban, ℔ lb .... 4½@5½c.
Hard, ℔ ton $28.00
Trinidad, refined, ℔ ton $30.00
Barytes—Sulph., Am. prime white 16@20
Sulph., foreign, floated, p. ton.... 20@21
Sulph., off color, p. ton 13.00
Carb., lump, f.o.b. L'pool, ton £6 5 0
No. 1, casks, Runcorn " " £4 10 0
No. 2, bags, Runcorn " " 3 15 0
Bleach—Over 35 p.c., ℔ lb........ 1·60
Borax—℔ lb 9¼
Refined at Liverpool, ℔ ton......... £26
Brimstone—*See Sulphur.*
Bromine—℔ lb .... 37@38
Chalk—℔ ton 3.25
Precipitated, ℔ lb. .... 4¾@5
China Clay—English, ℔ ton 13.50@18.50
Southern, ℔ ton 13.50
Chrome Yellow—℔ lb .... 10@25
Cobalt—Oxide, ℔ lb .... 2·60@2·90
Copper—Sulph. English Wks., ton..... £26
Precip., Eng. Wks, unit... fluctuating
Copperas—Common, ℔ 100 lbs. 52@57½
Best, ℔ 100 lbs .... 75@1.00
Liverpool, ℔ ton, in casks .... £1 15s.
Cream of Tartar—Am. 99%.... 24@24¼
Powdered, 99 p. c. .... 24¾@25¼
Emery—Grain, ℔ lb .... 4½@5
Flour, ℔ lb .... 2¾@3¼
Feldspar—Ground, ℔ ton 15.00
Fuller's Earth—Lump, ℔ bbl. .90@95
Powdered, ℔ lb .... 1⅞@2
Gypsum—Calcined, ℔ bbl. 1.25
Iodine—Resublimed 3.50
Kainit—℔ ton .... 9.75@10.50
Kaolin—*See China Clay.*
Lead—Red, ℔ lb. .... 6¾@7
White, American, in oil, ℔ lb ... 6¾@7¼
White, English, ℔ lb .... 8⅛@8¾
Acetate, or sugar of .... 12@13
Lime Acetate—Amer. Brown. .95@1.00
" Gray 1.75@1.87½
Litharge—Powdered, ℔ lb. ...... 6¼@6¾
English flake, ℔ lb .... 9@9½
Magnesite—Greek, ℔ ton 20.00
Manganese—Crude, per unit .... 23@.28
Oxide, ground, per lb .... 2½@6½
Mercuric-Chloride — (*Corrosive Sublimate*) ℔ lb. .... 64@66
Mineral Wool —℔ lb. 2
Mica—In sheets according to size,
1st quality, ℔ lb .... 25@$6.00
Phosphate Rock—S. Carolina,
per ton f. o. b. Charleston. 5.25@6.00
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. .... 13¾@15¼
Carb, ℔ lb. .... 4.70@5.50
Caustic, ℔ lb .... 7½@8
Iodide .... 2.70@2.75
Muriate, ℔ 100 lbs 1.80
Nitrate, refined, ℔ lb .... 6@8
Bichromate, ℔ lb .... 11½@12
Sulphate, ℔ 100 lbs .... 2.30@2.35
Yellow Prussiate, ℔ lb .... 17½@18
Red Prussiate, ℔ lb .... 42@45
Pumice Stone—Select lumps, lb. 3¼
Original cks., ℔ lb 1¾
Powdered, pure, ℔ lb .... 2¼@2½
Pyrites—Non-cupreous, p. unit, s. 10d.
Quartz—Ground, ℔ ton 16.00
Rotten Stone—Powdered, ℔ lb.. 3¼@3¾
Lump, ℔ lb .... 6@10
Eng., powdered, ℔ ton £4
Lump, ℔ ton £5
Salt—Liverpool, ground ℔ sack . 75@80
Turk's Island, ℔ bush .... 25@27
Salt Cake—℔ lb .... 50@57
Saltpeter—Crude, ℔ lb .... 5@5½
Refined, ℔ lb. .... 6@8
Soda Ash—Carb., 48% 100 lb.... 1.22½@1.30
High test .... 1.12½@1.15
Caustic, 48% 1.23¾
Soda Caustic, 60% 2 40
" " 70% .... 2.10 @2.15
" " 74-6% .... 2.10 @2.15
Sal, English, ℔ 100 lbs .... .90 @1.00
Sal, American, ℔ 100 lbs .... .80
Nitrate, ℔ 100 lbs 2.05
Strontium—Nitrate ℔ lb .... 9@9½
Sulphur—Roll, ℔ lb 1¾
Flour, ℔ lb 2
Crude Brimstone, 2s., ℔ ton. 19.50@20.00
Crude Brimstone, 3ds, ℔ ton. 19 00
Talc—Ground French, ℔ lb ...... 1¼@1¼
Domestic, ℔ lb .... 1@1¼
c.i.f. Liverpool, ℔ ton £4 5 0
Vermillion—American, ℔ lb 61
English, ℔ lb .... 82@85
Vitriol—(Blue), Ordinary, ℔ lb. 5¾@6⅛
Extra, ℔ lb 7
Zinc Oxide—Am., Dry, ℔ lb 4½
Antwerp, Red Seal, ℔ lb .... 6@6½
Paris, Red Seal, ℔ lb. .... 6½@7
* Spot

BUILDING MATERIAL.

Bricks—Pale, ℔ 1,000 .... 2.75@3.25
Jerseys, ℔ 1,000 .... 5.00
Up Rivers, ℔ 1000 .... 5.00@5.50
Haverstraw seconds, ℔ 1000.... 5 50@6.50
Haverstraw firsts ℔ 1,000 .... 6.50
Fronts, nominal, ℔ 1000.
Croton .... 14.00@16.00
Wilmington .... 20.00@21.00
Philadelphia .... @28.00
Trenton .... @28.00
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 ...... .90@1.10
Portland, American, ℔ bbl ... 2.15@2.45
Portland, foreign, ℔ bbl 2.40
Portland, " special brands. 2.45@3.75
Roman, ℔ bbl. .... 2.65@2.85
Keene's coarse, ℔ bbl .... 4.50@5.50
Keene's fine, ℔ bbl .... 7.00@8.25
Slate—Purple and green roofing, ℔ 100 ft. ......
Red roofing, ℔ 100 sq. ft... 10.00@15.00
Black, roofing, ℔ 100 sq. ft... 4.50@5.25
Lime—Rockland, common ℔ bbl 1.00
Rockland, finishing, ℔ bbl 1.20
St. John, com. and finish, ℔ bbl. .... .90
Glens Falls, com. and fin., ℔ bbl .80@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 RARER METALS.

Aluminum—(Metallic), ℔ lb. $8.50@$10
Arsenic—Metallic, per lb 20
Barium—(Metallic), per lb 975.00
Bismuth—(Metallic), per lb 2.40
Cadmium—(Metallic), per lb 1.25
Calcium—(Metallic), per oz 150.00
Cerium—(Metallic), per oz 160.00
Chromium—(Metallic), per lb 200.00
Cobalt—(Metallic), per lb 6.00
Didymium—(Metallic), per oz 160.00
Erbium—(Metallic), per oz 140.00
Gallium—(Metallic), per oz 3250.00
Glucinum—(Metallic) per oz 250.00
Indium—(Metallic), per oz 158.00
Iridium—(Metallic), per lb 650.00
Lanthanum—(Metallic), per oz. 175.00
Lithium—(Metallic), per oz 160.00
Magnesium—Per lb 4.50
Manganese—Metallic, per lb 1.10
Chem. pure, per oz. 10.00
Molybdenum—(Metallic), per oz. 6.00
Niobium—(Metallic), per oz 128.00
Osmium—(Metallic), per lb 640.00
Palladium—(Metallic), per lb 400.00
Platinum—(Metallic), per lb 140.00
Potassium—Metallic, per lb 28.00
Rhodium—(Metallic), per lb 512.00
Ruthenium—(Metallic), per oz. 112.00
Rubidium—(Metallic), per oz 200.00
Selenium—(Metallic), per oz 3.00
Sodium—(Metallic) per lb 2.75
Strontium—(Metallic), per oz. 128.00
Tantalum—(Metallic) per oz 144.00
Telurium—(Metallic) per oz 9.00
Thallium—(Metallic) per oz 3.00
Titanium—(Metallic) per oz 32.00
Thorium—(Metallic) per oz 272.00
Tungsten—(Metallic) per oz 4.00
Vanadium—(Metallic), per oz. 320.00
Yttrium—(Metallic), per oz 144.00
Zirconium—(Metallic), per oz. 240.00

METALS.

Aluminum—
94-96% pure, ℔ lb $5
Over 96% pure, ℔ lb 6
Copper—
Lake Ingot, Spot, ℔ lb .... 12c.
Electrolytic, ℔ lb .... 11c.
Casting Brands, ℔ lb
Chili Bars, London, ℔ ton £41
Sheet Copper (according to size), ℔ lb .... 25@30c.
G. M. B. £41
Nickel—
Metallic, per lb .... 60c.
Lead—
Domestic, Common, Spot .... 3·95c.
Foreign .... 4·80c.
Sheet, ℔ lb .... 6¾c.
Pipe, ℔ lb .... 6c.
Tin lined Pipe, ℔ lb .... 15c.
Shot, ℔ 25-lb. bag .... 1·20c.
Spanish Lead, London .... £12 12s. 6d.
Tin—
Tin Plates .... 13s. 6d.
Tin Spot in London £92
Pig tin, spot in N. Y., ℔ lb .... 20·60c.
Zinc—
Domestic spelter, ℔ lb .... 4·90c.
Foreign spelter, ℔ lb .... 5·80c.
Silesian, ton .... £17 15s.
Sheet, American, ℔ lb .... 6¼c.
Antimony—Hallet's, per lb .... 13¾c.
Cookson's, per lb .... 14¼c.
Star Antimony .... £56 10s.
Quicksilver—Per lb .... 57@58c.
London, ℔ flask .... £8 5s @£8 10s.

IRON AND STEEL.

New York Prices.

