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MESSRS. E. B. & S. W. ELY, agents for Messrs. COXE BROTHERS & CO., the proprietors of the Cross Creek, Lehigh, collieries, have opened an office in Boston, under the charge of Mr. HENRY G. ELY, Jr. In addition to the New York and Philadelphia branches of this firm, which have been established some years, it has but recently opened an office at Chicago, Ill.

THE friends of Mr. CHARLES A. ASHBURNER, a member of the American Institute of Mining Engineers, long connected with the Pennsylvania Geological Survey, will receive with pleasure the news of his marriage, on the 27th ultimo, at Pottsville, Pa., to Miss ROBERTA JOHN, daughter of the late Dr. HENRY JOHN, of Columbia, Pa. The congratulations and good wishes of the JOURNAL are hereby extended to the happy pair, with the hope, however, that the claims of matrimony may not supersede those of science, or withdraw Mr. ASHBURNER from the field in which he has so creditably accomplished so much.

IN noticing the annual general meeting of the shareholders of the Canadian Copper and Sulphur Company in the JOURNAL for January 15th, reference was made to a telegram received from FRANCIS BENNETTS, the superintendent in charge, in which it was stated that "in the adit we have rich silver ore." Since then, we have seen the report of Captain BENNETTS, in which he writes encouragingly of the appearances in the important new discoveries in the St. Francis mine. The following is a certificate of a sample of ores taken from the adit-level and assayed by Mr. HUNT, of the Orford Nickel and Copper Company: "I hereby certify that I have assayed a stone of ore from St. Francis mine that you gave me, and found it to contain as follows: Copper, 3.44 per cent (wet); silver, one assay, 19.5 ounces; one, 17 ounces; and one, 1 ounce to the ton of 2000 pounds of ore; it also carries about \$4 worth of gold.—F. F. HUNT. I am not satisfied with the above results for silver, and will remix the samples and assay it again."

THE announcement of the death of SAMUEL H. BROWN, of the firm of S. H. BROWN & Co., coal merchants, was a blow to a large circle of friends both in and out of the trade. He was born at Haverhill, Mass., about the year 1828, and received his education in that vicinity. When twenty-one years of age, he was carried away with the California excitement, and went to the gold region, where he became known as one of the "Forty-niners." Mr. BROWN was very successful in that part of the country, and returned East in 1862 with a good supply of money. He then became connected with and partly owned the New England coal mine, of Plymouth, Pa., and this led him into the coal business. About five years ago, he came to this city, and founded the firm of S. H. BROWN & Co., of which he became the head. This house subsequently established branches

in Boston and Philadelphia, and has an extensive business. Mr. BROWN died of typho-malarial fever, from which he had been suffering since August last.

THE Philadelphia meeting of the American Institute of Mining Engineers, of which we have given the programme, promises to be one of extraordinary interest and enjoyment. The preparations in the latter particular are reported to be making, on the part of the Philadelphia committees, in a manner heretofore unequalled; and we hear on all sides of the determination of members to "come up to the feast" in throngs. On the other hand, the professional importance of the meeting is assured in advance by the announcement of Dr. CHARLES B. DUDLEY's paper on "The Wearing Power of Steel Rails in Relation to their Chemical Composition and Physical Properties." Preliminary copies of this paper, "subject to revision," have already been sent to the members; and a hasty inspection of it convinces us that it is one of the most elaborate and valuable ever presented to the Institute. When we say that it contains the records of sixty-four chemical analyses of rails, with the history, section, and physical tests of each, we say enough to prove its exceptional value as a contribution to the discussion of the subject. If it should elicit as lively a debate as that which followed the former paper of Dr. DUDLEY, it will make the Philadelphia meeting memorable.

PRE-CAMBRIAN GLACIERS.

One of the most interesting contributions of the past year to the science of historical geology was the publication of Professor GEIKIE's observations of the Laurentian gneiss of the North of Scotland. This gneiss, where it is exposed along the western margin of Sutherland and Ross, exhibits bare, rounded hummocks and ridges, happily called by Professor GEIKIE "mammillations" of the surface—equivalent, we suppose, to the *roches moutonnées* of the French. The smooth polish and striation which glaciers only are known to produce may also be easily found on this gneiss. There would be, therefore, no reasonable doubt that, in a glacial period (presumably the recent period known to geologists by that name), this region had been worn down and rounded by the passage of moving ice, but for the startling fact that Professor GEIKIE has been able to trace the rounded outlines of the ice-worn Laurentian rock passing distinctly beneath the overlying Cambrian rocks.

Already in 1855, RAMSAY argued before the Geological Society the existence of glaciers in the Permian period; others have less positively asserted the probability of Silurian glaciers; but these latest observations, if they should be confirmed in data and in interpretation, show a still greater antiquity for the effects of ice. All that Professor GEIKIE claims at present is, that these ancient rock-surfaces, if found in a recent formation, would certainly be pronounced without dispute the work of land-ice. We need not point out that if a Cambrian, a Silurian, a Permian (and who knows how many another) glacial period should be established, some conclusions concerning the Glacial Period might need revision.

AIR-MOTORS FOR ELEVATED ROADS.

When our New York elevated railroads were new, and especially while they were operated with some degree of rivalry, the companies made great professions of readiness to adopt all the improvements which science could suggest, for diminishing the annoyances and dangers and increasing the public benefits attendant upon their enterprise. The noise of the trains was to be ingeniously deadened; the smoke of the engines was to be swallowed; the systems of signaling, of heating and lighting, of starting and stopping—in short, all parts of the railway practice—were to be overhauled and perfected; and if the public would only wait a little, it should have no cause of complaint.

Time has brought no very striking improvements in any of these particulars, while it has, we fear, removed some of the motives which might lead to improvements. The roads have demonstrated their great usefulness, and the wrongs of individual property-owners have thus far been left without remedy. The consolidation of rival lines has done away with the necessity of emulation, and the practical watering of stock has called for an economy resembling parsimony in management. There is apparently less need of conciliating public sentiment by mechanical reforms, and less money available for experiments. Things seem to be settling into a rut; and the elevated railway system of the metropolis bids fair to remain what it now is, a great public convenience, based on an outrageous disregard of private rights and administered in such a way as to secure the profitable patronage of the people—and give in return as little as possible. So long as folks don't prefer to take horse-cars or omnibuses, or go afoot, there is no pressing motive for further improvement in these railroads.

The worst nuisances of the elevated lines are connected with their use of steam-motors. The experience of the old Greenwich street road, though really not decisive, seems to have put stationary motors out of the question; and of all the substitutes for ordinary steam-power, there is but one which promises at present to be practically successful. That one is compressed air. We are aware that various experiments in this direction

have been made elsewhere, with unsatisfactory results; but there is the highest authority for the assertion that an appeal to thorough engineers, rather than mere inventors (who are notoriously often unable to perfect in detail even their meritorious designs), would result in the preparation of plans on which convenient and effective compressed-air locomotives could be constructed.

Colonel BEAUMONT, of the British Royal Arsenal at Woolwich, is indeed reported to have solved the problem already. A feature of his engine which evidently increases its economy, and also diminishes the well-known difficulties of refrigeration, is the use of several cylinders, in which the air is used at different pressures, as in a compound steam-engine. The BEAUMONT locomotive weighs ten tons; carries in its reservoir one hundred cubic feet of air, compressed to one thousand pounds per square inch; will draw a load of sixteen tons; has traveled thirty miles in sixty-three minutes; and works in comparative silence. Thus, at least, speaks *Chambers's Journal*.

A year ago, there was some talk of compressed air upon the horse-rail-roads of New York; and an air-motor was actually run for some time upon the Sixth Avenue. The reports of its performance were favorable, but we have heard nothing of it lately. We hope the idea is not abandoned. Sooner or later, the reform must come; and when every body perceives its feasibility as clearly as experts already do, the elevated roads will be forced to give up their smoking, snorting, cinder-dropping dummies.

an average of \$2.51 for the year. The average price of Lackawanna coal for 1880 was \$4.01, or \$1.50 per ton more than in 1879. The Scranton sales, although at times "bolstered," were very much nearer the market than were the circular prices of 1880. Taking the most unfavorable view of the situation, the prices of 1880 were from \$1 to \$1.25 greater than in 1879, affording an increase in revenue on the full shipments of say from \$23,500,000 to \$29,000,000.

Our review of the coal trade for 1880 is prepared more to make complete the series, and from which to draw future lessons, than for any teachings it will yield at present. It is the object of these reviews to point out the dangers which the trade passes through or is likely to pass through. The year under review has been one of comparatively plain sailing, and the chief value of its history will be to afford hope to those who may be in the trade during some storm similar to that which the companies were but recently passing through. The reviews to which we can look with the most pride, and which are of unquestioned value to those interested in all departments of the coal trade, are those covering the periods of great danger, and to these we refer our readers now. That history repeats itself in the coal trade, has been proved over and over again, and so will it probably continue; but still there are those among our readers who will prepare for the storm that must surely follow the present bright weather, and those who do, although they will not pass through without some injury, will probably avoid wreck.

The year 1880 witnessed in this country a degree of prosperity unequalled in the commercial history of the world. The wave was so powerful that every thing was carried before it, and apparently incapable managers became successful, and companies on the verge of bankruptcy became financially strong, and gave promise of substantial returns to their stockholders in the future. That the year developed a very encouraging and highly satisfactory condition of affairs, is beyond all question; but whether this condition is permanent, is a matter now worthy of consideration.

The causes of our prosperity are numerous. The most prominent are: A series of unusually large crops in this country and unfavorable ones abroad, which have compelled the world to draw upon us for its necessities; a large production of gold and silver, which we have been able to retain as a sound basis of a medium of exchange; economy and skill in all departments of manufacturing, which have not only enabled us to supply our own wants—which were abnormally large, created by the long period of depression—but to enter foreign markets, and thereby swell the balance of trade in our favor so much as to compel the world to increase our wealth by shipping us large amounts of precious metals. In addition to the active causes of prosperity, the country has passed through a period of liquidation which has placed it upon the soundest basis.

These causes produced confidence, and with it there was revived the speculation natural to our people. Manufactories were re-started, and the public, having confidence in full employment for labor and activity in other branches of industry, purchased the products of the factories; the demand for transportation became so great that established railroads were extended, new roads were built, greater repairs were required and justified, resulting in a very large demand for iron and steel; and so could we pass through first one and then another branch of industry, and find cause for a large increase in the consumption of coal. The farmers of the West, after several years of hard labor, were enabled to free their properties from mortgages to a very large extent. This period was followed by very favorable crops, good prices for grain, and surplus earnings which enabled them to participate to a considerable extent in the luxuries of life, among which may be noted the large introduction of base-burner stoves and the creation of a demand for coal in the West that anthracite companies have been unable to supply this winter.

The coal combination was continued during 1880, but upon a new basis. The plan adopted was for all the collieries to stop work at the same time, and for none of them to be under any restrictions when work was resumed. It was claimed that no effort was made to regulate prices; but whenever any of the companies varied particularly from the rates that seemed to be established as if by common consent, there was considerable opposition shown. Without the restriction, there would have been produced last year, beyond all question, very much more coal than the market would have taken, and, as a natural consequence, prices would have ruled decidedly lower. Although there were temporary benefits derived from the combination during last year, the business was to an extent curtailed and the seed for trouble in the future was planted. Under this programme, it was and will be the object of the companies when mining to produce and place upon the market as much coal as possible during the time that they are at work. This situation has stimulated the development of unnecessary mines and the enlargement of the facilities for preparing coal. The result is, that the capacity for producing is becoming so great that the collieries will have to be closed down so much of the time as to make it necessary to greatly increase the wages of the miners and laborers, that they may live under the short-time system.

Although the shipments of coal last year were not quite 23,500,000 tons, the consumption was very much larger. During 1879, in which year

REVIEW OF THE COAL TRADE OF THE UNITED STATES FOR 1880.

(Continued from page 73.)

CIRCULAR PRICES OF LACKAWANNA COAL IN 1880.

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut
January.....	\$ 3.40	3.40	3.40	3.45	4.00	3.75
February.....	3.40	3.40	3.40	3.45	4.00	3.75
March.....	3.50	3.70	3.70	3.70	4.00	3.90
April.....	4.00	4.00	4.00	4.00	4.00	4.00
May.....	4.00	4.00	4.00	4.00	4.25	4.00
June.....	4.00	4.00	4.00	4.00	4.25	4.00
July.....	4.00	4.00	4.00	4.00	4.25	4.00
August.....	4.00	4.00	4.00	4.00	4.25	4.00
September.....	4.00	4.00	4.00	4.20	4.45	4.10
October.....	4.00	4.00	4.00	4.20	4.45	4.10
November.....	4.00	4.00	4.00	4.20	4.45	4.10
December.....	4.00	4.00	4.00	4.20	4.45	4.10

CIRCULAR PRICES OF PITTSBON COAL IN 1880.

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
January.....	\$ 3.20	3.10	3.10	3.10	3.50	3.50
February.....	3.20@3.55	3.10@3.55	3.10@3.45	3.10@3.50	3.50@3.95	3.50@3.80
March.....	3.55	3.55	3.45	3.50	3.95	3.80
April.....	3.90	3.90	3.80	3.80	3.95	3.90
May.....	4.00	4.00	3.85	3.85	3.95	3.90
June.....	4.00	4.00	3.85	3.85	3.95	3.90
July.....	4.00	4.00	3.85	3.85	3.95	3.90
August.....	4.00	4.00	3.85	3.85	3.95	3.90
September.....	4.30	4.30	4.00	4.10	4.35	4.00
October.....	4.30	4.30	4.00	4.10	4.35	4.00
November.....	4.30	4.30	4.00	4.10	4.35	4.00
December.....	3.95	3.95	3.95	3.95	4.20	3.95

LEHIGH COALS AT AMBOY, PORT JOHNSTON, AND ELIZABETHPORT.

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
January.....	\$4.00	\$3.50	\$3.60	\$3.60	\$4.00	\$3.75
February.....	4.00	3.50	3.60	3.60	4.00	3.75
March.....	5.00	3.50	4.25	4.25	4.00	3.90
April.....	5.00	.....	4.25	4.25	4.00	4.00
May.....	5.00	5.00	4.25	4.25	4.25	4.00
June.....	5.00	5.00	4.25	4.25	4.25	4.00
July.....	5.00	5.00	4.25	4.25	4.25	4.00
August.....	5.00	5.00	4.25	4.25	4.25	4.00
September.....	5.25	5.00	4.40	4.40	4.45	4.00
October.....	5.25	5.00	4.40	4.40	4.45	4.00
November.....	5.25	5.00	4.40	4.40	4.45	4.00
December.....	5.25	5.00	4.40	4.40	4.45	4.00

WILKES-BARRE COAL AT PORT JOHNSTON.

	Lump.	Steamer.	Grate.	Egg.	Stove.	Chestnut.
January.....	\$ 3.40@3.15	3.40@3.15	3.40@3.15	3.45@3.20	4.00@3.75	3.75@3.50
February.....	3.15@3.40	3.15@3.40	3.15@3.40	3.20@3.45	3.75@4.00	3.50@3.85
March.....	.....	.....	.....	.....	4.00	3.90
April.....	4.00	4.00	4.00	4.00	4.00	4.00
May.....	4.00	4.00	4.00	4.00	4.25	4.00
June.....	4.00	4.00	4.00	4.00	4.25	4.00
July.....	4.00	4.00	4.00	4.00	4.25	4.00
August.....	4.00	4.00	4.00	4.00	4.25	4.00
September.....	4.00	4.00	4.00	4.20	4.45	4.00
October.....	4.00	4.00	4.00	4.20	4.45	4.00
November.....	4.00	4.00	4.00	4.20	4.45	4.00
December.....	4.00	4.00	4.00	4.20	4.45	4.00

The above, being circular prices, are not nearly so satisfactory as auction sales returns. The latter, however, became so much of a farce that even they were not to be relied upon. The average of the Scranton sales for nine months of 1879 was \$2.33 per ton. The average circular price for Lackawanna coal for the remaining three months was \$3.05, making

tunnel to ascertain the depth of vein. Since the strike in the Camp Bird, it is shown that this contact-vein runs through the entire length of the Silver Bell mine. The southern extension of the Silver Bell is the Buckhorn mine, which reveals the same fine quartzite and mineral at a depth of 50 feet. The Castle mines were among the first located on Aspen Mountain by Hank Tourtelotte. A shaft has been sunk 65 feet on each, which shows the southern portion of this contact-vein to be over 40 feet deep. The ore on the Castles is galena and native silver, and mill-runs over 100 ounces silver per ton. The Swedish Boy mine, on the same vein as the Silver Bell, about two miles south, is taking out some chloride ore that assays over 5000 ounces. The owners are preparing to make regular shipments to Leadville. The Tioga mine has a tunnel 40 feet in, with a fine showing of lime and galena. The Little Giant, Forrest, Tip Top, Durant, Evening Star, and Silver Star mines are vigorously worked. The Lottie V., Covington, and Little Bess are worked with good prospects. The Monarch is pushing ahead, and the indications point to the same body of galena in the tunnel that is exposed to view in the adit above. The Little Mac has a 60-foot shaft, with a drift running north in mineral for 40 feet. The ore shows a fine galena, chlorides, and gray copper, and assays high in silver. The Inter-Ocean joins the Little Mac, and is worked by a tunnel now in 130 feet, with the possibility of cutting the same body of mineral. The Washington mine was parallel to the spar, and is worked by an inclined shaft that shows fine lime and galena, stained with chlorides. The Mother Shipton shows an immense vein, the croppings of heavy-spar and mineral being in places 60 feet wide; it is opened by a 30-foot tunnel, showing lime, spar, and galena in the whole breast. The Grand Duchess has two shafts—No. 1 having five feet of mineral, fine galena, and gray copper, with good hanging-wall, the foot-wall not yet cut. No. 2 shaft shows six feet of mineral; this No. 2 shaft is 75 feet west of No. 1, and is a distinct vein, thus showing two distinct mineral veins running through these claims, parallel with each other. Assays show 1500 and 2400 ounces silver per ton. The Pioneer and Galena mines run parallel with the Mother Shipton and Grand Duchess. The Silver Bell, Pioneer, Spar, and Smuggler are the best developed mines. The Pioneer has a large body of galena and gray copper, and is further developing by a cross-cut tunnel, which will enable the owners to furnish at least 50 tons of ore per day. The Pride of the Hills mine and Traynor lode are in large bodies of good milling ore. The Steamboat Tunnel is actively pushed, and has a good showing for mineral. The same may be said of the Town Site Tunnel. The 1001 mine, belonging to the Smuggler Company, has had no work done outside of its assessment; it shows a fine face of mineral. The apathy shown by the company in developing this claim has caused the mine to be jumped by three separate claimants, which will involve a tedious litigation. For two months, the Smuggler lay idle, pending a sale; but since it has passed into the hands of Mr. Thomas Ewing, Mackey's expert, the work now begun will be carried on with vigor all winter. The mine is opened by three shafts 70 feet apart, No. 1 showing the vein 40 feet deep, and the foot-wall not yet reached. The ore is a fine-grade galena, carrying native silver, select specimens of which will assay nearly 20,000 ounces silver per ton. The Chance lode, north of 1001 mine, is located but 300 feet above the town site, and offers easy facilities for extensive development, while the ore contains sufficient lime, iron, and lead for smelting purposes. This mine, like the Silver Bell, shows the vein running through its entire length. It was opened first by adit and then tunnel, both showing an 8-foot vein containing lime, iron, galena, and chlorides that assay 1500 ounces silver per ton. A shaft was recently sunk which uncovered the same vein 750 feet from tunnel. The ore contains no refractory elements, and shows an extensive body and high-grade character.

