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In the "Engineering and Mining Journal" of April 9th last we cautioned our readers against the "boom circulars" issued by the Copper King Mining Company, of Arizona. The affairs of that company now appear to be in some disorder, its president having been arrested in New York this week on complaint of a person who had invested over \$5,000 in the stock of the company. The complaint was supported by the affidavit of a mining engineer to the effect that the representations made in the prospectus were unsupported by the facts. As this case has not yet been tried we cannot express any opinion on its merits, but our readers will remember the warning we gave and will not be surprised that the company or its promoters should have come to grief.

A note from our Duluth correspondent last week recorded the shipment of the largest cargo of iron ore ever carried through the Sault Ste. Marie Canal. This cargo was taken from the Duluth docks by the steamer "Superior City," and consisted of 6,800 short tons of iron ore. That the vessel was able to carry this enormous load on a draft of 16 feet 3 inches shows the success of the lake shipbuilders in adapting their vessels to the work to be done. This week the same ship has beaten her own recent performance by loading 7,568 short tons of iron ore at Escanaba. With this cargo her draft was 18 feet. This is the largest load ever carried by a lake steamer, and the first one on record which reached 7,000 tons. At present rates these ore cargoes are carried at a rate equal to about one-twentieth of a cent per ton-mile.

We recently recorded the sharp advance of the prices of zinc ore in the Joplin District in Missouri, and the purchase of ores there at \$28.50 a ton, the best grade running about 60 per cent. zinc. It seems that the top price had not been reached, for last week the best grade ores sold in the Joplin market at \$29.50 a ton, or \$8 a ton more than in the corresponding week last year. This rise was, moreover, in spite of a shortage in the demand of about 1,000,000 pounds, due to the burning down of the Lanyon Smelting Works at Iola, Kan. Work is exceedingly active in the Joplin District, the total production of zinc ore in the region last week reaching 9,035,930 pounds; while for the year up to June 11th the total has been 192,503,000 pounds, showing an increase of 51,518,400 pounds, or 36.5 per cent., over last year. Joplin is at present about the most prosperous mining district in the country.

Some months ago a concern called the National Metallurgical Company started a plant in Chicago for the purpose of making gold from antimony ore by a process devised by E. C. Brice. In the "Engineering and Mining Journal" for December 11th, 1897, we referred to this process and to Brice's previous unsuccessful attempts to patent it. The works in Chicago were kept up until recently, however, Brice continuing his alleged transmutation operations, though it has never been claimed, we believe, that gold was turned out in any quantity. Enough money had been turned in, it seems, to keep the concern going until quite lately, but the Chicago papers of recent date say that the supply of money is at an end, and the plant has been shut down, while Brice has left the city, "suffering from nervous prostration." The company's stock was held by a number of people, some of whom are said to be still believers in the transmutation process. The Chicago works were said to have cost \$25,000, though we are informed that a small fraction of that sum would probably represent the real expenditure on them. How much of the stockholders' money has been transmuted into the process man's money it is difficult to ascertain. This "process," or scientific discovery, appears to be now dead, or at least in a state of innocuous desuetude, but those who are crying for such investments can still find a good supply.

The Joseph Ladue Gold Mining Company of Yukon, seems to have struck a better lead in the United States Treasury than in its claims near Dawson City. These, so far as any evidence of value was presented in the company's prospectus, were almost worthless, though the stockholders were paying for them "as good as a million dollars" to the vendor-president of their company, Joseph Ladue, and three millions more, as Mr. Ladue assured us, to his associates, chiefly the eminent gentlemen who formed the Board of Directors.

It will be recollected by our readers that these directors spent the company's money in purchasing the old "Morgan City" steamship for \$120,000, changing the business of the company from the doubtful speculation of looking for bonanzas in unproven ground, where probably none exist, to the humdrum everyday business of competitive freight and passenger traffic on the Alaskan coast. We pointed out at the time that the Klondike bubble had already collapsed and that the passenger business would be disappointing, and that the stockholders would probably still want to know what they had received for \$4,000,000 out of \$5,000,000 of the capital of their company (except the respectability of their directors, which seemed to come high at \$3,000,000)—now it would seem that the "freight and passenger business" has proved as elusive

as the Hunker Creek bonanzas, and the company, according to the newspaper dispatches, has been "holding up" the United States Government, trying to get \$1,000 a day for the use of the "Morgan City" to carry troops to Manila. Another report says that the ship has actually been chartered by the Government at \$600 a day. This should yield a pretty good return on a \$120,000 ship, and it is certainly infinitely surer than the profits of the mythical bonanzas.

Nevertheless, the stockholders, who are almost always unreasonable, may still wonder why they paid \$4,000,000 for the privilege of investing their own money in the competitive steamship business, even though the War has found a profitable occupation for a few months for their otherwise idle ship, and they may soon begin to want their money back. We hear that, under cover of giving them preference stock, a cunning release of liability was secured by the directors, but it is doubtful that this will hold and release these gentlemen from responsibility for the grossly erroneous statements made in the prospectus of the company.

THE CASSEL-HINMAN GOLD AND BROMINE RECOVERY PROCESS.

The Gold Extraction and Bromine Recovery Company, Limited, of London, is the title of a concern organized to exploit the patents of Henry R. Cassel and B. C. Hinman for the treatment of gold ores. The company has a capital of £500,000, of which £300,000 in shares and £3,000 in cash were paid to the patentees, while 15,000 shares have been sold to the public with £1 paid up, and 18,000 shares with 10s. paid. The fact that the statements made by this company are calculated to deceive the public leads us to devote some attention to the process which it is promoting. Incidentally we shall take occasion to refer to the impropriety (we use a mild term) of eminent chemists in reporting upon subjects outside of their own field of work and knowledge, the public at large (to whom one chemist is much like another) trusting to the reputation of their names and being unable to comprehend that a scientist who could discover a new element may not be good authority upon a new metallurgical process.

The Cassel-Hinman process consists essentially in the treatment of pulverized ore, acidified with sulphuric acid, in open vats with a solution of sodium bromate and sodium bromide. The bromate and bromide coming in contact with the acid ore is decomposed with the liberation of bromine, which presumably attacks the gold with the formation of auric bromide. The last is removed by the passage of several water washes and the solution is made to fall through a tower in which are rising air, steam and chlorine. The auric bromide is converted by the chlorine into auric chloride, and bromine, the latter being volatilized by the heat of the steam and carried over into a tower through which is falling a solution of caustic soda, where it forms sodium bromide and hypobromite. Upon heating the solution the hypobromite passes into bromate and the solution is then ready for the treatment of a fresh lot of ore, enough fresh bromide and bromate being added to supply any loss of bromine that may have occurred.

The use of bromine as a solvent for gold is by no means new, several attempts to apply it within the last fifteen years or so to the treatment of ores on a large scale having been made in Colorado, South Dakota and perhaps elsewhere. There has been considerable inducement toward the making of these experiments since there are probably some cases wherein bromine water may be a more active solvent for gold than chlorine water of corresponding strength, while in certain instances the cost of the chemicals required for bromination may be less than for chlorination. But, notwithstanding these apparent advantages there have evidently been unforeseen difficulties in the way which have led to different results in practice from those realized in the laboratory, and we are unaware that bromination of gold ores is being performed on a working scale anywhere at the present time.

