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It is said that the Philadelphia banks are fully protected by collateral securities for their loans to the Philadelphia & Reading Railroad.

THE present strike at Leadville, of five thousand miners for an advance in wages from \$3.50 to \$4 per day, is not received with as much rejoicing by stockholders as some previous "strikes."

THE imports of iron have been so great in Philadelphia as to fill all the bonded warehouses and compel some importers to pay the duties upon arrival. It is said, however, that the Collector of the Port will license some additional warehouses. Nearly the same condition of affairs exists at Baltimore.

PROF. J. S. NEWBERRY will soon leave New York, to spend several months in the mining regions of the West, and will, if desired so to do, examine a limited number of mining properties. Until June 1st, his address will be School of Mines, Columbia College, New York. During June, Walker House, Salt Lake City, Utah.

EARLY in the year, contracts for Lake Superior Iron ore were made at \$12 per ton, under the supposition that prices of iron would rule as high or higher than they were at that time. The recent decline in these prices, however, makes it impossible for the furnace companies to work without loss, and it is said that a compromise is likely to be effected on the basis of about \$9 per ton at Cleveland. Already, some of the furnace companies are refusing to take their ore, and the docks are rapidly filling.

THE FUEL OF THE FUTURE.

The ENGINEERING AND MINING JOURNAL long ago applied this title to what is popularly known as "water-gas;" that is, the gaseous product (CO+H) of the decomposition of water in the presence of incandescent carbon. The several practical tests which have been made during the past three or four years have but confirmed the opinion we expressed when its introduction here was still in its infancy, and have justified the title which we then applied to it. We look upon the manufacture of water-gas by the simple and successful Strong system as an event in the industrial arts second in practical importance to none which has preceded it; in fact, it is one of those epoch-making inventions which inaugurate great commercial revolutions, and the importance and far-

reaching consequences of which are rarely appreciated at first, even by the sanguine inventors themselves. "They have builded wiser than they knew," and have inaugurated an industry which is destined to create a veritable revolution in the industrial world.

We give elsewhere a very interesting communication upon this most important subject from the skillful pen of Mr. GEORGE S. DWIGHT, a gentleman who, during the past four years, has devoted his entire time and great abilities to this subject, and who must now be ranked among the very highest practical expert authorities upon the subject of fuel-gas. We were unable to publish this important communication at an earlier day; but shall follow it with other papers on the subject from Mr. DWIGHT, and, we trust, from others who may feel interested in the subject and desire to see it discussed through our columns. An invention or discovery which promises to double the "useful effect" of our fuel is certainly worthy the best attention of our engineers, metallurgists, and manufacturers.

THE EXPORTS OF BRITISH IRON.

MESSRS. W. W. & C. RICHARDSON'S monthly circular gives the following table of exports, extracted from the government returns :

RAILWAY IRON EXPORTED TO	Month ended April 30.			4 Months ended April 30.		
	1878.	1879.	1880.	1878.	1879.	1880.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
United States.....	25	21,067	134	1,184	64,434	
Russia.....	1,885	2,444	170	4,630	2,473	235
Turkey.....	284	179	4	7	746	4
British India.....	5,642	6,998	13,402	44,236	38,086	53,382
British North America.....	4,889	2,293	11,106	5,522	2,920	12,527
Egypt.....	42	241	2,251	1,330	3,262	
Australia.....	9,921	8,463	11,405	29,594	27,698	21,531
Brazil.....	1,922	8,421	2,154	7,242	13,022	8,089
Holland.....	34	62	4	57	1,016	
Spain and Canaries.....	1,159	1,210	1,606	7,520	5,379	4,219
Sweden and Norway.....	7,295	3,203	253	15,273	8,447	531
Chili.....	210	10	38	345	594	366
Denmark.....	704	41	19	1,566	71	41
Peru.....	1,199	6	20	2,038	989	467
Germany.....	8,235	714	.....	23,584	1,227	.....
British Possessions in South Africa.....	766	817	273	5,112	1,909	3,115
Italy.....	937	1,892	841	1,479	6,634	3,794
Other countries.....	1,598	2,333	6,150	5,607	9,010	21,207
Total.....	46,387	33,025	68,809	156,144	118,776	198,220
Total exports from Great Britain of iron and steel to all countries.....	209,580	227,989	455,191	696,086	727,089	1,382,727
Estimated total of iron rails.....	16,028	3,756	16,804	52,214	14,261	49,600
steel rails.....	24,426	25,401	45,287	71,716	77,905	122,242
Total of rails.....	40,454	29,157	62,091	123,930	92,166	171,842
Exports of the following to the United States :						
Pig-iron.....	2,330	4,897	135,724	7,671	14,689	368,247
Old iron for re-manufacture.....	.....	2,077	39,109	569	3,678	138,471
Steel unwrought.....	441	530	7,627	1,628	1,962	18,752
Tin plates.....	8,859	11,293	15,259	32,998	44,226	57,330
Hoops and sheets.....	33	122	5,585	189	357	20,006
Bar, angle, bolt, and rod.....	380	243	9,536	2,006	958	33,363

The exports of railway iron show no particular features excepting the increase to the United States, British North America, Australia, and British India as compared with the April of last year. The total exports of all kinds of iron and steel during April show a very large increase, but deducting the increased shipments to America, very little improvement would be shown. The most noteworthy feature of the above statistics is the enormous shipments of iron to this country, amounting for the month of April to 233,907 tons, or at the rate of over 2,700,000 tons per annum. The shipments for the first four months aggregate 700,603 tons. Were the shipments to this country continued at the same rate they were last month, it would certainly result in closing a large number of our establishments. It is the belief, however, that such can not be the case, and that within a very short time the shipments will be very much reduced.

THE AMERICAN AND FOREIGN IRON TRADE IN 1879.

We have before us the Annual Report of the Secretary (Mr. JAMES M. SWANK) of the American Iron and Steel Association, containing statistics of the American iron trade to January 1st, 1880, and a review of the present condition of the iron industry in foreign countries. The report was presented to the members of the Association May 20th, 1880.

Under the past and present conditions of the iron market, the report is of more than ordinary interest. From it we take the following interesting details: Since the panic of 1873, the year 1876 was the year of least production of iron and steel. Each succeeding year has brought a steady increase in production. For the two years following 1876, however, the prices did not improve. At the close of 1878, there was an improvement, and in the spring of 1879 the railroads of the country simultaneously began to give out orders for materials containing iron and steel. This altered condition of affairs advanced prices, at first slowly, then

stockholders have not a good title to the mines and other property now supposed to be in their possession." *Ans.* The company owns thirteen mines, part of which are covered by United States patents; and, for others, patents have been applied for; and so long a time has elapsed without objection that no adverse claim can be put in. We consider the titles absolute, and know of no rumor to the contrary.

Our offices have been, are, and will be open, while under the present management, to all proper information in which the public is interested; and with this single exception, we have received uniform courtesy at the hands of the gentlemen connected with the press, for which we are much obliged.

MICHAEL SNOW, Vice-President.

ON A RECENT FORMATION OF QUARTZ AND ON SILICIFICATION IN CALIFORNIA.*

By T. Sterry Hunt,†

At the meeting of the American Institute of Mining Engineers in New York, Feb. 19th, 1880, Professor George W. Maynard exhibited a remarkable specimen lately obtained by him from the mines of the Gold Run Hydraulic Company, at Dutch Flat, in California. It consisted of a mass of milky vitreous quartz, in which a recent fracture had disclosed an imbedded fragment, about half an inch in diameter, of the characteristic so-called *blue gravel* of the region, holding in its paste a worn and rounded piece of gold of several grains' weight. Portions of a similar blue gravel adhered closely to certain parts of the mass of quartz. Remarks were made on this specimen by Professors Silliman and Egleston, and by Dr. T. Sterry Hunt, all of whom, after examination of it, were satisfied of the correctness of the opinion expressed by Professor Maynard, that the quartz had made part of a vein formed in the auriferous gravel subsequent to the solidification of the latter.

Dr. Hunt, in commenting upon this occurrence, remarked that it is in accordance with what we already know of the recency of some of the quartz of this region, and cited the microscopic studies of John Arthur Phillips, who has shown that a great part of the siliceous deposit from certain thermal waters of Lake County, California, and from the Steamboat Springs of Washoe County, Nevada, is of the nature of crystalline quartz. Dr. Hunt then gave an account of some observations made by him at the Blue Tent placer mine, in Nevada County, California, in 1877, showing that the process of depositing quartz is there going on in the auriferous gravel of the region, independently of thermal waters, and is connected with the sub-aerial decay of the silicates in the gravel, which is here made up in great part of the *débris* of the crystalline Huronian schists of the region, including much greenstone or diorite-rock. The gravel below the drainage-level is greenish or bluish in color, and contains disseminated pyrites, together with trunks of trees in the condition of lignite, while the feldspar and hornblende of the greenstone are undecayed. Above the drainage-level, however, these silicates are more or less decomposed, the greenstone pebbles becoming earthy in texture, rusty in color, and exfoliating, and the accompanying pyrites oxidized, while the lignite is more or less completely silicified, being sometimes converted into agatized masses, often with drusy cavities lined with quartz-crystals, and at other times only penetrated or injected with siliceous matter which has filled the pores of the exogenous wood, the vegetable tissue of which still remains, often incrusting with crystals of quartz. In still other cases, a slow subsequent decay of the latter, in coniferous woods, has left these siliceous casts in the form of bundles of fibers which have been mistaken for asbestos. The various specimens from this locality illustrate perfectly the theory of silicification of vegetable structures, set forth by the speaker in 1864, based on his own microscopic studies conjoined with those of Göppert and of Dawson.

The silica by which the tissues are thus successively filled and replaced is, according to the speaker, that which is set free in a soluble form in the decay of the silicates in the gravel. The lignite in the undecomposed and unoxidized portions of this which lie below drainage-level is as yet unsilicified. Dr. Hunt acknowledged his obligations to Mr. D. T. Hughes, a member of the Institute of Mining Engineers, in charge of the mine in question, and a skilled and careful observer, who had called his attention to the facts just set forth.

Professor W. C. Kerr stated that his recent and as yet unpublished observations on the fossil woods found in ancient gravels in North Carolina were in accordance with those described by Dr. Hunt.

NEARLY seven hundred men have struck at South Side rolling-mills, at Chicago, Ill.

GOLD DISCOVERY IN NORTH RUSSIA.—Great excitement has been caused throughout the government of Archangel by the discovery of extensive new gold-fields within a short distance of the town of Shenkoorsk. Measures have been taken by the imperial authorities of the far northern province for working the auriferous district this spring, and already applications have reached the powers that be at St. Petersburg from natives of Shenkoorsk for concessions and allotments, the land upon which gold has been discovered being almost exclusively an appanage of certain members of the imperial family. It is stated that the presence of gold in these regions, which are of a peculiarly sandy and sterile character, was first detected some years ago by a prisoner who had contrived to escape from Siberia, and who kept his secret until last year, when he communicated it upon his death-bed to his brother, giving the latter an exact description of the locality in which rich treasures of gold-dust would be found.

* From the *American Journal of Science*, vol. xix., May, 1880.

† This communication, which for want of space was excluded from the April number, had been printed and revised before the writer had seen Professor Joseph Le Conte's paper on the Old River Beds of California, in the March number of this Journal, where (on pages 179-181) he has so well described the auriferous gravels here referred to, and pointed out the true relations between the blue gravel and the upper and altered portions of the deposit. As regards the process of silicification, it is not, I think, necessary to suppose the infiltration of alkaline waters from the overlying volcanic rock, to explain the solution of silica. As elsewhere pointed out by the writer (page 350 of the present volume), the removal of the silica in a soluble form from the silicates which make up a large part of the gravel itself does not require the intervention of alkalis.—T. S. H.

‡ See *Can. Naturalist*, New Series, vol. i., p. 46; also Hunt's *Chem. and Geol. Essays*, p. 286.

A WONDERFUL ADVANCE IN THE FUEL ARTS—STRONG'S WATER-GAS SYSTEM.

By George S. Dwight.

Some two years since, the representatives of the Strong process publicly announced that it was possible to convert the best anthracite coal to a gas which should possess a greater heating value than the fuel from which it was derived, for practical purposes. The objection was at once raised that here was an absurd attempt to extract from a given weight of carbon more calories than it contains. The charge was based upon the undeniable truth that the burning of C to CO implies the expenditure of a proportion of its heat, and hence the new form must represent less calorific energy than the old.

Prompt answer was made, admitting this last fact, but explaining that the objection was theoretic and not practical; that the comparison, must not lie between the potential energy of a fuel and that of its gaseous product (except for certain limited purposes), but between their several *actual* energies. It was shown that the theoretic heating-powers of fuels are determined by delicate laboratory methods, which, however precise and valuable, are utterly unattainable by ordinary practice; that the steel-makers of Sheffield utilize only three per cent of the value so ascertained, consumers in the domestic industries not over ten per cent; while the most economical use of fuel ever attained, namely, in the largest and most perfect blast-furnaces, does not exceed thirty-six per cent. The better result claimed for some boilers was excluded from the comparison, on the apparently just ground that, as the generation of steam is specifically for the driving of engines, the utilization of heat should be judged by the power developed rather than the weight of water evaporated, and that, so judged, the loss is as great as in other fuel applications.

Evidence was then offered that in the combustion of the Strong gas it is possible to utilize within ten to twelve per cent of its full theoretic value, and it remained only to make a comparison of results, which was done substantially in the following manner:

One pound of anthracite possesses a potential energy of 13,500 units of heat, of which the *actual* energy, namely, that realized in practical operation is, as we have already seen, from 3 to 36 per cent thereof, or 405 to 4960 units of heat, according to the manner of its use. The gaseous products of one pound of anthracite, by the Strong system at that time, was 22.33 c. ft. \times weight .04116 = .919 lbs., possessing a potential energy of .919 \times 8798 = 8092 units of heat, and an actual energy of from 88 to 90 per cent thereof, or 7121 to 7290 units.

Assuming for simplicity what is, perhaps, not an unfair assumption, that the labor-cost of conversion is compensated by collateral advantages in the reduced labor of using gas-fuels, the consumer was left to decide the simple question, from which form of fuel he would realize the greater number of heat-units.

This answer on the parts of the advocates of the new system seemed intelligent and correct; at all events, it has never been controverted. Admitting it to be so, we must acknowledge also that the new method of converting carbon in superheated steam, instead of atmospheric air, represents an important advance in the art of combustion.

More recently, additional facts of great interest have been developed by further experience with the Strong furnace more perfectly constructed. The opinion that a great variety of fuels could be utilized by it has been justified by the results, and the gratifying fact established that all yield nearly identical gases, the variation being not in quality but in volume, which is consistently in proportion to the amount of carbon contained in the fuel. The special excellency of this system in rendering available certain cheap and abundant forms of fuel, heretofore deemed inferior and so neglected, such as small coals, culm and peat-dust, and which were employed in the proportion of three pounds to one pound of the better grade, is now ascertained to have a more important significance than the utilization of cheap material, important as that is.

The facts now to be stated will certainly revive the original objection that the method is claiming to get more out of the fuel than it contains. Let the proposition be stated in the clearest possible manner. In the earlier operations, the advantage was claimed to be a practical one, shown, as already explained, by a comparison between the energies actually derived, it being admitted that the potential energies of the fuel and the gas were related as 8092 is to 13,500; that is, that the loss by conversion was 5408 units of heat, equivalent to about 40 per cent of the theoretical calorific value of the fuel.

Now, it is claimed that this percentage of loss has, by greater skill and experience in applying the principle, been steadily reduced, till, in some instances, it almost disappears. In other words, the potential energies of the crude fuels and their gaseous products, as heretofore determined by scientists, are approaching so closely as to indicate that the Strong system will yet develop what is now understood to be the maximum theoretical energy of the fuel in its gas. Here are the facts:

1st. If one pound say of English coke is blown to a red heat upon the grate of the Strong furnace, and the heat of the resulting products of combustion are stored in its regenerating chambers, and used to make and superheat a proper quantum of steam, and this latter is led directly back to the coke, it is ascertained that the largest yield of gas thus far attainable is 25.79 cubic feet.

The potential energy of this gas is as follows:

25.79 cubic feet \times .04116 = 1.06 pounds \times 8798 = 9326 units.

The potential energy of the 1 pound coke is 13550 units.

This, it will be observed, is an improvement upon the earlier results of 1234 units of heat per pound of fuel, and the loss by conversion is so reduced to 31 per cent of the potential energy.

2d. If one pound of English coke is treated as before, but the superheated steam is intercepted before coming in contact with the incandescent coke by a shower of pulverized fuel, it is possible to convert a larger weight in that form, and the yield in gas, proportionally to the purity of the dust-fuel (that is, its percentage of carbon), will be greatly increased. Take peat-powder of the following composition:

Water	17.90
Combustible gas	20.12
Non-combustible gas	20.05
Carbon	28.87
Ash	15.00

99.94

When three pounds of this material are used, the total gas produced is

101.96 cubic feet. Deducting from this volume the 25.79 cubic feet, which, as already shown, are obtainable from the coke, leaves 76.17 cubic feet as derived from the peat, or 25.39 cubic feet of gas for each pound of peat used.

The total gas product possesses the following potential energy: $101.96 \times .04116 = 4.196 \times 8798 = 36,916$ units. The potential energy of the fuels from which it was derived is:

$$\begin{array}{r} 3 \text{ lbs. peat} \times 7854 = 23,562 \\ 1 \text{ " coke} = 13,550 \quad 37,112 \end{array}$$

Showing a loss of potential energy of 196 units of heat only. This is equivalent to a loss of but 49 units of heats for each pound of fuel, as against 4224 where the coke was used alone without dust-carbon.

If the calorific value of the peat is compared directly and separately with that of its own gas, we meet a surprising result, namely:

$$\begin{array}{r} 76.17 \text{ cubic ft.} \times .04116 = 3.135 \times 8798 = 27,581 \text{ units.} \\ 3 \text{ lbs. peat} \times 7854 = 23,562 \text{ "} \end{array}$$

Here the gas stands related to the fuel as 1.17 to 1, equivalent to a gain of 4019 units of heat, or 17 per cent even upon the basis of potential energies! What becomes of the law of loss in conversion? It is not disturbed, but most strikingly illustrated. The seemingly impossible result is not beyond an explanation, and one which appears to vindicate a theory advanced by the advocates of the new system, and yet to be generally admitted, namely, that in the conversion of carbon from the solid to the gaseous state there is a proportion of the energy of the fuel expended in its own gasification, which is productive of no other effect, and which has never entered into the laboratory tables concerning calorific values. In other words, that the ultimate maximum potential energy of carbon is greater than the accepted estimate.

Take, as example, the conversion of the peat just explained. The heat essential to the act was furnished entirely by the coke, exerted through the medium of the steam, and hence the carbon of the peat went directly and without reduction into union with the oxygen of the water to form gas, representing 9193 units of heat per pound. When the analyst sought to determine the calorific energy of the peat, he obtained 7854 units only. The difference of 1339 units, or a considerable proportion thereof, we must infer was expended in the gasification of the crude fuel, which, according to this theory, is not merely a part of combustion, but a pre-requisite to it. This theory is based upon the proposition that only the gases contained in fuel materials are combustible; and that whatever heat was, during the processes of nature, expended in their solidification from their original gaseous form, must be repaid to restore it and render them available in combustion.

Let us for the moment regard heat-units as a merchantable article, like any other commodity of purchase and sale, and, comparing the above figures upon this commercial basis, see in what market or in what shape we can most advantageously buy.