In concluding these remarks upon Aspen, I would like to say that no more promising field is offered to the miner or prospector than the Gunnison country, which has more than fulfilled the predictions of last winter, as was verified by the rich mines found at Aspen, Ashcraft, Gothic, Ruby, Irwin, and Pitkin. Two wagon-roads will be opened by the way of Buena Vista and Twin Lakes. I can say to those intending to go to the Roaring Fork country, that they are not by any means too late for prospecting, and the country is not staked for miles around. Not over 1500 persons came to the Roaring Fork region last year, and out of this number 1000 remained at Aspen; and as there were but 500 to prospect a mineral belt over twenty miles long, it is very obvious how small a fraction of this mineral country has been prospected. This year will also see the immense tract of land embraced in the Ute Reservation opened up for settlement. Accounts of those who have returned from there report the altitude lower than at Denver, while there are thousands of acres of land that are fertile and productive for farming purposes, and the grazing for cattle can not be surpassed. An unexplored mineral section lies between the Grand and White rivers, while fine-looking specimens have been shown from Snow Mass Mountain and Sopris Peak. But the mineral section that offers the best inducements for prospecting is the extensive mineral region around Ashcraft, at the head of Castle Creek, and about 13 miles from Aspen. Late in the summer, several specimens from the Little Alice and Angelo mines were brought into Aspen that assayed very high in silver. Sufficient development has been made to demonstrate the fact that this is the most extensive mineral belt yet found, with every indication of large veins, free-smelting ore, showing ruby and brittle silver, black sulphurets, and galena, specimens of which have assayed into the thousands. Ashcraft is 80 miles from Leadville, and the same distance from Buena Vista, and can be reached by wagon-road from Buena Vista, which passes directly through the town; or from Leadville, by way of Twin Lakes and Red Mountain Pass.

ROBERT ARMSTEAD.

ASPEN, COLO., Jan. 15.

A MINERS' STRIKE SUCCESSFUL.—PITTSBURG, PA., Feb. 2.—The Low-Grade Division coal miners of the Alleghany Valley Railroad, numbering 4000, who have been on a strike for an increase of 10 cents a ton on screened coal, and 6 cents on unscreened, have gone in, the operators conceding the advance.

The coal miners at Steubenville, Ohio, have struck for higher wages.

The colliers at over 80 collieries in North Staffordshire, England, gave notice on the 2d inst. for an advance of wages.

SAN JUAN SILVER MINES—REVIEW OF THE YEAR 1880.

SUPPLEMENTAL PAPER.

Special Correspondence of the Engineering and Mining Journal.

Regarding the camp of Rico, on the Dolores River, I can only speak in a general way, as I have not visited it since August, 1879. That, for extraordinary abundance of ore-deposits and lodes, this is a phenomenal district, no one can deny. Several good mines have been discovered and developed; and now that they are getting down to systematic work and development, I think a great many more will be found. A smelter has been erected and made a successful trial-run; and now that there is a home market for the ores, obviating the necessity of shipping to Ouray and Silverton at a cost of from \$30 to \$40 per ton, I think Rico will come to the fore as a large producer. Then again the Denver & Rio Grande Railroad, reaching Durango this spring, will place Rico within 40 miles of the end of the railroad, and render mining facilities greater and cheaper. Rico has suffered great injustice at the hands of snide operators, the camp offering superior facilities for the operations of these mining vermin. The extraordinary abundance of earthy ores, and of the same character, enabled hundreds of holes to be dug which showed up mineral-stained earth, float, and earthy ores, some of them perfectly valueless, but similar in appearance to the ores of some of the really good mines in the camp, and there is no doubt but that a great deal of "salting" was done, the "salt" being obtained from the good mines aforesaid; but on the homeopathic principle of *similia similibus curantur*, people have learned to take statements of mine venders *cum grano salis*, and I think the halcyon days of mining sharps in Rico are past and gone.

As regards the work done in the camp, I consider that so far the hills have simply been scratched over, the aim of each prospector being principally to expose a little ore and then sell out; therefore it is quite within the bounds of possibility that this year some big discoveries may be made. What little systematic mining has been done has shown that some of the ore-bodies are permanent and paying, and this stimulates and gives men courage to stay by their claims and develop them before offering them for sale.

The mines of this camp are situated in a beautiful country, in the midst of pine and quaking aspen forests, with abundance of never-failing streams and large beds of splendid coal; so that, in my opinion, with the close proximity of a railroad, rendering supplies cheap, very low-grade ores can be worked to pay largely.

The early history of Rico was fully described in my letters to the ENGINEERING AND MINING JOURNAL of August 23d and 30th, 1879.

Rico's mines are not by any means a new discovery, as they are said to have been first visited in 1860 by Baker's ill-fated expedition; and in 1869, John Eckels, "Pony" Whitmore, and two others made their way thither from the Merino mines, near Elizabethtown, New Mexico, and discovered many of the mines now worked at Rico. In 1870, Gus Begole, now of Ouray, went in there with an assay outfit, and joined his partner, Eckels. These two prospectors sunk several shafts and ran some tunnels, and, although they exposed abundance of ore, it proved too low-grade to pay at that early day; they therefore abandoned their claims. As greater depth, however, was gained by other men in the old workings in succeeding years, richer ore was found, and the fall of 1879 witnessed a blaze of excitement which has since then never entirely "let up," and Rico is now a prosperous mining town, with its full quota of stores, saloons, hotels, restaurants, smelter, saw-mills, etc. It is altogether probable that, about May next, there will be a big rush in there. But there is plenty of room for all, an immense tract of country only half prospected, and a big opening in the town for business in almost any branch. But I would here warn any and all against going there without means. If a man is going there to prospect, let him have enough money to pay for an ample outfit for six months and some spare cash besides. It is no country for paupers, and such will invariably suffer.

As to Rico being a "carbonate camp" and a "second Leadville," that is simply twaddle, as, in point of fact, it is not a carbonate camp, the ores being principally oxides and sulphides; and it resembles Leadville in nothing except that some of the ore-bodies are genuine contact-deposits; that is to say, they are inclosed between walls of dissimilar rock, generally porphyry and limestone.

Rose-colored statements and inferences have permanently ruined many a good camp, and men who will go East and make such statements to eager and credulous newspaper reporters are either ignorant asses or mining sharps and thieves.

In Silverton, of course, I consider the success of the camp as assured, as, with the railroad terminus at Durango, the facilities for cheap mining will be so increased that the immense veins of argentiferous galena contiguous to Silverton will be made to pay permanently and handsomely. One of the most remarkable properties of this kind is the Veta Madre and its extensions, owned by Gus Begole and John Munro. I visited it last fall, and it is no exaggeration to say that, where this magnificent vein outcrops on the mountain side, you can walk for 2000 feet on galena ore which varies from two to four feet in width, and will run from 40 to 150 ounces silver to the ton. I saw no zinc in it and no gray copper, simply argentiferous galena associated with copper pyrites. There must be sites for at least ten drifts on the vein, and the amount of ore that could be produced daily from this vein when developed would be enormous. It is only about seven miles from the town of Silverton, and half a mile from the toll-road over Stony Pass.

The New York & San Juan Mining and Smelting Company (I think that is the title) has bought a large group of the best paying mines around Silverton, together with Greene & Co.'s smelter, and is also building a large smelter at Durango, in close proximity to the enormous Animas coal-beds, which, I believe, it also owns; and I am informed that the directorate is largely composed of prominent men connected with the Denver & Rio Grande Railroad, with General Palmer at the head, which, if true, is sufficient guarantee that the enterprise will, in all human probability, be pushed to success.

One source of great congratulation to Ouray and her mines is the fact that the treaty with the Utes is ratified, the money paid over to them, and the Indians will be moved in the spring. As soon as the President issues his proclamation declaring the reservation open for occupancy

upward of fifteen millions of acres of mining, agricultural, and pastoral lands, now tied up for red men, will be thrown open for settlement and cultivation by white men, for the benefit of this portion of San Juan and our miners. A great portion of this tract, especially that watered by the Uncompahgre and San Miguel rivers, is adapted to ranching, and more of it for cattle-farming. What the mineral resources of the mountainous portion are, remains to be determined by future prospectors. Wild stories have been told about gold and silver. But 'twas ever thus—the richest mines are always in the "great beyond." For my part, I very much doubt the truth of these yarns. The land which ought to be available for raising hay, cereals, and vegetables for the use of our miners, has, up to this date, been occupied by Granny Schurz's pets, and consequently we pay enormous prices for the same. For instance, I paid, this fall, for oats for my animals, 8½ cents per pound; 5 cents per pound for 10,000 pounds of potatoes for our miners; 5 cents per pound for a ton of cabbages; 10 cents per pound for onions; \$10 per hundred pounds for flour; \$65 per ton for hay; 7½ cents per pound for 12,000 pounds of beef: add to this, 1½ cents per pound for packing to the mines, and some idea may be formed of how much more it costs us to produce ore than it really ought to. Thus has the absurd policy of the Interior Department helped to retard the greatest industry of the United States. I think, however, that the removal of the Indians, and the consequent enlargement of our ranching interests, will put a stop to exorbitant prices, and we shall be able to produce ore at a correspondingly small cost per ton.

Ouray itself, the most picturesque and beautiful little town I ever saw, is now thriving and comfortable, plenty of money afloat, and nearly every one in business making money. Perhaps the best idea I can give of its size is by enumerating its places of business. They are as follows: Watchmakers and jewelers, 2; gentlemen's furnishing goods and cigars, 1; boot and shoemakers, 2; drygoods, 2; bath-house, 1; saloons and billiard-rooms, 6; bowling-alley, 1; hotels, 2; restaurants, 3; livery stables, 3; churches, 3; social evil, 1; blacksmiths, 2; druggist, 1; brewery, 1; tailor, 1; physicians, 3; surgeon-dentist, 1; surveyors, 2; assayers, 2; saw-mill, 1; photographer, 1; washee washee, 1; pettifoggers, innumerable, and the usual quota of judges and colonels. Barlow & Sanderson's stage line runs in here with daily mail and express, and no end of new enterprises, such as a fire-company, school-house, water-works, etc., are on the tapis.

In my description of Imogene Basin, I omitted to mention the Hancock and Tuscola, two of the most promising properties up there. They are adjoining claims on the same vein, and a cross-lode to the Gertrude. The owners, Butler & Jackson, have been working them since last October, and have run a drift 80 feet on the vein, having an average of 15 inches solid pay-streak the whole distance, with nearly two feet of ore showing in the breast now. The ore is galena, carrying from 20 to 30 ounces of silver per ton, and about 7 per cent lead, and copper pyrites yielding 65 ounces silver to the ton. In doing this dead-work, they have taken out 80 tons of ore, which is now on the dump. There are sites for seven drifts on the vein without sinking. It is in a trachyte formation, about five feet between the walls, the vein-matter being soft porphyry, and the matrix of the metal a white quartz. This property is on the same vein and next southerly extension of the Talisman, one of the Allied Mines group.

I also omitted to mention the Eldorado in Sneffels Basin. This most promising prospect has, I believe, produced more than \$4000 with 250 feet of work, and upward of 75 tons of 50-ounce ore yet on the dump, which would not pay to ship at the time it was produced. I think it is a caunter lode to the Yankee Boy. The ore is brittle and ruby silver, sometimes associated with red blende, in a matrix of quartz and heavy-spar.

There are many splendid mines in San Juan, of course, that I have omitted to mention, simply because my personal knowledge is confined to those contiguous to my own district, Ouray. Having lived and worked in the Sneffels Mining District, winter and summer, for now nearly four years, I have not had the time to visit the mines of other San Juan districts, and it is not from any feeling of jealousy that I have not given them more extended mention. Of the thousands of promising prospects with which our hills are covered, having little more than assessment-work done on them, I have said nothing; but in the blessed absence of any "boom" in this camp, mining values are not inflated, and there is no camp where, in a proper, business-like, and judicious way, capital can be invested to so great an advantage as in the mining districts contiguous to Ouray; at least, such is my opinion; if it were not, I should hardly be here myself.

OURAY, Jan. 1, 1881.

W. WESTON.

MAINE MINING NEWS.

Special Correspondence of the Engineering and Mining Journal.

The Blue Hill is now hauling the slate for the roof of its smelting-works from Bucksport. The building is nearly completed, and the rest of the material for furnaces is expected here soon. Sinking is going on on the incline for the 200-foot level.

The new buildings (smelting-works, engine-house, etc.) at the Twin Lead are nearly completed. The smelting-works building is roofed with corrugated iron. The machinery (breaker, etc.) arrived several days ago.

The Stewart Company is sinking on its vertical shaft, and has taken some ore from the bottom of the shaft.

The Douglass is doing the usual amount of work in the mine, and also a great deal of work on furnaces, etc. Two furnaces are nearly completed, and the work on the building to cover them is well forward. The foundation for the large building for the other furnaces is also nearly or quite done. The company is roasting more ore, and the immediate prospect is excellent for an extensive smelting business.

BLUE HILL, ME., Jan. 31.

DIRIGO.

At the Sullivan & Waukeag mine sinking is going on below the 200-foot level and with a wider vein than before encountered, showing ruby silver with the other forms of pay-ore. Above the 200-foot level, the stopping of rich ore is pushed by as large a force as can be worked in the mine to advantage. At the mill, the machinery having at last been landed, the completion of the mill will be rapidly pushed forward.

At the Milton, work is progressing in both shafts. In shaft No. 1, the rock is improving. There was a little excitement last week, owing to the report of a strike in this shaft; but I have seen nothing to corroborate the report as yet. This mine is one of the best-equipped mines in the State, and will show up the vein as soon as it is struck.

At the Golden Circle, there is hardly a piece of quartz taken out but what shows more or less free gold. The directors have decided to erect a stamp-mill as soon as practicable. The mill will be erected in Portland, owing to the lack of accommodation on the island.

At the Gouldsboro', a very fine showing is still made, and with the amount of ore now on the dump, and the mill running regularly, concentrating about twenty tons of ore per day, it is more than probable that a dividend will be declared before next summer, as the manager intends to use the receipts for the payment of dividends, the funds in the treasury being sufficient to work the mine for some time.

Little change has been made at the Cherryfield. The company is preparing to ship its ore to the Lehigh Zinc-Works, instead of taking it to the Gouldsboro' mill.

The Grant is encountering stringers of well-mineralized quartz, and portions of the dark rock contain more or less mineral. The vein will probably be reached in the course of ten or fifteen feet; but as the rock continues very hard, the progress with the hand-drill is quite slow.

ELLSWORTH, ME., Feb. 1.

DOUGLASS.

PETROLEUM IN 1880.

Stowell's *Petroleum Reporter* for January gives the following review for the year 1880: "The year 1880 greatly distanced all its predecessors in the volume of production and in the consequent accumulation of stock. For the first time, we have accumulated a stock in excess of a year's supply, and the production still remains in excess of the current demand. Any considerable appreciation of values in the near future would seem improbable, were it not for the strong counterbalancing facts—namely, that the territory is clearly defined; that the gas is failing; that salt water (a sure sign of the end) is making its appearance on the outskirts of the field; and that the production is, without doubt, declining. Add to this the plenitude of money in the country, and we have a combination of facts which warrants better prices, and which will surely bring better prices as these facts come to be more clearly realized.

"The falling off of production is very likely to enlarge the confidence of the holders of this stock, especially if money continues as easy as it has been for some time past, although we may look in the present year for a gradual and continued reaction from the exceedingly low prices which have prevailed during the two years just passed."

As regards production, stocks, etc., for the year, the following figures are given:

"Total production, 26,032,421 barrels; daily average, 71,124 barrels; total stock in the producing regions, 18,928,430 barrels; in the custody of the pipe lines, 16,594,136 barrels; in private iron tanks, 566,000 barrels; at the wells, 1,768,295 barrels; producing wells, average number for the year, 13,260 barrels; average daily production, per well, 5⅓ barrels; number of new wells completed during the year, 4217; average daily production of the new wells, 22⅞ barrels; number of dry holes, 168. Shipments of crude and refined reduced to crude equivalent during the year: To New York, 7,072,234 barrels; to Pittsburg, 960,336 barrels; to Cleveland, 2,535,214 barrels; to Philadelphia, 1,743,536 barrels; to Boston, 478,363 barrels; to Baltimore, 611,505 barrels; to Ohio River refiners, 205,997 barrels; to California, 7636 barrels; to other local points, 1,477,181 barrels; destroyed by fire, 582,490 barrels; total shipments, 15,674,492 barrels."

PETROLEUM STATISTICS.

COMPARATIVE SYNOPSIS OF REPORTS FOR NOVEMBER AND DECEMBER, 1879 AND 1880.

