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CONTENTS.

THE first six months of the year have been a great disappointment alike to manufacturers, to traders, to investors, and to those who seek to start new enterprises. So far as the latter are concerned, there has been complete apathy, and it would be difficult to point to a single instance of the establishment of a new industrial undertaking with funds raised by appeal to the general investing public. The efforts of all appear to have been absorbed in the protection of holdings. Securities of all kinds, even the very best of them, have been shrinking at a fearful rate, while wild-cat enterprises have gone out of sight entirely. In mining, we have the curious spectacle of an entire absence of speculation and an unprecedented amount of actual work done in the field. While the transactions in the exchanges have dwindled down to insignificant figures, the quantity and quality of development and extraction are showing every evidence of solid prosperity. There is little sensational news, little wild talk. Reports from the West are monotonous reiterations, the burden of which is, that so many men are regularly employed, that shipments succeed one another with marked uniformity, etc. To those bound up in the prosperity of the great mining interests of the West, nothing is so well calculated to make them cheerful and confident as such a state of affairs.

THE GUISE CO-OPERATIVE EXPERIMENT.

One of the most extensive experiments in the participation of labor in profits is that which has been carried out for years at the Guise works, in the Aisne Department, France, formerly belonging to M. GODIN, and still under his immediate charge. In 1859, M. GODIN put up a large building called the "*familistère*," for the accommodation of 300 families, adding a theater, school-house, etc. Twenty-one years later, he extended his plans, bringing forward the co-operative plan, which is interesting as a striking departure from similar experiments made elsewhere, and which, whatever its ultimate outcome, will always command the admiration of those interested in the relations between capital and labor.

The Société du Familistère de Guise is composed of the founder, M. GODIN, and of four classes of employés, "members," "associates," "participants," and "interested parties," whose rights and qualifications are defined as follows, in the by-laws, forming a part of a work published by M. GODIN in 1880, entitled "Mutualité Sociale." The founder reserved the right to accept or reject any applications for admission to any one of the different classes, and of granting applications, even if certain qualifications are not complied with. He has the power to designate his successor during his lifetime or by testament. He has the power to propose modifications of the by-laws, even without the written consent, otherwise required, of two thirds of the members. This power does not, however, descend to his successor, nor does the acquirement by inheritance of founder's shares entitle the owners to any of the founder's rights, or confer on the heir or heirs the right to meddle with the affairs of the association. It carries with it simply the enjoyment of the proper share of the profits. "Members" must be at least twenty-five years of age, must have resided at least five years in the "familistère," and have worked during at least the same period in the shops of the company. They must be able to read and write, and must be owners of at least 500 francs worth of the company shares. On the other hand, they have the first right to employment in times of scarcity of work, are entitled to a certain share in the profits, and are members of the assembly. "Associates" must be at least twenty-one years of age, be residents of the familistère, and have a record of three years' work with the company; while the "participants" must have served the company for a year, but need not be residents. They, too, share in the profits and take precedence in employment in case of short work. "Interested parties" are those who have acquired shares by purchase or inheritance. They draw interest to the extent of five per cent on their capital, which is a first claim on profits, and share in the net returns. The interest on capital is paid in cash, the profits of labor are paid in certificates of savings of 50 francs each. In case of the death of an employé, whose heirs are not members of the association, his certificates will be redeemed at one half of their face value, the other half being paid to the benefit funds. The "members" belong to the general assembly, which elects three members of the managing committee, of which the founder and general manager is president, and the six chiefs of departments are members. The general assembly receives the report of the general manager, and has a voice in matters touching the purchase or sale of plant, the raising of money, and all extraordinary expenditures. The general manager has the sole right to sign in behalf of the association, and is its representative. The general assembly elects three persons from its number, who constitute the supervising committee, the duties of which are to examine books and to take part in the annual examination of the inventory. There are, besides, two other minor committees, the one having charge of the familistère, and the other deliberating on all industrial questions.

From the returns at the end of the fiscal year, 10 per cent is first written off from the value of the material, and 5 per cent from the value of the plant; then the grants to the benefit funds, the cost of education and instruction, and the interest on founder's and savings shares. The balance is the net profit, which is distributed as follows: Twenty-five per cent goes to the reserve fund and for the purchase of shares, and 50 per cent to capital and labor; that is, labor is represented by the total wages earned during the year, and capital by the interest on capital and savings shares, the dividends on capital being payable in cash and the dividends on labor in savings shares. Out of the remainder, twelve per cent is given to the general manager, nine per cent to the members of the council, two per cent to the supervising committee, and two per cent is for distribution among those employés who have distinguished themselves by exceptional services. In the allotment to the workmen, the "members" are entitled to a share measured by twice the amount of their wages, the "associates" by one and one half times their wages, and the "participants" by the exact amount of their wages. Losses are borne by the reserve fund

and, when the latter is exhausted, by assessments. Roughly, therefore, after providing for a reserve fund, the profits are divided into three parts: one of them, the smallest, going to capital, in the form of cash; the second, the largest, going to labor in the shape of interest-bearing savings certificates; while a full third is devoted to compensation for services of administration.

The workings of the plan thus far have borne out the best hopes of its founder. In 1880, the association assumed the Guise and Laeken-les-Bruzelles works and the familistère buildings, put up in 1859, the patterns and patents, for 2,288,383·44 francs, the raw material and stock at 1,956,012·17, and cash and funds to the value of 356,604·39 francs, a total of 4,600,000 francs, or more than a million of dollars, as the capital of the founder. The employés, numbering 1022, did not put in any thing but their skill as workmen and their good will; now, the men possess shares or certificates of savings representing a capital of 1,969,000 francs, and in from twelve to fifteen years they will be the proprietors of the entire establishment. It may be urged that this is certainly an extremely handsome showing for the men, but that it is not likely to be very encouraging to other employers to follow this example. Still Mr. GODIN has had a very good thing of it. Practically, he is selling his works to his men, instead of allowing it to pass by purchase into other hands and taking the risks from which he is now secured. The last fiscal year yielded him the following result, according to a statement in the *Genie Civil*:

Interest, 5 per cent, on the capital still in the concern, or 3,090,420 francs	154,521 francs.
Salary as manager	15,000 "
Profit as a member	4,785 "
Profit on capital	24,646 "
Profit as manager	60,387 "
Total	259,339 "

Besides this, he has received a cash payment of 222,305 for retirement of that part of his capital, as provided for by the by-laws, whenever the reserve fund amounts to more than 10 per cent of the capital of the association.

From the fact that the manager's profits are 12 per cent, we have computed that the total profit for the fiscal year must have been about 504,383 francs. The wages amounted to 1,888,000 francs, and the interest on capital to 230,000 francs; therefore the profits must have been distributed approximately as follows:

Reserve	125,806 francs.
Capital profits	27,328 "
Labor profits	224,284 "
Manager's share of profits	60,387 "
Managing committee	45,290 "
Supervising committee	10,644 "
Rewards	10,644 "
Total	504,383 "

The men therefore have acquired a share of the profits amounting substantially to nearly 12 per cent of the total amount of their wages, which goes into capital account and draws interest in succeeding years. Besides this, the laborer has an interest in three societies, one an insurance fund for the necessities of life, another an insurance against infirmity or old age, and the third against sickness. The first is mainly provided for by the payment of a sum equal to two per cent of the wages by the association, its object being to contribute to the necessities of members, even when capable of working, when their income is insufficient. The sums vary from 1 to 2·50 francs a day for men, and from 0·75 to 1·50 francs a day for women, according to length of service. The third fund is maintained by the employés by the payment of 1·5 per cent.

The Guise experiment is therefore based on an elaborate system, of which we have simply given the rough outlines, the details being carefully worked out. Its main principles are the dwelling together of the workmen in one large building; a progressive grading of participation in the profits of the work, represented by the acquirement of a growing interest in it; the comparatively small share of capital in the profits; and the large amount paid to management. It is, of course, impossible to judge how much of the success of this co-operative enterprise is due to the personal influence and efforts of its founder, M. GODIN; nor has it, thus far, we believe, borne the crucial test of all such attempts, the severe strain of a long-continued period of dullness, shortage of work, and shrinkage of profits.

Thus far, from all the accounts that have reached us, it is eminently a success, and it differs in so many important points from any former co-operative plans that it is not idle to believe that it has elements of vitality that they did not possess. Many features of it, of course, would be entirely out of place in our own country; but they are well fitted to meet the peculiarities of the relations between employer and employed abroad.

THE QUICKSILVER REDUCTION-WORKS AT IDRIA.—According to the statement of Adolf Exeli, there are now at work at Idria 12 reverberatories, most of them built according to the Adalberti design, one old "Fortschaufelungsofen," eight of more modern design, three old shaft-furnaces, and four of recent design. The fuel used is wood or lignite, the latter being employed also in shaft-furnaces, and charcoal. The ores averaged 0·95 per cent of quicksilver, of which 94 per cent was recovered.

NEW PUBLICATIONS.

THE MATERIALS OF ENGINEERING. Part III. *Non-Ferrous Metals and Alloys: Copper, Tin, Zinc, etc.; Brass, Bronze, etc.* By ROBERT H. THURSTON, A.M., C.E. Octavo. 575 pages. With Index and numerous Illustrations. New York: John Wiley & Sons. Price, $4.

Professor Thurston's third part of his now widely-known work on the materials of engineering takes up what he terms the non-ferrous metals and alloys. Professor Thurston is peculiarly well qualified to deal authoritatively with this subject, since he has undoubtedly been the leader in this country of investigations conducted to ascertain their mechanical properties. After a brief introductory chapter on the history and characteristics of the metals and their alloys, Professor Thurston takes up the metals singly, giving a general description of the ores, the processes of reduction, commercial uses, etc., but does not quite escape the errors which compilers are apt to fall into when not familiar with a special branch of a subject. When he reaches subjects, however, in the third chapter, on the properties of alloys, which he has studied closely, inaccuracy even on minor points disappears. Professor Thurston, as a member of the United States Testing Board, had charge of the investigation of the alloys, his work being generally accepted as the standard authority on the subject. After carefully going over the ground traversed by earlier investigators, he carried out an exhaustive and elaborate series of tests. The results obtained, and the important practical applications to be drawn from them, naturally take up a large part of the work. They are, however, recast, and have been added to materially by subsequent investigations privately made. In addition, there are excellent chapters on the manufacture and working of alloys. The body of the work is devoted to the discussion of the strength of alloys, and to the conditions which affect them. This reveals a thorough and critical study of earlier writings, and a painstaking and original method of conducting independent research, that give the work a standing as authority for many years to come. Professor Thurston has brought to bear the methods of modern investigation, which he has himself done so much to develop, on a range of subjects in which much was obscured by prejudice and the rule of thumb. He has done a great service, too, to those important industries that furnish the raw material, by teaching engineers how and when to use them to greatest advantage.

LEHRBUCH DER BERGBAUKUNDE. (TEXT-BOOK ON MINING.) By G. KOEHLER, Professor at the School of Mines at Clausthal, Germany. Octavo, 707 pages. With Index, 823 wood-cuts, and 6 plates. Leipzig: Wilhelm Engelmann. 1884.

To those who have been accustomed to look upon Lottner-Serlo as a standard work on mining practice, so far at least as it related to continental practice, it would almost seem a waste of hard work to go over the same ground. Professor Koehler has strikingly proved that the same subject may be treated with success from practically the same point of view in a somewhat different manner. Professor Koehler was called from active practical work to the chair of mining at one of the three great German schools of mining, and we presume felt the need of working out his lectures independently. He has embodied in them much that careful observation in the field has taught him, and has endeavored particularly to avoid one error into which the painstaking German book makers too frequently fall. They conscientiously go over the mass of literature that has accumulated during the last fifty years of active writing by mining engineers, and consider it their duty to pigeon-hole in a series of chapters all the information thus accumulated. We do not wish to insinuate that they do not exercise due care in critically sifting this material; but usually they err on the side of too much caution. The result is, that the memory of the student is overburdened with a mass of data that really should not be granted more than a passing allusion; and that the methods in actual general use are not given that importance that they really possess. It is true, as has been urged, that a careful study of failures and their causes is as instructive as a thorough examination of successful methods. It is, undoubtedly, for a trained engineer, but rarely so for a student. He should first be taught what is good practice, and why it is; and it will tax all his resources of study and memory to be perfectly at home there. It is not encouraging to any one to be asked to listen attentively to a long description of some method, to be finally told that, after all, nobody thinks of using it because it is bad practice. We are somewhat emphatic on this point, because we know that in our country some of our professors have a leaning in that direction. Professor Koehler has tried to avoid this fault, and his work is, therefore, a condensed presentation of modern practice abroad, with occasional allusions to other methods. We are pleased to note that he pays some attention to characteristically American methods, whenever made accessible through the intermediacy of the German technical press. His chapter on ore-deposits is very brief, probably because a fuller work, that of Von Groddeck, is readily accessible to most of his readers. The second chapter on drilling wells and bore-holes is more elaborate, detailing the system, so thoroughly worked out on the continent, of drilling with rods, which is hardly known in this country, where the oil district practice holds undisputed sway. Drilling and blasting are treated in what might be called the conventional German style, with its inadequate presentation of rock-drills. Mr. Drinker's classical work on the subject, of which a second edition has been recently published, is, in our opinion, far superior to it. The driving of tunnels, and particularly the sinking of shafts, are well presented, and the methods of mining reflect very well the careful study that German mining engineers have always given to that subject, and that Americans are too apt to slight. Professor Koehler's chapter on underground haulage, in drifts and inclines, is very well worked out, and is fully illustrated, and the same is true of hoisting in shafts. Professor Koehler has not believed engines to come within the province of his work—a matter upon which many may differ from him. His discussion of safety-catches, of caps, of appliances to prevent over-winding, of counterbalancing, and of drums, etc., is well worked out. Surface haulage and the important subject of wire tramways are, we think, dismissed a little too briefly. Timbering and masonry in levels, stopes, and shafts, with the different systems of tubbing, sinking, and drilling shafts, embrace the wide experience that continental engineers have been forced, at great expense, to gather, in order to get through the water-bearing alluvial and later

strata to reach the coal formation. In pumping, the Germans are only now beginning to realize how convenient direct-acting pumps are. They call them American pumps. Professor Koehler treats the subject of Cornish pumps with great detail, but discusses the direct-acting pumps in a page, and without a single illustration. The last chapter is on ventilation.

Altogether, Professor Koehler's work is highly creditable to him, and will prove a valuable addition to German literature. It is very well equipped, well printed, and thoroughly indexed.

INFLUENCE OF CHARCOAL UPON THE AMOUNT OF PHOSPHORUS IN PIG-IRON.*

It has long been noticed that the amount of phosphorus in pig produced in charcoal furnaces (of Sweden) from ores containing a very small percentage of phosphorus is greater than that which corresponds to the amount in ores, even supposing that all of the phosphorus went into the pig-iron. The phosphorus determinations that I have made during the past eleven years of the best brands of Swedish pig-iron have, generally, shown about ·01 per cent more of this element than could be calculated from the amounts of iron and phosphorus in the ores. If, therefore, pig-iron "reguli," produced by means of crucible assay, and tested for phosphorus, gave results differing very little from the calculated ones, it would not only show that the analyses of the amounts of phosphorus in the ores were correct, but would also indicate that the excess of phosphorus obtained in pig-iron made from the same ores in blast-furnaces must have originated from the charcoal. In the crucible assay, part of the charcoal comes in contact with the charge, whereby the percentage of phosphorus in the "regulus" may be somewhat increased; but the amount of charcoal consumed in the crucible by the ore is very small in comparison with the quantity consumed in the blast-furnaces, where the ore comes in contact also with the charcoal which produces the melting heat.

To obtain some exact figures of the amount of phosphorus that can be transferred from the charcoal to the pig-iron in blast-furnaces, I have made some phosphorus determinations, not only of general samples of blast-furnace burdens, taken at six of those furnaces I visited in 1879, but also in the pig-iron obtained from those burdens, and, finally, in the pig-iron "reguli," obtained from the same compositions by the crucible assay; the latter to confirm the results from the analyses of the burdens.

The results of these investigations will be found in the accompanying table, which also exhibits the amount of charcoal consumed, in parts, of undried charcoal per part (by weight), of pig-iron produced; the temperature of the blast, and amounts of pig-iron in percentages of the burdens are also given.

From these results, it will be seen that, generally, as before mentioned, about ·01 per cent of phosphorus in the pig-iron may be safely considered as coming from the charcoal. The greater excess in burden E can be accounted for by a greater amount of phosphorus in the charcoal used, which supposition is confirmed by analyses made by Mr. Särnxtröm; but the cause of it may also be that the general sample of the burden may possibly have been freer from phosphorus than the burden was generally.

Since the following analyses were made, I have determined the phosphorus in a pig-iron from an iron-works in Wermland, which, according to statement, was obtained from ores partly the same as those in E. Analyses of the burden showed only ·007 per cent of phosphorus, but the pig-iron contained ·027 per cent, which result is almost the same as the one obtained in E.

Burdens are marked:	Blast-furnaces situated in	Undried charcoal charged, parts per 100 parts (by weight) of pig-iron produced.	Temperature of blast in degrees. Centigrade.	Fahrenheit.	Pig-iron in per cent of burden as obtained in the blast-furnace.	Amount of phosphorus found in: Burdens, per cent.	*Pig-iron "reguli,"* obtained by crucible assay, per cent.	*Pig-iron* produced in blast-furnaces, per cent.	Amount of phosphorus in pig iron calculated from the amount of phosphorus and percentage of iron in the burdens, per cent.	Amount of phosphorus in pig-iron originating from the charcoal, per cent.	Calculated percentage of phosphorus in undried charcoal.
A.	Upland	117·3	Cold.	Cold	52·35	·062	·007	·014	·004	·010	·009
B.	Upland	96·5	80	176	51·30	·062	·007	·014	·004	·010	·010
C.	Westmanland	110·6	250	482	54·36	·003	·009	·017	·006	·011	·010
D.	Dalecarlien	88·5	300	572	47·03	·005	·011	·019	·010	·009	·010
E.	Wermland	117·1	250	482	48·04	·005	·013	·026	·010	·016	·014
F.	Wermland	97·8	200	392	50·37	·006	·013	·021	·012	·009	·009

THE DUTY ON WIRE PLATES.—The Treasury Department has decided that steel forgings, so called, for wire plates, known as "steel wire drawing plates," or tools for drawing wire, which are graduated or pricked for drawing wire, of sizes ranging from No. 6 to No. 14 "Stubbs wire gauge," are not to be dutiable as forgings of steel under T. I., new, 167, but to be liable to duty at 45 per cent *ad valorem*, as a manufacture of steel not otherwise provided for.