American Pig-Iron.—At tidewater.
No. 1 X .... $16 50@$17 00
No. 2 X .... 15.50@ 16.00
Forge .... 14.50@ 15.50
Scotch Pig—Coltness ..... $21.50@$21.75
Clyde
Dalmellington .... 19.50@ 20.00
Summerlee .... 21.25@ 21.50
Shotts .... 20.50@ 21.00
Langloan .... 20.50@ 21.00

By Cable to-day to the Metal Exchange:
Scotch Warrants .... 43s. 4d.
Coltness, at Glasgow .... 54s. 6d.
Langloan, at Glasgow .... 54s.
Summerlee, at Glasgow .... 54s.
Gartsherrie, at Glasgow .... 50s. 6d.
Glengarnock, at Ardrossan .... 51s. 6d.
Dalmellington, at Ardrossan .... 45s.
Eglinton, at Ardrossan .... 43s. 6d.
Bessemer Pig—
Foreign, nominally .... 20.50@ 21.00
Domestic " .... 16 50@ 17.50
Spiegeleisen—
German, 20 per cent .... 27.50@ 28.00
English, 20 " " .... 28.00@ 28.50
" 30 " " .... 33 00@ 34.00
Ferro Manganese, 80% .... 57.00@ 58.00
Steel Billets, " .... 30.00@ 33.00
Steel Nail Slabs, " .... 28.00@ 28.50
Steel Wire Rods, " .... 41.00@ 42.00
Steel Rails—
Heavy sections, at mill .... 26.50@ 27.00
Light " " .... 30.00@ 32.00
Structural Iron and Steel—
Bridge Plate, at mill .... 2·00@2·1c.
Angles, at mill .... 1·90@2·00c.
Tees, at mill .... 2·40@2·50c.
Steel Angles, at mill .... 2·15@2·25c.
Beams and Channels, on wharf, 2·8c. base
Steel Plates—
Tank and Ship, on wharf .... 2·15@2·25
Shell, on wharf .... 2·35@2·4
Flange, " " .... 2 55@2 75
Fire-Box, on wharf .... 3·13@4
Iron Plates—
Common tank, on wharf .... 1·9@2·2c.
Refined, on wharf .... 2·3@2·4c.
Shell, " " .... 2·4@2·5c.
Flange, " " .... 3·4@3·5c.
Extra flange .... 3¾@4
Bar Iron—
Refined .... 1·7@2·0c.
Common .... 1·55@1·65c.
Merchant Steel—
American tool .... 7½@10c.
Special grades .... 13 @20c.
Crucible machinery .... 5 @6c
" spring .... 3¾@4½c.
Bessemer machinery .... 2·25@2·75c.
" spring .... 2·5@2·70c.
Cast-Iron Pipe—At works:
According to size .... $25 00@$31.00
Wrought-Iron Pipe—nominal—
Butt-Welded, Plain and Tarred, 55% disc; Galv., 45% disc.
Lap-Welded, Plain and Tarred, 65% disc.; Galv., 55% disc.
Boiler Tubes—Per cent disc 62½%
Rail Fastenings—
Spikes .... 2c. deliv'd
Angle Fish-bars .... 1 85c.
Bolts and Sq Nuts .... 2·9 @3c.
" Hex. " .... 3·1 @
Wrought Scrap—
No. 1 Yard *to vessel* 20.50
Cast Scrap 15.50
Old Car Wheels 18.00
Old Rails—Tees 22.00
—Doubles 23 00
Nails—In car-load lots. .... $1.80@ $2.00
—From store .... 1.85@ 2.00
Nails .... $1.90 usual discount
Steel Nails $1.90
Wire Nails 2.55
Two per cent off for cash * At works.

Louisville Prices.

Hot Blast Irons—
So. Coke, No. 1 .... $14.50@$15.00
" " No. 2 .... 14 00@ 14 50
" " No. 3 .... 13 00@ 13.50
Mahoning Valley (Lake Ore Mixture) .... 17.50@ 18.50
So. Charcoal, No. 1 .... 16.50@ 17.00
" " No. 2 .... 16.00@ 16.50
Missouri Charcoal No. 1 .... 17.50@ 18.00
" " No. 2 .... 17.00@ 17.50
Forge Irons—
Neutral Coke .... $13.00@$13.25
Cold Short .... 12.75@ 13.00
Mottled .... 12.00@ 12.25
Car Wheel and Malleable Irons—
Southern (standard brands). $21.50@$22.00
" (other brands) .... 17 50@ 18.00
Lake Superior .... 22.00@ 22 50

Pittsburg Prices.

Coke or Bituminous Pig—
Foundry No. 1 .... $16.25@16.50
Foundry No. 2 .... 15.25@......
Gray Forge No. 3 .... 14.25@......
" " No. 4 .... 13 75@14.00
White .... 13.75@14.00
Mottled .... 13.75@14.00
Silvery .... 16.00@18.50
Bessemer .... 15.75@16.00
Low Phos .... 20.50@......
Charcoal Pig—
Foundry No. 1 .... 23.50@24.50
Foundry No. 2 .... 22.00@23.50
Cold-Blast .... 25.00@28.00
Warm-Blast .... 24 00@25.00
10 + 12% Spiegel 27.50
20% Spiegel 30.00
Muck-Bar .... 26.25@26.50
Steel Blooms ....@28.00
Steel Slabs .... 26.75@27.00
Steel Crop Ends 18.00
Steel Bloom Ends 18.00
Ferro Manganese, 80% .... 58.00@......
Steel Billets .... 26.75@27.00
Old Iron Rails .... 22.00@22.25
Old Steel Rails .... 17.50@18.00
No. 1 W. Scrap .... 18.00@18.25
No. 2 W. Scrap .... 17.50@......
Steel Rails .... 27.50@28.00
" light sections .... 27.50@31.00
Bar Iron, nominal .... 1.65@ 1.70
Iron Nails .... 1.85@ 1.90
Steel Nails .... 1.85@ 1.90
Wire Nails .... 2.15@ 2.20

Philadelphia Prices.

Foundry No. 1 .... $17.00@18.00
Foundry No. 2 .... 16.00@16.50
Gray Forge .... 14.50@15.25
Bessemer Pig .... 19.00@......
Foreign Bessemer .... 20.00@......
Spiegeleisen ....@27.50
Scrap, Selected .... 22.00@......
No. 1 .... 21.00@21.50
Cargo Scrap .... 20.00@21.00
Muck-Bars ....@27.00
Merchant Iron .... 1.60@ 1.80
Plate Iron .... 1.80@ 2.00
Tank Iron .... 2.00@ 2.10
Skelp Iron .... 1.70@ 1.85
Angles .... 1.95@......
Beams and Channels .... 2.80@......
Nails .... 1.60@ 1.90
Steel Rails .... 26.00@27.00
Old Rails .... 22.00@23.00

STOCK MARKET QUOTATIONS

Birmingham, Ala.

COMPANY.	Bid.	Asked.
Ala. R. Mill Co.	....	$60
Ala. Con. C. & C. Co.	....	$26
*Alice Furnace.	$102	...
Anna Howe G. Mg. Co.	$3	$3½
Bess. Land Co.	$23½	$24
Bir. Fur. & Mg.	$17	$18
Bir. Mg. & Mg.	$120	$145
Broken Arrow.	$2¼	
De Bardeleben C. & I. Co.	$50	
Decat. L. Imp.	$10½@$12	$12½@$13
Decatur Min. L.	....	$25
Enterprise Mfg.		$50
*Eureka	$101@$103	$107@$108
Hen. S. & M. Co.	$115	$120
Jagger Towley C. & C.	....	$11@$12
Mag-Ellen	$96	$100½
*Mary Pratt	$100	....
Sloss I. & S.	$44	$44½
†Sloss I. & S.	$94	$95
††Sloss I. & S.	$67	$68
Tuscaloose C., I. & L. Co	$20	
Tenn. C. & I. Co.	$35@$37	$38@$39
*Williamson	$99¾	....
Woodstock I. Co	$54½@$55½	$60

Sales during the week ended May 29th.

Bessemer L. Co.	170 shs.	$23½@$24
Henderson S.M.Co.	16 shs.	$115@$120

* Bonds. † First mortgage. †† Second mortgage. ‡ Selling price.

Pittsburg, Pa.

COMPANY.	H.	L.	Closing
Allegheny Gas Co.	37.25	36.00	37.25
Bridgewater GasCo	48.00	47.00	48.00
Chartiers Val. Gas.	51.00	49.75	49.75
La Noria Mining	1.63	1.13	1.50
Manufact'rs Gas Co	23.00	23.00	23.00
Nat.Gas Co. of W.Va	70.00	56.00	70.00
New York & C. Gas Coal	37.00	35.00	35.00
Ohio Valley Gas	*34.00	*36.00	*34.00
Pennsylvania Gas	22.00	22.00	22.00
People's N. G. & P. Co.	17.50	16.50	17.50
Philadelphia Co.	37.75	36.50	37.75
Pine Run Gas	100.00	85.00	100.00
Pittsburg Gas	62.50	62.50	62.50
Silverton Mg. Co.	1.00	1.00	1.00
South Side Gas	25.00	25.00	25.00
Washington Oil Co.	74.50	72.00	72 00
W'house A. B. Co.	120.00	115.00	119.00
W'house B. Co. Lm.	64.00	64.00	64.00
W'house E. Light.	*56.00	*54.00	*54.00
Wheeling Gas	*31.00	*31.00	*31.00

Sales during the week ending May 30:

Chartiers Valley	187 shs.	$50
La Noria Mg. Co.	100 "	1⅜
Ohio Valley	10 "	34
Philadelphia Co.	237 "	36½@ 37¾
Silverton Mg.	100 "	1
W'house E. Light.	235 "	54 @ 58
Wheeling Gas	150 "	31

*Actual selling price.

Foreign Quotations.

London. May 18.