Assume that lump anthracite coal or coke is selling at four dollars per ton of 2240 lbs., and coal-dust or peat at one dollar for the same weight, and that we have one dollar to spend for practical heat-units, that is, for such as we actually get the value of in combustion:

	Units of heat.	Cost per unit in mills.	Per cent of potential energy of fuel utilized.
1st. If we pay one dollar for lump coal, applied as in Sheffield steel-making, we obtain.....	226,800	.00440	3
2d. The same sum, as applied in domestic uses, gives.....	758,000	.00132	10
3d. The same in the most perfect blast-furnace.....	2,716,100	.00036	36
4th. One dollar's worth of lump coal, converted by the Siemens generator, will yield gas representing theoretically.....	2,451,874	.00040	30
[NOTE.—In this last computation, the coal is credited with three times the volume of gas, namely, 150,000 cubic feet per ton, stated by Percy in <i>Metallurgy</i> (page 528). But as recent investigations prove this gas can only be burned with great loss, if used without the regenerative system, and to be entirely inefficient for general distribution, only its theoretic value is given in this table.]			
5th. One dollar, for lump coal or coke, converted to water-gas, as explained, and burned with ten per cent.....	4,706,804	.00021	62
6th. The same sum, expended for one quarter the lump coal or coke and three quarters peat, and converted by Strong's system, as explained, yields, after allowing ten per cent loss.....	10,623,630	.00009	80

Bear in mind that the figures are *not* theoretic (except in Case 4), but show the calorific values *actually obtained in practical combustion*. The prices, of course, represent the material cost of manufacturing at wholesale only, but they indicate that the gas-maker has a margin for liberal profit without being unreasonable. Naturally the gas purchaser will always determine for himself, as in any other transaction, whether the price charged is in excess of the advantages gained, into which calculation many collaterals, as to the convenience, comfort, and reduced labor attending the use of gas-fuels, must enter. And he will always have the alternative of a return to crude fuels, if the gas manufacturer becomes exorbitant in his demands.

The table represents both clearly and accurately the advantage possessed by the Strong principle, not only as compared with general methods of employing crude fuels directly, but also shows at a glance how far it stands in advance of all preceding gas methods, including even those that rely upon the conversion of carbon in an atmosphere of steam. This last remark may be emphasized in passing, by the statement that careful investigation indicates that, where lump fuel is exclusively used in the decomposition of the steam, as described earlier in this paper, little or no further increase of heat-units—that is, no greater volume of gas—will be probable. A slight gain may result from a reduction of loss by radiation and a further utilization of the sensible heat of the products of the gas-furnace; but beyond these trivial gains, the process can not apparently advance.

Not so, however, when the principle is applied to the conversion of

carbon-dust. The principle itself is so perfect as to admit of no improvement, and yet an increasing experience in its management may still further develop its efficiency. It is manifest, from what has been stated, that the conversion of a small additional proportion or weight of dust beyond that already successfully used will enable this system to deliver gas representing the full potential value of the fuels as at present estimated. This is a daring promise to make; but we may be trustful of a method which has hitherto kept its pledges so well, and predict a not distant fulfillment of this latest one. The application of the steam principle has had an almost immeasurable influence upon the industries of civilization. The Strong system of conversion is certainly no less important than that, and may, indeed, be said to be the development of that principle to a yet grander plan of beneficent usefulness.

STOCKHOLM, Feb. 23.

SIDE-LINES AND END-LINES—IMPORTANT MINING DECISION.

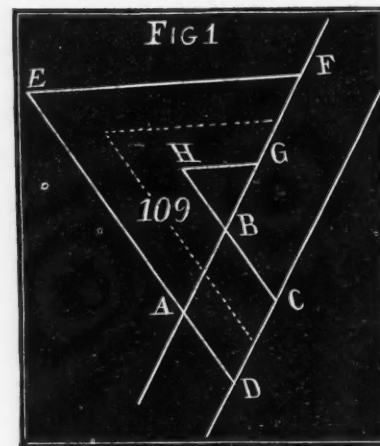
The following communication has been received by the Surveyor-General of Colorado from the Commissioner of the General Land Office.

DEPARTMENT OF THE INTERIOR, GENERAL LAND OFFICE, }
WASHINGTON, D. C., May 4, 1880. }

ALBERT JOHNSON, *United States Surveyor-General, Denver, Colorado:*

SIR: Referring to your letter of February 4th, 1880, submitting tracings of two surveys, which you say appear to come directly under the ruling of the office in the case of the Helvetia lode, lot No. 212, dated March 6th, 1879, and asking for instructions with regard to approving the same as shown by the tracings, is at hand and has been considered.

Regarding the location of lode claims, Section 2322 of the United States



Revised Statutes reads as follows: "A mining claim located after the 10th day of May, 1872, whether located by one or more persons, may equal, but shall not exceed, one thousand five hundred feet in length along the vein or lode; but no location of a mining claim shall be made until the discovery of the vein within the limits of the claim located. No claim shall extend more than three hundred feet on each side of the middle of the vein at the surface." * * * "The end-lines of each claim shall be parallel to each other."

The location contemplated by the law above quoted must have been essentially a parallelogram.

The wording of the law evidently presupposes such a figure, or it would not have been made to read fifteen hundred feet in length by three hundred in width, on each side of the middle of the vein at the surface. Had the complicated figures shown in your tracings been thought possible or likely to occur, the law would have been differently framed, in order to meet just such contingencies; for, as I shall endeavor to show, it is only when certain peculiar conditions exist that such a location can be made to satisfy the intent of the mining act.

"Locators'" rights of possession and enjoyment are defined by section 2322 of the United States Revised Statutes to be as follows, to wit: "Locators shall have the exclusive right of possession and enjoyment of all the surface included within the lines of their locations, and of all veins, lodes, and ledges throughout their entire depth, the top or apex of which lies inside all such surface-lines extended downward vertically, although such veins, lodes, or ledges may so far depart from a perpendicular in their course downward as to extend outside the vertical side-lines of such surface locations.

"But their right of possession to such outside parts of such veins or ledges shall be confined to such portions thereof as lie between vertical planes drawn downward, as above described, through the end-lines of their locations, so continued in their own direction that such planes will intersect such exterior parts of such veins or ledges. And nothing in this section shall authorize the locator or possessor of a vein or lode which extends in its downward course beyond the vertical line of his claim to enter upon the surface of a claim owned or possessed by another."

The intent of the above-quoted section of the Revised Statutes was held by the Supreme Court, in its decision in the case of the Flagstaff Silver Mining Company, of Utah, vs. Helen Tarbet (*Copp's Land Owner*, June, 1879, page 42), to be as follows: "That mining locations on lodes or veins shall be made thereon lengthwise in the general direction of such veins or lodes on the surface of the earth where they are discovered, and that the end-lines are to cross the lode and extend vertically downward, and that the right to follow the dip outside the side-lines is based upon the hypothesis that the direction of those lines corresponds substantially with the course of the vein or lode at its apex on or near the surface.

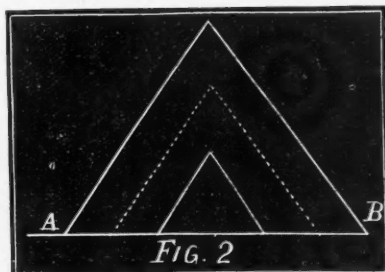
"It was not the intent of the law to allow a person to make his location crosswise of a vein so that the side-lines shall cross it, and thereby give him the right to follow the strike of the vein outside of his side-lines.

That would subvert the whole system sought to be established by the law. As the law stands, we think that the right to follow the dip of the vein is bounded by the end-lines of the claim properly so-called, which lines are those which are crosswise of the general course of the vein on the surface. The Spanish mining law confined the owner of a mine to perpendicular lines on every side, but gave greater or less width according to the dip of the vein; but our laws have endeavored to establish a rule by which each claim shall be so many feet of the vein lengthwise of its course to any depth below the surface, although literally its inclination may carry it ever so far from a perpendicular."

Such a location as the one shown in survey No. 709 was evidently never contemplated by the law as above quoted, which clearly means that the claim must be contained between parallel end-lines indefinitely extended; for the right of possession to the outside parts of such veins or ledges as may extend in their downward course outside the vertical lines of the surface location is based upon the supposition that such right of possession is limited and confined by the vertical planes drawn downward through the parallel end-lines of the surface location extended indefinitely.

By referring to the diagram of survey No. 709, it will be seen that only the part designated A, B, C, D is contained between parallel end-lines indefinitely extended. That portion of the claim designated A, E, F not being limited, as prescribed by law, between parallel end-lines, the claimant would be restricted, were such a location allowable, to perpendicular side-lines. But it is not contemplated by the law that he shall be so restricted, and therefore a location which on its surface defeats the intent of the law is necessarily illegal.

A location made as shown in the annexed figure would for the same



reason be illegal. The end-lines extended would form one and the same line, and the vertical planes of the end-lines would be identical—contingencies never contemplated by the law and not applicable under its conditions.

Attention is called in your letter to dotted lines drawn through the middle of each of the surveys Nos. 462 and 709, marked "center of vein," and the deputy says:

"The discovery-shaft is found in the former to be about 95 feet south-erly from the center of the vein, and the center of the vein is in the middle, between the side-lines of said survey, and that the dotted lines indicate the center of the lode." In the very nature of the thing, a lode or vein in its unworked and undeveloped stage can not be known and surveyed so as to plat it and make a diagram of it. No developments or workings are shown upon the lines indicated in the tracings in the center lines of the veins, although in both instances shafts are shown at a considerable distance therefrom. Particularly is this the case with survey No. 462.

In neither case, are any workings indicated or proof offered to show that the lodes or veins make the extraordinary departure from a straight course shown upon the tracings; a line is simply drawn through the center of the claim, and called the center of the vein.

This assumption that the middle of the vein is in an explored position is unwarrantable. The middle of the vein must be ascertained by actual exploration and development, or the discovery-shaft must, for executive purposes, be taken as the middle of the vein, and the lateral measurements be made therefrom.

Concerning the diagrams forwarded by you and not hereinbefore specifically explained, I may best remark that the statute contemplates a lode location to be substantially a parallelogram, and that the several calls

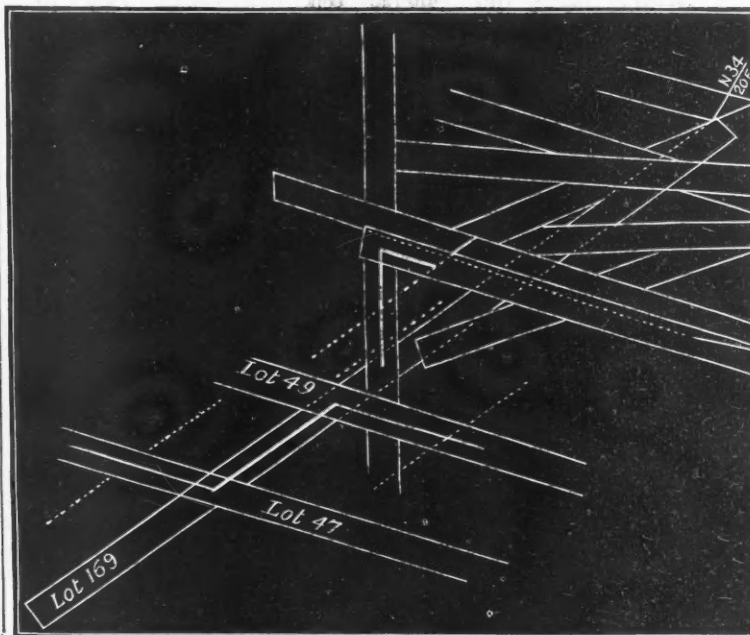
of the statute, the grant of rights, the limitation of rights, and the theory of the law all point to this conclusion.

I do not intend to be understood as construing the law as requiring a perfect parallelogram; but it must not vary largely from that figure; for such material variance involves conditions which, in a greater or less degree, according to circumstances which, at the date of location and patent even, are most frequently unknown quantities, conflict with the theory of the law, render uncertain the property-rights of adjoining owners, or owners in the vicinity, and, in a patent which should convey the property in that form which will at least render an application of the law to its subsequent use possible, result in rich and apt material for litigation.

A portion of a side-line can not properly be made an end-line. Lodes and veins do not separately run in the tortuous manner represented in the diagrams of surveys numbered 462, 709, and 212.

If the topography of the country does not permit a claimant to take under the law all he desires, yet he must abide by the law.

The law contemplates that he shall make his location on one vein; and while certain rights attach to other veins whose top or apex is found



within his surface-boundaries, yet but one vein can be made the basis of his location. It is from the middle of that vein that his lateral measurements must be made.

The surveys Nos. 462, 709, and 212 indicate the probability that they were made with the intent to embrace therein different and distinct lodes. An examination of the attached plat of the Jay lode lot No. 169, Boulder County, Colorado, indicates the ease with which surveys such as you submit could include several separate and distinct veins, and as a geological proposition it is extremely improbable that the surveys you forward can be defended.

I can not authorize their approval in their present form; and before giving them your approval, you will require such modification as will bring them within the proper form as above indicated.

Very respectfully,
J. A. WILLIAMSON, Commissioner.

WORK has been stopped at Kensington, Pa., rolling-mills, awaiting the adjustment of a basis of wages.

PETROLEUM EXPORTS.

The following advance statement from the Bureau of Statistics at Washington shows the exports of petroleum and petroleum products from the United States, during the month of March, 1880, and during the nine months ended the same, as compared with similar exports during the corresponding periods of the preceding fiscal year:

CUSTOMS-DISTRICTS.	CRUDE.		NAPHTHAS.		ILLUMINATING.		LUBRICATING.		RESIDUUM.		TOTAL.	
	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars.	Gallons.	Dollars.
Boston.....					239,762	33,162	24,382	7,079			264,144	40,241
New York.....	1,665,399	117,730	780,548	47,516	15,330,656	1,503,377	1,170,999	208,242	409,374	22,513	19,356,976	1,899,378
Philadelphia.....	121,494	7,322			3,842,012	302,930	2,471	1,033			3,965,977	311,285
Baltimore.....					1,071,000	88,062	78,454	15,391			1,149,454	103,453
San Francisco.....			1,000	430	38,850	6,972	120	138			39,970	7,540
Richmond.....	157,927	11,050									157,927	11,050
All other districts.....	200	50	1,280	192	23,466	4,963	184	62	1,344	128	26,474	5,395
Total March, 1880.....	1,945,020	136,152	782,828	48,138	20,545,746	1,939,466	1,276,610	231,945	410,718	22,641	24,960,922	2,378,342
Total March, 1879.....	3,597,860	286,882	704,885	62,868	15,578,217	1,635,443	275,818	64,473	144,102	10,160	20,300,882	2,059,826
Total nine months ended March 31st, 1880.....	23,234,490	1,553,823	16,199,449	1,046,542	315,096,021	26,946,935	4,127,215	807,461	4,164,468	260,495	332,821,643	33,615,256
Total nine months ended March 31st, 1879.....	19,995,013	1,681,469	12,532,768	1,057,544	249,677,781	28,077,508	1,753,246	478,561	2,423,190	153,679	286,281,998	31,448,961

PROGRESS IN SCIENCE AND THE ARTS.

Technology.

Technical Brevities.—A patent suit that is remarkable for the heavy damages awarded has just been decided by Judge Wheeler, of the United States Court, Rutland, Vt. The case was that of Riley & Burdett against Estey & Co., organ-builders, of Brattleboro'. The action was brought some time ago, to recover for the alleged infringement of a patent in the manufacture of organs. Judge Wheeler decided for the plaintiff, and awarded judgment for \$161,011.71. The case will be appealed to the Supreme Court; but so far as it has gone, it would appear to teach the lesson that the infringement of patent-rights is expensive.—*Alu-ni* is the euphonic name given to a new alloy of nickel and aluminium, for the composition of which United States letters-patent have lately been granted. It is intended to be used in place of nickel anodes in electroplating. It is said to deposit, under the influence of the electrical current, a white, smooth surface, susceptible of taking a high polish, and giving a soft, silvery appearance.—Commenting on the large importations of foreign iron, which put a summary end to the late "boom," the *Bulletin* draws the editorial conclusion that "they [these importations] should teach our manufacturers that the English policy of piling up iron in bad times, to be prepared for good times, is a safe policy to follow."—A careful investigation into the cause of the fire which lately broke out on the steamship Mosel is reported to have definitely established the fact that it originated from the *spontaneous combustion of silk* that formed part of the cargo. The silk had been heavily weighted with iron and astringents.—Mr. Frank Fossett, who is very familiar with the resources and productions of Colorado, asserts his belief that this State will surpass all the other mining regions of the country during the present year in the *production of the precious metals*. The present rate of production he estimates at over \$2,000,000 per month, and steadily increasing; on which basis he holds that the product of 1880 will be between \$25,000,000 and \$30,000,000.—Prof. Forbes has devised an ingenious instrument for *detecting fire-damp* and determining the quantity of light carbureted hydrogen in an atmosphere. The instrument is called the "damoscope." It consists of a tuning-fork placed over the mouth of a straight telescopic tube of brass. It is taken to the suspected spot, the fork sounded, and the telescopic tube adjusted by means of a screw until it emits its maximum sound, when the index is read off. It will detect, it is said, one half per cent of gas.—The Yale College corporation has established a *horological bureau*, in connection with the Winchester Observatory, to encourage improvement in watch-making and in the construction of more refined apparatus for the measurement of time.—The International Fishery Exhibition which was opened in Berlin on April 20th has, from all published accounts, proved to be a decided success. The part taken by the United States government, it is gratifying to note, was most creditable, the admission being freely made by English and German reports that the exhibits of this country form in every respect the most remarkable collection in the Exhibition. The floating hatchery, the Fish-Hawk, has received especial praise.—Mr. Cyrus W. Field has prepared a map showing the telegraphic lines already constructed and in operation, and those which yet remain to be established to complete the *telegraphic girdle about the world*. The missing link is a section from some point on the Pacific coast to the Sandwich Islands, and thence to China and Japan. For this last, Mr. Field is understood to have secured important governmental concessions in connection with projected lines.—The *diaphote* is the name given to an invention which, it is affirmed, will transmit light as the telephone transmits sound. It is only mysteriously talked about, and may or may not prove to be practicable. It is said to depend upon certain peculiar properties of selenium in respect to its action on light. Mr. Bell, its inventor, is said to have deposited with the Smithsonian Institution a sealed package containing the results of his first experiments with it.

The Siemens Regenerative Gas-Furnace, it appears, is public property in Prussia, the application for a patent some years ago having been refused. It has come out now that the reason for this action on the part of the officials was based on the alleged resemblance between that important invention and a certain warming apparatus found at a castle at Marienburg, in Prussia, which is supposed to date from the fourteenth century. In this ancient heater, a fire was made in the lower part of the furnace, and the combustion products made to pass through the apertures between a series of stones, placed in the upper division, before escaping into the flues. When the stones had become thoroughly heated, the fire was extinguished and the flue closed by a damper. The apertures in the floors of the apartments to be warmed were opened and a current of air, warmed by contact with the heated stones, found its way into the rooms through the openings aforesaid. Some of these furnaces were tried a few years ago, and, where they had not been tampered with, they are said to have worked very effectively. As a sample of official "cussedness," this case, which we give on the authority of the *American Manufacturer*, is "equaled by few and excelled by none."

