# THE ENGINEERING ING JOURNAL



Eutered at the Post-Office of New York, N. Y., as Second-Class Matter.

VOL. XLVI.

JULY 7.

No. 1.

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Cable Address: "Rothwell," New York. Books for review and all communications for the Journal should be addressed, Managing Editor, P.O. Box 1833, New York.

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RENITITANCES should sloways be made by Bank Drafts, Post-Office Orders, or Expressioney Orders on New York, payable to The Scientific Publishing Company.

Advertising Rates, -See page XVI.

THE SCIENTIFIC PUBLISHING CO., Publishers,

P.O. Box 1833.

27 Park Place, New York.

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In the next issue of the Engineering and Mining Journal we will describe with elaborate illustrations the ore deposits of the Aspen District, Colorado, and the faults which have occasioned some of the great

THE index for Volume XLV, of the Engineering and Mining Journal, which closed with our last issue, accompanies this number of the JOURNAL. Should any subscribers not receive it, they will please notify us promptly to that effect.

### ALUMINUM AND MAGNESIUM.

The progress which has been made within the past year or two in the metallurgy of aluminum and magnesium may be estimated by the remarkable reduction in their price - aluminum from about \$20 per pound to its present wholesale price of about \$4 per pound, and magnesium from about \$40 per pound also to \$4.

has been due to the reduction in the cost of making sodium by the

Castner and similar modifications of the old Deville process, and to a semi-electrical method in use in some of the European works. The chief uses of aluminum are in the forms of alloys, in which form the Cowles electric process, which reduces alumina in the electric arc with copper, forming an alloy which is sold in ingots containing accurately any desired percentage of aluminum, has reduced the cost of this metal to a lower point than is possible by any of the methods which make it through sodium.

Moroever, the Cowles process has for some time past been producing these alloys in large quantities and of remarkably high strength and elasticity, as has been amply shown in the tests made on the United States testing machine at Watertown, Mass., and in English works.\*

The properties developed in these alloys seem to adapt them specially for such uses as propeller blades, gun castings, torpedo tubes and parts of machinery exposed to unusually heavy work, and to pump barrels, screen mesh and other applications where incorrodibility as well as strength is requisite. It seems probable that aluminum alloys are destined to replace steel in many of these as well as other important uses, so that the metal in this form appears to have made a wide and important market.

Either pure or as an alloy of iron it is also receiving quite an extended application in casting steel in the manner and for the purpose in which it is used in making mitis castings of wrought-iron; that is, to lower the fusing point of the alloy and thus secure greater fluidity at any temperature above that point, and also for removing oxygen from the molten metal. It is difficult to say how extensive this use has become, but it is known to have been adopted recently in several important steel castings.

Pure aluminum has not yet received extensive application, owing chiefly to its comparatively high price; but the recent reduction in this, and the probability that at an early day it will be produced at a far lower cost by methods now under test, makes its extensive adoption in the near future almost assured.

Magnesium in many respects does not promise as wide application in the future as does aluminum. It oxidizes too readily to be well suited for the chief uses where its low specific gravity would make it desirable, and it alloys with but few metals in a com nercially useful form. Nevertheless the trade in magnesium has increased fourfold within the past six months, owing to so apparently insignificant a cause as its exten ive introduction into photography, where it is employed to produce a brilliant illumination for taking photographs at night, or in mines and caves. Some efforts have been made also to alloy it with other metals, but its exceedingly low fusing point (about 770° F.) renders this extremely difficult, and several violent explosions attended the experiments. The only successful result was with nickel, which an admixture of from three to five per cent of magnesium renders homogeneous an' dense, the latter quality being especially remarkable, as nickel and its alloys are very frequently more or less porcus.

The extreme lightness of magnesium, its specific gravity being on 1.75 as against 3.6 in the case of aluminum, makes it the most des rable metal known for op ical instruments, from which its use is prevented only by its cost, which is now about four dollars per pound. It is also more durable than aluminum in si uations where it is exposed to the influence of alkalies, which attack it much less readily. But its easy fusibility and ox dation will never permit it to become a rival to aluminum.

## EXTENDED USE OF SOME OF THE RARER MINERALS.

The values of some of the rarer minerals used as gems are so enormous that the idea of counting them by the ton would seem very absurd, yet the production of diamonds in South Africa last year amounted to more than a ton in weight, or, to be exact, 3,596,036 carats, valued at about \$21,-300,000. In other words, 2497 pounds Troy, valued at \$8530 per pound, or more than \$17,000,000 per net ton. Yet even these prices are less than those for some rubies of fine quality, which are, however, not found " by the ton " as diamonds are.

These values would reward a good deal of prospecting, but unfortunately they depend on the very difficulty in finding the stones, so that they don't pay the prospector, who can not wait long enough for the reward that might come after a long continued search.

Many of what are now comparatively common and inexpensive minerals were a few years ago extremely rare, and since they have not the qualities which would always make the diamond popular and valuable, they entered into use and found a ready market only when diligent search had found them in such quantities as to reduce their cost.

There are many useful and not very rare minerals, some of which are worth prices that, if applied to the ton of ore, would appear immense, and which are yet so little known to prospectors and miners that they might walk over them or throw them in the waste dumps without ever suspecting their value.

Among the so-called rare minerals which are almost unknown to pros-In the case of aluminum the reduction in the price of the pure metal pectors, but which are attaining considerable importance, are those

<sup>\*</sup> See Exci seams and Mining Journal. June 30th, 1688, page 476.

substances that are now in good demand. At the last meeting of the New York Microscopical Society, Mr. George F. Kunz, the able mineralogist of Messrs. TIFFANY & Co., of this city, exhibited sand from Brindletown, Burke Co., N. C., containing monazite, which is a phosphate of cerium, lanthanium, didinium and thoria, of which it contains from 0 to 17 per cent, and also exhibited monazite sand from Caravelhas, Brazil. He stated that the demand for these minerals had greatly increased of late, owing to the rare earths, zirconia, thoria, glucina, etc., which they contain, and which are now used for the mantle or hood of the new incandescent gas burner invented by Dr. CARL AUER, called the "Welsbach" light.

This increased consumption has led to a search by the collectors and dealers in England, Germany, France, Russia, Norway, and Brazil, and more especially in the United States, and so thorough has the search been that the prices of minerals which were considered rare a short time ago are now quoted at one-tenth to one-hundredth of former figures.

The minerals containing these earths are: Lanthanite, sipylite, tysonite, uranothorite, orangite, thorite, clevite, beryl, yttrotantalite, alvite, erdmannite, cerite, monazite, xenotime, fergusonite, æschynite, allanite, zircon, eudialyte, euxenite, samarskite, gadolinite, and bodenite. Of these beryl, cerite, monazite, xenotime, allanite, and zircon have been obtained in large quantities. Sipylite, orangite, and thorite are especially sought for.

Monazite has been found at the following localities: at Villenevue, Ottawa County, Canada, a crystal of 142 pourds; Alexander County, N. C., at Milholland's mill; Amelia County, Va., in 20-pound crystals; Norwich, Conn.; Ural Mountains, Tavetch (var. turnerite), Mount Sorel (var. turnerite), Binnenthal, Switzerland, Southern Ural, River Samarka, Arendal, Norway, but at all these localities the occurrence is of min-Carolina; at Glade Mine, Georgia, and at Caravelhas, Bahia, Brazil, it can be obtained in the form of sand in commercial quantities.

In the North Carolina gold gravels of Rutherford, Polk, Alexander, Burke, McDowell and Mecklenburg counties, monazite is found in considerable quantities in small brown or greenish or yellowish brown monoclinic crystals, associated with chromite, garnet, zircon, anatase, corundum, menacanite, xenotime, fergusonite, epidote, columbite, samarskite and other materials. With these associations have been found several of the North Carolina diamonds, and from these localities will be furnished tons of monazite within the next twelve months.

The Brazilian monazite is found at Caravelhas, Bahia, where its existence was made known about 8 years ago by Dr. ORVILLE A. DERBY, geologist of Brazil. It occurs in large quantities as a beach sand almost free from other minerals, as if concentrated. As it occurs on the coast, it can eas ly be shipped directly to any point desired, and over six tons have already been sent to the United States.

The Mereditn Freeman estate on Green River, Henderson County, North Carolina, is one of the best zircon localities, and for twenty-five years was in the hands of Gen. T. L. CLINGMAN, who mined 1000 pounds in 1869, believing firmly in the incandescent properties of zircon. Unfortunately for him, when the time for utilizing this mineral had at last arrived, Gen. CLINGMAN had forfeited his leases.

At Anderson, in Anderson County, S. C., zircons are found in immense quantities loose in the soil under similar conditions to those in North Carolina. They evidently come from a decomposed feldspathic The crystals are generally remarkable for their perfection, weighing occasionally several ounces. The recent demand has also brought to light the existence of enormous quantities of zircon in the Ural Mountains and in Norway.

Although in Canada, in Renfrew and adjoining counties, immense crystals have been found, single crystals being up to 15 pounds each, yet they are so isolated that it would be impossible to obtain them in any

As already stated, the use of the Welsbach incandescent light has created a new demand for these minerals, and with rare prudence the parties interested quietly gathered a stock before the demand was generally known. It is said that there have now been accumulated more than 25 tons of zircon, 10 tons of monazite, 6 tons of cerite, and thousands of pounds of samarskite and other minerals. As a consequence zircon is now offered at less than 10 cents a pound, monazite at 25 cents, and samarskite at 50 cents, and many of the uncommon minerals at equally low rates. It is said that the zirconia in one ton of zircon would, if used alone, make half a million Welsbach burners, but several other minerals are mixed with it to produce varied and beautiful effects of color in the light.

#### TRAINING SCHOOLS FOR PROSPECTORS AND MINERS.

Education should be that preparation which will best fit every one to perform the duties of life, and since this is of interest to the whole

containing the earths zirconia, thoria, glucina and several other education should, where practicable, be given in the public schools and to the young.

> Every civilized country has found that in the great struggle for industrial existence it is the fittest that survive, and since no permanent prosperity can be based on anything but productive industry, the effort in every country is to increase the efficiency and productive capacity of

> Intercommunication between countries has become so easy and inexpensive that the conditions of the labor market in one are quickly known and profited by in other countries. So that the tendency is always towards an equalization of wages in all countries. It is not necessary that the day's pay should become the same, but the comforts of life which can be procured with the products of a day's labor are gradually becoming equalized the world over. Labor, like gold, flows in where it is best rewarded, and the tendency is thus to equalize the conditions of production in different countries.

> One by one the industries grow up to the point where they can more than supply home markets, and then of necessity their further expansion can only come through the slow growth of consumption at home or by competing in other markets with the goods produced in other countries. When this arrives, not only must the cost, but the quality, of the goods be taken into account.

> This is why in nearly all foreign countries the greatest possible efforts are now being made to increase the skill of workmen by giving them better technical training, so that they may be able not only to produce more to the day's labor, but produce goods of better quality that will "take" in the common markets of the world,

> In Germany and France particularly is the interest in technical training being pushed as never before. Industrial schools are being organized in nearly every department of industry, and already great benefits are becoming apparent in the better and more attractive goods that are made as well as in the increased efficiency of the better instructed and more intelligent workmen. In France the public schools are being used to give this technical instruction, and it is said with excellent results.

We do not now propose to discuss the advantages of this technical training of workmen engaged in the manufacturing industries, nor to that still more important subject, the technical training of women for the occupations of their lives, a subject almost wholly neglected in our present system of education; but we will limit our suggestions to one subjectthe training of prospectors and miners.

It is, of course, true that no American expects to spend his whole life in any one occupation in a subordinate position, and so probably few young men expect to be prospectors all their lives. Nevertheless it is very important for the individual, and also for the country as a whole, that the army of men who so arduously, and frequently so heroically, spend the best years of their lives in the work of prospecting for minerals, should be well prepared for the successful performance of their work.

What prospector cannot recall the many moments of bitter disappointment he has endured when he learned of the discovery by some one else of valuable ore in the very rocks over which he had often walked in his vain and weary search for the fortune that was lying under his feet, in full view, but for the cloud of ignorance that obscured his vision. There are few more important occupations than that of the prospector, and there is none that requires and produces a fuller development of the perceptive faculties.

If a small collection of minerals were kept at the schools in the mining districts, and some instruction were given on their properties, modes of occurrence, values, etc., with the specimens and practical lessons in the field, to enforce the instruction, as in the Kindergarten system, what an impetus it would give to prospecting, and what an immense advantage it would prove to miners and prospectors in being able to learn the values of the minerals with which they are but little acquainted.

There is in nearly every camp some one who could and would devote attention to such a collection, and if qualified persons were engaged to visit the several mining camps in succession and give a course of plain practical lectures, and lessons in the field, on prospecting and mining, the cost, which could be borne by the school districts, would be as nothing compared with the practical benefits that would result to the state and community. We shall refer to this subject again, and in the meantime shall be pleased to receive the views and criticisms of our readers on our proposition to establish training schools for prospectors and miners.

## THE PROBLEM OF UNDERGROUND HIGH TENSION ELECTRIC WIRES.

The New York Board of Electrical Control has taken summary measures with one of the electric light companies, practically ordering it to abandon its business, or lay its conductors in the subways constructed under the authority of the Board. If it is intended by this measure to bring on a legal contest, in which the relations and rights of the parties community, and it is far easier to teach the young than the old, this may be judicially determined, we have nothing to say, except that the same end seems likely to be attained in a more dignified manner by another process, namely, a suit to be brought by the Corporation Counsel against electric light companies operating dangerous wires overhead. That suit, as we understand it, will permit some result securing the adequate protection of the aerial conductors-a matter over which the Subway Commissioners have unfortunately no jurisdiction.

But as a mere display of energy, or as an order to which obedience can be expected, this action of the Board is absurd. They have provided no system in which electric arc-light currents can be operated. So far as we can learn, they have not even "destill less actually tried, any arrangement whatever, by which the distribution of light can be made to private consumers. Their "system," if it deserves the name, is simply a more or less protected hole in the ground; and their late action simply amounts to a command that the electric light companies shall get into this hole and invent some way of using it. It strikes us that it is the Board that will be "put in a hole," when the matter shall have gone a step further.

The reports which are so eagerly accepted by the daily press, of successful underground arc-light systems, have very little foundation. One of them adduces the city of Philadelphia as an example. It has even been asserted that in Philadelphia the electric arc-light wires and the telephone wires are operated successfully in the same conduit. This is not the case. The conduits containing the high-tension conductors are not only separate from the others, but are kept as far away as possible. Moreover, the arc-light conduits and conductors have not yet proved satisfactory. The most that the electricians are willing to say is that they think they know where the main trouble has been, and hope they will be able to overcome it by new devices. If the nature of the trouble were merely economical, and concerned the companies and their subscribers only, the community might wait with equanimity, while the sufferers found either relief or ruin. But the defects of the underground high-tension systems concern the public safety. Apart from the question of induction, affecting other conductors, there is the far greater danger due to the frequent failure of insulation, and consequent leakage, and "short-circuiting" through inflammable materials. We know of several instances in which not only the insulating material itself, but also the conduit, has been thus burned up. The greatest danger from these subterranean leakages, however, is the firing of explosive mixtures of gas and air, such as accumulate so easily in all open spaces underground in our streets. We understand that in the New York conduits there are instances in which the gas-pipes actually traverse the manholes. To carry high-tension currents through such places is wanton folly.

Such manholes are so likely to contain explosive mixtures of air and gas that no prudent engineer will suffer a workman to descend into one of them with a lighted candle, until it has been thoroughly ventilated with a fan. This is easy enough, when the risk is only to be taken at a given time, in the manner just mentioned. But every manhole and connection in a high-tension conductor is peculiarly liable to failure of insulation, which may result in flame. This risk is continuous; and until it has been more adequately provided for, no one can truly say that the problem has been solved.

In the city of Washington, after at least eight years of constant experiment, there are now 5 miles of electric conductors underground, used for street-lighting. The Engineer Commissioner of the District writes under date of June 23d, 1888: "Although the experiment has not proved completely satisfactory, the results are believed to warrant its continuance and justify its gradual and careful extension.'

Two years ago, it was reported by the proprietors of a certain patented system that it was in completely successful use in Washington. Personal inspection at that time led us to doubt the completeness of this success; and we now learn that the system referred to is not even the one which, although not completely satisfactory, is worth an experimental continuance. In other words, the present system is a new thing, not two

But all the systems of this kind which have been even partially successful are, we believe, alike in this: they do not accommodate temporary or changing consumers. A company having a long contract to light the streets can perhaps lay a conductor underground in such a way that it will work safely and durably. But a way of effecting new connections, taking out branch-wires, etc., without destroying the efficiency and safety of the system has yet to be found. There is as yet absolutely nothing which has stood a reasonable test in practice.

On the other hand, the dangerous nature and condition of the overhead conductors of many companies are evident. Unfortunately, the law gives to the Subway Commissioners no jurisdiction over this case. They can order conductors to be put underground when they have devised a suitable plan and means. Until that time, the electric light wires are beyond their control. It seems to us, however, that the city authorities have clearly the power to deal with these companies and sorce them to employ better protection for their wires. A vigorous ex-

forcement of this requirement would be more to the point than the dramatic, but futile, demonstration of the Subway Board.

We notice that the Brooklyn Board has approved for experiment a plan presented by the Edison Illuminating Company, for high-tension as well as low-tension underground conductors. The bill authorizing this company to enter Brooklyn was passed by the Legislature and vetoed by the Governor. The application now before the Aldermen will be refused, unless that body can be made to feel the public indignation. The obstacles to the solution of the underground electric lighting problem in Brooklyn are therefore DAVID B. HILL and the Aldermen of the city, to whom might be added, perhaps, those newspapers that spend their force in denouncing the Subway Commissioners for not having been able to override the Governor and the Aldermen, or for not being willing to hurl a brutum fulmen, just for fireworks.

#### NATURALLY FORMED MUMMIES FROM MEXICO.

In the Ethnological Department of the California State Mining Bureau, are now on exhibition four mummies, which form the subject of a paper by Dr. Winslow Anderson in a recent bulletin published by the Bureau. These interesting remains were discovered by Signor S. Marghieri on the eastern face of the Sierra Madre Mountains, Mexico, in a cave, the mouth of which had been so skillfully sealed with adobe plaster and natural rocks from the mountain, as to almost escape detection. At the extreme end of this natural sepulchre these bodies, a man, woman, little bey, and infant girl, of which no inscriptions or other evidences exist to reveal their race, had been placed with faces turned toward the rising sun. No artificial means of preservation had been employed. They were simply wrapped in burial shrouds, woven of various materials, cotton, hair and grasses, and their mummification had been brought about by the natural action of the extremely dry atmosphere of that region, which prevents decay. They have dried in the sitting posture, with hands crossed and knees drawn towards the chin, and are remarkably well preserved, the brain, heart, lungs, abdominal and pelvic viscera being intact, and dried to a solid consistency. The man is large and well developed, with a large head and broad shoulders, but has small hands ard feet, with high-arched instep. The woman is even better preserved. A heavy suit of hair still remains; her hands and feet are small, the latter measuring only 84 inches in length, and her skull gives unmistakable evidence of a high degree of intelligence. The facial angle of the man is 71 degrees, and of the woman, 69 degrees. The skull of the little boy, who is supposed to have been about seven years of age, is unusually well-shaped, and indicative of no meagre mental capacity, and the facial angle is 71 degrees. These cranial features are superior to those of the inhabitants of the same region to-day. Moreover the hair of the woman is soft, silky, and brown in color, wholly unlike that of the Indian r

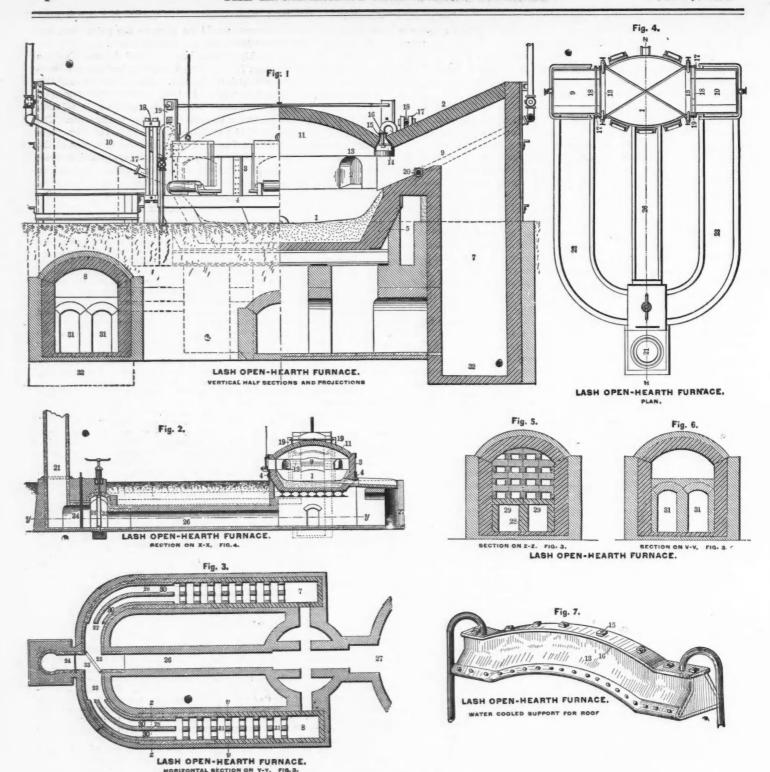
#### THE LASH OPEN-HEARTH FURNACES.\*

## By Alfred E. Hunt.

One of the chief defects of the original open-hearth furnace was that One of the chief defects of the original open-hearth furnace was that a large portion of the superincumbent weight of the furnace and its charge was supported by the brick walls, between the gas and air regenerators, which were at the upper part of the regenerators, softened by being subjected often to intense heat on both sides. This fault is obviated in nearly all of the newer designed furnaces by incasing the hearth in a plate iron shell. This shell is carried on iron beams extending completely across the furnace and resting upon exterior walls or columns which are independent of the more highly heated and perishable parts of the furnace underneath.

of the furnace underneath. of the furnace underneath.

Natural gas, in the favored regions, has been a great boon to the open-hearth steel manager; he no longer has to spend a very valuable portion of his time "poking the gas man to poke his fires." The gas is carried to the furnace in an even flow through a 3 inch gas-pipe, which branches off to both ends of the furnace in 2-inch pipes. The delivery and reversing of the gas is regulated by ordinary globe gas valves placed in the circuit. The ends of the pipe are incased in the brickwork and open into the flats of each end of the furnace from the opposite side walls by leaving out the space of regulated by ordinary globe gas valves placed in the circuit. The ends of the pipe are incased in the brickwork and open into the flats of each end of the furnace from the opposite side walls by leaving out the space of a header in the fire-brick at the ends of the pipe. This gaseous fuel is not diluted to fully 60 per cent of its entire bulk with mert nitrogen, as is Siemens gas, which has to be conducted in pipes of 4 feet diameter to one of the furnace gas regenerators to be preheated. Natural gas is conducted directly to the ports of the furnace, as it was found that preheating decomposed it and soon filled the checker work of the gas regenerators with deposited carbon. The use of cold gas is much more than compensated for in the heat produced by the combustion of the concentrated fuel and by avoiding the large amount of nitrogen which is present in Slemens gas. Natural gas melting furnaces are now built so that both of the regenerators at each end of the furnace are connected with the air inlet valve, or they are built with only one regenerator at each end of the furnace for preheating the air. In this case the air valve and air regenerators are built larger, with 60 per cent greater capacity than when using Siemens gas. Natural gas is supplied in the service mains to melting furnaces in the vicinity of Pittsburg with a pressure of about 8 ounces, and this pressure is adjusted in the service-pipes by regulators ordinarily furnished to the plants by the natural gas companies, and which they place with their connection to their mains at some suitable point about the plant. The pressure, as regulated by the



valves at the large-sized Lash furnaces, is at present only about 1 cunce valves at the large-sized Lash furnaces, is at present only about 1 cunce or 1½ inches of water pressure as the gas goes into the melting furnace. The lighter the pressure, so long as the flow is kept uniform and steady, the better the combustion, and the more intense the heat. The steady uniform flow of natural gas has made it peculiarly applicable as a fuel for melting in open-hearth furnaces, and has been a very potent cause of the growing reputation for regularity and uniformity, as well as for superiority in other ways, of the open-hearth steel made in the natural resediativities.

gas districts.

The tendency up to within the past year has been to increase the size and capacity of open-hearth steel furnaces, and the newer furnaces have been of 30 and 40 tons capacity, instead of 5 and 7 tons, as were those been of 30 and 40 tons capacity, instead of and 1 tons, as welcomes the built at first. Except for special purposes, where large steel castings are to be made, the writer believes the limit of size has been reached. Experience with the large furnaces has led to the growing conviction at present that furnaces of about 15 to 20 tons at the maximum, are the

most economical and produce the best steel.

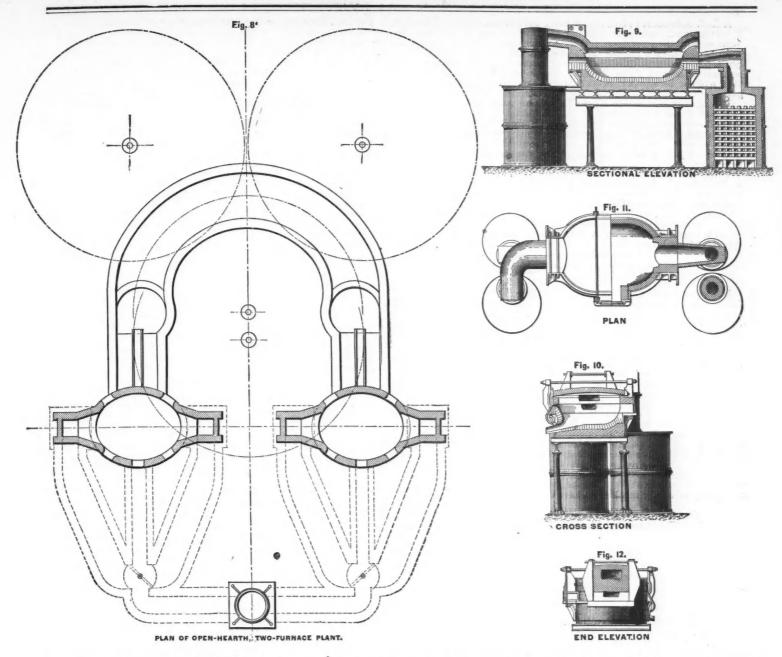
The latest improved Lash open-hearth furnace plant the writer believes to be the best yet devised. It is peculiarly adapted to the use of natural gas, and there are, at the present writing, 12 furnaces now erected in Pittsburg on the Lash system, four of 40 tons, five of 30 tons, one of 20 tons and two of 15 tons, and there are four 15-ton furnace buildings. See Figs. 1, 2, 3, 4, 5, 6 and 7, in which the parts are numbered for reference. The hearth of the furnace (1) is made circular or, preferably, elliptical, with major axis of eighteen feet of hearth inside the linings and minor axis of fifteen feet for a fifteen ton furnace. This hearth is supported on

axis of fifteen feet for a fifteen ton furnace. This hearth is supported on

beams resting on suitable walls or piers of such a height that the charging beams resting on suitable walls or piers of such a height that the charging doors are accessible from the ground level. The retaining shell of one half inch thick steel plates extends from the top of the side walls down to a broad connecting hand (4) a short distance below the charging-doors; from this the shell slopes inward to the bottom plates of the hearth. The lining of the hearth conforms to the shape of the shell, and since the bottom plates and supporting beams prevent any vertical movement downward, the conical shape of the outer walls of the lower portion of the melting chamber prevents almost all of the outward movement due to the expansion of the lining, thus preventing the rupture of the lower side-walls of the furnace.