COMPANY.	Highest.	Lowest
Alturas Gold, Idaho	4s.	3s.
Arizona Copper, Ariz.	18s. 6d.	18s.
Callao Bis, Venz.	3s. 6d.	3s.
Carlisle, N. Mex	4s.	3s. 6d.
Colorado United, Colo.	4s.	3s. 6d.
Columbian, S. A.	£2	£1¾
Comstock, Utah	£1¼	£1⅛
Cons. Esmeralda, Nev.	6s. 6d.	5s. 6d.
Denver Gold, Colo.	1s. 6d.	1s.
Dickens Custer, Idaho.	3s.	2s. 6d
Eberhardt, Nev	1s. 6d.	1s.
El Callao, Venezuela.	£2½	£2
Elmore, Idaho	4s. 3d.	3s. 9d.
Empire, Mont	2s. 9d.	2s. 3d.
Flagstaff, Utah	1s. 6d.	1s.
Garfield, Nev	6s. 6d.	6s.
Hambley Freehold, N.C.	£1⅛	£⅞
Ilex, Cal	£⅜	£⅝
Jay Hawk, Mont	5s. 6d.	4s. 6d.
Josephine, Cal	10s.	8s.
Kohinoor, Colo.	4s.	3s. 6d.
Mason & Barry, Port.	£6¼	£6⅛
Montana Lt., Mont	£1 15-16	£1 13-16
New California, Colo.	8s.	7s.
New Consolidated	1s. 6d.	1s.
New Emma, S., Utah.	5s. 3d.	4s. 9d.
New Hoover Hill, N. C.	2s. 3d.	1s. 9d.
New La Plata, Colo.	2s. 6d.	1s. 6d.
Old Lout, Colo.	£1¼	£1
Pittsburg Cons., Nev.	16s. 3d.	13s. 9d.
Quebrada, Venezuela.	£⅞	£⅝
Richmond Con., Nev.	£2¼	£1¾
Ruby & Dunderberg, Nev	1s. 6d.	1s.
Russell Gold, N. C.	2s. 3d.	1s. 9d.
Sierra Buttes, Cal.	£⅜	£⅝
Stanly, N. C.	4s.	2s
United Mex can, Mex.	£3	£2¾
U. S. Placer, Colo.	2s.	1s. 6d.
Viola Lt., Idaho	5s. 6d.	4s. 6d.

*Paris.** May 16.

Belmez, Spain	540.00	540.00
Boleo, Mex	365.00	365.00
Callao Bis, Venez	5.50	5.50
East Oregon, Ore	35.00	35 00
Forest Hill Divide, Cal.	400.00	400.00
Golden River, Cal	390.00	390.00
" " parts	60.00	60 00
Lexington, Mont.	118.75	118.75
" parts	5.00	5.00
Ouray, Colo.	28.00	28.00
Rio Tinto, Spain	270.00	270.00
Tharsis, Spain	86.25	86.25

DIVIDEND-PAYING MINES.