42 GALLONS = 1 BARREL.	1880.	1880.	1879.	1879.
	Novemb'r. 30 days.	Decemb'r. 31 days.	Novemb'r. 30 days.	Decemb'r. 31 days.
Production for the month, bbls.....	2,374,420	2,238,634	1,710,480	1,769,356
Daily average.....	75,814	72,214	57,046	57,076
Stock at the wells.....				
Iron tank stock.....				
Total stock.....	18,025,409	18,928,430	8,051,169	8,470,490
Number of producing wells.....	14,400	14,700	11,960	11,960
" " drilling wells.....	475	408	372	440
" " completed.....	338	303	227	261
" " dry holes.....	9	12	21	15
Aggregate daily production of new wells.....	8,198	6,890	4,459	4,200
Average.....	24 4-10	28 8-10	20	16 1-10
Number of rigs building.....	448	413	437	490
Total shipments out of the region.....	1,226,030	1,335,613	1,453,645	1,532,585

—Stowell's *Petroleum Reporter*.

LABOR TROUBLES ABROAD.—A thousand colliers at Tyldesley, England, have resolved to return to work; but a meeting representing twelve thousand colliers at Pendlebury, Lancashire, resolved to strike for an advance of wages.

COLORADO'S COAL PRODUCT FOR 1880.—This is estimated at 587,314 tons. The coal mines around Golden, Colo., are constantly multiplying in number, and they add very much to the importance of the city. In 1879, the output was about 30,000 tons; in 1880, it is estimated at about 50,000 tons.

Fossil Plants in the Red Sandstone of Prince Edward's Island.—At a meeting of the Natural History Society, held at Montreal on the 1st instant, Prof. John William Dawson remarked that Mr. F. Bain, of North River, Prince Edward's Island, had discovered fossil plants in a higher horizon in the Red Sandstone of that island than that in which they had been previously known to occur. The effect of this would be to require us to recognize part of the sandstone hitherto regarded as being really Permian.

THE VALUATION OF COAL.*

By Prof. Charles E. Munroe, U. S. N. A.

By the valuation of coal is meant the estimation by experiment of its value as a calorific agent, and it will be admitted that the discovery of some method which will readily give accurate and reliable results, and which will enable us to avoid the costly and prolonged test of actual use—a test which may involve great waste and prove very vexatious—is a great desideratum.

In valuing a coal, the estimation of the calorific power is of the first importance, yet there are other characteristics of the fuel to be considered, which will render it more or less suitable for the use to which it is to be put, and which should not be overlooked in an examination of, and deciding upon, its fitness. These are the nature of its ash, the readiness with which it burns, the presence of sulphur, and, when the coal is for naval use, the loss by attrition; and in this paper it will be the aim, after briefly stating the properties and composition of coal, and describing some of the means proposed for estimating its calorific power, to allude to the methods employed in the estimation of these secondary properties.

Since the heat developed by a fuel depends upon the union of the carbon, hydrogen, and other combustible constituents which it contains, with the oxygen of the air, and since also the heat produced by the combustion of measured quantities of each of these substances in oxygen has been determined with great accuracy, it would appear a simple thing to determine the calorific power of a coal by subjecting it to an elementary analysis and calculating from the weights of the elementary substances obtained the heat produced by its combustion; and this method has been followed to a considerable extent in the past, but it has been found in practice to give very erroneous results, some of the sources of which we will consider.

We have in coal a substance whose composition is very variable and very complex; but as we have no proximate analysis of coal, it is not possible to make this directly apparent, and therefore we must prove the truth of the statement in another way. The following table gives the results of the ultimate analysis of several varieties of coal, and exhibits the variability in its ultimate composition:

	Lesmahagow Parrot Coal, Miller.	Wigan Cannel, Vane.	Coking Coal, Newcastle, Richardson.	10 Yard Wolverhampton, Vane.	Newport Steam, Miller.	S. Wales Anthracite, Vane.
Sp. gr.	1.251	1.276	1.280	1.278	1.309	1.392
Coke, per cent.	43.300	60.360	77.755	59.210	75.100	92.100
Carbon	73.440	80.070	86.750	78.570	81.470	90.390
Hydrogen	7.620	5.520	5.240	5.290	4.970	3.280
Nitrogen	2.120	2.120	1.840	1.840	1.630	.830
Oxygen	11.761	8.080	6.610	12.880	5.230	2.980
Sulphur	1.145	1.500	.....	.390	1.100	.910
Ash	6.034	2.700	1.400	1.030	5.510	1.610

An ultimate analysis, however, gives us little real knowledge of the character of a coal; for, as a few experiments will show us, the substances we have determined do not exist wholly in an elementary condition in it. Let us first examine the coal by subjecting a weighed quantity in a confined space to the action of a rarefied atmosphere and heat. We shall find that a considerable amount of gas is evolved from the coal, that this gas is a mixture of compound gases, and that in our ultimate analysis we have estimated their constituents as simple substances. The following table gives the results of some of Mr. Thomas's analyses made in the way described:

	C. of gas from 100 grms., evolved at 100°.	Percentage Composition of Gas.					
		CO ₂	CO	CH ₄	C ₂ H ₆	O	N
Lignite, Bovey	114.3	96.74	2.80	.....	.....	.....	0.46
Cannel, Wigan	350.6	9.05	.....	77.19	7.80	.....	5.96
Jet, Whitby	30.2	10.93	.....	C ₂ H ₁₀	86.90	.....	2.17
Bituminous coal, S. Wales	55.9	36.42	.....	.....	0.80	.....	62.78
Semi-bituminous "	73.6	12.54	.....	72.51	.....	0.64	14.51
Steam coal "	218.4	5.46	.....	84.22	.....	0.44	9.88
Anthracite "	555.5	2.62	.....	93.13	.....	.....	4.25

If, in addition to this, we heat the coal in closed vessels, out of contact with the air, if the coal be other than anthracite we shall find that, in addition to the gases evolved, as given above, the coal will yield a large number of substances, solid, liquid, or gaseous, which exist already formed in the coal, or which are produced by the action of heat on substances existing in the coal, and there will be left behind a mass of coke. We may thus prove the complex composition of the coal, but our methods of analysis do not yet admit of our estimating these constituents.

However, our ultimate analyses have shown that carbon is the most important element present, and it is probable that it exists to a large extent in the coal in a free state. Let us consider what would result if we were to estimate the calorific power of the carbon present from a simple determination of the percentage of free carbon. Carbon is one of the elementary substances which exists in several allotropic or unlike states. In all of these, its chemical properties are precisely the same, though its physical properties are widely different. These differences are believed to be due to the difference in the arrangement of the atoms in the molecules. Among other differences Favre and Silberman have found that

their heats of combustion differ considerably, increasing inversely as the density, as the following table, embodying their results, shows:

Substance.	Product.	Units of Heat.	Density.
Wood charcoal	CO ₂	8080	1.500
Gas-retort carbon	"	8047	1.885
Native graphite	"	7797	2.300
Artificial graphite	"	7762	.....
Diamond	"	7770	3.530

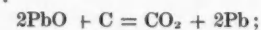
"These figures point to the conclusion that the heat of combustion of an elementary substance depends not only on its chemical constitution but also upon its physical state before combustion. It varies not only with the nature of the atoms, but also with the manner in which they are grouped together. We can not deduce the calorific power of graphite from that of charcoal, nor that of the diamond from either. If, then, the mere fact that the substance is composed of pure carbon is not sufficient to determine its heat of combustion, it is not reasonable to suppose that the like information can be acquired in the case of so complex a substance as coal, by a calculation based on a knowledge of the quantities of carbon, hydrogen, and oxygen which it contains."* These substances exist in the coal in a state of combination, the compounds of the various elements being mixed together. Hence, when they are burned, these compounds must be broken up before they can unite with the oxygen of the air, and, as a general rule, heat is absorbed by the analytical process, and consequently the true heat of the combustion of the coal will be less than the calculated result. Should the compounds, however, be of such a nature that their decomposition is attended with an evolution of heat, the true heat will be greater than the calculated.

Another source of error is due to the fact that the calorific power of hydrogen was determined when that substance was in the gaseous state. Now, hydrogen would certainly exist in the coal in a solid or liquid state, and, during the process of combustion, would be converted into a gas. We know that if a solid or liquid is converted into a gas, heat is absorbed. "Therefore, even if the assumption that the 'available' hydrogen is not combined with any of the other elements present in the coal were correct, the calculations themselves would be open to objection, since the hydrogen in its conversion to the gaseous state would absorb heat. Hence, in assuming that the calorific power of solid hydrogen is, like that of gaseous hydrogen, 34,462 units, we commit an error, the existence of which we are certain of, while we are totally ignorant of its magnitude."

Experimental proofs are not wanting to confirm the doubts which theory suggests as to the accuracy of this method of calculation. Two physicists,† Scheurer-Kestner and C. Meunier, have made a long series of experiments on the heat of combustion of coal. They analyzed numerous specimens, calculated their calorific power by the ordinary rules, and then made direct experiments to determine their heat of combustion. A comparison of the numbers obtained by calculation and observation proved that they did not agree. Thus, in the case of two coals, one from Ronchamp and the other from Creusot, which contained almost precisely the same proportions of carbon, hydrogen, and oxygen, the calorific powers, instead of being identical, were 9117 and 9622 respectively. The difference between the real and calculated calorific powers amounted in some instances to as much as fifteen per cent. In the case of two specimens of coal from England, and several from France, the calculated heat of combustion was too small. In that of six kinds of brown coal from France and Germany, it was too large, while experiments on several different coals from Russia proved that in these cases the discrepancies between calculation and experiment were comparatively unimportant. It is evident then, that, in order to determine the calorific power of a coal with precision, we must resort to direct experiments, and that we can not trust to the calculations based on the elementary composition of the coal. To determine this factor with accuracy, we must use the delicate calorimeters employed by the physicist, and at the same time estimate the amount of incombustible matter present. But such precise results are not necessary for the examination of coal for use in the generation of steam; coarser methods will yield results which are sufficiently accurate for this purpose, some of which we will consider.

Thomson has devised a calorimeter which has sometimes been used for determining the calorific power of coal. It consists of a thin copper cylinder placed inside another, of similar material, which is perforated with holes at the bottom and furnished with a stop-cock at the top. The coal to be examined is finely powdered and mixed with ten to twelve times its weight of a mixture of three parts of potassic chlorate and one of potassic nitrate, and this mixture, which will burn out of contact with the air, is then placed in the inner cylinder and the whole submerged under a known weight of water. As the mixture burns, the hot gases bubble up through the holes and warm the water, until the combustion is completed, when the stop-cock is opened and the water flows in to fill the vessel. The heat of combustion is deduced from the elevation of temperature of the vessel and water. The quantities of coal and water employed are so adjusted as to make the calculation extremely simple. It has been shown, however, by Dr. Percy, that there is an error in this method, due to the fact that the bubbles of gas which escape are not completely cooled when passing through the water, and that the loss of heat on this account is not unimportant. I have not as yet given much thought to this form of calorimeter; but it would seem an easy thing to overcome, by some simple mechanical device, the fault which Dr. Percy has pointed out, and thus secure a useful though not a precise instrument.

A more practical method among those of a less refined and delicate nature is that of Berthier. This depends upon the fact that carbon, when heated in the presence of litharge, reduces the litharge in accordance with the following reaction:



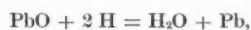
and, calculating from the known atomic weights of carbon and lead, we find that for every gram of carbon present, thirty-four and five tenths (34.5) grams of lead will be obtained. Berthier proposed to perform the

* A paper read at the Naval Institute, Annapolis, Md., April 8th, 1880. From the Proceedings of the Naval Institute.

† *Coal: Its History and Uses*, Prof. Thorpe, page 243.
† *Ann. phys. et chim.*, 4 ser., t. xxi. et xxvii.

experiment by heating the coal, in a finely-divided state, in a crucible, with about forty times its weight of litharge, and continuing the process at a red heat, for some time. The crucible was then allowed to cool; it was then broken, the button of lead extracted, washed, dried, and weighed; and on the above equation the weight of carbon calculated. Suppose we find that a given sample yields 25 grams of lead; then the heating power is $\frac{25}{34.5}$ of that of pure carbon, or, assuming that 1 kilogram of carbon raises 7900 kilograms of water 1° C., 1 kilogram of the sample of coal is capable of raising 5724 kilograms of water 1° C. To estimate the evaporative power by this method, we have simply to divide the number of units of heat obtained by 537, the units of heat necessary to vaporize 1 kilogram of water at 100° C.

Many objections to this process have been raised, but it seems to me as unobjectionable as any that have been devised. Among other objections, it is urged that hydrogen may be present in the coal to a greater extent than the oxygen necessary to combine with it to form water, and that this free hydrogen, if we may so term it, will reduce a part of the lead, and that, by assigning the whole to the carbon, very serious errors may be introduced. On the other hand, it may be said that, according to the reaction,



one part of hydrogen will reduce 103.5 parts of lead, while one part of carbon reduces 34.5 parts of lead, or 3:1; but at the same time, the units of heat produced by the hydrogen are to those produced by an equal weight of carbon as 4:265:1. Now, as the hydrogen is in the solid condition, some heat will be absorbed in converting it into a gaseous form; therefore, in valuing the coal for purchase, when this error exists, it will be in the right direction. In using the method, however, I have found a source of error which has led me to modify the details of it. When a crucible is used, it is placed in a furnace where it is difficult to manage, and there is great danger of the reducing gases of the furnace reaching the litharge. Hence, instead of the crucible I employ an iron tube or gas-pipe. Into a piece of gas-pipe (ungalvanized), one inch in diameter and one foot long, a plug, tightly fitting, is screwed at one end, and a second piece of pipe, one-half inch in diameter and three feet long, is screwed at the other. One gram of the coal to be examined, finely powdered, is now mixed with about forty times its weight of litharge, and poured into the tube and covered with a small quantity of litharge. The tube is then placed in the furnace under a boiler, the open end extending out six inches, and allowed to remain there until, upon placing the finger over the open end, no pressure is felt. The process does not occupy over ten minutes. The tube is then removed, the closed end rapped sharply on the hearth to cause all the molten lead to descend, and it is then placed in a vise. In the mean time, a small box is lined with plaster of Paris for the reception of the lead. This is placed under the tube and the plug is removed and the lead allowed to run into the box. During this operation, the tube is rapped with a hammer, to facilitate the escape of the molten lead. After the tube is cooled, it is frequently found that some of the metallic lead has been caught in the thread, but it is easily got out. Care must, however, be taken not to mistake fused litharge for metallic lead. The lead which is now collected is washed, dried, and weighed, and the calculation made as above. It is found that, after a tube has been used two or three times, it gives more constant results than at first.

The following determinations, made in this laboratory, prove that this process gives closely agreeing results. One gram of coal was taken for each experiment:

Coal.	Weight Lead.	Calo- rific Power.	Coal.	Weight Lead.	Calo- rific Power.
Lee Wilkes-Barre (anthracite)	.31.60	7235	Lignite	23.60	5404
"	.31.65	7247	"	23.19	5311
"	.31.09	7099	"	23.97	5489
"	.31.13	7128	"	23.29	5457
Newburg Orrel (bituminous)	.31.61	7238	"	23.58	5400
"	.31.26	7158	"	23.55	5393
Lao-ping (Chinese)	.27.10	6206	Peat	22.75	520
"	.27.46	6288	"	22.63	5182
"	.27.47	6290	"	22.42	5135
"	.27.10	6205			

All but the last four of these analyses were made by Lieut. Charles Belknap, U.S.N., instructor in Physics and Chemistry. The last four were made by Cadet Eng. A. T. Woods, U.S.N.

(TO BE CONTINUED.)

PROGRESS IN SCIENCE AND THE ARTS.

Determination of Sulphur in Iron Pyrites.—On oxidizing pyrites with nitric acid and precipitating the sulphuric acid from the ferriferous solution, slightly acidified with hydrochloric acid, there is always obtained a barium sulphate, contaminated with iron, and still the results were too low. Bernhard Dentecon therefore adopts the following process: 1 gram pyrites was mixed in a large covered crucible with 8 grams of a mixture of equal parts potassium chlorate, sodium carbonate, and sodium chloride. The crucible is heated at first gently, so as to dry the contents, which are afterward melted at a high temperature. The mass when cold is treated with boiling water, and the solution, together with the deposit, is introduced into a measuring-flask of 200 c.c., filled up, filtered, and the sulphuric acid is determined in aliquot parts, say 50 c.c. The insoluble residue does not retain any sulphuric acid. In this manner, the use of nitric acid is evaded. The decomposition of the potassium chlorate is complete.

Glass Manufacture in Ohio.—In 1880, five new glass-works were erected in the State, and probably as many more will be built this year. The nineteen firms engaged in the making of glass use 292 pots and employ 2032 men.

Mineral Resources of Japan.—From the Memoirs of the Science Department of the University of Tokio, it appears that there is no warrant for the extravagant expectations entertained some time ago of the mineral wealth of Japan, especially in gold and copper. Such rich and easily worked deposits as there may have been were long since exhausted.

Scientific methods, backed by capital and perseverance, must now be employed. The useful minerals now raised in Japan rank as follows in the order of their importance: Coal, copper, silver, gold, iron, kaolin, petroleum, sulphur, lead, antimony, tin, salt, mercury, marble, jasper, agate, amber, and graphite. Nickel, zinc, and arsenic have not been found in sufficient quantities for industrial purposes. Coal is annually exported to the extent of 160,000,000 catties (1 catty = 1½ pounds avoirdupois), but 47,396,160 catties are still imported. Charcoal-burning is carried on in a reckless and wasteful manner, and the mountains are consequently becoming denuded, and the climate and the productiveness of the soil consequently deteriorated. Sulphur and sulphuric acid are among the articles exported; the former to the amount of one and a half million catties; and the latter, 1,400,000 catties.

Explosive Preparation of Antimony.—E. Mascarenas y Hernandez, in the *Chemisches Central-Blatt*, describes the following preparation: A solution of crystalline antimony chloride and hydrochloric acid at 1.12 specific gravity was made so as to stand at 38° B. On electrolysis with the Leclanché element, there was obtained, in from twenty to twenty-four hours, a highly explosive compound.