* Translated by Mr. J. Westesson, Chemist, of Thurlow, Pennsylvania, for the Journal of the United States Association of Charcoal Iron-Workers, from a paper by Dr. Adolph Tamm, in the *Jernkontorets Annaler*.

ON PRECAUTIONARY MEASURES AGAINST EXPLOSIONS OF FIRE-DAMP.—IX.*

By M. Hoernecke, Halle, Germany.

(CONCLUDED.)

Air-Drifts.—Wide drifts are absolutely necessary for the larger volume of vitiated air. As in the case of cross-cuts, their section for the lower lifts will suffice if the main level of an exhausted upper lift is used as air-drift for the deeper lift. In driving air-drifts, even less value is attached to large section than in the case of cross-cuts, because the latter are more frequently used. Therefore all the errors already alluded to in the case of cross-cuts are repeated in a worse manner in air-drifts. Still, ample space leads in the long run to a saving of money. The doors that regulate the entire current of air in the workings below the air-drift are placed in the latter. Frequently, however, there are so many obstacles to the flow of air in the workings that it appears superfluous to further hamper or regulate it in the air-drifts. It is good practice, in order to more easily conduct the current of air in the cross-cut, to allow the air-drift to connect with it by a curve. It is good, also, with the object of disturbing the flow of air as little as possible, and of maintaining the drift in as good a condition as possible, to replace the timber by iron, which offers less resistance and which is not, like wood, subject to rapid destruction by the moist warm air. The same rules that apply to main levels must be followed in driving air-drifts into uncut ground. The working drifts or butt entries in the pillar system should be begun only after a connection between the main level and the air-drift has been made. They are parallel with the main level, their width being dependent on the thickness of the seams, the benches of rock in them, their dip, and the character of the roof and floor, while their distance from one another, or the size of the pillar between them, depends on the character of the seam and the roof. The entries are started narrow from uprises or inclines, in order to keep the roof up. They widen out from 30 to 60 feet from the starting-point, by cutting downward on the dip. The waste rock is so piled up that an air-course is kept open along the lower edge, while the hauling road is carried along the upper part. Frequently the air-course is made very narrow, a practice that increases the resistance to the flow of air in a very injurious manner. The butt entries are connected with one another. When there is no waste rock, so that no center wall can be carried along, the entries are made only wide enough for hauling the coal. If driven too wide, they would tend to make the current of air sluggish, which would easily be a dangerous matter in fiery mines.

In Saxony, these narrow entries are often ventilated by a special system. Compressed air is carried to every entry that is outside of the main ventilating system by pipes carried up to the face. Thus the dangerous and costly connections by cutting through the pillars are avoided.

In other coal districts, the cross-cuts through the pillars are in general use, their distance from one another varying between 150 and 200 feet. Between them, diffusion is counted upon to secure ventilation. In order to avoid the latter drawback, the cross-cuts are made to alternate, so that the upper one is between the two lower ones. It may be questioned whether this prevents the gathering of fire-damp. On the other hand, it is costly to have these cuts through the pillars too close to one another, and they are not always an advantage in the later work of extraction. To supplant the cuts by drill-holes is only a means to get a certain amount of air speedily; but it is not generally applicable. The entries beyond the last cut should be, if possible, ventilated specially. They can be then placed at so great a distance from one another that the extra cost for special ventilation is saved by lessened outlay for cuts. At the Consolidated Victor colliery, in the Waldenburg District, the pillars are cut every 175 feet. As soon as the entry has got 15 feet beyond the last one, it is provided with pipe, and thus a better and cheaper ventilation is attained than if the pillars were cut every 35 or 65 feet. At the Neu Iserlohn colliery, duck brattices were recently in course of introduction for the butt entries, with much success; but in narrow entries, their section is so much lessened that haulage is interfered with, and the room left for ventilation is no larger and much less thoroughly separated than when pipe is used. The latter can be put in so that they do not interfere; and in case of need, their work can be rendered more efficient by the use of hand-fans. It is certain that more must be done in ventilating the butt entries than hitherto, because the extent of recent explosions in these workings points to the fact that the current of air has been insufficient.

In all workings driven upward on the dip of the seam, the escape of gas is more dangerous than in those on the strike, because fire-damp accumulates in the upper part, just before the face. On account of the low specific gravity of fire-damp, its removal from such localities is more difficult. Therefore it has become a practice of late to avoid driving upward, and to work downward or underhand, so that the fire-damp can escape more freely. The French Fire-Damp Commission considers uprises to be less dangerous when ventilated by exhausting, excepting the ever dangerous point at the roof of the face. Harzé, however, insists that, on that very account, only blowing-pipe should be put into workings on the dip. If it is the point to keep the face free from fire-damp, because men are constantly at work and their lamps may easily cause an explosion, the blowing action will be found to be stronger than exhausting. The area of the working is probably fifty times as great as that of the pipe: and accordingly the velocity of the current in the working and in the pipe will compare as 1 to 50. When the air is forced from the pipe with a velocity of 50, it flows out of the working with a velocity of 1: and *vice versa*, when the current of air is expected to be carried to the fan with a velocity of 1, it must be 50 in the pipe. The diffusion of the fire-damp will therefore be accomplished more readily at the face, by the greater momentum of a current issuing from the pipe. Besides, the slower current obtained in the working by exhausting will show a greater tendency to flow into the pipe directly without reaching the face.

Menzel has tried to directly show this different action in an uprise with the following results; the velocity being measured with a Casello anemometer, while the volume of fire-damp was the space in the uprise

* Verhandlungen des Vereins für Beforderung des Gewerbfleisses.

above the point where a slowly raised safety-lamp began to fill with the flame:

	Velocity.	Temperature.	Volume of fire-damp.
Exhausting.	0·39 meter.	21·8 deg. R.	2·5 cubic meters.
"	0·49 "	20·9 "	4·0 "
Blowing	0·40 "	Not measured.	1·0 "
"	0·30 "	21·1 deg. R.	1·5 "
....	"	20·8 "	1·5 "
.....	0·48 "	20·5 "	1·0 "

When the action of the pipe was that of exhausting, the quantity of fire-damp in the face of the uprise was twice and three times as large as when blowing.

THE ELECTRIC LIGHT IN POWDER-WORKS.

Some time ago, says the *Engineer*, we reported that the use of the electric light had now been introduced in gunpowder manufactories, the Gunpowder Mills, near Kendall, having adopted this mode of lighting in their works. We may add that on the continent, also, and already since the end of last year, the electric light has been used with great success by one of the largest gunpowder-works in Germany, at Hamm-on-the-Sieg, the branch establishment of the United Rhenish Westphalian Gunpowder Mills, Cologne (Vereinigte Rheinisch Westphälische Pulverfabriken). The electric light current is produced by a dynamo machine (Gulcher system) of 130 ampères and 65 volts. It is well known that this system is distinguished by the low tension or pressure of the electric current, which excludes every danger: by its power of working arc and incandescent lights of any power simultaneously in parallel circuits with one dynamo machine; by the perfect independence of all lamps from each other; by the constant tension of the current with any number of lamps being lighted; and by the proportion between power required and light produced.

In the before-mentioned establishment. the dynamo machine is worked by a steam-engine of 25 horse-power, which is fitted with a very sensitive regulator by Messrs. C. A. Chanieux & Co., Aix la Chapelle. There are two arc lamps and 114 incandescent lamps in use. The former serve to illuminate the open places before the buildings, the latter the various *ateliers*. The incandescent lamps from Gebrüder Siemens & Co., Charlottenburg, are perfectly made, both as regards uniformity of resisting power and good workmanship. These lamps not only last very long, but the different kinds of 8, 16, and 32 candle-power are all of equal tension, so as to avoid the irrational installation so manifest in the A and B lamps.

The incandescent lamps are mounted in pairs in transportable lanterns fitted with German silver reflectors of double focus. These lanterns have the appearance of locomotive lanterns, and are doubly secured. The socket of the lantern contains three contacts, by means of which the electric current can be cut off or opened both for each single light or for both lamps together simultaneously. Outside the buildings in which the dangerous part of the manufacture is carried on, iron boxes are mounted before the windows, which boxes contain isolated conductor-screws, upon which the movable lanterns exactly fit. These conductor-screws are fitted with two switches for each lamp, but so arranged that the electric current can only be opened when the lanterns are firmly fixed. The conducting wires consist of trebly insulated and vulcanized caoutchouc wires carried to the lantern on wooden insulators from diametrically opposed sides, so as to avoid any intentional or unintentional approach of the wires among themselves, no matter whether the lanterns are put up or not, and not even then when by mechanical force one of the wires should be broken. The strength of the incandescent lamps at these places equals about 16 to 18 candle-power; while in the engine-rooms, lamps of 8 and 32 candle-power have been employed.

Especially in places where a uniform, steady, and intense light is required, and particularly in those *ateliers* where the well-known brown prismatic powder—a specialty of the above-mentioned gunpowder-works—is manufactured, the advantage of electric light manifests itself clearly, and the workmen are well satisfied with this improvement. As appears from the foregoing, it seems that, as regards safety, the arrangements at the works at Hamm-on-the-Sieg touch on perfection, inasmuch as the formation of sparks is absolutely excluded, as well during the ordinary working as from any elementary influences which can possibly occur at gunpowder-works.

It may be mentioned that the two arc lamps at Hamm are placed at such a long distance from the dangerous buildings that any influence on the latter must appear impossible. The whole installation has been carried out by the Gesellschaft für Electrisches Licht and Telegraphenbau, B. Berghausen & Co., Ehrenfeld-Cologne, which company has thus proved its efficiency much to its advantage. This company has lately bought the Gulcher patents for the whole of Germany.

THE ELECTRIC CONDUCTIVITY OF METALS.—M. Lazare Weiller has conducted a series of valuable experiments with the object of ascertaining the relative electric conductivity of metals, submitting the results to the Société Internationale des Electriciens. They are referred to a pure silver wire, one millimeter in diameter, and having a resistance of 19·37 ohms per kilometer at 0 degree Celsius, as a standard. The following are his figures:

	Standard.
Pure silver	100·00
Pure copper	100·00
Silicon bronze (telegraph)	98·00
Alloy of equal parts silver and copper	86·65
Pure gold	78·00
Pure aluminium	54·20
Silicon bronze (telephone)	35·00
Pure zinc	29·90
Phosphor-bronze (telephone)	29·00
Alloy of equal parts silver and gold	16·10
Swedish iron	16·00
Pure Banca tin	15·45
10 per cen taluminium bronze	12·60
Siemens steel	12·00
Pure platinum	10·60
Pure lead	8·88
Pure nickel	7·89
Antimony	3·88

GOLD PRODUCTION OF AMERICA AND AUSTRALASIA.

There is no single question, says Robert J. Creighton, of San Francisco, in *Bradstreet's*, of so much importance at the present time as that of the supply of gold. This metal is the universal standard of value in the world's commerce, whatever may happen to be the local or national exceptions in favor of a dual or even a silver standard. Ultimately, all values are measured in gold. Treating gold, therefore, as the universal measure of commercial value, the point whether the supply is likely to keep pace with the demand is one which should be investigated carefully, having regard to its uses not merely as money, but also in the arts, which continue to absorb more and more of this metal as wealth increases.

It is hardly pertinent to consider whether there is more gold visible in the world now than there was at some previous epoch. This may be an interesting archæological study, but it is not practical. It may be assumed, however, as a fact that the ancients were well supplied with gold for their requirements; but these requirements were exceedingly limited. Hence the concentration of gold in the hands of the powerful, and its application for ornamentation and display. The common people had little or none of it, and needed little, as a rule, because their industrial and commercial systems were not sufficiently developed, and poverty was the lot of all except the governing caste. In our day, however, gold is employed in an infinity of ways unknown to the ancients, and is by no means the exceptional possession of a small governing caste. Whatever may be said of the concentration of wealth in a few hands, the fact remains that gold is very widely distributed among those classes that, even a century ago, were entirely innocent of its possession. The demand for gold in the arts is steadily increasing; its use for coinage is likewise on the increase; and therefore, as was said at the outset, the supply of this metal becomes a question of the very foremost importance upon social, economic, and political grounds.

It is not the purpose of this article to discuss theories, but to report facts. Accuracy of statement is essential to a right understanding of the subject. Of course, it is understood that absolute accuracy is impossible; but as near an approximation to the truth as can be made from a comparison of official and other credible sources of information is what is proposed. Reliable statistics for all purposes of comparison and deduction are obtainable in the case of California and Australasia, which are the great gold-producing countries of the world. There are several other gold-producing countries besides these, as Siberia; but their output of the precious metal does not, in any appreciable degree, affect commercial values in the open markets of the world, and may as well, therefore, be left out of consideration altogether. The commercial world depends at present mainly upon the United States and Australasia for its supply of gold. Other sources of supply do not affect the general result.

There was a growing scarcity of gold among commercial nations before its discovery in California in 1848, and soon afterward in Australia. Manufacturers and trade were greatly depressed in England and on the continent of Europe, and distress was generally prevalent among the common people. Statesmen were at their wits' end, and economists had no practical solution of the difficulty to offer; but a few humble men engaged in digging a water-race at Sutter's mill, in the remote and unknown California, solved the industrial and economic problem by throwing up a few spadefuls of dirt containing gold. The valley of the Sacramento soon became famous the world over, and the foundations of a great and prosperous commonwealth were thus laid upon a gold basis.

Competent authorities have estimated the annual increase to the world's stock of gold for the five years following its discovery in California and Australia, ending with 1856, at $150,000,000. The effect of this large production of gold was to stimulate industries and trade, and the manufacturing and agricultural development of the present century, with its marvelous discoveries and utilization of natural forces, is clearly traceable to it. The era of invention may be said to have begun with the discovery of gold in California, because, although an inventive spirit was moving in the world before that event, it was almost barren of results, owing to the scarcity of money. Since then, the world has been flooded with inventions, and the elements of nature and organic matter have been transmuted into force, and, by mechanical genius, compelled to do the labor of the world. This is, indeed, the golden age, because the golden store this time fell into the hands of the Anglo-Saxon race, which does not hoard its treasures.

From 1856, the yield of gold steadily declined, although the discovery of rich diggings in New Zealand gave a temporary check to the downward movement. In the five years ended with 1875, the yearly average output of gold was about $100,000,000. Since that date, the fluctuations in the yield have not been remarkable, although the tendency all the time has been to shorten production. Hopes are entertained that new developments will take place on the Pacific slope, as well as in Australia, and the present condition of the mining industry generally in those regions warrants such a conclusion; but it should not be forgotten that recent litigation in California has had a depressing effect, and, by enjoining hydraulic mines from working, owing to the damage done to valley land and farms, it may seriously affect the yield of gold from that State. The following figures, taken from public returns, exhibit the fluctuations in the yield of gold in the United States during the last fourteen years:

ANNUAL PRODUCTION OF GOLD WEST OF THE MISSOURI RIVER.

Year.	Value.	Year.	Value.
1870	$33,750,000	1877	$44,880,223
1871	34,938,000	1878	37,576,030
1872	38,177,395	1879	31,470,262
1873	39,206,558	1880	32,559,067
1874	38,466,488	1881	30,653,959
1875	39,968,104	1882	29,011,318
1876	42,862,935	1883	27,816,640

The total output of gold in the United States as a whole, according to the report of the Director of the Mint, averages about $4,000,000 a year in excess of the foregoing figures. This estimate is probably correct. In considering the production of gold in this country, therefore, the fact stated should be borne in mind. Small quantities of gold are obtained by mining east of the Missouri River. The bulk is obtained west of that stream.

California is the great gold-producing State of America, and, up to date

stands at the top of gold-producing countries. As already mentioned, a check has been put to hydraulic mining by the issuance of a perpetual injunction by the United States District Court in a test case. But this need not ultimately affect the production of gold. The hydraulic process is extremely wasteful. Only the coarse gold is saved, and it has been estimated that 80 per cent of the precious metal in fine dust and float gold is lost. Although a far smaller quantity of auriferous dirt could be handled by drift mining than by hydraulic working, there would be far more gold saved in proportion to the labor and capital employed; but just at present, before any change of system has been adopted, a decreased yield may be anticipated. According to the Director of the Mint's estimate, the production of gold in California decreased about $1,300,000 in 1882, as contrasted with 1881. This was half a million in excess of the estimate of local statisticians. Wells, Fargo & Co., who move most of the gold produced in California from interior points, estimate that the yield for 1883 falls $1,629,028 short of the production in 1882. This decrease may, in a great measure, be attributed to the interruption of hydraulic mining. But the amount is too insignificant to be seriously considered as affecting the world's stock of gold in its relation to commercial values. Moreover, quartz mining is making satisfactory development, and the certain increased yield from Arizona, Montana, Idaho, and Alaska, combined with improved methods of extracting gold, will more than offset the decrease from the hydraulic mines. Whether the Cœur d'Alène District will prove prolific remains to be demonstrated. It will add something considerable, however, to the general stock, although it may not redeem the promise of its trumpeters. At the same time, it should be borne in mind that very many of the old placer mines of California have been worked out, even those industrious gleaners of gold fields, the Chinese, being unable to make it pay on not a few once famous leads. The yield of gold in California in 1882 was estimated at $15,470,325 by Wells, Fargo & Co.