	Name and Location of Company.		Capital Stock.	Shares. No.	Shares. Par	Assessments. Total levied.	Assessments. Date and amount of last.			Dividends. Total paid.	Dividends. Date and amount of last.		
1	Adams, s. l.	Colo.	$1,500,000	150,000	$10	*				$555,000	Jan.	1887	.15
2	Alice, s. c	Mont	10,000,000	400,000	25	*				775,000	Dec.	1888	.06¼
3	Alma Cons., g	Idah.	300,000	30,000	10	*				45,000	Dec.	1888	.50
4	Alturas, g	Idah.	1,500,000	300,000	5					262,500	Jan.	1888	.37½
5	Amy & Silversmith, 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	520,000	Feb.	1889	2.00
7	Argenta, s	Nev.	10,000,000	100,000	100	325,000	July	1885	.10	40,000	Feb.	1880	.20
8	Aspen Mg. & S., s. l.	Colo.	2,000,000	200,000	10	*				280,000	May	1889	.20
9	Aurora, i.	Mich	2,000,000	100,000	20					155,000	Oct.	1887	1.87½
10	Bassick, g. s.	Colo.	10,000,000	100,000	100	*				400,000	Mar.	1884	1.00
11	Belle Isle, s.	Nev.	10,000,000	100,000	100	155,000	Apl.	1889	.10	300,000	[illegible]	[illegible]	[illegible]
12	Belcher, g. s.	Nev.	10,400,000	104,000	100	2,822,000	Feb.	1889	.50	15,397,200	Apl.	1876	1.00
13	Bellevue Idaho, s. l.	Idah.	1,250,000	125,000	10	76,250	Nov.	1888	.15	187,500	Jan	1887	.10
14	Bodie Con., g. s.	Cal.	10,000,000	100,000	100	550,000	Mar.	1889	.50	1,295,000	Apl.	1885	.50
15	Boston & Mont, g	Mon.	2,500,000	250,000	10	*				520,000	Jun.	1886	.15
16	Boston & Mont., c. s.	Mon	2,500,000	100,000	25	*				500,000	Apl.	1889	1.00
17	Breece, s.	Colo	,000,000	200,000	25	*				2,000	Feb.	1880	.01
18	Brooklyn Lead, l. s.	Utah	500,000	50,000	10					127,000	July	1887	.05
19	Bulwer, g	Cal.	10,000,000	100,000	10	105,000	Apr.	1889	.25	175,000	Jan.	1884	.10
20	Bunker Hill & Sull.	Idah.	3,000,000	300,000	10	*				150,000	Oct.	1883	.06⅔
21	Caledonia, g	Dak.	10,000,000	100,000	100	505,000	May	1885	.15	96,000	May	1889	.08
22	Calumet & Hecla, c.	Mich	2,500,000	100,000	25	1,200,000				31,850,000	Feb.	1889	5.00
23	Carbonate Hill s. l.	Colo.	1,500,000	200,000	10	*				80,000	Apl.	1884	.05
24	Carlisle, g	N. M.	1,000,000	200,000	5					175,000	Dec.	1888	.12½
25	Castle Creek, g	Idah.	100,000	100,000	1					51,000	Oct.	1883	.03
26	Catalpa, s. l.	Colo.	3,000,000	300,000	10	*				270,000	May.	1884	.10
27	Central, c	Mich	500,000	20,000	25	100,000	Sept	1861	.06	1,930,000	Feb.	1889	2.00
28	Chrysolite, s. l.	Colo.	10,000,000	200,000	50	*				1,650,000	Dec	1884	.25
29	Colorado Central, s. l	Colo.	2,750,000	275,000	10	*				392,250	Jun.	1889	.05
30	Confidence, s. l.	Nev.		24,960		287,440	Apl.	1887	.50	199,680	Apl.	1889	1.00
31	Cons. Cal. & Va., g. s.	Nev.	21,600,000	216,000	100	108,000	Jan.	1885	.20	2,764,800	Apl.	1889	.50
32	Contention, s.	Ariz.	12,500,000	250,000	50					†2,587,000	Dec.	1884	.25
33	**Cop. Queen Cons, c.	Ariz.	1,400,000	140,000	10					140,000	Oct	1888	.50
34	Crescent, s. l. g.	Utah	15,000,000	600,000	25	*				228,000	Oct.	1888	.03
35	Crown Point, g. s.	Nev.	10,000,000	100,000	100	2,825,000	Oct.	1888	.50	11,588,000	Jan.	1875	2.00
36	Daly, s. l.	Utah	3,000,000	150,000	20					1,050,000	May	1889	.25
37	Deer Creek, s. g	Idah.	1,000,000	200,000	5	*				10,000	Oct.	1888	.05
38	Deadwood-Terra, g.	Dak.	5,000,000	200,000	25	*				§1,000,000	Nov.	1887	.10
39	Derbec B. Grav., g. s.	Cal.	10,000,000	100,000	100	90,000	Dec.	1881	.10	180,000	May	1887	.10
40	Dunkin, s. l.	Colo.	5,000,000	200,000	25	*				370,000	Apl.	1889	.05
41	Dunstone, g. s. l.	Mont	1,000,000	200,000	5	*				6,000	Nov.	1888	.03
42	Eclipse	Colo.	100,000	100,000	1					20,000	Nov.	1887	.10
43	Elkhorn, g. s.	Mont	1,000,000	100,000	10	50,000	July	1883	.50	170,000	July	1887	.05
44	Empire Lt., g.	Mont	500,000	100,000	5					70,500	Oct.	1887	.37½
45	Eureka Con., g. s. l.	Nev.	5,000,000	50,000	100	625,000	Mar.	1889	.25	4,955,000	July	1888	.25
46	Evening Star, s. l.	Colo.	500,000	50,000	10	*				1,425,000	Apl.	1889	.25
47	Excelsior, g	Cal.	10,000,000	100,000	100	560,000	Sept	1885	1.00	875,000	Oct.	1880	.25
48	Father de Smet, g.	Dak.	10,000,000	100,000	100	200,000	Nov	1878	1.00	1,125,000	Dec.	1885	.20
49	Franklin, c	Mich	1,000,000	40,000	25	220,000	Jun.	1871		800,000	Dec.	1888	2.00
50	Freeland, g. s. c.	Colo.	5,000,000	200,000	25	*				190,000	July	1886	.10
51	Fresno Enterprise, g	Cal.	5,000,000	100,000	50		Mch	1883	.10	110,000	July	1882	.10
52	Garfield Lt., g. s	Nev.	500,000	100,000	5					85,000	Apl.	1888	.12½
53	Golconda, g. s.	Idah.	1,000,000	100,000	10					120,000	May	1888	.60
54	Gould & Curry, g. s.	Nev.	10,800,000	108,000	100	4,402,200	May	1889	.30	[illegible]826,800	Oct.	1870	10.00
55	Grand Central, s.	Ariz.	1,000,000	100,000	10					625,000	Dec	1882	.25
56	Grand Prize, s.	Nev.	10,000,000	100,000	100	625,000	Mar.	1889	.30	49[illegible]	Mar.	1884	.25
57	Granite, s. l.	Idah.	500,000	500,000	1	*				10,000	Jun.	1888	.02
58	Granite Mountain, s.	Mont	10,000,000	400,000	25					6,200,000	May	1889	.50
59	Green Mountain, g.	Cal.	1,250,000	125,000	10	*				212,000	Nov.	1881	.07½
60	Hale & Norcross, g. s	Nev.	11,200,000	112,000	100	5,086,000	July	1887	.50	1,822,000	Aug.	1888	.50
61	Hecla Con., s. g. l. c.	Mont	1,500,000	30,000	50					1,332,500	May	1889	.50
62	Hel'a Mg & Red, g. s. l	Mont	3,315,000	663,000	5	*				197,970	July	1886	.06
63	Holmes, s.	Nev.	10,000,000	100,000	100	300,000	Sept	1885	.10	75,000	Apl	1886	.25
64	Holyoke, g	Idah.	200,000	200,000	1					27,000	Feb.	1883	.10
65	Homestake, g.	Dak.	12,500,000	125,000	100	200,000	July	1878	1.00	4,393,250	May	1889	.10
66	Honorine, s. l.	Utah	500,000	250,000	2	37,500	Apl.	1889	.05	125,000	Sept	1887	.05
67	Hope, s.	Mont	1,000,000	100,000	10	*				233,252	Apl.	1888	.25
68	Horn-Silver, s. l.	Utah	10,000,000	400,000	25	*				4,000,000	Nov.	1884	.50
69	Hubert, g	Colo.	500,000	50,000	10					239,500	Oct.	1888	.11
70	Idaho, g	Cal.	310,000	3,100	100					5,15[illegible],650	May	1889	5.00
71	Ideal, s. l.	Colo.	1,500,000	50,000	10					15,000	Oct.	1886	.05
72	Illinois, s.	N. M.	100,000	100,000	1	*				45,000	Apl.	1889	.20
73	Independence, s.	Nev.	10,000,000	100,000	100	340,000	Oct.	1886	.20	225,000	Sept	1879	.25
74	Iron Hill, s.	Dak.	2,500,000	250,000	10	126,500	Jan.	1889	.03	156,250	Nov	1887	.07½
75	Iron-Silver, s. l.	Colo.	10,000,000	500,000	20	*				2,500,000	Apl.	1889	.20
76	Jackson, g. s.	Nev.	5,000,000	50,000	100	237,500	Nov	1880	.20	50,000	Oct.	1886	.10
77	Jay Gould	Mont	2,000,000	40,000	5	*				365,000	Apl.	1889	.04
78	Jocuistita, s.	Mex.	2,500,000	250,000	10					1,200,000	Feb.	1885	.50
79	Jumbo, g	Colo.	2,000,000	200,000	10					35,000	Oct.	1887	.02½
80	Kentuck	Nev.	3,000,000	30,000	100	351,000	Apl.	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. i.	Colo.	4,000,000	400,000	10	*				423,000	Apl.	1887	.05
83	Lexington, g. s.	Mont	4,000,000	40,000	100	*				565,000	Jan.	1885	3.00
84	Little Chief, s. l.	Colo.	10,000,000	200,000	50	*				800,000	July	1888	.10
85	Little Pittsburg, s. l	Colo.	20,000,000	200,000	100	*				1,050,000	Mch.	1880	.50
86	Lookout, g	Dak.	1,000,000	500,000	2	*				60,000	May	1889	.02
87	Marion Bullion, g	N.C.	500,000							15,000	Jan.	1886	
88	Martin White, s.	Nev.	10,000,000	100,000	100	1,175,000	Jan.	1889	.25	140,000	Dec.	1886	.25
89	Mary Murphy, g. s.	Colo.	350,000	3,500	100	*				175,000	May	1888	5.00
90	Minnesota, c	Mich	1,000,000	40,000	25	420,000	Apl.	1886	1.00	1,820,000	Mar.	1876	
91	Mono, g	Cal.	5,000,000	50,000	100	65,350	Mar.	1889	.25	12,500	Mar.	1886	.25
92	Montana, Lt., g. s.	Mont	3,300,000	660,000	5	*				2,190,285	Jan.	1889	.06¼
93	Morning Star, s. l.	Colo.	1,000,000	100,000	10					775,000	Mar.	1888	.25
94	Moulton, s. g.	Mont	2,000,000	400,000	5	*				380,000	Dec.	1887	.07½
95	Mount Pleasant, g	Cal.	150,000	150,000	1	*				150,000	Feb.	1887	.30
96	Mt. Diablo, s.	Nev.	5,000,000	50,000	100	137,500	Jun.	1880	2.00	140,000	Jan.	1889	.40
97	Napa, q	Cal.	700,000	100,000	7					290,000	Jan.	1883	.10
98	Navajo, g. s.	Nev.	10,000,000	100,000	100	485,000	Apl.	1888	.30	365,000	Apl.	1889	.10
99	New Guston, s.	Colo.	500,000	100,000	5					100,000	Dec.	1888	.50
100	N. Hoover Hill, g. s.	N. C.	300,000	120,000	2½	*				30,000	Dec.	1885	.06¼
101	Northern Belle, s.	Nev.	5,000,000	50,000	100	425,000	Jan.	1884	[illegible]	2,400,000	Apl.	1883	.50
102	North Belle Isle, s.	Nev.	10,000,000	100,000	100	350,000	Jan	1889	.50	230,000	May	1888	.50
103	North Star, g	Cal.	1,000,000	100,000	10					150,000	Dec.	1888	.50
104	Ontario, s. l.	Utah	15,000,000	150,000	100					10,100,000	May	1889	.50
105	Ophir, g. s.	Nev.	10,000,000	100,000	100	4,159,440	May	1889	.50	1,595,800	July	1882	1.00
106	Original, s. c.	Mont	1,500,000	60,000	25	*				123,000	July	1888	.05
107	Osceola, c	Mich	1,250,000	50,000	25	480,000	Apl.	1876	1.60	1,222,500	Mar.	1889	1.00
108	Oxford, g	N. S.	125,000	125,000	1	*				38,500	Oct.	1885	.02
109	Paradise Valley, g. s	Nev.	10,000,000	100,000	100	57,000	Apl.	1888	.15	150,000	Apl.	1887	.10
110	Parrot, c	Mont	1,800,000	180,000	10					372,000	May	1889	.10
111	Peacock, s. g. c.	N.M.	2,000,000	200,000	10	*				60,000	Nov.	1886	
112	Plumas Eureka, g	Cal.	1,406,250	140,625	10					2,495,312	Apl.	1889	.50
113	Plutus, g. s. c. l.	Colo.	2,000,000	200,000	10	*				20,000	Feb.	1886	.10
114	Plymouth Con., g	Cal.	5,000,000	100,000	50	*				2,280,000	Feb.	1888	.40
115	Quicksilver, pref., q.	Cal.	4,300,000	43,000	100					1,599,593	May	1889	1.50
116	" com., q.	Cal.	5,700,000	57,000	100					643,867	July	1882	.40
117	Quincy, c	Mich	1,000,000	40,000	25	200,000	Dec.	1862		5,170,000	Feb.	1889	5.00
118	Richmond, s. l.	Nev.	1,350,000	54,000	25	*				4,312,587	Jun.	1887	1.25
119	Ridge, c	Mich.	500,000	20,000	25	219,939	Mar	1886	.50	99,785	Feb.	1880	.50
120	Robinson Con., s. l.	Colo.	10,000,000	200,000	50	*				585,000	Mar.	1886	.05
121	Robert E. Lee, s. l.	Colo	10,000,000	500,000	20					100,000	Dec.	1882	.50
122	Savage, s.	Nev.	11,200,000	112,000	100	6,486,000	Jan.	1889	.50	4,460,000	July	1869	3.00
123	Shoshone, g	Idah.	150,000	150,000	1					7,500	Apl.	1883	.01
124	Sierra Buttes, g	Cal.	2,225,000	122,500	10					1,568,145	Apl.	1888	.12½
125	Sierra Nevada, g. s.	Nev.	10,000,000	100,000	100	6,175,000	Mar.	1889	.25	102,000	Jan.	1871	1.00
126	Sierra Nevada, s. l.	Idaho	1,000,000	¶	1	*				40,000	May	1889	.02
127	Silver Cord, g. s. l.	Colo.	5,000,000	500,000	10					275,000	Apl.	1889	.10
128	Silver King, s.	Ariz.	10,000,000	100,000	100	50,000	Jun.	1888	.50	1,950,000	July	1887	.25
129	Silver Mg. of L. V.	N. M.	500,000	500,000	1					25,000	June	1888	.05
130	Silverton, g. s. l.	Colo.	2,000,000	200,000	10	*				80,000	Nov.	1886	.02
131	Small Hopes Cons., s.	Colo.	5,000,000	250,000	20	*				3,137,500	Jun.	1889	.10
132	Smuggler, s. l.	Colo.	600,000	60,000	10					66,700	Aug.	1883	.25
133	Spring Valley, g	Cal.	200,000	200,000	1	50,000	Oct.	1886	.25	50,000	Jan	1881	.25
134	Standard, g. s.	Cal.	10,000,000	100,000	100	25,000	Oct.	1884	.25	3,595,000	Jun.	1888	.05
135	Stormont, s	Utah	500,000	500,000	1	*				155,000	Nov	1881	.05
136	St. Joseph, l	Mo.	1,500,000	150,000	10	*				844,000	Dec.	1887	.20
137	Surinam, g	D. G.	3,000,000	600,000	5					105,000	Nov.	1887	.05
138	Swansea, g	Colo.	600,000	60,000	10	*				9,000	Apl.	1888	.02½
139	Syndicate, g	Cal.	10,000,000	100,000	100	38,729	July	1882	.15	48,308	Sept	1885	.10
140	Tamarack, c	Mich.	1,000,000	40,000	25	520,000	Apl.	1885	3.00	840,000	Apl.	1889	5.00
141	Tip Top, s	Ariz.	10,000,000	100,000	100	250,000	Sept	1883	.25	100,000	Nov.	1881	.20
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	*				97,500	Feb.	1884	.20
144	Valencia, m.	N. H.	150,000	1,500	100	*				37,500	Apl.	1886	2.50
145	Viola Lt., s. l.	Idah.	750,000	150,000	5	*				272,500	Oct.	1888	.37½
146	Ward Cons., s. l.	Colo.	2,000,000	200,000	10					10,000	Apl.	1889	.05
147	Yankee Girl	Colo.	2,500,000	250,000	10					1,275,000	July	1887	.10
148	Yellow Jacket, g. s.	Nev.	12,000,000	120,000	100	5,508,000	Mar	1889	.50	2,184,000	Aug	1871	1.50
149	Webb City, l. z.	Mo.	55,000	11,000	5					2,200	Apl.	1889	.10