The single flues (9) in natural gas furnaces at either end of the melting chamber are 5 feet wide and are simply large passages inclined down

The single flues (9) in natural gas furnaces at either end of the melting chamber are 5 feet wide and are simply large passages inclined down toward the bath at a pitch of about 4 inches to the foot, to give the flame a strong guide downward upon the metal. In order to provide a firm support for the arched roofs of the melting chamber and flues leading into it, a water-bosh, fig. 7, made of ½-inch thick steel plate, is put in the form of a keystone in the arch of each roof, that of the melting chamber (15) and that over the downtake flues (2) butting against the plates of the inclined sides of the water-bosh, which in this way acts as a double skew-back or keystone. This bosh is 1 foot wide at the bottom and 5 feet long. It is stayed inside at proper intervals by transverse bars, and, although exposed on its under side to the intense heat of perhaps 3000 degrees Fahrenheit of the flue leading directly from the melting chamber, is found to work admirably; the writer has seen the under side of one of these water skew-backs after being in service for several side of one of these water skew-backs after being in service for several



months and having made over 100 heats in the furnace, which has stood perfectly, the scale being hardly detached from the surface of the metal. These water skew-backs are provided with 1-inch pipes (16) feeding water at 5 pounds pressure and leading out the waste water which is

hardly lukewarm.

The side walls of the flues are held in place by suitable plates, angles and backstays (16, 17, 19) and the other walls of the furnace are also stayed from opposite sides by means of plates reaching upward from the surrounding bands of the melting chamber and diagonal rods (18). Natural gas is led into the sloping flues by wrought-iron pipes (10-17) which enter the brick-work near the "four corners" of the melting chamber. The gas being much lighter than the air, mixes with it in its chamber. The gas being much lighter than the air, mixes with it in its downward rush into the furnace.

The stack (21) is placed in such a manner that the flues leading from each end of the hearth (22-23), which have checker work in them, altereach end of the hearth (22-23), which have checker work in them, alternately act as regenerators to preheat the air before it enters the furnace. The lower end of the stack is connected by a short flue (24) with a fourway chamber (25), to which the flues (22-23) from each end of the furnace converge and to which the air-duct (26) delivers. This air-duct (26) leads out from the ladle-pit (27) and passes directly under the hearth in this way, not only heating the air but giving a free circulation under the hearth, and preventing an expessive heating of the bottom. Along the

this way, not only heating the air but giving a free circulation under the hearth and preventing an excessive heating of the bottom. Along the middle of the flues (22-23) leading from the central four-way chamber (25) to the opposite ends of the furnace is placed checker-work of firebrick supported on tiles (28), so that the bottoms of the flues are clear openings (29), giving a stronger draft; but as there is a constant tendency of the heated air to ascend there is a thoroughly uniform heating of the air entering the furnace by this arrangement.

The front portions of the flues are provided with a series of double arches, which not only serve to strengthen the side walls and tops of the flues, but also to increase the heating surfaces. The up-takes (7) are extended down below the points of entrance of the chimney flues, in this manner forming pockets (32) for the reception of any cinder, dust or other matter that may be drawr over from the furnace-chamber and preventing this material from ging forward toward the stack and clogging the checker-work (31) in the chimney flues (22-23). Suitable openings are provided in the brick work, so that by taking down the brick bulk-heads these cinder pockets may be easily opened and cleaned cat

The four-way chamber (25) has the air-duct (26) leading into it permanently open, and is fitted with a three-way valve (33) alternately connecting the flues (22-23) leading to each end of the furnace with the chimney (21) and with this air-chamber (25), in this way reversing the furnace on the well-known Siemens principle. This three-way valve (33) is hollow and is kept cold by a stream of water running through it, preventing the warping or burning out of the valve, or with Siemens gas furnace. the direct loss of fuel by leakage to the chimney.

The tap-whole of the melting furnace (34) is at about the ground level, and the metal is conducted through an inclined spout (35) some 10 feet in length to the ladle-pit (27). The ladle, after been filled, is lifted by a crane and transported to an auxiliary semicircular casting pit, only about 4 feet lower than the ground-level in which the ingot molds are set. The front of the furnace is provided with three cranes, so located that they cover they entire pit space, the ladle and ladle-pit and the furnace melting-chamber, so that if a movable roof be put on the furnaces, large pieces may be swung in on to the furnace hearth.

The great advantages of the Lash furnaces are:

1. They have all the ordinary and important operations around the furnace on one ground-level, the three doors on the back side of the furnace and the two on the front or tapping side being all accessible for charging or for repairs to the furnace. A record of five hundred consecutive heats, of 50,000 pounds of stock each, shows that each were charged in an average of twenty-four minutes per charge, twelve men, or all hands about the furnace, doing the charging from all five doors, which are balanced and arranged to open by levers in the pulpit under the control of the crane boy.

2. The ladle and the tap-hole are easily accessible from the ground

under the control of the crane boy.

2. The ladle and the tap-hole are easily accessible from the ground

2. The ladle and the tap-hole are easily accessible from the ground level, thus avoiding all swinging platforms and stages.
3. The gas and air-flues are so arranged as to be entirely isolated from the melting chamber and hearth except where the flues enter the furnace, thus doing away with the necessity of thick brick walls which are subjected to heat on both sides; the masonry being of uniform thickness throughout, much unequal expansion and bulging is prevented.
4. The chimney flues, regenerators, three-way valve and ladle-pit are all on one level, about 10 feet below the ground level, and easy of access for readits.

for repairs.

5. The free access of air all around the flues and furnace-chamber preents their being unduly heated at any time.

A Lash open-hearth plant is now being built by the Wetherell Brothers Steel Casting Company, at Thurlow, Pa., for the use of producer gas, with modifications necessary for the double sets of flues and checkerwork to preheat the gaseous fuel as well as the air and double sets of ports, and the air over the gas for their entrance into the furnace. There seems to be no reason why the Lash system of furnaces, suitably modified, will not be equally advantageous for producer gas as for natural

The rapidity with which repairs have been made upon Lash furnaces is one of the most important of their advantages. In two weeks' time, from heat to heat, a 30-ton furnace was repaired, the bottom taken out, and the brick-work, from the ground level up, put in entirely new, with seven masons working on day turn, without any night work except in tearing out the brick work, and in the five days making bottom and

tearing out the brick work, and in the five days making bottom and reheating.

Thirty-ton furnaces have been shut down and cooled off after the heat on Saturday, the furnace allowed to cool on Sunday, the roof and side walls torn out on Monday, the brick relaid on Tuesday and Tuesday night, gas turned on Wednesday morning, and the furnace charged, with good results, by Thursday noon. That is, a rebuilding of the lining of the entire melting chamber from the hearth up, and of the side walls of the flues leading to the down-takes, with a loss of time of only five days from heat to heat.

#### AMERICAN METHODS OF COPPER SMELTING.

In the last number of the Revue Universelle des Mines (et) de la Metallurgie is a highly complimentary mention of Dr. Peters's "Modern American Methods of Copper Smelting." It says: "We note the publication of an American treatise upon the metallurgy of copper by the dry method, which possesses great interest at this moment, when enterprises having copper for their object are attracting universal attention. The interest is rendered still greater on account of this work being entirely original, and being occupied with the metallurgy of copper in a country which ranks among the greatest producers of that metal, and, furthermore, because it is written by a practical metallurgist, whose has in it made a résumé of the fruits of a long experience. That which distinguishes the treatise of Dr. Peters is the number of carefully executed designs of furnaces, which often depart widely as to form and construction from those employed in the manufactories of Europe; the numerous estimates for construction which part widely as to form and construction from those employed in the manufactories of Europe; the numerous estimates for construction which accompany the designs; as well as the net cost in detail of the metallurgical operations which are there described. This work has obtained a grand success in the United States, where it was published in parts by the Engineering and Mining Journal. There is no doubt that its success will be very rapid also in Europe, where the special processes in the metallurgy of copper in America have remained until now unknown."

▲ Steel Railroad Car.—The Steel Car Company, which, it is said, will soon erect works near Chicago, is constructing a fire-proof steel car at Boston. Greater strength, together with a reduction of the dead weight, are anticipated from these cars, and the dangers of telescoping and of fire are hoped to be lessened. There is nothing to burn except the upholstery, and even that consists largely of uninflammable material. The car now have built contains an observation room, parlor smoking room, buffet. being built contains an observation room, parlor, smoking room, buffet, ladies' and gentlemen's toilets, etc., and is promised to be as handsome as those finished in wood.

Rivetless Steel Sleepers.—Mr. H. Hipkins, according to the Colliery

The lips Guardian, has invented a rivelless steel sleeper for railroads. The lips or jaws, for holding the rail in place, are stamped out of the solid plate, and are stiffened by corrugations or brackets which are also raised from the solid plate out of the hollow at the back of each jaw. A center strip is provided for the rail to rest upon, dispensing with all rivets and loose parts. These sleepers can be laid rapidly, and they are claimed to be especially adapted to use underground in mines.

The Longest Run on Record of a Spiegel Furnace.—Mr. G. C. Stone, of the New Jersey Zinc and Iron Company, Newark, N. J., reports that one of their two furnaces recently blew out after the longest blast ever made at the works, and the longest run on spiegel that has yet been made, being three years and two days. The product was:

First year Second year Third year	3443	Cwt. 10 13 8	Pounds. 70 57 79
Total	9874	12	94

The average yield of ore was only 31.5 per cent. The spiegel averaged 19.55 per cent manganese. It required 2 tons, 9 cwt., 22 pounds of coal to the ton of iron, and made about 6000 pounds slag to each ton of

Coating Sheet-Iron with Lead.—Patents have been granted to Mr. Francis J. Clamer, of Philadelphia, for coating sheet-metal plates with lead, the principal features in the process being the manner in which the plates are previously cleaned. Mr. Clamer holds that the usual treatment in an acid bath only removes a portion of the impurities, and after this preliminary cleansing he places the sheet-metal in a bath of cyanide of potash and water. A galvanic current is then passed through the solution, the plate being made the anode. The surface is rendered perfectly clean by this process, and then it is further treated in a bath of chloride of zinc. made by dissolving metallic zinc in hydrochloric acid,

chloride of zinc, made by dissolving metallic zinc in hydrochloric acid, which prepares it for the more ready adhesion of the lead.

To the molten lead, in which the plates are finally immersed, sal ammoniac, arsenic and phosphate of lead are added, the first ingredient serving to drive out absorbed gases which would form bubbles under the surface of the coating, the arsenic giving to the coating a greater hardness, and the phosphate of lead increasing the fluidity and permitting an even distribution of the lead over the plates. A working plant in Philadelphia is said to have demonstrated the success of the method, and to show that leaded iron and steel can be produced cheaper than galvanized plates.

Perino's Process for the Wet Extraction of Copper.—Engineering notes the invention, by Dr. Joseph Perino, of Charlottenburg, of a new process for the extraction of copper from sulphurous ores without previous roasting. It is based upon the action of nitrate of iron direct upon raw ores, with or without an intermixture of sulphides of iron and other metals. It is claimed that when the pulverized ore is mixed and heated raw ores, with or without an intermixture of sulphides of iron and other metals. It is claimed that when the pulverized ore is mixed and heated with nitrate of iron, the copper sulphide is completely converted into sulphate, and may then be leached out with water. The copper sulphide is attacked before the sulphides of other metals, and by preliminary tests of the ore to be treated, a barely sufficient amount of nitrate of iron may be used, and thus effect the removal of the copper without altering other constituents present. The reaction is said to be effected with a temperature as low as 150° C. (302° F.), and the operation is conducted in earthenware vessels. The copper is precipitated from solution with metallic iron, and the nitrate of iron required is prepared from the residual iron liquor by addition of nitrate of strontium or lime. Arrangements are made for condensing and saving the nitrous fumes that come off in the process, and it is claimed that the loss is so small, that with the regeneration of the various compounds used, the deficiency can be made good by an occasional addition of from 5 to 8 per cent of fresh nitrate of lime. It will be interesting to see what the results will be in a large working plant. working plant.

working plant.

Prices of Rare Alloys.—The Iron Age publishes the following quotatious, but they are, in general, far above what these metals and alloys can be bought at: "P. W. L. Biermann, of Hanover, Germany, who makes a specialty of the manufacture of metal alloys, has sent us the following quotations: F.o.b. Hamburg and Bremen, net cash: Aluminium metal, in lots of 100 kg., 49 marks per kg.; aluminium brass, 300 marks per 100 kg.; 2½ per cent aluminium bronze, 300 marks; 5 per cent aluminium bronze, 400 marks; 7½ per cent aluminium bronze, 560 marks, and 10 per cent aluminium, 550 marks, and 10 per cent ferro-aluminium, 650 marks; 1½ silicon bronze, 300 marks, and silicon bronze for conductor wire, 260 marks; 3 per cent silicon copper, 550 marks, and silicon copper, running from 3 to 4 per cent, 650 marks; manganese copper, 30 per cent, is quoted 475 marks, while 4 per cent manganese bronze, rolled, is offered at 250 marks, and 15 per cent pure manganese bronze is quoted 290 marks. Metallic cadmium sells at 620 marks; phosphor-copper of 10 per cent is quoted 320 marks, and for 15 per cent material 450 marks, while phosphor-bronze sells at 190 marks. Nickel bronze, No. 200, is quoted 180 marks per 100 kg.; Wolfram metal, 94 to 98 pure, 400 marks, chromium, 1200 marks, and Rose's metal, melting at 195 Celsius, 1500 marks, and Wood's metal, melting at 173 Celsius, 1600 marks. A number of different alloys for brasses and Babbitt metal are also quoted, which are, however, of less interest than those named." which are, however, of less interest than those named.

#### PATENTS GRANTED BY THE UNITED STATES PATENT-OFFICE.

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

PATENTS GRANTED JUNE 26TH, 1888,

jects, issued by the United States Patent-Office.

PATENTS GRANTED JUNE 26TH, 1888.

384.953.

Salt-Drier. C. Talleyrand Bartlett. Warsaw, N. Y.

384.967.

384.972.

384.991.

384.994.

Apparatus for Welding Tubes. James Hemphill, Pittsburg, Pa.

Automatic Pipe-Coupling. James F McElrey, Lausing, Mich.

84.998.

384.999.

384.999.

Wire-Bending and Forming Machine. Samuel T. Newman, Danbury, Conn.,

Assignor of two thirds to the Hat Wire Company, same place.

Paparatus for Welding. John E. Moore, Fort Worth, Tex., Assignor to the Fort Worth Iron Works Company, same place.

385,007.

385,007.

386,008.

386,040.

385,040.

385,040.

385,040.

385,055.

Electric Welding Company, Soston, Mass.

Electric Welding Company, Boston, Mass.

Electric Welding Company, Boston, Mass.

Belectric Welding Company, Boston, Mass.

Manufacture of Shafts and Ordinance. John H. Flagler, New York, N. Y.

Electric Car Company R. Rudolph M. Hunter, Philadelphia, Pa., Assignor to the Electric Car Company of America, same place.

385,055.

Electric Railway. Rudolph M. Hunter, Philadelphia, Pa., Apparatus for Eenoving and Setting Rolls. William R. Jones, Braddock, Pa.

385,068.

Dynamo-Electric Machinery. Anthony Reckenzaun. London, Eng., Assignor to the Electric Car Company of America, Philadelphia, Pa., Assignor to the Electric Car Company of Pennsylvania.

Boiler. Francis W. Dean, Cambridge, Mass., Assignor of one half to Erasmus D. Leavitt, Jr., same place.

Boiler. Francis W. Dean, Cambridge, Mass., Assignor of one half to Erasmus D. Leavitt, Jr., same place.

Pump Adactive Feeder. Johann C. Grübner, Kupferhammer, and Henri Ruperti, 1845.112.

Nail Plate Feeder. Johann C. Grübner, Kupferhammer, and Henri Ruperti, 1851.

385,104. Pump Attachment. Thomas Diffley, Rosemount, Minn.
385,109. Tube and Mode of Making the Same. David A. Garver and Clarence H. Straight.
Bryan, Ohio.
385,112. Nail Plate Feeder. John C. Gould, Chicago, Ill.
385,113. Steam Engine. Johann C. Gräbner, Kupferhammer, and Henri Ruperti,
Brackwede, Assignors to K. and Th. Möller, Kupferhammer, Prussia. Germany.
385,121. Carburetor. Chester S. King and Edward G. Brown, Smethport, Pa.
385,122. Friction-Coupling. Otto Kromer. Sandusky, Ohio.
385,123. Priction-Coupling. James S. Stewart, Philadelphia, Pa., and Frederick Stone,
Brooklyn, N. Y.
385,125. Governor. Joseph W. Thompson, Selem, Ohio, Assignor of one half to the
Buckeye Esgine Company, same place.
385,126. System of Electrical Distribution. Thomas A. Edison, Llewellyn Park, N. J.
385,187 and 385,188. Nut-Machine Frederick Lackner, Pittsburg, Pa., Assignor to
Thomas Ne-ly. Edwin Bindley, and John Bindley, all of same place.
385,198. Air-Brake. Harvey S. Park, Chicago, Ill.
385,211. Elec rical Pumping Apparatus. Frank J. Sprague, New York, N. Y.
385,224. Arb-Brake. Edward Andrews, Pottsville, Pa., Assignor on one half to William
G. Matz, same place.
385,226. Rotary Cylinder Engine. John S. Barden. Warren, R. I.
385,227. Apparatus for Annealing Wire. Fred. H. Daniels, Worcester, Mass.
385,247. Apparatus for Annealing Wire. Fred. H. Daniels, Worcester, Mass.

N. Y.

Apparatus for Annealing Wire. Fred. H. Daniels. Worcester, Mass.
385,249. 385,250, and 385,251. Apparatus for Charging Billets, Bars, etc., into Furnaces. Fred. H. Daniels, Worcester, Mass.
Battery-Zinc. John Doyle, Hoboken, N. J., Assignor to himself and C. Coles Duseobury, Lake Mahopac, N. Y.
385,267. Anti-Friction Journal-Bearing. John W. Hyatt, Newark, N. J.
Balanced Governor-Valve. Philip S. Kingsland, Chicago, Ill.
Pipe-Coupling. John Story, Castle Shannon, Pa.
Electric Battery. Ernest M. Hewett, Newton, Assignor to Daniel W. Crosby,
Trustee, Boston, Mass.

Process of Amalgamating Zinc. Ernest M. Hewett, Newton, Assignor to Daniel W. Crosby,
Trustee, Boston, Mass. 385.254.

# THE METALLURGY OF STEEL.\*

By Henry M. Howe.

(Continued from page 458.)

Snakes, sinuous markings on steel plates, are probably due to external cracks, which are drawn out into irregular serpentine shapes as the ingot is rolled now longitudinally, now diagonally, now transversely.

Internal Cracks.-Just as the too rapid contraction of the shell in cooling causes surface cracks, so its too rapid expansion in heating causes internal ones. If a cold ingot be placed in a hot furnace, the shell of the ingot expands and may elongate so rapidly that the expansion of the slowly heating interior cannot keep pace with it, when internal cracks form as shown at C, Figure 41, often with a loud report. These cavities on forging become elongated as at D, and may break through to the surface, causing incurable defects, sometimes so serious that the ingot must be cut to pieces. From this cause the proportion of eracked or "second quality" rails is greater when rail ingots are allowed to cool, than when they are charged into the heating furnace while still hot from teeming. Ingots which for any reason are allowed to cool should not be charged into a hot furnace. They should either be charged when the furnace is cool (say on Sunday night or early Monday morning) and be gradually heated with it, or else be preheated to redness in a comparatively cool auxiliary furnace, and then be transferred to the regular white-hot heating furnace.

Thus, in order to guard against cracks both external furnace as soon after casting as possible. Some would teem the steel into moulds standing close to the heating furnace. A more practicable plan is that of the Pittsburgh Steel Casting Company, in which the steel is cast in jack immediately after teeming, and drawn by a locomotive to the side of the heating furnace, where the moulds wheels of the car are liable to become clogged with the the top end. metal splashed in teeming, it might be better to cast the ingots in a group on a single base plate, which could then be quickly raised by a crane and placed on a car. But these matters may be considered more advantageously elsewhere.

Both for given volume and for given cross-section, the longer the ingot the more liable is it to acquire cracks, both external and internal: in other words, short stumpy ingots are less liable to cracks than long and than thin ones.

Hammering between Flat Dies is liable to cause a central pipe-like crack in round steel bars: hence it is better to employ swedges, or, if possible, grooved rolls.<sup>a</sup> It is said that this same tendency is met in rolling round bars by Simond's rolling machinery, b in which the pressure appears to be applied along two lines diametrically opposite, just as in hammering between flat dies.

Let us now consider the means of preventing blowholes and pipes.

§ 227. A SINKING HEAD (rising or feeding head) raises the pipe to a more or less harmless position, but probably does not directly affect its volume. If it affects

the volume and position of the blowholes it should be through increasing the ferrostatic pressure within the ingot. Usually the walls of the sinking head are of the same material as the mould, and simply form a continuation of it. In order that the sinking head shall sink and feed efficiently it must not only be so wide that it will not freeze across till the ingot beneath has completely solidified, but its volume must be such that it will preserve molten up to this point enough metal to fill the cavity due to the contraction of the ingot's interior.

If the maximum volume of pipe is as we have estimated 11% of the volume of the hot ingot, and if from one-third to one-half the volume of the sinking head is available for feeding, then the greatest needed volume of sinking head should be from about 20 to about 28% of the total volume of the hot ingot or casting including the sinking head itself, or from 25 to 38% of the volume of the casting proper excluding the sinking head. The volume of sinking head actually employed, and the proportion of the ingot or other casting which is rejected on account of unsoundness in certain cases, are given in Table 78. As pipes in rail ingots are partly effaced in the subsequent rolling, while in castings proper (i. e. those which are employed without forging) they remain of their full initial size, special pains are taken to avoid them in castings: and we note that the proportion of sinking head by weight is much smaller in rail ingots than in castings proper, varying in the former between the narrow limits of 5.6 and 9.75%, while in the latter it runs from 17.6 to 25%. That portion of the top of the rail ingot which is subsequently cropped off on account of unsoundness is for convenience and internal the ingot should be placed in the heating here classed as a sinking head: and with it may be included the crop end of the rail made from the steel next the top of the ingot. Formerly many works cropped from the bloom only 5% of the weight of the ingot: but this brings the upper end of the upper rail uncomfortably moulds standing on a car, which is raised by a hydraulic near the porous or piped region of the ingot top: and as the rail receives the hardest usage at its end, the impact of the approaching wheel, it is better to crop off are stripped, and the ingot immediately charged. As the 7.5%: the subsequent rail cropping removes another 1% of

Since the above was written I learn that at one American Bessemer works 10% of the weight of the ingot is cropped from its upper end, and about 1% more in the upper cropping of the upper rail.

Some Bessemer rail ingots from a well known American works have been cut in two longitudinally, when a very deep and rather narrow pipe was found, somewhat as in Figure 37, § 224. It would be manifestly impossible to remove this by cropping. Indeed, the unsoundness of the crop end of the rail ingot is due probably more to imprisoned gas bubbles which have risen from below, than to the pipe proper. Crucible steel ingots are usually very narrow, and are cast in iron moulds. The large proportion of their weight which is rejected on account of piping harmonizes with the deductions in § 225.

Hot-Top Sinking Head.—When iron moulds are employed, the sinking head will solidify relatively slowly, and so feed the more efficiently if its walls be of clay or other poorly conducting substance (as in Figure 42), especially if this be previously heated, as in the Terre Noire practice of casting steel projectiles.c

The feeding of the sinking head may be assisted in steel as it is in iron castings by working a rod up and down through it, to break through any bridging that may occur

<sup>\*</sup> Copyright by the Scientific Publishing Company, 1887.

a Cf. Metcalf, Trans. Am. Soc. Civ. Engineers, XV., p. 290, 1887.

b Described in the Iron Age, XLI., p. 269, 1888, and in Stahl und Eisen, VIII. p. 255, 1888.

c Holley, Metallurg. Rev. II., p. 379, 1878,

TABLE 78.—SINKING HEAD AND CROPPINGS, ETC., FROM TOP OF STEEL INGOTS AND CASTINGS.

Number.	-1	Description of	ingot or co	Weight of portion re- jected from top of ingot or casting, per 100 of total weight.	total volume of	
		Bessemer		ols: Weight of		
	Name of works.	Size of ingot	Bloom cropping	Crop'ng of up- per end of upper rail.		
1 2 8 4 5	A. B. C. D. E. F.	14" × 14" 10" × 16" 14" × 14" 145" × 14.5" 14" × 14" 14" × 14"	8 63	1 00 0 75 0 74 0 67 0 75 0 60	9 75 8 58 6 47 9 38 5 60	
7 9 10 12 13 14	rejecte weigh Saw stee Mild ste High ca Badly m Ordnanc U. S. N Wiscellan	ed on account t of ingut. el el rbon steel elted steel e *ngots. avy, reject at rmy, reject at	least (Walrand)	f upper portion per 100 of total	30 - 10 to 20 20 to 35 100 - 33 - 3	16 7
15 16.	6" steel Plain ey	oire, 10" proj cast gun, Piti	shurgh Stangs for rol	el Casting Co Is, Norway Iron	17 6	20 to 25 25 5
19	Mitis ca 100 of Do. do.	total	10 lbs., wei	ght of sprue per to 100 lbs	25 10 16 7	

either in the sinking head itself or the upper part of the ingot, and so to maintain a passage through which feeding may occur. But this as well as the "hot-top" sinking head

Hot-top sinking head, (Walrand),

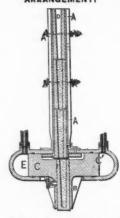
rather encourages the late escape of gas, which leads to the formation of blowholes. For if the top of the ingot be allowed to solidify rapidly, or better still if its solidification be hastened by pouring water on it, the upper crust bottles up the gas set free within the ingot, the gaseous pressure within rises and thus tends to prevent the further evolution of gas.

Special Forms of Sinking-Head. - If a series of moulds be placed one above another, with perforated diaphragms of refractory material between, each ingot serves as a sinking-head to the next lower one and the piping may be concentrated in the upper ingot. This arrangement suggests itself most readily for tyre and similar ingots: but recent inventions aim to apply it to common pyramidal ingots as well. This is done by lowering the ingot as soon as its crust has solidified, and casting a second on top of it. They unite in the center, and the second feeds the piping of the first. In the case of small ingots, the coldshut due to intermittent teeming makes it easy to separate the ingots, which is done while they are still so hot as to it was made on December 20th, 1887. be weak: should the cold-shut be insufficient, some 2:2,371.

special device is employed. The steel is thus cast in continuous notched bars, later broken at the notches. Each ingot should have nearly the same composition as the steel fed to its pipe, as otherwise it will be heterogeneous; this means that successive ingots must have closely similar compositions.