Conversion Tables for French and English Measures of Length.—London *Engineer*, in its issue for January 7th, 1881, gives the first of a series of tables, which it "hopes to publish by degrees, for enabling French measures to be turned into English, or English into French, at a glance, and without any calculation whatever." A column of figures is carried forward from 100 to 1000, by the side of six other columns, headed respectively, Meters=Feet, Feet=Meters, Centimeters=Inches, Inches=Centimeters, Kilos=Miles, Miles=Kilos. Suppose the question is, "233 meters=how many feet?" Finding 233 in the number-column, opposite to this, in the "Meters=Feet" column, we find the number 764.4, which is the equivalent in feet of 233 meters. If, as is perhaps the case once in a hundred times, we desire a closer equivalent, we find the tables still sufficient. Thus, 200 meters=656.2 feet; 300 meters=984.3 feet, and therefore 30 meters=98.43 feet, and 3 meters=9.843 feet. Adding these three figures together, we get 233 meters=764.473 feet; thus dispensing with the laborious multiplication of 3.281—the equivalent of 1 meter—by 233. The method is equally easy of application where the number does not lie within the limits of 100 to 1000, or where it is partly a decimal. The remaining columns, of course, are to be used in the same way. The table has been compiled with great care by Herr C. Capito, assistant to Professor Ayrton; and hints will be gladly received which may render this table, and those to appear in the future, more complete and valuable.

The History of Copper-Smelting in Swansea.—We are informed by the author that there will shortly be published a second edition of *The History of Copper-Smelting in the Swansea District of South Wales, from the Time of Queen Elizabeth to the Present Day*, by Colonel GRANT-FRANCIS, F.S.A., Vice-President of the Royal Institution of South Wales, Mayor of Swansea, 1853-4, and author of *The Charters of Swansea*, and other historical works. The first edition, published in 1867 in a limited number of copies, has now become rare. The work will be published by subscription, in demy 8vo, at 10s. 6d., and in crown 4to, at 15s. As Colonel FRANCIS is a Swansea man by birth and life-long residence, and has been led by his tastes and pursuits into researches specially connected with that district, we have no doubt but that his book will be eagerly sought by those interested in the history of copper-smelting and of its famous center, so familiar to the readers of the *JOURNAL*. Subscriptions may be sent to this office, and copies forwarded on publication, due announcement of which will be given in these columns.

New Railroad Construction.—The *Railroad Gazette* of February 1st gives a total of 24 miles of new railroad, being 71 miles reported for 1881.

GENERAL MINING NEWS.

ARIZONA.

From late issues of our Arizona exchanges we condense the following:

CENTENNIAL.—An additional force of men has been put at work on this mine recently, and it is stated that the company intends to sink the main shaft to a depth of 500 feet, and drift 100 feet each way on this level before any further stoping is done. The hoisting-works will be in position in a few weeks, and the erection of a 10-stamp mill will speedily follow.

SILVER BELT.—This mine is situated about 18 miles east of Prescott. The developments consist of a shaft No. 3, 17 feet; No. 3 shaft, upper level, running south, 100 feet; No. 3 to No. 2, 92 feet; No. 2 west of winze, 48 feet; from winze to No. 1 shaft, 88 feet. Besides which, there are other short stopes and levels.

HOUSE & ROUSE GROUP.—This group consists of the Succor, Silver Crown, Favorite, Aurora, and Saratoga. The development on this property consists of one shaft 25 feet deep, with a three-foot vein in bottom; one shaft 18 feet deep on same vein; one tunnel 25 feet long, to strike the ledge, then drifted 30 feet on ore and stoped to the surface 20 feet. A working-shaft has been sunk to a depth of 45 feet, to connect with the main tunnel, which has been extended a distance of 145 feet, having passed through a 6-inch streak of ore at 80 feet from the mouth of the tunnel, and another streak farther on, 18 inches wide.

CALIFORNIA.

THE BODIE DISTRICT.

The following notes, showing the progress made in these mines during the week ending January 22d, are clipped from the *Bodie Free-Press*:

BODIE CONSOLIDATED.—During the week ending the 22d inst., the following advances were made in the several drifts, cross-cuts, etc., as reported by the superintendent in his official letter: On the first (206-foot) level, the small west cross-cut has been driven 12 feet, making a total length of 37 feet. At a distance of 34 feet, the vein was cut, exposing about 10 inches of quartz, a sample of which assayed \$53.74 in gold and \$15.77 in silver; total \$69.51. After cross-cutting the vein formation, an upraise was started on the 21st instant, which is now four feet above the roof of the drift, at which point the upraise is in a horse of porphyry, much seamed and considerably altered. We hope, however, to get into quartz again above. The inclined upraise between the fourth and fifth incline levels, south, has been continued 18 feet farther, and is now 21 feet in length from the point at which the vein was cut by the vertical upraise. The ore here, however, will not pay for milling until our stamp capacity is increased. On the 18th inst., the red faulting vein was reached

in the north drift, sixth (incline) level, and it presents the same appearance as where exposed on the fourth level south, in the fourth and fifth levels, east cross-cut, and in the fifth level, north drift. Samples of the quartz irregularly disposed throughout it gave better assays from the sixth level than any other point where it has been cut, but it is evident that the quartz has only been enriched from the faulted Fortuna vein at and near the zone of contact. This north drift is now in 228 feet, a gain of 12 feet since last report, and it will be driven 20 feet north of its point of intersection with the faulting vein, where a west cross-cut will be driven to the Fortuna vein as on the fifth level. You will note, from the mill report for the week, the marked improvement in the average quality of the ore milled. In the stope just started from about half-way up the winze between the fourth and fifth levels, north, the vein is narrow, but very rich in gold. The stope gangway south from the bottom of the north winze, sixth level, is also in ore showing free gold.

BOSTON CONSOLIDATED.—The vein in upraise No. 2, above the 200-foot level, is from three to four feet wide, all good ore. Progress for the week, 10 feet; total height above the drift, 19 feet. The vein is well defined and free from waste. The stopes on this level continue to look well. The north drift on the 300-foot level has now reached a point 305 feet north of the station, the drift being continued on the west side of the vein. The width of the vein, as ascertained by drill, is between three and a half and four feet, passing through quartz and clay.

BULWER CONSOLIDATED.—During the week ending with Saturday last, the drift on the Homestake ledge, from the top of the up-raise, was advanced 20 feet; total length, 122 feet. There is no change to note in the size or appearance of the vein.

CONSOLIDATED PACIFIC.—The west cross-cut, 600-foot level, was driven 10 feet last week; total length, 65 feet. The face is in better-looking ground, and of the same favorable character reported last week. The north drift, same level, is in 19 feet; progress for the week, 7 feet, with no change of any importance in character or value of the vein-matter, and no walls in sight. After considerable delay in getting the track and dump in order, have finally got to work driving a drift on Pacific Lode No. 1, tunnel level.

GOODSHAW.—The Miners' mill was started up on Goodshaw ore on the 22d, and an ample supply is now raised and shipped to keep the mill going. Ore is stoped from the 660-foot level, near the winze from the 600. The south drift, 660-foot level, is steadily pushed, and is looking well.

NORTH NOONDAY.—The superintendent's report for the week ending the 22d inst. says: The stopes from the 312-foot level, North Noonday, are looking well, and the ore-body is from 12 to 15 feet wide. The 412-foot level north slope, North Noonday, is about 22 feet wide, and the quality of the ore is improving as we extend the stope. The 512-foot level north drift on vein No. 1 is now 128 feet north of the cross-cut, 11 feet having been run the past week.

SYNDICATE.—Still stoping ore all around the old chute and keeping the company's mill fully supplied. The ore is paying about as usual, and the shipments of the current month will equal if they do not exceed those of December. As soon as the ore is extracted from the immediate vicinity of the chute, so that the smoke-stack from the underground steam-engine can be replaced, prospecting-work will be resumed on the 950-foot level. This, however, will not occur for some weeks, and it is barely possible that a cross-cut may be run from one of the upper levels to cut the large and rich vein developed in Union Consolidated last week, inasmuch as it is believed the vein in question passes into the southeast corner of the Syndicate ground.

SOUTH BULWER.—Sinking the main vertical shaft is the principal work now going on in the mine. The shaft is down 570 feet in favorable ground, with strata of quartz, and the water coming in is easily handled.

TIOGA CONSOLIDATED.—During the past week, the west cross-cut from the 982-foot level was advanced 25 feet, the face being in porphyry of a light blue cast, and very favorable for working. The flow of water still continues quite strong at and near the face of the drift. We are now hoisting of water an average of 252 tons every twenty-four hours.

GREENVILLE DISTRICT.

The mines of this district are thus noticed in the *Greenville Bulletin* of the 19th ult.:

CHEROKEE.—No hauling has been done at this mine since the commencement of the last severe storm, the roads being so bad as to render it impossible. It is expected that work will be resumed early next week. A new steel wire rope for hoisting purposes arrived last evening, and has been sent to the mine.

GREEN MOUNTAIN.—The face of No. 5 tunnel is advancing in good milling ore, which has continued to improve ever since the chimney was first encountered some weeks ago. All other portions of the mine are yielding ore abundantly, sufficient to keep the mills constantly supplied.

CANADA.

NOVA SCOTIA.

A Halifax paper states that Messrs. Kaye, Symonds & Co. have opened up an 18-inch lode, some 2000 feet west of their old workings; 10 tons having been crushed gave three ounces to the ton. The new opening on the Rose lode promises to eclipse any thing ever yet seen in Montagu, and arrangements are making for opening new shafts along the entire length of the property. The barrel lodes are tapped in several directions, and show well, and prospecting parties are waiting anxiously the approach of spring to resume operations.

The *Halifax Chronicle* says: Tangier at one time was looked on as the richest gold-field in the province, and it seems to be fast recovering its former reputation. There can be little doubt that the whole of Tangier is one vast bed of slate, permeated with auriferous quartz. Mr. Joseph Townsend has twice within the past three months succeeded in striking very rich quartz in sinking shafts. A few weeks ago, he struck a remarkably good lead in one shaft, and he has just taken some heavy gold from another which he is now sinking.

COLORADO.

CLEAR CREEK COUNTY.

ATLANTIC-PACIFIC.—The *Georgetown Courier* of the 27th ult. says: The steam-engine, diamond drill, and air-compressor lately purchased by the Atlantic-Pacific Tunnel Company, will reach Georgetown this week, and at once be sent up to the mine and put in running order. The tunnel has reached a length of 140 feet, and near the breast a lode about five feet wide that carries iron pyrites has been intersected. As soon as the tunnel heading has been driven far enough, so that work will not be interfered with, a level will be driven on the lode each side of the tunnel.

PELICAN & DIVES.—The new hoisting machinery at the Pelican & Dives property has been started up.

SIMPSON MINING AND MILLING COMPANY.—According to the *Georgetown Miner*, work will be at once resumed on the Simpson mine by lease. Some preliminary work has already commenced. Drifting will be resumed on the main adit, which is already several hundred feet in length. The property is located near the north end of Leavenworth Mountain. The Sweepstakes lode, which is also the property of this company, is intersected by the Rocky Mountain tunnel, and will be worked from that point. The lode has been opened a short distance on the tunnel level, and shows six inches of solid ore of low grade. In some places, the ore is scattered, and appears to be of a better quality. By drifting sixty feet east, the Sweepstakes shaft will be encountered, which will secure good ventilation, if nothing more.

CUSTER COUNTY.

GAME RIDGE.—The *Rosita Journal* says that during the month of December,

1880, the Game Ridge Consolidated Mining Company has worked a force of twelve men upon its vast property. The Graphic shaft as driven is now 80 feet deep. The fourth or topmost level, counting from the first or tunnel level, is 62 feet from the surface. Here, north and south drifts are driving, which are 18 feet in north and 10 feet in south at the present. This work is prosecuted with day shifts, and will be extended to the south, so as to meet the north drift upon the same level from the Tecumseh shaft. These drifts, as well as the shaft, are in ore all the way. The Tecumseh shaft is now cutting out to proper shape and size eight feet by four feet. The fourth level will here be 86 feet deep from the surface. So soon as this shaft is in shape north and south, drifts will be started upon this level. A blacksmith-shop west from the Tecumseh shaft, 24 x 20 feet shaft, is in course of construction. West from the blacksmith-shop about 100 feet, is the old Blacktail shaft. This shaft will in due time be cut out and sunk down 380 feet to meet the work tunnel No. 1. This tunnel will be 900 feet long when it is driven through to the Blacktail shaft. When that work is done, the whole of the great horn-silver bearing ledge or mass of trachyte rock which is forming Game Ridge Mountain, will be thoroughly opened.

OLONIA.—The *Silver Cliff Miner* says: The working-shaft of the Polonia mine, at Rosita, has attained a depth of 225 feet, and has levels at 70, 150, and 200 feet, aggregating 800 linear feet. Three hundred feet of the vein is exposed in the 150, and about the same in the 200 level, and although the pay-streak waves and varies in thickness at different places, it has never yet been lost, but ranges from 3 to 10 inches in thickness throughout all of the workings. The mineral is gray copper, and with a working force of 28 men produces about 30 tons per week. The richest ore ever extracted from the mine is that now surfacing from the 200-foot level. The cross-cut at that level is driving northward, has advanced 65 feet, and is near its junction with the north vein, which is to be opened and worked from the shaft now in use.

VALLEY CITY.—The *Silver Cliff Gazette* says: The most important discovery made in the county for a year past was that on the Valley City Company's claim, the California, on the 19th inst. The general manager had ordered a cross-cut driven from station No. 1 in shaft, 72 feet down, for the purpose of exploring the ground, and his workmen penetrated a body of ore within 20 feet of the starting-point, the extent of which is unknown at this writing.

GILPIN COUNTY.

The *Register-Call* of the 24th ult. has the following notes of the mines in its vicinity:

The Iowa capitalists, who have been developing the Iowa lode, on the mountain back of the Wheeler mill, are coming into a very good pay-streak in the breast of their tunnel driven on the line of the lode.

OAKLAND.—The Oakland Company has graded off a plot of ground over its main working-shaft on the Paola lode, and will commence the erection of a building over the mine. As developments are made on the Paola, the vein increases in width and richness.

SILVER KING.—The agent of the Silver King Company has cut into a fine body of silver-bearing ore in the Alaska mine. This new find is in the last 250-foot level. Sinking the main shaft will be resumed to-morrow, and continued until a depth of 460 feet is attained.

ST. LOUIS.—Davis S. Green, superintendent of the St. Louis Mining and Milling Company, has a force of miners at work in the 300 and 500-foot levels of the Ralls County mine, on Quartz Hill. To-morrow, developing the vein by sinking will be resumed.

LAKE COUNTY.

CHRYSOLITE.—A decision was given in the district court at Leadville against the Searles patent to a placer claim taking in a portion of Fryer Hill, and in favor of the Chrysolite Mining Company. The patent covers a portion of the ground of the All Right and Kit Carson claims, belonging to the Chrysolite Company. In regard to the decreased ore-product of this mine, the *Leadville Herald* of the 25th says: Mr. Rolker has been holding back the output from the Chrysolite, simply because he did not desire to exhaust his reserves until he knew what he had before him. In the mean time, he has pushed forward his development, and will now increase his output of ore. The developments show a resource in the mine of a vast amount of ore, and the increase of output now determined upon is justified by the appearance of the mine.

DENVER CITY.—The *Leadville Democrat* says that little is being done at this mine, except making preparations for the reception of the new machinery, which is now expected in a few weeks. The shaft, which is a trifle out of plumb, is being straightened for the cages, and guides will be placed in it. The walking-beam of the pump, which broke about a week ago, has been repaired, and the pumps are working nicely again. Considerable difficulty and delay has been encountered in the erection of buildings, on account of the storm which has been prevailing, but now, with the appearance of better weather, faster progress is made. There is quite a large dump of very fine-looking iron on the west side of the shaft-house, which the company has been unable to move heretofore, on account of the deep snow and lack of facilities for handling ore after it is raised from the shaft. The higher grade of ore from the Denver City consists of fine iron, making a desirable smelting ore, which the smelters will treat and pay all over eight ounces. No large shipments of mineral are expected from the mine before the expiration of six weeks or two months, when the new machinery will be in place.

HIBERNIA.—Concerning this mine, the *Leadville Democrat* of a late date says: The developments of the property consist of two shafts, which are being worked at the present time, also several others, which are not now in use. The Hibernia shaft taps the main ore-body, is 150 feet deep, and is located on the northern end of the claim. The ore-body here seems to have made a dip, giving it great thickness, and just north of the shaft there is quite a large stope, forty feet in height. The bulk of the mineral which is now being produced comes almost exclusively from this section of the claim. The territory stoped out in this vicinity, while quite extensive, still leaves considerable ground yet untouched both north and west, also toward the Lee line between the shaft and stope. The wedge-like strip of ground, running up between the Matchless and Lee mines, is now being worked, and has about 30 feet of unexplored territory to pass through. On the west side of the stope, the Matchless miners are engaged, and the two workings look like those of one mine to a visitor. The amount of mineral in sight is quite considerable and very rich, much of it showing a great deal of chloride of silver. From the foot of the Hibernia shaft, a drift extends in a southwesterly direction a distance of 240 feet. The Surprise shaft is located on the other side of Dry Stray Horse Gulch, 300 feet south of the Hibernia shaft, and has a depth of 150 feet. From this shaft a drift was run nearly south, a distance of 80 feet, where some fine-looking black iron, showing an abundance of chloride of silver, was encountered. The drift was then continued 80 feet farther, and subsequently a cross-cut driven to the west about 40 feet. Another drift is being run to the west, and has attained a total length of 140 feet. About 85 feet more are required to connect this drift with the one driven in a southwesterly direction from the Hibernia shaft.

IOWA GULCH.—The *Leadville Herald* says: In the Scooper mine, the property of this company, the ore-body continues to improve in quantity and quality. Some of the richest chloride ore ever mined about Leadville is now being taken out, and the large ore-house is piled full of ore of an excellent grade. The northeast drift, where the ore was first struck, is being carried forward two sets of timbers high. A winze has also been sunk for 15 feet in the iron below. The regular-sized drift pushed on ahead has reached a distance of 60 feet. The ore took a raise from this drift, but is now again showing down from the roof, and the face of the drift is now nearly all in ore. From the south drift, a cross-cut is

being run to connect with the main drift, and the face is now in ore. This assures a large reserve of ore ahead. No effort has been made to stope out the ore in sight, but to carefully prospect ahead.