American Exhibits at Sydney.—Mr. Morris, one of the U. S. Commissioners to the International Exhibition at Sydney, has lately sent a dispatch to the Secretary of State containing advices of interest to our manufacturers. He reports that in all cases where those who are recognized at home as our representative manufacturers have sent their products to the Exhibition, they have either excelled all competitors from other countries, or have stood in the front rank. Our manufacturers have been treated without prejudice, and have received more than their share of honors.

High Railway Speeds.—At the last meeting of the Franklin Institute, Mr. W. B. Levan gave some interesting remarks upon this subject apropos of the recent trials of a new Baldwin locomotive, built for the Philadelphia & Reading Railroad Company, and intended to be used on the New York branch to make the trip between New York and Philadelphia in 90 minutes, or at the rate of a mile a minute. To accomplish this, it was pointed out the engine must be capable of being driven at a much higher rate of speed than this over parts of the road, to make up for the time lost in crossing bridges and passing through towns where slower speed is necessary; and to accomplish this safely, the road-bed must be in perfect

condition, and some changes in the form of the engine must be made. Respecting the engine above named, the following details were given: It has a single pair of driving-wheels, 6½ feet in diameter. The boiler has 1400 square feet of heating-surface, and about 56 square feet of grate-surface. Diameter of cylinder, 18 inches; length of stroke, 24 inches; diameter of driving-wheel, 78 inches; wheel-base, 21 feet 1 inch; distance from center of driving-wheel to center of trailing-wheel, 8 feet. The boiler is of ¼ inch steel, and is 52 inches in diameter. It contains 198 tubes, 2 inches in diameter, and 12 feet 2¼ inches long. The fire-box is 96½×84 inches. Capacity of tender, 3800 gallons; and weight, when filled with water and coal, 70,000 lbs. The engine weighs 85,000 lbs., and the weight is so disposed that by an alteration of fulcrum-points additional weight can be thrown on the drivers in starting. At a trial-trip, on May 14th, this engine was attached to four cars, each weighing about 42,000 lbs., making the total weight of the train about 161 tons. The run was made at rates ranging from 27 miles per hour between Ninth and Green streets (Philadelphia) and Wayne Station, to 63 miles an hour between Trenton Junction and Bound Brook. The time between the Philadelphia and Jersey City depots (a distance of 89.4 miles) was made in 98 minutes, being at the average rate of 54¾ miles an hour. The return run was made in 100 minutes. On a former trip, the engine developed a speed of 79 miles an hour. In these trials, the engine consumed 35 gallons, or about 300 lbs. of water per minute.

Mr. A. R. Roberts, at the last meeting of the Engineers' Club, made some references to this engine's performances—alluding to a trial-trip in which the run from Philadelphia to Jersey City was made in 97 minutes, with four cars; returning in 96 minutes, with five cars. No heating of the machinery was noticed.

Mr. Levan, in commenting upon the tendency to higher railway speeds, prophesied that within five years the distance between New York and Philadelphia would be traversed within an hour. He added the interesting statement that the average speed on the English railways is 46 miles an hour; on the French roads, 37½; on the German, 40; and on American, 37. On the English roads, 6½-foot driving-wheels are quite common; and some of the fast lines have 8 and 9 foot wheels, and one line has 10-foot wheels.

The Dissociation of the Metalloid Elements.—Reasoning from the absence of the so-called metalloid elements in the solar spectrum, Pictet concludes that the surface of the sun is too hot for metalloids to exist there; or, as he infers, the temperature of the sun is higher than the temperature of the dissociation-points of the metalloids. To verify this reference, Pictet proposes the following ingenious experimental method. He reasons that, as the rays of the sun traverse space without any diminution in their frequency or wave-length, it follows that the sun's rays are able to raise to a temperature equal to that of the sun's surface any body on the surface of the earth on which they can be concentrated, provided only such a body could be prevented from losing heat by conduction or radiation. If it is true, therefore, that all the metalloids (except oxygen?) are dissociated in the sun, Pictet holds that thermal equilibrium, if thus experimentally obtained, ought to effect their dissociation here. He proposes, therefore, to construct a huge parabolic mirror, in the focus of which the sun's rays could be concentrated upon the various metalloids which it is sought to decompose. As we do not know how much heat will be required to break up the hitherto undecomposed metalloids, it will be impossible to calculate what the size of the mirror must be. On certain assumptions, however, Pictet considers that to dissociate one gram of bromine per minute will require that the solar rays should be concentrated by a mirror of at least thirty-five square meters measured normally to the rays, or of about ten meters aperture. At the focus he proposes to place a solar chamber or crucible, constructed of lime, zirconia, or other refractory substances, into which the vapors to be operated on would be led. To avoid loss of heat, this chamber could be kept heated from without by a number of oxyhydrogen flames. The whole apparatus would not exceed two tons in weight. To catch the dissociated substances, and prevent their immediate reunion, he has conceived the ingenious plan of aspirating the contents of the crucible through metal tubes containing wire-gauze septa, and cooled from without to a temperature of say fifty degrees below zero, by intense artificial refrigeration. By this rapid cooling, he hopes to be able to prevent a notable percentage of the products of dissociation from re-combining again as fast as they were liberated from each other in the crucible.

M. Pictet's suggestion is highly original, but it would be impossible to predict the result of the experiment he proposes. A complete account of Pictet's arguments and suggestions will be found in a late issue of *London Nature*.

THE strike at the Omaha Smelter has ended with a compromise.

MESSERS. TOTEN & Co., of Pittsburg, the owners and manufacturers of Forster's Patent Rock and Iron Ore Breaker and Combined Crusher and Pulverizer, claim that it requires but one third the power to run it, and less than one half the expense to keep it in repair, and that it will break rocks or iron ore to any required size, and can be so adjusted as to pulverize to any required fineness. It has been in use at the Etna Iron Company's works, Bridgeport, O., for the past six years.

MAINE MINING NOTES.

Special Correspondence of the Engineering and Mining Journal.

Since my last letter, Mr. John H. Moyle has arrived here from Copper Falls, Mich., and taken charge of the Blue Hill mine. The Worthington pump and Burleigh drill are now at work. They are now getting gallow-frame, etc., in readiness for hoisting from shaft No. 2 (incline), which has not been worked for some time. Mr. Cutter, the late superintendent, is now in California, as superintendent of the Lyon Gravel Mining Company.

The Atlantic cross-cut has struck some very good ore, and there seems nothing to prevent this becoming one of the leading mines of the district.

The Douglass mill is now nearly ready for setting the most of the ma-

chinery, which, I hear, is at Blue Hill Falls, some three miles from here. An immense pile of ore is awaiting treatment.

The shaft at the Granger mine is down between 20 and 25 feet, and a night-shift is to be put on the coming week.

The incline at the Favorite is down about 20 feet, and sinking has been suspended for a few days past for the purpose of cribbing.

BLUE HILL, ME., May 22.

GENERAL MINING NEWS.

ARIZONA.

GLOBE DISTRICT.

From the *Silver Belt* we extract as follows:

Ten thousand pounds of Townsend mill machinery were delivered on the 6th. Sinking for water at mill-site was commenced, and already forty feet have been attained. The Golden Eagle mill just below, and on the same draught, have more water than can be drawn by a steam pump. The completion of these mills will very greatly increase the shipments of bullion from Globe.

Below, we give the number of stamps ready and in course of erection in Globe District: Completed: Miami, Stamps, 10; Durvea, 10; Stonewall, 5; Isabella, 5. Building: Baldwin, 10; Nugget, 10; Golden Eagle, 10; Irene, 10; Silver Era, 10; Townsend, 5. Total, 85.

MOHAVE COUNTY.

A correspondent of the *Arizona Miner*, writing from this county under date of the 5th inst., has the following:

As yet there has been no deep mining in this district; there are but few shafts more than 150 feet deep; but in every case where shafts have been sunk below water-level, rich ores have been found.

The Keystone mine had rich chloride ore at outcrop; at 75 feet, it became base and low-grade; at 100 feet, rich antimonial silver ore was struck. Very fine ore is now extracting that shows native and ruby silver. The same may be said of the Lone Star mine, the rich ores of which can now be seen glittering in the mine on the 200-foot level.

In the bottom of the Fontenoy mine (the property of the Mohave Mining and Milling Company), now about 140 feet deep, they have richer and better ore than ever. The Indian Boy is another mine in which a 100-foot shaft has developed high-grade ore.

TOMBSTONE DISTRICT.

From the *Nugget* of the 13th inst., we condense as follows:

The shaft on the Junetta is now disclosing a wealth that is astonishing. The vein of rich ore is very large and wide, and in it is a pay-chute of ore that is a perfect mass of pure horn-silver, and kindred ores with native silver. An assay from some of this ore gave over \$27,500 in silver, or equivalent of about 84 per cent.

The Vizina continues to improve, the vein obtaining a more vertical pitch, and continues large and strong. It has now a well-organized force of men at work, and is sinking a double-compartment shaft, from which the ore in the vein will be extracted by cuts, drifts, and levels.

In the Merrimac, the shaft is down 45 feet, and has a 4-foot vein that samples \$372.28 per ton. This was made from a ten-pound sample of the whole ore-body. It also contains gray carbonates of lead, along with gray chlorides.

The True Blue and Gordon mines are worked under the same management, and employ a force of about 50 men. They are sinking a double-compartment working-shaft; have obtained the depth, and are now in the 100-foot level, which has already obtained a length of 60 feet one way and 40 feet the other. Both these mines improve as they go down, and continue their supply of horn-silver. They were both knife-blade veins at the apex, but have grown to four feet in width, and are improving with depth.

The Graveyard No. 2 is looking finely, having a rich vein the same as the Graveyard No. 1.

The Bradshaw and Lily are worked with splendid results. From a depth of over 40 feet, they are extracting some exceedingly rich gray chlorides and carbonates.

The Emerald mine has not been sold, the bond having expired by lapse of time. It was bonded for \$100,000.

The Omeo mine is about to be sold to Eastern parties.

Outside of Tombstone proper, we have good reports. In the gold camp, the Tioga has long maintained a supremacy as "chief," but now comes the Empire. In this mine, the developments, during the past week, have disclosed a large vein of rich gold.

A country in the Galiuro Mountains is just now having a stampede, as rich ores and large veins are found there.

TOMBSTONE M. & M. Co.—From the *Citizen* of the 15th we learn that this company is rapidly developing its property, and with satisfactory results. The No. 5 east drift from the Goodenough shaft No. 2 is in 70 feet, the face in rich ore. The No. 2 shaft has reached a depth of 60 feet, the bottom also in rich ore.

The 113-foot level in the Tough Nut has been connected with the main shaft. The track has been laid, and the ore from this immense body is now carrying to the hoist in cars. The ore from the south shaft workings is taken out through No. 5 tunnel.

GENERAL NOTES.

The Independence mine, in Harshaw, has been bonded for \$40,000.

Rich copper discoveries are reported on the south slope of the Huacheraca Mountains. The ledge is traceable over two miles, showing four feet and upward of high-grade copper ore, with considerable quantities of native metal.

The old San Felix mine, in Northwestern Sonora, is reopening, and will be operated by Chicago capitalists. A ten-stamp mill, with power for sixty stamps, is ready for shipment from San Francisco.

CALIFORNIA.

THE BODIE DISTRICT.

We condense from the *Free Press* of 18th inst.:

BELVIDERE.—On the 500-foot level, the south drift is in 51 feet from the shaft. The ledge is mixed with waste rock, but still carrying some good ore on the east wall.

BLACK HAWK.—On the 700-foot level, the cross cut east has been run 220 feet; face in good working-ground and making fair progress. The west cross-cut is now in 120 feet, making a total of cross-cutting on that level of 340 feet.

BOOKER.—The east drift, 500-foot level, is pushed with vigor toward the main ledge, 24 feet having been made during the past week. The ten-inch pumps handle the water with ease, running at six strokes per minute.

BOSTON CONSOLIDATED.—The cross-out in the 300-foot level east from the station has been advanced 9 feet; face in favorable working ground. They have also followed a stringer of quartz varying from 4 to 8 inches in width, south 19 feet, giving assays from \$10.50 to ore of fair milling quality.

BULWER CONS.—The north drift from the tunnel on the Ralston vein is in 215 feet; progress since last report 12 feet. The ledge at this point is 3 feet wide, of good ore. The Stonewall south drift, 380-foot level, has been advanced during the week 11 feet; total length, 64 feet. The vein is 2½ feet wide and looks well. The south drift from the Bodie west cross-cut, 430-foot level, is in 163 feet, having been run since last report 10 feet; showing a ledge in the face of the drift 2 feet wide. The upraise from this drift is up 120 feet. The vein is 3 feet wide, with no change to report in its appearance. The ledge in the Stonewall stope is 2 feet wide, of good ore. In the Ralston stope, the ledge is 3½ feet wide, of good milling-ore.

MONO.—The pumps were started up on the 13th, since which time the water in

the shaft has been reduced 60 feet, the pumps throwing a steady stream of 40 inches. There are yet nine feet of water at the bottom of the 575-foot level station, which, with the east cross-cut, 104 feet in length, and a drift on the ledge north of 16 feet, all nine feet in height and six feet in width, the rock full of seams, open and porous, leaves a large body of water yet to be raised before work on the 575-foot level can be commenced.

STANDARD CONSOLIDATED.—The north drift, from the east cross-cut, 700-foot level, is in 59 feet. The east cross-cut is making good headway in favorable-looking rock. The character of the rock encountered in the west cross-cut is about the same as last reported. The new shaft has reached a depth of 821 feet; the rock passed through during the past week was unusually hard. The west cross-cut from the north drift, 500-foot level, is in 50 feet in very favorable-looking porphyry. The east cross-cut is in 35 feet; the character of the rock here remains unchanged. The work of timbering the south drift, 385-foot level, is now finished. The up-raise on the West Standard has reached a height of 31 feet, showing a ledge 3½ wide of rich ore. The north drift, 300-foot level, is in 145 feet. The vein here is 8 feet wide, of good milling-ore. The east cross-cut, from the south drift, 550-foot level, is in 55 feet, with no change to report. In the stope, 385-foot level, north-drift vein, the ledge continues to look about the same, and now shows a width of 30 feet of good milling-ore. In the south drift, they are stopping for a distance of 150 feet. The ledge is from 3 to 8 feet wide of high-grade ore. The ledge in the south drift, 550-foot level, is 14 feet wide, of good ore.

TIOGA.—The *Free Press* of the 16th says: During the past week, the progress made in the east cross-cut, 800-foot level, was 3 feet. A drift north, on the vein mentioned in the last weekly report, has been run a distance of 10 feet, and is found to widen. It is now 5 feet between the walls. The foot-wall carries a heavy seam of clay, and the quartz in the center is rich. The west cross-cut, 800-foot level, was only extended 13 feet since last report, owing to having to timber the drift in places where the moisture was causing the roof to cave a little. All is now secure and in good shape. The syndicate tunnel was timbered a distance of 40 feet during the week.

LAKE DISTRICT.

The Mammoth City *Herald* of May 12th says:

MAMMOTH.—In Mammoth tunnel No. 4, there has been no change in the character of the ground encountered during the week ending Saturday last. The flow of water continues. The workings follow the foot-wall in the gangue of clay and slate, and timbering has been necessary. The distance made during the week was 26 feet, making the total length of tunnel 1353 feet.

H. L. & M. C. JOINT TUNNEL.—The rock still continues to be hard, but blasts well. The entire length of the tunnel is now 702 feet.

COLORADO.

CLEAR CREEK COUNTY.

We gather the following from the *Georgetown Courier*:

EQUATOR.—The case of the *Equator Co. vs. G. W. Hall, et al.*, for \$20,000 damages for dumping rock from the Colorado Central mine upon the patented ground of the plaintiff, was decided in the U. S. Circuit Court, at Denver, Judge Hallett presiding, by the jury returning a verdict for the defendant, although the instructions of the court were for nominal damages for plaintiff.

FRED ROGERS.—The Fred Rogers shaft has reached a depth of fifty feet below the 230-foot level, and the lessees are now driving a cross-cut for the north ore-vein.

GRAND VIEW.—Last week, the two shafts were cleaned out, and sinking was resumed. Both of the shafts show ore, the vein being about ten inches thick, and composed of quartz carrying silver glance, that assays over 2000 ounces per ton.

The *Miner* has the following:

RED ELEPHANT.—The Red Elephant Company is shipping about 30 tons of ore daily from its properties. It is making connections daily between the Clary adit in the White mine, with the main shaft of the Boulder Nest mine. There are about 30 feet to raise in order to make the connection, and the work is pushed ahead rapidly. In the seventh level, on the Boulder Nest, it has begun drifting west, which will open up an immense block of ground.

In the White mine, timbering is going on. A stope above the Clary adit has been started up on a good body of mineral. The level under the Clary adit is driving ahead, and is worked through the Disbro shaft, and is destined to reach the Boulder Nest mine, running the whole length of the White mine, west of the gulch, and 80 feet deeper than the Clary adit.

In the Free America, the company is raising a winze between the fourth and fifth levels on good mineral, and on the seventh level is drifting and stopping on a body of rich ore, which averages from 1 to 4 feet in width, and is the richest body of ore ever opened in the Free America. In the eighth level, the company is drifting and raising for air, and has the same body of ore as in the seventh level. The company is running the fifth level west, in order to connect with the Boulder Nest, and also running and working other levels.

BRICK POMEROY.—The developments consist of three tunnels, which will aggregate 400 feet, besides about 150 feet of shafts. They are at present working in the upper tunnel, now 150 feet in length. From the tunnel level, a shaft has been sunk 50 feet. East of this shaft a stope has been started; the ore taken from the stope runs 426 ounces in silver to the ton. It is the intention of the manager to run a cross-cut tunnel from the Owasco lode, in order to cut the Brick Pomeroy.

FAIRMOUNT SHAFTER.—The shaft is sinking on three-hour shifts. This is now 147 feet deep, and has been sunk 42 feet deep since the present developments commenced. The tunnel is 151 feet long. This will cut the lode at about 115 feet farther, where it will be continued on in the direction of the shaft, which it will intersect when that has reached a depth of 237 feet. The consolidated property is within about two miles of Idaho Springs.

CUSTER COUNTY.

The Penn Gold and Silver Mining Company has purchased for \$50,000 all of the St. Mary claim, an undivided one half of the Excelsior and Australia claims, undivided one quarter of the Dug-out claim, and two thirds of the Spurgeon claim.

From late issues of the *Silver Cliff Miner* we take the following notes:

An immense amount of machinery is on the ground at the Plata Verde mine, which will be placed in position as soon as the mill is ready to receive it.

The Colorado Cooperative Prospecting and Mining Company has made a rich strike of gold ore in its property, which runs \$55 in gold.

In the Beecher lode, in the upper shaft, it has struck the same ore, bearing rock at sixty-two feet that was struck in the lower shaft at 125 feet.

Work has been resumed on the Presto lode, at a depth of 125 feet. It is following down the hanging-wall. The ore in this lode is fine galena, which runs about sixty ounces.

The *Miner* announces the sale of the Game Ridge mining property to an Eastern company. A shaft has been sunk 100 feet on one of the lodes included in the sale, with good ore in abundance. Two mill-runs were made last week at Dillingham's works of assorted ores, with the gratifying result of 253 ounces per ton, on first-class ore, and 109 on second-class.

In the Copper Bottom, in Johnson's Gulch, at 307 feet, a four-foot vein of rich ore was struck which assays 152 ounces of silver. The property is owned by the Iowa Company.

GILPIN COUNTY.