In Boulton's arrangement, which consists essentially of a vertical frame A A, in which four moulds are held in column by spring clamps, a mould with a bottom is first filled, standing in the position occupied by the empty mould D in Figure 42, A. A perforated asbestos diaphragm is now placed upon it, and on this an empty bottomless mould, when both moulds are forced down by appropriate mechanism, the empty mould now occupying the position originally held by the first mould. The second mould having been filled, it receives its asbestos diaphragm, a third mould is placed upon it, all these are pushed down, and so on.

Fig. 42 A. BOULTON'S CASTING ARRANGEMENT.



A A, frame of I beams, held together by spiral springs. B, pocket, holding the lower mould C, C', rams for breaking lower ingot away from next higher one. D, empty mould, ready to receive the next lot of steel. E, hydraulic cylinder for moving the ram C.

After three moulds have been filled, matters stand as in Figure 42 A, a fourth mould being now in position for teeming, and the first having reached the pocket B. The ram C in the hydraulic cylinder E is now forced against the first mould, breaking its ingot away from that in the second mould, as shown. The opposite ram C' returns the first mould to its former position, the column of moulds and ingots is again forced down, and so on. The asbestos diaphragms which separate the ingots make it easier to break them apart."

Hinsdale uses a single, stationary, bottomless, water or steam-cooled mould. The ingot is drawn down by mechanism as soon as its crust has solidified, till only its upper end remains in the mould, when a second is cast upon it, uniting with it in the centre and feeding its pipe, yet readily detached later. b In order that the top of one ingot may fully close the bottom of the mould while the succeeding ingot is being cast, there must be little or no taper: hence difficulty in drawing the weak tender ingot through the mould, and danger of cracking and bleeding.

(TO BE CONTINUED.)

NOTE.—The publishers of the ENGINEERING AND MINING JOURNAL will thank the readers of this article if they will promptly call attention to any inaccuracies they may observe in it.

b W. R. Hinsdale, priv. com., April 21-26th, 1888. U. S. Patent Application,

a J. B. D. A. Boulton, U. S. Patent 365,902, July 5th, 1887. Messrs. Spaulding and Jennings, West Bergen, New Jersey, who have one of Boulton's machines, write me (April 25th, 1888) that they regard it as successful. The first cast in

#### PERSONAL.

The Ohio Institute of Mining Engineers will hold its summer meeting at Logan, Ohio, beginning July 11th.

Mr. A. J. Carroll, for thirty-two years superintendent of the Steubenville (O.) Gas and Coke Company, has resigned. Mr. J. Gwym, of Fostoria, O., succeeds him.

Dr. Francis Wyatt has been called to Montreal, Canada, to advise upon the construction of an exten-sive sulphuric acid and chemical plant in the vicinity

Mr. William Cowan, the vice president of the Corliss Engine Works, at Providence, R. I., it is said, will succeed the late Mr. George H. Corliss in the management of the works.

Mr. J. B. Cooper, son of James R. Cooper, super-intendent of the Detroit & Lake Superior Smelting works, has assumed charge of the extensive smelting plant at Bridgeport, Conn.

Mr. H. P Cooper, formerly manager for the Carbon Iron and Pipe Company at Parryville, Pa., has accepted the position of Superintendent of the Pottsville Iron and Steel Company's furraces, Pottsville,

Mr. M. N. Forney, editor of the Car-Builders' Dictionary and of the Railroad and Engineering Journal, will contribute the railroad article in Scribner's for August, entitled "American Locomotives and Cars."

The Emperor of Japan has conferred upon Professors John Milne, James Maine Dixon and Julius Scriba, of the Imperial University, the fourth class decoration of the Rising Sun, and upon other educators of Japanese rising sons the fifth class decoration of the

The Swedish engineers, architects, chemists and other technical workers have organized the "Swedish Eugineers' Club of Philadelphia." Mr. Backstrom was elected President, Leo Bergmark Vice-President, and F. Ludahl Secretary. It is proposed to bring about a union between the New York and Philadelphia

Mr. R. T. Frechville, ex-Mining Commissioner of Great Britain for Cornwall, is reported to be in San Francisco, accompanied by Mr. Dowling, the well-known mining expert. Their ultimate destination is Alaska, where some mining proprieties will be visited and reported upon in the interest of foreign capitalists, represented in London by the firm of John Taylor & Sons.

Mr. Charles A. Ashburner, mining engineer, of Pittsburg, Pa., is said to have received an offer from the Shah of Persia to take charge of the government engineering corps now being organized in that country. It is styted that ai present nothing but turquois is mined in Persia, and the Shah expects to discover valuable deposits of coal, iron, petroleum, and possibly the precious metals. the recious metals.

The Canadian Phosphate Company, Limited, has secured the services of Mr. Joseph Lainson Wills, M.E., F.C.S., of London, as managing engineer and chemist. It is expected that his large experience of phosphate mining will enable him to materially reduce the cost of production now rendered so onerous by the "cobbing" process. He is now on his way to the mines at Buckingham, Quebec.

The Hon. H. W. Sage has agreed to pay for the new The Hon. H. w. Sage has agreed to pay for the new Cornell University library building, Ithaca, N. Y., if the University is defected in the Fisk will case. In other words, he advances without interest \$225,000, the cost of the building. If the suit goes against the University Mr. Sage does not get his money back; but if the decission is favorable to the University, Mr. Sage is to be reimbursed. Sage is to be reimbursed.

Sage is to be reimbursed.

Capt. Nat. D. Moore, of the firm of Moore, Benjamin & Co., is about to leave the Gogebic Range permanently, to locate at Kingston, Canada, where he intends to begin anew the arduous task of acquiring a fortune. Captain Moore leaves a range, where be made and lost a million or so, without a dollar. He was one of the pioneers of the Gogebic Range. When the reaction in values set in, it found Moore and his associates loaded down with properties that they had bought at fancy prices for speculative purposes, and for which they were heavily indebted. They found it impossible to "unload" and went to the wall. Moore soon found himself stripped of all he had made, and has since been endeavoring to get a fresh start in the Gobebic District, without success. So he goes to Canada to seek fresh fields and diggings new.

### INDUSTRIAL NOTES.

The buildings of the Buffalo Cast Iron Pipe Company, in Buffalo, N. Y., were burned on the 3d inst.

The Reading bardware works, Reading, Pa., were burn d on the 2d inst. The loss is estimated at fully \$350,000. The works will be rebuilt at once.

The Kimberly Mill, at Sharon, Pa., which has been idle since March 14th, will be put in repair at once and will resume work not later than August 1st.

The Joliet Steel Company, of Joliet, Ill., has ordered an electric plant, using the Waterhouse are and incan-descent system made by the Waterhouse Electric and Manufacturing Company, of Hartford, Conn.

The Bethlebem Iron Company, Pa., on the 2d inst. made a 150-ton casting, being the base for the steel compressor in the new gun works. This is thirty tons heavier than the recent big cast, and is the largest ever known to have been made. It will take three weeks to cool.

Work has been stopped on the new charcoal furnace of the Montgomery Furnace and Chemical Company, at Montgomery, Ala. A considerable part of the furnace has been built and a large part of the charcoal and wood alchohol plant is finished, but it is stated that the furnace itself will not be comp eted this year.

According to reports \$700,000 was placed in bank at Birmingham, Ala., to be used in the erection of three new blast-furnaces in that vicinity. The furnaces are to be seventeen feet each. The projectors of the enterprise are H. F. Debardeleben, of Birmingham, and parties from Charleston and Savannah. Work is to be begun immediately.

The Westerman Iron Rolling Mills, situated on the Fifteen Mile Creek, a mile from Lockport, N Y., wero burned on the 3d inst. The fire caught in the roof from the high chimney about noon, and in fifteen minutes the enitre mill was burned out so that nothing but the rafters remained. The warehouse to the right was burned as was also the bridge crossing the creek. The firm tate that the works will be rebuilt and be running in 60 days. in 60 days.

in 60 days.

The Harvey Steel Company is a new organization which is about to purchase a site for works at Jersey City, N. J. The company consists of H. A. Harvey, President; Theodore Sturges, of the Oxford Iron and Nail Company, Secretary; B. G. Clarke, of the Thomas Iron Company and the Lackawanna Coal and Iron Company, Treasurer; Mr. Percy R. Pyne, of Moses Taylor & Co., being also interested in the concern. The company will build works to make steel under the patents of H. A. Harvey, who is well known as the inventor of machinery for the manufacture of cut and rolled wood screws.

The Freeman Wire Company Fact St. Lovie has

facture of cut and rolled wood screws.

The Freeman Wire Company, East St. Louis, has purchased the plant of the Illinois Wire Company, adjoining its barbed wire mill. The present capacity of the Freeman barbed wire mill is about 32 tons daily, which will soon be increased by the addition of ten or a dozen new machines new in process of building. The wire mill was to be started up July 1st, on 1000 tons of imported rods, and run double turn to a capacity of 30 tons in 24 hours. While the bulk of the product will be converted into barbed wire, it is not the intention of the company to limit its manufacture to sizes adapted for that purpose, but to make all sizes of market wire from No. 9 down to No. 20.

market wire from No. 9 down to No. 20.

The following firms have signed the scale of the Amalgamated Association of Iron and Steel Workers: Apollo Iron and Steel Company; Akron, O., Iron Company; Mingo Junction, O., Iron and Steel Company; Lookout Rolling Mill Company, Chattanooga, Tenn.: Carnegie, Phipps & Co., at Homestead; Scottale Iron and Steel Company, Scottdale, Pa.; P. H. Laufman & Co.; Aurora Iron and Steel Company, Aurora, Ind.; Maumee Company, of Toledo; Howard Haroward Company, of Cleveland; Republic Iron Works; Oliver Bros. & Phillips; Lawrence Iron Company, of Ironton, Ohio, and the two firms at Findlay, Ohio; Moorehead Bros. & Co., of Sharpsburg.

Onio; Moorehead Bros. & Co., of Sharpsburg.

Singer, Nimick & Co. have resumed work with non-union men, the firm agreeing to restore a 10 percent reduction recently ordered. The Amalgamated officials say that if any of their men go to work they will be expelled. The majority of the skilled workmen there are members of the Knights of Labor. The firm employs 800 hands, and its decision to resume in defiance of all labor organizations has caused the biggest sensation since the strik began. Several departments of the works were in operation to-day, but no puddlers appeared. An attempt to start up the rest of the mill will probably be made on Monday. The firm will hire men as individuals and upon no other conditions. The men who agree to go to work must renounce their organization.

nounce their organization.

The Jackson Furnace Company has been incorporated with a capital stock of \$25,000 by W. H. Peters, C. E. Murdock, George Peters, Jas. F. Peters and John Peters, Sr., to operate the Huron furnace property, at Jackson, Ohio, which has been purchased. The purchase includes 235 acros of coal land. There is a shaft mine at the furnace from which coal will be obtained without the labor of transporting it. Ore and limestone from the Lawrence furnace lands will be used. Huron is a 25-ton hot blast furnace, size 50 × 13 feet, which was remodeled seven or eight years ago and has been idle for some time past. The new company propose to have the furnace in blast by the 1st of August. John Peters, Sr., was made President of the company, J. F. Peters Vice-President and W. H. Peters Secretary and Treasurer. The last-named gentleman will have charge of the property.

gentleman will have charge of the property.

Further particulars have been received in reference to the failure of the Cartwright Iron-Works, of Alikaima, Ohio, to which we referred in our last issue A press dispatch from St-ubenville, Ohio, says the liabilities will reach \$60,000. It is said that the company held a large block of Graff, Bernett & Co.'s paper, upon which they could not realize. This, with the inadequate size of the plaut, precipitated the failure. The company have only about \$7000 personal property above the value of the plaut, upon which there is a mortgage of \$9000 held by the Miners' and Mechanics' Bank, of this city. This bank sold the company the plant for \$12,000 originally. The assignce has issued time certificates to the employés

for their wages, which they have negotiated for 50 cents on the dollar. It is now feared that the personal property will not be sold for much more than to pay the employés, to whom there is owed \$3500, and the costs of assignment.

A new manufacturing concern, the Aluminum Brass and Bronze Company, has been organized, with a capital of \$250,000, for the manufacture of aluminum and Bronze Company, has been organized, with a capital of \$250,000, for the manufacture of aluminum and the alloys of silicon, under the Cowles patents. At the first meeting of stockholders, held in Waterbury, Conn., recently, the following officers were elected: F. J. Kingsbury, Br., President; William Powe, Treasurer, and F. J. Kingsbury, Jr., Secretary. Dr. Waldo will be Electrical Engineer and Charles S. Moss Mechanical Superintendent A location has not yet been decided upon, but Bridgeport is talked of as the place for erecting factories. The company is encouraged by the success that the companies abroad have met with. It controls the exclusive rights, under the Cowles patents, of the alloys of aluminum in sheets, rods, and wire. Experiments have already been made at the Scovill Manufacturing Company's; from the first the Staudard Time Company has used the wire, and says it want no other. The Sprague Electric Railway and Motor Company are also using the silicon bronze wire.

Company are also using the silicon bronze wire.

The suits brought at Pittsburg, Mass., against the Hudson Iron Company, to which we referred in our last issue, were the first cause under the Employers' Liability act passed in 1877. The company's furnaces are at Hudson, N. Y., but the mines are at West Stockbridge, Mass. The case closed on the 3d inst. in a disagreement of the jury. The plaintiffs claimed that under the act defendants were guilty of gross carelessness in not providing proper machinery, and defendants set up the plea that going by bucket was at the option of the men. It appeared in evidence that shovelers, uch as these plumtiffs were, were allowed no discretion, but had to go by the bucket while the miners went by chutes. The Kuights of Labor have furnished money for prosecution of the company as a test case. Chief Justice Brigham, of the Superior Court, held that if defendants furnished an ordinary safe machine they had discharged their duty. The jury stood nine for a verdict to three for acquittal. The latter held that there was option afforded to plaintiffs to get in to the mine. A new trial will be had.

A new trial will be had.

The Pittsburg Steel Casting Company, Pittsburg, Pa., has signed a contract to furnish some heavy castings for the cruiser Maine, now builling at the Prooklyn Navy Yard. Among the pieces to be cast is the stem post. This forms the forward part of the keel and the bow. One arm of it is twenty-six feet four inches long, the other thirteen feet ten inches. The shape is nearly that of a right angle. At the widest point it measures forty-two inches, and the thickness throughout will be twelve inches. The estimated weight of the monstrous piece of metal, the largest ever cast in Pittsburg, is seventeen tons. So odd is the shape that it is feared that no railroad entering in Pittsburg will contract for its shipment. Sup-rintendent Pitcairn. contract for its shipment. Sup-rintendent Pittsburg will contract for its shipment. Sup-rintendent Pittsirn, of the Pennsylvania Railroad, will send an engineer to examine the model, and if it can be safely shipped the pattern will be sent on at once. In any other case it will have to be shipped by water around by New Orleans. The total cost of the work will be about \$70,000.

### CONTRACTING NOTES.

Machinery and supplies wanted. See page xiv. Contracts open will be found on page xix. New contracts this week: No. 951, Wrought-Iron Bridge; No. 952. Water-Works; No. 953, Asphalt; No. 954, Bridge; No. 955, Cast-Iron Pipe.

### GENERAL MINING NEWS.

Shipments of iror ore from the mines of the districts mentioned below for the season up to and including June 29th, as reported by the Marquette Mining Journal, were as follows:

	Tons. 1888.	Tons. 1887.
Marquette, Marquette District	120 784	213,227
	40,922	30,333
Escanaba. " "	228.145	272,310
" Menominee District	282,838	333,727
" Gogebie District	. 60,735	*** **
Ashland. " "	. 211,269	253 645
Two Harbors, Vermillion District .	61.399	74,625
	1,015,962	1.177,867

TENNESSEE COAL, IRON AND RAILROAD COMPANY. TENNESSEE COAL, IRON AND BAILROAD COMPANY.—Official reports to us show that during June the company received from the mines of the Tracy City division 11,269 tons of coal, 14.881 tons of coke, making a total for the first half of 1888 of 89,228 tons of coal and 80,072 tons of coke.

# ARKANSAS.

ARKANSAS.
PULASKI COUNTY.

Activity is constantly increasing on the Fletcher manganese range. Four different Chicago companies are now at work preparing for the shipment of ores, and a railroad is being built to the mines, which will be completed in ninety days. A general average of the ores gives 40 per cent. manganese, 3 per cent. iron, and .012 phosphorus. It is said there are 500,000 tons of ore in sight already, and that the veius, some of which are eight feet wide, have clearly defined foot and hanging-walls. Large deposits of bog manganese have been found in the low-lands of the same region. the same region.

# CALIFORNIA.

MONO COUNTY.

STANDARD CONSOLIDATED MINING COMPANY.—The company has just issued the following statement: May

1st, balance on hand, \$63,999.15; bullion bar, 687, \$8 508.52; total, \$72,502.67. Dividend No. 74, \$5,000; expenses, mine, \$14,830.22; insurance, legal expenses, etc., \$2,660.30; total, 23,490,52. June 1st, balance on kand, \$49,012.15.

balance cn hand, \$49,012.15.

NEVADA COUNTY.

At the copper mine at Spenceville, recently purchased by Woeler & Pietzsch, a new and ingenious method of working the ore has been introduced, which was originated by Mr. Woeler, who was in the employ of the old company for many years.

Instead of running the solution through a series of cylinders to catch the copper they have constructed a sluice box about 200 yards long which is filled with old iron, through which the sulphuric acid solution is run; the iron is replaced by the copper which is precipitated to the bottom.

Mr. Woeler also devised a process by which he can refue copper cement, making it into pig copper 98 to

Mr. Woeler also devised a process by which he can reflue copper cement, making it into pig copper 98 to 99 per cent fine, losing only 3 to 5 per cent in the operation. He uses common furnaces and crucibles. This company's smelting is said to be the only practical work of the kind done on the Pacific Coast. All cement is generally sent to Baltimore or New York to be refined.

The owners are at present employing only five men, and are working up a pile of about 175,000 tons of burnt ore. They expect to raise ore from the bank in about eight months.

Champion.—This copper mine, situated two miles

CHAMPION.—This copper mine, situated two miles north of Spenceville, owned by C. C. Bitner and Charles Pietzsch, will soon be worked.

Charles Pietzsch, will soon be worked.

Original Empire Mill and Mining Company.—
Suits havebeen begun in the Superior Court, Grass Valley, by Mrs. Mary F. Shields, Mrs. Martha J. Trebilcox and John H. Paul against this company to recover in the aggregate \$87,000 for fatalities and injuries resulting to workmen in the company's employ by the explosion of March 14th. Plaintiffs claim that Geo. W. Starr, superintendent of the Empire mine, was negligent and careless in rermitting powder to remain in the dryhouse, which caught fire and thereby caused the explosion.

#### COLORADO

CLEAR CREEK COUNTY.

INTER OCEAN.—The Inter Ocean lode, located on line of the Idaho tunnel, is being worked by Cowen & Scofield. A 40-foot shaft has been sunk, and a three-inch streak in the bottom worth from \$188 to \$250 per ton has been found.

LAKE.—This mine in Virginia Cañon is now shipping about 40 tons of ore per month.

MARY FOSTER.—This mine on Cascade Creek has been sold to the Granite Mountain people in St. Louis for a consideration of \$40,000.

EL PASO COUNTY.

WESTERN COAL AND MINING COMPANY.—This com-

WESTERN COAL AND MINING COMPANY.—This company, of Kansas, has filed a statement with the county clerk showing that the principal office of the company will hereafter be in Colorado Springs.

The case entitled the People ex rel. Wolpert et al. vs. Rogers et al., which is the suit brought by the farmers to enjoin the mill men of Gilpin County from running tailings into Bear Creek, will come up for hearing in the Supreme Court in September. The Deuver Mining Industry says that there does not appear to be a great deal of interest in the matter, though it is a very important suit to the mining men of the State.

We have received the follow statement, which shows the gold bullion deposited at the United States Mint, Denver, during June, 1885: Gross weight deposit for month, 8423 39 ounces; net weight deposit for month. month, 8423, 39 ounces; net weight deposit for month, 8284, 95 ounces; net weight bose removed, 197, 44 ounces; average per cent base removed, '023 per cent; average fineness siver, '178. Making a total for the month of gold of \$137,419.95; silver, \$1,168.66, a total of \$138,-500.41

ADAMS MINING COMPANY .- The company has refused to renew its ore contracts or make new ones, on account of the low price now paid for lead, and, con-sequently, is making no shipments at present.

Breece Mining Company.—In an interview with a representative of the Engineering and Mining Journal, Mr. A. Bradstreet stated that for the past three years, instead of sinking the shaft, the company JOURNAL, Mr. A. Bradstreet stated that for the past three years, instead of sinking the shaft, the company had mined an iron ore found near the surface, which is peculiarly adapted for the manufacture of steel rails, and which has been regularly purchased by the Colorado Coal and Iron Company for this purpose. The orders run from 600 to 1300 tons per month. The mining is done by a contractor, who pays all the expenses of labor, etc., and the ore is simply sold at an advance to the Coal and Iron Company.

The board of directors have decided to sink the old shaft deeper, in the hope of finding a body of silver ore. This will probably be done by August next, when the surplus water has been evaporated by the sun. thus saving the expense of pumping.

The company has ample funds, between \$20,000 and \$30,000, to perform the work. Mr. J. H. Fletcher, the superintendent, will have charge of the work.

St. Kevin Mining Company.—Mr. G. Hassell, the president of the company and owner of eight tenths of the stock, said to an Engineering And Mining Journal representative: "Owing to certain internal troubles, until now we have steadily refused to give, except to bona-fide stockholders, any information concerning the work and prospects of our mine. The new 10-stamp mill of the Hassell Milling Company, which is leased by the St. Kevin Company, is in opera-

tion, and concentrates are being shipped every other day to the Pueblo Sampling Works. Ten more stamps for this new mill have been ordered from the Colorado Iron Works at Denver, and will be delivered July 7th. From April 25th till a few days ago we suspended active work in the mine, owing to the large amount of low-grade ore which we had on hand and which we could not easily dispose of. However, now that we have our mill in operation, we have resumed mining. We know that on every level there is ore of great richness. Recent assays of 11-ton carloads show 46 and 50 ounces silver. At present we have levels at 50, 75, 100, 150, 200, 250 and 300 feet, and the next 50 feet is being rapidly sunk."

PITKIN COUNTY.

The ore shipments from Aspen for the week ended June 30th amounted to 1760 tons, of which Denver got 713 tons, Pueblo 258 and Leadville 789.

IDAHO.

IDAHO.

LEMHI COUNTY.

VIOLA MINING COMPANY, LIMITED.—The Viola Smelting Works at Nicholia offer a \$16 rate on dry ores delivered at Camas stations on the Utah & Northern Railroad.

ores delivered at Camas stations on the Utah & Northern Railroad.

MILLS COUNTY.

Oro Fino Limited Company.—The purchasers of the Oro Fino group of mines have registered in London under the name of the Oro Fino Limited Company. Local papers state that, judging from the way the owners are pushing matters, Silver City will soon be a lively camp. A new mill-site has been located in town and the work of preparing the same for a mill begun; fifteen hundred cords of wood advertised for, and bids for hauling 150,000 pounds of mill machinery are asked for. Arrangements are also being made to put up a bucket tram to transport ore to the mill from the mine, one and a quarter miles distant. Everything is now about arranged to begin taking ore out of the mine. Three hundred feet of T rail track have been put in on the third level, and many important improvements have been made at the mine to enable them to work economically. The winze connecting with the Sinker tunnel is nearly completed, and is being sunk through rich ore. As soon as this is finished they will have good air in the tunnel, and it will be pushed with three shifts, operating with a diamond drill, trying to reach the rich chute of ore known, it is said, to be about one hundred feet ahead.

IOWA.

IOWA.

The miners of the Des Moines District have accepted 90 cents per ton for the coming season. This is the employers' figure, the miners having asked for \$1.

WITEBREAST FUEL COMPANY.—The statement for May shows net earnings of \$16,502, an increase of \$11,007, or 22½ per cent. For eleven months of the current year the net earning were \$147,200, an increase of \$22,071, or 17½ per cent.

MICHIGAN.

COPPER MINES.

ALLOUEZ MINING COMPANY.—Since the assessment the Calumet News has bad several inquiries as to the condition of affairs at this mine, and says: The buildings at the mine, as well as at the stamps, the hoisting machinery, the railroad track, the skip roads, etc., are budly in want of repairs, but they are not, with the exception of the hoisting machinery, likely to require much of the assessment to put them in good working order.

quire much of the assessment to put them in good working order.

Since the owners have resumed control of the mine, two lifts have been sunk in No. 2 shaft, which is now down to the 18th level. The 17th level has been drifted south some 100 feet, but it will require to be drifted another 150 feet before it reaches the rich shoot of copper which the tributers met with in drifting on the 16th, the level above, and which gave every promise that it would continue down.

It is intended to connect the lower levels with the No. 1 shaft, which at present has not reached the 9th

It is intended to connect the lower levels with the No. 1 shaft, which at present has not reached the 9th level, although the 10th, 14th, 15th and 16th levels are extended further south than it. When these connections are made, and having so much ground opened ahead, and by the aid of that well-known hustler, Capt. Ned Roscoria, who has charge of the underground workings, we feel sure that this mine can soon be placed on the dividend list, and without any further call on the pockets of the shareholders than the assessment now demanded, which is payable on July 25th.

the assessment now demanded, which is payable on July 25th.

We lately saw some very rich rock taken from the twelfth level, south, of No. 2.

From the character of this vein it is necessary, in order to make it pay, to work it on a large scale, and to call in the aid of the latest improvements in hoisting machinery, etc.; but if this is done there can not, we think he any few up to the result. think, be any fear as to the result.

CALUMET & HECLA MINING COMPANY.—The work Calumet & Hecla Mining Company.—The work of unwatering the mine is now progressing quite satisfactorily. The Worthington condensing pumps are doing good work. The trouble with them was due to the water in the mine being too hot to condense the steam rapidly enough. The steam pipe made it so warm that the men could not work in No. 5 Calumet. Mr. Duffey, who was sent here by the Worthington Company, made no alterations whatever; but General Manager Whiting ordered the water skips to work in the same shaft with the pumps. The leakage from the water skips cools the shaft and water in the bottom to such an extent as to make it possible to work the water saips cools the shall and water in the bottom to such an extent as to make it possible to work the pumps. A mechanical device attached to the pumps by the mine machinists overcame the vapor that interfered with the working of the pumps to a great extent and really made their work a success. In the United States Court at Grand Rapids, on the 3d inst., a non-suit was taken in the case of Joseph Chandler vs.

the Calamet & Hecla Mining Company. The defendants held some land in Houghton County, valuable for its deposits of copper, which they held by grants fifty two years old. Under a later grant from the State of swamp lands, Mr. Chandler claimed a title to the land and brought a suit in ejectment. The case was called on the 3d inst. Neither the plaintiff nor his attorney appeared, and a non-suit was taken. The suit was brought in November, 1887, and was referred to in our i-sue of November 19th and December 3d of the

IRON MINES

IRON MINES.