The figures following exhibit an almost similar state of things in Victoria, the chief gold-producing country of Australia, as exists in California. The total yield of gold in all the Australasian colonies, from the discovery of the precious metal in 1851 to 1881, inclusive, was 73,493,423 ounces, equivalent to $1,446,247,255. Of this total, Victoria, the smallest of all the continental group of Australian colonies, yielded 50,505,567 ounces, worth $1,010,111,340, calculating the gold at $20 an ounce. The Victorian government statist values it at £4 an ounce. New Zealand gold is less valuable than Australian gold as a rule, being largely alloyed with silver. It will be seen, from the following official statement, that the output of gold in Victoria from 1870 to 1883—the years chosen to illustrate the fluctuations in the American gold product—was marked by nearly identical features. Thus:

PRODUCTION OF GOLD IN VICTORIA.

Year.	Ounces.	Year.	Ounces.
1870	1,222,798	1877	809,653
1871	1,355,477	1878	775,272
1872	1,282,521	1879	758,947
1873	1,241,205	1880	829,121
1874	1,155,972	1881	858,850
1875	1,095,787	1882	898,536
1876	993,760	1883*	740,373

Averaging these figures for the whole period, the average annual production is about 1,632,000 ounces gold, or nearly twice the quantity raised in 1882. This gives a better idea of the important change that has taken place in the productive character of the Victorian mines than perhaps any thing else could do. But it is extremely likely that the gold output of Victoria will remain stationary at about present figures for a number of years. Improved machinery has been applied, and deep sinking, as the result of the diamond drill explorations, has proved satisfactory in several places, although quartz mining was not prosperous. Mr. Hayter, government statist of Victoria, gives the following comparative statement of the gold product of all Australasia up to and inclusive of 1881:

Victoria	£202,022,268	$1,010,111,340
New South Wales	34,027,114	170,135,570
Queensland	13,411,511	67,057,555
South Australia	404,378	2,021,890
Tasmania	922,757	4,613,785
New Zealand	38,461,423	192,307,115
Total	£289,249,451	$1,446,247,255

Contrasting the years 1880 and 1881, we find that there was a slight increase in gold production in the several colonies, except in New Zealand. Thus:

	Ounces. 1880.	Ounces. 1881.
Victoria	829,121	858,850
New South Wales	116,751	145,532
Queensland	203,469	239,782
South Australia	13,246	16,975
Tasmania	50,999	54,348
New Zealand	305,248	270,561

Late advices from New Zealand show that the yield continues to decline, the total export of gold during the first three quarters of the current financial year being 14,000 ounces less than during the corresponding period of 1882–83. This is more than met, however, by increased production in New South Wales and Queensland, in each of which important gold developments have taken place. There is a very rich auriferous belt in Northern Queensland that runs clear through to the Gulf of Carpentaria, where it joins the proved auriferous belt of the northern territory of South Australia. Little can be anticipated from this region at present, owing to the hot climate and scarcity of labor. It is especially trying upon Europeans, and Chinese are not encouraged to immigrate to Australia. The gold procured by Chinamen, however, did not as a rule find its way through ordinary channels into general use. It was sent to China, and there remained in what may be appropriately styled the sink of the world's money. In all the Australasian colonies, but notably in Victoria and New Zealand, the governments stimulate gold mining by the payment of rewards for new discoveries, the importation and supply of diamond drills for exploration, and in other ways. New Zealand has an expensive system of public works in operation on its gold-fields, including the construction of water-races and sludge-channels, roads, tramways, etc. This expense is borne upon the public revenue, the entire gold-field revenue being given to the municipal authorities in aid of local taxation in the counties in which it is raised. Thus the government does for Australasian gold mining what private enterprise must do for it in the United States. Were it not for this direct help, the yield of gold would soon be greatly diminished.

Taken as a whole, the indications are pretty conclusive that the yield of gold in the United States and Australasia will not appreciably decline during the next decade. There are always fresh discoveries, and although nothing like the great output of the early gold-producing days is to be expected, in the aggregate the supply from these new fields is considerable. Meantime, development is in progress elsewhere. An expensive and complete hydraulic outfit has been shipped from San Francisco for South Africa, to handle the rich placer deposits in the Cape Colony, and an increased yield of gold from that quarter may be anticipated. Central and South America may likewise be counted upon for an increased quantity of gold now that American capital and enterprise have laid hold of their transportation and mining interests. And there is every reason to hope that gold may be found in equatorial Africa under the various expeditions that have been organized by European powers to explore that region and open it for trade. Gold is, of course, known to exist in large deposits on the west coast of Africa, commonly called the Gold Coast; but the warlike character of the native population, their savage habits, and the fatal nature of the climate combine to keep this supply of the precious metal in reserve for future use. It is not diminishing, however, and this reserve will assuredly be drawn upon when the requirements of commerce render an increase in the world's supply of gold an absolute necessity.

As far as the question of gold supply is concerned, therefore, the fair and indeed the only conclusion that can be reached is, that the present annual output of that metal will not diminish appreciably during the next ten years at least. Whether this supply is sufficient for the growing requirements of the world's commerce and art does not fall within the scope of this article, but is a point well worth considering.

* This is the estimate of the Melbourne *Argus*, based upon the average of previous years and the drought, which had seriously impeded mining operations. The actual yield was probably in excess of the quantity stated.

ADVANCE IN POWDER ON THE PACIFIC COAST.

The various acid-works companies of San Francisco and the various powder companies engaged in the manufacture of dynamite and nitro-glycerine descriptions, have for some time been trying to unite on some basis satisfactory to all. A verbal understanding was arrived at some time ago. Since then, the necessary papers have been prepared, and each interest has signed the agreement. The last signature, says the *Bulletin*, was obtained from the Vigorit Company. The parties to the contract include six acid-works, embracing the Golden Gate and Western Mineral, and the following powder companies: Giant, California (Hercules), Safety Nitro, Vulcan, and Vigorit. The contract is for three years, and is of iron-clad construction. The basis first fixes on the cost of production, and the difference between uniform figures agreed upon and the selling price is to be turned into a common pool and divided up pro rata. The uniform selling prices agreed upon are about 25 cents for No. 2 and about 37½ cents for No. 1. These figures are nearly 50 per cent above the average prices at which these descriptions have been selling for of late in this market. The combination will of course place the companies in a better position than they have been in for some time. Something of the kind appeared to be absolutely needed to prevent an illustration of the Darwinian theory of the survival of the fittest. It is said that Eastern powder companies long ago resolved on similar measures. The Atlantic Dynamite, owned here, makes no powder here, does not import any, and is not a party to the contract. The Giant paid monthly dividends of 75 cents a share up to last March, when it dropped to 40 cents. It is thought the 75 cent rate will be restored next month. The California pays $1, and will probably make no change. The Safety Nitro has never paid, but under the present arrangement expects to pay 25 cents a share next October. The Vulcan suspended dividends a long time ago, and has since levied two or more assessments. The Vigorit is paying 10 cents, and may increase to 15 cents, although it will cease manufacturing for the present, but will share in the common pool. Its present supply of materials will be sold for account of stockholders.

THE government of Mexico has recently published a list of the localities in Mexico where coal is found.

ON THE INFLUENCE OF COPPER IN ROLLING STEEL.—Choubley has confirmed the observations made by Wasum on the influence of copper in steel upon its rolling qualities. Wasum found that 0·862 per cent of copper did not, in the absence of sulphur, produce red-shortness, and Choubley, in the *Comptes Rendus de la Société de l'Industrie Minérale*, adds that even one per cent of copper does not produce it. He melted 15 kilograms of steel scrap in a crucible with 150 grains of copper, the metal produced having the following composition: Carbon, 0·495; manganese, 0·460; silicon, 0·150; phosphorus, 0·069; sulphur, 0·040; and copper, 0·960 per cent. This steel did not show the slightest trace of red-shortness. Noting that Wasum's tests were conducted with steel low in phosphorus, Choubley made some additional experiments to test the question what influence phosphorus and copper have. At the Firminy steel-works, France, copper was added to the melted pig in a ten-ton converter, the composition of the steel in five blows being:

No.	Carbon.	Manganese.	Phosphorus.	Sulphur.	Copper.	Silicon.
1	0·510	0·454	0·192	0·068	0·360	From
2	0·600	0·539	0·204	0·045	0·370	0·10
3	0·492	0·360	0·150	0·073	0·420	to
4	0·580	0·393	0·174	0·054	0·440	0·15
5	0·540	0·427	0·192	0·070	0·480	

In order to see whether the steel was red-short, a small bar was nicked and then heated to dark cherry-red. The time of the fracture and its appearance revealed any tendency to red-shortness that was not observed in any of the blows analyzed. The steel rolled well. It is safe to conclude, therefore, that steel with 0·50 carbon, from 0·40 to 0·50 manganese, 0·20 phosphorus, and 0·50 copper does not exhibit red-shortness.

ELECTRIC BLASTING AND LIGHTING AS APPLIED TO QUARRIES.

Among the largest engineering works at present in course of construction are those undertaken by the city of Liverpool for the supply of that city with water. Away up among the Welsh hills, says *Engineering*, some seventy miles from Liverpool, what was once a fertile agricultural valley is under rapid conversion into a lake, by the process of building a masonry dam across its narrow lower end, thus backing up and impounding the water of the river Vyrnwy, over the village and valley of Llanddyn. The area of the lake when formed will be 1115 acres, with a length of 4¼ miles, and will contain nearly eleven billion gallons above the level at which the water will be drawn off for the supply of the city of Liverpool. The engineers of this great work are Mr. T. Hawksley, C.E., of Westminster, and Mr. G. F. Deacon, C.E., of Liverpool.

It is not, however, with the construction of the embankment and the lake that it is proposed to deal in this article, but rather with the scientific appliances used in the quarrying of the stone for the wall. The quarries in question are situated about a mile away from the site of the masonry dam, with which they are connected by a double line of narrow-gauge (3-foot) railroad, somewhat remarkable in itself for its uniform gradient of 1 in 30, and for two or three very sharp curves, one of which possesses the somewhat unenviable radius of 150 feet. Geologically speaking, the quarries are in the massive beds of rocks at the base of the Bala or Saradoc beds of the Lower Silurian group, which dip at an angle of about 30 degrees to the west. The position is very favorable for quarrying, and the beds are stripped off one by one, each layer being from 6 feet to 10 feet thick, but divided into beds of about 3 feet. The blocks come out, with skillful quarrying, in their natural crystallized form as rhomboids. The locating, development, and control of these quarries were intrusted by the corporation to a firm of mining engineers well known in North Wales and its borders, Messrs. D. C. Davies & Son, of Oswestry; and at the time of our visit, there were some 600 men employed by the corporation under them, the work continuing uninterruptedly day and night. The output at that time was over three hundred tons of building-stone a day, mostly dressed, to say nothing of the removal of waste and the extension of the quarry. In order to grapple with so large an output, all the appliances of machinery and science that were thought of practical value have been brought into successful work.

To the student of either mining or civil engineering, no better opportunity could be afforded than by a visit to these works of seeing in daily practical use the various engineering appliances, with which, however well he may be acquainted in theory, yet with which in their application and the manner in which they are utilized, so as to be of daily and increasing value, he is absolutely ignorant. The beds of rock lie, it may be added, in a way that peculiarly adapts itself to electric blasting, and this has been adopted to the almost total exclusion of the ordinary method by means of a fuse, which is only used in isolated and special cases. At first, the Welsh quarrymen and foremen were much prejudiced against its employment, and used every means to discourage its introduction, almost disheartening the young engineer to whose control it was intrusted, necessitating his personal superintendence at the charging of every hole and the making of every joint. A man and a boy have now been trained and are almost constantly employed in preparing the fuses and firing the shots. The battery employed for firing is one of Siemens's high tension, and resembles, when open, a small dynamo, being driven by a handle and train of wheels, and to which is attached a condenser, consisting of alternate layers of mica and tin-foil. The electricity stored in the condenser is automatically discharged at every third turn of the handle of the machine, and, passing along the wires and through the fuses, fires the holes simultaneously. As many as fifty holes could be fired at once; but in practice it was not found advisable to couple more than thirty together, owing to the difficulty of insulating so many, and the consequent short-circuiting of some of the holes, thus spoiling the blast and necessitating their subsequent firing.

The holes as a rules are 9 feet deep, 1¼ inches diameter, 3 feet apart, and placed at a distance of 9 feet from the edge of the rock. The men stand on a line of planks along the slope, when preparing holes for a blast. Thirty of these holes would bring down a mass of 576 tons of rock, in blocks from three to five and ten tons, those from three to seven tons being the most useful, as, if they are over seven tons, the cranes used in building are unable to lift them. A great deal of waste is occasioned by breaking up large stones, as one of eight tons can not be broken into two good stones of four tons, and sometimes the effort to do so is simply wasted. In order to prevent as far as possible this waste, owing to the blocks being too large, much judgment and experience are necessary in choosing the best site for the holes, and after many trials, the above dimensions were adopted as affording the best average results.

The electric fuses employed are what are known as Abel's high-tension fuses, and consist of two gutta-percha covered iron wires, 3 feet long, twisted together. One end is inclosed in a small wooden cap, and in this the pointed ends of the wires are brought close together, leaving a space of about $\frac{1}{32}$d of an inch between them, which is filled with a fulminating mixture. On a current being sent through, it leaps as a spark across the space and ignites the fulminate, which in turn explodes a detonator, and through it the powder in the hole. Ordinarily, the fuses are supplied with but a few inches of insulated wire, and it is necessary to attach a further length to this, thus making two joints that would be buried and out of sight in the hole. This was found to be a fruitful source of failure, so the fuses were provided with wires a yard long, being a sufficient length to reach down to the powder in the holes and also to stretch across halfway between two neighboring holes. In order to protect the joints—where the insulating material was of necessity removed—from coming into contact with the rock, and thus short-circuiting the current and making a miss-fire, a short piece of fine India-rubber tubing is slipped over them and tied with string. This is an effectual remedy.

In the summer of 1883, the question arose as to whether in the ensuing winter the quarry should be lit up with the electric light. As the works for the foundation of the dam had been so illuminated during the previous winter, the various machinery was on the spot; but opinion differed as to the advisability of removing the machinery to the quarry or of leaving it in its original position and conducting the current by an overhead line of wires to the lamps at the quarry a mile away. This latter method was the one adopted.

The dynamos available were four 3000 candle-power Siemens direct-wound machines and a separate exciter, which, however, was not used, the dynamos being coupled in series and made self-exciting. Their speed is 750 revolutions a minute. The conducting wires are carried at the summits of poles 30 feet high and eighty yards apart. They are fastened to large white insulating mugs, one at each end of a cross-piece near the top of the pole. The wire itself is composed of a strand of 5 No. 16 copper wires, and has a resistance of about 5 ohms for the whole length. The area of the quarry was divided as nearly as possible into three equal portions, and in each of these a mast 80 feet high was erected from which the lamp is swung at any hight found most convenient. The lamps are of Siemens make, and are what are known as the Hefner Von Alteneck differential lamp. Each lamp is supplied with two pairs of carbons, which burn alternately for about fourteen hours, when they require to be renewed. Their peculiar construction allows of a number being coupled in series on the same circuit. In a small office that is devoted to the storing of the electric appliances are found the switches and resistance coils, of which there are three, one to take the place of each lamp in case of its failure during the night. A resistance frame resembles nothing so much as a spring mattress. It is made of rows of iron bands bent in flat springs and contained in a wooden frame. Each frame offers a resistance equal to that of a lamp, or 5 ohms. Dangerous heating of the coils of dynamos and sparking at the brushes are avoided by inserting one of these resistances into the circuit in the place of a lamp that may have failed to work. The four dynamos are required to work the three lamps, as the current from one is for the most part absorbed in overcoming the resistance of the long leads. The first evening that the lamps were used, darkness had set in before all the arrangements were complete, and a crowd of workmen had gathered round the lamp, at the bottom of the pole, commenting in Welsh possibly upon the absurdity of expecting a light from the two black sticks in the lamp. Suddenly the arc struck up, and the crowd, covering their eyes with their hands, retreated hastily from the dazzling glare of light. On another occasion, a lamp having gone out in the middle of the night, one of the men, of a more brilliant genius than the others, endeavored to re-light it with matches, but in vain. The number of burnt matches on the ground next morning testified to the fact, and showed the perseverance.

THE DELTA METAL.

Recently before the Iron and Steel Institute, Mr. Alexander Dick presented a valuable and interesting paper on the subject of the Delta metal, of which he is the inventor and the patentee. The specific gravity of Delta metal is 8·4, its melting-point 1800 degrees. In color, it resembles gold alloyed with silver. It can be worked hot and cold. When melted, it runs freely, and the castings produced from it are sound and of a fine, close grain. Like all copper alloys, it does not weld, but can be brazed like copper or brass, and if the object is of sufficient thickness, it can be "burned-on" with great facility. Cast in sand, it has a breaking strain of over 21 tons per square inch. When forged at a dark-red heat, the breaking strain is raised to from 33 to 35 tons; and when hammered or rolled cold, it will stand a strain of more than 40 tons per square inch.

The varieties destined for working cold can be drawn into tubes and wire, or rolled into sheets and rods, while those intended for working hot can not only be rolled with great facility when heated to about 1600 degrees Fahr., but are also capable of being stamped or punched, similarly to wrought-iron and steel, into a great variety of articles that have hitherto been cast in bronze or brass. Special attention is drawn to this quality of Delta metal, as the possibility of hot stamping offers very great advantages over castings; the articles are turned out much cheaper, they are of perfect soundness, and possess three times the strength of brass castings; blow-holes, which frequently can only be detected after expending time and labor, are impossible, besides which, a great saving is effected in the finishing of such articles, as, unlike castings, the stampings leave the die almost perfect, requiring little or no tooling, but ready to be polished.