MINER BOY.—The Leadville Democrat of the 28th contains a description of this mine, the substance of which we give below:

The Miner Boy, on Brece Hill, shows up much more favorably than it did before January 1st, when work was resumed on the property. A connection has since been made with the Colorado Prince tunnel, and the mine can now be worked more expeditiously and economically, the ore being carried from the stopes directly to the mill without a second handling. The northern shaft on the claim has a depth of 270 feet. The vein which it opens is but a few degrees from the vertical, and at the surface is a little to the west of the shaft. At a depth of 225 feet, it is crossed by the shaft, and at the sixth level the foot-wall is seven feet east of the shaft. The vein has very nearly a north and south course, running parallel with the side-lines of the location, and almost in the center of the claim, which comes very near the north slope of Brece Hill, and extends southward across the hill. From the shaft there are six drifts or levels at various depths, following the vein, the breasts of all showing fine ore. The first level is 98 feet from the surface, and driven in on the vein a distance of 120 feet. The second level is only about 20 feet below the first, and has been run on the vein 80 feet. The third level is at a depth of 155 feet, and shows fine ore its entire length—about 40 feet. The fourth drift of the shaft is on a level with the Colorado Prince tunnel. It is at a depth of 200 feet, and has a total length of 75 feet, connecting with the tunnel. The fifth level has recently been established at a depth of 250 feet. Here the vein in its eastward dip crosses the shaft from the west to the east side. The ore here is of a finer quality and higher grade than in the upper levels, and shows considerable free gold. At a depth of 245 feet, a drift has been run to the east, disclosing the vein about seven feet from the shaft. The rich pay-streak shows in the breasts of all the drifts and levels in the mine, generally about two feet in width, although in one or two places pinching down to almost eight inches, and again opening to four or five feet. The rich pay consists of a fine-looking brown and gray quartz ore, generally containing a great deal of copper in a carbonized state. On account of the difficulty with the water company, the Colorado Prince mill was unable to treat any of the ore until last evening, when the crushing of Miner Boy was commenced. Three tons of the ore had, however, been previously sampled and a mill-run made, which returned four and one half ounces of gold and thirty-eight and one half ounces of silver to the ton. The ore being all free-milling, and admitting of raw treatment, it should leave almost \$100 to the ton. The result of the lot of ore now being reduced at the mill is anxiously awaited, as a practical test of this nature only will give reliable figures of the true value of the ore.

ROBERT E. LEE.—The Leadville Democrat says: The reduced ore-product of the Robert E. Lee mine, and the fact that the managers are shipping a large quantity of low-grade mineral from some old dumps, has recently caused some comment on the condition of the mine, and its present resources. Among those familiar with every detail of the affairs of the Robert E. Lee, there is nothing surprising in its present reduced product. The amount of territory opened previous to January 1st was very small. None of the drifts were of great length, and nearly all showed ore in the breasts. During the last four months of 1880, the mine produced about one hundred tons of ore per day, from its limited development, through a single shaft, operated by buckets, and at the same time also hoisting water. During this time, it was, of course, impossible to prosecute development-work, and the entire force was employed on the stopes. Now it has become necessary to resume development-work, and open new sections of the rich ore-deposit. The work being done in the Lee is frequently referred to as prospect-work. This, however, is a misnomer; for the drifts which are being run, and the new shaft in course of sinking, are not in search of mineral, but to open up the northern and eastern extension of the mineral body, and make it accessible to the miners by a series of levels and cross-cuts. The superintendent of the Lee reports that the mine looks exceedingly well, and nearly all the faces of the drifts now driving are in good ore. The mine is employing 100 men, a very small force, considering the nature of the work, but will nevertheless pay a ten thousand dollar dividend for January. The ore from the dump, which is now being shipped, is sold to the stamp-mills at nominal figures, as the dumps have proved an incumbrance. It is all very low grade, and much of it had already been treated by the lixiviation process, at the leaching works on the territory of the mine, which have since been changed into a sampling-mill, and the major portion of the silver extracted.

SUMMIT COUNTY.

ROBINSON CONSOLIDATION.—The Leadville Herald of the 19th ult. says: George Daly, manager of the Robinson, came over to the city last night. He has been pushing improvements, and is now ready to turn out an unlimited amount of ore. A cross-cut is being run to connect the tunnel with the fifth and fourth levels, northwest from the main incline. Tracks now extend from the tunnel, one extending to the smelter, where the ore is dumped into bins numbered one, two, etc. Another track extends to the large ore-house built alongside the railroad track, where the bins are lettered A, B, etc. The ore-car is tagged before it leaves the mine for the particular bin it is designed for, and so no mistake can occur. One stack of the smelter is running constantly, and the other would be started up were there a sufficient supply of lead ores. At the railroad ore-house, 600 tons of first-class ore are piled up, besides large amounts in the mine and on the surface. With so great an accumulation, no effort is being made to break a large amount of ore at present. Negotiations are now pending with smelters at Kansas City, Pueblo, and other points for the sale of ore, the company not being satisfied with bids received here. The smelter at the mine has been using some low-grade bullion from Leadville to assist in fluxing.

MONTANA.

From late dates of the Butte Miner we condense the following:

ALICE.—The face of the 700-foot cross-cut has penetrated the ledge for a total distance of 68 feet—inclusive of the horse, which at that depth is 12 feet wide. The cross-cut has penetrated the north ledge for a distance of 20 feet, and is still passing through ore without any indication of a hanging-wall. The face of the cross-cut is 180 feet from the shaft. In the upper levels, there are no important developments to report.

BELL.—The east drifts from the whim-shaft are forwarded on a wide vein of first and second-class ore, of which it is estimated there are between 12,000 and 15,000 tons in sight by those who have made measurements lately with a view of purchasing stock. The lower east drift is now 120 feet long, and the exceedingly high-grade ore-chute which dips east in the 60-foot level may be tapped at any moment.

BONANZA CHIEF.—The shaft on this mine is down about 80 feet, and the ore-body is uniform, and free gold is shown at the deepest point reached.

BOULDER.—It is reported that this property has been stocked in New York, and that on the opening of spring a new shaft will be started to develop the ledge on a large scale. Should the present indications as to the extent and richness of the ledge be verified by future exploration, a quartz mill will be erected at an early day, as it is now believed that below water-level the ore, though carrying gold, will be principally valuable for silver. This is in accordance with the theory advanced by Professor Clayton, and is furthermore the belief of the present owners of the property, who have had abundant opportunity to acquaint themselves with the characteristics of the ledge.

HECLA CONSOLIDATED.—It is rumored that this company has sold out its works and mines to the old Telegraph Company.

MOULTON.—The shaft has attained a depth of 118 feet. The blind ledge, the discovery of which was reported last week, and which appeared to be dipping from the shaft, has changed its course to an almost vertical direction, and is now nearly two feet wide, having increased nearly a foot during the past ten days.

NEVADA.

COMSTOCK LODE.

The Gold Hill News of the 26th ult. says that there never was a time when there was so much waiting along the lode: Best & Belcher and Gould & Curry to get their pumps in, Savage to repair and connect, Hale & Norcross to rebuild, Chollar and Potosi for relief from water, Exchequer and Alpha and Con. Imperial and Crown Point and Belcher for the Jacket to reach the Sutro Tunnel and then start its pumps, New York to get its shaft in working order, Caledonia for a new opening on the 2275 level, Lady Washington and Benton Con. and Justice for Alta to sink and drift; and there's scarce a mine on the lode but must do something which is delayed before going on with its full work of prospecting. It may be that hope thus deferred is making the public heart sick; but that sickness is not unto death. In Sierra Nevada, the stopes from cross-cut No. 1, 900 feet north of the incline and on the 2300 level, are yielding ore and giving hope beyond expectation. Union is nearly ready to begin explorations from the shaft on the 2600 level, and to demonstrate how much it has there. The joint Mexican-Ophir winze is pioneering below that level and opening a promising way for the 2740 level. The confidence of the management of the mines along this portion of the lode is not based upon any thing so unreliable as the diamond drill, and it is not true that one has been run in this winze.

ALTA.—Sinking is making usual progress; total depth this morning below the 1550 level, 110 feet. The ground is getting to be a little harder.

BELCHER.—Pumping as usual. The water is 35 feet below the 2160 level. Repairing the 300 bobbit.

CALIFORNIA.—The joint Ophir winze, from the 2300 level, to connect with the raise from the 2500 level, is increasing its depth at the rate of nearly three feet per day, and the raise is making usual progress on up. For workings joint with Consolidated Virginia see report of that mine. The main lateral drift south from Ophir on the 2500 level is advancing at the rate of five feet per day. A cross-cut joint with Ophir has been started east on this level.

CONSOLIDATED VIRGINIA.—The south lateral drift on the 2300 level is approaching the perpendicular of the joint Best & Belcher winze from the 2000 level at the rate of about three feet per day. The joint California cross-cut east on this level has been pushed forward 18 feet since last week's report, and is without particular change. On the 2500 level, a joint California cross-cut has been started east from the C. & C. shaft, and in time will connect with the main lateral drift now running south from the Ophir line, and some 600 feet east of the meridian of the shaft.

SIERRA NEVADA.—The incline above the 2300 level, to connect with the main shaft at the 1700 level, is up 490 feet and making usual progress. In the rebody east, on the 2300 level, the stopes were pushed up 25 feet without any narrowing of the ore-vein. Sil-floors are now extending south along the vein to make the line of stopes longer, and the whole will then be carried on up together. These stopes promise to yield considerable ore. Cross-cut No. 2 west, on the 2500 level, has been carried forward 165 feet to the west wall of the vein and discontinued, and work resumed in the north lateral drift on this level. From the winze from the 2400 to the 2500, and midway between the two levels, a drift was run south 64 feet and a cross-cut was then run east 10 feet, and now one opposite is running west. Good quartz is encountered in these cross-cuts, but no milling ore as yet has been found. On the 2500 level, the joint Union cross-cut east has been run 335 feet to date. It is still in the vein and in good ground for rapid progress, and is making about 7 feet per day.

UNION CONSOLIDATED.—The drill is still plied from the bottom of No. 1 winze, 2600 level, in drill-hole No. 7 (called No. 6 in previous reports), but is greatly interfered with by water. The borings are still so mixed with washings from the sides of the hole as to afford no true test of the ground penetrated, further than to determine that the drill has been cutting and still is in quartz. The joint Mexican cross-cut east on the 2500 level is increasing its length four feet per day, and usual progress is made in cross-cutting west on this level joint with Mexican.

YELLOW JACKET.—The drift north to connect with the Sutro Tunnel south lateral branch continues to make favorable progress through dry ground; total length from the switch, 200 feet. The usual work at other places is continued.

PROPOSALS AND SALES.

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:

Furnishing Ten Thousand Feet of Rubber or Rubber and Cotton Hose, with the necessary Couplings, for the Use of the Fire Department; Fire Department, 367 Jay street, Brooklyn.	Feb. 5, 1881.
For Repairing Pier 12 East River and the adjoining Bulkhead; Board of Commissioners, Department of Docks, 117 and 119 Duane street, New York.	" 9, "
For the Erection of the Superstructure of a New Almshouse in Mercer, Pa.; Parties can bid on any part of the work, or on the whole job, the bids then must be separate on each kind of work; Commissioners of Mercer Co., Mercer, Pa.	" 10, "
Furnishing and Delivering 6000 Cubic Yards of Sand and 2000 Cubic Yards of Cobble-stone for Street Repairs; Commissioner of City Works, Room 15, Municipal Department Building, Brooklyn.	" 12, "
Erecting a New County House on the County Farm, in the City of Troy; M. F. Cummings, Architect, Times Building, Troy, N. Y.	" 14, "
Erecting Frame Buildings necessary to form Two Ranges for Passing the Horseshoe Shoal, Delaware River; William F. Reynolds, Colonel Corps of Engineers, 532 Walnut street, Philadelphia, Pa.	" 14, "
Furnishing and Laying or Setting Pipe-Valves and Hydrants at the Water-Works of the City of Springfield; Trustees of Water-Works, Bowman's Building, Springfield, O.	" 23, "
Furnishing and delivering at the Jeffersonville Depot, the following articles: Army-Wagon Axles, Spring-Wagon Axles, Ambulance Axles, Dump-Carts, Sand-Boards, Bolsters, King-Bolts, Tongue-Bolts, Hounds, Line-Pins, Coupling-Poles, Tongues and Wheels for Army Wagons, Ambulance Tongues, Riding-Bridles, Head-Halters, Cart-Harness, Riding-Saddles, Wagon-Saddles, Coupling-Straps, Horse-Blankets, Horse and Mule Collars, Large Paulins and Army-Wagon Covers; James A. Ekin, Deputy Quartermaster-General U. S. Army, Jeffersonville, Ind.	" 23, "
Furnishing Materials and Labor necessary to the Construction and Final Completion of the Water-Works of the City of Springfield; Trustees of Water-Works, Bowman's Building, Springfield, O.	March 16, "
Constructing the Sunflower Extension of the Greenville, Columbus & Birmingham Railroad from Stoneville to the Sunflower River, twenty miles; Bids will be received separately for the Grading, Bridging, Cross-ties, and laying Track, or for the entire work, the iron alone being furnished; H. T. Irish, Secretary, Greenville, Miss.	" 21, "
Designs for Statuary to be placed on the Four Pedestals at Blackfriars Bridge: the designs may be submitted either by drawings or models; if by drawings, to be either in chalk, charcoal, pencil, ink, or sepia; if by models, in clay, plaster, or other convenient material; the designs in either case to be prepared to a scale of one inch and a half to the foot; Architect's Office, Guildhall, London, England.	" 21, "
Monument to be Erected in Rome for late Victor Emanuel II., First King of Italy; President of the Royal Commission, Cairoli, and the Secretary of the Royal Commission, etc., Rome, Italy.	Sept. 21, "

FINANCIAL.

Gold and Silver Stocks.

New York, Friday Evening, Feb. 4.

There has been considerable activity and some excitement in mining stocks during the past week. We regret to say, however, that the operations in some of the stocks have done but little for the cause of legitimate mining. There are good indications of a greater interest being taken in mining matters.

Amie has not been so active as it was, although there has been a very fair business; the sales aggregate 70,425 shares at 51@45c. Argenta has been dealt in to the extent of 400 shares at 45@40c. Barbee & Walker records sales of 100 shares at \$4. Belle Isle has been very quiet and weak, with sales of but 150 shares at 65@50c. Bodie Consolidated has been very active, irregular, and a little weak, the sales aggregating 2835 shares at \$6.25@5.75. Breece has been quiet and steady, with sales of 700 shares at \$1.35@1.30. California has had a moderate business at declining prices; the sales aggregate 6100 shares at \$1.40@1.10. Chrysolite has had a very fair business at strong prices; the sales aggregate 14,840 shares at \$5.63@6.88@5.75. Climax has been quiet and steady, the sales amounting to 9200 shares at 53@47c. Consolidated Virginia has had an active business at very much lower prices, the sales aggregating 9755 shares at \$2.15@1.40. Copper Knob has had a moderate business, the sales amounting to 23,000 shares at 8@7c. Dunkin has been liberally dealt in at declining prices; the sales amount to 7000 shares at \$1.40@1.20. Eureka Consolidated, although quiet, has continued to show strength; the sales amount to 215 shares at \$21.38@22. Findley has shown a little activity at steady prices, the sales amounting to 5400 shares at 25c. Gold Stripe, under sales of 550 shares, sold from \$2.50@2.60. Grand Prize has been steady and quiet, the sales amounting to 600 shares at \$1.60@1.50. Great Eastern has been quite active and somewhat irregular; the sales amount to 29,100 shares at 19@24@21c. Green Mountain has had some inclination to weakness, although, upon the whole, fairly maintained; the sales aggregate 1850 shares at \$5.50@6@5.88. Hibernia has been very active but weak, the sales amounting to 84,450 shares at \$1.40@96c. Horn-Silver has been quiet but improving; the sales amount to 405 shares at \$12.75@13.50. Hukill has been quiet and steady, the sales aggregating 4350 shares at \$1.55@1.40. Independence has been quiet and steady, with sales of 1950 shares at 46@42c. Leadville Consolidated has been quiet and steady, with sales of 2875 shares at 57@50c. Little Chief has shown considerable activity and some strength; the sales aggregate 19,500 shares at \$1@1.30@1.15. Little Pittsburg has been the leading feature in the market, selling at \$2.70 on Saturday, \$5.75 yesterday, and down to \$4.90 to-day, the sales amounting to 43,864 shares. Moose has been very active and irregular; the sales aggregate 25,300 shares at \$1.75@1.30@1.50. Moose Silver records sales of 1200 shares at \$1.95@1.70. North Belle Isle has been quiet, with sales of 500 shares at 40@42c. Ophir records a very fair business at declining prices; the sales aggregate 2725 shares at \$5.50@4.25. Plumas records sales of 200 shares at \$1.40. Rising Sun has had a moderate business at strong prices, the sales amounting to 6800 shares at \$2.85@3.10. Robinson Consolidated has been quiet, the sales amounting to but 150 shares at \$7.88@7.50. Stormont was for a time entirely neglected; the sales, however, aggregate 4100 shares at \$2.75. Sierra Nevada has been very liberally dealt in at declining prices, the sales amounting to 2440 shares at \$6.75@5.13. Silver King records sales of 800 shares at \$14.50@14.25. Spring Valley has had a moderate business at declining prices, the sales aggregating 1110 shares at \$3.75@3. Standard has been quiet but strong, the sales amounting to 831 shares at \$22¼@24. Calumet & Hecla makes its appearance in the dealings in this market; the sales aggregate 200 shares at \$248¼@247¼.