Mikado Iron Mining Company.—At a recent meeting of the board of directors several changes were made in the official management of the company. Maj. R. N. Roberts, of Waupaca, Wis, was elected President and director to succeed Jay A. Hubbell, resigned; L. J. Perry, of Ironwood, Mich., was elected Secretary and Treasurer to succeed M. Van Orden, resigned; and L. L. Wright, of Ironwood, Mich., was elected a director to succeed J. B. Sturgis, resigned. L. J. Perry was chosen General Manager. The board unanimously voted to remove the general offices of the company from Houghton to Ironwood, Mich. These changes are the result of the recent purchase of the control in the Mikado by a party organized by Captain Perry. The price paid was \$25,000. In the present state of the ore trade the company will make no effort to ship ore.

Nanaimo.—This mine, in the Crystal Falls District.

make no effort to ship ore.

NANAIMO.—This mine, in the Crystal Falls District, has been seized by the sheriff on executions amounting to \$17,000, at the instance of parties who have been advancing money to keep it in operation. Labor claims to the amount of \$25,000 are also outstanding. Money to pay laborers was advanced during the winter by Tod, Stambaugh & Co., for which they took security on the ore as it was mined. They have now taken possession of the stock pile and are shipping it. The company is pretty hadly involved, according it. The company is pretty badly involved, according to all accounts. An assessment made to provide means to relieve it of pressing embarrassment a short time ago has not been paid.

MONTANA.

MONTANA.

DEER LODGE COUNTY.

BRUNSWICK MINING AND REDUCTION COMPANY.—
The company has been organized with a capital stock of \$2,000,000, shares \$5 each, for mining and reducing ores in Deer Lodge County, the principal office to be at Granite. The incorporators are: Thomas Treveaille, Thomas Coulter, William Souden, John Hickey, Richard Francis, Nicholas Francis, Thomas Tonkin, Joseph Richards and Joseph Lutney.

LEWIS & CLARKE COUNTY.

HELENA & LIVINGSTON SMELTING AND REFINING COMPANY.—The work of excavating for the foundation of the works has commenced. An electric light plant has been ordered, and when it arrives will be set up on the grounds, which will be illuminated at night, and a night and day shift worked until the building is completed.

MONTANA COMPANY, LIMITED.—Mr. R. T. Bayliss,

building is completed.

MONTANA COMPANY, LIMITED.—Mr. R. T. Bayliss, the manager, has contradicted the report that a rich strike had been made in a letter to the Helena Independent. He says: "No new strike has been made in this mine for many months. The ore-body to which the reports refer as the new discovery in the Cruse level is not a parallel vein, but is a part of the Drum Lummon lode, and although it has only lately been opened up at this point, it has been worked in this and other levels of the mine, and has furnished many thousands of tons during the past three years. Further still, I regret to state that it is only a low-grade ore-body, and yields ore only fit for the purposes of the low-grade mills."

NEVADA. We have received the following from our special

We have received the following from our special correspondent:

The mine at Tybo, Nye County, is producing quite largely and shipping to Salt Lake City for treatment, From all accounts prospects are very good in that quarter. A company with a little capital could make a nice income by erecting a furnace and refinery and buying an interest in the Dimick and Sly mines. I hear that they have an old speiss and matte dump out there containing about 5000 tons of \$30 stuff. Besides this there are many smaller mines in the vicinity which would contribute good smelting ores.

At the Purcell mine, at Seligman (owned by Seligman Bros. & Church, of New York, I believe), they have tried Krom's dry concentrating, but some difficulty has been experienced with dust. I hear Krom passed through lately to investigate the matter.

The mines at Spencer Mount, Elko County, are attracting attention They have just started a 40-ton smelter. The property is managed by a St. Louis corporation, with Lewis as president.

Now that the Eureka reduction works have combined on a rate, there is no competition, and consequently less incentive to low grade ore miners and prospectors.

prospectors.

prospectors.

ELKO COUNTY.

Messrs. Hyman, Hart and Schussler, representatives of San Francisco capitalists, are now at Tuscarora, where they contemplate heavy investments. Mr. Schussler is consulting engineer of the Spring Valley Water Company of San Francisco, and will report upon the feasibility of supplying Tuscarora with water from some of the numerous mountain streams on the other side of Independence Valley.

NORTH BELLE ISLE MINING COMPANY.—At the annual meeting of this company held at San Francisco recently the following officers were elected: E. Scott, President; F. A. Berlin, Vice-President. John W. Pew was reappointed Secretary and W. C. Price Superintendent. The financial statement showed re-

ceipts during the year of \$585,928.13. The disbursements, including \$200,000 in dividends, amounted to \$585,193.41. leaving \$732.72 cash on hand, but there is a bullion shipment valued at \$41,000 on the way. The product of the mine during the last year amounted to 3015 tons of ore, yielding bullion of the gross value of 564,955. The average assay value of the battery samples of the ore was \$214.64 per ton, and it was reduced at a fifteen-stamp mill, which crushed an average of 12½ tons per day. The mill was shut down on June 19th for the purpose of putting manew boiler and making repairs, but this work will be completed on or about July 7th. Superintendent Price concludes his annual report with the statement that there remains in sight considerable ore on the different levels that will grade between \$100 and \$150 per ton, and there is already developed several thousand tons of ore that will be handled as concentrating ore. During the year there has accumulated on the dumps between ten and twelve thousand tons of ore that is estimated at \$30 per ton, but the nature of the rock is such as to make it difficult to determine its actual value until a milling test of it is made. A concentrating plant with a capacity of 100 tons per day is being constructed, and will be completed in a short time. The prospect work has been forwarded to an extent that at a nominal cost the value of large areas of unexplored territory can be ascertained. If the next few weeks prospecting on the 400 level strengthens the situation as now anticipated, it will justify the opening of another level at an early date. The tollowing report was received on the 27th inst. "Since writing the annual report, face of drift on 400-foot level has materially improved. It now shows 3 feet of more than \$200 ore."

ESMERALDA COUNTY.

It is stated that an English company has purchased on Walker River, near the mouth of Rough Creek, a tract of land for the purpose of erecting a large reduction works suitable to work the ore around Aurera.

EUREKA CONSOLIDATED

EUREKA COUNTY.

EUREKA CONSOLIDATED MINING COMPANY.—The committee of the San Francisco Stock and Exchange Board, appointed to investigate the affairs of this company, referred to in our issue of June 30th, has made pany, referred to in our issue of June 30th, has made a report vindicating the management of this mine from all the malicious charges lately current. The statement presented by the company shows for eight morths ending May 31st, 1888, an output of \$380,-351.86 in bullion from the mine. Eight dividends, amounting to \$100,000, have been paid, and the available assets still on hand June 20th amounted to \$84,395.75.

\$84,395.75.

LINCOLN COUNTY.

The small copper furnace at Bristol, erected recently by C. L. Roe, was fired up a short time ago, and a three days' run made, the result of which was 7 tons of bullion, containing 95 per cent. copper, produced from 14 tons of ore. The bullion carries but \$2 per ton in silver. This experimental run resulting successfully, the furnace will be fired up again as soon as it is relined. It is stated that the copper ore on which the furnace has been running was mined upwards of ten years ago.

wards of ten years ago.
STORNY COUNTY—COMSTOCK LODE.
We condense the following from the Virginia City

we condense the following from the virginia City Chronicle:
CHOLLAR MINING COMPANY.—The 20 additional stamps added to the Chollar mill complement are ready to drop, but the dynamos for operating them by electric power have not yet arrived.
GOULD & CURRY MINING COMPANY.—The

weekly shipments amount to about 229 tons of ore, battery samples of which show an average assay value of \$24.03 per ton. Eldorado Tunnel, the southeast drift from the top of upraise, is now in fair grade milling ore.

Occidental Mining Company.—The Excelsior Stamp Mill has recently been leased by this company, which, with the Atlanta, furnishes a combined daily crushing power of 50 tons. With the pre-ent assay value of the ore maintained, the bullion yield of the mine should reach \$15,000 per month.

SAVAGE MINING COMPANY.—The recent ore development on the 500 level, stripped by the south drift, is higher grade than that heretofore extracted, assays showing an average value of \$35 per ton. Stopes will be immediately opened in this development for the extraction of ore. The stopes from the 400 down to the 900 level are yielding the usual grade.

#### NEW MEXICO.

The Flagler reduction works, of Silver City, are un-The Flagler reduction works, of sliver city, are undergoing many changes and improvements, and by the middle of this month will probably be ready to sample, treat and buy ores of all kind. A smeltor is one of the latest improvements to the plant, while the sampler is something, the need of which has been long felt in this country. The lixiviation process will also be used where it is to the advantage of the ore to be treated by that method that method.

#### PENNSYLVANIA.

COAL.

The Schuylkill Coal Exchange, Pottsville, publishes the following report, dated July 3d:

The collieries drawn to return prices of coal sold in June, 1888, to determine the rate of wages to be paid, make the following returns: W. Shenandoah Colliery (P. & R. C. & I. Co.), \$2.28; Tunnel Colliery (P. & R. C. & I. Co.), \$2.24; Richardson Colliery (P. & R. C. & I. Co.), \$2.37; Turkey Run Colliery (P. & R. C. & I. Co.), \$2.38; Shenandoah City Colliery (P. & R. C. & I. Co.), \$2.31. The average of these prices is \$2.31 \( \frac{1}{10} \), and the rate of wages therefore, is six (6) per cent below \$2.50 basis.

These charters were issued from the State Department at Harrisburg on the 2d inst.: The Elk Coal and Coke Company, of Philadelphia, capital, \$150,000; the Philipsburg Coal and Land Company, of Philipsburg, Center County, capital, \$28,600.

The litigation which has been going on for some years between the Cummings' estate and the Lehigh Valley Railroad Company for possession of a tract of land north of Montana, near Mt. Carmel, has been decided in favor of the Cummings' estate by the Supreme Court. Some valuable coal veins have been discovered on it.

on it.

Bellevue.—An extensive caving in of this colliery, at Scranton, occurred on the third inst, and many miners who were working in the mine at the time had a narrow escape from being crushed to death. The fall of roof covers a vast area of surface, and has damaged a number of houses and destroyed the streets and sidewalks along Main street. The damage to property on the surface is considerable.

Lehigh & Wilkes-Barre Coal Company.—A fire was discovered in the western portion of the work-

LEHIGH & WILKES-BARRE COAL COMPANY.—A fire was discovered in the western portion of the workings of the Hollenbach mine at Wilkes-Barre on the morning of the 3d inst. The entire force fought the fire all day, and in the afternoon succeeded in subduing the flames. The damage will be considerable, During the past four months the company has been driving a tunnel through the rock from the Ross vein to the Red Ash deposit in its great Nottingbam colliery at Plymouth, and has just reached the coal. The rock was of the hardest known to the cutters and the time consumed in the work is very short considering the volume that had to be removed. The seam was found in excellent shape. was found in excellent shape.

WYNN COKE COMPANY.—This company, of Union-

wynn Coke Company.—Inis company, of Union-town, has made an assignment, growing out of the disappearance, it is said, of Maj. A. B. DeSaulles, one of the principal owners. The assignment is made to his brother, Louis DeSaulles, The liabilities are about \$15,000. The coke plant is supposed to be worth \$25,000.

# TENNESSEE.

TENNESSEE.
STEWART COUNTY.
The Cumberland Iron-Works property, at Dover, has been sold to Northern capitalists for about \$200,-000. The property consists of about 46,000 acres of land, several hundred acres lying on the Cumberland River, which are considered the best farming lands in the county. Iron ore is found in and near the Bear Spring furnace. The works were operated before the war.

# UTAH.

Spring furnace. The works were operated before the war.

UTAH.

SUMMIT COUNTY.

ONTARIO SILVER MINING COMPAN Y—The follow ing is an extract from Prof. J. E. Clayton's report contained in the company's report for the year 1888:

"One year ago I made a careful study of the Ontario mine, both from a geological and economical standpoint, giving my views on the condition of the mine, and its future prospects of long continued prosperity as a dividend-paying property. The last year's operations show that the estimated reserves were much larger than was supposed, which you will see by comparing the statement of the work done in the mine during last year's operations with the report issued one year ago. It is a remarkable fact that the Ontario mine has always given a larger output of ore from its reserves than any one has ever estimated them to contain. The last year's work proves that the ground cut and underrun, ready for stoping, will yield at least 50 per cent more ore than it was estimated to contain one year ago. All the new work done in the western portion of the mine last year gives increased confidence in its productiveness. The seventh, eighth, ninth and tenth levels west of shaft No. 3 are looking much more promising than they did one year ago. The four levels above named will have to be driven 1875 feet further to reach the west end line of the Ontario ground. This block of new ground (1875 feet long by nearly 500 feet deep) measured on the plane or dip of the lode, will supply your present milling capacity for nearly four years. The vein is unusually large in the face of all four of the levels above referred to, and the ore seams are strong and good, and as the 600-foot level carried good ore beyon it the end line for several hundred feet into the Daly ground, it is safe to estimate this whole block of virgin ground as fully up in quantity of ore to any of like dimensions heretofore worked out. The spur vein, No. 1, to its intersection with the south or Paly work has a residual to the loof-foot level. Henc

#### FOREIGN MINING NEWS.

ment for government account was adversely affecting private enterprise in coal mining in Japan. The government declares that the agents who have worked the mine alone derived profit from it. The reserve price is four million yen, but it is stated that about one million yen more should be spent by the purchaser in developing and reforming the whole system of the works. With reference to the future of the mine, the Choya Shimbun states that the whole quantity of coal is estimated at 230,000,000 tons, enough to last for 230 years at 1,000,000 tons per annum; that it is the greatest mine in Japan; and that when the Takashima mine is worked out (which the Choya expects will be the case seven or eight years hence) Milke alone will furnish the coal for export to Shanghai and Hong Kong. ment for government account was adversely affecting

# SOUTH AMERICA

SOUTH AMERICA.

UNITED STATES OF COLOMBIA.

Our special correspondent sends us the following:
On May 20th the Mal Paso mine, near Houda,
shipped its month's product of 42 pounds of gold. The
adjoining mine, the Orita, sent for its month's work
48 pounds, and the Organos mines in the southern
part of the state sent 21 pounds. The recent "cleanup" of La Rica mine, in the western part of the state,
produced 16 pounds.

Things in a mining way are very quiet just now.
Another mine is being opened by the American Mining Company. They have a property near the famous
Marmato mine, in the State of Antioquia. Chas. E.
Stacie is Superintendent.

Mr. A. Harpending has asked the government for
concessions on salt and machinery for a 30-ton smelter
to be erected at or near Santana, presumably to work
the ores of the Cristo and Boconéme mines.

There are some prospects of forming companies in

There are some prospects of forming companies in France to work the Plata Vieja and Agua Bonita mines, located west of Honda,
The Frias, Calamonte, and Santa Maria mines keep up their shipment of three hundred dollar concen-

rates.

The Gallo mine at Ibagué has just added 80 new samms to its milling capacity. This is a free-gold

The Gallo mine at Ibague has just added 30 new stamps to its milling capacity. This is a free-gold mine, averaging two ounces to the ton.

Furnaces are son to be fired on a cinnabar mine in Central Tolima, with a daily capacity of 200 pounds. This is good news to the consumers of quicksilver, for that article costs here about one dollar gold per pound. Many gold mills are run here without using quicksilver, depending on blankets alone to save the gold.

#### COAL TRADE REVIEW.

NEW YORK, Friday Evening, July 6.

#### Statistics.

Production Anthracite Coal for week ended

June John and Jear Hom Jane	miy int.	
18	88	1887.
Tons of 2240 LBS. Week.	Year.	VART
P. & Read. RR. Co., 131,921	2,693,759	3,845,061
Cent. R. R. of N. J. 77,407	2,486,860	2,404,536
L. V. RR. Co 46,468	2,872,529	3,494,917
D., L. & W. RR. Co. 117,951	3.087,512	2,586,544
D. & H. Canal Co 71,663	2,052,584	1,829,465
Penna. RR 75,645	1,968,855	1,524,659
Penna. Coal Co 44,183	751,851	688,383
Penna. Canal Co	148,807	140,913
Total 565,238	16,062,757	16,514,480
Decrease	451,723	
Increase 7,539	********	****** ***

The above table does not include the amount of coal con umed and sold at the mines, which is about six per cent

of the whole production.

Production for corresponding period:

1883......14.401,622 | 1885.......13,175,500 1884.....13,739,099 | 1886......14,709,981

EASTERN AND NORTH		1887.
Week.	Year.	Year.
Phila. & Erie RR 371	32,711	5,999
*Cumberland, Md 66,552	1,717,366	1,395,429
Barcian, Pa	86,266	105,392
Broad Top, Pa.	00,200	200,000
H. & Broad Top RR. 5,269	181,903	176,080
Clearfield Region, Pa.	202,000	210,000
Snow Shoe 2,703	65,972	84,759
Karthaus (Keating) . 2,834	73.966	96,364
Tyrone & Clearfield 60,346	1,714,385	1,626.938
Tipton 656	30,108	4,713
Alleghany Region, Pa.	,	
Gallitzin & Mountain. 15.875	447,494	542,207
Pocahontas Flat Top Coal.		
Norf'k & West, RR 29,979	789,484	585,647
Kanawha Region, W Va.		
Ches. & Ohio RR 27,066	885,179	751,191
Total 211,651	6,024,834	5,374,719
<ul> <li>Tons of 2240 lbs.</li> </ul>		
WESTERN SHIE	MENTS.	
Pittsburg Region, Pa.	198,334	158,149
West Penn RR 8,073		67,513
Southwest Penn. RR. 1,605	50,898	108,297
Pennsylvania RR 7,830	152,457	100,401
Westmoreland Region. Pa.	870,643	738,150
Pennsylvania RR 29,654	870,023	130,100
Monongahela Region, Pa.	202,285	263,261
Pennsylvania RR 11,817	202,200	400,401
Total 58,979	1,474,617	1,275,370
	# 400 AFF	0.000.000
Grand total270,630  Production of Coke on		6,600,089

The Japanese government has resolved to sell the Mike coal mine, which has long been a source of loss to the government, at the same time that its manage- itons; to corresponding date in 1887, 1,853,793 tons.

#### **Anthracite**

As stated in our last, the demand for anthracite continues very active in anticipation of the increased price which is expected to be made on the 15th. As we then stated, the advance will probably be as follows:

The producers who have sold out all that they can deliver between now and the 15th have already advanced their quotations, so that prices have already felt the effect of the anticipated decree.

Pea and buckwheat coal are still a drug, and are selling at almost any price. Pea coal is down to \$2.25, and buckwheat as low as \$1.90 almgside, which would be about \$1.70 f. o. b.

The production of coal still continues large, and during the month of June will considerably exceed the output of June last year. Up to the 25th of June the output this year was 15,600,000 tons, in round numbers, or about 110,000 tons more than in the corresponding period last year.

Since the bituminous output has also greatly exceeded that of 1887, there can be no question that the general business of the country is in a satisfactory condition, so far as the extent of the business is concerned. Never before in the history of this country has so much coal been consumed; and even if in some parts of the country prices are lower than they were a year ago, the Eastern trade has been a little better on the average, so that no general complaint can be made. The iron business in the East is still very duil, and takes but a small amount of anthracite. This, however, we believe, will shortly be improved, for all the indications are that the general market will improve after the end of July or the middle of August.

Bituminous.

#### Bituminous.

The soft coal trade continues to be rather dull owing to the fact that nearly all of the large contracts are taken. The inquiries are not frequent, and there is a good deal of cutting in prices, so that the f.o.b. quotations, which are nominally \$2.60, are in reality about \$2.25 to \$2.50, and in some cases even below

about \$2.25 to \$2.50, and in some cases even below \$2.20. The inquiry that we made in our editorial pages some weeks ago concerning coal for the Panama Canal has evidently resulted in business In fact, the canal has made quite heavy purchases here, and during the month of June no less than 16,000 tons of American soft coal were delivered at Colon. The immense advance in freights on Erglish coal, some of the last charters having been made at 29s. from Cardiff, would bring the cost of English coal up to about \$9.50@\$9.75 per ton at Colon. Freights from Philadelphia and Newport News are quoted at from \$4@\$4.25, making the price at Colon about \$6.75, some of the coal having been sold here as low as \$2.50 f.o.b. This allows of such a wide margin in favor of American coal that we expect to see this trade develop, and finally to see our American coals absorb the entire market.

Unfortunately the Panama scheme is not likely to last very long, for it seems incredible that the French should continue to sink their money in such an utterly hopeless enterprise. But while it lasts, our American coal producers will have a good market for a very considerable amount of their output.

#### Boston.

[From our Special Correspondent.]
The market for anthracite coal at this port is showing a little more signs of life. This seems to be due to two reasons: dealers are in need of more coal, as they have been out of the market for some time, and then some confidence is beginning to be placed in the talk of an advance about the middle of July. The fact of the advance in prices to the Western trade has been mainly responsible for the growth of this sentiment. The talk is of a 25-cent advance all round. Prices are rather firmer than they have been, and the indications now point to a decidedly better movement from the Eastern market in the immediate future. The easier tendency in freights noted below will help decidedly to this end

asier tendency in freights noted below will help decidedly to this end

No improvement can be mentioned in the line of bituminous coal. There is less cutting going on, but chiefly because there is so little desirable trade left to compete over. Quotations remain nominally as before at \$2.50@\$2.60 f.o b. Delivered prices on a considerable lower basis are talked about, however.

Although freights have unquestionably been tending downward for some little time past, it has beer in large vessels only that any noticeable change is felt. Small vessels are as scarce as ever. The new colliers have all been of large tonnage of late, and there is a better demand than supply, both for light draught vessels and barges. Most all of the barges draw a great deal of water, as they are altered over vessels of deep draught, generally speaking.

We quote vessel rates, exclusive of discharging: New York, 70@80c.; Philadelphia, \$1@\$1.05; Baltimore, \$1.10@\$1.15; Newport News and Norfolk, \$1.05@\$1.10: Richmond, \$1.15@\$1.25. Provincial, \$1.60@\$1.75.

The Provincial freights are from Cape Br-ton, as no foreign coal is coming from the Bay of Funday this year, at least thus far, and very little from any port. The few cargoes that have arrived are worth about \$2.70 delivered, which is a slight advance on last year's figures.

In retail coal circles the city of Boston bids have

year's figures.

In retail coal circles the city of Boston bids have hereful coal circles the city of Boston bids have been the latest topic of interest. Agreeably to the combination rules, all bids were at the same figures, two parties bidding for the whole city and others bidding for various sections. In one respect the rules of the combination were violated, as a bid coming from a concern called the Boston Coal Company offered 90

days option when all others were for 30 days only days option when all others were for 30 days only. The prices were for the city proper. Roxbury, Charlestown and South Boston: Broken, \$5.35; Egg, \$5.60; Stove, \$5.85; for Dorchester, West Roxbury and Brigton prices were uniformly 25 cents higher. On cannel coal bids were \$9.95 and \$10.25. For one cargo of soft coal a bid of \$3.97 was made.

The new coal trade exchange is now fully organized, with the following officers: Horatio Wellington, President; George F. Stebbins, Secretary; E. H. Baker, Treasurer. The exchange is now in good running order.

#### Buffalo.

[From our Special Correspondent.]

On Ju'y 2d and until further notice the prices of anthracite coal will be as follows:

		,	or Niagara River Bridges for ship-	board ve
	Size.		ment West.	falo.
Gra e, per	grosston		\$4.50	\$4.80
Egg.	do		4 80	4.80
Stove.	do		4.75	5.05
Chestnut,	do		4.75	5.05

The retail price here delivered per 2000 lbs.: Grate and Egg, \$4.85; Stove and Chestnut, \$5.10; No. 4, \$5.35, and Pea. \$3.75. These prices show the locked for advance, although it is 10 cents more than was talked of

\$5.35, and Pea. \$3.75. These prices show the locked for advance, although it is 10 cents more than was talked of.

The following item from a local newspaper is pertinent: "The advance in the price of coal for July delivery, which was ordered by the anthracite shippers at their last meeting, applies to all points where hard coal is sold, and is not merely westward from the mines, as the heavy shipments in that direction might suggest. There has never been anything approaching the rate at which coal is going west by lake at present, and unless the apprehensions of some vessel men are met in the rapid decline of shipments early in the fall, the amount moved by the close of navigation will be something astonishing."

The bituminous coal trade continues demoralized, as per last report, although dealers say that there is some chance for improvement in the near future, but do not say what the chances consist of.

Coke trade unchanged; average business.

Lake freights on coal strong. The rapid handling of cargoes here has caused many vessels to seek this port for coal tonnage as well as the inducement of the higher rates prevailing. All crafts are taken on arrival or by telegraph before leaving oth r Lake Erie ports. "The stocks of coal here plenty," said a vessel agent this morning, "freights are very firm, and the demand continues excellent."

The shipments by lake westward from June 28th to July 4th, both days inclusive, aggregated 95.615 net tons, namely. 52,100 to Chicago, 20,580 to Milwaukee, 8300 to Duluth, 450 to Toledo, 1300 to Bay City, 700 to Menominee, 1950 to Washburn, 1000 to Manitowoc, 250 to Saginaw, 1500 to Superior, 2500 to Marquette, 500 to Green Bay, 2250 to Gladstone, 1810 to Sheboygan, 25 to Port Dover and 500 to Detroit. Total shipments thus far this season (including vessels from Tonawanda not reported at the Custom House) 845,615 net tons. The rates of freight were \$10 to Chicago and Racine, 90c. to Malwaukee, 75c. to Duluth, 50c. to Toledo, 40c. to Bay City, 95c. to Menominee, 90c. to Manitowo

Seamen's wages on the lakes have been reduced 50c, er day in consequence of the low rates of freight pre-

vailing.

Receipts of coal by canal. fourth week in June, 7459 net tons: the shipment, 708 net tons.

Canal freights on coal to eastward points entirely nominal. Shippers making their own bargains in consequence of the extraordinary demoralization in transportation charges by this water route.

A Duluth dispatch says there is a serious blockade at Connor's Point near that port. Vessels are lying five deep at the coal docks awaiting turn for unloading.

ing.

Statistical.—Receipts of coal at this port this year by lake none. Shipments westward by lake for month of June 398,680 net tons, as compared with 281,100 tons in 1887 and 196,610 tons in 1886; for the season there for this year 798,000 net tons, as compared with thus far this year 798,000 net tons, as compared with 630,970 tons in 1887 and 501,070 tons in 1886. The 630,970 tons in 1887 and 501,070 tons in 1886. The receipts of coal by canal for June 19,645 net tons, as compared with 11,359 tons in 1887 and — — tons in 1886; the shipments 1622 net tons, as compared with 997 tons in 1887 and — — tons in 1886. Total receipts thus far for the season 20.821 net tons, as compared with 12,314 tons in 1887 and 15,810 tons in 1886; shipments 2333 net tons, as compared with 1597 tons in 1886. These figures show a large increase this year over last of lake shipments and also of receipts by canal.

#### Pittsburg. July 5.

# [From our Special Correspondent.]

Coal remains quiet with moderate local demand. Amount leaded for shipment first water, 12,000,000 to 13,000,000 bushels. As there was no June rise, we are entitled to one in July. The year's shipments so far have been large.

The shipments show a falling off over one bundred

The nominal rates are: Blast furnace, \$1; to dealers, \$1.10; foundries, \$1.25.