Experiments are making at the present time to utilize the semi-plastic state of heated Delta metal to press it by hydraulic pressure into tubes and rods of round, hexagonal, and other sections in a way similar to that in which lead tubes are pressed.

The uses to which Delta metal can be applied are naturally very numerous. Its price being but little in advance of the best brass, it can not only replace the latter and gun-metal with advantage, but in many instances, also iron and steel, as it does not corrode or rust. Thus, parts of rifles, of guns, of torpedoes, tools for gunpowder mills (on account of their not emitting sparks), parts of bicycles, gongs, and a number of domestic articles are now stamped in Delta instead of steel; while spindles for steam and water-valves, plungers and pump-rods, etc., etc., are forged in the same metal. Messrs. Yarrow & Co., London, are at present building a steam-launch entirely of Delta metal—the plates and angle-pieces being of the same thickness as if built in steel. Such launches are especially adapted for the transport of salt and other chemicals, sugar, etc., which rapidly corrode steel; the small extra first cost is therefore quickly repaid, besides which, the metal always keeps its value. The non-corrosive quality of Delta metal renders it very valuable to shutter-makers, for replacing steel shutters by those made of Delta sheet, upon which the atmosphere has no influence.

A number of specimens of Delta metal were submitted for examination. These included a cylinder cast in sand by Whitley's process, partly turned and bored, and thus showing the soundness and surface of the casting; a ring cut from the same cylinder, and when tested exhibiting a breaking strain of 23·1 tons per square inch, and after hammering cold 39·75 tons per square inch. There was shown, too, a piece of cast chain, the links ·733 inch diameter, which, on testing, stretched 14 per cent, and broke at 8·15 tons, equal to 19·3 per square inch. The exhibits included, too, wire of 22 wire-gauge, breaking at 62·5 tons per square inch, a hot-stamped bowl, hammers, spanners, row-locks, ship's deck fittings, parts of bicycles, keys, gongs, bearing and hooks, all stamped hot, a hexagon rod, tilted from the ingot, an ingot partly forged, a piece of hexagon rod, partly turned, screwed, and fitted with a nut cut from the same bar, and showing, when tested by Professor Unwin, an elastic limit of 24·65 tons per square inch, and a breaking strain of 33·97 tons per square inch, with 6·95 per cent of elongation.

WIRE TRUSS ELEVATED RAILROAD.

Mr. Ch. J. Quétil, C. and M.E., on Wednesday, June 18th, read at the meeting of the Franklin Institute a paper on his triangular wire truss. He claims for it simplicity, lightness, and cheapness, and an advantage over the ordinary triangular truss by bracing a beam without exerting any compression on its two ends. This allows him to use a lighter and consequently cheaper beam. His truss has also the advantage over the ordinary truss of reducing the deflections of the beam in its center more than the ordinary truss can do. This he proved by calculation and by a model that he exhibited at the Franklin Institute. This new truss, applied to elevated railroads for mines, will, he claims, allow him to build them on uniform ground for $4000 a mile, with a daily capacity of from 120 to 400 tons of ore, according to the distance. He also exhibited plans of cheap bridges of short or long spans that he proposes to build on this principle—one of which, designed for a mining company, is 412½ feet long, in two spans, one of 275 feet and the other 137½ feet. It is to be built with four cables 2¾ inches in diameter, braced on top by iron rods 1 inch in diameter, with four cables below, 1¼ inches diameter, in an inverted position. The cables will approach the parabolic form, and are supported from distance to distance by stays. The deflection of this bridge under a load of 56 cars covering the whole length of the span of 275 feet and weighing 1400 pounds each, or 78,400 pounds in all, will be above two inches. The bridge can be built for $12,000. Mr. Quétil's paper will be published in the Journal of the Franklin Institute, August 1st, 1884.

FURNACE, MILL, AND FACTORY.

The Belvidere Iron Company, of Easton, Pa., which has been largely engaged in mining operations in Oxford township, Warren County, N. J., has suspended. It employed 120 men. The laborers have been paid in full, but bills for supplies are still outstanding.

The Cambria, Pa., barbed wire mill closed down on the first of July for repairs and because of an excessive supply throughout the country.

The rolling-mill and property of the McCullough Iron Company, at Rowlandsville, Cecil County, Md., was damaged by the storm June 27th to the amount of nearly $100,000.

The Cambria Iron Company, Johnstown, Pa., has purchased a lot on which to erect a hospital for the treatment of employés injured.

Citizens of Hubbard, Ohio, are offering inducements to industrial establishments to locate there.

The proposition of the Edgar Thomson Steel-Works to come into the borough of Braddock, Pa., in case their taxes were not increased above what they are now, has been favorably received by the authorities.

The company organized to enlarge the steel-works at Cumberland, Md., will shortly be incorporated with a capital stock of $150,000.

The Vulcan Iron-Works, of Wilkes-Barre, Pa., have supplied the Wyoming Valley Coal Company's colliery at Forty Fort, Pa., with four new standard cylinder boilers each about forty feet in length.

The Gates Iron Works, of Chicago, have recently removed to their new building, Nos. 50 to 58 Clinton street, where they have very much better accommodations and greater facilities. The building is of brick, 150 by 84, and, being one story with the exception of front and rear, gives excellent light for the machine-shop. The upper story front is used for office and drafting-rooms, and in the rear upper apartment is a pattern-shop and pattern storage-rooms. These enlarged quarters will enable the company better to meet the wants of the growing demand for Gates crushers.

A denial of the claims of the Cummer Engine Company, with reference to exhibition premiums, by a number of the leading automatic engine manufacturers, has led to a circular from the Cummer Company, giving certified copies of the applications, showing the number, class, etc., in which the Cummer and other automatic engines were entered for competition. The circular is an answer to one issued by rivals, which was headed "Facts vs. Falsehood," and claims to give the "facts without any falsehood." It ends by appealing to the reader to "note carefully, that we place willingly what we say over our name." Manufacturers, we presume, will continue to investigate and take their choice.

A new steel-gun, 32-pound caliber, made entirely of American steel, was completed recently at the Watertown Arsenal, and has been taken to Sandy Hook to be tested. If this gun proves as successful as is expected, the excellence of home-made steel will be proved beyond question. It is intended to supply our batteries with these steel breech-loaders on the interrupted screw system.

The Hope rolling-mill of the Pottstown Iron Company, Pennsylvania, has shut down for an indefinite time.

The Amalgamated Association of Iron and Steel-Workers will hold its annual National Convention in Pittsburg, Pa., on the 5th of August.

The rolling-mill of the Philadelphia & Reading Coal and Iron Company, in Reading, which has been in operation for some time making fish-plates and small rails, has been shut down, and will probably not resume until August.

The pneumatic switch invented by George Westinghouse, Jr., that was successfully tested a few days since at Wilkinsburg, Pennsylvania, is already in great demand. The Union Switch and Signal Company, of Pittsburg, has received an order from the Chicago, Burlington & Quincy Railroad Company to equip five points with the pneumatic signals. The five points cover five miles of new track. The switches will be ready to ship in July.

Clement English, of Cincinnati, Ohio, manufacturer of bellows and forges, has made an assignment to William L. Robinson. The assets are $25,000; liabilities, $26,000.

Hussey, Howe & Co., of Pittsburg, have introduced natural gas into a steel-melting furnace as an experiment. The new appliances used added to the success of the experiment.

The new foundry and machine-shop at Catasauqua, Pa., has been compelled to increase its force of workmen and to erect a large frame addition to its works.

The Harrison Wire Company, of St. Louis, Mo., has become financially embarrassed, and is endeavoring to reorganize. A trust deed has been recorded for $51,000, and a warranty deed for $25000.

C. Westlake & Co., rolling-mill, at Warren, Ohio, made an assignment June 28th, with assets of $59,000 and liabilities of $52,000.

The Crown & Cumberland Steel Company has been organized with a capital of $150,000, for the purpose of enlarging the steel-works at Cumberland, Md. The work of laying a railroad switch from the track of the Baltimore & Ohio Railroad to the present works has begun. When this is finished, the new machinery will be put in and the work will be pushed forward vigorously.

At the State Department at Harrisburg, Pennsylvania, June 23d, a charter was granted the Stokes & Parrish Machine Company, of Philadelphia, with a capital of $150,000. The incorporators are, Samuel E. Stokes, Alfred Parrish, William Pearsall, Erwin T. Hope, and William H. Ambler. They intend manufacturing and selling machinery and materials for machinery.

San Francisco papers state that the Golden Gate Mill and Mining Company has sued the Hendy Machine-Works Company to recover $12,500 damages for an alleged trespass, committed March 11th, 1884.

Tuckerman, Mulligan & Co., extensive iron manufacturers in Saugerties Village, New York, and proprietors of the Ulster Iron-Works there, have dissolved partnership. The works are closed and a large force of men is suddenly thrown out of employment. The iron manufactured at these mills has long had a reputation among dealers and machinists as being of exceptional superiority in quality, and "Ulster iron" has been a leading standard brand for many years. It is announced that a new firm will soon assume charge of the mills.

The Delaware Rolling-Mill was sold at public sale at Phillipsburg, N. J., July 2d, by the receiver, to Dennis Reilly, of Easton, for $24,600, which is $3100 less than that bid when the mill was first offered. The sale must be approved by the Court of Chancery, and it is probable that other parties will offer more. In that case, the sale will be set aside. The mill cost about $200,000, and the claims against it are about $175,000. The Spring Garden National Bank of Philadelphia showed $150,000 of bonds given the bank by W. A. Leavitt, of Philadelphia. This was before it was known that he was embarrassed. At the time of his failure, the mill was employing about 300 men, and had just been enlarged. The bank will lose all but about $8000 or $10,000, if the sale is confirmed.

LABOR AND WAGES.

The San Francisco Iron-Molders' Union is endeavoring by a strike to enforce its demand that not more than one boy shall be employed in any foundry to every eight men at work.

The firm of Baldwin & Graham, at New Castle, Pa., has withdrawn all questions at issue between it and the Iron-Molders' Union, No. 135, and the large works of this firm have resumed.

The employés of the Jersey Central Railroad Company seem much discouraged on account of the discontinuance of payment of May wages. The Brotherhood of Locomotive Engineers telegraphed July 1st to Chief-Engineer Arthur to come at once. A strike is threatened, but nothing will be done until his arrival. Chief-Engineer Arthur, of the Brotherhood of Locomotive Engineers, and three committees of engineers of the Jersey Central Railroad, visited Receiver Keim July 3d, on the subject of obtaining wages for the employés. If they do not get a definite answer, they say, all the men of the Jersey Central, Southern Central, and Lehigh & Susquehanna roads will strike.

A cable dispatch from London announces that ten thousand miners in Staffordshire have struck against a reduction of wages.

A reduction of twenty-five per cent has been made in the wages of all the workmen at the Bingen and Northampton furnaces, owned by the Bethlehem Iron Company. The keepers, who have been getting $1.85 a day, now receive $1.39, and stock-breakers, who got $1.25, now get 94 cents a day.

A reduction of ten per cent in the wages of the employés of the Pennsylvania Steel-Works, at Steelton, Pa., is announced, to take effect on August 1st. The workmen will accept the situation as the best that can be done under the circumstances, and the works will continue operating on full-time.

The shops of the Columbus, Hocking Valley & Toledo Railroad, at Columbus, Ohio, closed July 1st, throwing out of employment 300 men. This action is said to be a result of the coal miners' strike.

The Independent Labor party of this city has issued a call for the election of delegates to the National Labor Convention to be held at Chicago on July 30th. Each congressional district is entitled to three delegates, and all labor unions, land leagues, tariff clubs, and the employés of all mills, mines, and industries are also entitled to one delegate each. The platform favors protection to American industry, the revival of American shipping, and the protection of American labor against pauper and convict labor.

RAILROAD NEWS.

It is reported from Laredo, Texas, that information had been received there directly from the City of Mexico, stating that American railroads in Mexico are to be handicapped by a law requiring that all railroads in that country be required to fence the entire length of their lines on both sides, the fences to be so constructed as to prevent even goats from getting on the tracks. It is estimated that the Mexican Central road would have to expend $5,000,000 to comply with such a law. The Mexican government has appointed an inspector of railroads, whose duty is to supervise and regulate train schedules. No special train can be run without first obtaining his consent.

The Lehigh Valley Railroad Company has let the contract for building a branch road one mile long from Slatington, to reach several slate quarries beyond the village of Slatedale.

The Philadelphia & Erie Railroad Company's gross earnings for May were $296,853.17, a decrease of $36,506.24; operating expenses, $195,778.68, decrease, $30,159.72; net earnings, $101,074.49, decrease, $35,346.52. The net earnings for five months of the year are $455,620, a decrease of $116,630.11.

The Columbus & Hocking Valley Railroad, which has heretofore refused to reduce the freight rates on coal, agreed, June 28th, to reduce the rate of freight from 85 to 65 cents per ton from the mines to Columbus. The coal operators claim that this concession on the part of the railroad company will not permit them to concede the demand of the miners, who, to the number of 3000, are now out because of a reduction of 10 cents a ton in the price of mining. The operators further claim that they can make as much money by handling Pittsburg coal as they can if the demands of the Hocking Valley miners are granted, that of 70 cents per ton. An impression prevails that John McBride, President of the Miners' Union, is largely responsible for the unsettled condition of affairs in the Hocking and other Ohio coal-fields.

COAL TRADE NOTES.

CANADA.

PROVINCE OF QUEBEC.

The Grand Trunk Railroad invites tenders for the following quantities of anthracite coal, properly screened and free from slack or dust, to be delivered at the company's coal-sheds at Bonaventure station, or in yard or workshops at Point St. Charles, Montreal, between the 15th July and 1st October next namely: Two thousand tons gross egg size, 800 tons gross stove size, 125 tons gross chestnut size, 100 tons gross grate size. Also "Old Company's" Lehigh: 250 tons gross lump size, 100 tons gross egg size, 600 tons gross stove size. Tenders will be received up to the 15th of July by Joseph Hickson, General Manager, Montreal.

COLORADO.

The Colorado Coal and Iron Company is prospecting for coal on the mesa, Crested Butte.

MARYLAND.

The contract for supplying the City Hall at Baltimore with 300 tons of hard coal, No. 1, has been awarded to Robinson & Brother at $4.63 per ton. There were eight bidders.

The School Board at Reading has made a contract for 720 tons of Kohinoor coal, at $3.60 per ton.

All improvements at Swatara colliery have been indefinitely suspended, only the fireman and one engineer being retained.

MISSOURI.

At the Rich Hill Coal Company's forty-acre mining tract, a large area has been stripped, from which coal can be taken out and loaded at any time, besides

which, about 25 cars a day are now loading regularly. A new slope mine is opening.

The new Keith & Perry shaft, No. 5, is operated without cessation.

OHIO.

At Chapman, there has been no change for the past two weeks, except starting the pump in Willow No. 5. The sinking of Burton, Ridgeway & Co.'s new opening goes on steadily. Preparations are making for shipping in the early fall.

The Sharon Coal Company, composed almost entirely of present and former citizens of Sharon, dissolved partnership recently, and has been succeeded by the Sharon Coal Company, Limited, incorporated under the limited copartnership laws of Pennsylvania, with a capital of $30,000. The new company succeeds to all the franchises and properties of the former company, and will continue the mining of Chestnut Ridge coal from its mines near Grove City.

PENNSYLVANIA.

ANTHRACITE.

The mine inspectors of the different districts report as follows for May:

Pottsville District—Samuel Gay, Inspector: Accidents, 7; killed, 1; injured, 6. Total number of employés, 6820; average number of days employed, 16; number of tons of coal shipped, 146,965·01.

Shenandoah District—Robert Mauchline, Inspector: Accidents, 12; killed, 3; injured, 9. Total number of employés, 13,067; average number of days employed, 16⅛; number of tons of coal shipped, 363,650·14.

Shamokin District—James Ryan, Inspector: Accidents, 18; killed, 7; injured, 11. Total number of employés, 13,380; average number of days employed, 18; number of tons of coal shipped, 370,288·12.

The Peerless colliery, at Shamokin, is full of water to within ten feet of the surface. It is to be pumped out at once. The slope is 225 yards deep.

In sinking the shaft at Waddell & Walter's mine at Luzerne Borough, the Ross vein was struck at a depth of 383 feet from the surface. From this seam to the Red Ash below, an inside tunnel will ultimately be put through.

The Susquehanna Coal Company is erecting fifteen double frame tenement-houses at Morgantown.

BITUMINOUS.

B. F. Rafferty & Co. have secured a contract for 80,000 tons of coal to be furnished the Columbus, Ohio, gas-works.

The Leechburg Coal Company has about completed its new apparatus for coaling engines, by which engines can be supplied with coal by only slowing up.

The purchase of the Painter and Crowshore coal, near Painterville, by A. A. Hutchinson & Co., is likely to fall through, owing to the failure of the Penn Bank.

The works at Reynoldsville have not been doing well, but seem to be improving. Soldier Run mine has not been making more than two-thirds time. Sprague mine has been doing somewhat better, but not running steadily. Old and new Hamilton mines have not been doing very well all spring, but this month have picked up a little. The price of mining is sixty cents a ton over an inch and a quarter screen.

At Du Bois, the works are only doing tolerably well. Sandy Lick mine is not doing any thing, and it is not stated when it will start up again. Rochester mine is making about two-thirds time, employing about five hundred men. The price for mining here is forty cents a ton run of mine.

COKE.

The receipts of the Coke Producers' Association during May were $75,000. Their prices are better and their money prompt and sure. The report that there was some cutting of prices going on within the pool is on its face an absurd story, says the Connellsville *Courier*. As all the coke is pooled, there would not be the slightest advantage in this. The pool is just now somewhat disturbed by competition from the furnace ovens. Some of these, notably the Youngstown and Stewart works, are not shipping to their furnaces, the latter having closed down, and the product of these ovens goes into the market, and swells the independent list.