We take the following items from the *Register-Call*:

BORTAIL. The company is having constructed a water-wheel 28 feet in diameter,

with a 6-foot breast, which is to be placed in position on the north end of its 125-stamp mill, which it is thought will prove sufficient to drive fifty stamps during the water season. This company is now running 100 stamps by steam-power.

O. K. AND WINNEBAGO.—On the 19th, the miners working near the third station, in trimming down what has been considered the north wall, for the timber sets of the shaft, cut through a 15-inch vein of beautiful ore, as good as if not better than any ever struck into.

HARD MONEY.—Another strike in the Hard Money mine, at Hughesville, is reported. This time it was uncovered in sinking a winze to connect the west levels. The ore in the east 120-foot level is holding out as it is driven eastward.

LAKE COUNTY.

AMIE.—The Leadville Democrat says: It would appear from both above and underground view that the ore-body enlarges with every foot of development. The shipments for a long while have been large and uniform, varying from surface cause from twenty to forty tons a day; but in this time the store-bins and ore-stacks, reserved after being mined, have almost covered the Amie claim from center-line to end-line. All of the four shafts from which an output is being hoisted have ore-dump in reserve, besides the amount contributed to the total yield, according to convenience and hoisting facilities.

BIG PITTSBURG.—The Leadville Herald says: The important strike on the Stray Horse claim of the Big Pittsburg consolidation was noted some two weeks ago. About thirty tons of high galena have since been taken out from the mine. The shaft on this claim is on the south side of Stray Horse Gulch, on Carbonate Hill. The shaft was sunk some months ago by the original owners, and was entirely too small, and very poorly constructed. It was but three by five feet in size. When Mr. George Daly took the superintendence of mining for this company, he expressed his fear of the safety of this shaft, and had already arranged to sink a new shaft about 150 feet distant, and on the southeast end of Fryer Hill. Yesterday, this Lent shaft caved in, and now work will be at once begun on the new shaft as previously proposed.

CLIMAX.—From an appended description of this property, appearing in the Leadville Herald, we make the following extracts: The wonderfully rich ore recently mined, and now taken out from the Climax, which has added new interest to the property, comes entirely from the No. 3 shaft. Last winter, a drift from this shaft opened up a body of mineral of great value, and the ground has since that time been extensively prospected. The mine is 90 feet in depth. From this depth of 90 feet, a drift was first run due south 20 feet, and then, turning to the west and southwest, was extended to the Amie line. All through this ground, ore was found, varying in value from 50 to 300 ounces of silver to the ton. Some time ago, a drift from the shaft was started due north, and this has continued a distance of 104 feet. At twenty-five feet from the shaft, ore first began showing in the drift, its dip being from the east toward the west. From this distance to the end of the drift, ore is disclosed of more or less extent the entire length of the drift. At sixty feet from the shaft, the ore-body became large and rich, and a drift to the west was started upon it, which was run a distance of 75 feet, or to the Amie line, and, in fact, cuts through into the Amie workings at this point. Here the great richness of the Climax was first exposed. This cross-cut to the Amie was small in size, and in fact run as a prospect-cut. Since then, alongside this on the north side, another cross-cut has been started, and has nearly reached the Amie line. These two cross-cuts should, perhaps, be more properly termed inclines. From these two inclines, without any stopings at the sides, including a cut of say six feet high by ten feet wide, and extending 75 feet, the bulk of the ore has come that has been sold by the company in a month past for upward of \$100,000. From the fact that ore extends in an unbroken vein for 75 feet at this point to the west line of the company's property, is found also in a drift running west, at twenty feet south from the shaft, and also extends in the north drift to a distance of 104 feet from the shaft, it is clearly shown that here exists one of the largest ore-bodies ever discovered on Fryer Hill.

COLORADO PRINCE.—The Leadville Herald of the 21st says: About ten days ago, the new stamp-mill of this company, which is located in South Evans Gulch, on the north of Brece Hill, was first put in operation. The machinery is all running in good shape, and the copper plates seem well charged with amalgam. The first run of the mill was for four and a half days, when it was shut down. During the time of this run, a little over 100 tons of ore were crushed. The amalgam produced looks well, and there is quite a bulk of it. It has not yet been retorted, but the amalgam has been carefully tested, and estimates place the amount of gold produced at about eight pounds. Only fifteen stamps of the mill are yet in operation; but it is proposed to soon put up the other ten stamps, which are already on the ground. Mr. Daly, the manager, is pushing forward the large new tunnel, which starts into the hill just back of the mill, and is to connect with the mine which is at present worked from the shaft on the hill above.

DUNCAN.—The Leadville Democrat says: A connection has been made between No. 1 and No. 3 shaft at a depth of 120 feet. From No. 1 rapid headway is making to No. 2 and the level which is driven from it to No. 3. Both these workings are now in ore, the greater part coming from the latter.

DENVER CITY.—The Leadville Herald says: The discovery-shaft has been enlarged and re-timbered. In addition to this, a large new shaft at the north end of the property, 5 by 14 feet in size, has been sunk from the surface to a depth of 156 feet, and timbered up from the top to the bottom. Over this shaft a new shaft-house has been built, and a 25 horse-power engine is running. On the Shamus O'Brien lode, work has been constantly driven, and a drift is now extending on a good contact-vein at a depth of 284 feet. On the Quadrilateral, another claim, when the new management took charge the shaft was 51 feet deep, and now it is 212 feet.

EVENING STAR.—The Leadville Democrat says: This mine, with nearly all the others on the hill, has been reducing its shipments from the figures of the output as far back as last fall. It is not small now by any means; but on account of the character of dead-work, the greater part of it being a connection between the workings of the three shafts and the immense quantity of waste necessary to be hoisted, it was quite impossible to keep up at the old rate. One hundred tons of ore a week is the average for the statement for near a month past, and from 62 to 60 ounces in silver and from 33 to 63 per cent lead to the ton as the value of the shipment in varying lots to the smelters.

GLASS-PENDERY.—The Leadville Democrat says: Of this combination, comprising the two mentioned in the title, and the Rough and Ready No. 2, only the Glass is working.

HIBERNIA.—Leadville Herald: The ore now taken out amounts to fifteen tons per day, and this could be easily increased if the development were greater. Twenty-five feet of ore is now exposed in thickness, while the drifting upon it has demonstrated that it is not a small pocket, but a vast ore-body, the extent of which can not be determined at present.

HIGHLAND CHIEF.—The Leadville Democrat says: It would naturally appear that the injunction issued by Judge Hallett, of the United States District Court, in chambers, at Denver, does not enjoin the above-named mine, inasmuch as the shipments have been resumed since the roads became good, and are now sixty tons of ore a day.

IRON MINE.—The Leadville Herald says: The lawsuit pending between the Iron mine and the Cleora property is occupying the attention of the Iron mine management just at present; but the work of improvements and mining progresses as usual. Professor Rossiter W. Raymond and Professor J. Alden Smith are here, carefully examining the points in controversy between the properties, preparing themselves to testify in the case to be called on the twenty-fifth of this month. At the Iron mine, the vast improvements laid out by Manager Keyes, when he took possession of the property, are rapidly progressing. At the present working-incline, all is about com-

pleted. The large shaft or tunnel house, with adjoining blacksmith-hop is completed, and the ore is run out to the ore-platforms on tracks extending over a raised platform. The large ore-house, which is to be the largest in the State, is not yet completed. This ore-house is calculated to hold 10,000 tons of ore. The new office is completed and occupied. At the north incline, the work of enlargement is nearly finished out to the surface, and the work of driving it so as to connect with the drift running north in the mine is progressing. Over this shaft is to be built one of the finest shaft-houses about Leadville, and with a fine stationary 75 horse-power engine for hoisting; a double track is to extend down the incline, on each of which will be run gigs, carrying three cars each, and also a trailing-car, thus keeping eight cars in operation. The hoisting facilities will thus be almost unlimited. From this incline, tracks are to extend to the ore-house, entering it over a raised platform at the north end.

LEADVILLE.—The Leadville Democrat says: The company is prospecting in the extension of the lower south levels from the main incline on the Carbonate mine, while mining is going on in the others north. From this exploiting there comes considerable waste. The output of ore is principally regulated by contracts with the smelters and their location. The shipments lately amount to about eighteen tons daily, while the output, over and above shipments, is accumulating in the ore-bins, and amounts to a considerable stack.

LITTLE CHIEF.—The Leadville Herald says that the shipments on the 15th amounted to 170 tons, and it was stated that the amount for the 17th would reach 180 tons. It far exceeded this amount, the actual weight of the ore shipped on the 17th being 232 tons and 860 pounds, the largest shipment for one day ever made by a mine in Leadville. Yesterday, this amount was not quite reached, owing to a delay on the No. 4 shaft machinery. The amount, however, reached about 200 tons. The mine seems everywhere in ore. George Daly, the new general manager, stated that he is running twenty drifts in the mine, and the face of every one is in ore.

LOWLAND CHIEF.—Leadville Herald: Since Mr. Daly took the management of this company, an entire change of programme has been inaugurated. The No. 1 shaft, on the west side of the Highland Chief tunnel-building, will be allowed to remain idle for the present. The No. 2 shaft, east from the building, is down 127 feet, and in the drift running southwest toward the Highland Chief, a large body of fine mineral has been found. The mine has heretofore been worked by a whim, but Mr. Daly has had this torn down, as well as the shaft-house, and is to at once erect machinery and buildings suitable for the proper working of the mine.

MORNING STAR.—The Leadville Democrat says: Among the mining instruments filed for record and published yesterday, was one from John L. Routt, trustee to the Morning Star Consolidated Mining Company, conveying the Morning Star, Waterloo, Buckeye Belle, Forsaken, Half-Way House, and Anchor lodes for \$6,000,000. This is merely a transfer of individual interests of the three owners through Governor Routt, who acts as trustee to the company recently incorporated, and of which it is still principal owner. It is virtually a close corporation, as the owners are the incorporators, and it is quite likely, so far as can be heard of the stock, that the \$75,000 net monthly profit will be subject to exceeding small division for some time to come.

The same paper, dated the 20th, says: For the past ten days, the ore-shipments have been heavily increasing from those prior to that time. Forty tons a day was the usual average during the winter and until lately, when the increase due to the extensive development through the ore-body was raised to as much as sixty tons a day. Besides this, a great deal that is hoisted is put in the bins, and the accumulation over and above shipments is between 80 and 100 tons. The ore is essentially leady, which ingredient in the low average percentage from the camp makes it very desirable and practically at a premium with the ore-buyers.

O'DONOVAN ROSSA.—The Leadville Herald says that this mine has been sold to Chicago and Denver parties. It also states that doubts exist as to the legality of the sale.

SCOOPER.—The Leadville Herald says: Parties from Philadelphia, largely interested in the Iowa Gulch Mining Company, which owns the Scooper, are here to investigate the property. Work on this property was suspended a few weeks ago, and it occasioned much surprise at the time, as it was generally supposed the mine was doing well.

PARK COUNTY.

We gather the following information from the Fairplay Flume of the 20th: ALMA MINES.—The London mine has just purchased the stamp-mill in Mosquito Gulch, and expects to operate it actively this season. It is also purchasing the requisite machinery for a fifty-stamp mill to be erected near the forks of Mosquito, just below.

The Gregory group of mines on Mount Cross, has just been sold for \$20,000. After the change in ownership, the property was placed in the hands of a competent mining engineer, who is pushing development, and yesterday came on to a new body of rich carbonate ore from two and a half to three feet in thickness. Previous to the sale, two very good bodies of ore were exposed.

SAN JUAN COUNTY.

We take the following items from the Silver World of the 15th and 22d: A cross-cut to the north from the bottom of the main shaft of the Bonanza mine, which is down 153 feet, has progressed over 35 feet. This cross-cut is run to cut the main gray-copper streak in the claim. The main shaft is now 40 feet below the surface of the lake, only 200 feet distant, and is perfectly dry.

There has just been completed a contract to run a tunnel 250 feet to cut the Little Abbie, in Picayune Gulch. This week, a contract was made to run the tunnel 100 feet farther. There are several veins of mineral in the Little Abbie claim. The property is owned by the Little Abbie Consolidated, of which W. A. H. Loveland is President.

The tunnel on the George Washington, near Sherman, is progressing favorably. It is now in over 50 feet. There is a large body of ore, brittle silver being plentiful.

The tunnel to cut the Black Wonder is now in 80 feet. The vein will be struck at a depth of 200 feet, when the tunnel progresses 80 feet farther.

In the Palmetto, the drift at the first level, 47 feet down, has been pushed forward about 85 feet, and is worked by two shifts. There are two shifts on the stoping also. The ore-house is full of ore. There are fifteen men at work on the mine.

MAID OF THE MIST.—The Ouray Times says: Maid of the Mist shaft down about 90 feet, showing 4 feet of mineral, gray copper, steel galena, and some yellow copper. One hundred and fifty tons of ore on the dump. Working seven men, driving the shaft down rapidly.

Lake Park group of mines is worked by six men.

DAKOTA.

From the Rochford Miner of May 8th we gather the following:

STANDBY.—The mill is running 40 stamps, and to-day the remaining 20 will begin to drop. The mill works well, and the company contemplates the immediate erection of 40 additional stamps, for which it has abundant power. The plates look very promising.

The Enos 20-stamp mill, on the Minnesota, Silver Creek, will start up to-morrow. The 10-stamp mill of the Charter Oak Company, head of Silver Creek, will start up in about ten days. A recent clean-up averaged \$6 a ton.

The Spread Eagle mine, close to the Chief of the Hills, has a shaft 60 feet in good prospecting ore. They have started a tunnel to tap the shaft at the bottom. The tunnel is in ore.

THE EVANGELINE.—This mine has shown up very well lately. The develop-

ments consist of a 90-foot tunnel and a 20-foot shaft. The ore is clear, and prospects above the average of paying quartz.

The Little Rapid Hydraulic Mining Company has just completed surveys of an additional 3000 feet of placer ground on Little Creek, making a total length now owned by that company of about four and a half miles.

The Alta-Lodi 40-stamp mill is pushing forward to completion as rapidly as possible.

NEVADA.

THE COMSTOCK LODE.

The Gold Hill News summarizes the situation on the Comstock as under :

There is not much change to note this week in the situation at the north end. Prospects continue to increase on the 2400 of Sierra Nevada, as workings are carried north. From Ophir to Union, inclusive, prospects are also increasing, and it is, apparently, only a question of time as to the looked-for development.

Water continues to trouble the middle mines and delays prospecting where the greatest expectations lie.

In Bullion, the prospectings through the diamond drill on the 2350 level and the rock encountered in the station at the 2450 level are encouraging.

Notwithstanding the present and past depression in Belcher, there are many who are as sanguine as ever in regard to the mine. Not a prospect there has been exhausted, not even on the 2760 level, where next to nothing is known of the vein. This is where developments will doubtless be pushed as soon as connections below make it expedient. It is said that the water encountered on the 3000 level, and which forced itself through the feed-pipe of the diamond drill to the 2500 level, is not east-country water ; and if it comes from the vein, then surely that vein is not yet prospected at all below the 2000 or 2200 level.

In New York, although the face of the south drift is not looking as well as farther back, there is a good prospect. It is nothing against the strike that it is richest near where first encountered ; for the drift just touches the west side of the ore-vein, and there are 90 feet of it to the east yet, and in that direction workings in this ledge have always been found to yield best returns.

SUTRO TUNNEL.—Following is the report of progress in the North Lateral Branch, for the week ending May 15th, 1880—the header being 8 by 10 feet :

Number of feet driven at last report.....	2897
Number of feet driven since	80
Total number of feet in Branch.....	2977

Following is the report of progress in the South Lateral Branch, for the week ending May 15th, 1880—the header being 8 by 10 feet :

Number of feet driven at last report.....	868
Number of feet driven since	65
Total number of feet in Branch.....	933

BRISTOL ITEMS.—From the Pioche Record :

At the mill-site of the Bristol Company, the artesian borer is doing good work, and is down 140 feet, with 80 feet of water. The large excavation for the reception of the mill has already been completed.

The Mendha, of the Hillside Company, is improving ; the shaft at 120 feet is all in ore with no walls. The drift from the 100-foot level is carrying ore full in the face with an average assay value of \$50, and from 20 to 25 tons are daily shipped to the furnace.

Custom ores are coming in rapidly ; the Day is shipping ten tons per day of high-grade ore, and the Midnight, of Blind Mountain, has already on the furnace-dump a good many tons of first-class rock.

A large amount of machinery for the Bristol Company has been coming in the past few days, the boiler and engine-bed arriving last week.

The Hillside furnace is turning out large quantities of bullion, running it out much faster than teams can haul it away ; the dump is covered with it in huge sacks, awaiting shipment.

UTAH.

From late issues of the Salt Lake Tribune we have the following :

STEWART No. 2.—Stewart No. 2 mill has not yet started, the roads not being sufficiently good to warrant hauling at the mine. Work has not been commenced in earnest, as considerable timbering had to be done ere the mine could be worked with a full force. Four hands are at present employed. A shaft is sinking on the ledge, and assays as high as \$500 gold have been taken from it.

TIWAUCKEE.—The strike made is much better than at first reported. The vein has widened out to fifteen inches, and the ore assays from \$1600 to several thousand dollars in silver.

FAIRVIEW.—A recent strike in this mine shows a vein 3½ feet wide, six inches of which assay \$222.50, while the remaining 3 feet go \$65.50.

OLD JORDAN.—About the first of last January, the systematic development of this property was begun, by starting an incline from the top of the hill under the Jordan patent. Here there is a very large outcropping of quartz, which is developed by an old tunnel run into the mountain several hundred feet. About 100 feet from the mouth of this tunnel and forty feet below the surface, the incline is started down northerly in ore at an angle of forty degrees. At a depth of fifty-four feet, an east and west level are started, and each runs in nearly forty feet with the vein. From the bottom of this incline, a north cross-cut, twenty feet in length, is run, and from the face of this cross-cut the second incline is sunk down forty-two feet. The second cross-cut to the north here commenced and pushed 110 feet to the hanging-wall, the only place in the entire upper workings where neither wall has been reached. At a point midway between the bottom of the second incline and the hanging-wall, an east level, 75 feet in length, has been run ; as also a west level, 60 feet long. From the bottom of the second incline and on a level with the north cross-cut, a circuitous south cross-cut has been driven in 75 feet without reaching the foot-wall. Seventy-three feet from the bottom of the incline and within 33 feet of the hanging-wall, a short east level and raise connect the upper workings of the Jordan with those of the Excelsior mine. At this point there is a chute 40 feet deep in ore, and connecting with the second tunnel. These workings are all in good paying ground, developing a body of ore 160 feet deep, 135 feet in length, and 185 feet thick, with only one wall yet reached. The lower workings of the mine are running through two tunnels, which run in on the strike of the vein, and develop it linearly about 500 feet. The upper and lower workings are all connected by chutes, through which the ore extracted in the process of development is sent to the lower tunnel and thence dumped into a ten-stamp mill. This mill was constructed last winter for the purpose of testing the ores of the Jordan mine with a view to ascertaining the best method of treating them, and after a run of about sixty days, the company felt justified by the results in projecting a sixty-stamp mill on the property at the village of West Jordan. This mill is now rapidly approaching completion.

It is rumored that the Yosemite mine has been sold to New York parties for \$75,000 cash.

The famous Emma has been making shipments of ore varying from 62 ounces to 232 ounces silver to the ton, with 20 per cent lead.