New freight rates: From Ovens to Pittsburg, 70c. per ton; to the Mahoning and Shenango Valleys, \$1.35; East St. Louis, \$3.20; to Cleveland, \$2.80; to Chicago, \$2.75.

#### PREIGHTS.

Vessel rates for ore from Marquette, Mich., to lower lake ports have been reduced to \$1.10.

Vessel rates for ore from Marquette, Mich., to lower lake ports have been reduced to \$1.10.

The latest actual charters to July 5th, per ton of 2240 lbs:

From Philadelphia to:—Alexandria, .85: Annapolis..65; Bangor, .95@1.05\*; Bath, Me. 1.00\*; Beverly, 1.05\*; Boston. .90\*; Ch.rlestown. .75; Charleston. .75@8.0; Com. Point, Mass., 1.00@1.05\*; Fall River, 85@.90; Gardner, Me. 1.00\*; Gloucester, 1.00\*; Lyon. 1.30\*; Marblebead, 1.10\*; Milton. 1.20\*; New Bedford, .80@.90; Newburyport. 1.15@1.25; Newberne. .80; New Orleans 1.25\*; New York, .90\*; Norfolk. .65@.10\*; Portand., .95@.1.0\*; Portsmouth, N. H., 1.05\*; Frovidence. .85@.90\*; Quincy Point, 1.05\*; Richmond. Va. . .75@.85; Saco. Me., 1.20\*; Natem, Mass. .90; Saugus, 1.15\*; Savannah, .90@.1.00; Washington. .85; Wilmington. N. C., .85.

From New York to:—Bath, Me., 82@.90\*; Beverly, .90\*; Boston. .80\*; E. idgeport, .80\*; C. Chelsea, .80\*; Com. Pt., Mass. .80\*; E. Boston. .80\*; E. Cambridge, Mass. .80\*3c; Cambridgeport, .80\*2c; Chelsea, .80\*3c; Cambridgeport, .90\*; From Baltimore to:—Bangor. Me., 1.10; Salem. .80\*. Prom Baltimore to:—Bangor. Me., 1.10; Bath, 1.10; Bridgeport, .90.90; New Bedford, .80; Gulveston. 2.90@3.00; New Bedford, .90; Gulveston. 2.90@3.00; New Bedford, .90; Newburyport. .130; New Haven., .90; Reinmort, .130; Fortsmouth, N. H., .10; Fright Reinmort, .130; Portsmouth, N. H., .10; Fright Reinmort, .130; Portsmouth, N. H., .10; Fright Reinmort, .130; New Haven., .90; New London, .90; Newburyport, .130; New Haven., .90; New London, .90; Newburyport, .130; New Haven., .90; Reinmont, N. H., .10; Fright Reinmond, Va., .60; Salem. Mass., .105; Savannah, .90@.1.00; Williamsburgo, N. Y., .85@.95.

\* And discharging. 3c. per bridge extra. † A'ongside. And towing.

#### MARKETS.

#### NEW YORK, Friday Evening, July 6. Prices of Silver per ounce troy.

J'ne	Sterling	Lond'n Pence.	N. Y Cents	July	Sterling		
30	4.8734	421/4	921/8	4	4.88	1017	92
July 2 3	4.88	421/8	92	6	4.8814	4216	92

Foreign Bank Statements.—The governors of the Bank of England, at their weekly meeting, made no change in its rate for discount, and it remains at 2½ per cent. During the week the bank lost £453,000, and the proportion of its reserve to its liabilities was reduced from 42 26 to 43 25 per cent, against a reduction from 43 to 38 35 per cent in the same week of last year, when its rate for discount was 2 per cent. The weekly statement of the Bank of France shows a loss of 2,700,000 francs gold and a gain of 200,000 francs silver.

of 2,700,000 francs gold and a gain of 200,000 francs silver.

Copper.—During the week just passed, the copper market has continued to grow stronger in tone for lake brands, and quotations have again to be raised, more especially as regards deliveries for the later months of the year. The representatives of the syndicate are now openly in the market bidding prices up, but as, in reality, no transactions have taken place, it would seem as if they have now secured the absolute control of almost all the lake companies' production. The closing quotations for lake are: Spot, 16:65; July 16:65; August, 16:60; September, 16:30. Outside brand sare still comparatively neglected and rather slow of sale, and the present quotation for got 1 casting copper is about 15:25

The London market for Chili bars has been very steady throughout the week, with no important fluctuations in quotations, and, according to cable advices, the closing prices to-day are: Spot, £81 2s. 6d., and three months futures £78, being virtually the same as a week ago. It is stated that a meeting of merchants took place in London a few days ago, at which it was proposed to include in Chili bar contracts all kinds of copper if the quality was equal or superior to Chili bars; but for various resons the proposition was negatived. The mere fact, however, that such a step has been contemplated clearly shows that the feeling is pretty general that at the present time the Chili bars; put for various resons the proposition was negatived. The mere fact, however, that such a step has been contemplated so the proposition was negatived. The mere fact, however, that such a step has been contemplated so the proposition was negatived. The mere fact, however, that such a step has been contemplated so the proposition was negatived. The mere fact, however, that such a step has been contemplated that a fact he present time the Chili bars; put for various resons the proposition was negatived. The mere fact, however, that such a step has been contemplated that a fact he pr

Boston & Montana Consolidated Copper and Silver Mining Company product of fine copper June, 1888: 1st week, 278,677 pounds; 2d week, 364.540 pounds; 3d week, 435,379 pounds. Total, 1,078,596 pounds.

The exports of copper from New York during the

)	Coal remains quiet with moderate local demand.	week were as folicws :
8	Amount leaded for shipment first water, 12,000,000	To Liverpool— Copper matte. Lbs. By S. S. City of Chester, Bbls. 348 370,358* \$45,000
.	to 13,000,000 bushels. As there was no June rise, we	De S S Adminis Santa De O 202 490 10 000
6	are entitled to one in July. The year's shipments so	By S. S. Italy Sacks 4,690 545,700 28,000
4	far have been large.	To Havre- Copper.
	PRICE OF COAL PER 100 BUSHELS = 7600 LBS.	By S. S. I a Bretagne Casks 91 93,633 13,881
2	First pool. \$4.75   Fourth pool. \$3.25 Second pool 4.25   Railroad coal 5.00	By S. S. Rugia Bars 281 225,000 28,125
3	Taird pool 3.75	By S. S. Rugia Bars 281 225,000 28,125 To Hamburg— Copper Bullion.
5.	Connellsville Coke To say that the coke trade pros-	1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
8	pects are worse than the trade itself is saying a great	The state of the s
1	deal, yet it expresses the situation accurately. Orders	TinSince our last report a very str. ng and de-
	continue to fall off, and prices are weak at a dollar.	

ket. The comparatively low range of prices and the recent heavy deliveries have brought about a considerable reduction in the visible supplies (the decrease during the past two months amounting to a total of about 9000 tons), and the shipments from the East, as we intimated last week, are also expected to be much smaller during the next few months. These influences appear to have had their due weight with speculators and consumers, and since Monday last the market has continued to rise, and after a very fair amount of business the market closes firm at: Spor. 19.25; July, 19.25; August, 19.25; September, 19.40, being a rise of about 2c. since last week. In London the market has also had a very important advance, closing to-day at £86 for Spot and £85 15s for three months' futures, against last week's quotations of £76 5s, and £76 15s., respectively.

Lead has also been firmer in tone and a rise in quotations has resulted, but this market does not show very much spirit, as beyond the ordinary current requirements of consumers there is, with the exception of one large and well known operator, n-body apparently disposed to go into the thing at present figures, and as it is quite understood that the Western smelters may at any moment come forward with the supplies, which they have been holding back until prices improved a little, we fail to see much prospect of any further marked improvement in this market for some time to come. Our closing quotations to-day are: Spot, 4 05; July, 4 07½, August, 4 ½.

The London market has also been stronger, and a substantial rise has taken place since last week, when we quoted Spanish £12 25. 6d., and English £12 7s. 6d. Our cable advices to-day report a firm markst at £12 15s. for Spanish, and £13 for English, but this has failed to have much influence on our domestic

has failed to have much influence on our domestic market.

Messrs. John Wahl & Co., of St. Louis, telegraph to-day as follows: There has been considerable inquiry for both hard and soft lead, in consequ nce of which sellers have been asking a little more, but only a moderate amount of business has been transacted. Sales will probably amount to 750 tons, at prices ranging from 3.67/2.63.85, the latter figure being the value at the close.

\*pelter—No change of interest can be reported in this article, and we give the present quotations as follows: domestic, 4.50 to 4.55; foreign, 5.05 to 5.10. Antimony is also without any movement, with Cookson's 12/4; Hallett's, 9.75 to 10.

The New York Metal Exchange on the 5th inst, obtained a verdict of \$7000 against the New York Elevated Railroad Company for damage to its property in Pearl street.

Chemicals.—There is practically no change in the chemical market since our last report; the sales are small and only to supply current wants. Prices, however, are firmly held at old figures, dealers being enabled to maintain them well owing to light stocks. Caustic soda ash, 48 per ceut, still lacks animation. The pot stock is almost nothing and holders continue to demand 1:30@1:35c. for it in small quantities. Futures are a little more active, though trade is not at all brisk. We continue to quote 1:2@1:25.

Carbonated soda ash, 48 per ceut, centinues quiet on the spot. The stock being very light dealers demand 1:25@1:30c. in a small way ex store. Futures are a little more animated, and we hear of some sales at 1:22%@1:25. according to quantity, etc. High test is neglected and the quotations are altogether nominal. Caustic soda, 60 per cent, continues dull and depressed, the demand being very light. The stock on the spot is small, and for goods ex store holders demand 2:40@2:50c. Goods for future delivery are now offering at 2:35. but without attracting the attention of buyers. High test (70@74 per cent.) is dull and without change in price, 2:20@2:22½ will buy small lots ex store. These figures would probably be shaded considerably on a large order for future delivery.

English sal soda is duller, but the price is maintained well at former figures. Spot quotations range from 1c. to 1.10 according to quantity and seller, while goods for future delivery are offering at .95@.97½; there is little demand for future delivery.

American sal soda is without change, a fair amount of business being done, and the prices maintained as heretofore.

Bleaching powder continues dull; the price is maintained as heretofore.

heretofore.

Bleaching powder continues dull; the price is maintained, however, at 1 '90@1 '95c. for best Liverpool brands. Newcastle bleach is procurable at 1 '80@ 1 '85c. We hear of very little business done in future deliveries, and the quotation for spot goods would probably be shaded considerably for a large order.

The acid market has not materially changed during the past week. Acetic acid is in very slight demand, all sales being of small quantities to supply current wants of consumers. There is no change in the quotations, though they are more or less nominal at 21/s@ 21/2c. heretofore.

3/4c.
Sulphuric acid continues to move fairly and prices are held firmly at 90@95c. per cwt. for large lots, and \$1@\$1.10 for smaller quantities of 66 degree acid.
Oxalic acid is without change. The market is dull and more or less unsteady. Sales are making in small quantities only for con-umers' immediate wants. We note no change in quotations, which remain at 6/4c. for large large lots and one half a cent more small quantities. Nitric and muriatic acids continue to move fairly, though the demand is not brisk. We note no change in quotations, which are firmly maintained, as given in our current price list

The increasing activity noted last week in the fertillizing chemical market continues, and quite a little

business has been done in the way of contracts for goods to be delivered during the fall and winter. Most of the inquiry is in the way of ammoniates and potash salts, blood, tankage and muriate heading the list. We continue our quotations of the principal chemicals and fertilizers as follows: Dried blood (city), low grade, 2:20@2 25 per unit; high grade, 2:35@2 40 per unit: tankage, high grade, \$24@\$25 per ton; low grace, \$18@\$21 per ton. We also quote tankage at 2:22½ per unit of ammonia and 18c, per unit of bone phosphate. Fish scrap is scarce, as the supply left over from last year is small, and there have been very few fish so far this season. Holders realize \$24@\$25 f.o.b. factory. Sulphate of ammonia is \$3.15@\$3.20 per cwt. Steamed bones, \$20@\$22 per ton. Dried Charleston rock is \$6 per ton, f.o.b. at mines; undried, \$5 per ton. Refuse bone black is \$17 per ton, guaranteed over 70 per cent. bone phosphate. Dissolved bone black is 90c, per unit for available phosphoric acid and acid pho-phate; 75c, per unit for available phosphoric acid and acid pho-phate; 75c, per unit for available phosphoric acid. High grade sulphate of potash is film at 2:20 on

available phosphoric a.id.

High grade sulphate of potash is firm at 2.20 on basis of 90 per cent, sulphate of potash.

Double manure salt continues somewhat dull, but the market is firm, and the price is well maintained at

Muriate of potash is firm and in good demand. note no change in quotations since our last writing. Spot lots are held at 1.80@1.85 as to quantity, sail shipment at 1.75, and prompt steamer shipment at 1.771/a/1.80 ¿@1 80.

shipment at 1.75, and prompt steamer shipment at 1.77\( \) (a) 180.

Kaint is very firm, but the market is rather dull. The price on the spot is high owing to the small quantity at present in store Holders demand \( \) 10\( \) 4\( \) 11 per ton for smal, parcels. Shipment is offering at \( \) 8.75\( \) 8.950, according to quantity, etc.

Nitrate of soda is quiet, and the market is somewhat dull. The very large arrivals of late have depressed the market on futures somewhat, and we hear of little or nothing doing. On the spot goods are procurable at \( \) 2.07\( \) 6 ex store, and \( \) 2.15 ex vessel. Futures are more or less nominal at \( \) 2.02\( \) 4.

Brimstone is high on account of the high rates of freight from Sicily. The amount on the spot is very small, and holders demand \( \) 26 per ton in a small way. Future shipments are attracting little attention just at present, and we quote \( \) 19.75\( \) 20, according to date of shipment and quantity. We hear of some sales of goods to arrive this month at \( \) 22 50. Thirds are attracting little attention; we quote \( \) 19.25 per ton for future shipment.

#### IRON MARKET REVIEW.

New York. Friday Evening. July 6.

The si uation is practically unchanged, with no apparent prespect of an early relief from the condition of dullness, approaching stagnation, which has characterized the iron market for several weeks past.

There is, however, a steady but small demand for American pig-irons, but the orders received are almost exclusively of a hand-to-mouth nature, and no disposition has yet been shownon the part of buyers to make contracts for future delivery. As we have frequently pointed out, the pig-iron market is being "drummed" to an uousual extent; even some of the largest and strong st companies are sending out agents to solicit orders. Such anx ety to sell does not tend to make buyers confident that bottom has been reached, although it is pretty evident that very few furnace companies could afford to sell their iron at lower rates than those now prevailing. Standard No. 1 foundry irons still sell at \$18.0 \$18.50, and some choice brands are held firmly as high as \$19.50 at tide-water. As a rule stocks in consumers' hands are very low, and a large part of the orders given are for immediate delivery.

Scorch irons remain very quiet, with prices unchanged.

Sco'ch irons remain very quiet, with prices un-

Bessemer pig and spiegel are very dull, with quota-tions purely nominal in the absence of business. Steel rails are quoted nominally \$30 at Eastern mills and \$31 at Chicago, a relatively much lower price. There is very little new demand from strong purchasers. The new sales have been very light. The total amount of orders booked for 1888 delivery will aggregate about 900,000 tons. Several mills are closed and likely to remain idle a month or two.

Structural iron have and plate iron are all in a very

about 900,000 tons. Several mills are closed and likely to remain idle a month or two.

Structural iron, bar and plate iron are all in a very weak and unsatisfactory condition. The Pittsburg labor troubles have not cau-ed any apparent quickening demand on the Eastern mills; on the contrary, they have contributed to the general depression. Prices are nominally unchanged, but are weak all around.

The latest news from Pittsburg indicates that those mills with work ahead will agree to the terms of the Amalgamated Association. Thirteen companies are reported to have signed the scale, including Carnegie Brothers & Co. Singer, Nimick & Co's mill has started with non-union men. On the other hand, many concerns will doubtless be glad to avail themselves of the opportunity of lying idle until there shall be a better demand for their products.

Old roils and scrap iron are almost lifeless.

Nails are very quiet, and several mills are closed. The tethlehem Iron Co. report that their new works for making heavy steel forgings, under the government contracts for ordnance, will be ready to put into operation within six weeks from the present time.

Louisville.

July 3.

Louisville. [Reported by HALL BROTHERS & Co.]

supply from the market. There is as yet no visible effect from the shut-down of all the mills by reason of the disagreement between the iron workers and the association. The principal buying of the week under review has been by some car works, who had orders ahead, and some of the other classes of consumers have also been buying in a moderate way. Quotations for cash, f.o.b. cars Louisville, will be found in our weekly register of prices.

Pittsburg. [From our Special Correspondent |

[From our Special Correspondent]

The situation remains about the same as last week, no change for the better being expected until capital and labor shake hands and compromise the pending difficulties. The strike that we feared at the date of last letter has taken place. Thou ands of workment have quit work for the present. Some of the mils have signed the Amalgamated scale, but not before a number of reductions were made at the suggest on of the mil lowners, thus giving employment to a large number of men. Both sides express confidence in the ne ult of their side being successful in the end. O course, there will eventually be a settlement, but when taking these matters into consideration it has to be expected the demand for iron wond fall off. The only wonder is that under existing circumstances the demand has been well maintained for so long a period. As usual, opinions of interested parties show a wide difference, each side being able to satisfy themselves that its

cen well maintained for so long a period. As usual, cpinions of interested parties show a wide difference, each side being able 10 satisfy themselves that its opinion is the correct one.

ullus-s and inactivity prevail in all departments of trade. The stock of iron on hand is not large. There is, however, no scarcity, provided the price is attifactory to both parties. A number of furnaces are still out of blast and will remain a until the labor meeting is made satisfactory. The price of cook is are still out of b'ast and will remain so until the labor question is made satisfactory. The price of coke is not in the way, in fact, it is being disposed of below first cost. There is little probability of any change for the present, the supply being largely in excess of the demand. We hear of coke-works being shut down at various points, leaving a large number of men to seek employment elsewhere; the last one reported being that of the Stewart Iron Company, at Uniontown. The outlook all round is not a healthy one by any means. An improvement is certainly very desirable.

Iron Ore—We can report the following sales of Bessemer Lake Superior ore:
4.50 cesh

Coke, Native Ore. 100 Tons Gray Forge....... 25 Tons No. 1 Foundry .....

28.25 cash.

Steel Billets.

3000 Tons Billets, delivered.

28.25 cash.

2000 Tons Billets, de ivered.

28.25 cash.

28.25 cash.

500 Tors Billets, delivered.

28.25 cash.

28.25 cash. 
 Muck Bar.
 500 Tons Good Neutral July
 26 50 cash,

 Steel Wire Rods.
 200 Tons American times.
 42,50 cash.
 Steel Bloom Ends. 42.50 cash

[From our special Correspondent.]

Opinion in the Eastern iron trade inclines to the con-Opinion in the Eastern iron trade inclines to the con-clusion that there will be a gradual resumption in the Western iron mills towards the close of the month and that there will be no perceptible benefit on prices from the temporary suspension. Owing to the sufficiency of stocks in hand in Eastern and West rn markets. Nor that there will be no perceptible benefit on prices from the temporary suspension, owing to the sufficiency of stocks in hand in Eastern and Western markets. Nor do Eastern manufacturers believe there would be any permanent benefit from the reduction in wages, as competition would crowd prices farther down and make it even more difficult than it is for Eastern mill owners to hold their own. Buyers so far have not been troubled in the least over the possibility of a prolouged struggle or over resulting scarcity. They have done nothing more as yet than to cover wants from two to three weeks ahead at bottom prices. Mill owners have made no effort to make business, and see no relief in the near future from the pressure within and without. Prices are unconanged. Repairing is going on in nearly all the mills in the eastern and middle districts. A few mills on plate iron will start up on the 16th list, as there are or ders and inquiries for a great deal of ship and boat material. There is more confidence in busier times this fall, owing to the inquiries that have been made within six days, but plain bars will not profit as much by it as other kinds of iron. The materials most wanted are structural shapes, plates, sheets and tubes, as well as certain grades of merchant sicel, but even for these manufacturers are not fully, assured at this writ ng that the activity promised will come. There will be very little done until after the trade can discount Western strike probabilities. In pig-iron there is scarcely anything doing in Northern or Southern irons. Under other circumstances the present oversold condition of Southern furnaces making iron that would readily sell here would help to barden prices, but as it is, crude iron keeps low and draggy for all but a few brands which are always in demand. Eastern forge iron buyers will do nothing until they can see their way clearer than they do now. Some people The week has been active in negotiations, and some large sales have been made. The same difference exists between the views of the different furnacemen, a prominent Tennessee furnace will probably blow out in a few days for repairs, which will take a large cy, but the reasons are not distinct. Quotations show

no chauge at all. So far as the rest of the trade goes there is no news. Steel rails are depressed, and Western mills are doing nearly all the business. A few Eastern railroad companies are in need of small repairing supplies, but will' not order for two or three weeks yet. The amount in sight is about 20,000 tons in lots from 500 tons up to 2,000. Makers say there will be a better early fall demand than this. In old material and all sorts of foreign material there is nothing whatever to make note of. Even prices bave dropped into a rut. There is no occasion, however, for drawing a gloomy conclusion as to fall and winter business. The necessary consumption is heavy in all branches and a little demand must come. Agents of mills say buyers everywhere are running on very low stocks. Machine shops, foundries and large consuming establishments generally will be in the market before the middle of August. Our shipvards are nearly all overcrowded with work that will last them well into the fall. Quotations will be found in our weekly register of prices. register of prices.

#### FINANCIAL.

New York, Friday Evening, July 6.

It would be pleasant and refreshing in this warm weather to be able to report a better market for mining stocks, but we cannot do so much as we desire it. The fact is, nearly every one at all disposed to gamble is disgusted with a game where nearly all the chances are against him, as has been the case with most of the worthless mines floated and quoted here. It would be a great benefit to the mining stock market if all the cats were driven off the exchanges and a few good mines admitted. As it is the good mining stocks are held for investment and are but little dealt in; and of those that make a show of dealings, the majority are never likely to pay. How then could the market be anything else but dead, and how can an interest in mining be developed under such circumstances?

Security has entirely disappeared from the list; no

veloped under such circumstances?
Security has entirely disappeared from the list; no dealings were reported this week.
Lacrosse shows a few sales at 9@10c; Cashier at 8@9c.; Little Chief, one at 24c.
Amador, Middle Bar, Astoria and Hollywood were about the only active stocks on the list. The prices of Amador ranged at \$2.40, of Middle Bar at 43 and 45c., Astoria at 25c., and Hollywood at from 38@42c. 420

Quicksilver Preferred was not dealt in until yester y, when some 300 shares changed hands at from

The business in Brunswick amounted to 2300 shares,

The business in Brunswick amounted to 2300 shares, and the price declined from 16 to 14c.

Standard was neglected and was only dealt in in the beginning of the week, at from \$1.35 to \$1.20. Bulwer shows one sale at 73c, and Mono one at \$1.50.

The Silver King Mining Company has levied its first assessment, amounting to 50c. per share, and to this is due the recent decline in the price of the stock. The company has paid to date \$1.950,000 in dividends; the last dividend was paid last July.

It is stated that the ore in this mine has, within the last year, deteriorated greatly, and the heavy discount on silver has made it impossible to reduce it except at a loss. The stock opened this week at \$2, but has since declined to \$1.15.

El Cristo has remained unchanged at from \$1@

El Cristo has remained unchanged at from \$1@

A downward tendency marked the price of Shoshone, which went from 17@13c. Holyoke shows a small business at 5c., and Proustite at from 95@

San Sebastian came out only on Saturday, when it

\$1.10.

San Sebastian came out only on Saturday, when it sold at from 72 to 74c.

Ontario shows a sale of five shares at \$29.75.

Rappahannock is quoted at 13c.

Homestake holds its own at from \$11@\$11.50.

The price of Barcelona, which opened at \$1.30 on Saturday, declined during the week to 99°., and has since sold at \$1.

The transactions were small as compared with previous weeks.

The Tuscarora stocks are neglected. North Belle Isle is quoted at \$3.90, Belle Isle at 60c., and Tornado at from 40c. to 50c.

Consolidated California and Virginia has just declared a dividend of 50 cents per share. The stock was neglected, selling at from \$10.50 to \$10.75.

Sutro Tunnel went from 13 to 8c. Union Consolidated was firm at \$3.70 to \$3.90. Mexican advanced from \$3.85 to \$4.10 and later declined again to \$3.75.

Julia was steady at 50c. Bullion at from \$1.50 to \$1.60. Sierra Nevada at from \$3.75 to \$4. Ophir at \$7.38.

#### Pipe Line Certificates.

Pipe Line Certificates.

Messrs. Watson & Gibson, brokers, 49 Broadway, report as follows for the week:

The petroleum market has shown very little animation for the greater part of the past week, and the trading in crude certificates has been very limited. We advised some time since that oil about 70 cents was equal to 60 cent oil last year, and that the reduction of stocks on hand was still going on, so that about that figure oil should be a good purchase. The first animation in the market was evidenced today, when it rapidly advanced after the opening some two points, and this advance was well maintained, although the well news is of a bearish character, and the possibilities are great of increasing wells that may affect prices. We do not see anything yet on which to bull prices, although the buying has been good in Pittsburgh, and oil seems to be scarce on the Western exchanges.

June 30 July 2		73c. 7314	741/4c.	73c.	73e.	. Sales. 363,000 630,000
3		741/4	7434	7316	73%	405,000
5		74 74¼	7416 76%	73% 73%	74% 76¼	486,000 1,315,000
Total	al sal	es in ba				3,199,000
		NEW YO	ARE STOCK	EXCHANG	1 W.	
	0		Highest.	Lowest.	Closing.	Sales.
June 30					Closing.	154,000
		pening.	Highest.	Lowest.	Closing. 73%c. 74	154,000 154,000
July 2		pening. 74c.	Highest.	Lowest.	Closing.	154,000
July 2 3 4		74c. 73 74¼	Highest.	T31/4c. 723/4 735/6	Closing. 73%c. 74	154,000 154,000 116,000
July 2 3 4 5		pening. 74c. 73	Highest.	Lowest.	Closing. 73%c. 74	154,00 154,00

Meetings.

Buffalo Consolidated Gold Mining Company, Sierra City, Cal., August 4th. Special meeting to act upon a proposition to increase the capital stock 100,000 shares, such increase to be used to purchase valuable mining properties and water rights adjoining the company's property.

Dividends.

Bridgewater Gas Co., of Pennsylvania, has declared dividend, No. 28, of one per cent, payable June 0th. Checks will be mailed to stockholders.