NON-DIVIDEND-PAYING MINES

	Name and Location of Company.		Capital Stock.	Shares. No.	Shares. Par Value	Assessments. Total levied	Assessments. Date & am't of last.		
1	Agassiz Cons., s. l.	Colo.	$2,500,000	50,000	$50	*			
2	Allouez, c	Mich	2,000,000	80,000	25	$697,000	Mar.	1889	.50
3	Alpha Con., g. s.	Nev.	3,000,000	30,000	100	562,500	Nov.	1888	.87½
4	Alta, s.	Nev.	10,080,000	100,800	100	2,248,800	Sept	1888	.50
5	Amador, g	Cal.	400,000	200,000	2	*			
6	American Flag, s.	Colo	1,250,000	125,000	10	300,000	Jun	1877	.5
7	Anglo-Montana, Lt.	Mon.	600,000	120,000	5				
8	Appalachian, Lt., g.	N. C.	1,500,000	300,000	5				
9	Astoria, g	Cal.	200,000	100,000	2				
10	Barcelona, g	Nev.	5,000,000	200,000	25	*			
11	Bechtel Con., g	Cal.	10,000,000	100,000	100	173,500	Jan.	1888	.10
12	Belmont, s.	Nev.	5,000,000	50,000	100	735,000	Apl.	1886	.10
13	Best & Belcher, g. s	Nev.	10,080,000	100,800	100	2,104,990	Jan.	1889	.25
14	Big Pittsburg, s. l.	Colo.	20,000,000	200,000	100	*			
15	Bi-Metallic, s.	Mon.	5,000,000	200,000	25	*			
16	Black Oak, g	Cal.	3,000,000	300,000	10	*			
17	Boston Con., g	Cal.	10,000,000	100,000	100	170,000	Nov	1883	.25
18	Bremen, s.	N. M	5,000,000	500,000	10	*			
19	Brunswick, g	Cal.	2,000,000	400,000	5	*			
20	Bullion, g. s.	Nev.	10,000,000	100,000	100	4,007,000	Aug.	1888	.50
21	Calaveras, g	Cal.	500,000	500,000	1	*			
22	Carisa, g	Wy.	500,000	100,000	5	*			
23	Carupano, g. s. l. c.	Ven.	200,000	100,000	2	*			
24	Cashier, g. s.	Colo.	500,000	250,000	2	*			
25	Cen. Contin'l, g. s. l.	C. & A	2,000,000	200,000	10	*			
26	Charles Dickens, g. s.	Idah.	1,250,000	250,000	5	*			
27	Cherokee, g	Cal.	1,500,000	150,000	10				
28	Chollar, s.	Nev.	11,200,000	112,000	100	1,428,000	Oct.	1888	.50
29	Cleveland, t.	Dak.	1,000,000	500,000	2	*			
30	Colchis	N. M.	500,000	50,000	1				
31	Commonwealth, s.	Nev.	10,000,000	100,000	100	170,000	Nov	1888	.50
32	Comstock, g. s.	Nev.	10,000,000	100,000	100	30,000	Mar.	1887	.15
33	Con. Imperial, g. s.	Nev.	5,000,000	50,000	100	1,800,000	Nov.	1888	.05
34	Con. Pacific, g	Cal.	6,000,000	60,000	100	183,000	Feb.	1889	.15
35	Cons. Silver, s.	Mo.	2,500,000	250,000	10				
36	Courtlandt	Colo	500,000	50,000	10				
37	Crescent, s. l.	Colo.	3,000,000	300,000	10	*			
38	Crocker, s.	Ariz	10,000,000	100,000	100	115,000	Feb.	1889	.10
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	Dardanelles, g	Cal.	1,000,000	100,000	10				
43	Decatur, s.	Colo.	1,500,000	300,000	5	*			
44	Denver City, s. l	Colo.	5,000,000	500,000	10	*			
45	Denver Gold, g	Colo.	300,000	60,000	5				
46	Durango, g	Colo.	500,000	500,000	1	*			
47	Eastern Dev. Co., Lt.	N. S.	1,500,000	150,000	10	990,000	Mar.	1886	1.00
48	El Cristo, g. s.	U.S.C	1,000,000	500,000	2	*			
49	El Dorado, g	Cal.	1,000,000	250,000	4				
50	El Talento, g	U.S.C	1,000,000	500,000	2				
51	Empire, s.	Utah	10,000,000	100,000	100				
52	Eureka Tunnel, s. l.	Nev.	10,000,000	100,000	100	*			
53	Exchequer	Nev.	10,000,000	100,000	100	515,000	Apl.	1889	.25
54	Found Treasure, g. s.	Nev.	10,000,000	100,000	100	30,500	Apl	1889	.12½
55	Gogebic I. Syn., i	Wis.	5,600,000	200,000	25				
56	Gold Cup, s.	Colo.	500,000	500,000	1	*			
57	Golden Era, s.	Mon.	2,000,000	200,000	10	*			
58	Gold Placer, g	Colo.	5,000,000	200,000	25	229,314	Dec.	1885	.25
59	Gold Rock, g	Cal.	1,000,000	500,000	2	*			
60	Goodshaw, g	Cal.	10,000,000	100,000	100	*			
61	Grand Belt, c	Tex.	12,000,000	120,000	100				
62	Grand Duke	Colo.	800,000	80,000	10				
63	Great Remance, g	U.S.C	1,000,000	500,000	2	*			
64	Gregory-Bobtail, g	Colo.	550,000	550,000	1	*			
65	Gregory Con., g	Mon.	3,000,000	300,000	10				
66	Harlem M. & M. Co, g.	Cal.	1,000,000	200,000	5				
67	Head Cent. & Tr. s. g	Ariz.	10,000,000	100,000	100				
68	Hector, g	Cal.	1,500,000	300,000	5	45,000	Jan.	1889	.15
69	Highland, c	Mich	500,000	25,000	20				
70	Hollywood	Cal.	200,000	100,000	2				
71	Hortense, s.	Colo.	2,000,000	200,000	10				
72	Huron, c	Mich	1,000,000	40,000	25	280,000	May	1887	3.00
73	Iron Gold & Silver, s	N. M.	2,000,000	200,000	10	*			
74	Ironton, i	Wis.	1,000,000	40,000	25				
75	Iroquois, c	Mich	1,250,000	50,000	25				
76	J. D. Reymert	Ariz.	10,000,000	100,000	100	*			
77	Julia Cons., g. s.	Nev.	11,000,000	110,000	100	1,660,000	Jan.	1889	.10
78	Kearsarge, c	Mich	1,250,000	50,000	25	190,000	Oct.	1887	1.00
79	Lacrosse, g	Colo.	1,000,000	100,000	10	*			
80	Lee Basin, s. l.	Colo.	5,000,000	500,000	10	*			
81	Mammoth Bar., g.	Cal.	10,000,000	100,000	100	50,000	Dec.	1880	
82	May Belle, g	Cal.	10,000,000	100,000	100	84,000	Mar.	1884	.15
83	Mayflower Gravel	Cal.	1,000,000	100,000	10	485,000	Jan	1889	.50
84	Medora, g	Dak.	250,000	250,000	1				
85	Mexican, g. s	Nev.	10,000,000	100,000	100	2,750,760	Mar	1889	.2[illegible]
86	Middle Bar g	Cal.	400,000	200,000	2	*			
87	Mike & Starr, s. l.	Colo.	1,000,000	200,000	5	*			
88	Monitor, g	Colo.	100,000	100,000	1	*			
89	Moose Silver, s	Colo.	3,000,000	300,000	10	*			
90	Mutual Mg. & Sm.	W'sh	100,000	100,000	1	*			
91	Native, c	Mich	1,000,000	40,000	25				
92	Neath, g	Colo.	1,000,000	100,000	10				
93	Nevada Queen, s.	Nev	10,000,000	100,000	100	180,000	Dec.	1888	.50
94	New Germany, g	N. S.	100,000	100,000	1	*			
95	New Pittsburg, s. l	Colo.	2,000,000	200,000	10	*			
96	N. Commonw'h, s.	Nev.	10,000,000	100,000	100	30,000	Oct.	1888	.30
97	North Standard, g	Cal.	10,000,000	100,000	100	20,000	Nov		
98	Noonday	Cal.	600,000	60,000	10	208,000	Dec.	1881	.10
99	Oneida Chief, g	Cal.	500,000	125,000	100	*			
100	Oriental & Miller, s.	Nev.	10,000,000	400,000	25				
101	Osceola, g	Nev.	5,000,000	50,000	100	*			
102	Overman, g. s.	Nev.	11,520,000	115,200	100	3,765,800	Jan.	1889	.25
103	Park, s.	Utah	2,000,000	200,000	10				
104	Peer, s.	Ariz.	10,000,000	100,000	100	145,000	Jan.	1889	.10
105	Peerless, s.	Ariz.	10,000,000	100,000	100	370,000	Mar	1889	.25
106	Phoenix	Ariz.	500,000	500,000	100				
107	Phoenix, g. s.	Ark.	5,000,000	200,000	250	*			
108	Phoenix Lead, s. l.	Colo.	100,000	100,000	1	*			
109	Pilgrim, g	Cal.	600,000	300,000	2	*			
110	Potosi, s.	Nev.	11,200,000	112,000	100	1,405,600	Apl.	1889	.50
111	Proustite, s.	Idah	250,000	250,000	1	*			
112	Puritan s. g.	Colo.	1,500,000	150,000	10	*			
113	Quincy	Colo.	3,000,000	300,000	10				
114	Rappahannock, g. s.	Va.	250,000	250,000	1	*			
115	Red Elephant, s.	Colo.	500,000	500,000	1	*			
116	Ropes, g. s.	Mich	2,000,000	80,000	25	103,200	July	1887	.50
117	Russell, g	N. C.	1,500,000	300,000	5				
118	Sampson, g. s. l.	Utah	10,000,000	100,000	100	288,157	July	1888	1.00
119	San Sebastian, g.	San. S	1,600,000	320,000	5	*			
120	Santa Fe, c	N. M.	5,000,000	500,000	10				
121	Santiago, g	U.S.C	400,000	200,000	2	*			
122	Security, s.	Colo.	10,000,000	1,000,000	10				
123	Sheridan	N. M.	2,000,000	200,000	10				
124	Silver Queen, c	Ariz.	5,000,000	200,000	25	*			
125	South Bulwer, g	Cal.	10,000,000	100,000	100	100,000	May	1881	.25
126	South Hite	Cal.	10,000,000	100,000	100	195,000	Jan.	1883	.05
127	South Pacific	Cal.	500,000	100,000	5				
128	Stanislaus, g	Cal.	2,000,000	200,000	10				
129	State Line, s.	Nev.	250,000	250,000	1				
130	St. Kevin, g. s.	Colo.	100,000	100,000	1	*			
131	St. Louis & Mex., s.	Mex.	5,000,000	500,000	10	*			
132	St. Louis & St. Elmo	Colo.	2,000,000	200,000	10				
133	St. L. & St. Felipe, g. s.	Mex.	1,500,000	150,000	10				
134	St L. & Sonora, g. s.	Mex.	1,500,000	150,000	10				
135	St. Louis-Yavapai	Ariz.	3,000,000	300,000	10	*			
136	Sunday Lake, i	Mich	1,250,000	50,000	25				
137	Sullivan Cons g	Dak.	600,000	200,000	3	*			
138	Sutter Creek, g	Cal.	500,000	100,000	5				
139	Sutro Tunnel	Nev.	20,000,000	2,000,000	10				
140	Sylvanite, s	Colo.	5,000,000	500,000	10	*			
141	Taylor-Plumas, g	Cal.	1,000,000	200,000	5	10,000	Feb.	1888	.03
142	Tioga Cons., g	Cal.	10,000,000	100,000	10	295,000	May	1888	.10
143	Tornado Cons. g s.	Nev.	100,000	100,000	1	*			
144	Tortilita, g. s.	Ariz.	1,000,000	100,000	100	*			
145	Tuscarora, s.	Nev.	10,000,000	500,000	2	110,000	Oct.	1881	.1
146	Union Con., g. s.	Nev.	10,000,000	100,000	100	3,235,000	Jan	1889	.25
147	Utah, s.	Nev.	10,000,000	100,000	100	145,000	May	1889	.25
148	Washington, c	Mich	1,000,000	40,000	25				
149	West Granite Mt., s.	Mon.	5,000,000	500,000	10	*			
150	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 $31,3[illegible] in dividends, and the Con Virginia $2[illegible]0,000. ** Previous to the consolidation of the Copper Queen with the Atlanta, Aug., 1885, the CopperQueen had paid $1,350,000 in dividends. ¶ 1,000,000.