The Cassel-Hinman process differs from the ordinary bromination process (1) in treating the ore in open vats with nascent bromine developed therein, and (2) in the recovery of the bromine. It is scarcely worth while to discuss the novelty of this idea or the validity of the patents upon it, except to mention that English patent 17,930, of 1888, granted to Matthew Henry Simpson, of London, is for identically the same chemical process, and bromine has been commercially produced from salt works mother liquor in about the same way that Messrs. Cassel and Hinman propose to recover it. We are more interested in considering the feasibility of the process from a metallurgical point of view. Unfortunately the company in its descriptive pamphlet, comprising the reports of various eminent chemists, furnishes us with scant data for this purpose. The essential points are: With a given ore what percentage of gold can be dissolved and precipitated with the apparatus to be used in practice (not the small shaking bottles, etc., employed in the laboratory experiments); what amount of chemicals is

required, and what percentage of the bromine is recovered, and what is the cost of labor, power, plant, etc., involved in carrying out the process? Upon these points the company and the chemists and metallurgists who have favored it with reports have preserved a profound and impressive silence. Sir William Crookes and Prof. William Ramsay (one of the discoverers of argon) made a joint report under date of May 26th, 1897, which would not be creditable as a thesis in a first class school of metallurgy. They state that they saw the operations of the process carried out on a ton of ore, and having assayed the original ore and the tailings assumed that the difference represented the extraction. Apparently no trouble was taken to assay the solution to check up the other result, although in testing ores for the cyanide process, etc., this has been found a wise precaution. Apparently also it was assumed that all of the gold gone into solution was saved, but we are familiar with bromination experiments where some difficulty has been encountered in the complete precipitation of the gold from the solution, and it strikes us that a metallurgist reporting upon such a process ought to assure himself as to this point. Messrs. Crookes and Ramsay made personally some experiments on one-pound lots, and on these data (we suppose, because they mention no other,) they reckoned the loss of bromine at about 4 per cent. and the extraction of gold at from 90 to 95 per cent. Dr. Elwyn Waller, of New York, reports that he visited a mill at Magnolia, Colorado, in September, 1896, where the process was in operation and found it a huge success, "destined to supersede entirely the chlorination methods, and in many cases the cyanide as well," but he presents no figures whatever. Dr. Peter T. Austen, of Brooklyn, states that he tested in the laboratory the chemical reactions involved in the process and found they took place as described, although since these experiments were not made quantitatively it does not seem worth while to have made them at all, since the same information could have been derived from numerous standard works on chemistry. Dr. Austen, together with some other eminent chemists, considers that the freedom from intensely poisonous chemicals, such as potassium cyanide, is a strong point in favor of the bromate-bromide process. From our own acquaintance with the chlorination and cyanide processes we feel sure in saying that this is not an advantage that will occur to any of the practical metallurgists. Horace F. Brown makes a report on the Cassel-Hinman process as carried out at the Nellie Bly mill at Boulder, Colo., from which some useful data might be expected, although barrel lixiviation was at that time in use there, but he also carefully avoids mentioning figures. He states only that the barrel is charged with the required amount of 2 per cent. solution of bromine. If the solution was to the ore as 1:2 this would be equivalent to 20 pounds of bromine per ton, which seems a rather large amount. In the experiments with the Engelhardt bromine process at La Plata, Colo., the strength of the solution employed was 0.25 per cent., though it was considered that a 0.15 per cent. solution equivalent to 1.25 pounds of bromine per ton of ore might be used to advantage. In the elaborate experiments on a large scale made at Rapid City, S. Dak., by Dr. L. D. Godshall in 1893 ("Engineering and Mining Journal," January 6th, 1894, and January 13th, 1894) it was found that well-roasted ores did not require more than 1.5 pounds bromine per ton. The present price of bromine at the works in Ohio and Michigan is 28 cents per pound. Obviously, therefore, the margin for economy through recovery of the bromine is not large, unless the ore requires a large amount of bromine, when most likely some other process would be preferable, anyway. The Cassel-Hinman process, in order to dispense with the barrels, which in chlorination are made of great capacity and efficiency, apparently involves the use of more bromine than would otherwise be necessary.

In the practical operation of the Cassel-Hinman process it seems to us doubtful if uniformity in the development of bromine can be obtained in the manner proposed. The saturation of a large charge of dry, finely-crushed ore, whether the solution is applied from the top or allowed to rise from the bottom, is a slow process and attended with irregularities. We fail to see how the acidity of the ore is to be adjusted so as to produce a regular development of bromine throughout the charge. Unless the sodium bromate and bromide is present in large excess the bromine will be formed chiefly at the bottom, while the solution will reach the top with its strength nearly or quite spent. Assuming that the excess of bromine formed at the bottom is dissolved (when it will no longer be "nascent"), there is a good deal of probability that a solution formed in this manner will differ in character in different parts of the tank, diffusion not being active under the circumstances. Evidently there will be some complications in the tank practice.

The use of a large excess of bromine leads to the question, how much of the latter can be recovered under the conditions that will be requisite in practice? We cannot accept the statements of the company, although they are supported by the eminent chemists mentioned, that there will be no loss of bromine from the lixiviation vats, which

must be necessarily comparatively shallow and of correspondingly large area, as in the case of the cyanide process. Bromine boils at 63° C., and is volatile at comparatively moderate atmospheric temperature. The aqueous solution is decomposed on exposure to light with the formation of hydrobromic acid, which is not a solvent for gold. In the decomposition of the gold-bearing solution by means of steam and chlorine the formation of bromine chloride is to be expected as well as bromine, and this reaction is by no means free from other complications.

The recovery of the bromine as proposed by Messrs. Cassel and Hinman is precisely analogous to the process employed in the commercial production of bromine, without the improvements that have been developed in the latter. In recovering bromine at Stassfurt, in Germany, the mother liquors contain from 0.15 to 0.35 per cent. bromine, and in strength are similar to the solutions which will have to be treated in the Cassel-Hinman process. That the recovery of the bromine from these mother liquors, which are an otherwise waste product, is not a perfectly simple matter is shown by the fact that when the bromine producers were engaged in a fierce contest for control of the market a few years ago the lowest point quoted for the substance was 17.5 cents per pound, which, it was commonly understood, was less than the cost of production. It is hardly to be expected that Messrs. Cassel and Hinman, operating in remote mining regions, can produce bromine more cheaply than the regular manufacturers, who generally enjoy cheap labor, fuel and the chemicals that are required.

It is quite obvious to us that the Cassel-Hinman process is obliged to use a good deal more bromine than would be necessary in barrel bromination, and proposes to recover it at the cost of new bromine. The object of it all is to constitute a "process" which is sufficiently plausible to induce eminent chemists who are not practical metallurgists to give it their indorsement, and thereby lead ignorant investors to hand over their money to the company engaged in its exploitation. We shall not say that there is no room for improvement in the hydrometallurgy of gold over the existing barrel chlorination and cyanide processes, but we may say that these have reached a high degree of perfection, and in the best practice are performed at an astonishingly low cost, so that in order to surpass them a new process will have to be an exceedingly good one, and this, we are convinced, the Cassel-Hinman process is not. Much fuller and more specific information, both as to the validity of patents and as to the working costs, is required before this process can merit the attention of investors.

NEW PUBLICATIONS.

"Der Eisenrost; Seine Bildung, Gefahren und Verhuetung." By Louis Edgar Andes. Vienna, Budapest and Leipzig; A. Hartleben's Sons. Pages, 292; illustrated. Price (in New York), \$1.65.

This book is a monograph on iron rust or iron oxide, written with special reference to the use of iron and steel in bridges and other structural works more or less exposed to the weather. It treats of the formation of rust, its causes and the methods in which corrosion affects the strength of the iron. The rust formed by the absorption of oxygen by iron or steel under the action of carbonic acid and water is especially dangerous to iron structures. The action of sea-water on iron plates is also carefully considered, as a matter of importance now that iron and steel are so generally used in ship-building. A large part of the book is occupied by the consideration of rust-preventives, and the use of various kinds of paints is carefully treated. Oil is the more important part of all these, and the best methods of applying it are the subject of several chapters. The many methods which have been proposed are described and criticised, and the value of many different pigments and coverings carefully estimated.

A drawback to the book, in this country at least, is the use of the old German or Gothic type. The use of Roman type in printing German books, especially scientific books, is now very general; and the average reader, though well acquainted with the language, finds the German type much more difficult to read.

The chapters on the formation and nature of rust are illustrated with a number of photographs of iron and steel specimens, most of them magnified considerably, which show graphically, as nothing else could, many points referred to in the text.

"Notes on British Guiana and its Gold Industry." By H. J. Perkins. London: Sampson Low, Marston & Company, Limited. Pages, 40; with maps.