Del Monte Mining Company, of Nevada, has declared a stock dividend of one third of a share on each share outstanding, payable July 16th, at 310 Pine street, rooms 15, 17, San Francisco, Cal. Granite Mountain Mining Company, of Montana, has

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			_		_				_
TITAL OF	-	207.32	-	4 3775	TRATE	T 4 33	* 500	DARKE BARR	

1	Total sales in barrels		Title Liozototo   Grantes			
			K FROM JUNE 27 TO JULY	2, AND		
1	Spelter Tons.	Year.	Steel Sheets, Billets,	Tons	Old Rails. Week.	Year. Tons.
I	Spelter Tons. American Metal Co., Lt	247	Abbott & Co., Jere 9		Baldwin Bros	1008.
1	Friedensville Zinc Co	23	Arkell, Jas Belcher, H. U Bowker, C. F Bruce & Cook	17	Bowening & Archibald	100
1	Hendricks & Bros Lewisohn Bros	28	Bowker C F	195	Brown Bros. & Co Crossman & Bro., W. H	1,005
1	Naylor & Co	75	Bruce & Cook	7	D., L. & W. R. R	409
ı	Naylor & Co            Osgood, F         41           Perkins, C. L            Pope's Sons & Co         28	83	Carey & Moen Carter, G. T. Cohn, M. Cooney, D. J.	24	Frankfort, M	100
1	Perkins, C. L	725 28	Cohn M	273 96	Henderson Bros	100 537
1			Cooney, D. J	20	Neumark & Gross	1,912
1	Total 69	1,494	Crooks, K. & Co	617	Stetson & Co., Geo. W	230
	Corres. date 1887 Tons.	1,850 Tons.	Crousbey, H	236 51	Waltam & Co Winter & Smillie	300 80
	H. Lemanche's Sons	594	Downing & Co., R. F 2	228		
	Milne & Co Naylor & Co	1	Henderson Bros	31	Total 400	5,541
	Naylor & Co	25	Holt, H. N Hondolette & D	106	Chres. date 1887 400	
	Total	620	Hugill, ChasLalance & G. Mfg. Co	97	Sheet Iron. Tons. Coddington & Co 25	Tons. 1,156
	Nickel. Lbs. McCoy & Sanders	Lbs.	Lalance & G. Mfg. Co	192 50	Newton & S	4
		138,166	Leng. J. S	22	Wagner, W. F	40
	Total	138,166	Leng, J. S. Lebenberg, N.	36		5
1	Antimony. Casks.	Casks.	Littlejohn, Jas	124	Total	1,205
1	10081	1,786	Mersick & Co	1.041	Corres, date 1887 25	
1	Corres. date 1887 200 Pig Lead. Tons.	1,128	Montgomery & Co	40	Scrap-Iron. Tons.	Tons.
. 1	Pig Lead. Tons.	Tons.	Moore's Son & Co	25 5	Brown Bros. & Co	172
	Caswell, E. A N. Corwith & Co 111	46 111	Manas, J. & Son	10	Burg : & Co Crossman, W. H. & Co	47
1	N. Corwith & Co 111 Hendricks Bros	100	Muller, Schall & Co Mauas, J. & Son Naylor & Co	5,291	Geisenheimer & Co	565
1	-		Newton & Shipman Ogden & Wallace	37 181	Gerhardt. P. T	15
	Total	258	Phelps, Dodge & Co	3	Neumark & Gross	321
1	Tin. Tons.	Tons.	Phoenix Steel Co	20	Purdon & W Trowbridge & Co., D	
1	Abbott & Co., Jere American Metal Co	3,448	Pilditch, F. S. 21	573 162	Ward & Co., J. E 50	150
1	Birdwell & French	89	Pierson & Co	42		
-	Crooks & & D Co	121	Prosser, Thomas Roebling's Sons, J. A	1,609	Total	1.440 13,156
1	Davol & Sons Dickerson, Van Dusen Hendricks Bros Knautb, W. & K.	10	Sanderson & Son	350 40	Charcoal Iron. Tons.	Tons.
1	Hendricks Bros	109	Shotts Iron Co	15	Abbott & Co., Jere	3
1	Knauth, W. & K	11	Strouse & Co	25	Downing & Co	25
. 1	Lewisohn Bros	2,601	Temple & S	287	Luuberg, G	16 10
	Naylor & Co	824	Wagner, W. F	545	Miline & Co	10
1	Naylor & Co Phelps. Dodge & Co	381		2,479	Muller, Schall & Co	2 25
:	Pope's Sons & Co	57	Wallace, W. H. & Co.	15	Page, Newell & Co	307
1	Thomson & Co., D 6	169	Whiting, E. W	11	Sanderson & Son	i
1		7 001	Walschid, C. A Wallace, W. H. & Co Whiting, E. W Whitney & Co	27	Total	404
1	Total 196 Corres. date 1887 62 Tin Plates. Boxes. American Metal Co.	7,881 5.398	Wilson, J. G Whittemore & Co	10	Total Tons.	404
1	Tin Plates. Boxes.	Boxes.	Wetherili & Co	2	Abbott & Co., Jere	Tons. 205
		301 57,236	Wolff, R H	150	Arkell, Jas	. 28
;	Bruce & Cook 6,814	15,750		10	Crecker Bros Dana & Co	1,311
1	Byrne, James	18,987	Total	17,017	Geisenheimer & Co	. 203
	Corbustion & Co., T B. 2,417	80,802 1,332	Corres. date 1887 492	39.761 Tons	Jansen, J. A Nayior & Co	9,983
	Cort & Co., N. L 1,523	59,458	Abbott & Co., Jere	1,668	Perkins, C. L	. 6,384
.	Corbierre, Fellows & S Cort & Co., N. L 1,523 Cons. Fruit Jar Co	849		3	Pierson & Co	1,035
	Crooks & Co , Robert De Mill & Co., H. R	33,316 7.939	Bacoo & Co	13 50		00.450
	Dickerson, Van Dusen., 2.894	137,427	Jacobus, E. Y Lilienberg, N Lundberg, Gustaf	11	Total	20,178 53,132
	Dolly, T. G. F	112	Lilienberg, N	5	Iron Ore. Tons	. Tons.
1	Lalance & Grosiean 62	119 955	Milne & Co., A	262 95	De Flores, R	. 6,768
1	Lalance & Grosjean 62 Lombard, Ayres & Co. 784 Merchant & Co 2,642 Mersick & Co., C. S. 101 Morewood & Co., G. 2,000	8,478	Navior & Co	25	Earnshaw, A Ennis & Co	. 4.670 1,721
1	Merchant & Co 2,642	10,647	Page, Newell & Co	122 20	Johnston & Co	300
1	Morewood & Co., G 2.000	4,042 17,339	Wallace & Co., W. H.	12	Navlor & Co	. 3,706
	Naylor & Co	8,899	Page, Newell & Co. Philip, C. M. Wallace & Co., W. H. Wilson, J. G.	7	Wright, Chas. L. & Co	1,630
3	Phelps Dodge & Co. 12 107	348 006		2,293	Total	. 18,795
	Phelps, Dodge & Co13,107 Potts, W. A., Son & Co	573	Totals	5,667		
,	Pratt Mfg Co Shepard & Co., Sidney. 1,551			Year.		
	Strond & Co., Sidbey. 1,551	69,322 686	Steel & Iron Rods. Tons, Abbott & Co., Jere 105	Tons. 5,512	EXPORTS.	
	Stroud & Co 344 Taylor, N. & G	295	American Screw Co	748	Week.	Year.
•	Thomsen & Co., A. A., 3,871	73,468	Bacon & Co	109	Abbott & Co 106,621	Pounds. 6,282,769
2	Warren & Co 280	1,065 1,188	Cohn, M.	428 60	Amer. Metal Co. Becker, & Co., H.	4,506,100
	Whittemore & Co., H	37,127	Dana & Co 500	1,597	Becker, & Co., H	1,250
ı	Wolff & Reesing	17,174	Downing & Co., R. F.,	192		112,000 224,034
	Wright & Sons, Peter	165	Galpin, S. A	2,110 1,689	Herold, Emil	250,000
)	Total	930,966	Heyn, A Hugill, Chas Jacobus, E. Y	33	Copper Queen	115.000
t	Corres. date 188710,189	994,966	Jacobus, E. Y	12		189,984 110,276 4,860,254 2,691,293
	Pig-Iron. Tons. Abbott & Co , Jere	Tons. 600	Lazard Freres	427 17	Lewisohn Bros. Lomal, F. A. Mendel, S. Muller, Schall.	4,860,254
	Baldwin Bros. & Co	100	Leng, J. S	120	Mendel 8	2,691,293 560,000
,	Bartlett & Co., N. S	2,900	Milne & Co., A	1,408	Muller, Schall	1,105,000
	Crocker Bros	5,660 700	Montgomery & Co	150	Neumark & Gross	120,143
-	Dana & Co	400	Navlor & Co 110	12,128	Orford Co	349,881 67,500
9	Downing & Co Drum'nd, McCall & Co Erie Despatch	51 20	Newton, & Shipman N. Y. Barb Wire Co	20	Parsons & Co	230,664
B	Erie Despatch	250	Page, Newell & Co	152	Pope's Sons	1,282,530
	Henderson Bros	1,375	Perry & Ryer 100 Pierson & Co	100	Todd & Co	112,026
t	Holt, H. N Lee & Co., James	50 325	Pierson & Co Pilditch, F. S	10 11	Total 996,621	22,690,754
	Milne & Co., A.,	901	Prosser, Thos 107	132	Corres. date 1887.	7,061,475
-	Naylor 285	2,015	Prosser, Thos 107 Roebling's Sons, J. A	1,510	Copper Matte.	pag
e	Pierson & Co	15	Sanderson & Son	67 11	Abbott & Co	601,145 2,466.222
i	Sanderson & Sons	10,197	Walleting C. A	15	Ledoux & Co	469,720
V	Tonsila, M. R 120 Walbaum, W. H	120	Washburn Mfg. Co	35	Lewisohn Bros	1,126,822
h	Williamson & Co. Tes	200 2,200	Whittemore & Co	1,700 1,196	Nichols & Co	516,783
n	Williamson & Co., Jas					
	Motol ACE	90 559	Total · 000	99 000	Motel 1 600 139	OF 440 400

1		1
CURRENT QUOTATIONS.	Sulphur—Roll, per lb	St
CHEMICALS.	Crude Brimstone, thirds, per ton 24@25  Tale—Ground French, per lb 14	St
Acid—Acetic	Domestic, per lb	3
Muriatic, 20°, per 100 lbs 1.35@1.50 Nitric, 36°, per 100 lbs 4.50@5.00	174   Domestic, per lb	Si
Nitric, 36°, per 100 lbs 4.50@5.00 Nitric, 42°, per 100 lbs 6.00 Oxalic		
Sulphuric, 66°, per 100 lbs 90 Sulphuric, 66°, per 100 lbs 1.10	Vitriol—(Blue), Ordinary, per lb 5½ Extra, per lb	
48 p. c	Extra, per lb 6  Zinc Oxide—Am., Dry, per lb 4  Antwerp, Red Seal, per lb 6@6%  Paris, Red Seal, per lb 6%67	St
Sulphuric, 60°, per 100 lbs. 90 Sulphuric, 66°, per 100 lbs 1.10 Alkali—36 p. 1.10@1.15 48 p. 1.22½@1.25 Refined, 58° 1.15 Alum—Lump, per lb. 13½ Ground, per lb. 2½	* Spot. BUILDING MATERIAL.	
Lump per ton, Liverpool £5	BUILDING MATERIAL.  Bricks—Pale, per 1,000 5.00  Jerseys, per 1,000 7.50  Haverstraw, per 1,000 8.50  Front bricks, per 1,000 from 10.00	To
Sulphate of Alumina, \$\pi\$ ton\(\pi 3\) 15  Aqua Ammonia—18°, \$\pi\$ b\(\pi \)  5	Haverstraw, per 1,000 8.50 Front bricks, per 1,000, from 10.00	
22°, \$2 lb	stone, per cu. ft., from	4
Aqua Ammonia—18°, § B	Brownstone, per cu. ft., from 1.00 Granite, rough, per cu. ft., from 45	B
Muriate, per 16	Slate-Purple and green roofing, per 100 ft	IV
White, glass	per 100 ft	
White, at Plymouth, per ton. \$11 10  White, at Plymouth, per ton. \$210 35100  Italian, p. ton, c. i. f. L'pool. \$18 6 0  Asphaltum—P. ton. 13.00  Prime Cuban, \$15 5 56.6c.  Hard, \$2 ton. \$28.60.  Triniclad, refined, \$2 ton. \$30.00  Triniclad, refined, \$2 ton. \$30.00	THE RARER METALS.	
Asphaltum – P. ton	Aluminum—(Metallic), per ib\$5.00 Arsenic—Metallic, per ib32 Barium—(Metallic), per ib975.00	-
Hard, \$\partial \text{ton} \cdots \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\	Barium—(Metallic), per lb. 975.00  Bismuth—(Metallic), per lb. 2.40  Cadmium—(Metallic), per lb. 150.00  Calcium—(Metallic), per oz. 150.00  Cosium—(Metallic), per oz. 160.00	C
Barytes—Sulph., Am. prime white16.00 Sulph., foreign, floated, p. ton19.00	Calcium—(Metallic), per oz150,00 Cœsium—(Metallic)	1,
Sulph., foreign, floated, p. ton 19.00 Sulph., foreign, floated, p. ton 12.50 Sulph., off color, p. ton 12.50 Carb., lump, f.o.b. L'pool, ton £6 0 0 No. 1, casks, Runcorn " £4 10 10 No. 2, bags, Runcorn " 3 15 0 Bleach – Over 35 p.c., \$\frac{1}{2}\$ lb.1.82\frac{1}{2}\text{0.0}\text{1.95} Borax – Per lb 734 Refined at Liverpool, per ton £31	Chromium-(Metallic), per lb200.00	
No. 1, casks, Runcorn " #24 10 10 No 2, bags, Runcorn " 3 15 0	Didymium—(Metallic), per oz160.00	E
Bleach - Over 35 p.c., \$\footnote{10.1.82\psi_01.95}\$ Borax - Per 10	Brbium — (Metallic), per oz	
	Indium - (Metallic), per oz 158.00	
Bromine—Per lb	Iridium – (Metallic), per lb700.00 Lanthanum – (Metallic), per oz.175.00 Lithium – (Metallic), per oz160.00	1
Portland, foreign, per bbl	Magnesium—Per ib	0
Portland, American, per bbl. 2 00 Portland, foreign, per bbl. 2 25 Chalk—Per ton. 3.00 Precipitated, per lb. 4 China Clay—English, per ton 18.50 Southern per ton 13.50	Molybdenum—(Metallic), per oz. 6.00 Nickel—(Metallic), per lb	0
Southern, per ton	Niobium—(Metallic), per oz128.00 Osmium—(Metallic), per lb 640.00	B
Copper -Sulph. English Wks., ton 223	Platinum—(Metallic), per lb513.00 Platinum—(Metallic), per lb128.00	
Cobalt - Oxide, per lo. 270 Copper - Sulph. English Wks. ton 223 Precip., Eng. Wks, unit	Molybdenum - (Metallic), per bz. 6.00   Nickel - (Metallic), per lb	
Liverpool, per ton, in casks, £1 16 1.20	Rubidium—(Metallic), per oz 200.00 Selenium—(Metallic), per oz 3.00	8
Powdered, 99 p c	Strontium (Metallic) per 15 4.50	B
Flour, per lb	Tantallum—(Metallic) per oz144.00 Telurium—(Metallic) per oz 9.00	8
Fuller's Earth—Lump, per bbl. 95	Tantallum—(Metallic) per oz144.00 Telurium—(Metallic) per oz 9.00 Thallium—(Metallic) per oz 3.00 Titanium—(Metallic) per oz 32.00 Thorium—(Metallic) per oz 272.00 Thorium—(Metallic) per oz 272.00	3
Gypsum—Calcined, per bbl 1.25 Iodine—Resublimed 3.60	Tungsten (metanic) per oz 1.25	1
Powdered, per lb.   2     2	Vanadium—(Metallic), per oz320.00 Yttrium—(Metallic), per oz144.00 Zirconium—(Metallic), per oz240.00	1
White, American, in oil, per lb 61/2	Zircontum (metame), per oz230.00	8
White, American, in oil, per lb 656 White, English, per lb	Aluminum—	1
		-
Litharge —Powdered, per ib 6@61/ English flake, per lb 9 Magnesite – Greek, per ton 10.00	Lake Ingot, Spot, & D 16.70@16.80c. Electrolytic, & D 16.50c Casting Brands, & D 15.00@15.25c	1
	Sheet Copper (according to	1
Per unit, up or down 1s. 6d. Ground 25 10 Mercuric-Chloride — (Corrosive Sublimate) per 1b 55	size), # 1025 @38c	13
Mineral Wool - Per ID 2	Domestic, Common, Spot. 4 ·10@4 ·20c. Foreign	
Mica—In sheets according to size, 1st quality, \$1525@\$6 00 Phosphate Rock—S. Carolina,	Foreign	1
per ton f. o. b. Charleston 5.80 Ground, f. o. b. New York9.00@ 9.50	Shot, @ D	1
Canadian Anatife lump to b at	Tin Plates	
Shipping port, per unit	Pig tin, spot in N. Y., P h 19.25@19 50c Zinc-	. 8
American, per lb	Domestic spelter,   D	. 6
	Silesian, ton	
Carb. per lb	Antimony—Hallet's, per lb9.75@10c Cookson's, per lb 123	6 9
Bromide, per lb	Star Antimony	. 1
Nitrate, refined, per lb. 6 Bichromate, per lb. 101 Sulphate, per 100 lbs. 1.10	IRON AND STREL	4
renow Prussiate, per ib 19	New York Prices. American Pig-Iron.—At tidewater	.
Pumice Stone—Select lumps, lb. 3@5	No. 1 X \$18 00@\$18.5 No. 2 X\$17.00@ 17.5	0
Powdered pure per lb 134	Forge\$16.00@ Scotch Pig—Coltness \$19.75@\$20.0	ó
Pyrites—Non-cupreous, p. unit, S. 14 Quartz—Ground, per ton	IRON AND STEEL.   New York Prices.   American Pig-Iron At tidewater No. 1 X	0
Lump, per lo. 5  Eng., powdered, per ton	Shotts 19.50@ 20.0	0
Lump, per ton. £5 Salt—Liverpool, ground per bol. 70	Scotch Warrants	1.
Salt Cake—Per 100 lbs	Scotch Warrants	i.
Saltpeter—Crude, per lb	Gartsherrie, at Glasgow	
Sall peter — Crude, per lb	Dalmellington, at Ardrossan 39s. 36   Eglinton, at Ardrossan 38s. 86   Bessemer Pig   Foreign, nominally \$19.0	1.
Soda Caustic, 60%	Bessemer Pig— Foreign, nominally	0
8al English 74–55 2.25	Domestic18@18.50 at furnac Spiegeleisen –	.0
		00
Strontium—Nitrate per lb 2.03	Ferro Manganese\$49.00@\$50.0	00

	Ing	ENGINEERING	AIN.	D MI
6	ulphur	-Roll, per lb	134 6	Ptool IDI
	Flour, pe Crude Br	r lb	2 19	steel Bl
7	Crude Br	imstone, thirds, per ton 24@:	25	steel Na Steel W Steel R:
	Domestic	per lb	6	Heavy
F	c. i. f. Li	verpool, per ton £4	50	Light Structu
1	Vermilli English	matone, thirds, per ton 24@:  und French, per lb,  , per lb	50	Angles,
1	Vitriol-	(Blue), Ordinary, per lb	51/6	Tees, at
7	Zine Oxi	de-Am., Dry, per lb	41/6	Beams
	Paris, Re	Continue	@7	Tank a
	Spot.	LDING MATERIAL.		Boiler 8
1	Jerseys,	Pale, per 1,000 5. per 1,000 7.	50	Iron P
•	Front br	LDING MATERIAL. Pale, per 1,000 5. per 1,000 7. aw, per 1,000 8. icks, per 1,000 from 10.	50 00	Refined Boiler
1	Buildin stone,	g Stone—Amherst free- per cu. ft., from	75	Boiler 1
	Granite,	rough, per cu. ft., from 1.	00 45	Extra f
-	per 10	rple and green roofing,	00	Commo
	Red roof Black, re	ing, per 100 sq. ft15. cofing, per 100 sq. ft 5.	00	Americ
		E RARER METALS.		Special Crucibl
			00	Bessen
	Barium Bismut	um — (Metallic), per ib	.00	Cast-Ir
	Cadmiu	m -(Metallic), per lb 150.	.00	Wroug
	Cœstum	-(Metallic)	00	Butt-W
	Chromi	um – (Metallic), per lb200	.00	Lap-W Galv
	Didymi	um-(Metallic), per oz160	.00	Boiler Rail F
	Gallium	-(Metallic), per oz3250.	.00	Spikes Angle
	Indium	-(Metallic), per oz 158.	.00	Bolts a
	Lantha Lantha	-(Metallic) per oz 160 um - (Metallic), per lb 200 (Metallic), per lb	.00	Wroug
	Magnes Magnes	ium-Per ib 4	.00	Foreig No. 1 Cast Sc
	Mangar Molybd	rese—Metallic, per lb 1. enum—(Metallic), per oz. 6	.00	Old Ca
l	Nickel- Niobiun	(Metallic), per lb	.65	Old Ra
١	Osmiun Palladi	n—(Metallic), per lb 640 um—(Metallic), per lb513	.00	Nails-
١				
l	Rhodiu Ruthen	um — Metallic, per oz. 2 m — (Metallic), per lb	.00	Hot
	Rubidi:	um – (Metallic), per oz200 m – (Metallic), per oz3	.00	So. Coke
١	Sodium	m — (Metallic), per oz	.50	Mahonir
I	Tantall Teluriu	um-(Metallic) per oz144	.00	So. Cha
۱	Thalliu	m - (Metallic) per oz 3.	.00	Missouri
١	Thoriu	m – (Metallic) per oz272	.00	Forg Neutral
١	Vanadi	um — (Metallic), per oz. 320.	.00	Cold She Mottled
١	Zirconi	n—(Metallic), per oz144 um—(Metallic), per oz240	.00	Car V
I		METALS.		Souther
١	Alumir	(10 %), P D	46c.	Lake Su
	Copper	- cot Spot 20 % 16:70@16	3·80c.	G - 1
١	Electro	ytic, \$ b	3.50c.	Foundry
١	Chili Ba Sheet	rs, London, \$\psi\$ ton £81 Copper (according to	l	Gray Fo
	Lead-	P 1625	38c	White .
	Domest	lc, Common, Spot 4.10@4	·20c.	Silvery
I	Sheet.	9 lb, net6.75@6.800	. net	Char
1	Tin line	ic, Common, Spot. 4:10@4  \$ \mathbb{D}, \text{ net } \dots \delta	Thic	Foundry
	Tin-Pla	tes 14e	64	Cold-Bla Warm-H
	Tin Spo	tes 14s ot in London £8 spot in N. Y., \$ 10 19.25@19	6 500	20 p. c. Muck-B
	Zine-	ic english N th 4:45@4	1.500	Steel Bl
	Foreign	ic spelter, \$ b4.45@4 a spelter, \$ b5.05@3 t, ton5.15.17 American, \$ b6@ ony—Hallet's, per lb 9.75@ ny= per lb	10c.	Steel Cr Steel Bl
	Sheet,	American, & b 6@	616c	Steel Bi
	Cookso	n's, per lb	1216 £40	Old Sto
	Quicks	n's, per lb	£40 63c.	No. 1 W No. 2 W Steel R
	London	, w mask	9£71/4	" lig Bar Iro
		IRON AND STEEL. New York Prices.		
	Americ No. 1 X	an Pig-Iron.—At tidev	vater. \$18.50	Two I
	No. 2 X Forge.	\$17.00@ \$16.00@.	17.50	-At V
	Scotch	Pig-Coltness \$19.75@\$	19.00	Foundr
	Dalmel Summe	lington 18 50@ orlee	19.00 20.00	Foundr Gray F
	Shotts.	to-day to the Metal Exchan	20.00 ge :	Bessem Steel Ra
	Scotch	Warrants37	s. 11d.	Foreign Spiegel
	Langlo	New York Prices. an Pig-Iron.—At tider \$18 00@\$ \$17.00@ \$18.00@\$ \$18.00@\$ Pig-Coltness. \$19.7%@\$1 8.50@\$ lington	s. 3d. s. 3d.	Scrap,
	Gartsh	erlee, at Glasgow	s. Od.	Cargo
	Dalmel	lington, at Ardrossan39 on, at Ardrossan38	s. 3d	Mercha Plate I
	Bessen	1er P1g-		Tank II
	Domes	tie 18@18.50 at fr	\$19.00 irnace	Skelp I Angles
	Spiege	IVAPUSE -		Beams

teel Blooms, nominally	50@ 29.00	Si
teel Blooms, nominally teel Billets, 28 teel Nail Slabs, 29 teel Wire Rods, 40.	50@ 00@ 40.50	AI
Light " 30	.50@ 34.50	Bi
Structural Iron and Stee Bridge Plate, at mill	1.9 @2c. 2.00@2.05c.	G L
Bridge Plate, at mill. Angles, at mill Tees, at mill Steel Angles, at mill Beams and Channels, on whar	2 40@2 50c. 2 1 @2 2c. f. 3 3c.base	Li Ni Oi Si
		di
Tank and Ship, on wharf Boiler Shell, on wharf "Flange, "Fire-Box, on wharf	2.60 @2.75 3 @3.50	
fron Plates— Common tank, on wharf1 Refined tank, on wharf2	9 <b>@</b> 2·0c. 1 <b>@</b> 2·3c.	A B B
Ton Flates	1@2 3c. ·50@3·75 以@314	B
Bar Iron –           Refined	@1.9c. "	DE
Merchant Steel – American tool	81/2@10c.	J
Crucible machinery	13 @20c. 5 @6c 41/6c.	M
Bessemer machinery spring.	2·2@2·5c 2·7@2·9c.	N P
American tool Special grades Crucible machinery  "spring. Bessemer machinery spring. Cast-Iron Pipe— According to size \$25 Wrought-Iron Pipe—no Butt-Welded Plan and Tarre	00@\$32.00 mmally—	4.50
Claly 50g dige	.,,	Is
Lap-Welded, Plainand Tarred Galv., 55% disc. Boller Tubes—Per cent disc Rail Fastenings—	e 621/4%	
Boiler Tubes—Per cent dis Rail Fastenings— Spikes	@2·1c.delv'd @1·9c.	0
Wrought Scrap	2000	
" Hex." 3 Wrought Scrap— Foreign, ex store. \$1: No. 1 Yard to vessel. 1 Cast Scrap 1 Old Car Wheels 1 Old Car Wheels 2 Nails—In car-load lots 2	9.00@ 9.00@ 5.50@ 16.50	1
Old Car Wheels 2 Old Rails—Tees 2 —Doubles 2	0.00@ 20.50 1.00@	000
Nails—In car-load lots	1.96@1.95c. 2.00@2.05c.	11
Louisville Price	5.	
Hot Blast Irons— So. Coke, No. 1	6.00@\$16.50 5.00@ 15.50	
Mahoning Valley (Lake Ore Mixture)	8.00@ 18.50	
No. 2 1 Missouri Charcoal No. 1 1	7.00@ 17.50 6.00@ 16.50 9.00@ 19.50	
Forge Irons - Neutral Coke \$1 Cold Short I Mottled Car Wheel and Mallea	18.50@ 19.00 13.25@\$14.00	
Car Wheel and Mallea	3.00@ 13.50 2.25@ 12.50	
(other brands) 1	2.00@ <b>\$</b> 24 00 18 00@ 18 50 21.50@ 22.50	
Pittsburg Price		
Coke or Bituminous Foundry No. 1	16.00@	1
Foundry No. 1	14.25@ 14.00@	
MottledSilvery	13.50@ 16.50@ 18.00	
Charcoal Pig-		
Foundry No. 1. Foundry No. 2. Cold-Blast. Warm-Blast.	22.00@24.00 25.00@26.00 24.00@25.00	0
20 n. c. Spiegel	27.50@	0
Muck-Bar. Steel Blooms. Steel Slabs Steel Crop Ends. Steel Bloom Ends.	18.0000	0
		5
Steel Billets Old Iron Rails Old Steel Rails No. 1 W. Scrap No. 2 W. Scrap Steel Rails " light sections Bar Iron, nominal Nails Steel Nails " 190 u Steel Nails	20.00@ 19 00@19.5	ò
Steel Rails	*31.50@32.0 *32.00@33.0	0
Nails\$1.90 u	sual discoun	t
Two per cent off for cash.  *At works.		
Philadelphia Pr Foundry No. 1		0
Gray Forge	19.50@20.0	0
Foreign Bessemer	29.50@nom 19.50@20.0 26.50@27.0	0
Spiegeleisen. Scrap, Selected No. 1	22.00@22.5 21.00@20.0	00
Cargo Scrap	27.50@ 1.75@ 1.9 2.00@	5
Tank Iron	1.80@ 1.9	
Beams and Channels	3.30.0	00
Nails Steel Rails Old Rails Best refined	31.50@33.5 21.00@22.0 .2@2 <sup>-1</sup> c, bas	00