Contrary to expectations, shipments have increased rather than diminished since our last report. The average daily output is now 680 cars, as against 660 two weeks ago. This increase is not a natural one, and does not argue any improvement in trade. It is due solely to the fact that the Joliet Steel Company has resumed shipments to the Chicago furnaces. Two weeks hence will probably see shipments reduced. Of the 9820 ovens in the region outside of the Pleasant Unity and Latrobe districts, 2488, or just 25 per cent, are idle, showing that the restriction on the output is not confined to the pool, but is carried out by those outside. The idle ovens include 1715 in and 773 outside the pool.

W. J. Rainey & Co., operating the Fort Hill coke-works, are building 104 additional ovens, making their total number 200. James Cochran & Son will add 100 ovens to their works. It is said that J. M. Schoonmaker will build 400 this summer.

The Pittsburg & Peters Creek Gas-Coal and Coke Company, Limited, which recently purchased 16 acres of coal land from Joshua Wright, of Washington County, for $23,000, will operate the coal on a large scale. The works will be completed by the first of next year.

The Long Run mine, at New Bethlehem, has been doing pretty well during the past month. One hundred and thirty-five men are employed. Thirty ovens attached to this mine have been idle the last ten days, although not cold yet. Sixty cents a tons over an inch and a quarter screen is the price paid for mining.

The Fairmount Coal and Iron-Works have been doing pretty well for some time. The company has forty ovens in full blast, and employs altogether at the ovens and mine about 300 men. The vein of coal at the mine averages about five feet four inches, and sixty cents a ton over an inch and a quarter screen is the price paid for mining.

NATURAL GAS.

Dispatches from Pittsburg, dated June 27th, say that although Judge Stowe has decided that the Fuel-Gas Company holds a virtual monopoly of furnishing natural gas for heat and light in Pittsburg, and despite the fact that the Fuel-Gas Company and the Penn Fuel Company have completed a mutual agreement, which, though not a consolidation, will prevent rivalry for the present, at least, the Westinghouse people have proceeded vigorously with their plans. It is now said that the Standard Oil Company and the United Pipe Lines are associated with Westinghouse, and are preparing to purchase or consolidate with the other companies, and thus create another wholesale monopoly. The United Pipe Lines have a broad charter, permitting the transportation of any thing pipable, with the privilege to go wherever they will and do much as they please. It is said that they are encouraged in the belief that Judge Stowe's decision will not stand the review of the Supreme Court. D. T. Watson, the attorney for the Standard and United Pipe Lines, professes to know nothing about any such deal.

William Reed, of Sewickley, while drilling a wild-cat oil-well on the Cresswell farm, near Butler, struck a heavy vein of gas.

The W. S. Bissell well, located on the Youghiogheny two miles from its mouth, has developed a good flow of gas at 1400 feet. Casing has been put down 600 feet, to shut off a small stream of salt water, and to-day the drill will be pushed through the sand. It was five inches into the rock when the gas was tapped. Piping to McKeesport mills will begin without delay.

UTAH.

The Pleasant Valley Coal Company has instituted suit in the Third District Court, at Salt Lake City, against the Denver & Rio Grande Railroad Company to recover $26,062.61, due on an open account for coal sold and delivered, for coal furnished by plaintiff to employés of defendant on defendant's orders, for overcharges, shortage, and rebate on coal carried by the Denver & Rio Grande for the plaintiff, and for services rendered and for office fixtures and material sold and delivered by plaintiff to defendant. As the Pleasant Valley Coal Company is a sort of adjunct of the Denver & Rio Grande Western, this suit may be looked upon as another branch of the litigation now pending between the Denver & Rio Grande Western and the Denver & Rio Grande.

GENERAL MINING NEWS.

ARIZONA.

MOHAVE COUNTY.

PACIFIC COPPER MINING COMPANY.—For the purpose of operating mines in the Cedar Valley Mining District, this company has been organized with a capital of $5,000,000.

PIMA COUNTY.

FLUX.—Work is progressing finely in this mine. Mr. M. Salsbury, of the Benson Smelting Company, now has possession, although the mine has been for more than two years in litigation. About twenty men are at work, and on an average one car-load of ore a day is shipped. Miners are paid $3.50 a day, but it is understood the wages will be reduced to $3. There are a large number of Mexicans at work in the mine, and they are paid but $2 a day.

CALIFORNIA.

MONO COUNTY—BODIE DISTRICT.

Reports for the week ended June 23d:

BODIE CONSOLIDATED.—Five hundred and forty-six tons of ore were crushed at the mill during the week. The average assay of the pulp was $33.15, and of the tailings $2.75. There is no change in the ore-breasts to report.

STANDARD CONSOLIDATED.—There were extracted and shipped to the mill 600 tons of ore, the amalgam from which is not yet retorted.

NEVADA COUNTY.

OMAHA.—The parties who purchased the company's mill are running on custom work.

PLUMAS COUNTY—GREENVILLE DISTRICT.

GOLD STRIPE.—The mill has stopped for the present. The rock that was crushed came from a break from the main ore-chute. The mine is not sufficiently developed to keep the mill running. It is stated that from less than 170 tons crushed, $1000 were obtained. Local papers regret that the owners in New York do not put up sufficient money to develop the mine properly.

INDIAN VALLEY.—Machinery is hauling to the mine.

LUCKY S.—The directors have made satisfactory arrangements with Messrs. E. D. Hosselkus, John Hardgrave, and J. W. Thompson to furnish the needed funds to erect a mill on the property, and to place the mine in complete running order. Voluntary aid from the stockholders, therefore, will be unnecessary, and no assessments will be made. Every thing at the mine is looking favorable, and the work is progressing satisfactorily, considering the annoyance of the late rains.

PROVIDENCE.—The mine is looking well. The three assays made in San Francisco show an average of $19 a ton.

TAYLOR-PLUMAS.—The company proposes to test the value of the mine.

CANADA.

Dr. Selwyn, director of the Geological Survey, has arranged an expedition for the exploration of the almost unknown country lying between Lake St. John and James Bay. The expedition will ascend the Bersimis River, and, after exploring the Hight of Land and the basin of Lake Mistassini, will continue down the Rupert River to James Bay. Mr. A. P. Low goes as geologist and Mr. Bignell as surveyor.

COLORADO.

A Leadville dispatch of June 27th says that it has just become known that within the past six months, and at some point between Aspen and Granite, the railroad shipping point, $100,000 worth of ore has been stolen. The Vallejo mine is the largest sufferer. All the State smelters have been notified of the robbery and given a minute description of the ore. About $40,000 worth of it has been disposed of by mixing with other ores and $60,000 worth is supposed to be stored away somewhere in the vicinity of Granite. The robbery was easily done, the bad condition of the roads during the winter necessitating the dumping of the shipments along the route whence it was taken. Pinkerton's men are following the clues. It is claimed that six men were in the thieving conspiracy, but their names can not be ascertained.

CLEAR CREEK COUNTY.

CORRY CITY.—The mill is now in operation, running principally on concentrating-ore from the Corry City mine.

GREAT REPUBLIC.—In the case of James Morris *vs.* Thomas P. Bryan and William F. Dougherty, an action brought to recover an undivided one-third interest in the Great Republic mine, which is situated up Cottonwood Gulch, near Idaho Springs, the jury rendered a verdict in favor of the plaintiff.

CUSTER COUNTY.

BOULDER-BUFFALA.—After an idleness of two years, the mill resumed operations; the details of the furnace will soon be completed.

JULIANNA.—The mine shows a good quality of vein-matter from a depth of 200 feet. It is stated that enough will soon be secured to open up the mill.

SILVER CLIFF.—The Sampling Mill Company is daily buying and shipping ores.

GILPIN COUNTY.

MIDAS.—Mr. B. O. Russell has taken a lease of the 39-stamp mill of this company at the mouth of the Midas tunnel, on North Clear Creek, and is fitting it up to run on custom ore.

RICHARDSON.—A contract has been made for a 40-stamp mill with Frue vanners, crushers, and Stamford feeders complete, together with a new hoisting-rig of large capacity, for the Richmond mine, now owned by the above company. The mill will be erected in Russell Gulch, near the mines of the company.

HINSDALE COUNTY.

CROOKES MINING AND SMELTING COMPANY (LIMITED).—Two feet of gray copper and galena have been uncovered in the west drift of the 8th level of the Ulé.

LAKE COUNTY.

The Leadville *Herald* has the following:

ANTIOCH.—The mill has been started up on an extended run of gold ore from the Florence mine, on Printer Boy Hill. This property shows a body of contact matter of great thickness, through which pockets and streaks of good free gold ore occur. Should this preliminary run prove satisfactory, it is possible that the mine will keep the mill steadily employed.

ESTY & HILL.—At this concentrating mill, amalgamating-pans are added, for

the saving of the chloride of silver now passing off in the shines from the jigs and concentrating-tables.

EVENING STAR.—The company offers its concentrating mill, in Big Evans Gulch, for sale or lease. The mill has a fifteen horse-power engine, five stamps, and other machinery.

LITTLE CHIEF.—The company is negotiating for the drilling of a number of 500-foot holes from the various shafts on the Little Chief claim, on Fryer Hill.

ROBERT E. LEE.—Ore has been shipped from this mine during the past few weeks, returning between 3000 and 4000 ounces in silver to the ton. Nine different leasers are at work in the mine.

RUBY.—Mr. Andre has purchased the waste and low-grade ore-dump at this mine, and he expects to make money by sluicing the material.

SMUGGLER CONSOLIDATED.—The lease of Mr. Harry Slockett on the company's mines has been renewed for the next six months.

PARK COUNTY.

R. M. Whipple has purchased the ten-stamp mill of J. G. Brooks, located on the Platte, about a mile above Montgomery.

BANNON.—The company has let contracts for taking out ore from the Stormy Petrel shaft, and has engaged a force of men to handle the dumps of low-grade ore on the company's different claims.

LAST CHANCE.—Four hand-jigs for taking mineral out of the screenings at the mines have been put up.

NESTOR.—Work has begun.

SOVEREIGN.—The company will increase its working force to about fifty men.

PITKIN COUNTY.

Mr. L. W. Thiele sends us the following notes from Aspen, under date of June 26th:

SPAR.—This is a contact vein, or deposit, of an average width of four feet, between car bonate "blue lime" and dolomite "short lime." The developments—320 feet—consist of main incline, 270 feet, and a cross-cut, 50 feet along the vein at an angle of 33 degrees. A shipment of eight cars of first-class ore to Grant's Smelting-Works, at Denver, gave returns of from 433 to 465 ounces silver per ton. The second and third-class ore is sold to smelting-works here. The ore is argentite, stephanite, and cerargyrite, and the gangue, baryta (heavy-spar) and lime. The freighting charge to Granite is $25 a ton. Miners' wages are $3 a day for eight-hour shifts.

WASHINGTON.—Adjoining the Spar, this mine has an 80-foot shaft, a drift 85 feet running southeast, to connect with the Spar workings.

VALLEJO.—Development, 1200 feet; main level, 140 feet; average width of deposit, 5 feet; shipment of ore, ten tons a day. First-class ore, 900 ounces a ton; second-class ore, 450 ounces; third-class ore, 130 ounces silver a ton. The Vallejo has been sold to George H. Hewitt *et al.*, for $72,000.

The contract of 200 tons of coke to the Aspen smelting-works has been completed. The furnace will be blown in July 15th.

PUEBLO COUNTY.

THE NEW ENGLAND & COLORADO SMELTING COMPANY.—The wind blew down the 150-foot stack of this new smelter on the day when it was approaching completion. An effort is making to explain its fall by a stroke of lightning. We are, however, informed by the best of authority that it was built in an exceedingly flimsy manner, the foundation being poor and the masonry wretched. Nobody was killed, because, as the local paper explains, somebody had sent them a keg of beer, and this, together with the rain, induced them to come down from the ponderous tower just before the storm struck it.

SUMMIT COUNTY.

GROUND HOG.—An injunction has been issued by Judge Goddard at the request of Herbert and Eugene Carl against the owners of the Ground Hog, to prevent the shipping of ore by them.

DAKOTA.

ALTA-LODI.—The Jenny Lind mine has been bonded by this company, and the Alta mill has started up on ore from it.

GOLDEN SUMMIT.—The old company has been reorganized, and is now in the hands of a corporation known as the Cedar Rapids Mining Company. The work of development is in active progress. A body of free-milling ore, assaying from six to thirty dollars a ton, has been discovered, second only to the famous Homestake. The property is extensively prospected. Two shafts are sinking, from which levels will be run, uncovering a large body of quartz for stoping. Two tunnels are also running.

IRON HILL.—Two shifts of miners are at work on this mine. The vein of ore gone through in making the cross-cut on the 160-foot level is receiving attention, and a considerable amount of ore has been taken out and placed on the dump.

WELCOME.—A Blake plant has been purchased, and will arrive at the mine by August 1st at the latest.

IDAHO.

The concentrating mill at the mouth of Indian Creek, owned by Jabez Chase, has started up successfully. The mill has a capacity of thirty tons daily, and will treat all the second-class ore from the Davitt and Wolfe Tone mines. Mr. Chase will be prepared to do custom work after a short time, and as business increases, he will enlarge the capacity of the mill.

LITTLE WOOD RIVER MINING COMPANY.—The company's property at Muldoon has been leased to Colonel Ballantine, who for the past year has been superintendent of the works. He will at once resume active operations in partnership with Fulton Haight. One furnace has been blown in, and as soon as the concentrating-works now erecting are in running order, the second furnace will be blown in. These furnaces have a daily capacity of 40 tons.

MAINE.

DOUGLAS.—Eighteen tons of refined copper were shipped to Boston during the week ended June 26th.

WILLIAMS SLATE COMPANY.—The reports presented at the annual meeting, held recently at Brownville, showed that the company owns a fine vein of slate, now well advanced in development, and the affairs are in a flourishing condition. Six cottage houses for the accommodation of the workmen are to be built, and additional machinery will probably be put up the present season, in order to work the quarry to its utmost capacity.

MARYLAND.

HARFORD COUNTY.

The building of the Philadelphia extension of the Baltimore & Ohio Railroad has very largely developed stone quarrying in the neighborhood of Lapidum. Small quarries on the farms of Messrs. Archer and Silver have been recently worked. A larger quarry on the place of Dr. W. W. Virdin is reopening. The stone is of the same quality as the Port Deposit granite, on the Cecil side, exactly opposite the Lapidum quarry, and is all shipped to Baltimore for the elevated railroad, and other purposes of the company in that city. The contractors are required to furnish large quantities of the stone by January next, and they have a large force of Italian and Hungarian laborers at work. The stone is near the Susquehanna, and very convenient for shipment. The Port Deposit quarry is very extensive. A large quantity of stone is procured also from Garrett Island.

MICHIGAN.

IRON MINES.

Lake shipments of iron ore from the ports of the Marquette District up to and including the 25th of June have been:

		Tons.
Escanaba,	Marquette District	208,478
"	Menominee "	327,950
Marquette,	Marquette "	205,838
L'Anse,	" "	19,841
St. Ignace,	" "	14,412
Total		876,519

ERIE.—It is stated that a new company will be formed, and operations begun, as arrangements have been completed for the taking by Cleveland parties of all the stock that will be required to work the property. A new lease of twenty years' duration has been secured, and the royalty on the ore has been reduced from 60 to 45 cents a ton.

MILWAUKEE.—Operations will soon be resumed.

PASCOE.—The mine, worked under contract by Messrs. Pascoe and Sellwood, is looking exceedingly well, and from 45 to 50 cars of ore are sent out a day. It is quite probable that operations will be continued throughout the winter. The shaft will be continued downward and the skip road extended if the price of ore warrants. As greater depth is attained, the quality of the ore is seen to be greatly improved.

WINDFALL.—This iron company, with business office at Crystal Falls, and a capital stock of $500,000, has been organized.

MONTANA.

MEAGHER COUNTY.

MAGINNIS.—The company has just been organized with a capital stock of $500,000. The machinery decided upon will consist of a double oscillating Huntington mill with a capacity of from fifteen to twenty tons a day, being equal to a 10-stamp (drop-stamp) mill, concentrators and amalgamators, and a 50 horse-power engine of Cincinnati manufacture. The concentrating and amalgamating machinery is manufacturing by the well-known house of Fraser & Chalmers, of Chicago. It is the intention of this company to treat custom ore as soon after starting up as arrangements can be made. It is said that fully $20,000 will be expended for machinery, etc.

SILVER BOW COUNTY.

ALICE.—The Alice is looking exceptionally well on the south vein, and a heavy production continues; not much is doing on the main ledge. A report was current some time ago of a probable resumption of sinking in the main shaft to a depth of 1000 feet; but work has not been commenced yet, despite the encouraging appearance and heavy productiveness of the south vein. The Magna Charta holds up in good shape and contributes its usual quota of ore to the mills. Some of it is low grade, but, being judiciously mixed, is reduced with satisfactory results.

ANACONDA.—This mine, from which no ore is extracted except what is absolutely necessary in order to extend the drifts, continues to be the heaviest producer in the territory. It is now yielding about 5000 tons of shipping ore a month, besides a vast amount that is dumped for treatment at the company's smelter when that vast enterprise shall start up.

COLUSA.—A new concentrator with a capacity of 60 tons a day will soon be erected at this mine. The works were manufactured at Fort Scott, Kansas, and include all the latest improvements now used in concentrating ores. The motive power will be one 60 horse-power engine and two 40 horse-power boilers of the latest patent. There are at the present time about 10,000 tons of 16 per cent copper ore on the dump at the Colusa, which will be concentrated and smelted at Butte or shipped, as circumstances may determine. The machinery is now on the way, and as soon as it arrives, ground will be broken for the erection of the works.