This book is a condensed account of the gold mines of British Guiana, with incidentally some account of the general resources and geography of the colony. The author has acted as Commissioner of Mines of the colony, and has consequently had its official records to draw upon for the history and statistics of the industry. The description of the gold placers is given by districts, and includes many particulars with regard to the streams along which the placers are situated, the characteristics of each, the extent of the workings and some of the results obtained. The gold output, which began, according to the present records, with 250 oz. in 1884, reached its maximum at 138,528 oz. in 1894, and though it has since fallen a little below that, placer working is an active industry, with a prospect for future growth. Quartz mining thus far has only been undertaken by a single company, and its success is still doubtful, although the indications are that such mining may be much extended in the future.

The year 1884 is given above as the date when regular mining first began, and returns were made to the Government. Exploration first began 164 years before that, the first assertion of the existence of gold being credited to Simon Abrahams in 1720. From that date to 1743 a number of prospecting parties undertook the search for gold, and some discoveries were made, but no regular exploitation of the deposits resulted. In 1863 the British Guiana Gold Company undertook the development of gold-bearing veins at Wairiri, on the Cuyuni River, but failed, and it was not until 1884 that regular working of the placers was begun. Since then the industry has grown largely, as we have indicated above. It is to be remembered that prospecting is slow and difficult work, on account of the tropical luxuriance of the forests and the very rapid growth of underbrush everywhere, making necessary much hard work to get through the country at all. The rivers are the highways of the country, and beyond a few miles from their banks the ancient forest has hardly been touched or even explored.

The book gives much information about the tools and supplies needed in prospecting and in placer working; about the climate, the diseases of the country, the best preventives and remedies. There are four large maps, one a geological map, the others showing three mining districts.

BOOKS RECEIVED.

In sending books for notice, will publishers, for their own sake and for that of book buyers, give the retail price? These notices do not supercede review on another page of the Journal.

"Ohio Agricultural Experiment Station, Bulletins 84, 86, 87, 88, 89, 90, 91 and 92." Wooster, O., Experiment Station. Pamphlets.

"Historical Gold Nuggets of the World." By Thomas Jefferson Hurley. London, E. C., England; The Mining and Geographical Institute. Pamphlet. Pages, 17; with plates.

"Fifteenth Annual Report of the Department of Mines and Mining of the State of West Virginia; 1897." James W. Paul, Chief Mine Inspector. Charleston, W. Va.; State Printer. Pages, 236.

"Mines and Mineral Statistics of the State of Michigan; 1897." George A. Newett, State Commissioner of Mineral Statistics, Ishpeming, Mich.; printed for the State. Pages, 232; illustrated.

"Addresses delivered at a Celebration in Honor of Prof. Thos. Conrad Porter, D. D., LL. D., at Lafayette College, October 20th, 1897." Easton, Pa.; Chemical Publishing Company. Pages, 48; with portrait.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.

Letters should be addressed to the MANAGING EDITOR. We do not hold ourselves responsible for the opinions expressed by correspondents.

Gen. A. J. Warner's Gold Mining Enterprise.

Sir: Has "The Engineering and Mining Journal" seen anything direct from my pen or any utterance or declaration of my own upon which to found the item in the issue of June 4th, herewith inclosed? Or does the editor assume that because interested in gold mining that therefore I must have changed my views on the money question?

The "Engineering and Mining Journal" is supposed to be a scientific journal, or at any rate to be conducted on scientific lines. Does the editor think that conclusions from scientific data must necessarily conform always to personal interests? Is that the principle upon which the paper is conducted? The "Journal" refers to me as an "opponent of the yellow metal." Does the editor know of any bimetalist who opposes, or ever did oppose, the use of gold as money? They do oppose limiting money supply to gold alone, and contend that the result of that policy, so far as it has been carried, has resulted in 30 years in more than doubling the value of gold, carrying along with it all world debts. They contend further that if the policy is persisted in, of extending the single gold standard to all nations, in spite of any probable increased production, gold will, in time, double again, and that while that is going on the essential elements of justice in the dealings of men are wanting.

The "Journal" says further that there are rumors that I have repudiated metallic money altogether, and have become an advocate of "flat paper, pure and simple." I believe in the quantitative theory of money, that value in money depends upon the number of money units as compared with their use or the demand for them, and not upon color, specific gravity or fiber, whether metallic or vegetable, of the material used for money. Does the editor of the "Journal" hold to a different theory? If so, it would be interesting to have such a theory scientifically defined.

One thing more. The "Journal" says it believes the ore in the mine I am reported to have become interested in, is of low grade. Is the editor of the "Engineering and Mining Journal" in the habit of expressing offhand views as to the value of gold properties without any knowledge of the facts? If so, it should be known to his readers.

The truth is, I have had interests in gold property heretofore, but those interests have been and are very limited. I broke down from overwork, and I was compelled to seek retirement and rest, and especially to abstain from severe mental work, till my health was restored, but I have seen no reason, and certainly no arguments, by the advocates of the single gold standard, to cause a change of views on the money question.

A. J. Warner.

Holly Springs, Ga., June 10, 1898.

[Our good natured squib at General Warner's gold mining enterprise has quite unnecessarily excited some of our readers. General Warner himself is far too sensible to get angry, and since it has drawn out a statement of the views, always sincerely and honestly held by him, the squib was not unproductive of good.—Editor E. & M. J.]

AUSTRALIAN NUGGETS.

Written for the Engineering and Mining Journal.

That the days of large nuggets are not yet at an end in Victoria, where the alluvial auriferous deposits are perhaps the richest in Australia, has been shown by a couple of recent finds. The first of these consisted of a nugget weighing 138 oz. 7 dwt. 6 gr., which was discovered in a claim at Rokewood, in the vicinity of which numerous nuggets were unearthed in the early days of the gold fever, the district yielding richly at that time, although of late years it has been comparatively neglected. The country is basaltic and the sinking shallow, the nugget being met with at a depth of about 60 ft. There are large areas of virgin ground in the district.

The second find was made by a couple of miners near Trentham, about 65 miles from Melbourne, at a depth of 19 ft. The nugget weighed exactly 127 oz., and was 7 in. long, 2 in. thick, and from 2½ to 3 in. wide; being somewhat honeycombed, a hole here and there being filled with cement and dirt. It was discovered in a place known as Blue Gully, at the base of the Blue Mountain, a lofty spur of the Australian Dividing Range, where numerous finds have been made from time to time, but none of any importance. About 40 years ago two nuggets, one of 28 lbs. weight, and another of 12 lbs. weight, together with several of lesser size, were obtained in the district. The country is about 2,000 ft. above sea level, and has long been known to be auriferous. It has, however, remained but partially prospected. There is now a probability that a more extended and systematic search will be made for the auriferous deposits, both alluvial and quartz.

SIGNAL TUBES IN MINES.

Experiments have lately been made at several collieries with pipes varying in diameter from 20 to 40 mm. for determining the conditions necessary to secure efficient speaking tubes, and also for fixing the limits of distance through which verbal communications may be made, not only between two points, but also between several points simultaneously, and the following is an abstract of the conclusions arrived at by the "Zeitschrift für Berg-Hütten und Salinen-Wesen." The greatest distance to which a strong voice will carry distinctly through a straight tube, without branches, and in the absence of disturbing noise, is more than 450 metres, but it cannot greatly exceed 500 metres. There is a certain relation between the length of tube and its inside diameter, one of 30 mm. being suitable for a simple tube up to 200 meters long; but above this length the diameter must increase up to 52 mm. Tubes of much more than this diameter or less than 20 mm. are not to be recommended; and the larger the diameter, the stronger must be the voice and the clearer the articulation, words rich in vowels being transmitted more readily, and long vowels being distinguished more easily than short. Zinc is the best metal for a speaking tube, owing to its slight elasticity; but for signals transmitted by knocks iron covered with zinc is preferable. A socket joint is best, because the tow used in collar joints must necessarily project into the tube, thus causing reverberation, and the inside of the tubes should be as smooth as possible, while changes of diameter should be gradual, and sharp curves should be avoided. Tubes for speaking should bear upon masonry for diminishing vibration, while if they have to serve for transmitting knocks they should be hung freely, and the latter method is best for signaling to a long distance, a whistle not carrying far.