THE CARRIE STEELE MINE.—The Tribune of Salt Lake, under date of May 22d, says : The Carrie Steele Mining Company, of Camp Floyd District, has commenced bullion shipments. The first two bars arrived to-day, valued at \$2586, with an average fineness of 800. This property is closely owned by a New York corporation, which has the mine in a thorough state of development, having employed during the past ten months an average force of from 25 to 30 miners to provide conveniences for the extraction of their ore-reserves, which are large and extensive. Since the change of management, this company

has been conducted on true bed-rock principles, without any assumption or ostentation. Although always open to the public's inspection, and as a producer of high-grade ores, it has of late occupied an obscurity that its record will not justify. The Carrie Steele produced, prior to incorporation, \$82,000 from sales of ore in our market. The present company having developed sufficient ore to show the need of a mill, has purchased one of 20 stamps, which is now in complete repair and running. The vein has an average width of about 30 feet, much of which is extracted and screened. The fine portion consists of a grade going \$35 to the ton. The coarse ore is assorted to the higher grades. We noticed a few days since a rich strike in this mine, the facts of which have since been corroborated. Fine specimens can be seen at the cabinet of Prof. J. E. Clayton, to whom much credit is due for the prosperous condition of the mine. This has been a paying property from the beginning, from its shipments of high grades alone, although worked under great disadvantage. It will doubtless prove largely more profitable with its new facilities of reduction at hand. Present indications bespeak a brilliant future for this new property, and we congratulate the owners on having one of Utah's best mines.

A private dispatch received in this city on the 27th, from Mr. John Sharp, one of the directors of the Utah Southern Extension Railroad, says : "We are now eleven miles from the Horn-Silver mine, and will have the road completed to that point about the 15th of June."

PROPOSALS.

For the benefit of many of our readers, we compile weekly such proposals and solicitations for contracts, etc., as may be of interest. The table indicates the character of proposals wanted, the full name and address of parties soliciting, and the latest date at which they will be received :

For Rebuilding a Portion of Chelsea Bridge ; William Woolley, office of City Engineer, City Hall, Boston, Mass.....	May 29, 1880.
For the Sale of Forty-Eight (48) of the Cairo & Fulton RR. First-Mortgage and Sinking Fund Land-Grant Bonds ; Ed. King, President, St. Louis, I. M. & S. RR. Co., Cincinnati.....	" 29, "
For Material and Workmanship Required for the Construction of the New Cook County Court-House ; E. F. C. Klokke, Clerk, Michigan street, Chicago, Ill.....	" 30, "
For Ten (10) Tons of Pure Zinc (in slabs) ; R. E. Preston, Office of the Director of the Mint, Washington, D. C.....	" 31, "
For Supplying the Schools of the City of Brooklyn with Coal until May 1st, 1881 ; James Clynne, Board of Education, Brooklyn.....	June 1, "
For Conveying Stone and Gravel ; Office of the Board of Managers of the House of Correction, Philadelphia, Pa.....	" 1, "
For Rolled, Wrought, and Cast Iron ; Samuel C. Perkins, President, Office of the Commissioners of Public Buildings, Penn square, Philadelphia, Pa. For Commissary Supplies ; John Sherman, Secretary Treasury Department, Washington, D. C.....	" 1, "
For Iron Work ; Office of Supervising Architect, Treasury Department, Washington, D. C.....	" 1, "
For Wire Fencing (Canadian Pacific RR.) ; F. Braun, Secretary, Department of Railways and Canals, Ottawa, Canada.....	" 1, "
For Coal Shed and Trestle ; D. Pottinger, Chief Superintendent, Railway Offices, Moncton, N. B.....	" 1, "
For Quartermaster's Stores ; Quartermaster's Department, Jeffersonville, Ind.....	" 2, "
For Furnishing Rations and Ship Chandlery for Revenue Vessels ; E. A. Merritt, Custom House, Collector's Office, New York City.....	" 2, "
For Dredging in Boston Upper Harbor, Commonwealth of Mass. ; Harbor and Land Commissioner's Office, Boston.....	" 3, "
For the Construction of Two Lift Locks and Other Works on the Greenville Canal ; F. Braun, Secretary Department of Railroads and Canals, Ottawa, Canada.....	" 3, "
For Furnishing Labor and Material for Pipe Laying ; Building Committee of the Northern Hospital, Winnebago, Wis.....	" 3, "
For Lock-Gates for the Lachine Canal ; F. Braun, Secretary, Department of Railways and Canals, Ottawa, Canada.....	" 3, "
For Lock-Gates for the Welland Canal ; F. Braun, Secretary, Department of Railways and Canals, Ottawa, Canada.....	" 3, "
For the Construction of Two (2) Lift-Locks for the Greenville Canal ; F. Braun, Secretary, Department of Railways and Canals, Ottawa, Canada.....	" 3, "
For the Work of Construction on Extension of the Vicksburg, Shreveport & P. RR. ; Office of General Manager V. S. & P. RR. Monroe, La.....	" 5, "
For Indian Supplies and Transportation ; R. E. Trowbridge, Department of the Interior, Office of Indian Affairs, Washington.....	" 7, "
For Dredging 162,000 Cubic Yards ; L. B. Bidwell, Chief-Engineer, 224 Federal street, Boston, Mass.....	" 7, "
For Manufacture and Delivery of 510 Tons of Galvanized Steel Wire Rope ; W. A. Roebling, Chief-Engineer, 21 Water street, Brooklyn, N. Y.....	" 7, "
For Fuel, Forage, and Straw ; Depot Quartermaster's Office, corner of Houston and Greene streets, New York City.....	" 10, "
For Fuel, Forage, Straw, Stationery, etc. ; Jeffersonville Depot of the Quartermaster's Department, Jeffersonville, Ind.....	" 10, "
For Rations ; United States Marine Corps, Quartermaster's Office, Washington, D. C.....	" 10, "
For Fuel, Forage, etc. ; Assistant Quartermaster's Office, United States Army, No. 1139 Girard street, Philadelphia, Pa.....	" 10, "
For Trucking Government Stores ; Depot Quartermaster's Office, Houston and Greene streets, New York City.....	" 10, "
For the Erection of a Stone and Pressed-Brick Passenger Depot ; M. J. Becker, Chief-Engineer, P. C. & St. L. RR. Co., Cincinnati.....	" 12, "
For Furnishing Stationery for the Department of the Interior ; C. Schurz, Secretary, Department of the Interior, Washington, D. C.....	" 14, "
For Erecting a Stone Jail at Lebanon ; A. B. Marshall, Secretary Building Committee, Lebanon, Ky.....	" 15, "
For the Construction of Swing and Stationary Bridges ; F. Braun, Secretary, Department of Railways and Canals, Ottawa, Canada.....	" 15, "
For Supplying Wood and Coal to the U. S. Marines, U. S. Marine Corps ; Quartermaster's Office, Washington, D. C.....	" 15, "
For the Work of Construction of the Tampa Peace Creek and St. John's River Railroad (200 miles) in Florida ; Daniel L. Boone, Secretary, Room 22, Boone Block, 133 La Salle street, Chicago, Ill.....	" 15, "
For Labor and Material for the Erection and Completion of the County Court-House ; Ben. H. Miller, Office of Board of Supervisors, Bridgeport, Mono County, Cal.....	" 15, "
For Quartermaster's Stores ; Depot Quartermaster's Office, Houston street corner Greene, New York City.....	" 17, "
For Elevators and Pumps, etc. etc. ; James W. Eaton, New Capitol, Office of the Superintendent, Albany, N. Y.....	" 18, "
For Steam-Fitting Boilers, Engines, Blowers, Registers, etc. ; James W. Eaton, Superintendent, New Capitol, Albany, N. Y.....	" 18, "
For Steam Communication around the Island of Jamaica ; British Consulate, No. 17 Broadway, New York City.....	" 21, "
For Swing and Stationary Bridges ; F. Braun, Secretary, Department of Railways and Canals, Ottawa, Canada.....	" 21, "
For White Oak and Yellow Pine Logs ; C. J. Emery, Navy Pay Office, 45 Milk street, Boston, Mass.....	" 26, "
For Material for Use of the Government Printing Office ; John D. Defrees, Public Printer, Washington, D. C.....	" 30, "
For Medicines and Medical Attendance to the Territorial Prison ; H. N. Alexander, Secretary Board of Prison Commissioners, Yuma, Ariz.....	July 1, "
For Furnishing Provisions for the Territorial Prison ; H. N. Alexander, Secretary Board of Prison Commissioners, Yuma, Ariz.....	" 1, "
For Stores for Grand Trunk Railroad Company ; Joseph Hickson, General Manager, Montreal, Canada.....	" 1, "
For Rolling Stock ; F. Braun, Secretary, Department of Railways and Canals, Ottawa, Canada.....	" 1, "
For Lighting the City of Guayaquil ; R. & C. Degener, No. 50 Wall street, New York City.....	" 31, "
For Competitive Designs for the Provincial Parliament and Departmental Buildings ; Department of Public Works, Toronto, Ontario.....	August 1, "

FINANCIAL.

Gold and Silver Stocks.

NEW YORK, Friday Evening, May 28.

The failure of the Philadelphia & Reading RR. Company had the effect of almost producing a panic in the railway stock market, and, as naturally would be expected, the mining market sympathized. The business in mining shares has been small, and, with very few exceptions, prices have declined.

The Bodie stocks have been quiet and some of them a little weak. The sales of Bodie amount to 360 shares at \$7.63@77/8. Standard has had a moderate business with 2820 shares at \$28 1/4@25 1/2@28. Bulwer has been quiet and weak, the sales aggregating 775 shares at \$6@5 1/2. Goodshaw has been quiet and weak, with sales of 900 shares at 80@70c. South Bodie only records sales of 200 shares at 33c. South Bulwer, with a fair business, was weak until to-day, when the highest point of the week was reached. The sales amount to 7000 shares at \$1.10@1.60.

The Comstock shares have been unusually quiet and generally weak. California records sales of 2185 shares at \$2.40@2.10. The dealings in Consolidated Virginia have been smaller than for a great many weeks past, amounting to but 1635 shares at \$3.35@3.10. Sierra Nevada only records 5 shares at \$15 1/2. Consolidated Imperial, with a moderate business, shows a little strength. The sales amount to 2700 shares at 35@45c. Union Consolidated, on a business of but 20 shares, sold at \$20@19 1/2. Alta records 50 shares at \$2 1/4.

The Tuscarora stocks have been very quiet and without any special feature. The sales have been as follows: Belle Isle, 500 shares at 50@45c.; Independence, 500 shares at 50@60c.; Navajo, 100 shares at 25c.; and Tuscarora, 600 shares at 17@16c.

The miscellaneous San Francisco stocks have been very quiet. Eureka only records 10 shares at \$7 1/2. Caledonia (B. H.), on a business of 400 shares, advanced from \$2.10@2.60. Tip Top records 300 shares at \$5 1/4.

The prices of the Leadville stocks have been influenced by the miners' strike. The dealings in the stocks of our regular lists have been as follows: Amie has been quite active but very weak. The sales aggregate 14,125 shares at \$1.45@1.05; Caribou has been without a transaction. Chrysolite, as exceptional to the list, has been quite strong under a liberal business. The sales aggregate 13,909 shares at \$14 1/2@19@18 1/4. Climax has been quite lively but a little weak. The sales amount to 10,500 shares at \$2 1/2@2.20. Findley, with a moderate business, has been weak, the sales aggregating 5100 shares at 22@19c. Great Eastern has been more quiet than of late, and although showing considerable strength at one time, has since lost it. The sales have aggregated 27,600 shares at 72@63c. Green Mountain has been unusually active but weak. The sales amount to 7100 shares at \$3.35@3. Homestake, with a business of 475 shares, sold at \$31@29 1/2. Horn-Silver has been quiet and a little weak. The sales amount to 240 shares at \$17 1/2@16.88. Hukill has been very quiet and fairly steady. The sales aggregate 8700 shares at \$2.05@2.20. La Plata only records 100 shares at \$4 1/2. Leadville has been quiet, and for a time very weak. The sales aggregate 4500 shares at \$1.95@1 1/2. Little Chief has had a fair business at fairly maintained prices. The sales aggregate 6654 shares at \$10@9.13. Little Pittsburg has been very quiet and somewhat weak. The sales amount to but 2080 shares at \$6 1/2@6. Moose, under a moderate business, has been steadily weakening. The sales aggregate 7050 shares at 90@75c. Ontario has been very much more active than for months past, and although at one time showing weakness, it has since recovered. The sales amount to 1780 shares at \$32 1/2@30@33 1/2. Calaveras has been fairly active and somewhat irregular, with a strengthening tendency at the close. The sales aggregate 33,100 shares at 64@77c. Central Arizona has been moderately dealt in at quite irregular prices. The sales amount to 4600 shares at \$6 1/2@5@6. The Quicksilver stocks have been quiet. The dealings in Preferred aggregate 900 shares at \$53@48, and in Common 100 shares at \$10. Rappahannock has been very quiet but quite steady. The sales aggregate 8600 shares at 26@29c. Shamrock has been quite active and for a time weak. The sales amount to 1250 shares at 98@85@99c. Silver Cliff

has had a moderate business at prices a shade weak, the sales amounting to 2500 shares at \$4@3.75. Sutro Tunnel has been very active and quite strong. It is rumored that the bonanza firm is buying this stock. The sales amount to 56,080 shares at \$1 1/2@2 1/2.

The dealings in the fancies have been as follows: American Flag, 1400 shares at 41@38c.; Buckeye, 55,760 shares at 39@28c.; Dahlonga, 1700 shares at 11@10c.; Gold Placer, 8000 shares at 68@63c.; Granville, 16,400 shares at 17@13c.; Lacrosse, 20,800 shares at 35@28c., and Lucerne, 1300 shares at 18@15c.

It has been determined to open the American Stock Exchange on June 1st. The following rates of commissions have been decided upon: All stocks quoted at \$2 and under, \$2 per 100 shares; all stocks quoted at \$5 and above \$2, \$3.12 per 100 shares; all stocks quoted at \$10 and above \$5, \$6.50 per 100 shares; all stocks quoted over \$10, \$12.50 per 100 shares.

The commissions between members of the Exchange will be \$1 per 100 shares for all stocks quoted under \$10, and \$2 per 100 shares for all stocks quoted at \$10 and over.

On the 24th inst. a hearing was had before Judge Choate, in the United States Circuit Court, in the suit of the Emma Silver Mining Company of London, against the same company of New York and other defendants. The present suit is brought to rescind the sale of the mine. The defendants pleaded, in bar to the bill of complaint, the judgment rendered in their favor in the action at law tried in this city in 1877. The hearing to-day was the argument on the pleas.

A correspondent of the *American Exchange*, writing from Philadelphia, under date of the 25th inst., says:

"There were many rumors afloat concerning the Argent Mining Company. Inquiries in regard to the stability of this company have been renewed in consequence of the suicide of its President, S. S. Scattergood, which occurred yesterday. It was organized in September of last year with a capital of \$2,000,000, consisting of 200,000 shares of stock at \$10 each. Its value, when first placed upon the market, was quoted at nearly \$4 per share, but now it is in poor request at 25 cents. The directors, most of whom are interested in Iowa Gulch, which has recently aroused grave suspicions, are Messrs. Charles H. Grahn, A. G. B. Hinckle, W. R. Thompson, George F. Work, and John H. Schreiner. They have not made public any recent statement of the condition of the mine."

QUOTATIONS OF UNLISTED MINING STOCKS.

Messrs. Trask & Francis, of No. 70 Broadway, under date of May 28th, 3 P.M., report the current quotations of unlisted stocks as follows:

	Bid.	Off'd.		Bid.	Off'd.
Amie.....			Julian.....		
Bassick.....	\$13 1/4		Little Chief.....	\$9 1/2	\$9 1/4
Breece.....		\$13 1/4	May Flower.....		
Bull-Domingo.....	\$6	\$6 1/2	Native Silver.....		\$15 1/2
Briggs Con.....			New Phil'd'lp'a.....		.50
Bald Mountain.....	.75	.80	O K & Winneb'o.....		
Cherokee.....	.90	.95	Penobscot.....	\$1	\$1 1/4
Chrysolite.....	\$17 1/4		Plata Verde.....		
Carbonate.....			Red Elephant.....	1.60	1.90
Carbonate Hill.....	.50	.60	Rocker.....		
Dunderberg.....		\$2.60	Rollins.....		
Empire Utah.....			Silver Cliff.....	\$3 1/2	\$4
Endowment.....			Sir Rod'k Dhu.....	.45	.60
Elko Con.....			Standby.....		
Father de Smet.....		\$17	Stormont.....	\$3	\$3 1/2
Freeland.....	\$3 1/4	\$3 1/2	Spring Valley.....	\$5	\$7
Harshaw.....			Silver Nugget.....		
Highland Chief.....			Trinity.....		
Homer.....			Van de Water G.....		\$2
Horn-Silver.....	\$16	\$16 1/2	Robinson Con.....	\$5 1/4	
Hortense.....		.90			

OFFICIAL LETTERS.

Bull-Domingo.—A recent telegram states that cross-cut has reached hanging-wall in 136 feet. Thirty-one feet in ore, which is more uniformly distributed, and richer in silver than on the level above. Will soon commence lateral drift. The mine is looking better than ever. This company is employing eighty men.

Boulder Consolidated.—It is stated that the main tunnel has cut a very rich ore-body, four feet in width.

Bassick.—The main shaft is down 365 feet. Ore running \$200 per ton is exposed in the lower levels, where the extent of the ore-body to the southward, eastward, and westward has not been discovered.

Big Pittsburg.—Advices dated the 21st inst. are that the Lent shaft has good vein of pay-ore, extent not ascertained; is now in a way to be thoroughly developed. Steam-hoister working this week. New shaft sunk between Banker and Keene, down 80 feet, running for vein discovered in raise of northeast drift of Banker. Keene shut down at present, in order to use its engine for the new shaft. McCormick promising early results, but as yet no large body of mineral, although indications of most flattering character; three engines working, one borrowed,

Bosco.—A telegram from this mine says: The new Williams shaft has passed through the porphyry and is now in iron and sand, with low-grade ore, improving in quality. This property is on Little Evans Gulch, near the Uncle Sam and Columbia, that have made recent strikes with free gold in the vein.

Crowell.—A recent letter says that the new machinery has arrived at the mine. The main double-compartment shaft is now down 42 feet and is to be sunk to a depth of 300 feet. Sufficient ore is on the dumps to supply 25 stamps six weeks.

Chrysolite.—From Mr. Keyes's weekly letter, covering the operations of this company up to the 17th inst., we make the following:

"We have driven 74 feet of drifts and have sunk 30 feet of shafts and winzes. On B 25, the face is mainly hard iron with a streak of ore in the roof. D 25 stope has sand carbonate and iron in the roof. B 28 stope has sand carbonate on both the east and west sides. B 29 has cut through to the drift. On F 30, under-hand stope, we have a very large and very fine body of soft sand carbonate. H 33 (Chrysolite IV west drift), the sand carbonate still continues. This sand-body waves down to the north and south; connects undoubtedly with the sand ore in F 30, and probably with the sand-ore in I 30. H 30 shows a fine body of sand-ore and galena, dipping to the east. Second level: The south drift from the bottom of Chrysolite shaft III had passed out of the porphyry and has come into iron, and to-day shows a small streak of high-grade mineral. The winzes on G 24, G 31, and A 29 are all in porphyry; the first and last are already at the second level. Vulture IV, west drift, has reached the line G, H, and the second level is advancing both north and south. The south face is in a hard siliceous matter, the invariable precursor of ore. We are driving at this face in the expectation of striking the continuation west of the New Discovery bonanza. The Roberts shaft is now down somewhat more than 30 feet below the second level; the bottom is in iron and siliceous porphyry. The new shaft on the carboniferous on B 34, 35, is now down 70 feet. The drifts and cross-cuts at the Roberts shaft, second level, are all in first-class ore, so general, indeed, that I deem it unnecessary to particularize them. We have shipped to date 1498 tons, not including to-day, which was 164 tons."