Alta-Montana records sales of 1165 shares at \$1.85@2. Alice was dealt in on Monday to the extent of 300 shares at \$7. American Flag has been quiet and steady, the sales amounting to 3300 shares at 23@25c. Bechtel Consolidated has been dealt in to the extent of 2200 shares at 80@75c. Best & Belcher has been

quiet, with sales of 100 shares at \$8. Bonanza Chief has been quite active and steady, the sales aggregating 27,700 shares at 33@30c. Bull-Domingo, under a moderate business, has been strong; the sales amount to 2550 shares at \$3.45@3.75@3.60. Boulder Consolidated has been a little weak, with a business of 1700 shares at 60@55c. Boston Consolidated has been quite liberally dealt in at weakening prices; the sales amount to 44,050 shares at \$1.10@82c. Buckeye, under a moderate business, has been steady; the sales amount to 21,800 shares at 23@25c. Bulwer has been quite liberally dealt in at prices a little weak; the sales amount to 3120 shares at \$2.35@1.85@2.15. By-and-By records sales of 600 shares at 70@65c. Calaveras has been liberally dealt in at steady prices; the sales amount to 24,200 shares at 20@23c. Caledonia (B. H.) has been quiet but strong with sales of 1200 shares at 60c.@1. Central Arizona has been irregular, but inclined to strengthen at the close; the sales aggregate 3570 shares at \$4¼@5¼@5½. Cherokee has had a moderate business at declining prices; the sales aggregate 3510 shares at \$2.05@1.80. Consolidated Imperial has been quiet but stronger, with sales of 3900 shares at 10@19c. Consolidated Pacific has had a moderate business at improving prices, the sales aggregating 4075 shares at 88@1.05. Crowell has been dealt in to the extent of 12,500 shares at 5c. Dahlonega has been very quiet, with sales of but 300 shares at 9@10c. Dunderberg records sales of 500 shares at \$1.35@1.40. Durango has had a moderate business at irregular prices; the sales amount to 6450 shares at 10@15c. Gold Placer has been quiet and steady, the sales amounting to 1400 shares at 45@44c. Goodshaw has had a moderate business at weak prices, the sales amounting to 10,000 shares at 75@55c. Glynn Dale has been dealt in to the extent of 200 shares at 7c. Granville has had a moderate business at steady prices, the sales amounting to 8350 shares at 4@6c. Harshaw records sales of 200 shares at \$9.13. Lacrosse has been quiet and steady, the sales aggregating 4200 shares at 28@29c. Leviathan has been very quiet, the sales amounting to 600 shares at 1@6c. Lucerne has had a moderate business at steady prices, the sales aggregating 7400 shares at 11@13c. Mariposa Preferred has been dealt in to the extent of 500 shares at \$3@4, and Common, 1556 shares at \$2.10@3. May Belle has been quiet, the sales amounting to 700 shares at 20@24@21c. Mineral Creek has had a liberal business at irregular prices, the sales aggregating 15,900 shares at 35@45@38c. Miner Boy has been quite active and a little strong, the sales aggregating 20,700 shares at 75@90c. Mexican shows a moderate business at weak prices, the sales amounting to 750 shares at \$5.75@5.13. Navajo has been quiet but stronger, the sales amounting to 1500 shares at \$2.10@2.60. The sales of North Standard amount to 72,050 shares at 61@30@45c. Quicksilver Preferred has had a moderate business at improving prices; the sales amount to 1000 shares at \$55@57@56. Common has had a moderate business at steady prices, the sales amounting to 1450 shares at \$15@14. Rappahannock has been quiet and steady, with sales of 2600 shares at 15@14c. Red Elephant has been quiet and a little weak, with sales of 6300 shares at 40@35c. Silver Cliff has been quite active and strong, the sales amounting to 11,750 shares at \$3.75@4.80. Silver Nugget has been very active and steady, the sales aggregating 40,700 shares at 11@13c. South Bodie has been dealt in to the extent of 200 shares at 21c. South Bulwer has had a moderate business at 45@35@41c., with sales of 1300 shares. South Hite has been quiet and weak, with sales of 2300 shares at 45@40c. Sutro Tunnel has been quiet and weak, the sales amounting to 5030 shares at \$1.50@1.10. Tioga has been quiet and weak, with sales of 1300 shares at 75@65c. Tuscarora has been quiet and a little weak, the sales amounting to 2100 shares at 44@39c. Unadilla has been dealt in to the extent of 20,100 shares at 14@16c. Union Consolidated has had a very liberal business at declining prices; the sales aggregate 2410 shares at \$9.38@8.50. Vandewater has been quite active and weak, the sales amounting to 81,700 shares at 78@53c. Willshire records sales of 7795 shares at \$1.20@1.40@1.30.

The opening of the National Mining Stock Exchange in Philadelphia during this week was quite an event in mining and financial circles. The officers of this

institution are: Samuel Disston, President; William B. Dalton, Vice-President; Joseph W. Thompson, Treasurer *pro tem.*; G. A. Q. Miller, Secretary; and T. Henry Ashby, W. J. Cheney, and Charles Disston, Trustees. The active committees are J. K. Vallance, F. S. Bond, W. R. Hunt, Thomas J. Stewart, and Andrew Hazlet, on auditing; Julius Hirshfield, L. S. Gans, and William Wilson, on the listing of stocks; and H. Burgin, M.D., John Tracy, Charles Kane, and L. Gilbough, on membership.

The Philadelphia Ledger says:

The Philadelphia Stock Exchange has just made some very liberal concessions in favor of mining stocks, though we are not aware that it will materially advantage the public. The commissions have been reduced, and are now as follows: On stock selling under \$1, one cent per share; selling at \$1 up to \$2, two cents per share; selling at \$2 up to \$5, three cents per share; selling at \$5 up to \$10, five cents per share; selling at \$10 and over, the same rate as on other stocks. The fee of \$250 for listing mining stocks has been abolished. They are about to organize a mining annex for trading in shares of mining companies exclusively, and will admit subscribers on payment of \$100 per annum. The secretary of the Stock Exchange, Mr. J. C. Johnson, is authorized to receive applications from outside parties who desire to become subscribers to this mining branch.

Mr. L. V. Deforest, under date of February 4th, 3 P.M., reports the current quotations of unlisted stocks as follows:

	Bid.	Offer'd		Bid.	Offer'd
Barcelona.....	\$1.00	\$1.70	North Hite.....	.....	\$0.75
Big Pittsburg..	1.60	.....	O. K. & Winne..	.....	1.00
Breece.....	1.25	1.35	Patagonia.....	\$0.50	.....
Bald Mountain..	.68	.....	Rico.....	.....	1.25
Carbonate Hill..	.25	.45	Rollins.....	.....	1.50
Empire, Utah..	.....	2.00	Sacramento.....	.....	2.00
Grand View.....	.....	70	Santa Cruz.....	.50	.75
Highland Chief..	.....	8.00	Sir Rod'r'k Dhu..	.15	.25
Hortense.....	40	.....	Stormont.....	.....	\$2¼
Julian.....	1.00	.....	Spring Valley..	.....	3.75
Mack Morris.....	.....	4.00	Silver Nugget..	.11	.12
May Flower.....	.25	.35	Trinity.....	.....	1.00
Mohawk.....	.....	.30	Van de Water..	.54	.55
Native Silver..	.....	.55	Legal Tender..	.....	2.75
New Philadel..	.....	.50			

The stockholders of the Huntingdon & Broad Top Mountain Railroad Company held their annual meeting on the 2d inst., Thomas T. Neilson, President, in the chair. The annual report was read, and showed that the receipts of the road were \$312,421.10, and the colliery and coal receipts were \$812.35, making a total of \$313,312.45. The road expenses were \$100,928.14, making the net \$152,384.31. An election for officers was held, and resulted in the election of B. Andrews Knight, President; Rothmell Wilson, John Devereux, I. V. Williamson, James Long, James Whittaker, Joseph H. Trotter, D. J. Morrell, William F. Jenks, C. W. Wharton, Samuel Field, Thomas P. Patton, and Jacob Naylor, Directors.

OFFICIAL LETTERS.

Barcelona.—The annual meeting of this company was held on the 2d inst. The following gentlemen were elected trustees for the ensuing year: J. H. Flagler, A. A. Dame, A. J. Severance, W. F. Leon, Elisha Riggs, Milton S. Latham, and S. J. Burrell. A report was submitted by the treasurer, showing the disbursements for the year to have been about \$29,000. The company has an indebtedness of about \$8000, and there are now 29,000 shares of stock in the treasury. A meeting of the trustees was held yesterday, at which the following officers were elected: J. H. Flagler, President; A. J. Severance, Vice-President; A. A. Dame, Treasurer; and E. D. Barnes, Secretary.

Boston Consolidated.—It is stated that the vein in the upraise No. 2 on the 200 level of this mine is four feet wide. Assays average \$42 per ton. Car samples from the stopes on the 300 level, 31 feet north, assay \$35 per ton. Vein, 3 feet wide. The shaft is sinking for the 400 level.

Bonanza Chief.—A dispatch from this mine reports the discovery of an ore-body on the foot-wall 14 feet wide, and another on the hanging-wall 16 feet wide.

Bull-Domingo.—It is officially stated that stoping has begun in the north drift of the 250 level of the Bull-Domingo, and that the ore taken out is cleaner and of a higher grade than has been exposed in any other opening. The south stope around the winze is looking well. A drift is running south in ore next to the foot-wall. The president and secretary of the company report that improvements have been made amounting to \$300,000, which has been made from the production of the mine, except \$75,000. After the payment of this sum, no further funds will be required, and a distribution of earnings among stockholders will follow.

Bodie Consolidated.—The superintendent of this mine, in his report for the week ending January 22d, says: You will note, from the mill report for the



GENERAL MINING STOCKS.

Dividend-Paying Mines.

Table with columns: NAME AND LOCATION OF COMPANY, Feet on Vein, Capital Stock, SHARES (No., Par Val), ASSESSMENTS (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 (Jan. 29, Jan. 31, Feb. 1, Feb. 2, Feb. 3, Feb. 4), SALES.

Non-Dividend-Paying Mines.

Table with columns: NAME AND LOCATION OF COMPANY, Feet on Vein, Capital Stock, SHARES (No., Par Val), ASSESSMENTS (Total levied to date, Date and amount per share of last), HIGHEST AND LOWEST PRICES PER SHARE AT WHICH SALES WERE MADE (Jan. 29, Jan. 31, Feb. 1, Feb. 2, Feb. 3, Feb. 4), SALES.

Gold. Silver. s. v. Lead. a. Copper. *Non-Assessable. †The Deadwood mine paid in dividends, previous to the consolidation, \$275,000. Total shares sold during the week, 882,700.

week, the marked improvement in the average quality of the ore milled. In the stope just started from about half-way up the winze between the fourth and fifth levels north, the vein is narrow, but very rich in gold.

Caledonia.—The superintendent writes, under date of January 22d, as follows:

During the week ended to-day, we have delivered at mill 834 tons of ore. Work in the mine has been confined to stopping ore and clearing off surface for an open cut.

Canada Consolidated.—Mr. Ernest Gaujot, the superintendent of the Canada Consolidated Gold Mining Co., was in the city this week, and reported that a hoisting-engine, boiler, and pump had been purchased and were being put in position at the deep shaft,

Harshaw.—This mine, on January 1st, 1880, had about 350 feet of work; during the year, the workings have been increased to a fraction over 8000 feet. The deepest shaft is down over 400 feet, 100 feet below the tunnel level.

Chrysolite.—Dispatches from C. M. Rolker, the general manager of this mine, under various dates state:

CHRYSLITE, Jan. 27.—Shipped 10 tons. Remit \$15,000.

CHRYSLITE, Feb. 2.—Shipped 10 tons. East drift B, 33, struck new ore.

Caribou.—This mine has attained a depth of nearly 850 feet, and is producing 20 tons of ore per day in addition to the dead-work, opening up new ground, etc.

Dunkin.—The manager of this mine telegraphs under date of January 31st: Shipments for January, over 560 tons. Mine looking well.

Father de Smet.—This mine crushed last year 90,754 tons of ore, returning an average of \$7.17 1/2 per ton, and bullion valued at \$600,011.

Little Chief.—The general manager, under date of January 29th, writes:

No ore settlements during the week. Shipped 172 tons. Grade of January shipments not equal to December, but all good pay.

Morning Star.—A dispatch states that this company is making very encouraging developments to the southwest from the main shaft to the upraise, and shows 40 feet of solid ore, with ore still in the roof.

Plata Verde.—It is said that this company is working night and day shifts in its mine, and is running a tunnel from the side of the hill to intersect the main working-shaft 65 feet below the surface opening.

Standard.—The superintendent reports, under date of January 24th, that the east cross-cut, 1000 level, is in 56 feet. The total length of the east cross-cut from the north drift, 700 level, is 177 feet, with the face in hard blasting ground.

ing the ledge 4 feet wide. The stopes are all looking well. On the 385 level, the ledge in the north stopes is from 10 to 18 feet wide, and in the south end it is about 8 feet wide.

South Hite.—The president of this company has issued the following circular to the stockholders:

You are hereby notified that, in pursuance of the resolution adopted at your meeting in Hartford, Conn., on December 7th, 1880, all of the property of this company has been sold out to the South Hite Gold Mining Company, a corporation organized under the laws of the State of California, with a capital stock of \$500,000, divided into 100,000 shares of \$5 each.

This latter company has opened a transfer-office at No. 35 Broadway, New York, Rooms 44 and 45, under the supervision of Mr. J. G. Riley, who will receive the stock of "The South Hite Gold Mining Company," of Connecticut, in exchange for the stock of the "South Hite Gold Mining Company," of California, share for share.

Silver King.—The superintendent telegraphs, under date of 1st inst., as follows:

SILVER KING (COLO.), Jan. 30.—Silver King lower drift in 25 feet. Forty tons high-grade ore ready to sack. B level is gradually running into rich mineral.

Tropic.—This company's shaft is 258 feet deep, or 98 feet below the third level, and is said to show 18 inches of ore in the bottom. Fifty men are employed. The ore from this mine is being sent to the Boston & Colorado smelting works, at Argo, two car-loads of ore every week, and there is no diminution in the output of the mine.

Willshire.—The superintendent of the Willshire Hydraulic Gold Mining Company writes, January 18th: We will be working both grants by the first of the week (January 24th), by which time we will be working night and day. We have had the best run to-day with the No. 3 grant that has happened since I have been here.

REVIEW OF THE SAN FRANCISCO MARKET.

If any thing, the San Francisco stock market is lower; the quotations of the favorites all showing a decline from the prices ruling a week ago.

Union Consolidated, for example, closed yesterday at \$8 1/2 from \$9, as quoted in our last. A dispatch, dated the 2d inst., says that the drill on the 2600 level of Union Consolidated has finished hole No. 7, and run No. 8 175 feet in good quartz. There is a great deal of water.

The old bonanzas, California and Consolidated Virginia, closed yesterday at \$1 and \$1 1/2 respectively, as against \$1 1/4 and \$2 1/2 a week ago. A dispatch from Virginia City, Nev., dated the 1st inst., says that 80 miners have been discharged from the bonanza mines, which, of course, means a material reduction in the ore output.

The Evening Post says of this: This may be regarded as additional evidence of the abandonment of the Comstock mines at no remote period, as has been foreshadowed in these columns for some months past. The intense and uncontrollable heat in the lower levels, the great floods of water, and the cost of extraction and reduction of the ores coming from the best mines, must sooner or later cause the entire stoppage of the works.

Silver King is the marked exception to the general tendency of the list; it closed yesterday at \$17 per share, the highest price that has been recorded for this stock for a long time past, and an advance from \$13 3/4 as reported on the 26th ult. This improvement, it is stated, is based on new developments in the mine.

A telegram in Monday's Tribune says: C. F. McDermott and George W. Grayson, mining capi-

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

Table with columns for Name of Company, Closing Quotations (Jan. 28, Jan. 29, Jan. 31, Feb. 1, Feb. 2, Feb. 3), and Opening Feb. 4. Lists various mining companies like Alpha, Argenta, Bechtel, etc.

talists, have just returned from the mining districts of Lower Arizona. They assert, after a thorough inspection, that there is sufficient ore in sight in the Contention, Tough Nut, Grand Central, Bradshaw, Head Center, and other leading mines of Tombstone District to warrant an annual production of \$20,000,000 for the next two years, provided sufficient milling facilities are afforded.

The market here for the past week closed exceedingly dull. Many of the leading brokers have given up their expensive offices and are curtailing expenses in other directions.

The San Francisco Alta has the following: As Arizona is now leading in the mineral developments of the coast, our stock people are trying to get control of some of these properties. It is rather a late hour for our people to turn their attention to these mines now, when it is considered the advantages Eastern capital has already gained over them—priority of investment.

Copper and Silver Stocks. Reported by C. H. Smith, 15 Congress street, Boston, Stock Broker and Member of the Boston Mining and Stock Exchanges.

Boston, Feb. 3. The market for copper stock the past week does not show a great degree of activity, but prices generally have been well sustained, and there is no pressure to sell stocks; on the contrary, we note good buyers who are taking the lots offering at fair prices and holding them for higher rates later on in the season.

PHILADELPHIA MINING STOCKS.

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

Table with columns: Stocks, Opening, High-est, Low-est, Final, Sales Shares. Lists various mining stocks like Amie, Argenta, Bodie, Buena, etc.

Total sales..... 329,325

nevitably rule higher the next two or three months. The speculative shares will sympathize in the advance, and an active market all around will be in order.

Calumet & Hecla is very steady at \$250, at which nearly all the sales have been made.

Copper Falls dull, only 120 shares sold for the week, at \$15@15 1/4, closing to-day at \$15 bid and none offered under \$16.

Franklin is a shade lower than last week; the sales, however, have been light, and quotations range from \$16 1/4 @ \$16 3/4, closing \$16 bid, \$16 1/4 asked.

Pewabic continues firm at \$21@22 1/2 as the extreme of quotations, nearly all the sales being made between these figures; an effort seems to be making to crowd the stock down to \$20, which, however, as yet is not successful. We believe it one of the cheapest stocks on the list, and predict very much higher prices for it in the near future.

Quincy opened at \$36, declined to \$35 1/2, but orders for the stock advanced the price to \$37 1/4, and it closed to-day at \$36 1/2 bid, \$37 asked.

Atlantic sold at \$17 1/2, a decline of \$1.

Osceola steady at \$8 1/2, same as last week.

Allouez declined from \$4 1/2 to \$4 1/4, small sales.

Huron is in little better demand, and advanced from \$5 1/2 to \$5 3/4, with small offerings.

Blue Hill opened quite strong at \$5 1/4 @ \$5 1/2, with a small sale at \$6; but the stock coming out freely, it declined to \$5, since which it has ruled firmer at \$5 1/4.