THE ESTIMATION OF CAUSTIC ALKALI.

A very interesting contribution to the methods of estimating caustic and carbonated alkali has been quite recently published* by Messrs. P. Dobriner and W. Schrauz, who state that two methods may be used for the estimation of the hydrate. The alkalinity may be determined before and after the elimination of the carbonate by chloride of barium, or the total alkalinity may be determined at the same time as the carbonic acid. In a series of comparative experiments it was found that, according to the first method, the proportion of carbonate of soda present appeared to be from 1 to 2 per cent. higher than the actual amount, and, naturally, the proportion of caustic soda would appear to be lower by the same quantity. It is shown that this error is due to the use of toughened folded filter-papers, for filtering the alkaline solutions treated by chloride of barium. These papers appear to absorb notable quantities of alkali. But if ordinary filter-papers are used this error disappears, and the two methods give concordant results. It is best to let the precipitated carbonate of baryta settle thoroughly, and to use a definite known quantity of the clear liquid for the determination of the caustic alkali. Results of sufficient accuracy can be obtained by the following method:

To 2.65 grms. of caustic soda dissolved in 50 cc. of water, add phenolphthalein, and titrate with normal sulphuric acid until the red color disappears. Then add 3 cc. more of the normal acid, and boil for five minutes to drive off the carbonic acid; then titrate the excess of acid by normal soda.

If a be the number of cc. of normal acid used in the first titration, and b the number of cc. of normal soda used in the second titration (after driving off the carbonic acid), then the proportion of caustic soda present will be $2(2a-b)$ per cent. Na_2CO_3 , corresponding to NaHO and $4(b-a)$ per cent. Na_2CO_3 .

It is well known that this method is based on the fact that, in the first titration, the whole of the caustic alkali is neutralized, and half the carbonate transformed into bi-carbonate. This reaction has served as the starting point for a large number of methods for the estimation of caustic alkalis in presence of the carbonate; but these methods only give exact results when the quantity of carbonate present is very small.

Lunge recommends titrating first with phenolphthalein as indicator, until decoloration takes place, and then to continue with methylorange

* "Zeitschrift für Angewandte Chemie," April; Manchester "Chemical Trade Journal."

as indicator. Those chemists who do not like the use of methyl-orange as an indicator will find the method proposed very convenient.

A TRANSVAAL MINING SCENE.

The large engraving on the opposite page, made from a photograph furnished us through the courtesy of Mr. W. Y. Campbell, of Johannesburg, shows a typical Transvaal scene. It is a view of the head-gear at the Langlaagte Royal Mine on the Witwatersrand. This is of the kind quite common in the district; but what gives special interest to the picture is the assembly of the working force at the mine. The manager and his staff are in the foreground; the European or white employees seem to have preferred elevated positions and are seen above on the head-gear itself and directly under it. The lower ground is occupied by the "boys"—the native Kaffir and Zulu workmen, who form so large a part of the working force in a Transvaal mine. It will be seen that they are in the majority in the group, occupying the largest part of the ground, though they are closely crowded together. Numerous as his class is, the "boy" seems contented with his subordinate part, and perhaps does not quite understand how important he is in the calculations of the companies. Without him the mining development of the Transvaal could never have reached its present point, and the supply of his people is a question anxiously discussed by the mine managers.

The Langlaagte Royal Mine was described in the "Engineering and Mining Journal" for April 2d, 1897, page 399. It is one of the Langlaagte group, and is one of the smaller mines of the district.

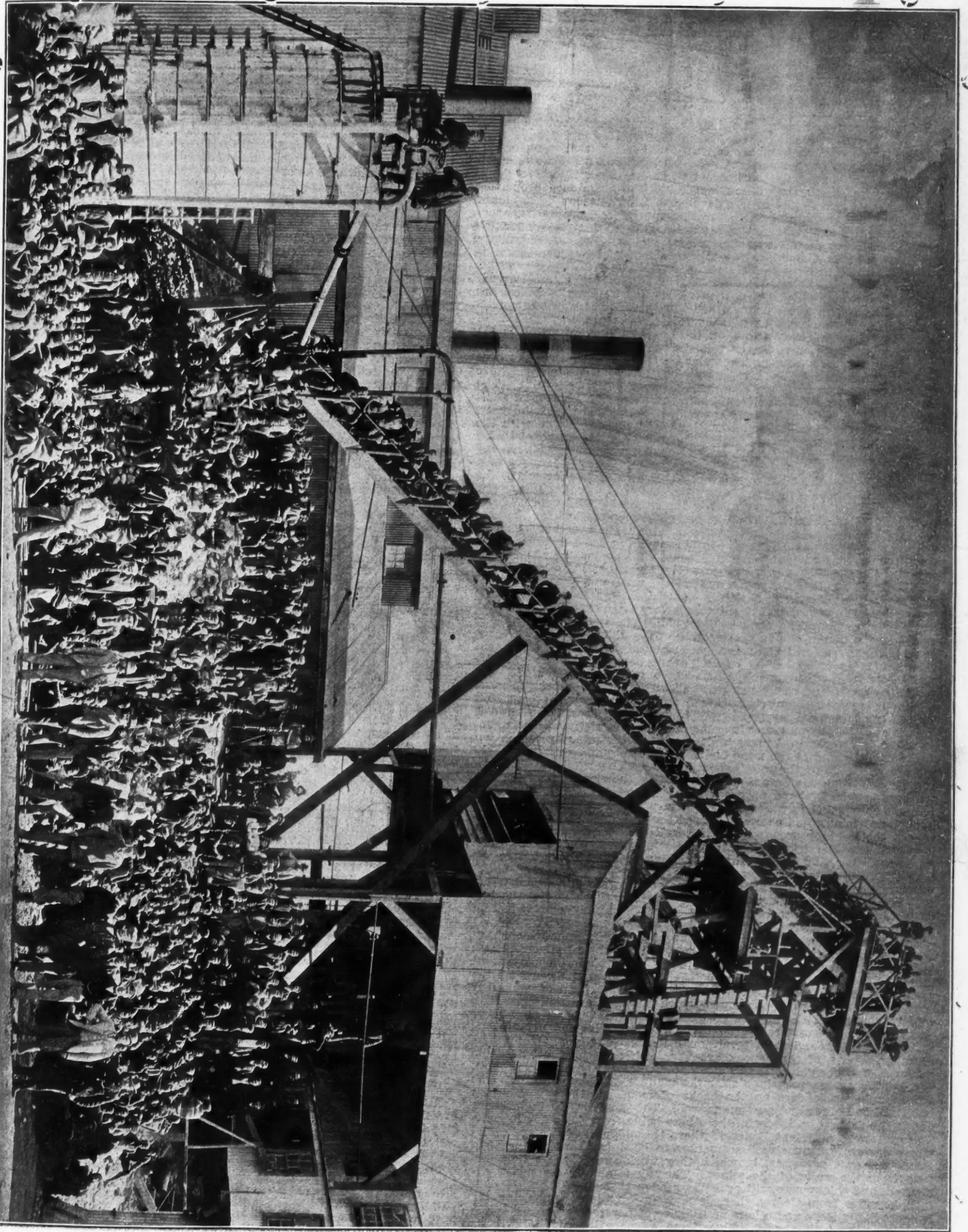
GOLD MINING COMPANIES IN BATAVIA.—A British Consular Report says that during 1897 nearly 20 new companies were started in Batavia, Java, for the exploration of fields and for the working of gold mines, with an aggregate capital of about £600,000. The majority are in connection with the Island of Celebes, but Borneo and Sumatra have also received some attention. The Netherlands India Mining Company shipped during the year some 600 tons of ore, chiefly to Liverpool, which realized an average of 4½ ozs. of gold to a ton of ore. This company is now erecting machinery at the mine, which was ordered from Germany. One or two of the other companies have already ordered their requirements from England. The mining engineers are almost exclusively British.