NEW YORK MINING STOCKS QUOTATIONS.

DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	May 25.		May 27.		May 28.		May 29.		§May 30.		May 31.		SALES.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Adams, Colo.	.50	.44	....	....	....	....	....	....	....	....	....	....	1,200
Alice, Mont	....	....	....	....	....	....	....	....	....	....	....	....	....
Argenta, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	....
Aspen Mg. & S., Colo	....	....	10 50	....	....	....	....	....	....	....	....	....	70
Belcher, Nev.	....	....	....	....	3 90	....	....	....	....	....	....	....	100
Belle Isle, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	....
Bodie Cons., Cal.	1.85	....	....	....	2.00	1 85	....	....	....	....	1.95	....	800
Breece, Colo	....	....	....	....	....	....	....	....	....	....	....	....	....
Bulwer, Cal	....	....	....	....	....	....	60	....	....	....	....	....	500
Caledonia, Dak.	....	....	....	....	....	....	....	....	....	....	3.75	....	40
Calumet & Hecla	....	....	....	....	....	....	....	....	....	....	....	....	....
Challar, Nev.	....	....	....	....	2.30	....	....	....	....	....	....	....	200
Chrysolite, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	....
Colorado Cent'l, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	....
Cons. Cal. & Va., Nev.	8.00	....	....	....	3 60	....	8 13	....	....	....	....	....	320
Crown Point, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	100
Deadwood, Dak.	....	....	....	....	....	....	1.50	....	....	....	....	....	200
Dunkin, Colo.	1.30	1.25	....	....	....	....	....	....	....	....	....	....	1,100
Eureka Cons., Nev.	....	....	1.50	....	....	....	....	....	....	....	....	....	10
Father de Smet, Dak.	....	....	....	....	....	....	....	....	....	....	....	....	....
Gould & Curry, Nev.	....	....	....	....	....	....	2.35	....	....	....	....	....	100
Grand Prize, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	....
Hale & Norcross, Nev.	....	....	3 90	....	....	....	....	....	....	....	....	....	100
Holyoke, Idaho	....	....	....	....	....	....	....	....	....	....	....	....	....
Homestake, Dak.	....	....	....	....	....	....	9.50	....	....	....	....	....	100
Horn-Silver, Ut.	....	....	1 15	1 00	1.20	....	....	....	....	....	1.20	....	1,800
Iron Hill, Dak.	....	....	30	....	.35	30	.35	....	....	....	.40	....	1,400
Iron Silver, Colo.	....	....	2.10	1.95	2.05	....	2.05	....	....	....	....	....	1,800
Leadville C., Colo.	....	....	....	....	....	....	....	....	....	....	....	....	....
Little Chief, Colo.	....	....	.35	.29	....	....	.30	....	....	....	.34	.32	3,800
Little Pittsburg, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	....
Martin White, Nev.	....	....	....	....	....	....	.65	....	....	....	.75	.70	300
Mono, Cal.	....	....	....	....	1 80	1.75	....	....	....	....	....	....	200
Moulton, Mont.	.32	....	....	....	.37	.36	....	....	....	....	.37	....	400
Mount Diablo, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	200
Navajo, Nev.	.65	....	....	....	....	....	....	....	....	....	....	....	400
North Belle Isle, Nev	1.50	....	....	....	....	....	....	....	....	....	....	....	200
North Star, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	....
Ontario, Ut.	....	....	....	....	....	....	....	....	....	....	....	....	....
Ophir, Nev.	....	....	....	....	4.40	....	....	....	....	....	....	....	200
Plutus, Colo.	.90	....	.85	....	.90	....	.90	....	....	....	.95	....	2,200
Plymouth, Cal.	....	....	....	....	....	....	10 65	....	....	....	10.25	....	200
Quicksilver Pref., Ca	....	....	....	....	....	....	....	....	....	....	....	....	....
" Com., Ca	....	....	....	....	....	....	....	....	....	....	....	....	....
Robinson Cons., Colo.	....	....	....	....	....	....	....	....	....	....	....	....	....
Savage, Nev.	....	....	....	....	2 70	....	....	....	....	....	....	....	100
Sierra Nevada, Nev.	3.80	....	2.75	....	2.70	2.65	....	....	....	....	....	....	500
Silver King, Ariz.	....	....	....	....	.75	....	....	....	....	....	....	....	100
Silver Mg. of L. V.	....	....	....	....	....	....	....	....	....	....	....	....	....
Small Hopes, Colo.	1 30	....	....	....	1.10	....	....	....	....	....	....	....	300
Standard, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	....
Sormont, Utah	....	....	....	....	....	....	....	....	....	....	....	....	....
Yellow Jacket	....	....	....	....	3 95	....	....	....	....	....	....	....	1 0

NON-DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	May 25.		May 27.		May 28.		May 29.		§May 30.		May 31.		SALES.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Alta, Nev	1.70	....	....	....	....	....	....	....	....	....	....	....	100
Amador, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	....
American Flag, Colo	....	....	....	....	....	....	....	....	....	....	....	....	....
Astoria, Cal.	.20	....	.20	....	.20	....	....	....	....	....	....	....	....
Barcelona, Nev.	....	....	....	....	.65	....	....	....	....	....	....	.20	1,200
Best & B'licher, Nev	....	....	....	....	....	....	....	....	....	....	....	65	700
Brunswick, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	....
Buffalo Iron Min'g.	....	....	....	....	....	....	....	....	....	....	....	....	....
Bullion, Nev.	1.30	....	1.20	....	....	....	....	....	1.10	....	....	1.20	500
Cashier, Colo	.06	....	.04	....	.04	....	....	....	.05	....	....	....	700
Castle Creek, Id.	....	....	....	....	....	....	....	....	....	....	....	....	....
Colchis, N. M.	....	....	....	....	....	....	....	....	....	....	....	....	....
Commonw'th, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	....
Con. Imperial, Nev	....	....	....	....	....	....	....	....	....	....	....	....	....
Con. Pacific	....	....	....	....	....	....	....	....	....	....	....	....	....
Denver City, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	....
Eastern Oregon	....	....	....	....	....	....	....	....	....	....	....	....	....
El Cristo, U. S. Col.	....	....	1.30	....	1.40	....	1.60	1.45	....	....	1.60	....	1,900
Excelsior, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	....
Exchequer Nev.	1.15	....	1.10	....	....	....	....	....	....	....	....	....	200
Hector, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	....
Hollywood, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	....
Julia, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	....
Kingst'n & Pemb'ke	....	....	1.38	....	....	....	1.50	1.25	....	....	....	....	4,373
Kossuth, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	....
Lacrosse, Colo.	.10	....	.10	.09	.09	....	.09	....	....	....	.09	....	14,100
Lee Basin, Colo	....	....	....	....	....	....	....	....	....	....	....	....	....
Mexican, Nev.	3.70	....	....	....	3 60	....	....	....	....	....	....	....	....
Middle Bar, Cal.	.29	....	....	....	.29	....	29	.28	....	....	.26	.25	1,900
Monitor, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	....
Mutual Sm. & M. Co	1.45	....	1 45	....	1.45	....	1.45	....	....	....	1 4	....	1,600
NevadaQueen, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	....
N. Standard, Cal	....	....	....	....	....	....	....	....	....	....	....	....	....
Oriental & Mil., Nev.	....	....	....	....	.09	.07	....	....	....	....	.06	....	4,200
Phœnix of Ariz.	.25	....	.25	.20	.25	.22	.23	....	....	....	....	....	7,80
Potosi, Nev	....	....	....	....	2 30	....	....	....	....	....	....	....	100
Proustite, Idaho.	....	....	....	....	....	....	....	....	....	....	....	....	....
Rappahannock, Va	.07	....	.07	....	.07	....	.07	....	....	....	.07	....	4,000
Santiago U. S. C.	....	....	....	....	....	....	....	....	....	....	....	....	....
Scorpion, Ariz.	.90	....	.90	....	....	....	....	....	....	....	.85	....	700
Shoshone, Idaho.	....	....	....	....	.07	.06	.07	....	....	....	....	....	1,700
Silver Cliff, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	....
Silver Cord, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	....
Silver Hill, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	....
Silver Queen	....	....	....	....	....	....	....	....	....	....	....	....	....
Slate Line, 283, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	....
Sullivan Con	....	....	1.25	....	1.25	....	1.25	....	....	....	1.25	....	1,500
Sutro Tunnel, Nev.	....	....	....	....	....	....	.09	....	....	....	....	....	900
" Trust Cert.	....	....	....	....	.51	....	.52	.50	....	....	.51	....	1,900
Tornado, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	....
Union Cons., Nev.	....	....	....	....	....	....	3.6	....	....	....	....	....	200
United Copper.	1.10	....	1 25	1.10	1 05	....	1.10	....	....	....	1 10	....	1,300
Utah, Nev.	1.20	....	....	....	....	....	....	....	....	....	....	....	100

*Ex dividend. †Dealt in at the New York Stock Ex. Unlisted securities. ‡Assessment unpaid. Dividend shares sold, 18,850. Non-dividend shares sold, 51,673. Total New York, 80,523.
§ Decoration Day.