Dougllass, in sympathy with Blue Hill, advanced to \$4, and for the same reason declined to \$3 1/2.

Among the minor stocks, we note sales of Madison at \$1.

Aztec at \$1 1/2.

Minnesota at \$3.

National at \$2 1/4 @ \$2 1/2.

Star at \$2 1/2.

Atlas at 25c.

Mesnard at \$1 1/2.

St. Clair at \$3 1/4.

Brunswick Antimony declined to \$21 1/2, but closed firmer at \$22.

In silver stocks, Catalpa has been active without material change in quotations, the range being \$2 1/2 @ \$2 3/4.

Harshaw advanced to \$10 1/2 in the early dealings, declined to \$8 1/2, and again advanced to \$9 1/2, and closed steady at \$9 1/4 @ \$9 1/4.

Silver Islet opened at \$36, but steadily declined to \$34, at which it was offered at the close.

Sullivan & Waukeag advanced from \$7 @ \$8, but closed at \$7 1/2 @ \$7 1/2.

Duncan sold at \$3 1/2.

Orford Nickel steady at \$10 1/2.

3 P.M.—The market at the afternoon was dull, and prices a shade lower. Atlantic sold at \$17, Franklin at \$16.

Pewabic at \$21, Blue Hill at \$5 1/2, Sullivan & Waukeag at \$7 1/4, Huron at \$5 1/2, Silver Islet at \$34, Duncan, \$37 @ \$3 1/2.

Br. Antimony at \$21; Harshaw, \$9 bid; Quincy, \$36 bid; \$37 1/2 asked; Ridge, \$6 bid; Dougllass, \$3 bid; Copper Falls, \$15 @ \$16; Allouez, \$4 1/2 bid; Aztec, \$1 1/2 @ \$1 1/2.

At the Boston Mining Exchange, business shows an improvement over last week. Boston Gold and Silver continues steadily to advance under the favorable reports from the

COAL STOCKS.

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

*Of the sales of this stock, 11,739 shares were sold at the Philadelphia Stock Exchange, and 13,600 shares at the New York Stock Exchange. Total Sales..... 402,213.

BOSTON MINING STOCKS.

Table with columns: NAME OF COMPANY, Shares, Par, Jan. 28, Jan. 29, Jan. 31, Feb. 1, Feb. 2, Feb. 3, SALES. Lists various mining stocks like Allouez, Atlantic, Atlas, Aztec, etc.

c Copper. s. Silver.

mines. Sales this week at \$4.10@4.16. Milton Mining and Milling Company, which started last week, has been very active, advancing from \$1.25 to \$1.70 regular and \$2 buyer 60. Empire, which has been dull and inactive, seems to have waked up the past day or two, and was quite active to-day at an advance from 30c. to 40c.

Gas Stocks.

NEW YORK, Friday Evening, Feb. 4.

The market for these stocks is strong and advancing. An auction sale of \$600 Metropolitan scrip, ex dividend, at \$101 1/2, is reported.

Report of the Trustees of the Philadelphia Gas Works.—The forty-sixth annual report of the trustees of the Philadelphia gas-works, giving a statement of the financial condition of the works and the results of the business for 1880, was presented to the city council yesterday afternoon. It states that since the last report there was expended for mains, \$45,824.23, and for services, \$15,012.89, making together \$60,837.12, from which deduct amount received on account of mains and services, \$12,361.29, leaving a balance of \$48,475.83.

The quantity of gas manufactured in 1880 was 2,173,010,000 feet, and the largest consumption in any twenty-four hours was on the night of December 20th, amounting to 9,511,000 cubic feet. The extent of street mains laid during the year was 14,958 feet, making the entire length 79,734 miles, and the whole number of lamps on January 1st, 1881, was 12,415, of which 11,927 were supplied with gas from these works, and 488 from the Northern Liberties.

The average illuminating power of the gas made at the different works under the charge of the trustees during the year, reported from tests made by Professor R. E. Rogers and Professor Lemuel Stephens, the lowest average in every case being given, was as follows: January, 16-28 candles; February, 16-29; March, 16-17; April, 16-44; May, 16-33; June, 16-25; July, 16-23; August, 16-22; September, 16-22; October, 16-24; November, 16-42; December, 16-23. Average for the year, 16-26 candles. The gross profits for the year were \$787,785, and the gain on the business \$273,372.90. The receipts in 1880, including balance on hand, were \$3,557,403.92, and the payments the same, less \$47,505.45, cash in hand. The assets are set down at \$14,560,803.60, and the liabilities \$10,955,396.55.

The following list of companies in New York and vicinity is corrected weekly by GEORGE H. PAENTLES, 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, Dividends (Rate per ann., Am. per inst., Date of last), Quotations (Bid., As'd.).

Coal Stocks.

NEW YORK, Friday Evening, Feb. 4.

There is little to note in the present condition of the market for these stocks. The prices fell off slightly in the earlier part of the week, but recovered at the close, and the closing quotations to-day are almost identical with those of a week ago. The same buoyant feeling, the result of the improved condition of the coal trade, is still manifest in all the quotations. Delaware & Hudson has had sales during the week of 44,628 shares at \$103 1/2 @ \$107 1/2, the latter price being reached to-day. The advance in this stock is attributed to the favorable financial condition of the company, as shown in its annual report, the substance of which we give below.

Delaware, Lackawanna & Western has been dealt in to the extent of 159,350 shares, the price fluctuating between \$124 1/2 and \$120, and subsequently recovering to \$123 1/2.

Of New Jersey Central, 70,532 shares have been sold at \$94 @ \$90 1/2 @ \$93.

In the lesser stocks, with the exception of Colorado Coal and Iron, but little has been doing. Of this stock, 31,637 shares have been sold at \$44 1/2 @ \$51 1/2.

Maryland Coal records sales of 700 shares at \$28 @ \$27; Consolidation Coal, 350 shares at \$41 1/2 @ \$41; and 700 shares of New Central Coal at \$29 1/2 @ \$28.

The forthcoming annual report to the stockholders of the Delaware & Hudson Canal Company will show a net profit, during the year 1880, amounting to 6 1/2 per cent on the capital stock. The receipts from coal were \$7,402,543; from railroads, \$4,673,436; and with miscellaneous receipts of \$448,570, make a total of \$12,524,549. The expenses were \$7,913,507, and with \$3,259,620 as interest, taxes, rentals, etc., leave a net profit of \$1,351,422. For the previous year, the

receipts were \$7,354,472, and expenditures, \$7,985,118, showing a net deficiency of \$630,643.

A dispatch from Baltimore to the Philadelphia Times says:

The Baltimore & Ohio Railroad has been notified by the Philadelphia, Wilmington & Baltimore Railroad that if hereafter the former road wishes to run its through passenger trains from Washington to New York over the track of the Philadelphia, Wilmington & Baltimore Railroad it must pay the cost of running the locomotive. The order takes effect to-day, and the Baltimore & Ohio Railroad will, no doubt, pay the desired sum. Three engines of the Philadelphia, Wilmington & Baltimore Railroad are engaged in transporting the cars of the Baltimore & Ohio road over the track of the former, the annual expenses of the engines being \$100,000, for which the Philadelphia, Wilmington & Baltimore people claim they are not reimbursed by the collection of tolls from through Baltimore & Ohio passengers. The Pennsylvania Railroad Company, in Maryland, has tendered to the Baltimore & Ohio Railroad Company the sum of \$29,398 award and costs of the viaduct crossing at Cumberland, which was declined by Vice-President Keyser.

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.

Table with columns: BONDS, Price, When Due, Int. When Due, High'st, Lowest, Amount.

BULLION MARKET.

NEW YORK, Friday Evening, Feb. 4.

The market closes in London and here scarcely so firm as at the beginning of the week, although nominally about the same, but with transactions during the week at slightly higher rates than those obtainable

to-day. There are no indications at present of the probable early future of the market.

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

Table with columns: DATE, London Pence, N. Y. Cents, DATE, London Pence, N. Y. Cents.

BULLION SHIPMENTS.

We give below a statement showing the latest bullion shipments. These are officially obtained from the companies where that is possible; and where official statements can not be procured, we take the latest shipments published in those papers nearest to the mines reported. The table gives the amount shipped for the week up to the date given, as well as the aggregate shipments to such date, from the first of January, 1881.

The shipments of silver bullion are valued at \$1,297,297 per ounce, Troy; gold at the standard \$20.67 per ounce, Troy. The actual value of the silver in the following table is therefore subject to a discount, depending on the market price of silver. The price of silver being now about \$1.12 per ounce, the following figures, where they relate to silver bullion, should be diminished by about 13 1/2 per cent to arrive at actual value:

Table with columns: Location, For the week, Month of January, Year from Jan. 1st, 1881.

PASSING BULLION.

Table with columns: DATE, Location, Amount.

ARIZONA.

Consolidated Arizona.—Recent reports state that this company's mill is turning out \$3000 bullion per day.

Copper Mines.—The copper mines of Arizona will soon become an important feature of the mining industry of that flourishing territory. The Longfellow Company, of Apache County, turns out about 7 tons of copper bullion daily and employs 350 men, principally Mexicans and Chinamen. The smelting-furnaces get their coke from England; but after the junction of the Southern Pacific and Santa Fe railroads is effected in March, the article can probably be obtained more cheaply in Colorado or Pennsylvania.

Gun Sight.—It is stated that a smelter and hoisting-works are on the way to the camp, and within sixty days will be in position and at work.

Harshaw.—This company's mill has been running steadily since the first of September, the monthly production amounting, it is said, to about \$100,000.

Silver King.—Forty-one thousand two hundred and thirty-eight pounds of Silver King concentrations were shipped to San Francisco from Casa Grande January 19th.

CALIFORNIA.

Goodshaw.—A telegram states that this mine is shipping ore to the Miners' mill, and that the crushing of ore at the mill has begun.

Standard.—The superintendent reports that during the past week 1298 tons of ore were shipped to the mill; average pulp-assay, \$49.76. Crude bullion received, 6485 ounces. Shipments to San Francisco amount to about \$59,943.26.

COLORADO.

Big Evans Gulch.—The Rio Grande Railroad will probably soon build a spur up Big Evans Gulch, to facilitate the shipping of the ore.

Boston & Breckenridge.—This smelter started up in January, and has been in successful operation since then.

Carbonate Hill.—From 20 to 30 tons of good ore are shipped weekly from this mine.

Crooke.—This company's works, situated near Lake City, are to receive two more roasters and a slagging furnace.

Evening Star.—The average daily shipment of ore amounts to about 30 tons.

Hazleton.—The new concentrating mill at this mine works satisfactorily.

Custer County.—The Silver Cliff Gazette has the following table, giving the product of the mines of Custer County for the year 1880.

The following statement includes only the ore extracted

and sold, or converted into bullion here, and approximates the actual product of Custer County for the year 1880 :

Table listing silver production and various mining operations in Custer County for 1880, including Silver Cliff, Bull-Domingo, Hecla, and others, with associated values.

A low estimate of the ore extracted but not sold, and which will be milled here, is 10,000 tons, valued at \$20 per ton, or 200,000

Total \$1,104,800

Hibernia.—It is stated that the last settlement of 70 tons of ore returned \$6778—a selling price of \$96.82, or far above the average of the district.

Iron Silver.—The manager reports that during the week ending January 24th, 1011 tons of ore were delivered ; ore previously reported this month 2050 tons.

Plata Verde.—As soon as the pipes furnishing the water supply are thawed out, the mill will resume work.

Republic.—The Pewabic quartz-mill, belonging to the Republic Company, will be completed shortly.

Silver Cliff Mining Company.—This company, it is stated, has paid for its new 40-stamp mill, with the exception of \$60,000, which is to be paid after a satisfactory test.

DAKOTA.

The Deadwood Press gives the names of 16 mills erected in Dakota last year, representing 465 stamps. The list includes the Highland, of 120 stamps, at Lead City.

MONTANA.

Alice.—Operations at this mill, it is reported, continue to be satisfactory. For the past two weeks, the bullion has steadily increased in fineness and the chlorinations run from 90 to 96 per cent of the assay value of the ore.

NEVADA.

For the week ending January 29th, Comstock mines raised ore as follows:

Small table showing assay values per ton for California, Consolidated Virginia, and Sierra Nevada.

Exchange Silver.—During the week ending January 22d, the bullion produced by the company's 8-stamp mill aggregated the sum of \$2800.

UTAH.

Our correspondent reports the following statement of bullion and lead shipped north from Salt Lake City during the week ending Saturday, January 22d, 1881 :

Table listing consignors of bullion and lead, including Mingo F. Co., H. M. and M. Co., Horn S. M. Co., and Germania S. and R. Co., with quantities and values.

Barbee & Walker.—On January 31st, the mill shut down for repairs. A new cylinder will be put to the engine, the present one being out of order, and therefore causing an extravagant consumption of fuel.

Bullionville.—It is reported that this furnace will be in readiness to start up about the beginning of February.

Great Basin.—This mine is now shipping bullion under the name of Connor bullion. The average yield of the mine is now about 40 tons per day.

Ontario.—The superintendent reports the following bullion shipments for the week ending January 21st :

Table showing Ontario bullion shipments for various dates in January, with values ranging from \$5,331.47 to \$6,970.11.

Total \$42,346.89 Silver Reef.—From January 13th to 19th inclusive, the total bullion shipments through Wells, Fargo & Co. aggregated the sum of \$15,374.48 ; total shipments for January to date, \$53,845.21.

MISCELLANEOUS.

Bullion Receipts from the Mines to New York.—The bullion received from the mines at the various offices in this city during the week ending with yesterday, as compiled from various sources, amounts to \$239,542.35, as against \$213,073.51, reported in our last.

Exports of Gold and Silver from New York.

Table showing exports of gold and silver from New York for the week ending Jan. 29th and corresponding periods.

Gold Interest Paid out by the Treasury.

Table showing gold interest paid out by the Treasury for the week ending Jan. 29th and corresponding periods.

The following is a statement of the net amounts in coin and bullion held by the Treasury at the dates named.

Table comparing gold coin and bullion holdings at Jan. 1, 1881, and Feb. 1, 1881, including silver dollars and fractional silver coins.

From the foregoing it appears that, while the total amount of coin and bullion remains nearly unchanged, the gold has decreased over two millions, while the silver has increased by a nearly similar amount.

WASHINGTON, Feb. 3.—The Treasury Department to-day purchased 150,000 ounces of fine silver for delivery at the San Francisco and New Orleans mints.

U. S. Assay Office Monthly Statement.—The following is a statement of the business at the United States Assay Office at New York, for the month ending January 31st, 1881 :

Large table detailing monthly business at the U.S. Assay Office, including deposits of gold, foreign coin, United States bullion, and various silver types.

Transmitted to Mint of the United States, at Philadelphia, for coinage, gold \$7,451,263

The coinage executed at the United States Mint in Philadelphia, during January, amounted to 4,246,380 pieces, of the total value of \$5,885,500. Of this sum there were 254,860 eagles, 561,520 half-eagles, 500,000 silver dollars, and 2,930,000 cents.

The weekly statement of the Bank of France shows an increase of gold to the amount of 7,995,000 francs, and a decrease of silver to the amount of 2,076,000 francs, making an increase of 5,919,000 francs.

Since January 1st, 1877, the reserve of the Bank of France has changed from 71 per cent gold and 29 per cent silver to 24 per cent gold and 76 per cent silver, showing that the effort to keep up a double standard has been even harder for the Bank of France than for the United States Treasury.

METALS.

NEW YORK, Friday Evening, Feb. 4.

In all departments of the metal trade for the week under review, the market has been quiet and confined strictly to a jobbing business, although prices have been well maintained.

In our London advices will be found, under copper, some pertinent remarks as to the likely future effect on the production of Chili copper from the fall of Lima to the Chilians.

Copper.—A considerable consumptive business in a small way is the only feature in the metal, and prices remain firm and steady.

We quote for Lake, 19 3/4c., for spot stuff ; Baltimore, 18 1/2 @ 18 3/4c. ; futures, former, 19 1/2 @ 20c. ; latter, 19c.

Our English advices by mail include January 25th. Jan. 14th. Market steady ; Chili Bars, £62 1/2 cash.

Jan. 17th. Sales Chili Bars on moderate scale, partly cash metal, at £62 1-16 for g. o. bs., £62 5-16 for favorite marks, less customary discount and brokerage, but for immediate payment without interest.

Jan. 18th. Fairly good market, with sales comprising g. o. bs., with short fixed prompts at £61 1/2, partly net money, a fair quantity at £61 1/2 and £62, customary conditions and usual 14 days.

Jan. 19th. In consequence of the severity of the weather, putting almost a complete stop to business, no reports were issued this day.

Jan. 21st. Cash metal sold from £61 1/2 up to £62 5-16, usual terms, with a firmer market, closing with buyers at £62 1/2 cash ; £63 forward delivery, full terms, sellers asking 2s. 6d. to 5s. more.

Jan. 24th. News is in of the surrender of Callao to the Chilians, and Peru is now practically in the hands of the victors. The opinion is gaining ground that Chilean exchange will tend to rise toward its normal

level, and, by reducing the present high dollar value of bars, render mining in that country less profitable than it has lately been ; in which case we might see shipments of metal from that side still further reduced.

Market opened with sales of g. o. bs. at £62 to £62 1/2 cash, closing a little quieter with sellers at £62 cash, buyers offering 5s. less.

Jan. 25th. With a nominal business, a little metal went at £61 1/2 cash. Very little pressure either way would at once make itself felt on the current values.

Wallaroo remains firm £72 ; Burra rules £68 1/2 @ £68 1/2. Smelters are compelled to pay such high prices for furnace material that they ask full rates for English. We call Tough £65 @ £66 ; Select Ingot, £67 @ £68 1/2 ; India Sheets, £71 @ £72 ; Yellow Metal Sheets, 5 15-16d. @ 6 1-16d. per lb.

News is in, by telegram, of the surrender of Lima to the Chilians, and this intelligence seems to have imparted more animation to the trade.

Tin.—Since the large trade mentioned in our last issue, this metal has been quiet but firm, with prices well maintained.

Mr. Edward P. White, of Fulton street, under date of February 2d, publishes the following :

Statistics of Tin: Table showing stock in all hands (New York, Boston, Philadelphia), imported and consumed quantities during January, and exports to London.