A BAMBOO SUSPENSION BRIDGE.—Mr. G. J. L. Litton, of the British consular service in China, gives particulars of the bamboo suspension bridge of Shi Tsuen, which spans a distance of 300 ft. Eight cables of bamboo strips woven together, and of the thickness of a man's leg, are slung loosely across the river. The cables are doubled at both ends and hitched through heavy wooden posts which are fixed in masonry, but in such a manner that they can be turned round like a windlass. The cables can thus be tightened up. Fixed under the cables at intervals of 4½ ft. are cross girders made of thin strips of bamboo, which are brought up on both sides and made fast to a great bamboo cable about 5 ft. above the bridge, which thus acts as a railing or banister. The bridge is paved with rough hurdles.

THE USE OF LIME IN GOLD MILLS ON THE WITWATERSRAND.—In a recent discussion in the Chemical and Metallurgical Society of South Africa, Mr. J. R. Williams said on this subject: "I am prepared to say absolutely that lime can never be injurious in a mill. In some of the larger mines we have, from the acid nature of the ore, to use a large quantity of lime, and in two or three of the mines we found it much more economical to add the lime in the mill as it undergoes the grinding process of the stamps. Before the lime comes down to the slimes plant, practically all the lime that can be rendered soluble is soluble. I do not think the use of lime could be injurious to milling under any circumstances, but a mill manager using lime for the first time would find that the amalgam on the plates became very considerably hardened. I have been called in to investigate one or two such cases, in which they said they were catching no gold on account of the use of lime. But there was one other very interesting result, and that was that the tailings were, if anything, a little lower in value, and therefore they were really losing no gold at all. On cleaning their plates at the end of the month, at least one of them was prepared to admit that lime was not so bad as he thought, after all." These remarks were approved by other speakers.

A NEW ELEMENT IN AIR.—According to a London letter Prof. Ramsay, the joint discoverer with Lord Rayleigh of argon, has, with the assistance of Mr. Morris Travers, eliminated from the atmosphere a new gas, which he calls crypton. According to a communication made to the Académie des Sciences in Paris, through M. Berthelot, the discoverers received from Dr. Hampson 750 cubic centimeters of liquid air, which they reduced by evaporation and collected in a tube. A gas was furnished by the residue. This gas was deprived of its oxygen by the help of metallic copper, and of its nitrogen by the action of the electric spark, and of its oxygen after that by a mixture of magnesium and pure lime. This effected, there remained 26 cubic centimeters of gas, which presented, besides a weakly defined spectrum of argon, an additional spectrum till then unknown. It was characterized by exceedingly brilliant lines, one almost identical with D₃. The other green may be compared in intensity with the green line of helium. Its wave length was 5,566.3. Another slightly weaker gave 5,557.3. The density of the gas was approximately 22.5, that of oxygen being 16. It is believed that the new gas is monatomic and constitutes an element. These facts go to prove that the atmosphere contains a hitherto unknown gas heavier than argon and with a characteristic spectrum less volatile than nitrogen and oxygen and argon.

Prof. Ramsay was unable to absolutely determine its position in the periodic system. He, however, hazards the conjecture that the pure gas has a density of 40 and an atomic weight of 80, and that it may be classed with helium. The investigations are being continued, and a larger quantity of the gas is being prepared.



HEAD GEAR AND WORKING FORCE AT THE LANGLAAGTE ROYAL MINE IN THE TRANSVAAL.

SOME MINES IN SONORA, MEXICO.

Written for the Engineering and Mining Journal by E. T. Dumble.

The number of mines now being worked in the southern part of the State of Sonora is small in comparison with that in operation a few years ago. Before the decline in the price of silver, mining was in full blast, while at present, with very few exceptions, operations are confined to the small veins of very rich ores, leaving the larger bodies of ore of lower grade untouched. In one belt silver seems to be the only precious metal present, but elsewhere the ores carry gold or both gold and silver.

On a recent trip through the district, I found many deserted mines and silent or even dismantled mills. Some of these mines have been famous producers and some are still in ore, but for one reason or another, they have been closed until the working mines are now in the minority. My route only touched a few of the mines in active work, but I had opportunity to examine several of the abandoned properties and many prospects more or less developed, and there can be no doubt that, when modern mining methods are employed and proper transportation facilities and reduction works are available, this part of Mexico is destined to become a very active mining region. The most southerly point visited was Alamos; a few miles west of that city are the mining towns of Minas Nuevas and Aduana.

The group of silver mines at Minas Nuevas, embracing the Purissima and Sambona, which are now being worked by Dr. Goycoolea, are said to be the first mines ever opened in Sonora. There are numerous remains of old workings on a rather extensive scale, in the form of deep open cuts and excavations on the broad outcrop of rhyolitic (?) breccia which appears to be the vein rock of this region and in which the ore occurs in shoots and chambers. It is claimed that the ores taken from these openings were very rich and from specimens I have seen from similar outcrops elsewhere I can readily believe it. The developments consist of numerous shafts and tunnels, the deepest shaft being only 400 ft. Work is only carried on during a part of the year. The silver is found native and as chloride and also associated with the sulphides of iron, copper and lead. The reduction works consist of a 20 stamp mill, lixiviating tanks and a small furnace for the smelting ores.

Three miles south of Minas Nuevas is the town of Aduana where the office and works of the Quintera Mining Company are located. The mines are situated in a saddle of the mountain a mile south of the town and 600 ft. above it. These mines have been worked for the past 60 years. Many openings, both shafts and tunnels, have been made on the various properties, but most of the systematic work has been done since the present company assumed control. The main shaft is now down 1,100 ft. and the property is well opened up. The vein has a N. E.—S. W. strike and has a granitic foot wall and hanging wall of rhyolite. The gangue, as at Minas Nuevas, is apparently a volcanic breccia and the ore body has a breadth varying from 0 to 30 ft.—the width of the vein. The ore occurs in solid bands, sometimes on one wall and sometimes on the other, occasionally filling the entire space or as bunches scattered through a part or even the entire width of the vein and is accompanied by calcite, quartz, etc. Occasionally it occurs in the form of geodes in quartz. The ores of the upper levels were very high grade and easily worked, but with depth they became more rebellious, carrying zinc, copper, lead and antimony with the silver, with only occasional pockets of the higher grade ores. The mine is lighted and the pumping and hoisting done by electricity which is generated at the works in Aduana and brought to the mine by cable.

The ore is sorted at the mine and separated into smelting and leaching ore and sent to the mill by pack mules. The works are modern and very conveniently arranged. For treating the smelting ores, which are here broken by hand on account of cheapness of labor, there is a 40-ton water jacket furnace. The necessary fluxes are obtained in the immediate vicinity and charcoal is used for fuel. A 20-stamp mill pulverizes the leaching ores, which are roasted in four-hearth reverberatory furnaces—the first two hearths being used for roasting, the third for chloridizing, and the fourth for finishing—whence they pass to the ample lixiviation tanks.

During the year 1897 about 90,000 tons of ore were mined and treated. While the average ore cannot be classed as high grade, the low price of labor and the economies practiced in mining and reduction permits its profitable working.

Near Baucari on the Cedros is a group of deserted mines which have a mint record of a production of \$1,400,000 in gold and silver. These include Los Pobres, San Felipe and others. The vein, which is proved for quite a distance by numerous shafts, occupies a fissure in the syenite, which is here the country rock. It has the form of a number of chambers connected by passages, which at places are not more than a few inches in width. It stands at a high angle. The ore may occur on either wall or scattered through the vein material and usually has a thickness of from 1 to 3 ft., although it occasionally fills the entire chamber. Parts of the deposit are very rich and carry considerable amounts of silver chloride, and some gold seems to be always present. The mining was largely done after the manner of the country and the ore brought up ladders on the backs of men, but there is a steam hoist at Los Pobres and a pump as well. This shaft is 400 ft. in depth and is the deepest on the vein, the others being from 40 to 100 ft. only. The ores were milled at Baucari, where the old mill still stands, and where several "gambocines" seem now to be doing very well with a plant of 5 or 6 arrastras, in which they work such ores as they can take from the walls of the mines. The mines are by no means exhausted, and the owners will probably reopen them in a short time.