S'	TOCK MAR	KE	T QU	DTAT	IONS.	
	COMPANY	im	ore, M	d.	sked.	
A	tlantic Coal				****	
B	alt. & N. C ig Vein Coal					
D	iamond Tunnel	10	2	10	5@ 110	
L	ake Chrome	.(	5	10	30	
0	re Knob	(	3		.11	
3	onrad Hill iamond Tunnel eorge's Crk, C. ake Chrome State, Baito re Knob ilver Valley Highest and le	west	prices	bid and	l asked	
a	TIME ONC WOOM	CMG	ham,	COURT.		
	COMPANY	R	id.	At	sked.	
B	ir.Min.& Mfg.		***	190	25 @19214 2214	
B	la. Conn. C ir. Min. & Mfg. ir. Fur. & Mg. ir. Fur. & Mg. ir. Conn. C ir. Min. & Mfg. ir. Fur. & Mg. ir. Fur. & Mg. ir. Fur. & Mg. ir. Fur. & Mg.	10			15	
I	ecat. L. Imp.	12		15		
I	& Fur DecaturMin.L. Interprise			171	60 271	
	Mtg. Co agger - Town-		35		50	
1,	ley C & C.Co.			10	%@11%	
1	Mg No Bus. Crk., C. & Mg Pioneer M. &		50		****	
1	C. & Mg		5		121/4	
1	Mfg	10	@1994	121	(@ 1984	
1	Sloss I. & S	73	@75	76	@ 82	
13	Tenn.C.& J. Co.	69	251/2	003	2716	
	Iron Co	404		**	162	
1	Bonds.	307	4600	30	(E) 3078	
	Highest and luring the weel	k end	ding Jui	ne 30th		
	Company. Allegegheny Gi Bridgewater Ga Charlotte Mg. (C Chartiers Val. (C Consignee Mg. Forest Oil Co Iron City Miaii Kittanning Ga: La Noria Minin Lustre Mining M'f'uurers' Gas Nat. G.Co. of W. N. Y. & C. Gas C N. Y. & Westm land G, C. &	ttsb	urg, I	Pa.	Closing.	
1	Allegegheny Ga	38.	35.00	35.00	35.00	
	Charlotte Mg. C	o	66.00	63.00	63.50	
	Columbia Oil C	0	60	60	60	
	Forest Oil Co.					
	Kittanning Gas	3	0.12	1.69	9.00	
	Lustre Mining	g	2.10	00.00	24.00	
	Nat. G. Co. of W.	Va	24.03	22.88	24.03	
Ó	N. Y. & C. Gast N. Y. & Westm	ore-	35.00	31.00	35.00	
	N. Y. & Westm land G, C. & Ohio Valley Ga Pennsylvania ( People's Nat. G Philadelphia G Pine Run Gas Pittsburg Gas.	S	*****	*****	*****	
	Pennsylvania ( People's Nat. 6	las.	******	******	*****	
Ó	Philadelphia G Pine Run Gas	as	42.00	41.63	41.75	
0	Pittsburg Gas. R yal Gas		60.00 14 00	60.00 14.00	60.00 14.00	
0	Silverton Minis South Side Gas	ng	2.50	2.25	2.50	
0	Tuna Oil Co Washington O	il			******	
0	Philadelphia G Pine Run Gas Pittsburg Gas. R. yal Gas Silverton Minin South Side Ga Tuna Oil Co Washington O W't'h'se Air-Bi West'house Br	ake		*****	*****	
	& Cambria G	and	46.00	46.00	46.00	
-	West morels & Cambria G Wheeling Nat. Yankee Girl M	Gas.	24 00 7.00	21.50 7 00	7.00	
1	Highest and during the wee	TOME	ase price	55 DIU 8	and asked	
:		ign	Quota	tions	ie	
	COMPAN				une 23. Lowest.	
0	Alturas Gold, Arizona Coppe	Idah er, A	10 10	98.	120 04	
0	Birdseye Creek	r, Ca	1 6	is.	5s. 21s.	
0	Centennial, Ca Colorado Unite	l ed, C	olo	7 <b>s. 6d.</b> 3s.	5s. 2s.	
0	Columbian, S. Denver Gold,	A	3	7s. 6d. 2s.	32s. 6d. 1s.	
0	Dickens Custer Eberhardt, Ne	r, Id	aho. 6	s. 6d. s.	5s. 6d. 1s.	
0	El Caltao, Vene Empire, Mont	ezuel	a £	3	£23/4	
5	Flagstaff, Uta.	h	10	ls. Gs.	3s. 14s.	
0	Gold Hill, N. C	J	1	28.	1s. 12s.	
0	Ilex, Cal		1	7s.	158.	
0	Kohinoor, Col	O	Mar	38. 6a	28.	
t t	Mason & Barr	y, Po	rtugal	£914	£914	
0	New Californi	a, Co	olo	ns.	48.	
	New Hoover	illi,	N. C.	28.	18.	
	Pittsburg Con	s., N	ev 2	58.	238.	
50	Quebrada, Ve	nezu	ela, £	4%	£456	
00	Carinsie, N. Me Centennial. Ca Colorado Unit. Columbian, S. Denver Gold, J. Dickens Custe Eberhardt. Ne El Caltao, Vene Empire. Mont Flagstaff. Uta Garfield, Nev. Gold Hill, N. Claho. Ilex, Cal. Josephine, Ca Kohinoor, Col Lady Franklin Mason & Barr, Montana Le., New Californi New Emma, S New Hoover I New La Plata Pittsburg Con Plumas Eurele Quebrada, Ve Richmond Co Ruby&Dunder Russell Gold, Sierra Buttes, Stanly, N. C.	rberg	,Nev	38.	28.	
00	Russell Gold, Sierra Buttes,	Cal	4	%	£1/6	
$0\dot{c}$	Tolima, Color	nbia	S.A. £	216	10s. £11/6	
00 50	Union Gold, C U. S. Placer,	Colo.	£	28. 6d.	18. 6d. £% 15s. 6d.	
95	Sierra Buttes, Stanly, N. C.: Tolima, Color Union Gold, C U. S. Placer, Viola Lt., Idal El Callao Golden River	no .	Paris.*	os. 6d.	15s. 6d. June 21.	
20	El Caliao Golden River		71	1.25 440	71.25 440	
90 10	Golden River Lexington.  Rio Tinto  oblig	rts	3	75 .75	3.75	
00	Rio Tinto	ation	ns501	490 1.25	490 501.25 498.75 136.25	
50 00			. 2d.498	5.75 1.25	498,75 136 25	
80	* Francs.					

### DIVIDEND-PAYING MINES.

# NON-DIVIDEND-PAYING MINES.

Di	NG MINES.		NON-DIVIDEND-PAYING MINES.						
NAME AND LOCATION OF COMPANY.	CAPITAL STOCK.	No. IPax	Total   Date and	Total   Date and amoun	t	NAME AND LOCATION OF	CAPITAL STOCK.	No   Par	Total   Date & am't
- Adams, S. L, Colo.	\$1,500,000	150,000 810	levied. amount of last	\$555,000 Jan . 1897 10	-  -	Agassis Cous., S. L  Colo.	\$2,500,000	No. Value	levied. of last,
Alturas, e Mont dah.	1,500,600	3 10,000 5		750,000 Sept 1886 06 95,000 Sept 1886 50 247,530 Aug. 1887 123		g Allouez, C Mich g Alpha Con., G. S Nev	2,000,000 3,000,000	80,000 25 30,000 100	\$657,000 Jun 1888 1.00 536,250 Jan. 1888 8736
6 Argenta 8 Nev.	1,000,000	40,000 25 100,000 100	\$280,000 Apl. 1875 \$1.00 3 5,000 July 1885 10	420,000 Feb. 1888 1.50 40,000 Feb. 1880 20		Amador, G Cal	10,080,000 400,000 1,250,000	100,800 100 200,000 2 125,000 10	2,191,200 May 1888 .60 300,000 Jun 1877 .50
Rassick, G. S Nich. Colo. Belle Isle, S Nev.	10,000,000	100,000 20		400,000 Mar. 1884 1.00	6	6 American Flag, 8 Colo. 7 Anglo-Montana, Lt. Mon. 8 Appalachian, Lt., 9 N. C.	1,500,000	120,000 5 300,000 5	
10 Beicher, G. S Nev	10,000,000 10,400,000 1,250,000	104,000 100	145,000 Feb 1887 20 2,663,000 Mar. 1888 50 67,500 Nov. 1887 25	300,000 Dec. 1879 .25 15,397,200 Apt 1873 1 00 187,500 lan 18-7 .10		9 Aspen Mg. & S., S. L. Colo Barcelona, 9	2,000,000 5,000,000 10,000,000	200,000 10 200,000 25 100,000 100	173,500 Jan 1889 .1t
12 Big B'nd Hydraulic, G Dak 13 Black Bear, G Cal	3,000,000	33,000 100	92,500 Dec. 1884 .25	253,000 Aug. 1887 .08 895,000 May 1883 .20	1	Best & Belcher, G. s. Nev.	5,000,000 10,080,000	50,000 100 100,800 100	173,500 Jan 1889 .16 735,00 Apl 1886 .10 2,029,330 Jun 1888 .25
15 Bonanza Developm TC &M	3,000,000 1,000,000	300,000 10	450,000 Feb. 1888 .50	135,000 Oct. 1882 .15	1	Bi-Metallic 8 Colo.	5,000,000	200,000 100	
17 Boston & Mont, G Mont	2,500,00	350,000 10	* ***	185,000 Feb. 1885 .10 520,000 Jun 1886 .15 2,000 Feb. 1880 .01		6 Black Oak, 6	3,000,000 10,000,000 2,500,000	100,000 100 100,000 25	170,000 Nov 1883 .25
19 Brooklyn Lead, L. S. Utah 20 Bulwer, G Cal	10,000,000	50,000 10 100,000 10	83,000 May 1898 .20	127,000 July 1887 .05 175,006 Jan. 1884 .10	2	dremen, s	2,000 000	500,000 10 400,000 5	•
21 Caledonia, G Dak 22 Calumet & Hecla, G. Mich 23 Carbonate Hill, a. L. Coto.	2,500, 00 2,000,000	100,00 25	5.15,000 May 1885 .15 1,230,000	40,00 Féb. 1886 .10 30,350,000 July 1888 5.00 80,000 Apt. 1884 .03	2	Bye and Bye	1,000,000	100,000 100	3.957,000 Aug 1887 .50
24 Caribou Con., 8 Jolo.	1,500,000	150,000 10	***************************************	80,000 Apt. 1884 .05 50,000 Meh 1880 .10 51,00 Det. 1883 .08		Calaveras. G Cal. Cal. Cal. Carisa, G Wy	500,000 500,000 2,0,000	500,00 1 100,000 5 100,000 2	
26 Catalpa, S. L Colo	\$,000,00c	20,000 25	10 ,000 Sept 1881 .06	270,000 May 1884 .10 1,46 .00 Feb 1888 2.00	2	Cen Contin'l. G. S. L. C. C.	2,000,000	250,000 2	
29 Chrysolite, S. L Jolo. 30 Colorado Central, S. 1 Jolo.	10,000,000 10,000,000 2,750,000	200,000 50		1,350, 30 Fee 1334 .25 310,000 fun 1888 .05	2	Cherokee, e Cal.	1,250,000	250,00 5 15 1,000 10	1,208,00 Dec. 1887 .50
31 Confidence, S. L Nev 82 Cons. Cal. E Va., G S. Nev.	21 600,00	24,981	287,440 Apl. 1 57 .50 100,000 Jan. 18820	93,540 Jun. 1888 2.00 2,033,850 July 1888 .50	8	Cleveland, T	11,20 ,0 0 750,000 1,000,000	112,000 10) 150,000 5 500,000 2	1,208,00 Dec. 1887 .50
33 Con. Gold Mining. G. Ja 34 Contention, 8 Ariz.	19 50 1 000	100,000 5 250,00 50 600,000 25	*	108,000 Nov. 1538 02 12,587,000 Dec. 1884 ,25	3	Con [mperial o Nev	5,000,000	50,000 100	30 000 Mar. 1887 .15 1,175,00 Sept 1887 .20
36 Cresceut, s. L. G Utah 36 Crown Point, G. S Utah 37 Daly, s. L Utah 38 Deadwood-Terra, G Dak. 39 Derbec B. Grav., G. S.	10,000,000	100,000 100	2,775,000 Api. 1898	210,00 Aug. 1886 .05 11,588,000 Jan. 1875 2.00 637,500 Jun. 1888 .25		Con. Pacific, e	2,500,000 1,400 00	61,000 100 250,000 10 140,000 10	177,00 Sept 1887 10
38 Deadwood-Terra, G. Dak Sy Derbec B. Grav., G. S. Jai	10,000,00	10 1,000 100	30, 6 Dec. 1881 .10	11,000,000 Nov. 1887 .10	3	Crescent s. t. Colo	3,000,000	50,000 10 800,000 10	
40 Dunkin, S. L	3, JU J, U Ki	100,000	**** ** * * * * * * * * * * * * * * * *	20,000 Nov 1887 .10	4	Crowell 6	10,000,000 500,000	500,000	165 000 Feb. 1884 .20
42 diktorn, G. S nont 53 Empire Lt., d Mont 44 Eureka Con., G. S. L. Nev.	5,003,000	50,000 100	51,0 ) July 1883 .50 500,000 July 1886 1.00	4,918 5 10 July 1888 .25	6 4	Dandy, 8	5,000,000 1,000,000	250,000 10 500,000 10	
45 Evening Star, S. L Jolo.	10,000,000	100,000 100	560,000 Sept 1835 1.00	1,400,000 Nov 1883 .50 875,000 Oct. 1880 .25	4	6 Denver City, 8 L Colo.	1,500,000 5,000,000	500,000 5	*
47 Father de Smet, G. Dak., dich 49 Freeland, G. S. C. Joio.	1,000,000 1,000,000 5,000,000	40.00   25	200,000 Nov 1878 1.00 220,000 Jun. 1871	1,125,000 Dec. 1885 2.00 72,000 July 1888 2.00 190,000 July 1886 .10	4	3 2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	300,000 500,900 1,500,000	500,000 1 150,000 10	990,000 Mar. 1886 1.00
5i Garfield Lt., 9.8 Nev.	5,000,000	100,000 5	Meh 1883 10	110,000 July 1982 .10 85,000 Apl 1888 .12	. 6	El Dorado G	1,000,000	500,000 2 250,00 4	*
53 Jould & Curry, G. S. Nev. 54 Jrand Central, S. Aris.	1,000,000	100,000 10	5,301,000 Jun 1888 .50	120,000 May 1848 .6) 3,826,890 Jec. 1870 10.00	C3 C3	Empire 8	1,000,000	500,00 2	
55 Jrand Prize, S Nev.	1,000,000	100,000 100		625,000 Dec. 1882 .25 495,000 Mar. 1884 .25 6,250 day 1883 .01	1 6	Exchequer	10,000,000 10,000,00 10,000,000	100,000 100 100,000 100	770,000 Feb. 189890 12,000 Jan. 1882 .06
57 Frante Mountain, 8. dout 58 Green Mountain, 6 Jai	1,250,000	125,000 10	***************************************	4,500,000 July 1888 .25 212,000 Nov. 1841 .07	11 8	57 Gogebic I. Syn., I Wis. Gold Cup, s Colo. Golden Era, s Mon.	5,600,000	200,000 25 500,000 1	*
du dall-Anderson, G N. S., du decla Con., S. G. L. C. dont	11,230,000 150,000 1,500,000	150,000	5,086,000 July 1487 .50	7,000 184 188	11 6		2 000,000 5,000,000 1,000,00	200,000 25	229,314 Dec. 1885 .21
62 del'a Mg & Red, 6.8.1 Moni	3,315,000	663,000 5	300,000 Sept 1885 10	197,97   July 1886 .06		61 Gold Ro k, 6 Cal. 32 Goodsnaw, 6 Cal. 63 Fraud Belt, c fec.	10,000,00	100,000 120,000 120,000 100	
61 dolyoke, G Dak.	200,000 12,50d,0 to	125,000 100	900,000 July 1378 1.00	4.143 75 Jun 1888 .20		ga Great Remance, G. U.S.C.	1,000,000	\$0,000 10 500,00 2	*****
67 Hope, 8 Utah 68 Horn-Silver, 8. L Jtah	1,000,000	250,000 2 100,000 10 100,000 25		12 000 Sept 1887 06 233, 252 Apt. 1868 25 4,000,00 Nov. 1884 50	1	Gregory Con. a Mon. Hariem M.& M.Co.s. Cal.	3,000,000 1,000,00	300,000 1 200,000 5	*
70 mano, w Colo.	310,000	3,100 100	*	23 1,0 0 Jun 1888 .17 4,893,25 Jun 1888 15.00		Heeros a	10,000,00	100,000 100	
71 Ideal, B. L Colo. 72 illinois, S M. 73 independence, S ev	1,500,000	100,000 1		25,000 Jan. 1886 .05		71 Highland, C Mich	200,000	25,000 25	
74 indian Queen, 8 Nev	250,000 250,000 2,500,000	100,000 100 125,000 2 250,000 10	340,000 Oct. 1886 20 111,25 Jun 1888 .04	368,75 July 1883 03		73 Hortense. s Coio 74 Huron, c Mica 75 Iron Gold & Silver, N. M	2,000,00 1,000,000 2,000,000	203,000 10 40,000 25 200,000 10	280,000 May 1887 3 00
76 fron-Silver, 8. L 2010.	10,000,000	50.000 100	* C	2,200,000 Feb. 1888 .23 45,000 Oct. 1886 .10	11	76 Ironton, I Wis. 7, iroquois, c Micr 75 J. D. Reymert Aris	1.000.000	50,000 25	
78 Jay Gould Wont 78 Jocuistita, B	2,000,000 2,500,000 2,000,000	250,000 10		267,000 Jun. 1888 .09 1,200,000 ren. 1885 .50 35,000 Oct. 1887 .02	11.	73 Julia Cons., G. v. Nev.	. 11,000,00	110,000 100	1,650,000 Apl. 1887 .10 190,000 Oct. 1887 1.00
82 . a Plata & L Colo	3,000,000	30.00 100	342,000 Nov 1881 30	1,350,000 Dec. 1846 .10	1 1	Si Laciede N. M. Lacrosse, G Colo	I WULLIAM	200,000 10	
84 Lexington, G. S Jour	4,000,000	400,000 100		423,00 Ap L88; .05 565,00 Jan L88; 2,00		s. Lee Basin, S. L Colo st Lochiel, s N M	2,000,000	200,000	*
85 Little Chief, 8. L Coro 86 Little Pittsburg, 8. L Coro. 87 Manhattan, 8	5,000,000	200,00 100		1,050,000 Men 1580 50	il y	8. Lucerne, 8 Con 8. Mammoth Bar., 6. Cal. 7. May Belle, 6 Cal.		100,000 100	
89 martin Wuite, s Nev .	10,000,00	100,000 100		15,000 Jan. 1886 140,000 Dec. 1886	- 11	35 May flower Gravel. Cal.	25 ,000	250,000	325,000 Api. 1488 .2
90 Mary Marpuy, 6.8 Colo. 91 Minuesota, C dica	1 0011411	3,500 100 40,00 25 5 ,00 100	420,000 Api 1886 1 00 616,000 Sept 1857 56	122,5 10 Feb. 1888 5.00 0 1,820,000 Mar. 1876 0 12,5 1 Mar. 1856		9. Mexican, 3 8 Nev 9. Middle Bar 6 Cal. 9. dise & Starr, 8. L Cold	400,000	200,000	* **** * * ****
92 Mono, 6 Cal. 93 Montana, Lt , 6. 8 Mont 94 Morning Star, s. L. Colo.	1,000,00	100,00 10	*	2,0 (0,9) Apl. 1858 .23		9. Monitor, G Cold 9.1 Moose Suver, 8 (Cold	3,000,000	100,000	*
Mount Pleasant, 9	2,000,000	1 150,00 1		380,000 Dec. 1887 .07 150,000 Feb 1487 .30				100,000 10	***************************************
Brinapa, q Cal Hi Navajo, G. 8 Nev. Liu N. Houver Hill, G. s. N. C	700,000	50,00 100 100,000 7 100,000 100	485 000 Apt 18 4	290,000 Jan. 185i .10		Neath, G	10,000,000	100,000 1	* ****
131 NOPTHERN Belle, 8   vev.	5,0 10,000	50,000 2%	425,000 Jan 1884 8.3	0 2,400,000 Apl. 1885 50	16 1	J. North Standard, G. Cal. OI Noonday Cal. O2 Ouelda Ca.ef, G Cal.	19,000,00	100,000 100 60,000 10	20,000 Nov
102 North Beile Isle, 8. Nev. 103 Ontario, 8. L	15,000,000	100,000 100 150,000 100	200,000 187 1887 .5	9,275,00c Jun. 1888 .5	1 1	03 Oriental & Miller, s. Nev. 04 Osceola, G Nev.	5,000,000 5,000,000	400,000 10	**** *** *** **** ****
lus Original, S. C	1,250,000	0 60,000 25		0 1.134,500 Jun 1888 1 0	1	Ob Park, 3 Uta	2,000,00	200,000 100	3,737,186 Aug. 1867 .25
108 Paradise Valley, 6.8 Nev.	135,000	0 125,000 1	63,000 Apl 1888 1	5 150,000 Apl 1887 .10		APIS POOP IS APIS	. It's eleben earle	100,000 100	195,000 Nov. 1886 .10 345,000 Apt 1888 .25
109 Parrott, C afont 110 Peacoca, s. G. C d. d. 111 Picasant Valley, G. s. Cal.	10,000,03	0 100,000 100	10,000 Mar 1984	60,000 Nov. 1886 0 80,000 Dec. 1882 .0	. 1	108 Peeriess, s Aris 109 Phoenix Ariz 110 Phoenix, S. s Ark 111 Phoenix Lead, S L Col.	5,000,00	2.00.000 1	
112 Plutus, G. S. C. L Colo.	5, 100,00	0 200,000 10		20,000 Feb. 1886 .1 2,283,000 Feb 1888 .4	)    1	12 Potosi, s Nev	11,810.00	300,000 j	1,293,600 Nov. 1887 .50
114 Prussian, S. L Colo. 115 Juicksliver, pref., Q Cal	1,300,00 5,700,00	0 150,000 10 13,000 100 57,000 100	Management of the second	1,417,692 July 1888 1.5	0 1 1	114 Proustite, s Idai 11., Parifan S. G Con 118 Quincy Colo	L.auo.ou	150,000	*
1.8 Richmond, S. L Nev.	1,350,00	54,000 2.	200,000 Dec. 1863	4,85 1,000 Jun. 1888 2.0 4,312,537 Jun. 1887 1.2	5 11	117 Rappahannock, 6.5 Va.	00,00	250,000	:
119 Ridge, C	750,00	0 150,000 28	219,939 Mar 1886 .5	. 52,000 day 1881 .0	b 1 1	119 dopes, 6. s	2,000,00 1,500,00 h 10,000,00	300,000 2	103,200 July 1887 .56
124 Robert E. Lee, s. L Colo	10,000,00	50,600 10		61 000 Apr 1885	0	122 San Sebastian, G San	5 1,000,00	3.0,000	188,157 Mar. 1007 .26
124 Savage. 8 Nev. 125 Security L. Mg., Mfg. Jolo.	11,201,00	112,000 100	6,334,000 Sept 1887 6	50,000 July 1859 3.0	0	124 Security, s Cole 125 Sheridan. N. a 126 Sliver Queen, C Ari	2,000,00	0 200,600	
126 Shoshone, G	2,325,00 2,500,00	Cladd,0000 8		7,000 ADL [1583] .U	2/8	127 South Burwer, a Cat	10,000,00	0: 100.00   10	100,000 May 1881 .25
129 Sierra Nevada, G. S Nev 130 Silver Cord, G. S. L Colo.	10,000,00	500.000 100	6,103,000 Apt. 1888 ,2	5 102.000 Jan. (1871) 1.0	5	130 Stanislaus, o Cal	2,000,00	0 200,000 1	
131 Silver King, s	2.000.00	100,000 100 0 200,000 10	50,000 Jun. 1838 .5	1,950,000 July 1887 .9 80,000 Nov. 1886 .0	3 2	131 State Line, s Nev 134 St. Kevin, G. S   Col	25J,00 0. 100,00	250,000	1
134 Smuggler, S. L Colo. 135 Socorro, C	250,00	0 250,000 20 60,000 10 2,5:0 100		66,700 Aug. 1853 .5	5	133 St. Louis & Mex., s. Me 134 St. Louis & St. Elmo Col 135 St.L. & St. Felipe, G s. Me.	0. 2,000,00	0 200,000	0
137 Standard, G. S Cal.,	200,00	100,000 100	1 50,000 Oct. L888 9	5 3.595,000 Jan 1881 3	5	136 st. L. & Sonora, G.s. Me 137 st. Louis-Yavapai Ari 138 sunday Lake, i Mic	r. 1.500.00	00 150,000 10	0
138 Stormont, 8 Ctah 139 St. Joseph, L do 140 Surinam, 6 D. G.	1.530;03	150,00		155,000 Nov 1881 844,000 Dec 1587	10	139 Sattivan, 0. 8 L Me 140 Sattivan, 0. 8 L Me	a 1,250,00 500,00 2 20,000.0	JU 100,00k	5 125,30 har, 1992 .2
141 Swansea, e Colo. 142 Syndicate, e Cal.	10,000,00	0 6),000 10	0 *	9,000 Apl. 1888	12 Ac. 11	1411 Taylor-Plumas, G Cal	1.000.0	20,000	5 tu.000 Feb. 1888 .83 0 205,0 0 May 1888 .1)
143 Tamarack, C Mich. 144 Tip Top, s Ariz.	1,000,00	40,000 2	520,000 Apr 1835 3.0	240,000 July 1888 8.	0	142       Tioga Cons., e	z 1,000,0	00 100,000	2
145 Iombatone, G. S. L. Ariz 148 United Verue, C. Ariz 147 Valencia, M. N. H.	12,500,00 8,000,00 150,00	500,000 2: 0 300,000 10 0 1,500 100		97,500 Feb. 1884 .5 37,500 Apl 1886 2.	30 11	Libiunion Con., g 8 Ne	v.   Lu,000,0	00 100,000 10	0 2,185,000 Nov 1887 .50
147 Valencia, M N. H. 149 Vlota Lt., s. L (Idah. 139 Vankas Girl (Colo 1.0) Yellow Jacket, a. s. Nev.	2,500,00	(175 1 O 41 )		222,500 Dec. 1887	0	147 Utah, s Ne 148 Washington, c Mi 149 West Granite Mt., s. Mo	11   5,000,0	00 49,000	25
1.0 Yellow Jacket. G. s.   Nev.	. 12, MID, 0	0.[123.00.1]100	0 5.448 000 Dec 1845	76 2,184,000 Aug 1871 1.	50	150 Zelaya, G. s C.	A. 600,0	00 300,000	8