LEXINGTON.—The old mill started up on custom ore July 1st, under the management of Donohue & Moore.

MOULTON.—Operations are running along smoothly, and the 200, 300, and 400-foot stopes are producing well.

STEVENS.—It is reported that operations are to be resumed.

NEVADA.

ESMERALDA COUNTY.

CANDELARIA WATER AND REDUCTION COMPANY.—The mill will be completed about October 1st, and it is said that this will save the Mount Diablo people the expense of building a mill at Soda Springs, and $2 50 a ton in hauling ores from Candelaria.

HUMBOLDT AND CHURCHILL COUNTIES.

Messrs. B. F. Dahl, F. C. Leavitt, M. Southard, C. H. Mason, and others, have issued the following circular, dated San Francisco, June 21st: Considerable excitement prevails in Humboldt and Churchill counties on account of the discovery of deposits of niter of soda oxide. We desire to state that all the niter land of Humboldt County, etc., etc., was located by us and our friends some time ago, and we also hereby caution parties not to buy or negotiate for any pretended stocks or claims to said location, as we the undersigned are the only lawful owners and locators.

LINCOLN COUNTY.

DAY.—The furnace hands struck for half a dollar additional daily wages, which was $3.50 and $4. The furnace will be fired up again as soon as new hands can be found.

ROOP COUNTY.

PYRAMID.—The company will build a furnace at Pyramid.

STOREY COUNTY—COMSTOCK LODE.

Work has been resumed on the 2500 level of the Best & Belcher. Twenty-five men were put on June 23d. Good progress is making in sinking the Mexican deep winze.

NEWFOUNDLAND.

A correspondent of the Montreal *Gazette*, writing from St. John's, says: It is not improbable that the bleak shores of Labrador may one day become the scene of active mining operations. Deposits of copper ore have been found in various localities, also lead, silver, and gold in small quantities. Just now, a mine of mica that is peculiarly promising is about to be tested at Chateau. The quality of the mica found here is very fine, and if it can be obtained in blocks sufficiently large to furnish transparencies for stoves and similar uses, the mine will prove of great value. The mine is owned by Mr. Outerbridge, of this place, and a number of American capitalists have embarked in the enterprise and sent a mining party to test this deposit. Mica is very abundant on Labrador, and should this adventure prove successful, other mines will probably be worked.

UTAH.

CRESCENT.—The work on the tramway and the sampling-works is to be pushed with vigor, and the present season will put the company in condition to defy the weather in its handling of ores.

CRYSTAL.—A contract has been let to Mr. William D. Conner to drive a tunnel 250 feet on this mine, in the Big Cottonwood District. This property is owned by Salt Lake parties. Work will begin at once.

FINANCIAL.

Gold and Silver Stocks.

NEW YORK, Thursday Evening, July 3.

The mining market this week was rather dull and uninteresting, the occurrence of a holiday and the warm weather seeming to take away what little interest was left in mining stocks. The dealings were more generally scattered throughout the list, although the larger part of the transactions were in the low-priced stocks. Some of the Comstocks were held a little firmer than last week, while the Leadville stocks, the Bodies, and the Tuscaroras record but very little change in price. Horn-Silver continues steady as does also Green Mountain. We give a complete summary of the market below. The number of shares sold aggregates 82,618, as against 91,915 last week.

The Comstock shares record a moderate business, at steady prices. California was quiet and irregular, selling from 18@24@20c. Consolidated Virginia records a very active business at steady prices; it sold from 12@20@19c. Sierra Nevada was quiet and steady, selling from 99c.@$1. Union Consolidated sold at $1.10 assessment paid, and at 55c. assessment upaid. Ophir sold at 85c. Hale & Norcross was dealt in to-day to the extent of 400 shares, selling from $2.60@$2.50. Sutro Tunnel was quiet and steady, selling from 11@10c.

The Leadville stocks were very quiet, and sold at steady prices. Amie records a fair business at 6c. Chrysolite was quiet and steady, selling from 85@90c. Breece sold at 17@15c., with a fair business. Iron Silver declined from last week's strong prices; it sold from 98c.@$1 under a small business. Little Chief sold at 29c.

The Bodie stocks were moderately dealt in at steady prices. Bodie Consolidated sold from $3@$3.50, with a small business. Standard was quiet and steady, selling from 99c@$1. Bulwer was weak, declining from 60@52@53c., under small business. Consolidated Pacific was moderately active at strong prices; it sold from 40@44c.

The Tuscarora stocks were quiet. Belle Isle was weak, declining from 60@54c. under a small business. Navajo sold at steady prices with a small business; it was quoted from $3.95@$4. North Belle Isle sold at 25c.

In the miscellaneous list, Eureka Consolidated was quiet and irregular, selling from $2.65@$2. Father de Smet sold at $3.25. Green Mountain was quiet and steady, selling at $2.05. Horn-Silver was moderately dealt in at steady prices; it sold from $5.13@$5.38@$5.25. Robinson sold from 19@21c., with a small business. Silver King was quiet and steady, selling from $5@$5.25.

Barcelona was quiet and steady, selling from 16@15c. Harlem sold at 3c. Oriental & Miller records a small business at steady prices, selling from 8@10c. Rappahannock was quiet and steady, selling from 17@18c. Sonora Consolidated sold from 5@4c., with a small business.

The July disbursements for interest and dividends of mining, railroad, and various other companies, are estimated at New York at nearly $48,000,000; at Boston, at over $13,000,000; and at Philadelphia, at over $11,000,000.

MEETINGS.

The following companies will hold their annual meetings for the election of trustees and the transaction of other business, at the times mentioned:

Mercer Mining Company, No. 115 Broadway, Room 87, New York City, July 17th, at twelve o'clock M.

Montezuma Silver Mining Company, No. 39 Wall street, New York City, July 10th, at half-past three o'clock P.M.

Pennsylvania Anthracite Coal Company, No. 119 Wyoming avenue, Scranton, Pa., July 16th, at one o'clock P.M.

Sullivan Mining Company, West Sullivan, Maine, July 9th.

Stormont Mining Company, No. 208 South Fourth street, Philadelphia, Pa., July 12th.

DIVIDENDS.

The following companies have declared dividends payable in July:

Buck Mountain Coal Company.

Fulton Coal Company.

Diamond Coal Land Company (quarterly dividend).

Empire Coal Company.

Nescopec Coal Company.

Saltsburg Coal Company.

Valencia Mica Company, quarterly dividend of two dollars and a half a share.

INTEREST.

July 1st, interest matures on the mortgages of the following companies:

Fairmount Iron and Coal Company's first mortgage loan.

Pennsylvania Steel Company, first mortgage 6s.

Philadelphia & Reading Coal and Iron Company, first mortgage 7s and scrip.

Saltsburg Coal Company, first mortgage 6s.

Snow-Shoe Coal and Improvement Company, first mortgage 6s.

Susquehanna Coal Company, first mortgage 6s.

Westmoreland Coal Company, first mortgage loan.

PIPE LINE CERTIFICATES.

The following table gives the quotations and sales at the New York Mining Stock and National Petroleum Exchange:

		Opening.	Highest.	Lowest.	Closing.	Sales.
June	29	$0.61⅝	$0.63	$0.61	$0.62⅝	5,235,0 0
	30	.63	.63⅞	.59⅝	.60⅛	7,873,000
July	1	.59½	.59½	.57⅝	.59½	7,187,000
	2	.60	.61⅝	.59⅝	.61¼	5,971,000
	3	.61	.62¾	.60¼	.62	6,572,000
Total sales						32,838,000

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

NAME OF COMPANY.	CLOSING QUOTATIONS. June 27.	June 28.	June 30.	July 1.	July 2.	July 3.
Albion	.. ..	....	....	....	.. ..	....
Alpha	....	....	....	....	....	....
Alta	1⅞	....	2	2	2⅛	....
Argenta	....	....	....	....	....	....
Bechtel	....	....	....	....	....	....
Belcher	....	....	....	.70	....	....
Belle Isle	....	....	....	....	....	....
Best & Belcher	1½	....	1¾	2⅛	2⅛	....
Bodie	3½	....	3½	3¼	3⅜	....
Bullion	....	....	....	....	....	....
Bulwer	....	....	....	....	....	....
California	.20	....	.20	.25	.25	....
Challar	1⅝	....	2	1⅞	2	....
Con. Pacific	.40	....	.40	....	.40	....
Con. Virginia	.15	....	.20	.25	.25	....
Crown Point	1⅛	....	1⅛	....	1⅛	....
Day	....	....	....	....	....	....
Elko Cons	....	....	....	....	....	....
Eureka Cons	....	....	....	....	2¼	....
Exchequer	....	....	....	....	....	....
Gould & Curry	.55	....	.75	1	.85	....
Grand Prize	....	....	....	....	....	....
Hale & Norcross	2¾	....	2⅞	2¾	2¾	....
Independence	....	....	....	....	....	....
Martin White	....	....	....	....	....	....
Mexican	.85	....	.90	.80	.85	....
Mono	....	....	....	....	....	....
Mount Diablo	....	....	....	....	....	....
Navajo	3¾	....	4	3⅞	4	....
Northern Belle	....	....	....	....	....	....
North Belle Isle	.. ..	....	....	....	....	....
Ophir	....	....	.80	.85	.85	....
Overman	....	....	....	....	....	....
Potosi	.40	....	....	.75	.80	....
Savage	.70	....	.75	.80	.80	....
Scorpion	....	....	....	....	....	....
Sierra Nevada	1⅛	....	1⅛	1	1⅛	....
Silver King	....	....	....	....	....	....
Tip Top	....	....	....	....	....	....
Union Cons	.70	....	.70	.65	.70	....
Utah	....	....	.30	....	.35	....
Wales Cons	....	....	....	....	....	....
Yellow Jacket	....	....	....	1⅞	1¾	....

METALS.

NEW YORK, Thursday Evening, July 3.

Copper.—The market has been quiet though fairly firm. We quote Lake, 14·10@14⅛c. for well-known brands, and 14c. for Woolverine. Other brands of copper are quiet at 13 13⅝c., according to quality. There are some impure coppers which can not be marketed at that figure, fetching only 12½c., but the quantity is small, and comes only occasionally.

England has improved, cabling £54 15s. for Chili Bars and £60 10s. for Best Selected.

Tin.—There has been a fair jobbing trade on the basis of 18·85@18·90c. for spot tin, while July delivery is offered at 18·65c. The spot stock is estimated to be 650 tons at the utmost, the lowest stock known to the trade for many years. Straits shipments for June to this country were only 150 tons, against 900 tons during the same month last year.

London cable Straits, £83 5s.

Lead.—During the week, about 800 tons have changed hands between the range of 3·60@3·62½c., the last sale yesterday being about 100 tons, July delivery, at 3·60c., which we quote. Buyers are fairly well supplied, though not as fully as some weeks ago, and it is believed that, with the approach of the active season, they will enter the market more freely.

From St. Louis, Messrs. John Wahl & Co. telegraph to us as follows to-day:

As we proceed, our market, instead of showing signs of greater animation, weakens more and more, and dealings are confined only to small lots. Sales for the week sum up 110 tons of Chemical lead at 3·40c. delivered at East St. Louis, and 70 tons of Refined lead at 3·40c., delivered at buyers' works.

England cables £10 5s.

Spelter.—Nominally 4·55@4·60c. is quoted, but there is some Common Domestic at the wharf that could be obtained for 4·50c. London cables £14 7s. 6d. for Silesian.

Antimony.—The market is quiet. We quote 10⅝c. for Hallett's and 10⅞c. for Cookson's.

BULLION MARKET.

NEW YORK, Thursday Evening, July 3.

An improvement in the price of silver in London and an advance in sterling exchange here have strengthened the silver market as by accompanying table:

DATE.	London. Pence.	N. Y Cents.	DATE.	London. Pence.	N. Y. Cents.
June 28	50⅝	110	July 2	50 11-16	110⅛
30	50⅝	110	3	50¾	*
July 1	50 11-16	110	4	.....	.....

* 110¼@110⅜.

BULLION PRODUCTION FOR 1884.

MINES.	States.	Month of May.	Year from Jan. 1st, 1884.
		$	$
*Alice, G. S	Mont.	† 119,826	520,843
*Belmont	Mont.	.....	8,081
Bodie, G	Cal	92,382	301,857
*Bonanza King, S	Cal	.....	191,891
*Boston & Montana, G	Mont.	37,178	207,474
*Chrysolite, S. L	Colo.	18,420	70,793
*Consolidated Bobtail, G	Colo.	.....	31,813
*Contention, S. G	Ariz.	33,433	293,607
*Deadwood-Terra, G	Dak.	46,120	209 974
*Derbec Blue Gravel, G. S	Colo.	16,616	58,644
*Father de Smet, G	Dak.	46,144	183,205
Grand Prize, S	Nev	.....	25,000
*Hecla Cons., G. S. L. C	Mont.	‡	320,052
Helena, S. L	Mont.	164.000	164.000
*Homestake, G	Dak.	107,775	509,357
*Hope, S	Mont	.....	17,980
Horn-Silver, S. L	Utah	219,000	969,087
*Iron Silver, S. L	Colo.	.....	252,132
*Kentuck, G. S	Nev.	1,700	16,847
*Lexington, G. S	Mont.	115,719	514,092
*Little Pittsburg, S	Colo.	8,832	45,966
*Moulton, G. S	Mont	64.120	317,899
*Mount Diablo, S	Nev	.....	24,820
*Navajo, G. S	Nev.	41,138	156,156
*Ontario, S. L	Utah	95.955	815,398
*Original, S. C	Mont.	11,050	29,724
*Oxford, G	N. S.	3,180	17,532
*Paradise Valley, S. G	Nev.	.....	45,164
*Plymouth Consolidated, G	Cal	91,349	455,526
*Rooks, G	Vt.	4.692	16,068
*South Yuba, G	Cal	6,861	15,615
*Syndicate, G. S	Cal.	13,434	61,694
*Tombstone, S. L	Ariz.	.....	302,692
United Gregory, G	Colo.	.....	7,174
Total amount of shipments to date			$7,113,495

* Official. † Assay value. ‡ Not including value of lead and copper. G. Gold; S. Silver; L. Lead; C. Copper.

United States Assay-Office at New York.—Statement of business for the month ended June 30th, 1884:

Deposits of gold:			
Foreign coin		$80.000	
Foreign bullion		120,000	
United States bullion		500.000	
United States bullion (re-deposits)		85,000	
Jewelers' bars		80,000	
Refined gold		101,000—	$906,000
Deposits of silver:			
Jewelers' bars		10,000	
Foreign coin		2,200	
Foreign bullion		26,500	
United States bullion (contained in gold)		5,700	
United States bullion (re-deposits)		3,000	
	Arizona	2,300	
	Colorado	300	
	Lake Superior	2,000	
	Montana	101,000	
	New Mexico	6.000	
	Utah	116,000	
Refined silver		107,000—	382,000
Total deposits			$1,348,000
Gold bars stamped		$4,377,861	
Silver bars stamped		413,659—	$4,791,520

IRON MARKET REVIEW.

NEW YORK, Thursday Evening, July 3.

American Pig.—The market has remained very quiet, transactions being limited to small lots, the aggregate volume of which is further curtailed by the approach of the Fourth. No. 2 Foundry continues to be the weak spot.

We quote standard brands: No. 1 Foundry, $20@$20 50; No. 2, $18.50@$19.50; and Gray Forge, $17.50@$18.50, with outside brands from 50c.@$1 lower. Spiegeleisen is nominally $28 for 20 per cent.

Scotch Pig.—It seems difficult to move even small quantities, and considerable pig is going into stock.

We quote ex ship and to arrive: Coltness, $21.50; Langloan, $21.50; Summerlee, $21; Dalmellington, $20; Gartsherrie, $21.25; Eglinton, $19.50@$20; and Glengarnock, $20.50.

Warrants were 41s. 6d. to-day.

Steel Rails.—Only a few small transactions have been closed during the week. We quote $30 at mill.

Scrap.—Under considerable purchases, which have absorbed the bulk of the stock, quotations have advanced to $19.50@$20.

Philadelphia. July 3.

[From our Special Correspondent.]

Pig-Iron.—All things considered, the crude iron industry is in even better shape than some well-informed brokers expected it to be a month ago. At the same time, there is a good deal of iron sold that does not bring as much as its cost. All of the special brands are doing well. The Baldwins purchased a lot of Chickies the other day at $20. None of the large buyers can be induced to buy for sixty or ninety days ahead. Foundry irons of well-known brands will not be sold any lower this summer than they are now quoted, namely, $19.50@$20. There is iron selling every day as No. 1 at $19; but when it comes to No. 2, all sorts of prices are named, and it is impossible to dispose of all that is offered. Gray Forge iron of best makes brings $18 with difficulty. All of the business that is heard of, from day to day, is made up of small lots. There are rumors of a further reduction of wages. Two or three blast-furnace companies have already effected reductions, bringing common labor below $1 a day. An attempt will certainly be made to squeeze out a little profit somewhere. The extreme quotations for mill irons are $16@$18.

Foreign Irons.—Nothing is to be said but to furnish asking prices, which are $19@$20 for Bessemer; $23@$28 for Spiegeleisen, according to per cent. Steel Slabs, $37@$40. A good deal of American Bessemer has been inquired after, but it is not likely that any heavy contracts will be placed, owing to the uncertainty as to the prices of the products into which Bessemer enters.

Muck-Bars.—A few lots of Muck-Bars have been sold at $30@$30.50.

Merchant Iron.—The fact of a great many sales of merchant iron being made at this time, when business is supposed to be very flat, is a further evidence of the fact that buyers are out of stocks. Another reason of the activity is, that a good many mills will suspend for a short time during this month, and it has often been the case that the summer suspension has served to harden prices a little. There is plenty of capacity ready to start in as soon as 2 cent rates can be obtained for iron; but at any thing below that figure, there is not much inducement.