Eight miles from Cedros there is a group of mines comprising the Juliana, Santa Rosa and others on a series of parallel fissures of which the first named the basal. They have a general strike N. 70° E., and dip north at angles varying from 45° to 80°. The veins are only of moderate width, 6 to 24 in., but the ore is of high grade. At present the Santa Rosa is the only one being worked. The shaft is 106 ft. deep, with a cross-cut to vein 60 ft. On the foot wall there is a solid seam

of high grade ore consisting of 4 to 8 in. of galena and tetrahedrite followed by about the same thickness of these ores somewhat mixed with quartz. The ore is high in silver, 100 oz. and over, but it does not carry gold. It is concentrated for shipment to a product of 400 to 500 oz.

This is a fair sample of the kind of mine which it is found profitable, and therefore possible, to work under conditions as they exist at present. Work is usually continued until they are so deep that the ores can no longer be hoisted without bringing in machinery or until the water becomes too troublesome, when they are deserted and a new location found.

Near Suaqui Grande three mines are being worked. These, like the last, are narrow veins of high grade ores, and the fact that the freight charges from the mines to smelter amount to \$80 silver per ton, is enough to prevent any experiments with ores of less value. The veins are usually narrow, or even when widest the ore streak is only from 4 to 18 in. in width. The ores are sulphides of lead and copper, with a little zinc, high in silver—140 to 400 oz. per ton being claimed for them—with gold up to 1 oz. per ton.

The district around San Xavier, Los Bronces and La Barranca has some very rich mining properties. Las Animas and Tarumari mines made their owners rich, and others yielded excellent results, but these are all shut down or deserted and at present only a very few are being worked at all. Rich finds of ore are reported every little while, and specimens of great beauty and value may be found in the houses of nearly every one interested in mining, but the Santa Rosa at San Xavier, one or two properties near La Barranca and one near Lo de Campo, are the only ones really shipping ore. The ores are similar to those already mentioned, silver greatly predominating over the gold and occurring native or as chloride or sulphide in the choicer ores. The veins are, for the most part, narrow. Two plants are engaged in re-working the tailings of the old mills at Los Bronces and La Barranca, but, otherwise, practically nothing is being done.

Along our line of travel considerable placer ground was seen, pitted here and there by the shallow holes of the old-time workers. In no place had any systematic work been done, nor had bed-rock been reached in any opening that we saw. Scarcity of water possibly accounts for the small amount of work done at these places, for there is still some gold there, as we found by panning. We found dry washers at work on some of the hillsides and some of the clean-ups showed paying amounts of coarse gold, up to half the size of a wheat grain.

POTASH SALTS IN GERMANY.—At Seesen, in Brunswick, potash salts have been discovered at a depth of 2,190 ft. Of the bed 27 ft. have been bored through, the cores yielding on analysis 24.14 per cent. of potassium chloride.

A LARGE WHITE TOPAZ.—A very large white topaz has lately been cut in New York, weighing 157½ carats. The jewel, as cut, is 1½ in. in diameter and 1½ in. deep. It was presented to the owner in the rough and was found near Smith Flat, Eldorado County, California. It was found in a gravel mine, several hundred feet underground, and beneath a lava cap. It is not only of extraordinary size, but entirely without flaws. About half the weight was lost in cutting.

GERMAN RAILWAY STATISTICS.—A recent issue of the "Centralblatt der Bauverwaltung" states that the total length of track in operation in Germany was 28,626 miles of standard gauge, and 817 miles of narrow gauge. During the year there were 487 derailments and 281 collisions; and in these accidents 762 persons were killed and 1,969 injured. These figures for accidents, which probably include all casualties in switching and coupling cars, show an increase over previous records.

SULPHATE OF AMMONIA PRODUCTION.—The production of sulphate of ammonia in Great Britain in 1897 was as follows: Gas works, 132,724 long tons; iron works, 17,779; shale-oil works, 37,153; coke ovens and producers, 10,624; total, 198,280 long tons, an increase of 7,371 tons over 1896. In spite of the increase in production the price has risen. The increased consumption of sulphate of ammonia in making fertilizers has, however, interfered with the imports of nitrate of soda. The production of sulphate of ammonia in the United States in 1897 amounted to 3,111 tons, chiefly from coke-oven gases.

DUTY ON JAPANESE ANTIMONY.—The collector of customs at New York having referred to the Treasury Department a question as to the proper classification under the tariff act of Japanese "needle antimony," the Department rules as follows: "As there appears to be a difference of opinion existing in respect to the proper classification of the article, the Department decides that duty should be assessed thereon at 20 per cent. ad valorem as a metal unwrought, not specially provided for under paragraph 183, tariff act. Should exception be taken to such assessment by way of protest, the question can then be decided by the Board of General Appraisers."

RUSSIAN RAILROADS IN ASIA.—The Russian Minister of Railways has undertaken a journey, according to a Berlin correspondent, to decide the direction of the projected railway, 900 miles long, which is to connect the Central Asiatic Railway system with the other Russian railways. Four projects have been under consideration for years. According to one of these, the line is to run from Uralsk, between the Caspian and Lake Aral, to the Transcasian Railway, while the three others propose that it shall connect Tashkent either with Orenburg or with Omsk, or with the Siberian Railway. According to the last project, it is to go by Vernoye and Sempalatinsk, along the ancient Central Asiatic caravan road. Connection with Omsk is of special importance, as a means of conveying West Siberian grain to Turkestan, where it is much needed. The first two projects, on the other hand, aim at effecting a more direct connection between European Russia and Central Asia.

BRITISH COLUMBIA. IX.—THE SANDON DISTRICT.

Special Report of W. M. Brewer, Traveling Correspondent.

The town of Sandon is located in a narrow gulch, with one long street, built up solid with business houses, and residences erected on terraces cut along the mountain sides, which enclose the gulch. It has two lines of railroad, a well appointed social club, water-works, electric lights, and excellent hotels. In May, 1892, the present site was staked as a mineral claim by Mr. Jas. M. Harris, but the building of the town was not begun until January, 1896; to-day it has a population of more than 1,000, is the junction of the Canadian Pacific with the Kaslo & Slocan Railroad, and the shipping point for four dividend paying mines, Reco, Ruth, Slocan Star and Payne, besides about 20 prospects in course of development.

Nearly all the locators of the best paying mines, as well as the miners working in them, are Americans, many from Idaho and Montana; but the capital which has been furnished to work several of the mines has come from England and Eastern Canada; although the Reco and some others are still owned and operated by Americans. The producing mines are located on the mountains, within an area of about 8 miles square, with Sandon almost in the center, so that the distance between the town and any of the shipping mines does not exceed 4 miles. The nearest to town are the Slocan Star, about 1 mile distant, and the Ruth, about 1½ miles. Those more distant are the Reco and Payne groups, Noble Five, Deadman, Sovereign, Last Chance, Queen Bess, and Idaho. During a recent visit I was enabled, through the courtesy of the superintendents, to examine the underground workings at the Ruth, Slocan Star and Sovereign mines.

Ruth Mine.—Property comprises the Ruth, Ruth Fraction, Hope,

average 10 ft. The vein is quite well defined, with its strike nearly east, dip toward the south at angle of about 52°. The strike of the country rock is N. W.; this is the argillite common to the district, having the same intrusive porphyritic dikes. The altitude of the third level is about 1,000 ft. above Sandon.

About 20 per cent. of the vein matter is solid galena, averaging about 100 oz. silver and 70 per cent. lead; this is shipped direct to the smelters. The remainder of the ore body is concentrated in the company's mill, situated below the mine, and connected with it by a gravity tramway ¼ mile long, having a grade varying from 30° to 50°. The mill has a capacity to treat 120 tons of ore per day; it is run by water power, furnished from Carpenter Creek, and brought around from near the head in a flume, the average altitude of which is 500 ft. above the town. Jigs and round slime tables are used for concentrating the ore, which yields from 12½ to 15 per cent. of concentrates, averaging according to the smelter returns nearly 80 oz. silver and 70 per cent. lead. A good deal of zinc occurs in the ore, which carries silver values, but cannot be saved except by a second concentration, and at present is allowed to pass off with the tailings from the slime tables.