Dunkin.—An official letter, under date of May 18th, says that extensive development work has been done in this mine during the last six weeks, which has resulted in opening up several bodies of mineral, some of them being of very high grade. In the first level west, is a body of high-grade galena, from which mill-runs of 161 ounces and 38 per cent of lead have been had. On the second level, in both east and west drifts, some high-grade sand carbonates are being mined. On third level north, between Nos. 2 and 3 shafts, is a body of galena and carbonates running between 100 and 150 ounces, and heavy in lead. In No. 1, A shaft, situate on the south end of the claim between the R. E. Lee and Climax, at 76 feet from the surface, a body of carbonates assaying 122 ounces was struck, upon which drifting is about to be commenced, while at the same time the sinking is being continued, with the expectation of striking, when at the proper depth, the rich bodies now being worked in the Climax and Lee. The ore mined this month up to date amounts to 137 tons averaging 18 ounces to the ton.

Denver City.—A dispatch says: Struck porphyry in the right shaft at 157 feet. In the Robert E. Lee, adjoining, the contact was reached at a depth of 165 feet. This ore-body has a strong dip toward the Denver City. On the Quadrilateral, another claim owned by the Denver City Company, the main shaft is down 234 feet, the bottom in porphyry.

Dunderberg.—A recent letter says that all the drifts were in good concentrating mineral, and the dumps full. Driving on the different levels had been suspended, but was to be resumed as soon as the jigs began running. Two new winzes were being sunk, one from A level, which was down thirteen feet, with one foot of solid ore in the bottom, and the other from the third level, which was carrying a fourteen-inch ore-body. The stopes were looking somewhat better than last reported.

Great Eastern.—The tunnel is in 160 feet, without reaching rock-wall, and is said to carry ore all the way of uniform richness. The superintendent reports that rich ore has been struck in the shaft-workings of the Flora Bell. The width of the vein has been ascertained to be 125 feet.

Green Mountain.—The superintendent telegraphs from Greenville, Cal., under date of May 25th: Raise 100 feet above lower level running east; opening new country. Good ore in abundance. Ledge in raise continues full and strong. Work on new tunnel and new mills is pushed ahead as rapidly as possible at all points.

Highland Chief.—Work has been entirely suspended

GENERAL MINING STOCKS.

Dividend Paying Mines.

Table with columns: NAME AND LOCATION OF COMPANY, Feet on Vein, Capital Stock, SHARES (No., Par Val, Total levied to date, Date and amount per share of last), DIVIDENDS (Total paid to date, Last Dividend), HIGHEST AND LOWEST PRICES PER SHARE AT WHICH SALES WERE MADE (May 22-28), SALES.

Non-Dividend Mines.

Table with columns: NAME AND LOCATION OF COMPANY, Feet on Vein, Capital Stock, SHARES (No., Par Val, Total levied to date, Date and amount per share of last), DIVIDENDS (Total paid to date, Last Dividend), HIGHEST AND LOWEST PRICES PER SHARE AT WHICH SALES WERE MADE (May 22-28), SALES.

g. Gold. s. Silver. L. Lead. c. Copper. * Non-Assessable. † Assessment paid. ‡ Ex Dividend. Total shares sold during the week.

pending the decision of Judge Hallett in the matter of the injunction recently served on the company.

Hukill.—Superintendent Osbiston writes from the Hukill, under date May 21st, as follows:

"The mine throughout is looking very well. North drift, third level, has 2½ feet good ore—not rich, but good concentrating-ore. South drift, same level, is wider, but more mixed. The upraise from the third to second level is up 20 feet, and in magnificent ore. This work was necessary for ventilation, but it will also give us a splendid block of ore to stope, and enable visitors to actually see the mineral from one level to another. The slopes on second level are looking well, and producing about the same amount of ore. We are shipping to the mill 30 tons daily of second-class ore, and 10 tons a week of first-class to Hill's works at Argo. We will show a nice profit for last month, and will do much better this. Accounts will be sent to-morrow."

Little Chief.—From the letter from the superintendent we make the following extracts: During the week ending May 17th, the usual amount of development work has been accomplished. One hundred and fifty-five feet of drifting has been done, and 38 feet of progress has been made in the different shafts and winzes. Shaft No. 3 and the drift on the carboniferous line were in porphyry, and the east cross-cut on the same line had five feet of mineral. The Daly shaft down 170 feet. The total shipments for the week were 1196 tons, and there were paid for 1285 tons of ore. The amount of the May product paid for to date of report was 1797 tons; receipts to date of report, 78,553; total shipments for May, 2104 tons.

The Leadville Herald, of the 16th makes the following statement:

"The Little Chief Mining Company has cleared over and above expenses, over \$100,000 in the past nine days."

Little Pittsburg.—A telegram dated May 24th says: Shipped 170 tons; settled for 106 tons; remaining unsettled for, 146 tons; remitted \$3500 week ending May 22d. Drifts from No. 6 Pittsburg improving rapidly. Also prospecting drift south on Discovery. Shipments increasing steadily. During the week ending May 22d, 170 tons were shipped from the Little Pittsburg mine. There were paid for by the smelter 109 tons; delivered but not paid for, 146 tons; remitted to New York office, \$3500.

May Flower.—The timbering of the new winze is nearly completed. Pumps and machinery will be in operation about June 5th. The winze has been enlarged to the dimensions of a standard double-compartment shaft, to be known as the Burt shaft. Sinking on the Berry shaft will be resumed as soon as the new pump shall have cleared the water from this portion of the mine. The pay-roll for May foots up about \$3000.

Morning Star Consolidated.—A recent letter from the superintendent of this company, whose property is located at Leadville, says that the mine has been developed by over 2000 feet of levels, drifts, and shafts, most of which have exposed valuable ore. The value of the ore now in sight in the Morning Star is estimated at \$5,000,000 gross, and about \$4,200,000 net. The ore-body ranges from six to twenty-six feet in width, and runs high in lead.

Mohave.—The superintendent reports that the ore-body in the Baden is improving in quality and widening as depth is attained. The main shaft is down 70 feet, the ore at several points running as high as \$300 per ton.

Miner Boy.—The manager, in a recent letter, reports that in the cross-cut running north from the third level a fine vein, two feet in thickness, has been encountered, assays from which give returns of six ounces in gold and eleven and one half ounces in silver. The vein contains eight distinct pay-streaks.

New York & Palmetto.—Development work on the different properties owned by the New York & Palmetto Mining Company, in Palmetto District (Nevada), is making favorable progress. Work on the Grimes and Spanish mines is pushed vigorously, with good results. On several claims ore running \$100 per ton is now taken out.

Native Silver (Caribou).—Rich ore has been struck, a vein of pay-rock from eight to ten inches thick having been cut in the main shaft at a depth of 560 feet.

Robinson Consolidated.—The Secretary (Mr. Verdalen) of this mine has received the following from the general manager:

"Mine work for eight days, ending May 15th, inclusive: Lower level tunnel continued 13 feet; total length, 420 feet. No. 2, north cross-cut winze, continued 2 feet; total length, 30 feet. No. 3½, south cross-cut winze, continued 6 feet; total length, 59 feet. No. 4, south cross-cut winze,

continued 1 foot; total length, 50 feet. No. 1, north cross-cut winze, continued 4½ feet; total length, 37½ feet. G. H. R. shaft, cross-cut winze, continued 3½ feet; total length, 38½ feet. Ore on roasters, 230 tons; ore on dumps, 1050 tons; number of men employed, 55.

"The spring thaw necessitates the use of our whole hoisting and pumping power to keep the water from our soft-ore stopes. A new pump is being placed, of the capacity of 200,000 gallons in twenty-four hours. About 500 tons of ore lie in the cross-cuts ready to hoist when power can be spared, probably in a week or ten days. The mine looks well at all points."

This company is piling up immense amounts of valuable ore, awaiting the completion of the smelter and the drying up of the road to Leadville. Work is driven on the new smelter which will be of fifty tons daily capacity. The roasters are kept busy in concentrating ores, but can handle but a small portion of the amount produced.

Standard Consolidated.—From the superintendent's letter, covering the operations for the week ending May 16th, we make the following extracts:

"The north drift from the east cross-cut 700-foot level is in 59 feet. The east cross-cut is making good headway in favorable-looking rock. The character of the rock encountered in the west cross-cut is about the same as described in my former report. The new shaft has reached a depth of 821 feet; the rock passed through during the past week was unusually hard. The ledge in the stope, south of the drift, 550-foot level, is 14 feet wide, of good ore. Since my last report, we shipped bars Nos. 206 and 207, valued at \$47,080.93.

Sir Roderick Dhu.—"A recent letter says: The mine will begin work on its new winze shaft as soon as the estimates are received. The shaft will be sunk from the lower level on the Deadwood side, cutting the ore-body penetrated by the diamond-drill. At the point where the shaft will intersect the vein, the ore assays \$9 per ton. The cost of mining and milling will not exceed \$2.50 per ton, which insures a profit of \$6 per ton."

Silver Cliff.—A dispatch from the superintendent, May 20th, states that 219 pounds of bullion were shipped on that day. Director Bailey telegraphs same date that tests were making, looking to the erection of a new wet mill and a new Davis crusher. He says that experiments on concentrating tailings produce good results.

South Hite.—A telegram received yesterday from the superintendent says: "Struck 20-inch vein in drift on 250-foot level, assaying \$90 per ton."

Spring Valley.—The new blast-shafts were exploded May 24th, removing about 100 feet of bank. The remaining 200 feet of bank will be removed by hydraulic force, thus exposing the rich bottom gravels. The superintendent, writing under date of May 13th, says that work goes on well in all branches. Blue gravel became visible to-day under "rotten boulders" on ground where October clean-up was made.

Sacramento.—The superintendent reports, under date of May 21st:

"During the past week, our operations have been carried on under little more favorable circumstances than usual. There is a noted change in the amount of water (snow) seeping through. The stopes are all looking well. The stope in the extreme west of the October is again resumed, and is yielding fine lots of ore. The vein appears to be rolling away to the southwest, the lines of undulation being plainly marked, and it will go much farther in this direction than was anticipated. The other stopes are yielding well, the ore, as a matter of course, being wet, and requiring drying before assorting and shipment. We have shipped thirty tons of good ore to Boston & Colorado works since last report."

Sappho.—The manager reports that examinations, by experts, of the property, declare the mine to be upon the same contact as the Iron-Silver mine, with strong indications of just such an immense body of ore as in that mine.

Tombstone Mining Company.—The new board, as elected at its recent meeting, is as follows: Trustees, George Burnham, Philadelphia; George S. Corbin, Philadelphia; Philip Corbin, New Britain, Conn.; W. J. Hulings, Oil City, Pa.; Forrest Hulings, Oil City, Pa.; Hamilton Disston, Philadelphia; M. Tasker, Philadelphia; Mr. Cochran, Philadelphia; Richard Grid, Arizona; Mr. Parry, Philadelphia; B. F. Hart, Philadelphia. George Burnham, President; George S. Corbin, Treasurer.

The Telegraph.—The mines of this company are located in the Pioneer District, Pinal County, Ariz. The company is sinking a 5 by 7 shaft in its property. The prospects of the mine are most encouraging. The ore taken out carries considerable native silver and chlorides. The property is half-a-mile from the Silver King mine.

Winnabago & O. K.—The managers says: "For week ending May 15th, we have timbered main shaft 22 feet below second level, and will make much better progress from this point to third station, which will be reached about June 1st. Have suspended work in face of drift on

first level for the present, to enable us to start a winze in body of ore exposed in drift, which is looking very fine. Am working our stope on the second level, which is producing a fine quality of ore. Have shipped to concentrator 14 tons, and had about 90 tons treated, but have not got returns. Number of tons sent to concentrator, 130."

Rappahannock.—Mr. Judson J. Embrey, the superintendent, under date of May 26th, says:

"I have to report excellent progress in our underground work and developments. On the lower (second) level, the tunnel running north is in 102 feet from the shaft, and 36 feet in south from the shaft. The tunnel upon the upper level is being extended beyond the 200-foot terminal point. We are also connecting the two levels by a raise from the lower level. The vein at the several points is of good average size (two feet), and shows well in free gold. The dam at the mill was finished in good time. For the last few days I have been cleaning and preparing the copper-plates. I propose coating these plates with silver amalgam, which I am now preparing. Milling ore will commence about June 10th, and there are already several hundred tons of good ore on the dump."

DIVIDENDS.

The Black Bear Mining Company, of California, has declared a dividend of 25 cents per share.

The Spring Mountain Coal Company has declared a semi-annual dividend of 3½ per cent, payable June 10th.

In California, the Idaho, Grass Valley, has just paid its 129th dividend—this time \$2 per share, or \$6200.

The Northern Belle, Esmeralda County, Nevada, whose last preceding dividend was paid November 15th, 1877, after paying in all \$1,450,000, resumes by a dividend of fifty cents, aggregating \$25,000.

Among the new companies to enter the dividend lists in June will be the Robinson Consolidated, which will inaugurate bi-monthly or quarterly dividends of \$150,000, or 75 cents per share. It is quite probable that the Iron-Silver will start in also, with a dividend of \$100,000, or 20 cents per share.

SAN FRANCISCO MINING STOCK QUOTATIONS.
Daily Range of Prices for the Week.

NAME OF COMPANY	CLOSING QUOTATIONS.						Open- ing. May 28.
	May 21.	May 22.	May 24.	May 25.	May 26.	May 27.	
Alpha.....	6	6	6	5½	5½	5½	5½
Alta.....	2½	2½	2½	2½	2½	2½	2½
Argenta.....	3-16	3-16	3-16	3-16	3-16	3-16	3-16
Bechtel.....	1¼	1¼	1¼	1¼	1¼	1¼	1¼
Belcher.....	2¼	2¼	2¼	3	3	3	3
Belle Isle.....	.....	.....	.....	.....	7-16	.....	.....
Belvidere.....	.....	.....	.....	.....	.....	.....	.....
Best & Bel.....	10½	11½	10½	10½	10½	10½	10½
Black Hawk.....	21-32	.....	.....	.....	.....	.....	.....
Bodie.....	7½	7½	8	8½	8	8½	8½
Boston Con.....	1½	1½	1½	1½	1½	1½	1½
Bullion.....	3¼	3¼	3¼	3¼	3¼	3¼	3¼
Bulwer.....	5½	6	6	5½	5½	5½	5½
Caledonia.....	19-32	7-16	7-16	13-32	13-32	13-32	13-32
Cal. B. H.....	2¼	2¼	2¼	2¼	2¼	2¼	2¼
Chollar.....	3½	4	3½	3½	3½	3½	3½
Con. Imp.....	13-32	13-32	13-32	13-32	5-16	.....	11-32
Con. Pacific.....	2¼	.....	.....	.....	.....	.....	.....
Con. Va.....	3	3½	3½	3½	3	3	3
Crown P'nt.....	2	1¾	1¾	1¾	1¾	1¾	1¾
Dudley.....	1½	9-16	7-16	7-16	1½	.....	.....
Eureka Con.....	18	18	17½	17½	17½	17½	17½
Exchequer.....	2¼	2¼	2¼	2¼	2¼	2¼	2¼
Goodslaw.....	21-32	11-16	11-16	11-16	11-16	11-16	11-16
Gould & Cur.....	4¼	4¼	4¼	4¼	4	4	4
Grand Prize.....	11-16	11-16	20-32	1	1	20-32	.....
Hale & Nor.....	4¼	4½	4¼	4	4	4	4
Hillside.....	.....	.....	.....	.....	.....	.....	.....
Indep'd'nce.....	7-16	.....	.....	.....	.....	9-16	9-16
Jackson.....	.....	.....	.....	.....	.....	27-32	.....
Julia Con.....	11-16	11-16	21-32	9-16	21-32	.....	.....
Justice.....	11½	.....	¾	13-16	.....	¾	¾
Kentuck.....	.....	.....	.....	.....	.....	.....	.....
Lady Wash.....	13-32	.....	13-32	.....	.....	.....	.....
Leeds.....	.....	.....	.....	.....	.....	.....	.....
Leopard.....	.....	.....	.....	.....	.....	.....	.....
Leviathan.....	3-16	.....	1¼	.....	.....	.....	.....
Mammoth.....	.....	2¼	2¼	2¼	2¼	2¼	2¼
Manhattan.....	.....	.....	.....	.....	.....	29-32	.....
May Belle.....	.....	.....	.....	.....	.....	.....	3-16
Mar. White.....	.....	.....	.....	.....	.....	.....	.....
McClinton.....	13-32	.....	.....	13-32	13-32	7-16	.....
Mexican.....	8½	8½	8½	7½	8	8½	7½
Mono.....	5	5	5	5½	5	5½	5½
Navajo.....	3-16	.....	.....	.....	3-16	3-16	.....
North Belle.....	.....	11½	11¼	10¾	10¾	10¾	.....
N. Bonanza.....	.....	.....	.....	5-16	5-16	.....	.....
N. Standard.....	.....	.....	.....	.....	.....	.....	.....
Noonday.....	4½	.....	4	4	4½	4½	.....
Ophir.....	9½	9½	8¾	9¼	8½	9½	1¼
Orig. Kys'e.....	25	.....	.....	.....	.....	.....	.....
Overman.....	2½	3	2½	2½	2½	2½	2½
Potosi.....	3	3	2¾	2¾	2¾	2¾	2¾
Ray & Ely.....	.....	.....	.....	.....	.....	.....	3-16
R. de Monte.....	11-16	.....	.....	.....	.....	.....	.....
Savage.....	3¾	4	3½	3¾	3¾	3¾	3¾
Scorpion.....	.....	.....	.....	.....	.....	.....	.....
Seg. Belcher.....	8	.....	.....	.....	.....	.....	8
Sierra Nev.....	14¾	15¼	14¾	14¾	.....	13½	13
Silver Hill.....	¾	11-16	11-16	19-32	¾	¾	¾
Silver King.....	4½	4½	5	5	5	5	.....
So. Bulwer.....	1	1	1	1	1	1½	.....
Summit.....	.....	.....	.....	.....	.....	.....	.....
Syndicate.....	1½	1¼	1	1½	1	1	.....
Toga.....	1½	.....	.....	.....	.....	.....	.....
Tip Top.....	5¾	6½	6	5¾	5¾	.....	5¾
Trojan.....	.....	.....	.....	.....	.....	.....	.....
Tuscarora.....	.....	.....	.....	.....	5-32	3-16	.....
Union Coa.....	8	18¼	18½	17¾	17½	17½	18½
Utah.....	10	.....	.....	.....	.....	.....	8½
Wales.....	.....	.....	3	3	3½	.....	.....
Yel. Jacket.....	6½	6½	6½	6¼	5½	5½	6

REVIEW OF THE SAN FRANCISCO MARKET.

The course of the Comstocks during the past week does not call for special comment. The market has been somewhat irregular. The prices, however, show unimportant changes, and such changes as have occurred are to lower figures. In Alta, the quotations have ranged from \$2 3/4 to \$2 1/2, and opened to-day at \$2 3/4, against \$2 1/4 a week ago. The diamond-drill on the 1950 level of this mine continues to occasionally cut bunches of low-grade ore.