Nails.—The nail-makers are selling, in a small way, at a little below current card rates.

Plate and Tank-Iron.—Some three or four mills are well fixed for the month. Quotations are: 2@2·15c. for Plate and Tank, 2·75c. for Shell, 3·75c. for Flange, and 4·75c. for Fire-Box.

Structural Iron.—The company having charge of the New York structural iron requirements has not, at present writing, accepted any of the several offers made. The most likely outcome of the negotiations is the placing of 4000 tons of angles in this market in a few days. Some parties are hourly expecting the announcement of the placing of the order. Some brokers say it is probable that other specifications of considerable dimensions will be presented this month.

Wrought Pipes and Tubes.—There is nothing of any interest in this branch of the trade. Discounts are, on Butt-Welded Black Pipe, 30 per cent; Butt-Welded Galvanized, 30 per cent; Lap-Welded Black, 50 per cent; and Galvanized, 35 per cent. Boiler Tubes, unchanged, at 47½.

Sheet-Iron.—Best Refined is selling at 3¼@4c., according to grade. Best Bloom Sheets, 5¾@6¼c.

Merchant Steel.—A little business is reported in merchant steel, and a further cut in prices is likely to take place during this month.

Steel Rails.—Rumors are afloat as to business likely to be secured. The quoted prices are $30@$32, and only small sales are made. The Pennsylvania Steel-Works closed down on Thursday, and will probably remain idle until the end of next week. They have reduced wages 10 per cent.

Old Material.—A great many offerings of old material are made at different points throughout the country, and prices range from $18@$19.50 for Rails; but, judging of the supply with reference to the present demand, it would seem that prices must come down before much business can be done. Bridge rails, car-wheels, and crop-ends are to be had, but there is very little urgent demand for them.

Pittsburg. July 2.

[From our Special Correspondent.]

Pig-Iron.—The fair improvement which was noticed in pig-iron last week has all been lost, and the dullest week that the trade has seen for many days was the present one. This was, no doubt, occasioned by the fact that the first of July came during the week, and manufacturers and dealers alike had no time to purchase or sell. The dullness, however, will only be temporary, and will probably last a week or two longer, but trade will then improve to what it was a week or so ago. Commission men spoken with tell a dull story, and, despite persistent efforts to sell, customers are hard to find. The few sales made indicate the weakness of the market, the total being only 416 tons. Prices hold their own, however, which is a good sign, and the quotations of last week fairly represent those of this.

Nails.—The nail trade is fair, and a good many orders are received. Stocks, however, are good, and there are quite a number of idle machines both here and in the Wheeling region. Prices are still cut, but are quoted at $2.25, with the selling rate somewhere about $2.15. Talk of there being no cutting is not strictly true, as any buyer can testify, although sellers generally say they are upholding rates. These prices are down to cost, and how they can continue is hard to say. Trade, however, is slowly getting better, and will be in very fair condition by the end of the month.

Manufactured Iron.—Orders come in timidly and are generally small, and the general position of the market is unchanged. But few mills are running full, the aggregate average being about two days a week. The idle mills will not grow less for a week or two more, and no improvement is looked for until the middle or end of August. It will come then slowly, if present indications do not fail. Business is expected to improve then all around. Prices are still quoted on a basis of 1·70@1·80c. for Bars, but good orders are taken slightly below these figures.

Muck-Bar.—This commodity is still quotable at $29.50@$30.50 cash, but sales are few and far between.

Steel.—There is considerable cutting in prices in this line, and the general trade continues dull. The consumption of Bessemer and open-hearth steel continues to cut into the iron trade, so these lines are fairly active. Best brands Refined Cast-Steel are quoted at 9½c.; Crucible Machinery 5c.; Open-Hearth and Bessemer, 3c.

Steel Rails.—The prices quoted now are $32@$30 cash at mill, but customers with heavy orders are probably doing somewhat better. Business is very dull, and I know of no large orders placed.

Old Rails.—Continue very dull and prices weak, the last sale reported being at $22. If sales are made of large lots, lower prices than this must be given.

Wrought-Iron Tubing.—Discounts on Black Butt-Welded Pipe, ⅛-inch to 1¼-inch inclusive, 30 per cent; on Galvanized, same size, 20 per cent. On Black Lap-Welded Pipe, 50 per cent; Galvanized do., 35 per cent.

Scrap Iron.—Trade continues dull, and prices are cut. Sales of old Car-Wheels are made at $17.50; No. 1 Wrought Scrap, $20@$21; Wrought Turnings, $16@$17; Cast Bearings, $13@$14.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, July 3.

Anthracite.

Business has been very quiet, principally because of the near approach of the holiday. The volume of trade is within the output of the mines, but the frequency of inquiries gives rise to the hope that next week will see a marked improvement, so that it will be possible to work full-time in August.

The Western Association has not changed prices chiefly because it was thought impossible to avoid the extension of contracts at old figures. It was understood this spring, and it was reiterated at the last meeting, that contracts might be made for June and July delivery. It was understood then, and is agreed now, that they shall not be extended beyond the 1st of August. After that date, old contracts can not be made the pretext for securing new business at old rates, and thus "cutting." It is believed that an advance in August may be thus secured.

Bituminous.

There is little new business, prices are low, vessels abundant, and freights very favorable to shippers.

Philadelphia. July 3.

[From our Special Correspondent.]

Stocks at Port Richmond last night were 51,998 tons. Shipments of coal over the Philadelphia & Reading road, for the week ended Saturday, were 342,794 tons, against 153,659 tons for the same week last year, an increase of 195,388 tons. The total shipments to date foot up 5,922,496 tons, or 937,599 tons over the same time last year. The Reading Company is holding its own, despite all assertions to the contrary. As to freights, there is a little falling off in activity. It is expected by some leading shippers here that there will be a decline in prices, and, in view of the possibility, some not very pressing requirements are permitted to wait and take their chances. The Reading Coal and Iron Company has issued its new circular, fixing its coal prices for July, and it is asserted that the circular means what it says. The statements made by different operators are somewhat antagonistic, some asserting that for certain sizes orders can not be promptly filled. It is certain that a good many local consumers have already put in their orders for fall and winter coal, and a good many retailers are beginning to fill their yards up in expectation of a smart demand right away. The position looks a little more encouraging to-day than last week, from the local dealers' stand-point. Supplies throughout the city are very low. Every body seems to have waited, hoping for some better conditions or lower prices. The agitation for cheaper coal is continued, but the coal companies pay no attention to it. Some parties expect to ship coal to Boston for $1 a ton, this month. A good deal of coal has been shipped to the South. The mill demand throughout Eastern Pennsylvania will drop off a little, on account of the usual summer suspension. The companies here feel quite hopeful over the trade prospects, and believe that there will be no further need for a suspension, and that there will be very little opportunity for a cutting of prices. The line trade is likely to show up better next week, and the retail trade will certainly gather strength by that time. The failure of N. Ferree Lightner, coal dealer, No. 635 Callowhill street, is announced. A judgment for $6000 was entered against him, by S. A. Spofford. The liabilities are stated to be $15,000 above this judgment, and the assets, $5000. The Western coal trade has not yet shown the expected strength, but it is well known in coal trade circles that that market will come to the rescue in due time. The bituminous trade is devoid of interest.

Pittsburg. July 2.

[From our Special Correspondent.]

There are few if any changes in the coal and coke situation in this section of the country. Perhaps it would be interesting here to quote prices, if only to show how regular they have been the past month or two:

Railroad, on the wall	5½ to 5¾	cents a bushel.	
" price for mining	3	"	"
River, on board	4½ to 6	"	"
" at Cincinnati	7 to 7½	"	"
" Louisville	7 to 7½	"	"
" New Orleans	28	cents a barrel.	

There is no price for mining on the river, as the men refuse to have any. Contrary to expectation, the

NEW YORK MINING STOCKS.

DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	HIGHEST AND LOWEST PRICES PER SHARE AT WHICH SALES WERE MADE. June 28. H.	June 28. L.	June 30. H.	June 30. L.	July 1. H.	July 1. L.	July 2. H.	July 2. L.	July 3. H.	July 3. L.	July 4. H.	July 4. L.	SALES.
Alice, Mon.													
Amie Con., Co.	.06						.06						6,850
Argenta													
Bassick, Co.													
Belle Isle, Ne.			.55		.60	.55	.60	.54					2,110
Bodie Cons., Ca.	3.00				3.25		3.40		3.50				535
Breece, Co.							.17	.15					2,300
Bulwer, Ca.	.60		.60		.52		.53	.52					1,350
California, Ne.	.18		.22		.24		.20						4,500
Cal. & Hecla, Mich.													
Castle Creek													
Chrysolite, Co.							.87	.85	.90				600
Cons. Va., Ne.	.15	.12	.20	.16	.20	.18	.20		.19				16,965
Deadwood-Terra, Dk.													
Dunkin, Co.													
Eureka Cons., Ne.	2.90				2 65		2.00						215
Father de Smet, Dk.							3.25						400
Findley, Ga.													
Gold Stripe, Ca.													6,200
Gould & Curry, Ne.													
Grand Prize, Ne.													
Green Mountain, Ca.							2.05						300
Hale & Norcross, Ne.									2.60	2.50			400
Hall-Anderson, N. S.													
Homestake, Dk.													
Horn-Silver, Ut.	5.25		5.13		5.38		5.25		5.25				2,408
Independence, Ne.													
Iron Silver, Co.			1.00	.98	1.00		1.00	.98					2,400
Leadville C., Co.													
Little Chief, Co.							.29						2,400
Little Pittsburg, Co.													
Martin White, Ne.													
Navajo, Ne.	3.95						4.00						1,100
Northern Belle													
North Belle Isle, Ne.							.25						10
Ontario, Ut.													
Ophir, Ne.	.85												800
Quicksilver Pref., Ca.	21.00												100
" Com., Ca.													
Robinson Cons., Co.	.19				.20		.21						4,560
Savage, Ne.													
Sierra Nevada, Ne.					1.00		.99		1.00				1,700
Silver King, Ar.					5.00		5.25						300
Spring Valley, Ca.													
Standard, Ca.	1.00		1.00				1.00	.99					850
Stormont, Ut.													
Tip Top, Ar.													
Vizina, Ar.													
Yellow Jacket													

NON-DIVIDEND-PAYING MINES.

NAME AND LOCATION OF COMPANY.	HIGHEST AND LOWEST PRICES PER SHARE AT WHICH SALES WERE MADE. June 28. H.	June 28. L.	June 30. H.	June 30. L.	July 1. H.	July 1. L.	July 2. H.	July 2. L.	July 3. H.	July 3. L.	July 4. H.	July 4. L.	SALES.
Albion													
American Flag													
Barcelona, G.							.16	.15					5,000
Bechtel Con., G.													
Belvidere													
Best & B'licher, G. S.													
Big Pittsburg, S. L.													
Bradshaw, S.													
Bull-Domingo, S. L.													
Cal., B. H., G.													
Central Ariz'na, S.													
Climax, Co.													
Colorado Central													
Cons. Imperial													
Con. Pacific	.42	.41	.42	.40	.42		.44	.43	.44	.43			
Decatur													
Durango, G.													
Eastern Oregon													
Goodshaw, G.													
Harlem M. & M. Co.							.03						600
Hortense, S.													
Lacrosse, G.													
Mariposa Pref., G.													
" Com., G.													
Mexican, G. S.													
Mono													
North Standard, G.													
N. Horn-Silv'r, S. L.													
Ori'nt'l & Miller, S.	.08						.10						4,300
Rappahannock, G.						.17	.18		.18				2,100
Red Elephant, S.													
Ruby, of Arizona													
Silver Cliff, S.													
Sonora Con.							.05	.04					2,700
South Bodie, G.													
South Bulwer, G.													
South Hite													
South Pacific													
State Line, 1 & 4, S.													
" Nos. 2 & 3, S.													
Sutro Tunnel	.11		.10		.11	.10	.11	.10	.10				6,365
Taylor Plumas													
Unadilla, S													
Union Cons., G. S.							.55		1.10				1,100

Full tables giving the total amount of dividends, capital, etc., will be printed the first week of each month. Dividend shares sold, 53,153. Non-dividend shares sold, 29,465.

miners will not leave their strike, preferring to remain in idleness. That they expect offers of compromise from the operators is evident, as they have all been informed to notify the general office of any disposition shown to give the price they are striking for, namely, 3½ cents in the three lower pools and 3 cents in the fourth pool. This rate they will hardly get before the winter run begins; and if they get it by that time, they will be doing well. Some operators talk now as though they would compromise, but not at any such figures. It must be recollected that the men were getting but 2¾ cents when they struck for 3½ cents, and three fourths of a cent is a very considerable sum when we consider the number of millions of bushels of coal mined every run. Their chances of success have been improved, however, by the return of empties, which got here in good number the beginning of the week. There are now at the many tipples in the pools a sufficient number of boats to give a month of steady work, or more perhaps; but from present indications, they will remain empty for some time to come. Some operators take a more hopeful view of the matter, and say the men will be back to work again in a few days, but I do not agree with them. There is no trade here. Mills generally are idle, making repairs, taking stock, etc., and now that the glass-houses have all closed, there is little doing in either the wholesale or retail river line, and the business of the flats to the retailers amounts to just nothing. The prices quoted above are flat, and sometimes considerably shaded. A pit on the first pool has returned to work, and the miners are filling barges in those on strike. To-night, the strikers will attempt to get them on strike.

The railroad coal operators and miners are taking a rest to a very considerable extent. They are not running more than two and three days a week at the most, and many of them do not put in one full day in the whole number of seven, mainly owing to the causes mentioned in connection with the river. But cars are also scarce and delay what little shipments there are to be made. The pits are all at work, as far as work goes, and there is no trouble at any. The miners are hearing labor speeches, and working in their gardens, or resolving to stand by the Trade Tribunal. One at a time, the different roads elect their representatives on this admirable arbitration board. Painter & Co.'s rolling-mill and Parks Brothers & Co.'s Black Diamond Steel-Works are among the latest to begin drilling for gas. These are busy times for those engaged in the drilling business hereabouts, and they are making the best of it. The gas companies are but a short distance away from the South Side with their tubes, and have many extensive contracts on hand to supply gas to the mills and glass furnaces. The coming winter will see many new consumers of gas, who are now large buyers of coal. There has been no extensive strike of gas since the Westinghouse roarer caused a sensation. Last Saturday, this well blew out the plug and partly wrecked the derrick with the flying tools. Its flow is now stronger than ever, but it is temporarily plugged again. Its owner is preparing to use it to good advantage for his own and others' benefit. The railroad coal miners who were convicted of conspiracy in blowing horns and intimidating the miners at Neel's pits are now in jail for non payment of costs. They were fined 6½ cents and costs and are unable to pay. The mine officers, who had intended, they said, to have the cases adjudicated in the Supreme Court, have abandoned the idea, owing to a lack of funds.

The coke trade goes on slowly, with shipments now averaging only 625 cars a day. This will not continue for many weeks longer; but improvement will come slowly as the mills recover from their summer stagnation. This is the semi-annual settlement time, and it does much to kill bus'ness entirely. Prices are properly maintained, however, at $1.25 a ton, and there is no cutting. There will probably be no change in this respect before the fall, if then.

Buffalo. July 2.

[From our Special Correspondent.]

Hot weather and lack of items will be an excuse for a short letter. Demand for household purposes for authracite has been fair in view of the advance of 25 cents a ton that comes into effect to-day at retail on all sizes. I understand that the wholesale prices remain the same, and will continue at present schedule until August 1st, thereby giving the retail dealer a profit of one dollar a ton and encouraging him to continue to uphold the compact made at the beginning of the season.

Your editorial article in your last number on the disadvantages of the present system of restriction, and the striking advantages of the allotment system, has been read with much interest and freely discussed.

The bituminous coal trade is without any new features in supply, demand, or quotations.

Coke is quiet and unchanged.

Meeting a hard coal dealer who has had years of experience, says a reporter of the *Courier*, he questioned him as to his views of the situation. "Well," said he, "we hard coal fellows feel all right over the situation; in fact, we have no complaint to make. Hotel men and private families are beginning to put in their winter stock of the dusty diamonds just the same as in seasons past, and make no complaint over the prices that they are compelled to pay. It was thought that there would be an advance of twenty-five cents on chestnut for July; but the recent meeting in New York has regulated the prices so that the expected advance will not be made[?]. A great many of the heavy consumers in Buffalo have increased their orders over those of last year, and have provided themselves with extra storage room; so this year I anticipate that every dealer in Buffalo will get a goodly proportion of trade, and will consequently reap a better harvest than most of them have expected. Poor people who purchase coal in small lots have got it into their heads that the coal dealer is a confirmed robber—wants the earth, in fact; but I tell you, they have formed a wrong impression. I think, as a general thing, that coal dealers are disposed to be very lenient with the poorer classes, and I have known instances where some kind-hearted men in the business have waited on poor people for a year at a time. This does not look as though we fellows wanted the earth at all." In conclusion, the gentleman said that Buffalo was well represented at the New York meeting, and he was inclined to think that the interests of the consumers in this section were taken care of in the best possible manner. He looked forward to a lively time this fall, when money would be more plentiful and people would be more free to pay whatever price was asked without grumbling.

The foregoing contains some slight misstatements; but I presume your readers will discover them, I merely present it as a specimen of newspaper interviewing.

The following bids to furnish coal for the School

BOSTON MINING STOCKS.

	June 27.		June 28.		June 30.		July 1.		July 2.		July 3.		Sales.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Amie Con													
Bonanza D.													
Bowman Sil	.16	.15	.15	.13	.12								1,400
Bulwer	.67½				.60								200
Cal. & Hec.	144		144		144								98
Catalpa	.25				.25								600
Con. Pacific			.43		.43								400
Co. Virginia	.12				.12								400
Crescent	.12												100
Decatur													
Dunkin	.18				.19								2,100
Empire	.15		.15		.16								1,500
Eureka Con													
Franklin	7.75												10
Huron													
Mascot	.55												300
Osceola					11.00								10
Pewabic													
Quincy			36.00										3
Robinson													
Standard													
Sullivan													
Sutro Tun.	.10		.10		.10								300

PHILADELPHIA MINING STOCKS.