The mine being located only about half a mile from Sandon, the ore and sacked concentrates are hauled by wagon to the railroad. This mine is also a good dividend payer, and the ore body is the largest in the Slocan district so far as at present discovered.

Sovereign.—This mine is located on Reco Mountain, about 2½ miles easterly from Sandon, on the same trail that leads to the Reco mine, and about half way between town and that property. The workings are 1,500 ft. above Sandon, and consist of two drifts run on the vein, which dips at an angle of 55° toward the southeast, the strike being toward the northeast, and strike of the country toward the northwest. The upper level is in 365 ft. and the lower 740 ft. A winze has also been



VIEW SOUTH FROM PAYNE MOUNTAIN, B. C.



VIEW WEST FROM PAYNE MOUNTAIN, B. C.

Despair, and Wyoming claims. The workings have attained a vertical depth of 350 ft. from the outcrop to the heading of the lowest level. The levels are opened by four drifts, No. 1 being in 600 ft.; Nos. 2 and 3 1,100 ft. each; No. 4, the lowest, is in 800 ft. The average thickness of solid ore is 3 ft. 6 in., the maximum from wall to wall being 10 ft. The thickness of ore in the heading of the stope at the fourth level is 4 ft. 6 in. This body is banded through with quartz and siderite. The minimum thickness has been about 2 ft. It is noticeable that in the thicker portions of the vein the ore body carries more carbonate and concentrating material, while in the thinner portions it is usually solid galena. The chief gangue material is siderite, the proportion of silica being comparatively small, often only from 3 to 4 per cent. About 20 per cent. of the vein material is concentrating ore. Only the solid galena has been shipped; this is graded into two qualities, the first class averaging about 120 oz. silver and 65 to 70 per cent. lead, the second class about 65 oz. silver and 25 per cent. lead.

The strike of the country is nearly N. W., while that of the vein is nearly N. E., the dip being almost vertical. The country rock is slate, with intrusive dikes of a porphyritic quartzite. In the underground workings some faults have occurred, which have disturbed the regularity of the vein. The workings I examined were on the lowest level, and the heading of the stope was between the third and fourth levels, in which the ore was 4 ft. 6 in. thick, having a banded structure. This level is 850 ft. above the town of Sandon, and about 1½ miles distant to the south by the ore road.

The machinery plant consists of an air compressor and saw mill. The ore is run from the lowest level by a gravity tram track to the dump at the wagon road. The haulage by wagon to town costs 95c. per ton. The product is shipped to the smelter at Pueblo, Colo., and Everett, Wash. The company has paid dividends, but being a private corporation the amounts are not made public. At present between 80 and 90 men are employed.

Slocan Star.—Here the deepest workings are about 100 ft. in vertical depth. They comprise five crosscut tunnels, run to the ore body, which has been drifted on at each level, and stopes opened. No. 1 tunnel intersects the ore body at 50 ft. from the mouth, No. 2 at 100 ft., No. 3 at 150 ft., No. 4 at 575 ft., and No. 5 at 900 ft. At the third and fourth levels the vein has been drifted on 440 ft., and at the fifth level about 300 ft. The maximum thickness of ore is 35 ft., the minimum is 1 ft., and the

sunk on the vein, 60 ft. deep, from the lower level. The country rock is the argillite of the district, with intrusive dikes of porphyritic quartzite. The vein matter carries a percentage of porphyrite as gangue, and averages about 5 ft. in thickness. No stoping has been done, but 100 tons of solid galena have been shipped from the drifts, and there is a large quantity of concentrating ore on the dump, awaiting shipment to one of the concentrators.

The hanging wall of this vein is very clearly defined, but the foot-wall is not well defined, the mineral having apparently impregnated the country rock from the hanging wall instead of from the foot, as is usually the case in this district. On the upper level near the heading a fault occurs, which has thrust the vein several feet to the west of its usual course, but as the workings have been extended ore has been again exposed. This fault appears to have been of small extent and vertical, because on the lower level, some 125 ft. deeper, the ore body has not been disturbed. As the bulk of the ore is not solid, the questions to be solved as to the paying qualities of the mine will be the quantity and grade of the concentrates, as well as permanency and extent of ore body as greater depth is attained. The work so far performed has been done in a systematic and economical manner.

At the Reco and Noble Five mines, situated at a much higher altitude on the same mountain, development work only was being carried on, but the Reco has been shipping ore all winter, as long as the trail was in good condition to rawhide over. The Noble Five mine was shut down during the winter, but work has been resumed to explore for extensions of the ore body. This mine is equipped with a concentrating mill, connected with the mine by an aerial tramway, 6,100 ft. in length. The elevation of the loading station above the mill is 2,050 ft. The tramway is of the Finlayson design, was built by the Colorado Iron Works of Denver, and erected by B. C. Riblett, an American engineer from Spokane Falls. It was finished in January, 1897. The longest span is 1,000 ft., having an elevation of 400 ft. above the surface. There are 20 towers, not including the terminals, with a tension for standing rope in the center. The capacity is 20 tons per hour, carried by 64 buckets, each holding 600 lbs. of material. The standing rope is 1½ in. on the loaded side and 1 in. on the unloaded; the hauling rope is ¾ in. steel. It works automatically at both ends, and the speed is regulated by three friction brakes on a grip wheel. Two men operate it at the upper end, one to work brake, the other to load buckets, but

no one is required at the lower end. The tramway was in operation about 8 or 9 months previous to the shutting down of the mine last winter. All supplies and mining timbers were hauled up to the mine, and the saving of the freight on these was sufficient to pay 6 per cent. interest on the investment, besides operating expenses.

Mr. Riblett has given a great deal of attention to aerial tramways, and after constructing the one at the Noble Five, designed and constructed another at the Payne Mine. This is designed with some original alterations from both the Finlayson or Bleichert patterns. This connects the ore bin at the switch on the Canadian Pacific Railway with a gravity tram, built at an earlier period from the Kaslo & Slocan Railroad track to the mine. The length is 1,420 ft., built in three spans, the longest being about 1,000 ft. The fall is 450 ft. between loading and unloading stations. It is built on the principle of a surface tram, working on a cable. Two buckets, with a capacity of 15 tons per hour, carry the loads. Attached to these is a hauling rope in two sections, the head end, the heaviest, being $\frac{1}{2}$ in. steel, and the tail end $\frac{3}{4}$ in. This system works better than a hauling rope in one section, because the tail end rope relieves much of the tension, which is excessive on such a length of tram if only one endless rope is used. The standing rope is $\frac{3}{4}$ in. steel, with flattened strand. The speed is regulated at the upper end by a three wheel brake. The buckets are automatic dumpers, and the plant is operated by one man at \$3.50 per day, which brings the cost of hauling ore to about 2 1-3c. per ton. The construction was begun January, 1898, and the tramway was finished, ready to run, on February 5th.

The Reco Mining Company, as well as others of the Slocan mines, contemplate putting in aerial cable plants during the coming season, so as to reduce the cost of transportation of supplies and ore, which heretofore has been excessive by the crude methods of packing in summer and rawhiding in winter.

A hurried study of the general geology of the Sandon camp demonstrates that the prevailing country rock is a metamorphosed argillite, very massive in places, and sometimes schistose or laminated, with intrusive dikes of porphyritic quartzite diabase, and porphyrite of varying extent.

PROGRESS IN ELECTRO-METALLURGY IN 1897.

Written for the Engineering and Mining Journal by E. Andreoli.