Total in all hands, spot and afloat 4,585 The opening of the new year developed an excellent demand for tin on the part of our consumers and inland dealers, who had allowed their stocks to run down to an extremely low point ; and their necessities were freely supplied by our dealers at between 20 1/2 @ 20 3/4c. per lb. up to the middle of the month.

It then became known that no fresh shipments from the East had been secured for this side, but that London had been buying up every thing available at prices considerably above what our importers had been willing to risk.

Thus while the shipments to London during the first fortnight of January were cabled at about 700 tons, the American market bought nothing ; and what is stranger still, our market began to droop, and sales were made here as low as 19 1/4c. ; at that point, however, a parcel of tin of about 400 tons, held as an investment since October last, was secured by one of our dealers at 19 1/4c. ; and as they very liberally supplied their needy neighbors with the greater part of their acquisition, at a moderate profit, it helped to make our available supply appear considerably larger than in reality it was.

Table showing December shipments of Straits to U.S. for 1879 and 1880, including Billiton, floating and shipping, and L. & F. and Refined.

Table showing December shipments of Straits to U.S. for 1881, including Billiton, floating and shipping, and L. & F., and Refined.

A glance at these figures is sufficient to convince every holder of tin that he will be able at no distant date to command the legitimate commercial value for his commodity. Moreover, considering that the Chinese traders (as usual before their New Year's holidays, just commenced) have cleared out their old stocks of tin at the mines, we can not be far wrong in estimating that very small supplies will be brought forward to the shipping ports during the next two or three months, unless prices here and in Europe should advance materially.

Inland dealers and consumers here have, during the past month, acted upon the most conservative basis, being totally different from the course pursued by them a year ago ; hence, we may expect a continuance of this steady absorption for the next three months.

quote at 20 1/2 @ 20 1/2 c. nominal for spot, 20c. being bid.

Our English advices include January 25th. Jan. 14th. Operators for a fall are inclined to push prices still downward.

Jan. 17th. On the 15th inst. and to-day a sharp struggle between operators for a "rise" or "fall" has been going on, producing sudden and violent fluctuations in price.

On the 15th, sales were effected at 89 1/2 @ 89 1/2 s. sharp cash, selling this day from 89 1/2 s. down to 87s. cash, closing with a reaction from lowest point, with business at 88s. cash.

Jan. 18th. Small trade with firm market at 88 @ 88 1/2 s. cash

Jan. 19th. No reports in consequence of severity of weather.

Jan. 20th. Prices paid range from 88 @ 88 1/2 s. sharp cash, 88 1/2 @ 89s. usual prompt, 89 @ 90s. for three months, closing with buyers 88 1/2 s. cash, 89 1/2 s. forward, sellers at 3d. per cwt. more.

Jan. 21st. Market trifle easier, with more trade, cash metal selling from 88 1/2 s. down to 88s., 14 days; final quotations being 88 @ 88 1/2 s. cash, 88 1/2 @ 89s. forward, buyers at the lowest, sellers at the highest prices.

Jan. 24th. Tolerably active, 88 @ 88 1/2 s. being paid for cash stuff values, closing at best.

Jan. 25th. At the Dutch Trading Company's sale this day, the Banca fetched an average of 53fls., the Billiton, 52 1/2 fls., equal respectively to 83 3/4 s. and 88 1/2 s., warehouse Holland. Market very active in London, with cash sales 88 @ 89 1/2 s., closing strong at top prices.

Messrs. Robert Crooks & Co., in their annual report on metals, bearing date Liverpool, January 20th, say: Tin shared the fate of all other metals when the American demand died away, but it quickly recovered the greater portion of its decline. While, from the absence of official figures, it is difficult to come to a definite conclusion, it appears likely supply has reached its maximum, while most probably consumption will this year be increased, so we look for at least the maintenance of present prices.

AVERAGE PRICE OF L. AND F. INGOTS.

Table with 5 columns: January, February, March, April, May. Rows for years 1880, 1879, 1878, 1877, 1876. Columns for Per ton and £ s. d.

Table with 4 columns: June, July, August, September. Rows for years 1880, 1879, 1878, 1877, 1876. Columns for Per ton and £ s. d.

Table with 4 columns: October, November, December, For the Year. Rows for years 1880, 1879, 1878, 1877, 1876. Columns for Per ton and £ s. d.

Average price for the five years, £76 13s. 0d.

Table showing Imports of tin into Great Britain and Exports of British tin from Great Britain for years 1871-1875.

Table showing Imports of tin into Great Britain and Exports of British tin from Great Britain for years 1870-1880.

Tin Plates.—There is a good strong market, but

business is generally quiet and dull, without sales to report.

By cable to-day we learn that in consequence of makers attempting to reduce wages 10 per cent, a good many of the men have gone out on strike. The weather has also been so severe that many of the mills have had to temporarily stop work for want of water.

Messrs. Robert Crooks & Co., of Liverpool, under date of January 20th, in their annual review say of tin and terne plates:

In this department, more than in any other, the evils of overproduction are to be seen. How tremendous the development of manufacture has been will appear when it is noticed that while exports in 1880 were almost double those in 1872, in the latter case the makers were overcrowded with work, and in the former, only partially employed.

Pig-Lead.—In this metal, only a very moderate business has been done during the week. The market closes quiet and dull at 4.95 to 5 cents.

There is a better feeling prevailing in the lead market, and holders are firm in their demands for 4.5 cents.

Spelter and Zinc.—The former is quiet but firm at 3 1/2 c.; the latter we quote at 7c.

Very little is done in spelter, and the market is quiet but firm at 5 cents.

Antimony.—We quote Cookson's, 15c.; Hallett & Johnson's, 14 1/2 c.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Feb. 4.

There is great quietness in the iron market, without, however, having any depressing effect upon prices. It is almost impossible to move iron, and it is accumulating on docks and elsewhere.

American Pig.—Brokers and dealers pronounce the market exceedingly quiet. We learn of no business worthy of note. Two hundred tons of No. 1 Thomas iron from second hands for immediate delivery are reported to have sold at \$26.

Scotch Pig.—The market abroad is a little lower. Here there is but little business doing, largely owing to the fact that the iron can not be moved.

Messrs. John E. Swan & Brothers, of Glasgow, under date of January 21st, report 122 furnaces in blast, as against 108 at the same time last year.

Gartsherrie, 62s.; Coltness, 63s.; Langloan, 62s. 6d.; Summerlee, 63s. 6d.; Carnbroe, 58s. 6d.; Glengarnock, 58s. 6d.; Eglinton, 53s. 6d.

Rails.—There has been a business of about 13,000 tons of steel at from \$59 @ \$62.50 for delivery from now until December.

Old Rails have been quiet. We note a sale of 1000 tons of Ts. at \$28.50, and quote D. Hs. at \$29.50 @ \$30.

Wrought Scrap has been quiet. We quote a sale of a few hundred tons selected from yard at \$30, and there is a rumor of a sale at \$31.

We publish the following letters received from our regular correspondents:

Baltimore. Feb. 1.

[Specially reported by Messrs. R. C. HOFFMAN & Co.] The iron market shows no material change since last report. The demand continues good, and prices very firm, especially for best brands iron.

Buffalo. Feb. 2.

[Specially reported by Messrs. PALEN & BURNS.] Market quiet but prices firm, and a better feeling growing, which may lead to a slight advance in prices.

Table listing various iron products and their prices, including No. 1 Foundry Pig, Gray Forge, American Scotch, etc.

Columbus, O. Feb. 1.

[Specially reported by Messrs. KING, GILBERT & WARNER.] We have no important change to note in the position of the market since our report of last week.

Table listing Foundry Irons and their prices, including Hanging Rock charcoal, Hocking Valley, etc.

MILL IRONS.

Table listing Mill Irons and their prices, including Gray neutral, Mottled and white neutral, etc.

Louisville. Feb. 1.

[Specially reported by Messrs. GEORGE H. HULL & Co.] There is an improved demand for foundry irons, and some furnaces have declined to sell except at an advance of 50c.

Table listing Foundry Irons and their prices, including Hanging Rock Charcoal, Southern Charcoal, etc.

MILL IRONS.

Table listing Mill Irons and their prices, including No. 1 Charcoal, Cold-short & Neutral, etc.

Messrs. John E. Swan & Brothers, of Glasgow, under date of January 21st, report 122 furnaces in blast, as against 108 at the same time last year.

Richmond. Feb. 1.

[Specially reported by ASA SNYDER, Esq.] Consumers are using larger quantities of iron than probably ever before in the history of this city and State.

Pittsburg.

Feb. 1.

[Specially reported by A. H. CHILDS.]

Pig-iron is very firm, with advancing tendency. Manufactured iron does not show the same improvement, but it is generally believed that it will be forced upward by the higher prices of raw material.

Table with 4 columns: Item, Price, Item, Price. Includes No. 1 F'dry, No. 2, Gray Forge.

St. Louis.

Jan. 29.

[Specially reported by Messrs. HOFFER, PLUMB & Co.]

The demand for iron continues good, while the general features of the market remain unchanged. Prices are firm.

HOT BLAST CHARCOAL.

Table with 2 columns: Location, Price. Includes Missouri, Southern, Hanging Rock.

COKE AND COAL.

Table with 2 columns: Location, Price. Includes Missouri, Southern, Ohio.

MILL IRONS.

Table with 2 columns: Location, Price. Includes Cold short, Red short.

CAR-WHEEL AND MALLEABLE IRONS.

Table with 2 columns: Location, Price. Includes Missouri, Southern, Ohio.

IRON ORE.

Table with 2 columns: Item, Price. Includes For fix, Furnace, Brown hematite.

John H. Austin & Co.'s Special Market Report.

LONDON, E. C., Jan. 20.

STEEL RAILS.—£6 7s. 6d. @ £6 15s. per ton; market quiet but firm.

IRON RAILS.—£5 7s. 6d. @ £5 12s. 6d. per ton; quiet but firm market.

BAR IRON.—£5 2s. 6d. @ £5 7s. 6d. per ton; steady market.

OLD RAILS.—A good inquiry for U. S. ports; but there being a very scant supply, and vessels difficult to obtain, it is impossible to give a reliable quotation.

HEAVY WROUGHT SCRAP-IRON.—In good request, 75s. per ton asked for selected parcels, f. o. b.; c. i. f. quotations, 85 @ 90s.

OLD RAILWAY LEAF SPRING STEEL.—£5 5s. @ £5 7s. 6d. per ton.

OLD CAST-IRON RAILWAY CHAIRS.—45 @ 47s. per ton.

STEEL BLOOMS, 7" x 7" and upward.—Nominally £5 15s. @ £6 per ton; but very few obtainable.

BESSEMER PIG-IRON, Nos. 1, 2, and 3.—Firm, g. m. b. 65 @ 70s. per ton.

SCOTCH PIG-IRON.—53 @ 53s. 1d. cash.

MIDDLESBROUGH PIG-IRON, No. 3.—40s. 9d. @ 41s. cash.

STATISTICS OF COAL PRODUCTION.

Comparative statement of the production of anthracite coal for the week ending Jan. 29th, and years from January 1st:

Large table with columns: TONS OF 2240 LBS., 1881 (Week, Year), 1880 (Week, Year). Lists various regions like Wyoming, Lehigh, Schuylkill, Sullivan.

Total same time in 1876... 1,245,232 tons. 1877... 1,193,633. 1878... 1,211,022. 1879... 1,440,200. 1880... 1,682,636.

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.

* These reports were not received this week. Belvidere Delaware Railroad Report for the week ending Jan. 29th:

Table with 3 columns: Week, Year 1881, Year 1880. Includes Coal for shipment at Coal Port, Coal for shipment at South Amboy, Coal for distribution, Coal for company's use.

The Production of Bituminous Coal for the week ending Jan. 29th was as follows:

Tons of 2000 lbs., unless otherwise designated.

Table with 3 columns: Region, Week, Year. Lists Cumberland, Barclay, Broad Top, Huntington & Broad Top, East Broad Top, Clearfield, Snow Shoe, Tyrone and Clearfield, Alleghany, Pennsylvania RR, Pittsburgh Region Pa, West Penn RR, Southwest Penn. RR, Penn & Westmoreland gas-coal, Pa. RR, Pennsylvania RR.

The Production of Coke for the eight days and year ending Dec. 31st, 1880:

* For the eight days and year ending Dec. 31st, 1880. † This report was not received this week.

Table with 3 columns: Region, Week, Year. Lists Tons of 2000 lbs., Penn. RR. (Alleghany Region), West Penn. RR., Southwest Penn. RR., Penn. & Westmoreland Region, Pa. RR., Pittsburgh, Penn. RR., Total.

FREIGHTS.

Coastwise Freights. Per ton of 2240 lbs.

Representing the latest actual charters to Feb. 4th, 1881.

Table with 3 columns: PORTS, From Philadelphia, From Baltimore. Lists various ports like Alexandria, Annapolis, Apopang, Baltimore, Bangor, Bath, Me., Beverly, Boston, Mass., Braintree, Bridgeport, Conn., Brooklyn, Cambridge, Mass., Cambridgeport, Charleston, Charlestown, Chelsea, City Point, Com. Pt., Mass., E. Boston, East Cambridge, E. Greenwich, R. I., Fall River, Fredericksb'g, Va, Galveston, Georgetown, D. C., Gloucester, Hartford, Hackensack, Lambertville, Lynn, Marblehead, Medford, Millville, Milton, N. Brunswick, N. J., New Bedford, Newburyport, New Haven, New London, New Orleans, Newport, New York, Norfolk, Va., Norwich, Norwalk, Conn., Petersburg, Philadelphia, Portland, Portsmouth, Va., Portsmouth, N. H., Providence, Quincy Point, Richmond, Va., Rockland, Rockport, Roxbury, Saco, Sag Harbor, Salem, Mass., Saugus, Savannah, Somerset, Staten Island, Trenton, Troy, Wareham, Washington, Weymouth, Williamsbr., N. Y., Wilmington, Del., Wilmington, N. C.

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

Rates of Transportation on Coal for Northern and Western Shipment.

SOUTHERN CENTRAL RR., IN CONNECTION WITH THE LEHIGH VALLEY, PENNSYLVANIA & NEW YORK, UTICA & ELMIRA,

NEW YORK CENTRAL & HUDSON RIVER, AND BOME, WATER-TOWN & OGDENSBURG RAILROADS.

On a consignment of not less than 25 tons, from Lackawanna Junction, subject to regulations printed below, will be as follows:

Table with 2 columns: Item, Price. Includes To Auburn (local), for shipment N. Y. C. & H. R. RR., points east of and including Syracuse, Weedsport (local), for shipment, Rochester, points between Rochester and Buffalo, for Charlotte and Genesee Docks, Buffalo, International Bridge, and Suspension Bridge, Sterling (local), for shipment R. W. & O. RR., Oswego, Fair Haven for shipment, from Penn Haven.

Rate, L. & B. Junction, to Buffalo, Black Rock, Suspension Bridge (via Weedsport), \$3.11 per gross ton. Rate, L. & B. Junction, to Rochester (via Weedsport), \$2.78 per gross ton. Rate, L. & B. Junction, to Buffalo, in return line cars (via Weedsport), \$2.81.

Regulations.

A charge of 15 cents per ton will be collected of each consignee, on all coal not unloaded within 24 hours after its arrival, and an additional charge of 10 cents per ton for every 24 hours thereafter, Sunday and legal holidays excepted.

No allowance will be made for coal lost from cars on account of broken doors or other defects existing when the coal is loaded. Claims for lost coal will be settled with shippers only. Charges for freight or tolls will follow the coal from State line to destination, when consigned to points on and beyond the New York Central Railroad.

Ten cents per ton will be charged, at Weedsport docks, for shipping coal direct from cars to boats, and 12 cents per ton additional from stock, making a total charge on what is shipped from stock of 22 cents per ton.

Freight charges to destination, via Weedsport and canal, will, at all times, be made as low as the rates via Ithaca and canal, to same destination.

Rates for coal in line cars running over this road will be as low to Western points from Lackawanna Junction as via competing roads.

CHARLES A. WARDEN, General Freight Agent, S. C. RR. AUBURN, N. Y., Jan. 1.

COAL TRADE REVIEW.

Anthracite.

NEW YORK, Friday Evening, Feb. 4.

There is a greater demand for coal than the trade has ever known, except during some long miners' strike. Coal famines are the order of the day, and if the obstructions by ice in the harbor increase, even this city will experience trouble. Already coal is so scarce with the retail dealers here that prices have been advanced about 50c. per ton. There is but little coal being mined, owing to the inability to move it. The storm of this week was very severe in Pennsylvania; and, as fast as the tracks were opened, the drifting snow closed them again. In addition to this, the temperature was so low that but little work could be done outside. Water-powers are of but little use this winter, and all manufacturing concerns are using steam. The result is, that they are getting very scarce of coal. The indications point to an extraordinary demand for coal for two or three months at least. Prices are very firm at circular rates, but there is a great disinclination on the part of the producers to take advantage of the present situation to advance rates. Of course, the combination will hardly be heard of again for some time to come. The policy of the early future will be to put into the market every ton of coal possible.

Owing to the non-receipt of the weekly statement of the coal tonnage of the Central Railroad of New Jersey, our statistics of coal production are incomplete. Without this amount the shipments last week amounted to 263,795 tons, making a total from January 1st to January 29th of 1,452,052 tons; which, as against 1,682,636 tons for the like period of last year, shows a decrease thus far this year of 220,584 tons.

Our Philadelphia correspondent, under date of February 3d, says:

There is no restriction agreed upon for this week, and miners are supposed to work full time. The weather, however, has put a veto on full work. Many collieries are stopped by cold weather, and the moving of the coal which is prepared is much delayed, so that even half-work will hardly be reached. In the mean time, the consumption goes on, and at the opening of navigation the demand will be active from all parts. How long it will remain so, will depend on the wisdom and moderation of the parties who regulate the prices.

No quotation of freight from this port can be given, as it is impracticable to move vessels. The Delaware has never been in a worse condition.

Bituminous.

This description of coal is in the same position as anthracite. Baltimore, Georgetown, and Philadelphia are closed with ice, and South Amboy, the only remaining shipping port, is but little better, there hav-