In Bullion, the prospects through the diamond-drill on the 2350 level, and the rock encountered in the station at the 2450 level, are said to be very encouraging. This stock closed at \$3 yesterday, a considerable decline from the price prevailing a week ago.

The assay of the ore now being taken from the Consolidated Virginia mine is about, from a total of 1383 tons, an average of \$51 per ton, while the assay of 707 tons from the California mine ran nearly \$29 per ton. Both of these stocks are steady, Consolidated Virginia holding the lead as regards value, opening to-day at \$3, while the quotation of California was \$2 1/2.

Eureka Consolidated is lower, closing yesterday at \$17 1/2, against \$18 1/4 as given a week ago. It is stated that the ore-product of this mine is still sufficient to run two furnaces which are producing the usual amount of bullion. Active work is going forward in all parts of this mine.

Mexican opens to-day at \$7 3/4, quite a decline from our last.

The prices of Ophir are fairly maintained. This company is employing a total of 134 men. It is reported that a rich strike of ore, 12 to 15 inches in width, has been made on the east drift of the 2500 level of this mine.

Sierra Nevada is lower. This company is employing 130 men.

The Union Consolidated Company is extracting about 500 tons of ore per week, the average assay-value, according to the latest returns, was \$28.50. This company is employing 153 miners. The stock opens at \$18 1/2, which is the best price of the week. We publish, as being of general interest, the following dispatch, dated San Francisco, May 26th:

"The presence here of Mr. C. W. Brush, President of the Suro Tunnel Company, since last Saturday, and his interviews with Mr. Mackey, caused the rumor that a bonanza had been struck in the Suro Tunnel. Well informed parties here do not believe this to be true. The only official information is, that at a point 1700 feet from the entrance of the tunnel favorable-looking quartz was found, which yielded by assays up to \$25 per ton."

PHILADELPHIA MINING STOCKS.

The subjoined table shows the opening, highest, lowest, and final sales of all the mining stocks dealt in at the Philadelphia Stock Exchange, and at the Philadelphia Mining Exchange, for the week ending the 27th inst.:

Table with columns: Stocks, Open-ing, High-est, Low-est, Final, Sales Shares. Lists various mining stocks like Argenta, Bechtel, Belle Isle, etc., with their respective price movements and sales volumes.

Copper and Silver Stocks.

Reported by C. H. Smith, Commission Stock Broker, No. 15 Congress street, Room 3.

The depression in the market for coppers noticed at the close of last week continued until yesterday, when the report of an advance in ingot in London of \$2 per ton stimulated the market and gave a much better tone to the whole list. The producing mines generally feel the impulse, and show a marked improvement over the early dealings of the week, while the low-priced shares are be-

COAL STOCKS.

Table with columns: NAME OF COMPANY, Capital Stock, Shares, Last Dividend, Rate per Ann., Quotations of New York stocks based on the equivalent of \$100. Philadelphia prices are quoted so much per share. Includes companies like Am. Coal Co., Buck Mt. Coal, Col. C. & I. Co., etc.

BOSTON MINING STOCKS.

Table with columns: NAME OF COMPANY, Shares, Par., May 21, May 22, May 24, May 25, May 26, May 27, SALES. Lists companies like Allouez, Atlantic, Atlas, Aztec, Brunswick, etc.

c Copper. s. Silver. * 2,000,000.

SILVER STOCKS.

The market continues very dull for this class of stocks, and sales light. Catapa declined from \$2 1/2 to \$1 3/4, but closes firm at \$1 1/2 @ \$2. Harshaw steady at \$18 1/2 @ \$18 1/4. Waukeag sold at \$4, which is bid. Sullivan sold at \$7 @ \$7 1/2, but was in demand to-day at \$8 1/2 bid. Silver Islet sold at \$13 @ \$14, and \$13 1/2 was bid at the close. Duncan sold at \$2, and International Silver at 40c.

Coal Stocks.

NEW YORK, Friday Evening, May 23.

These stocks have again been exceedingly active, the sales aggregating 1,263,496 shares, although the prices have, as a rule, been irregular and weak. Reading has been very active, the sales on this market amounting to 118,500 shares; opening at 28, it sold down to 17 1/2 Monday, but sells to-day at 22 3/4 @ 21 1/2. A dispatch from Pittsburg, dated yesterday, says:

"This morning, Samuel Dixon, Esq., attorney for the receivers of the Reading Railroad, appeared before Judge McKenna, of the United States Circuit Court, in chambers, and applied for an order authorizing the receivers to borrow \$1,000,000 for the payment of wages of employes and interest falling due on June 1st. He submitted a preliminary statement of the condition of the company, showing its assets and liabilities, but stated that a full report would be made in a short time by the receivers. The Court granted the order applied for, and Mr. Dixon will leave for home this afternoon. A transcript of the figures could not be obtained for publication."

Delaware, Lackawanna & Western has been the feature of the week, with sales amounting to 516,750

ginning to come again to the surface. It is quite generally believed that we have seen bottom prices for the season, and that higher figures may reasonably be looked for. Calumet & Hecla declined on the 22d to \$200, the lowest point for the year, but rallied steadily to \$220, which was the asking price at the close to-day. In Central and Copper Falls, there was hardly any thing doing. The latter closed \$6 bid. Franklin sold the lowest on the 25th, at \$10 1/2, but the rise in ingot caused a brisk demand for the stock, and all lots offered were quickly taken, resulting in an advance to \$13 1/4 to-day, closing \$13 bid, \$13 1/2 asked. The sales of Quincy were very light this week, only 20 shares being sold at \$2 1/2, the lowest point; sales this afternoon at \$4, which was the bidding price at the close. Osceola declined to \$30, closing \$31 1/2 bid; none offered. No. 3 shaft on the Tecumseh end of the Osceola anydalo is being sunk through over-lying soil to bed-rock as fast as possible, work in the other shafts having been temporarily discontinued through inability to keep them freed from water with present pumping facilities. An engine, capable of doing the required work, will soon be in place, and, as the company has now \$40,000 in its treasury, a vigorous prosecution of the work of development is to be expected.—Northwestern Mining Journal. Fawcett touched \$1 1/4 on the 23d, rallied to \$12 @ \$12 1/2 yesterday, with sales of 450 shares. To-day it advanced to \$15 1/2, and closes at \$15 @ \$15 1/2. Atlantic declined to \$12 1/2, on sales of small lots, but closed strong at \$14 1/4 @ \$15. Allouez sold at \$1 3/4 @ \$2. Huron declined to \$3, but closed strong at \$3 1/2 @ \$3 3/4. National sold at \$1 1/2, but was firmer to-day at \$1 3/4. Ridge sold at \$3. Blue Hill sold at \$4 1/2; closed, \$4 1/4 bid. Star sold at \$1. W. Minnesota sold at \$4. Rockland sold at \$3. Humboldt, 1/2 bid, \$1 asked. Messard, \$ bid. Brunswick Antimony sold at \$20 on the 22d, declined to \$16 on the 24th, and was firm to-day at \$20, and in good demand.

shares. The price has fluctuated between \$78 3/4 @ \$68 1/4, and closes at \$74 1/4.

Delaware & Hudson records sales of 49,437 shares at \$70 1/4 @ \$60 @ 68 3/4.

New Jersey Central has been weak; opening at \$63 1/2, the highest price, it dropped to \$45 1/2, the lowest, and closes to-day at \$58 1/2. It is said that the gross earnings of this company for April were \$350,000 in excess of those for the corresponding month of 1879, and it is estimated that the gross earnings for June will reach \$1,250,000.

Miscellaneous Stocks and Quotations.

Sales and quotations of the stocks and bonds dealt in at New York, Philadelphia, and Baltimore, for the week ending the 27th inst., are given in the following tables. The Philadelphia quotations will have a * affixed. The Baltimore quotations are indicated thus †.

Table with columns: STOCKS, Par Value, High'st, Lowest, Closing, Sales: Shares. Includes entries for St. L. & S.R. Co., Cambria Iron Co., Penn. Salt Mfg. Co., etc.

Table with columns: BONDS, Princ'l. Due, Int'est. Due, High'st, Lowest, Amount. Includes entries for D. L. & W., 7s conv, St. L. & S., 1st mt, M. & E., 1st con, 7s, etc.

Gas Stocks.

NEW YORK, Friday Evening, May 28.

The market for gas stocks is strong and rising, and dividend-paying stocks are getting scarce.

The Manhattan Gas Company has declared a dividend of 8 per cent., payable June 1st. We are reported a sale of 25 shares of this company's stock at 186, ex dividend, although to-night the closing quotations are 190 @ 195, ex dividend.

The Williamsburg Company has changed its certificates to bonds of \$1000 each, 6 per cent per annum, interest payable in April and October.

The aldermen, on the 24th inst., adopted a resolution setting forth that permission had been given all gas companies to lay gas mains in all the streets of

this city, in order to increase competition and lower the rate of gas. This for a time had the desired effect, lowering the price of gas 30 per cent, but it had been frustrated by the recent action of the companies in combining to increase the price. It therefore became the duty of the Common Council, in the interest of all householders, to take measures to relieve them from the exactions of this new monopoly. It was resolved that the Commission for lighting the streets be requested to transmit to the Board copies of the conditions imposed upon the several gas companies that have laid pipes in the streets, under and by authority of the resolution of December 23d, 1876, and that copies of the correspondence between the companies and the Commission be given to the Board.

The following list of companies in New York and vicinity is corrected weekly by GEORGE H. FRENZIS, Broker and Dealer in Gas Stocks, No. 19 Broad street, New York. Quotations are based on the equivalent of \$100.

Table with columns: COMPANIES IN NEW YORK AND VICINITY, Capital Stock, Par, Rate per ann., Am. of last, Date of last, Bid, As'd. Includes entries for Mutual, N. Y., N. York, Metrop., etc.

* Changed from certificates to bonds, of \$1000 each; 6 per cent per annum. † Ex-dividend.

THE BULLION MARKET.

NEW YORK, Friday Evening, May 28.

Nothing worthy of note has occurred during the past week.

DAILY RANGE OF SILVER IN LONDON AND NEW YORK, PER OZ

Table with columns: DATE, Pence, Cents, DATE, Pence, Cents. Includes entries for May 22, May 24, May 25.

BULLION SHIPMENTS.

We give below a statement showing the latest published bullion shipments, in addition to those announced in our issue of May 22d:

Table with columns: DATE, Pence, Cents, DATE, Pence, Cents. Includes entries for May 10, May 11, May 12, etc.

ARIZONA. Tombstone.—The shipments of bullion from Tombstone for the week ended May 14th, aggregated \$52,000.

CALIFORNIA. April Yield.—The Excelsior Water and Gravel Mining Company produced \$110,000 in April.

COLORADO. Leadville Output.—We are indebted to the Leadville Circular for the following figures: We revise our last week's table of the average daily output of the camp, as follows:

Table with columns: Mines, Tons, Mines, Tons. Includes entries for Chrysolite, Little Chief, Dunkin, etc.

SMELTERS' OUTPUT. The following table shows the operations of the smelters for the week ending May 17th:

Table with columns: Bullion shipped, Tons, Grade, Silver @ 1.14, Lead @ 4%, Total, Bars of bullion on hand. Includes entries for Grant S. Co., Oro La Plata, Billing & Eilers, etc.

In addition to this, the samplers shipped ore valued at \$25,441, as against \$31,907 last week, a decrease of \$6556.

On the 16th, the Silver Cliff Company's mill run through fifty tons of ore, the largest day's work, up to that date, done by the mill. The superintendent hopes to have it up to seventy-five tons per day in a short time.

Contracts have been made with the Leadville smelters (J. B. Grant & Co.) to reduce Little Chief ores at 25 per cent less than the one under which past reduction had been made. At present rate of yield, this mine will yield nearly or quite 5000 tons per month.

The Transcript says: "The manager of the Golden Smelting Works kindly furnishes us the following report of a twenty days' run of that establishment from April 25th to May 14th. There were shipped twenty-eight tons of lead bullion, amounting to \$33,823; and also a lot of copper matte, of the value of \$2343, making a total of \$36,166. An average of twenty-two tons of ore per day was smelted."

As soon as teams can be secured, the Montana Copper Company will ship East for reduction about 150 tons of ore. Some of this amount will be treated at Phoenixville, Pa., and the remainder at Baltimore, Md.—Montana Miner.

NORTH CAROLINA. Five ounces of gold bullion were received at the New York office of the Crowell Gold Mining Company this week. This is the first bullion shipment from the Crowell mine.

NEVADA. Northern Belle.—The shipments of bullion from the Northern Belle mine for the week ended May 15th aggregated \$21,594.

Richmond.—The Richmond mine of Eureka shipped 10 bars of bullion, valued at \$17,748, during the week ended May 18th.

Eureka Consolidated.—From May 8th to the 13th, the Eureka Consolidated shipped bullion valued at \$10,048.

Alexander.—The Alexander mine produced \$20,360 bullion during the month of April.

Northern Belle.—From May 1st to May 15th, the Northern Belle mine shipped \$15,308 bullion.

The Austin Reveille says, that during the first week in May the Manhattanville mill was closed two and one half days for the monthly clean-up, and has reduced for the week 101 tons and 1120 pounds, of the assay value of \$28,751.33. Of this amount \$9061.34 was from custom ores, \$10,541.77 from tribute ores and \$9148.22 from Curtis shaft.

UTAH. Our regular Salt Lake correspondent, writing under date of 22d inst., says: The bullion shipments from Utah for the week ending May 22d, inclusive, were: Thirty-one cars base bullion \$69,030.90 Twenty-one bars fine silver 31,736.87

Total \$100,768.87 Silver Reef.—The bullion shipments from Silver Reef, for the week ending May 8th, aggregated \$18,752.02. The bullion shipments through Wells, Fargo & Co.'s express, for the week ending the 15th, aggregated \$23,561.82. Shipment of ore from the Kinmer to the Leeds mill recommenced on the 14th. About thirty men are working in the mine at the present time. The Stormont Mining Company

has received \$33,600 from its mines this month. The Christy mine produced \$21,075 bullion in April.

Exports of Gold and Silver from New York.

Week ending May 22d.....	\$117,334
Corresponding week last year.....	469,914
Since January 1st.....	3,523,923
Corresponding period last year.....	8,004,069
Gold Interest Paid Out by the Treasury.	
Week ending May 22d.....	\$465,329
Corresponding week last year.....	234,532
Since January 1st this year.....	23,118,129
Corresponding period last year.....	25,941,533

METALS.

NEW YORK, Friday Evening, May 28.

We have to report a better tone in the metal market this week. The feeling is becoming more general that prices in the near future will improve all around. The jobbing business continues to be fair and the consumption is well maintained. A new feature is that some inquiries are being made for larger lines.

Copper.—About 200,000 to 300,000 lbs. Lake have changed hands at from 17½@18c., which includes a lot of 100,000 lbs. sold yesterday at 18c., the market closing firm at 18½@18¾c. Jobbing lots are offered at 18½@18¾c. The Baltimore Copper Company is holding at 19c. By cable to-day, Chili Bars are quoted at £56.

From our English advices by mail up to May 15th, we learn that May 12th Chili Bars opened with a small sale at £55 17s. 6d., cash, closing with a good demand at £56@£56½, a moderate quantity of metal offering at £56½@£56¾. May 13th, a fair business was done at £56½@£56¾, cash, falling to £55½, cash. May 14th, a small quantity changed hands at £55, cash, going up to £55½; but the bulk of the business was done at £55½@£55¾. Values of Australian, nominal; Burra Cake, £70@£72; Wallaroo, £72@£74; English, rather wide in price; Tough Cake, £60@£62; Select Ingot, £62@£64; India Sheets, £66@£67; Yellow Metal Sheets, 5½@5¾ per pound.

STATISTICS OF COPPER—LONDON, LIVERPOOL, SWANSEA, AND FRANCE.

	Imports.		Tons.	Deliveries.	Tons.
	May 1st to 15th.	Imports.			
Fine foreign, chiefly Australian.....	215	945	London.		
Chili } Bars and Ingots.....	575	1,086	Liverpool		
} In Ores and Regulus.....	Nil	Nil	& Swansea.		
Totals, England.....	790	2,031			
Fine foreign, chiefly American.....	Nil	Nil			
Chili Bars, Ingots, and Barrilla.....	325	300	France.		
Tons.....	1,115	2,331			
Stocks.					
	May 15th.	April 30th.			
	Tons.	Tons.			
Fine foreign, chiefly Australian.....	5,212	5,942	London.		
Chili } Bars and Ingots.....	32,060	32,571	Liverpool		
} In Ores and Regulus.....	465	465	& Swansea.		
Totals, England.....	37,737	38,978			
Fine foreign, chiefly American.....	633	633			
Chili Bars, Ingots, and Barrilla.....	3,329	3,304	France.		
Tons.....	41,699	42,915			
Chili, chartered } Mail.....	12,077	11,925			
and afloat..... } Telegram.....	4,900	2,300			
Tons.....	58,676	57,140			
Chili G. O. Bs.....	£56	£60¾			
Wallaroo Cake.....	74	76			

	Jan. 1 to May 15.		
	1880.	1879.	1878.
Imports } Chili.....	17,436	17,507	19,634
} Other foreign.....	3,819	6,584	4,950
Tons.....	21,255	24,091	24,584
Delive. es. } Chili.....	18,390	15,645	16,003
} Other foreign.....	3,421	4,838	3,810
Tons.....	21,811	20,483	19,813

Tin.—Our English advices are up to May 15th. On May 12th, this metal was a trifle firmer, with small cash sales from 74¾@75¼s. May 13th marked a further improvement, sales being effected up to 76½s., cash. 77s. for July deliveries. May 14th, quiet; a small trade, 75½s., cash; 76½s. forward. May 15th, 75½s. The *Mining Journal* of May 15th says: "A rise in prices just now appears fully justifiable; for, according to the last statistics, the visible stock has been greatly reduced, owing to a limited supply and good deliveries, and recent advices from America show that there is now more inquiry on that continent for tin plates, and if the demand continues to increase for tin plates, it necessarily follows that the consumption of tin must be augmented, and prices would, doubtless, be proportionately advanced."

By cable yesterday this metal was quoted in London at £73, and this has been confirmed this afternoon. Singapore, \$22; Penang, \$21½; exchange on Singapore, 3s. 10½d., equal to about £75 5s. in London. The sale in Holland, mentioned in our last, amounted to 20,200 slabs. This was advised by cable to-day from London: Average 4½fl. per 50 kilos, equal to £74 per ton in London. In sympathy, Australian on the spot appreciated from 80s. to £2 per ton, improving from £71@£71 10s. to £73.

The market here is firmer, although without much life. The arrivals during the past week have been 3550 slabs of Billiton and 45 tons of Straits. We quote Straits 15½@16c., wholesale; jobbing lots 16¼@16½c.; L. & F., nominal, at 16½c. Australian, in a small way, 15½@16c. Of Billiton, we report sales of about 50 tons on private terms, at not far from 15c, closing with sellers at 15c.

Tin Plates.—There is little doing and the market is dull, excepting for cokes, in which there is more inquiry. Quotations are nominal, excepting for B. V. Coke, which we quote at \$5½; for all others our quotations are the same as last week.

Messrs. Robert Crooks & Co., writing under date of May 13th, from Liverpool, say of tin and terne plates:

"Extreme weakness of our market has been shown by the quick reaction following on two or three days, during which the late vigorous buying was not sustained. It will evidently take considerably more buying to make firm present partial advance. The men's action in limiting output is not yet definitely decided upon, but most probably the decision will be to restrict make by one third. This will tend to give steadiness. Meanwhile charcoal tins and ternes are, except in a few exceptional cases, to be had at bottom points touched this year, while coke tin, though nominally held at 3s. advance, from weak holders for prompt delivery and payment, can be had at less."