BOSTON MINING STOCK QUOTATIONS.

NAME OF COMPANY.	May 24.		May 25.		May 27.		May 28.		May 29.		May 30.*		SALES.
Atlantic, Mich.	....	....	1 00	....	....	....	....	....	....	....	....	....	5
Bodie, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	....
Bonanza Developm't	....	....	.80	....	....	....	....	....	....	....	....	....	1,200
Bost. & Mont., Copper	32.88	32.50	....	....	....	....	33.00	32 63	33.00	....	....	....	1,475
Breece, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	....
Calumet & Hecla.	....	....	....	....	215½	215	....	....	217	....	....	....	108
Catalpa, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	....
Central, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	....
Chrysolite, Colo	....	....	....	....	....	....	....	....	....	....	....	....	....
Con. Cal. & Va., Nev.	....	....	....	....	....	....	....	....	....	....	....	....	....
Dunkin, Colo.	....	....	....	....	1.25	....	1.25	....	....	....	....	....	200
Enterprise	....	....	....	....	....	....	....	....	....	....	....	....	....
Franklin, Mich.	10.00	....	10.00	....	10.00	....	....	....	....	....	....	....	285
Hale & Norcross, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	....
Honorine, Utah	....	....	....	....	....	....	....	....	....	....	....	....	....
Little Chief, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	....
Little Pittsburg, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	....
Martin White, Nev.	....	....	....	....	....	....	....	....	....	....	....	....	25
Mono, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	....
Napa, Cal.	....	....	....	....	....	....	....	....	3 50	....	....	....	200
Ontario.	....	....	....	....	....	....	....	....	....	....	....	....	....
Osceola, Mich.	9 50	....	....	....	10 00	....	....	....	9.50	....	....	....	126
Pewabic, Mich.	....	....	....	....	....	....	....	....	3.25	....	....	....	100
Quincy, Mich.	53.00	51.00	54.50	....	....	....	....	....	54.00	53.00	....	....	60
Ridge, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	....
Sierra Nev., Nev.	....	....	....	....	....	....	....	....	....	....	....	....	....
Silver King, Ariz.	....	....	....	....	....	....	....	....	....	....	....	....	....
Standard, Cal	....	....	....	....	....	....	....	....	....	....	....	....	....
Tamarack, Mich.	....	....	....	....	....	....	108	107	107	....	....	....	259

NAME OF COMPANY	May 24.		May 25		May 27.		May 28		May 29.		May 30.*		SALES.
Alloues, Mich.	1.00	....	....	....	....	....	....	....	....	....	1 00	....	2 0
Arnold, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	....
Aztec, Mich	....	....	....	....	....	....	....	....	....	....	....	....	....
Brunswick, Cal.	....	....	....	....	....	....	....	....	....	....	....	....	....
Butte & Boston	....	....	....	....	....	....	....	....	....	....	....	....	....
Canada	....	....	....	....	....	....	....	....	....	....	....	....	....
Cashier, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	....
Crescent, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	....
Cusi, N. Mex.	....	....	....	....	....	....	....	....	....	....	....	....	....
Denver City, Colo.	....	....	....	....	....	....	....	....	....	....	....	....	....
El Cristo, W. S. C.	....	....	....	....	....	....	....	....	....	....	....	....	....
Everett.	....	....	....	....	....	....	....	....	....	....	....	....	....
Hanover, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	....
Humboldt, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	....
Hungarian	....	....	....	....	....	....	....	....	....	....	....	....	....
Huron, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	....
Kearsarge, Mich.	....	....	....	....	....	....	....	....	....	....	5.00	....	25
Mesnard, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	....
National, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	....
Native, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	....
Pontiac.	....	....	....	....	....	....	....	....	....	....	....	....	....
Rappahannock, Va	....	....	....	....	....	....	....	....	....	....	....	....	....
Rockland	....	....	....	....	....	....	....	....	....	....	....	....	....
Santa Fe, N. Mex.	.60	....	....	....	.60	....	57½	.55	....	....	....	....	600
Security, Colo	....	....	....	....	....	....	....	....	....	....	....	....	....
Shoshone Idaho.	....	....	....	....	....	....	....	....	....	....	....	....	....
South Side, Mich.	....	....	....	....	....	....	....	....	....	....	....	....	....
St. Louis Cop.	....	....	....	....	....	....	....	....	....	....	....	....	....
Sullivan, Dak.	....	....	....	....	....	....	....	....	....	....	....	....	....

* Decoration Day. Boston: Dividend shares sold, 3,998. Non-dividend shares sold, 825. Total Boston, 4,823.

COAL STOCKS.

NAME OF COMPANY.	Par val. of sh'rs.	May 25.		May 27.		May 28.		May 29.		‡May 30.		May 31.		Sales.
		H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
American Coal.	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Buck Mountain Coal.	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Cameron Coal & Iron Co	....	32⅞	....	....	....	....	....	32⅞	32¾	....	....	....	....	300
Ches. & O. RR.	100	....	....	....	....	....	....	....	....	....	....	21½	20	5,913
Chic. & Ind. Coal RR.	100	....	....	....	....	....	....	....	....	....	....	....	....	....
Do. pref.	100	....	....	....	....	....	....	....	....	....	....	....	....	....
Col. & Hocking Coal	100	....	....	21	....	....	....	....	....	....	....	....	....	100
Col., C. & I.	100	25½	25¼	25½	25	24	....	....	....	....	....	25	24½	800
Consol. Coal.	100	....	....	....	....	....	....	....	....	....	....	....	....	....
Del. & H. C.	100	140⅜	139¾	140¼	139⅝	140⅜	140	140⅝	140¼	....	....	140¼	138⅝	4,141
D., L. & W. RR.	50	143½	142⅛	144⅛	142¾	144	143⅜	143¾	143¼	....	....	143⅝	143	50,100
Hocking Valley.	100	18¼	18⅛	18⅝	17¾	18	16⅞	17¼	16	....	....	16¼	16	5,080
Hunt. & Broad Top	....	....	....	....	....	20	....	19	....	....	....	....	....	315
Do. pref.	....	47⅛	....	....	....	....	....	47¼	....	....	....	....	....	365
Lehigh C. & N.	50	52¾	....	52⅝	....	....	....	52⅞	52¾	....	....	....	....	37
Lehigh & W. B. Coal.	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Lehigh Valley RR.	50	53⅛	....	53⅛	53¾	54	53¾	53⅛	53⅜	....	....	....	....	912
Marshall Con. Coal.	100	....	....	....	....	....	....	....	....	....	....	....	....	....
Mahoning Coal.	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Maryland Coal.	100	....	....	....	....	....	....	....	....	....	....	....	....	....
Morris & Essex.	100	....	....	155	154¾	155	....	156⅛	....	....	....	....	....	550
New Central Coal.	100	....	....	....	....	....	....	....	....	....	....	....	....	....
N. J. C. RR.	50	101⅛	101⅛	101¾	101	....	....	101	100¾	....	....	101	100½	4,978
N. Y. & S. Coal.	100	....	....	....	....	....	....	....	....	....	....	....	....	....
N. Y., Susq. & Western	100	9	....	9¼	9	9¼	9	8¾	....	....	....	8¾	8⅝	2,980
Do. pref.	100	34¼	34⅛	34¾	34⅛	34⅝	34⅛	33¾	....	....	....	34	....	1,932
N. Y. & Perry C. & I.	100	....	....	....	....	....	....	....	....	....	....	....	....	....
Norfolk & Western R.R.	100	....	....	16¼	....	16⅛	16¼	....	....	....	....	....	....	160
Do. pref.	50	53	....	52⅞	52¾	53⅛	53	52⅞	....	....	....	53⅜	....	1,220
Penn. Coal.	50	....	....	....	....	....	....	....	....	....	....	....	....	....
Penn. RR.	50	53⅛	53	53⅛	53	53⅛	....	53⅜	53⅛	....	....	....	....	3,841
Ph. & R. RR.	50	47	46⅜	47¾	46⅞	47⅛	46⅞	47⅞	46½	....	....	47¼	46¼	149,883
Sunday Creek Coal.	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Do. pref.	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Tennessee C. & I. Co.	100	37⅛	....	37⅛	37	37¾	37¼	38⅛	37⅛	....	....	37½	37⅜	4,215
Do. pref.	....	....	....	....	....	....	....	....	....	....	....	101	98	120
Westmoreland Coal.	100	....	....	....	....	....	....	....	....	....	....	....	....	....
Wyoming Valley Coal	....	....	....	....	....	....	....	....	....	....	....	....	....	....

‡Decoration Day.
** Of the sales of this stock, 42,593 were in Philadelphia and 107,290 in New York. Total sales, 237,902.

San Francisco Mining Stock Quotations.