	June 27.		June 28.		June 30.		July 1.		July 2.		July 3.		Sales.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Argent							No quotations received.						
Cincinnati													
Comprom'e													
Contention													
Dauntless													
Denver City													
Gr'd Union													
Iowa Gulch													
Little Maud													
Mt. Sheridan													
Palmetto E.													
Penn-Breck													
Pizarro													
Rara Avis													
Rara Avis E.													
Sierra Apac													
Sierra Bella													
Sierra G'nde													
Sierra Nev													
Silver Cord													
Sutro Tun'l													
Tombstone													

Department were opened in the superintendent's office last Saturday afternoon :

	Chestnut. Ton delivered.	Stove. Ton delivered.	Egg. Ton delivered.
Lee, Smith & Moore	$5.11	$5.11	$4.89
James E. Gavin	5.20	5.20	5.00
C. A. Gatchell & Co	5.11	5.11	4.89
E. Elias & Brother	5.20	5.20	5.00
Palen & Burns	5.00	5.00	4.80
F. H. Goodyear	5.11	5.11	4.89
Charles T. Hall	4.69	4.69	4.47
Lehigh Valley	5.20	5.20	5.00
W. E. Carroll	5.11	5.11	4.89

The contract has not been awarded yet, but doubtless the lowest bidder will get it.

Lake tonnage has been and is comparatively scarce, and freights in consequence very firm. The following are the rates at which charters were made during the past few days : To Chicago, Milwaukee, and Green Bay, 80c. a ton ; to Sandusky and Toledo, 30c. ; to Detroit, 25c. ; to Amherstburg and Saginaw, 35c. ; to Duluth, 90c., and on contract ; to Superior City, 80@75c. ; to Kincardine, 65c. ; to Racine, 90@85c. ; to Port Arthur, $1@$1.05. Closing strong, with good demand for vessels, which continue scarce.

Shipments by lake from June 26th to July 1st, both days inclusive, 41,860 tons, namely : 18,650 to Chicago, 9970 to Milwaukee, 1660 to Port Arthur, 640 to Racine, 250 to Toledo, 290 to Kincardine, 900 to Sandusky, 250 to Saginaw, 6180 to Superior City, 350 to Amherstburg, 1970 to Detroit, 550 to Green Bay, and 200 to a port in Georgian Bay.

Shipments by canal for the week ended yesterday were as follows : 2 loads coal to Syracuse, 80c. net ton ; 1 load coal to Albany, 95c. net ton. All free on board, and captain to pay unloading. Nominal rate to New York, $1.30 a net ton f. o. b. and c. p. u.

The break in the canal near Palmyra is reported to be repaired, and water will be let into the level to-day.

Shipments by lake for the month of June were 220,180 tons ; from opening of navigation to June 30th, 1884, 446,800 tons ; the corresponding period of 1883, 425,860 tons ; and of 1882, 385,000 tons.

Receipts by canal from May 7th to June 30th, 1884, 12,598 tons ; no figures to hand for 1883 for comparison.

Shipments by canal from May 7th to June 30th, 1884, 12,625 tons ; corresponding period 1883, 13,278 tons.

Freights on coal, Buffalo to Chicago, on June 30th, 1884, 80c. a ton ; on same date 1883, 60c. ; and in 1882, 65c. a ton.

The propeller Onoko, that took out the large quantity of coal that I alluded to last week, is returning from Chicago with 3000 tons of wheat !—over 100,000 bushels. She is the champion carrier of the lakes.

The following are official Buffalo statistics : Receipts of coal by Lake Shore & Michigan Southern Railroad for the past week, 720 tons, namely, 460 for Buffalo and 260 for other points ; for the month of June, 3516 tons ; from January 1st to June 30th, 19,833 tons, namely, 12,073 for Buffalo and 7760 for other points.

Receipts by lake from opening of navigation to June 30th only 350 tons.

The receipts of coal at Duluth, Minn., for the week ended Saturday last, 5026 tons ; total from opening of navigation, 91,163 tons.

Chicago. July 1.

[From our Special Correspondent.]

Very little else is talked about in coal circles here now save the meeting of the Western Anthracite Association in New York last Thursday, and its results. The decision of this meeting not to advance the circular for July was a surprise to most of the trade, and some do not hesitate to express their disapproval of the action. Generally, however, the feeling is that, on the whole, the decision of the meeting was about as wise a one as could have been made—in fact, they say, "what matters it, anyhow ; the country trade is not coming into market until it is absolutely forced to do so, and an advance in prices now would have had only a temporary effect." What the dealers and agents of the Eastern shippers to Chicago are after now is the best thing for the good of the market in the future. They realize the fact that a hard fight is now making for careful, conservative business management in the Chicago coal trade; that this is a critical time for the trade ; and that every thing depends on the results of the coming two or three weeks. If the shippers maintain the firm stand they have taken thus far during the season, through the month of July, all will be well, and a victory will be won. This was clearly recognized by the Western Anthracite Association, which sent stirring letters to all the shippers and their agents in this market after last week's meeting, setting forth the need of a continuance of the firm stand taken by the trade, a rigid adherence to circular rates on both rail and dock coal, and a strict tabooing of any thing like selling coal ahead at present circular rates. This last is doubtless aimed at the reported shipment of cargo coal to points in the interior without any stipulated prices, of which I wrote in a recent letter. It is pretty certain that this practice was not indulged in to any extent.

It is a matter for congratulation among the trade that the dissensions which threatened the peace of the New York meeting were satisfactorily adjusted, and that now a healthy united feeling governs the trade here. Orders from the country are still light, though inquiries are increasing every day. Travelers among the country dealers state that the yards are practically bare of coal, and that the retail men must be forced into the market before long. When the trade does open, it will be with an activity calculated to compensate for the dullness that has reigned thus far this season.

Both lake and rail receipts of anthracite are light, the latter especially so. The two weeks' stoppage of operations at the mines has a further stiffening tendency on the trade here, and with a firm feeling that they will see an active market before August 1st, and that prices will be advanced then, our shippers feel equal to almost any thing. Lake freights are firm on a basis of 90 cents to Chicago.

The receipts of anthracite by lake are reported to be about 50,000 tons short of those for the corresponding period last year, although, as the statistics of the association are now carefully guarded and kept safe from inquisitorial eyes, the actual figures can not be given.

There is nothing new to report as regards the situation of the market for bituminous descriptions. There has been no improvement in the demand on general order account, and except for the competition for an occasional municipal contract, the market is lifeless and prices weak and unsettled. Receipts are ample for all requirements. Owing to the customary summer dullness in many lines of manufacturing, the demand for coke is not as brisk as it was, though prices are well maintained. Prices remain unchanged, as follows :

	Per gross ton.	Per net ton.
ANTHRACITE		
Grate	$6.65	$5 93
Egg	6.76	6 03
Stove	7.00	6.25
Nut	7.00	6.25
BITUMINOUS.		
Erie and Brier Hill	$4.50@$4.75	
Pittsburg	3.40@ 3.50	
Indiana, Block	2.60@ 2.90	
" Slack	1.40@ 1.60	
" Nut	1.75@ 2.00	
Baltimore & Ohio	3.25	
Hocking Valley	3.25	
Blossburg	3.90@ 4.00	
Cumberland & Smithing	4.00	
Sonman Smithing	3.90@ 4.00	
Wilmington	2.25	
Fountain County	2.25	
Grape Creek	2.20	
Clinton Sump	2.10	
Morris	2.20	
Streator	2.20	
COKE.		
Connellsville coke	5.25	
Crushed coke	5.85@ 6.15	
Pittsburg coke	4.25	

Boston. July 2.

[From our Special Correspondent.]

There has been only a moderate business at this port. July business, as one can easily see, will be done for the most part on June orders, notwithstanding the claim to the contrary that some companies are making. Those dealers who have not bought will doubtless await the settlement of prices under the new circular.

Stocks here are increasing from the receipts of six weeks past, but are by no means large. Dealers have gone on the light stock policy for months, regardless of threats of advances, and while they are taking on coal more freely, we do not look to see old time loading up, usual at this season. This is not so much because they fear a break in prices as from the dictates of the general conservative policy that runs throughout all business circles at this time.

We do not consider an advance yet established, but would quote nominally our former figures. We quote f. o. b. prices at New York $4 for stove, $3.65 for Broken and Egg.

At Philadelphia, f. o. b. prices are $3.75@$3.85 for Stove, $3.40@$3.50 for Broken and Egg. Fully the usual amount of individual coals is moving from New York, say at $3.90@$3.95 for Stove and $3.50 for Broken and Egg. Special free-burning coals at Philadelphia are selling in the vicinity of $5.50 for Stove and $4.90 for Egg.

There is very little doing in bituminous coal save on contracts. The Vanderbilt Clearfield, from Moshannon Creek, is now in this market ; but of course it is too late for any business of importance this year. We understand that low prices are given, to introduce the coal. Cargo prices for bituminous are nominally at $3.80@$3.90.

We note a continuance of low freights. Some large vessels have been taken at Philadelphia at $1.15. We quote :

New York, 90c.@$1.15 per ton ; Philadelphia, $1.15@$1.25 ; Baltimore, $1.40 ; Newport News, $1.25 ; Richmond, $1.30 ; Bay of Fundy, $1.50@$1.60 ; Cape Breton, $1.80@$1.90.

Retail trade is moderately active at unchanged figures. We quote :

White ash, furnace, and egg	$5.25@5.50
" " stove and nut	5.50@5.75
Red ash, egg	5.75@6.00
" " stove	6.00@ ....
Lorberry, egg and stove	6.50@ ....
Franklin, egg and stove	7.25@7.50
Lehigh, furnace, egg, and stove	5.50@5.75
" nut	5.50@5.75

Baltimore. July 1.

[Specially Reported.]

Hard and free-burning white-ash in cars of Northern Central Railroad :

Lump	$4.15	Egg	$4.25
Steamer	4.15	Stove	4.80
Broken	4.15	Chestnut	4.45
Lykens Valley Red-ash.			
Egg	$5 90	Chestnut	$5.00
Stove	6.15		

By boats or barges afloat, 15 cents less a ton than the prices in cars.

STATISTICS OF COAL PRODUCTION.

Comparative statement of the production of anthracite coal for the week ended June 28th, and year from January 1st :

TONS OF 2240 LBS.	1884.		1883.	
	Week.	Year.	Week.	Year.
Wyoming Region.				
D. & H. Canal Co.	133,510	1,644,648	65,874	1,768,555
D. L. & W. RR. Co.	130,767	2,211,680	79,527	2,219.023
Penna. Coal Co.	39 268	550,506	23,184	623.921
L. V. RR. Co.	49,917	629,183	15,126	520,655
P. & N. Y. RR. Co.	7,603	97,795	3,587	97,392
C. RR. of N. J.	*	*	30,317	1,178,102
Penn. Canal Co.	11,127	143,669	9,585	160,652
North & West Br. RR.	14,600	394,036	5,549	221,904
	386,792	5,671,517	232,749	6,790,204
Lehigh Region.				
L. V. RR. Co.	152,720	2,025,924	66,466	2,283.504
C. RR. of N. J.	*	*	46,381	1,105,683
S. H. & W. B. RR.	2,560	100,640	1,741	25,421
	154,280	2,126,564	141,588	3,414,608
Schuylkill Region.				
P. & R. RR. Co	369,683	4,827,533	95,371	3,234,452
Shamokin & Lykens Val.	*	*	34,555	659,098
	369,683	4,827,533	129,926	3,893,550
Sullivan Region.				
St Line&Sul.RR.Co.	4,819	42,572	810	29.927
Total	915,574	12,668,186	478,073	14,128,289
Increase				
Decrease		1,460,103		

* Included in tonnage of the Philadelphia & Reading Railroad.

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.

Total same time in 1879.....11,514,593,tons.
" " " " 1880..... 9,914,544 "
" " " " 1881.....11,921,724 "
" " " " 1882.....12,692,313 "

The increase in shipments of Cumberland Coal over the Cumberland Branch and Cumberland & Pennsylvania railroads amounts to 128,961 tons, as compared with the corresponding period in 1883.

Belvidere-Delaware Railroad Report for the week ended June 21st :

	Week.	Year. 1884.	Year. 1883.
Coal for shipment at Coal Port (Trenton)	1,525	28,940	42,860
Coal for shipment at South Amboy	7,409	300,972	390,842
Coal for distribution	4,336	351,254	374,414
Coal for company's use	1,525	83,171	70,400
Total	14,795	764,337	878,516
Increase			
Decrease		114,179	

Comparative Statement of the Transportation of Coke over the Pennsylvania Railroad for the week ended June 28th, and year from January 1st :

Tons of 2000 pounds.

	1884.		1883.	
	Week.	Year.	Week.	Year.
Gallitzin & Mountain (Alleghany Region)	2,655	65,207	477	50,903
West Penn. RR.		24,886	1,670	53,083
Southwest Penn. RR.	42,910	1,110,040	43,600	1,011,794
Penn. & Westmoreland Region, Pa. RR.	3,817	91,188	3,999	114,195
Monongahela, Penn. RR.	1,605	41,567		
Pittsburg Region, Pa. RR.		136		454
Snow Shoe (Clearfield Region)	727	11,126	391	10,362
Total	51,714	1,343,950	50,137	1,240,791
Increase		103,159		

FREIGHTS.

Coastwise Freights.

Per ton of 2240 lbs.

Representing the latest actual charters to July 2d.

PORTS.	From Philadelphia.	From Baltimore.	From Elizabethport, Port Johnson, South Amboy, Hoboken, and Weehawken.
Alexandria	.65@.70		
Annapolis			
Albany			
Baltimore	.58§		
Bangor	1.20	1.35	
Bath, Me	1.10@1.15	1.30	1.00
Beverly	1.15		1.00
Boston, Mass.	1.10@1.15	1.35@1.40	.90@.95
Bristol	1.10		
Bridgeport, Conn.		1.20	.50
Brooklyn			
Cambridge, Mass.	1 20‡		.95‡
Cambridgeport	1.15@1.20‡		.95‡
Charleston, S. C.	.65	.75@.80	
Charlestown	1.15		.95
Chelsea	1.10@1.15		.95
City Point			
Com. Pt., Mass.	1.20		.95
E. Boston	1.10@1.15		.95
East Cambridge	1.15‡		.95‡
E. Gr'nwich, R. I.	1.10		.80
Fall River	1.05		.75
Galveston			
Gardiner, Me			
Georgetown, D.C.	.65@.70		
Gloucester	1.20		
Hartford			
Hackensack			
Hudson			
Lynn	1.30@1.35		
Marblehead	1.30		
Medford			
Millville, N. J.			
Milton			
Newark, N. J.			
New Bedford	1.05		.90
Newburyport		1.60	1.10
New Haven		1.20	.50
New London			.65@.70
New-Berne			
Newport	1.10		.75
New York		1.05@1.10	
Norfolk, Va	.55@.60		
Norwich			.65@.70
Norwalk, Conn			
Pawtucket			
Philadelphia			
Portland, Me	.85@.90*		.90
Portsmouth, Va.	.55@.60		
Portsmouth, N.H.		1.40	1.10
Providence	1.05	1.20	.70@.75
Quincy Point			
Richmond, Va.	.75		
Rockland, Me			
Rockport	1.40		
Roxbury, Mass.	1.15‡		
Saco			
Sag Harbor			
Salem, Mass.	1.15@1.25		1.00
Saugus			
Savannah		1.00	
Somerset	1.05		
Staten Island		1.00	
Trenton			
Troy			
Wareham			
Washington	.65@.70		
Weymouth			
Williamsbg, N.Y.			
Wilmington, Del.			
Wilmington, N.C.			
St. Thomas, W.I.			

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

Comparative Statement of the Production of Bituminous Coal for the week ended June 28th and year from January 1st :

Tons of 2000 pounds, unless otherwise designated.

	1884.		1883.	
	Week.	Year.	Week.	Year.
Cumberland Region, Md.				
Tons of 2240 lbs	56,766	1,287,677	48,030	1,095,873
Barclay Region, Pa.				
Barclay RR., tons of 2240 lbs	4,545	162,377	4,518	153,656
Broad Top Region, Pa.				
Huntington & Broad Top RR., of 2240 lbs	2,481	94,345	2,554	97,625
East Broad Top				
Clearfield Region, Pa.				
Snow Shoe	3,007	92,068	3,959	121,217
Karthaus (Keating)	1,734	13,055		
Tyrone & Clearfield	58,389	1,510,882	46,664	1,369,710
Alleghany Region, Pa				
Gallitzin & Mountain	9,042	187,686	5,296	223,775
Pittsburg Region, Pa.				
West Penn RR.	4,273	142,350	5,639	224,427
SouthwestPenn.RR.	1,333	75,724	1,274	54.602
Pennsylvania RR.	2,441	140,238	12,537	251,095
Westmoreland Region, Pa.				
Pennsylvania RR.	31,206	603,507	17,858	680,272
Monongahela Region, Pa.				
Pennsylvania RR.	2,153	74,897		
Total	177,370	4,384,806	148,329	4,277,216
Increase		107,590		

DIVIDENDS.

SAN FRANCISCO, June 20. 1884.

THE BODIE CONSOLIDATED MINING COMPANY has declared

DIVIDEND NO. 17,

of ONE DOLLAR per share, payable July 7th. Eastern stockholders of record may be paid at the office of LAIDLAW & CO., 14 Wall Street, New York.

Transfer-books will close on the 24th inst.

GEORGE W. SESSIONS, Secretary.