## NEW YORK MINING STOCKS QUOTATIONS.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

AME AND LOCATION	Jun	e 30.	July	2.	July	3.	*July	4.	July	75.	Jul	у 6.	0 1	NAME AND LOCA-		30	July	2	July	3.	*Jul	y 4. 1	July	5. 1	July		
OF COMPANY.	H.	L.	H.	L.	H. 1	te.	H.	L	H.	L.	Н.	L.	SALES.	TION OF COMPANY.	H. 1	I.	H. ,	L.	H. 1	L.	H. 1	L	H. 1	L	H.	L	SALI
dams, Colo														Alta, Nev			-									-	-
ice. Mont														Amador, Cal.,	2.40		0 40		2.40				0 401		0 40		. 60 .6
genta, Nev								****						Am'can Flag, Colo.			~.~									*****	2.2
ssick, Colo														Astoria, Cal	.25		645		95			****		****	25		
icher. Nev														Harcelona, Nev	1.30		1.05		.99							****	6,5
ie isle, Nev			.60										100	Bechtel Con., Cal				10	* 5252	****		****			1.60		3,
					****	***	**	*****			****						.11	.10	- 1						***		
die Cons., Cal					****		1		****	****			*******	B wt a d'lcher. Nev.		****	****	***			*****			***			
ece, Colo			****											Brunswick, Cal	***	***	.15		16	.15					.14		2.
wer, Cal					****						.73		75	Bullion, Nev	1,60								1.50				-
ledonia. Dak													*** ***	Carupano, Venes													
tral. Mich									*****					Cashier, Colo					00				.09			****	***
ollar, Nev				****										Castle Creek. Id					.00					.C8	** 000	****	1
vsolite, Colo								*****									****			*** *		10			.07		
orado Cent'i, Colo.								***	*****	****	****	****		Cleveland, Dak			1 300				*****			2005	*****		
		*****	****	***			18.1							Columbia & Beaver	*****		.02										1
ns.Cal. & Va., Nev.						****	****	****	10.75		10.50		400	Confidence, Nev													
wn Point, Nev										1				Con Imperial, Nev		*****											
adwood, Dak														Con Pacific				****									
nkin, Colo.,														Denver City, Colo.							****		****	****	****	****	
reka Cons., Nev			1	1	*****									Eastern Oregon										****	****		
ger de smet, Dak	****				1111					****	****							****	1 40			*** ***					
		****	-919	0 . 00	.40			***					200	El Cristo, U. S. Col.	*****			****	1.10				1 05	1.00	1.10	1.00	1
eland, Colo								****				****		Exchequer, Nev					****								
He & Carry, Nev.														Found Treas'e, Nev.		***											
nd Prize, Nev														Hector, Cal			1					1 "					
en Mountain, Cal											1			Hollywood, Cal	.42		.43		. 12			1	39			00	
le & Vorcross, Nev						1					7.50			Huron, Mich					1 44		44		98		.39	.88	
lvoke, Idaho																	. 15	** *	* 0.00				**		**		
							****	****					600	Julia, Nev	.50		.50	***	.67				50		.50		1
mestane, Das					11.00			****	11.00		11.50	11.60	545	Kingst'n& Pemb'ke				****									
ra-Silver, Ut														Kossuth, Nev	. 20		.20		. 18				20		20		
n Hill, Dak			38	3									50	Lacrosse, Colo									10	.09			
a Silver, Colo									1	1	1			Lee Basin, Colo	1		1 - 5						10	90.87	*		
adville C., Colo		1		1	1									Mexi an Nev	3 85		****		4.10	4.00			41 00				1
					1			*****				1	1 000	Middle Bar, Cal				****				***	3.75		3 90		
tle Chief, Colo													1,000		.48		.41		.45			****	.43		.40		1
tle Pittsburg, Colo									****					Monitor, Colo					******								
rtin White, Nev							***							Ori'nt'la Mil'r. Nev					*****								1
ono, Cai		1						*****			1.50	0	200	Phoenix Load, Colo				1	****	1		1					
uiton, Mont														Phoenix of Ark									****	*****			1
unt Diablo, Nev	1										1			Potosi, Nev								1.	***	****	***		
					****	*****								Proustite, Idaho		1 0	1.10	1 00	116	( 1 00							
vajo, Nev	00	****	***				**	*****					*****						1.16	1.00							177
orth Belle Isle, Nev								4 4	41.0		0 0 0	****		Kappanann'k, Va			.13						.13				
tario, Ut	29.7												5	San Sebastian,S'ns		.72				****							1
hir. Nev			7.3	8				1		1			300	Santiago, U. S. Col													1
mouth, Cal					1									Scorpion, Nev							1			1			1
Ekstiver Pref., Cal				1	1					36 0		1		\$Security, Colo							***			***		***	١.
Com. Cal							*** *							Shosnone, Idaho		30	1	*****		****	****						
		* * * * ***							****							.10		.15						****	.14	.13	
ins in Cons., Colo.												****	*** ***	Silver Cliff, Colo				****	***								
age, Nev														Silver Cord, Colo				****									
"a Nevada, Nev			37	5		3.80					1			Sitver Mg. of L. V										1		****	
ver King, Ariz					1.78	1.50		1		1,1			m 45 F . 1	Silver Queen, Ariz.										*****	*****	***	
all Hopes, Colo														Saro Tunnet, Nev			1 10	11	19	***			1			esc.	
				0 ***				1	****		180												.10		.10		3
an a d, Cal	1.3		1.0	0					****		1.1	0	350	aylor Plumas, Cal			Cree	**								****	1
rmo t, Ut														Tioga, Cal													
low Jacket, Nev					1	1	1							Tornado, Nev	45				.45						200	****	
			1	1	1	1	1	1	1		1	1		Union Cous., Nev			3 85	3.70	3 00				.40		.50	****	-

\*Independence Day +Assessmer 1 unpaid. ‡Dealt | Dat | he New York | Stock Ex. Unlisted Securities | Dividend shares soid, 7,275. Non-dividend shares soid, 79 930 | Total New York, 87,205

### BOSTON MINING STOCK QUOTATIONS.

	June 29.	June 33.	July 2.	July 3.	+July 4	July	SALES.	NAME OF COMPANY.	June 29	June 30.	July 2.	July 3.	+July 4.	July 5.	SALE
tiantic, Mich		*******	17.25	1		17.00	35	Allouez, Mich	.621/2	621/81	62561		1	70. 001	1 40
odie, Cal															
onanza Developm't	1.50	1.50	1.50			1.50	1.38 550								******
oston & Mont., Mon								Bos. & Mont., Mont.	45.50 45.00	47.25 45.75	48.50 47.06	42 25 48 25	***** *****	47 00 40 00	50
reece, Colo							300	Bowman Brunswick. Cal				21.40 20.10		47.00 40.00	92
alumet & Hecla, Micl	h			*241		240	37	Brunswick, Cal	.18				*** *****	**** * *****	******
atalpa, Colo		.20					100								
entral, Mich								Cust, N. Mex		.08		*****	****** *****		26
hrysolite, Colo .								El Cristo, U.S. Col Everett			*****				1,00
on. Cal & Va., Nev.								Everett	.25			**** * *****	**** **** *		******
unkin, Colo	7714 75	80 70	*7714 74	* 75		75	1.9.0	Hanover, Mich			*****				20
nterprise								Humboldt, Mich				*****			
ureka, Nev								Hungarian, Mich.			*****				
ranklin, Mich	19.50	12.63	10 63 19 50	#1914 1 2 95		12 50 1	2.38 727	Huron Mich	4:0		******	4 600			
ale & Norcross, Nev								Huron, Mich Kearsarge Mich Mesnard Mich	5.75	8 00	9.00	4.00		4.00	35
lonorine, Utah								Mesnard Mich	0110 11111	0.00	0.00	0.00			27
Ittle Ubice Cole			******	******	******	**** * * * * * * * * * * * * * * * * * *		Mesnard, Mich National, Mich	*****	**** ****	*** ** *****				
ittle Chief, Colo		**** *** *		*****	*****			National, Mich Oriental & M., Nev.	33						
ittle Pittsburg, Colo								Pannahannoak Va			.12	10			the
lartin White, Nev								Rappahannock, Va.				120,000.00			1 20
lone, Cal								Royal, Mich	*****	** *****	*****		Innered		
apa, Cal		** ***	laniate in the	400 10-000		2.00	I'm	Security, Colo	20	.08	.08 .07	.08		.07	2.83
sceola, Mich								Shoshone Idaho Simpson, Utah	.19	19 .17		.16 .15		16 15	8,60
ewabic, Mich								Simpson, Utah	.02					.40 .10	0,00
uincy, Mich	. 72.50	72 63	73.00			73.00 .	201	South Side, Mich Sullivan.							2,00
idge, Mich								Sullivan. Sutro Tunnei, Nev.				. 26 .25		94 00	*****
lerra Nev., Nev								Sutro Tunnei, Nev. Taylor Plumas, Cal						.000	1,10
liver King., Ariz								Taylor Plumas, Cal Winthrop, Mich	******	*** ****				*** ** * ***	
andard, Cal				1				Winthrop, Mich					******	**** *****	
amarack, Mich								11					*****		

\*Ex-dividend. + Independence Day. Boston: Dividend shares sold, 4,330. Non-dividend shares sold, 16,199. Total Boston, 20,529.

NAME OF	Par val.of	June	30.	July	2.	July	y 3.	‡July	y 4.	Jul	y 5.	Jul	y 6	Sales.
COMPANY.	sh'rs.	Н.	L.	H.	La.	H.	L.	Н.	L.	H.	L.	Н.	L.	Curcu.
Barclay Coal		+16		+16		+16				+16				
Buck Mt. Coal		*4				*1				*4				
hes. & O. KR	100													
Chic. & Ind. Coal RR	100													
Do. pref	100													
ol. & Hocking Coal	100				1814									15
ol., C. & I	100													20
Connellsville Gas Coal		00/8												
Consol. Coal														
Del. & H. C	100	1035%	10014	10014	10016	1.0034	*****		****	10956	10936	11014	10984	3.02
D. L. & W. RR	50	128%	19714	10914	19714	10092	19274			199	128	131	120	41.02
locking Valley	100	2134	14178	2014	14 1 7%	32078	T- 1 /4			200		2114	21	43
Tunt. & Broad Top	100	~ 174		2079		1714						W 1.7%	~4	10
Do. pref		4116		4116	*****	1174				*****		****		11
ehigh C. & N		4896	4816			4986	408/			4884				68
ehigh Valley RR	. õi	5219	50397			2084	508/	*****		5052				84
4. & W. C. &. I. Co					52%									C.I
14 - 1			****											********
Marshail Con. Coal				** . *										
Marshall Con. Coal	100											*****	** *	20
Maryland Coal	100													
Montauk Coal										1110				
Morris & Essex				142							*****			8
New Central Coal					12.45		*****							******
N. J. C. RR	. 50		81	81									811/4	5,93
N. Y. & S. Coal	. 100										*****	11000	** ***	****** **
N. Y., Susq. & Western												8%	81/4	5.5
Do. pref	100											30	29%	60
N. Y. & Perry C. & I	. 100													
Norfolk & Western R R	. 100												*****	30
Do. pref			4616	467	4614	461/4				401/			4634	
Penn. Coal		0												**** **
Penn. Gas Coal														
Penn. RR	. 5	0 52%	5210	5256	5214	5256				5:34	5256			
Ph. & R. RR. **	. 50	0 59	5816			59					58%	60	59%	56,4
Tennessee C. & I. Co	. 10	0	1											
Westmoreland Coal	10		*6386	+68		+68	1			+68				
Whitebreast Fuel Co														
Wyoming Valley Coal		+47	*45	+47	*45					A 4 1000	1*45	1	1	

\*bid tAsked. ‡ li deps not not Day.

Of the sales of this stock, 12,156 were in Philadelphia, and 44,270 in New York.

Total sales, 113,343.

# San Francisco Mining Stock Quotations.

_		CLO	SING QUO	TATION	3.	
COMPANY.	June 29.	June 30.	*July 1	*July 3.	*July	*July
Alpha						-
Alta	1.55				** *****	
Belcher						
Belle Isle.						
Best & Bel.	0.80	3.80		***** .		
Bodie	2.35	2.10		**** ***		
Bulwer		2.30	**** ***	*** ***		
Chollar	3.85	3.80		** *** *		
C'm'weal'h	0.00	0.00		**** ** *		
Con. C. & V	10.50	10.50	****	***** **		
Con. Pac	10.00					
Crown Pt.	4 90	4.00				
Eureka C.	7.50	4.80				
Bould & C.			****			
Journ & C.	3.20	3.15				
ard. Prize.	2.35	2,30		l		
Hale & N.	7.25	7.25				
Mexican	3.90	3.75	*** ** *			
Mono	1.50	1.50				
Mt. Diablo						
Navajo	1.95	*** ** *				
Nev. Queen	4.75	4.80				****
N. Beile I	3.90	3 90				
Ophir	7.25	7.25	*****			
Potosi	3.50	3.60				
Savage		0.00			1	
Scorpion		*****	** *** *			
Sierra Nev	3.70	3.06				
Sutro Tun.	0.10	0.00	******			
Tip Top			* ****			
Union Con.	3.70	3.65	*****			
Utah						
Yellow Jkt.	1.50	1.50				
I Saturda 'I KP"	5.00	4.95				

\* No sessions of the San Francisco Stock Exchange.

declared a dividend, No. 43, of twenty-five cents per share, or \$100,000, payable July 10th.

Consolidated California & Virginia Mining Company, of Nevada, bas declared a dividend, No. 19, of fifty cents per share, or \$108,000, payable July 11th.

Hubert Mining Company, of Colorado, paid June 20th a dividend of seventeen cents per share, or \$8500.

Huntington & Broad Top Mt. Railroad and Coal Co. has declared a dividend of one dollar and twenty cents per share, pay ble July 28d at 418 Walnut street, Philadelphia, Pa.

Little Schuylkill Navigation Railroad and Coal Company has declared a dividend of 3½ per cent, payable July 7th, at 410 Walnut street, Philadelphia, Pa

North Commonwealth Mining Company, of Nevada, has declared a stock dividend of one third of a share on each share outstanding, payable July 16th, in San

Quincy Mining Company, of Michigan, has declared dividend. No. 40, of two letters are declared a dividend, No. 40, of two dollars per share, or \$80,000, payable August 15th.

Tuna Oil Company, of Pennsylvania, has declared a quarterly dividend of two dollars per share, or \$4400, payable July 2d, in Pittsburg.

COMPANY	No	When levied.	D'i'ng'i in office.	Day of	per share.
Atlouez, Mich		June 6	July 25		1.00
Alta. Nev	37	May 12	June 12	July 9	.50
Alta Idalia, Dak	1	May 24	June 20	July 16	.001
Anchor, Utah.	6	June 1	July 5	July 26	.10
Best & Beicher, Nev.	40	June 5	July 10	July 31	.25
Big Hole Pl., Utah	3	May 7	Jue12	Aug.15	.01
Bodie Tunnel, Cal	15	June 5	July 9	July 31	.25
Challenge Cons., Nev			June 29		.50
Concord, H. C		May	June30		.02
Cora, Dak	2	June 2	July 6	July 27	.0014
Diana, Nev			July 10		.10
Dickert & Myers, Dt.	1	June 13	July 21	Aug.15	2.50
Florence, Dak	.2	May 10	June 17	July 2	.001/4
Gould & Curry, Nev.	59	June 22	July 6	Aug.16	.50
Iron Hill, Dak	13	June 27	July 30	Auz. 18	.04
Live Oak Drift, Cal .	9	June 13	July 17	Aug.16	.05
Mikado, Mich		June 12	July 13		.15
New Era, Dak	- 4	June11	July 12	July 30	.01
Nve. Nev	1	May 28	July 5	July 24	.05
Pet Gravel, Cal	5	day 11	*July 2	*J'iy17	.01
Occidental Con., Nev	2	Mar. 3	July 2	July 25	.20
Raitler Gilroy, Dak.			July 30		.01
Ruby Bett, Dak	7	June 9	July 19	Aug. 9	.01
Russell, Cal	2	June 6	July 9	July 31	.10
Scorpion, Nev	23	May 25	June 22	July 16	.10
Seacury-Calkins Dak	9	June 5	July 10	Aug. 1	.001/6
Silver Bar, Dak	1	May 24	June20	July 16	.001
Silver King, Ariz	1	June 22	July 30	Aug.23	.50
Seg. Belcher Cons.,					
Nev	1	June 5	July 9	July 30	.25
Summit, Cal				July 31	

ent day and day of sale postponed to date given above.

#### St. Louis Mining Stocks.

(Reported by our Scecial Correspondent.)

Owing to the extreme duliness of the market, everything is gradually declining, as the following table

shows.
Granite Mountain closes slightly weaker at \$59.50@ \$57.50. West Granite declined to 17½c. San Francisco and Caribou also show a considerable decline. Mascotte closes stronger at \$1.05@\$1. Granite Mountain has declared a July dividend of \$100,000. half the usual amount, but making a total of \$1,200,000 paid this year to date.

paid this year to date.			
Name of company. Opening.	H.	L.	Closing.
Adams, Colo 3.25	3.25	2.75	3.00
Anderson Mont8756	1.15	.85	1.15
Black Oak Cal 2616	.271/4	.25	.2516
Black Oak, Cal 261/2 Bi-Metallic, Wont 37.75	38.00	37.50	37.75
Caribou. Idaho331/2	.35	.15	.15
Central Silver, Ariz	****		
Cleveland, Colo0816	.09	.05	.051/4
Concepcion, Mex			
Dingro May 15	.15	.15	.15
Dinero, Mex	.40	.3236	.3516
told King Colo 25	.25	.25	.25
Golden Chicken, Colo	.30	.30	.30
Golden Era, Mont861/2	.90	.85	.8616
Gordon		100	100/8
Grarite Mt., Mont 59.25	59.50	57.50	58.50
Grey Eagle, Mont	.03	.03	.03
Hope, Mont 6.35	6 40	5.75	6.00
I X L, Colo 06	.0616	.05	.0616
Inumbo Colo	.221/6	.20	.21
Junbo, Colo	.70	.65	.70
La Traion May 30	.30	.30	.30
Mascotte Colo 1.04	1 05	.90	1.0214
Mexica Imp., Mex			
Mountain Koy. N. M			
Neatn, Colo24	.25	.20	.20
Pat Murphy, Colo72	.73%	.70	.70%
Peacock, N. Mex10	.10	.10	.10
Pilot, Colo06	.0616	.05	.06
Pine Grove, Idaho 1.00	1.00	1.00	1.00
Queen of the West, Col .50	.50	.50	.50
Kena, Mont	.213/4	.1716	.18
San Francisco, Mont. 1.34	1.4216	1.00	1.08
San Pedre. Ariz	.4236	.35	.3714
Small Hopes, Colo 1.221/2	1.25	1.20	1.2214
Silver age49	.50	.45	.46
West Granite, Mont31	.311/4	.1736	.20
Yavapai, Ariz	*****	*****	

Bid and asked prices during the week ending July 3d.

Boston Mining Stocks. [From our Special Correspondent.]

The market for copper stocks the past week has partaken of the dullness ruling in the stock exchange and is without any special feature. Boston & Montana has been stronger, and recovered from the decline of

last week, and sold one point higher at \$48, with a reaction of \$47 on the later sales. The product of the mine is increasing and a good outlook is indicated for the future, and its friends confidently predict much higher figures for the stock.

Quincy sold at \$72½, and later at \$73, on the announcement of a dividend of \$5 per share.

Franklin has been a little heavy at \$12½,@\$12½.

Osceola declined to \$18½ on small sales. Huron sold at \$4. Keersarge at \$6. National at \$2, and Allouez at 62½c. Calumet & Hecla fairly steady at \$241@\$240, selling at both prices in a small way, and this is about the whole story.

In silver stocks, Dunkin sold at 75c., ex dividend, and is the only one dealt in at the Stock Exchange. At the Miniug Exchange, Dunkin sold at 75c., Cusi at 8c.. Security at 6@8c., Catalpa, 20c., Crescent at 8c. Security at 6@8c., Catalpa, 20c., Crescent at 8c. Two new stocks have been listed, the Shoshone Gold Mining Company and the Sullivan Gold Mining Company, with transactions in the former at 15@ 18c., and the latter at 25@27c.

The market presents a holiday dullness, and no great activity is looked for the ensuing two months.

Latest prices (by telegraph) July 6th, 1 p. M.: Boston & Montana, \$47.; Calumet & Hecla, \$239½; Franklin, \$12½; Osceola, \$18½; Quincy, \$73; Tamarack, \$154@\$157.

arack, \$154@\$157.

### Gogebic Stocks.

Gogebic Stocks.

Sales of Gogebic mining stocks continue to be made under the sheriff's hammer at Milwaukee, and at prices that look shockingiy low, compared with what was asked for the same stocks only a few short months since. At a sale which took place there a few days ago, a block of Bourne stock went at 12½ cents a share, Nimikon at 20, Atlantic at 5, Prospect Hill at 1, Bessemer at 16, and Sunday Lake at \$4.81. These stocks sold last July at the following prices: Bourne, \$4: Nimikon, \$7: Prospect Hill, \$2.40; Atlantic \$4.50; Bessemer, \$7.50; Sunday Lake, \$7. The sale of a lot of stock owned by John E. Burton is announced to take place shortly. There are 32,000 shares in this lot, which was seized on an execution issued in favor of Mr. G. E. Tarbell. Some excellent purchases can then be made, for these are valuable mines on the Gogebic.

#### Utah Mining Stocks.

Sales were recently made of 100 shares of stock of the Daly Miding Company at \$16.25 per share; of the Anchor Mining Company at \$5.25 per share. The stock of the Apex Mining Company is held at 25 cents and of Crescent Mining Company at 35 cents a share, with little demand at present for either stock.

#### CONTRACTS OPEN.

(See also page xix.)

453 CAST-IRON WATER PIPES—440 tons six inch pipe, class B, for Boston Water-Works. Address Footon Water Board, City Hall, Boston, Mass., until July 17th.

The subscriber is prepared to erect steel-works to use patent proces

The owners of the patents will grant shop right license at a nominal price, when the works are built by the subscriber.

iges of the processes are use of lowest grades of pig-iron to make highest grades of tool and soft steet. aving of fuel and waste.

Economy of production, cost of ingot above pig being but about \$3 per ton.

## JAMES HENDERSON,

Belleville, New Jersey.

# ADVERTISING RATES. Of the Engineering and Mining Journal.

No deviation whatever from the rates given herewith all be allowed except to educational institutions.

	Lines.	Inches.	One tasue.	1 Month (4 issues).	3 Months (18 issues).	6 Months (16 issues)	9 Months (39 issues).	12 Months. (52 issues.)
	6 9	36	81.50	\$4.23	\$11.64	\$20.60	\$28,39	834.3
	9		2.25	5.84 7.46	20.04	27.65 34.70	37.71 47.03	60.0
	12 15	1	3.00 3.66	9 28	24.49	42 4	57.49	78.8
	18	116		10.78	28.95	50.14	67.96	86.7
	21	178	5.00	12 41	33.41	57.86	78 42	100.0
	24	2	5.67	14 10	37.87	65.69	88.88	113.4
	27		6.29	15.58	41.85	72 48	98 23	125.8
≰ Celumn.	30	21/2	6.86	17.07	45.83	79.35	107.55	137.2
	33	-	7.45	18.55	49.81	93.18	116.93	149.1
	86	S	8.05	20.04	53.80 57.38	99.38	126.28 134.68	161.1
	89 42	01/	8.58	23.70		105.58	143.09	182.5
	45	314	9.66	24.03		111.78	151.49	193.2
	48	a	10.20	25.37	68,14	117.99	159.90	314.0
	54	436	11.17	27,79	74.64	129,27	175.19	204.0 223 8 248.0
	60	5	12.15	30.22	81.15	140.55	190.48	248.0
14 Column.	66	516	18.05	32.46	87.16	150.16	204.56	261.0
	72	6	13.95	34.70	93.18	161.87	218.69	279
	78	614	14.81	36.81 38.92	104 50	171.17	231.97 245.26	295.9 312.9
	90	7	15.74	40.95	109.96	190,42	258.63	329 2
	96	716	17.28	42.99	115.42	199.87	270.81	345.8
%Page	102	84	18.09	45,01		200,28	283.55	861.7
	108	9	18.90	47.03	126,28	218.69	25m, 20	377.8
	114	916	19,72	49.07	131.77	228,19	809.19	395.4
	120	10	23 55	51.12	137,26	237.70	309.19 322.15	411.0
	1:26	104	21.41	53,23	143.02	247.68	335.07	428.2
Page	135	111/	23.25	55,40	148.75		349.20	445.5
Page	201	17	32.25	79.20	218.00	374.05	503.10	333 t
Full Page	408	84	61.00	147.45		705,75	956.40	122

Double these rates for outside front, add 80 per cent for outside back page, 60 per cent for page next to front feading matter, and 25 per cent for page opposite back reading matters

# Hubert Mining Company,

ROOMS I AND 2 BURKE BLOCK, DENVER, COLO.

The Hubert Mining company is organized under the laws of the State of Colorado, with a Capital Stock of \$500,000, divided into 50,000 shares at \$10 each.

Its property consists of the Hubert mine, mill and mill-site, held under U. S. patent, and is located in Nevada Mining District, Gilpin County, Colorado. This property paid its first dividend in May, 1885, and has paid thirty-eight consecutive monthly dividends aggregating \$230,000; \$221,500 of sald sum being paid through the Rocky Mountain National Bank of Central City, Colorado, and \$8,500 through the First National Bank of Denver, Colorado. THOWAS J. BURKE, Secretary.

# OFFICES

Second Corner Loft, Murray and Church Sts., 73 x 50 Floor space, about 3,500 square feet, nine windows, Shipping Facilities, rent about 25 cents per square foot. and One Small, Fine Office, about 350 square feet, rent cheap.

APPLY

PUBLISHING COMPANY. SCIENTIFIC 27 PARK PLACE, NEW YORK.