COMPANY	CLOSING QUOTATIONS. May 24.	May 25.	May 27.	May 28.	May 29.	May 30.
Alpha	....	....	....	....	....	....
Alta	1.60	1 60	1.50	....	1.50	....
Belcher	....	....	....	....	....	....
Belle Isle	....	....	....	.30	.30	....
Best & Bel.	3.80	3.85	3.65	3.6	3.65	....
Bodie	1.75	1.80	1.95	2.00	1.95	....
Bulwer	.50	....	.50	.55	.55	....
Challar	2.30	2.35	2.25	2.20	2.30	....
C'm'weal'h	4.40	4.40	4.95	5.25	5.38	....
Con. C. & V	7.88	7.88	7.63	7.50	7.88	....
Con. Pac.	....	....	....	....	....	....
Crown Pt.	3.75	3.70	3.55	3.45	3.80	....
Eureka C.	....	....	....	....	....	....
Gould & C.	2.50	2.45	2.25	2.15	2.25	....
Grd. Prize.	....	....	....	....	....	....
Hale & N.	....	4.10	....	3.90	3.90	....
M. White.	....	....	....	....	....	....
Mexican	3.70	3 65	3.55	3.40	3.60	....
Mono.	1.70	1.70	....	1.85	....	....
Mt. Diablo	....	....	....	....	....	....
Navajo	....	....	.50	....	.60	....
Nev. Queen	....	....	1.30	....	....	....
N. Belle I.	....	1.40	....	1.45	1.60	....
Ophir.	4.35	....	4.35	4.25	5.25	....
Potosi.	....	....	2.20	2.15	2.20	....
Savage	....	....	2 45	2.45	2.65	....
Sierra Nev	....	....	2 65	2.55	2.80	....
Tip Top	....	....	....	....	....	....
Union Con.	3.60	3.60	3.50	3.55	3.50	....
Utah	1.10	1.10	1.10	1.05	1.10	....
Yellow Jkt.	4.00	4.00	3.90	3.85	3.95	....

* Decoration Day.

"the other side of the question" and we present it, without comment, in the interests of a fair discussion. The Treasury Department has sixty days within which to either refund the duties or appeal from the court's decision.

The market for fertilizing material continues rather quiet, with no important variation in prices, and with trade generally characterized as "slow." There seems to be little disposition to shade prices. We get quotations this week as follows: Azotine, $2.55; dried blood (city), low grade, $2.45@$2 50 per unit; Western high grade, $2.50@$2.55 per unit for ground material; tankage, high grade, $25@$26 per ton; low grade, $23@$24 per ton, as to quality. Fish scrap, $25@$26, per ton f.o.b. factory. Sulphate of ammonia, $3.12½@$3.20 per cwt.

Refuse bone-black, guaranteed 70 per cent phosphate, $19.50 per ton. Dissolved bone-black is 95c.@$1 per unit for available phosphoric acid, and acid phosphate 80c. per unit for available phosphoric acid.

Steamed bones, unground, $21@$21.50; ground, $25@$26.

Charleston rock, undried, $5.25 per ton; kiln dried, $6.25 per ton, both f.o.b. vessels at the mines. Charleston rock, ground, $11.00, ex steamer at New York.

Muriate of potash is held at 1·80c. for both spot and futures. Arrivals of 50 tons are reported.

We quote double manure salts quiet at 1·20c. spot and 1·15c. to arrive, on the basis of 48 per cent potash. High grade sulphate of potash, basis 90 per cent, is quoted at 2 32½@2·35c. on the spot.

Kainit.—A little more animation in this article is reported. We continue to quote $9.75 for shipment, according to foreign invoice weight, and $10.50 per ton ex store.

Brimstone is a trifle firmer, although a quiet feeling still prevails. The latest quotations are $19.50@$20 per ton for best unmixed seconds and $19@$19 50 for thirds. Shipments to this port from Sicily during the month of April are reported as 1648 tons.

Nitrate of soda is still weak. Our quotations of last week, 2@2·05c., are continued, but it is understood that spot supplies can be obtained as low as 1·95c.

The Fertilizer Market of the United Kingdom.

[Special Report by Messrs. COUPER, MILLER & Co.]

LONDON, E. C., May 16th.

The position remains much the same as stated in our last circular, though since the Easter holidays business has been quieter. Nitrate of soda is very depressed owing to heavy imports, while phosphates, more particularly those of high test, continue in request even at the advanced prices demanded by sellers.

Mineral Phosphates.—Canadian will come forward in larger volume than ever before, and the higher tests are finding a ready market. Eighty per cent we quote at 1s. ½d.; 75 per cent, 11d., and 70 per cent, 10d. per unit, all with one-fifth of 1d. rise. South Carolina inquired for at 9½d. for U. K., and at a proportionate advance for Continent. The high tests of Somme are very scarce, but business is being done in the lower grades; prices on application. Belgian 40 to 45 per cent, and 45 to 50 per cent is available, but the higher qualities seem to be all bought up. Cambridge coprolites selling in small lots at 45s. 6d. f.o.r. Bedfords sold forward.

Bone Ash, Bones and Meal.—No sales reported afloat, and no demand for bones, though ash is inquired for and will probably be dearer, in harmony with mineral phosphates. Indian bone meal dull at £4 17s. 6d. to £5.

Nitrate of soda down to £8 5s. per ton, and very dull.

Sulphate of ammonia keeps its position well, today's quotation being £11 17s. 6d. to £12. Ammoniacal materials are not affected by nitrate as much as might be expected, the supply of nitrogen from organic matter being so limited. Dried blood from R. Plate sold at Liverpool at 10s. 6d. Fish guano and ground hoofs and horns we are sellers of for prompt and forward.

Muriate of potash is quoted at £7 4s. on 80 per cent.; kainit at 23s. 6d. in bulk, 26s. 6d. in bags, and kieserit at 17s. 3d., all f.o.b. Hamburg, subject to open river navigation, net cash, Strassfurt weights and sampling.

BUILDING MATERIAL MARKET.

NEW YORK, Friday Evening, May 31.

Bricks.—With the close of the fifth month of the year has come a fall in prices which should awaken brick manufacturers to the fact that the market at present is by no means able to take the heavy shipments that have been received during the past few weeks without a severe depression of values. Right along a surplus of from ten to fifteen barges has been carried over each day. In fact, since the heavy receipts of Centennial week, when consumption was inordinately light, the market has never been equally balanced. Prices have declined steadily since then, arrivals have not decreased, and the last old brick has been replaced by an endless supply of the new product. At the close, only a very good brick from the Hudson River yards will command $6 per thousand, and other grades have been sold as low as $5. Until the demand "picks up" a little, which it should very shortly, and of which there are no immediate indications, the outlook cannot be called encouraging for higher prices.

Lime.—Shipments from Rockland have not yet been resumed, and the supply on the market is said to be getting rather low, but as there has been no appreciable increase in consumption, the tone is practically unchanged. Rockland is still held at Association rates. St. John is quoted at 90c., with few transactions.

We are reported arrivals of 1967 barrels on the "Sarah Hunter" and 1085 barrels on the "Frank and Millie," both from St. John.

Cement.—In common with other materials, cement is moving less rapidly than was expected. Domestic is offered at $1@$1.10. Sales of rather inferior quality have been made as low as 95c. We hear of an offering of 500 barrels foreign Portland at $2·40 ex ship, equivalent to $2·50 delivered.

Stone.—The demand as yet has not developed quite as largely as was anticipated, but there are a number of projects in view which afford considerable encouragement to quarrymen. The Joint Association of Stone-cutters and Quarrymen will shortly be asked to list the Chattanooga Marble and Stone Company's freestone. The stone is comparatively a new one and is light blue in color, with a crushing strength of 15,700 pounds per square inch. It is claimed that it is fine grained, free from spots, clay, rust and oil.

Roofing Slates.—One of the largest manufacturers of roofing slate in the country writes us from Vermont as follows: "Last year we sent a large quantity to Melbourne and Sydney, Australia, also to the Bermudas and London, and as far south as Jacksonville, Fla., and New Orleans, and west to San Francisco. Quite a quantity also to the Canadian cities, notwithstanding the duties of nearly one dollar per square. The slate trade for roofing seems as yet to be in its infancy, as each season we see it reaching further away and continually growing. The outlook for this season in purple, sea green, and red seems very bright, with the manufacturers' green a trifle more quiet."

The following quotations are given: No. 1 peerless purple f. o. b. cars Vermont, 14 by 7 to 24 by 16, at $3.75 per square; 12 by 8 at $3; 12 by 7 at $2.75; 12 by 6 at $2.50; mfrs. green, 14 by 7 to 24 by 12, at $3.50; 12-inch, same as purple, variegated or mixed colors, 16 by 8 to 24 by 14, at $2.65; 14-inch at $2.50; 12 by 8 at $2.25; 12 by 7 at $2.15; 12 by 6 at $2; fancy bright red, 18 by 9 to 16 by 8, at $10; 12 by 8 at $8.50; 12 by 7 at $8.25; 12 by 6 at $8; all other sizes at $9.50.

CONTENTS.

MINES AND LANDS FOR SALE.

MINING PROPERTY AND SMELTING WORKS FOR SALE.

The whole of the valuable mining properties and smelting works of the Huntington Copper and Sulphur Company, Limited. By order of the Liquidators, Messrs. Glasier & Sons will sell by auction at the Mart, Tokenhouse Yard, London, on Thursday, July 4th, at two o'clock, in one lot, the above properties, situate in the townships of Bolton and Sutton, County Brome, Quebec. The Huntington Mine is equipped with pumping and hauling engines, air compressor, and receiver, and the best description of rock drills. The mining rights are extensive, and the Waterloo and Magog Railway Branch to East Bolton passes through the works. A new shaft has been sunk 37½ fathoms, and the ground under it has been proved by the 60 fathom level from the original shaft to contain a mass of rich ore assaying 10 per cent of copper. Further particulars may be obtained from the Liquidators, Andrew R. Gray, 15 Maitland street, Edinburgh, and John E. Watson, 149 Hope street, Glasgow; from Messrs. Burton & Co., Solicitors, 37 Lincoln's Inn Fields, London, and the auctioneers, 6 Spring Gardens, London.