Lead.—The market grew stronger toward the middle of the week, owing to the exhaustion of the supply of low-priced lead in St. Louis, and then the strikes in Leadville strengthened holders still more, and stimulated some demand. St. Louis advanced to 4¼c. equal to about 4¼c. here, but some sellers here still are ready to sell at 4½c. It closes with firmer outlook. Sales have not exceeded 100 tons at 4¼c. We quote 4¼@4½c. The shipments by the St. Louis & San Francisco Railway Company for week ending May 14th were 154 tons; for week ending May 21st, 165 tons.

Spelter and Zinc.—The market is very dull with nothing doing, with quotations nominally same as in our last.

Antimony.—Market and prices nominal and same as last week.

Quicksilver.—The *San Francisco Commercial Herald* under date of May 20th, says: "The market remains in an inanimate state. The combination price is kept up at 40c., but outsiders feed the market at a trifle less."

The Quicksilver exports by sea from May 17th are as follows:

	Flasks.	Value.
To Mazatlan hence 17th inst.....	300	\$9,180
Previously since January 1st, 1880.....	10,567	331,621
Totals since January 1st, 1880.....	10,867	\$340,801
Totals same period 1879.....	22,522	669,611
Decrease in 1880.....	11,655	\$328,810
"Receipts for the past week, 829 flasks."		

IRON MARKET REVIEW.

NEW YORK, Friday Evening, May 28.

The failure of the Philadelphia & Reading Coal and Iron Company has had no particular influence on the market for iron. There is a very much better feeling in the iron market, although business has not improved much, nor have prices. There is a feeling that bottom has been touched and that better prices will be obtained by those who can hold on to their iron.

American Pig.—We hear of a sale of an outside lot of 250 tons of Thomas No. 1 Foundry at \$22; also of 2000 tons of No. 1 Lehigh iron at \$23. We also learn of a sale of 1000 tons of Forge on private terms, but under our regular quotations. Those who have made contracts are taking their iron very promptly. Those who are purchasing are taking as little as possible. We quote outside lots as follows: No 1 Foundry, \$25; No. 2, \$24; and Forge, \$21.50@22. The furnace companies, as a rule, are asking \$28 for No. 1 Foundry, \$26 for No. 2, and \$25 for Forge.

Scotch Pig.—We are reported sales of 2800 tons of various brands, all for consumption at private but hardening prices. We quote, Eglinton, \$20@21; Coltness, \$23@24; Glengarnock, \$21@22.50; Gartsherrie, \$21@22; and Summerlee, \$21@22.

Messrs. John E. Swan & Company, of Glasgow, under date of May 14th, report 114 furnaces, against 87 at the same time last year. The quantity of iron in Connal & Company's stores was 441,471 tons, an increase of 2290 tons for the week. The shipments show an increase of 102,391 tons since Christmas, as compared with the shipments to the same date last year. The imports of Middlesbrough pig-iron for the same period show a decrease of 3787 tons. The following are the quotations of the leading brands of No. 1 pig-iron: Gartsherrie, 53s.; Coltness, 57s.; Langloan, 55s.; Summerlee, 52s 6d.; Carnbroe, 53s.; Glengarnock, 53s.; Eglinton, 48s. Middlesbrough pig-iron was quoted as follows, f. o. b.: No. 1 Foundry, 42s. 6d.; No. 2, 40s.; No. 3, 37s. 6d.; No. 4, 37s. 6d.; No. 4 Forge, 37s. 6d.

Rails.—We are reported sales of 5000 tons of steel rails, to be rolled from blooms, and 6000 tons of iron rails, all on private terms. There is a large inquiry, and it is said that prices for domestic rails are firmer. The quotations given us for steel rails range from \$60 to \$65, and for iron rails at \$48@50.

Old Rails.—We only learn of sales of between three and four thousand tons. It is said that as high as \$28 has been paid to-day, although there are still some offering at a lower price.

Wrought Scrap.—This is very quiet, and it is almost impossible to give a quotation. From docks, small lots could probably be purchased at \$22.50@23.

We publish the following letters, received from our regular correspondents:

"BALTIMORE, May 24.
"There seems to be rather more inquiry this week, particularly for charcoal irons, although prices are lower. We quote:
Balt. Char. .. \$45.00@50.00 Cl C. B Blooms 70.00@ 80.00
Va. " " 45.00@ 50.00 " " Billets. 75.00@ 80.00
Anth. No. 1. 26.00@ 27.00 Ref'd Blooms. 60.00@ 65.00
" " 2. 25.00@ 26.00 M. & White.. \$23.00@24.00
" " 3. 24.00@ 25.00

"R. C. HOFFMAN & Co."

"LOUISVILLE, May 25.
"The market continues dull and depressed. Some lots held by speculators who have lost their nerve have been forced on the market and been sold at prices much lower than prices asked by furnaces generally. We reduce our figures according to the actual sales made, although most furnaces will not accept these prices. Have still no demand.

"GEORGE H. HULL & Co."

"RICHMOND, May 25.
"There is still so much of uncertainty connected with the iron market that quotations must be regarded as nominal. There is really no good reason for this distrust in the market. Our Virginia furnaces are accumulating no stock. Our foundries and machine-shops are actively employed on orders, and stocks in consumers' hands are light. These facts should restore confidence, and with confidence must come stability to this great interest.

"ASA SNYDER."

"ST. LOUIS, May 22.
"The business of the past week, while done at lower prices, seems to be more encouraging as to volume.

"CARD & HOFFER."

COAL TRADE REVIEW.

Anthracite.

NEW YORK, Friday Evening, May 28.

As we predicted in our last would be the case, the failure of the Philadelphia & Reading Railroad and the Philadelphia & Reading Coal and Iron companies has reduced the buying to the very lowest limit. The public has been, and is still, looking for a discontinuance of the arrangement which has existed between the companies for limiting the production to the actual requirements of the market, and the fact that nearly all the business that has been done during the past week has been at concessions, has rather tended to strengthen it in its position. The coal, however, which has been sold at less than circular rates has come entirely from second hands, there being no under-cutting so far as we can learn on the part of the companies. Upon the announcement that the Philadelphia & Reading Coal and Iron Company had gone to protest, all the company's coal in this market was taken up by parties who had advanced money to the company; and as a portion of this coal was under demurrage, there has naturally been an inclination to dispose of it at the best prices obtainable, to save the running expenses upon the same. It is now pretty clearly indicated that the Reading Company will enter even more earnestly into the arrangement for curtailing production and securing prices for its coal that will pay a profit. It has been agreed among the several interests that the curtailment of three days a week be continued during the whole of the month of June. From present indications, it is quite probable that this arrangement will have to be continued even through July, as there is nothing;

indicate that a revival will set in much, if any, before August 1st. The consumption of coal continues to be large, and there is every reason to believe that an extraordinarily large quantity will be required during the last five months of the year, and it is confidently believed that even higher prices will rule than are now asked. Although there will probably be a quiet season between now and the first of August, we see no reason why prices should decline; and as freights are very much lower than can be expected upon a revival of business, we believe that there will be no more opportune time for purchasing coal than now.

The United States Court of Pennsylvania, sitting at Pittsburg, has appointed Franklin B. Gowen, Edwin M. Lewis, and Stephen A. Caldwell receivers of the Reading Railroad and Coal and Iron Company. Mr. Lewis, the President of the Farmers and Mechanics' Bank, is trustee of the Reading Railroad income mortgage. Mr. Caldwell is President of the Fidelity Trust Company, which is trustee of the Coal and Iron Company's \$25,000,000 mortgage. The bill in equity, asking for the receivership, was drawn up on Saturday and filed in the court office in Philadelphia, being taken to Pittsburg in time to present to the court yesterday morning. The application was made by Moses Taylor, of New York, a holder of income mortgage bonds, and it is understood that all the parties in interest concur in this disposition of the case. The receivers are required to give \$500,000 security in Pennsylvania, and also \$500,000 additional for New Jersey, for action under the lease of the Bound Brook Railroad. They are to pass their accounts monthly before Joseph A. Clay and George M. Dallas, who are appointed special masters in the case. They are directed to run and operate the railroad of the Philadelphia & Reading Company and leased lines, and to continue the mining operations and other business of the Coal and Iron Company.

The following is the circular issued by the Schuylkill Coal Exchange, asking the operators to continue the curtailment during June:

"It has been agreed upon by the anthracite coal interests to suspend the mining of coal upon the three last days of each week in June, that is to say, on June 3d, 4th, 5th, 10th, 11th, 12th, 17th, 18th, 19th, 24th, 25th, and 26th. To fully carry out the spirit of the agreement, it is essential that the mining, hoisting, preparation, and loading of coal during those days be entirely discontinued, and it is earnestly hoped that the above agreement for suspension will be carried out by every one in the most perfect good faith.

"Respectfully,
 "WILLIAM H. JONES,
 "JOHN E. GRAEFF,
 "JOHN MILNES,
 "R. C. THOMAS,
 "Committee Schuylkill Coal Exchange."

The Executive Committees of the Lehigh and Schuylkill Exchanges met yesterday afternoon at the office of the Lehigh Coal & Navigation Company, and decided to increase the prices of stove and small stove coal fifteen cents per ton. Mauch Chunk prices will be as follows:

Lump.....	\$3.00
Broken.....	2.75
Egg.....	2.50
Stove and small stove.....	2.75
Chestnut.....	2.50
Chestnut No. 2.....	1.50

The production of anthracite coal last week was 398,193 tons as compared with 390,117 tons the previous week, and 512,251 tons the corresponding week of 1879. The total production from January 1st to May 22d was 7,939,037 tons, as against 8,632,714 tons for the like period of last year, showing a decrease this year of 693,677 tons.

Bituminous.

The business in this coal is very small, and prices are a little lower than a few weeks ago. The Clearfield District is very well supplied with labor, and from this time hence will have no difficulty in meeting all demands made upon it. The Cumberland region shows quite an increased business, as compared with last year, the output to May 22d being 228,767 tons greater than for the corresponding period of 1879. The shipments over the Baltimore & Ohio Railroad absorbed of this increase 205,426 tons, and the Pennsylvania Railroad 31,473 tons, while the Chesapeake & Ohio Canal shows a loss of 8131 tons.

The Baltimore Sun of May 24th says:
 "It is learned from official sources that the rates fixed for coal freights from the Cumberland and Clearfield regions, some time since, by the carrying companies, are to be maintained as necessary to their general interests, and that consequently no change is to be made on the first of June, as had been stated. The Chesapeake and Ohio Canal tolls and the boatmen's freight-charges have been adjusted for the season, and they, as well as the railroads, hold that a reduction could not be afforded at this time. The rates once fixed are generally designed to hold for the year."

STATISTICS OF COAL PRODUCTION.

This is the only Report published that gives full and accurate returns of the production of our Anthracite mines. Comparative statement for the week ending May 22d, and years from January 1st:

Tons of 2240 lbs.	1880.		1879.	
	Week.	Year.	Week.	Year.
Wyoming Region.				
D. & H. Canal Co.	46,913	1,157,866	67,877	1,093,463
D. L. & W. RR. Co.	61,828	1,206,429	78,540	1,270,330
Penn. Coal Co.	20,112	347,067	31,716	491,455
L. V. RR. Co.	19,798	370,689	31,248	353,585
P. & N. Y. RR. Co.	913	9,057	1,170	8,817
C. RR. of N. J.	24,300	560,493	36,644	667,462
Penn. Canal Co.	11,055	77,622	.....	.....
Total	184,889	3,789,222	247,195	3,885,112
Lehigh Region.				
L. V. RR. Co.	60,402	1,101,951	65,724	1,092,349
C. RR. of N. J.	34,476	715,169	37,932	770,548
S. H. & W. B. RR.	.....	5,831	.....	8,865
Total	94,878	1,822,951	103,656	1,871,762
Schuylkill Region.				
P. & R. RR. Co.	107,361	2,044,381	140,957	2,566,375
Shamokin & Lykens Val.	10,871	265,726	19,218	289,606
Total	118,232	2,310,107	160,175	2,855,981
Sullivan Region.				
St. Line & Sul. RR. Co.	194	16,757	1,225	19,589
Total	398,193	7,939,037	512,251	8,632,714
Increase.....	.....	.....	.....	.....
Decrease.....	114,058	693,677	.....	.....
Total same time in 1875.....	.....	.....	4,388,706 tons.	.....
" " " " 1876.....	.....	.....	5,502,262 "	.....
" " " " 1877.....	.....	.....	7,234,671 "	.....
" " " " 1878.....	.....	.....	5,121,427 "	.....
" " " " 1879.....	.....	.....	8,632,714 "	.....

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.

Receipts and Shipments of Coal at Chicago, Ill., for the week ending May 22d, and year from January 1st:

	Week.	Year.
	Tons.	Tons.
Receipts.....	55,817	970,300
Shipments.....	7,386	239,100

Coals Cleared on the Canals of the State of New York for the week ending May 22d, and year from the opening of navigation:

Tons of 2000 lbs.	1880.		1879.	
	Week.	Year.	Week.	Year.
Anthracite.....	27,036	104,901	39,482	90,220
Bituminous.....	3,881	11,675	3,076	6,501
Total amount cleared.	30,917	116,576	42,558	96,721

Belvidere Delaware Railroad Report for the week, and years ending May 22d:

	Week.	Year.	Year.
	Tons.	1880.	1879.
Coal for shipment at Coal Port (Trenton).....	1,447	7,681	683
Coal for shipment at South Amboy.....	6,685	149,287	180,439
Coal for distribution.....	8,296	182,640	128,601
Coal for company's use.....	1,528	39,104	32,437

The increase in shipments of Cumberland Coal over the Cumberland Branch and Cumberland and Pennsylvania railroads amounts to 221,727 tons, as compared with the corresponding period in 1879.

The Production of Bituminous Coal for the week ending May 22d was as follows:

Tons of 2240 lbs.	Week.		Year.
	Tons.	Tons.	
Cumberland Region, Md.			
Barclay Region, Pa.	55,942	751,569
Barclay R.R., tons of 2240 lbs.....	9,112	.....	178,729
Broad Top Region, Pa.	4,269	91,365
Huntingdon & Broad Top RR.....	1,640	.....	31,931
*East Broad Top.....	649	28,359
Clearfield Region, Pa.	22,283	423,841
*Snow Shoe.....	649	28,359
*Tyrone and Clearfield.....	22,283	423,841
Allegheny Region, Pa.	7,678	142,444
*Pennsylvania RR.....	6,390	112,859
*Pittsburg Region, Pa.	458	24,138
*West Penn RR.....	6,390	112,859
*Southwest Penn. RR.....	458	24,138
*Penn & Westmoreland gas-coal, Pa. RR.....	26,732	453,027
*Pennsylvania RR.....	11,784	199,138

*1 or the week ending May 14th.

The Production of Coke for the week ending May 14th:

	Tons of 2000 lbs.	Week	Year.
Penn. R.R. (Allegheny Region).....	1,220	25,018	.....
West Penn. RR.....	301	35,575	.....
Southwest Penn. RR.....	15,870	390,059	.....
Penn. & Westmoreland Region, Pa. RR.....	3,160	53,270	.....
Pittsburg, Penn. RR.....	2,983	192,011	.....
Total.....	23,534	695,933	.....

FREIGHTS.

Coastwise Freights.

Per ton of 2240 lbs.

Representing the latest actual charters to May 28th, 1880.

Ports.	From Philadelphia.	From Baltimore.	From Elizabethport, Port Johnson, South Amboy, Hoboken and Weehawken.
	Alexandria.....	65@70
Annapolis.....	.....	.....	.....
Apponong.....	.....	.....	.....
Baltimore.....	55@60	.....	.....
Bangor.....	.....	.....	90
Bath, Me.....	.....	.....	90
Beverly.....	.....	.....	.....
Boston, Mass.....	1.20@1.50	.....	90
Braintree.....	.....	.....	.....
Bridgeport, Conn.....	.....	.....	.....
Brooklyn.....	85	.....	.....
Cambridge, Mass.....	.....	.....	.....
Cambridgeport.....	1.45	.....	.....
Camden.....	.....	.....	.....
Charleston.....	.....	.....	.....
Charlestown.....	.....	.....	.....
Chelsea.....	.....	.....	.....
City Point.....	.....	.....	.....
Coosaw, S C.....	.....	.....	.....
E. Boston.....	.....	.....	90
East Cambridge.....	1.35	.....	.....
E. Greenwich, R. I.....	.....	.....	.....
Fall River.....	1.28@1.45	.....	.....
Georgetown.....	65	.....	.....
Hackensack.....	.....	.....	.....
Hartford.....	.....	.....	.....
Keypoint.....	.....	.....	.....
Lambertville.....	.....	.....	.....
Lynn.....	1.47½	.....	.....
Marblehead.....	.....	.....	.....
Medford.....	.....	.....	.....
Millville.....	.....	.....	.....
Milton.....	1.40	.....	.....
Mystic River.....	.....	.....	.....
N. Brunswick, N. J.....	.....	.....	85
New Bedford.....	.....	.....	.....
Newburyport.....	.....	.....	.....
New Haven.....	.....	.....	1.00
New London.....	.....	.....	.....
Newport.....	.....	.....	80
New York.....	75@85	.....	.....
Norfolk, Va.....	.....	.....	.....
Norwich.....	.....	.....	.....
Norwalk, Conn.....	.....	.....	.....
Pawtucket.....	1.35	.....	.....
Plymouth.....	.....	.....	.....
Portland.....	1.00*	.....	90
Portsmouth, Va.....	.....	.....	.....
Portsmouth, N. H.....	1.30@1.40	.....	.....
Providence.....	1.30	.....	.....
Provincetown.....	.....	.....	.....
Quincy Point.....	.....	.....	.....
Richmond, Va.....	60	.....	.....
Rockland.....	.....	.....	.....
Rockport.....	.....	.....	.....
Roxbury.....	.....	.....	.....
Saco.....	.....	.....	.....
Sag Harbor.....	1.30	.....	.....
Salem, Mass.....	.....	.....	90
Saugus.....	.....	.....	.....
Savannah.....	75	.....	.....
Somerset.....	.....	.....	.....
Staten Island.....	.....	.....	.....
Trenton.....	40	.....	.....
Troy.....	.....	.....	.....
Wareham.....	.....	.....	.....
Washington.....	65	.....	.....
Weymouth.....	.....	.....	.....
Williamsbz, N. Y.....	.....	.....	.....
Wilmington, Del.....	.....	.....	.....
Wilmington, N. C.....	.....	.....	.....

* And discharging. † And discharging and towing. ‡ 3c. per bridge extra. § Alongside. ¶ And towing up and down. † And towing. ** Below bridge.

ROBERTSON
ELECTRIC ORE REDUCTION COMPANY.
 ORGANIZED UNDER THE LAWS OF THE STATE OF NEW YORK.
 Capital Stock, \$5,000,000 in 200,000 Shares; Par Value, \$25.00.
FULL PAID AND UNASSESSABLE.
LINDLEY F. SEAMAN, Secretary and Treasurer.
 This Company is now prepared to sell licenses for the use of its process, which reduces all classes of rebellious ores, except those containing lead, at an expense of \$3 per ton. All infringements upon its patents will be promptly prosecuted.
 Principal Office: Rooms 23 and 24, No. 58 Broadway, New York.