The difficulties which surround the electro-metallurgy of lead are so great that they have almost discouraged attempts to overcome them. It is improbable that there will be any electro-metallurgical method for the deposition of lead more scientifically and practically studied, and developed than the system of Dr. Tommasi, an electro-chemist whose books are indispensable to those who go in for electrolytical research work. His process for desilverizing lead consists in depositing lead on rotating discs from a solution of acetate and other compounds of lead. There is no formation of peroxide of lead at the positive pole. The lead goes to the cathode and the silver falls into a receptacle at the bottom of the tanks into which it is collected. There is no polarization in the electrolyzers; the resistance is very low; the lead only is dissolved and deposited and the silver is untouched.

An estimate shows that with a current of 1,800 amperes and 375 volts, 84.24 kilos of lead can be deposited every 24 hours at a cost of less than \$2 per ton. A characteristic feature of this process is that it can be advantageously applied to the treatment of poor lead ores. Dr. Tommasi has also devised a process for making lead oxide or carbonate, which is carried out at his model works in Paris.

In his Presidential address to the Institution of Electrical Engineers on the process of electro-chemistry, Mr. J. W. Swan dwelt at length on the refining of copper by the electric current, but beyond mentioning the production at the Anaconda works, he said nothing about the immense development of electrolytic copper refining in the United States, which is without a parallel in the world. Mr. Swan retold the story of his process for electrotyping with a large current density, for getting tough copper with 1,000 amperes per square foot of cathode surface and making use of a concentrated solution and an extremely rapid circulation of the electrolyte. Mr. Swan was neither the first nor the only one to make use of a very strong current for electrotyping. He spoke of the "many attempts made to utilize the fact that copper matte or sulphide can be cast in the form of plates or slabs and that such plates have a sufficient degree of conductivity to allow of their being used as anodes in an electrolytic bath. These attempts have not always been successful, but there is an interesting exception in the case of the copper-nickel mattes worked by the Canadian Copper Company, which refines copper and nickel electrolytically, and uses the matte as anodes. The mattes contain about 40 per cent. each of copper and nickel, and 14 per cent. of sulphur, together with small quantities of silver, gold and platinum. The power used in the production of 1 lb. of nickel is nearly 1 electrical horse power per hour."

We shall only mention the experiments made by Professor Foerster, who obtained a bright deposit from a concentrated solution of nickel chloride or sulphate at a high temperature, using carbon anodes, with a current of 8 amperes per square foot. Carbon never makes a good anode in a solution of chloride or sulphate. This cannot be called an improvement on the actual electro-deposition which has already been, for many years, well known and is a well established industry.

There is little new to be said about the electrolytic production of chlorine and caustic soda. The Castner-Kellner Alkali Company, Limited, has pushed forward the erection of large works in England and the United States. The Parent Electrolytic Company, which owns the new Hargreaves-Bird process, has sold its French patents to the Societe de St. Gobain, and is on the eve of starting in Lancashire an important installation for the manufacture of bleaching powder and chlorates.

A great deal has been said about the Rhodin process, but hardly any criticisms have been published in the technical press on this process, which is the property of the Commercial Development Company. We must wait for the results obtained from the working on something like a commercial scale of the process.

In the Rhodin process it is proposed to work at nearly 100° C. The mercury in this case not only diffuses in the hydrogen, but also into the water vapor which is carried off by diffusion in the hydrogen itself. Under such conditions a loss of from 7 to 8 lbs. of mercury for each ton of salt decomposed may be reckoned as a minimum.

Three or four years ago the opinion sprung up that there was a brilliant future before the chlorine and alkali industry in the electrolysis of fused chloride of sodium. The success of some experiments made on a relatively large scale led some electricians to believe that the problem of the production of chlorine was solved. Mr. Vautin, however, did not persevere in this work, and abandoned his process, which consisted mainly in the use of a cathode made of lead. Leon Hulin, a French chemist, has used molten lead as a cathode since 1891, and he now uses chloride of lead. His process is known and we shall not describe it here. The Societe des Soudieres Electrolytiques employs Hulin's process in France at Clavaux, near Grenoble, and up to the present there is every hope that the dry method will eventually become a success.

The formation of an alloy, by means of a metallic electrode in a fused electrolyte, has been known for many years, and the history of the aluminum industry has shown us how bronzes were made by the electrolytic process. Diehl, for instance, employed a lead cathode in an electrolytic crucible which allowed him to obtain at the bottom of his crucible alloys containing up to 75 per cent. aluminum. With regard to the electrolysis of chloride of sodium, the case is rather different. It was an American electro-chemist who first had the idea of using a lead cathode. Professor A. Rogers, whose process for producing chlorine and sodium is described in many books and papers on electrolysis and electro-metallurgy, and who has devoted a great amount of time to the electrolysis of fused salts, and to the production of alloys by means of electrolysis, gave a lecture in 1889, in which he described how sodium and lead alloys, or sodium and tin alloys, could be produced in an electrolytic tank. Particulars of this process, which was described in the "Proceedings" of the Wisconsin Natural History Society (April, 1889), are highly interesting for the commercial application of the electrolysis of fused chloride of sodium or potassium, with a view to the production of chloride and pure caustic soda or potash.

The new electrolytic methods for extracting gold from its ores or treating gold solutions, seem generally to be little adapted to the treatment of large masses of ore. Among those electrolytic processes there is not a single one that can be applied economically to the treatment of from 100 to 200 tons of ore a day.

There is a Cassel electrolytic process for the extraction of gold by electrolysis, which we simply mention. The Cassel process is electrolytic; the Hinman-Cassel process is not electrolytic. In this process the roasted ore is leached in open tanks with a solution made by adding bromine to caustic soda. Previous to leaching, the ore is rendered slightly acid and when the bromine lye comes in contact with the acid bromine is set free and dissolves the gold. The bromine liquor is then run off and the ore washed. The liquor and washings enter a tank without coming in contact with the air; any combined bromine is liberated by the addition of a mixture of bromate, sodium chloride and an acid, and the bromine is removed by a current of air which is blown through the heated liquid. This air current is led through a tower down which a stream of caustic soda solution trickles, by which the bromine is completely absorbed and the solution is brought to its initial condition and serves for a second extraction. The blown liquor is mixed with a solution of sulphide of sodium; the gold is thrown down as sulphide and is easily recovered by roasting and fusing. For shipment, the bromine is in an innocuous state. The inventors make a dry salt consisting of bromate, bromide and a suitable chloride. Messrs. Hinman and Cassel say that by their process, telluride ores can be treated with success, and a high extraction of the gold is obtained at low cost. The process can be carried out with a minimum amount of water (even when highly charged with salt), as the solutions employed are used over and over again, the only waste being confined to that which remains as moisture in the tailings. They do not require to pulverize the ores to such a degree of fineness as is essential for the weaker solvent, cyanide of potassium.

According to Mr. Cassel many attempts have hitherto been made to use bromine for metallurgical purposes; but none were successful, for the reason that its use involved its total loss, so that former experimenters were restricted to the employment of insufficient quantities in order to obtain a perfect extraction of the gold. Their system involves the recovery of the bromine employed, with a loss of about $\frac{1}{2}$ lb. of bromine to the ton of ore treated.

Very little is known about the chlorocyanide process for the extraction and recovery of gold and no information can be obtained. Chlorocyanide is made by fusing ferrocyanide of potassium and chloride of sodium; this is a slight modification of the old Ellershausen process, which consists in fusing ferrocyanide to obtain pure cyanide. The only results which the Chlorocyanide Manufacturing and Gold Extraction Company has published refer to the electro-deposition of gold on cycles to impart a better finish and more attractive appearance to the machines.

The Haycraft process of gold reduction is represented as simple and complete, the whole of the ores being treated in one operation after coming from the mill, and all the gold being practically extracted during that operation in two hours time. The ore is reduced to the fineness of a 60x60 mesh; it is then transferred to steam jacketed pans, each capable of holding one ton of ore, and fitted with stirrers; 20 lbs. of common salt, 100 gallons of water, and 100 lbs. of mercury complete the charge, which is heated to a boiling point and the mercury is spread throughout the pan by the action of the stirrers. Electric currents are applied to the pans, causing the solution of the gold and the formation of an amalgam. The charge is then run out, any waste of mercury

being obviated by means of a concentrating table, and the residue flows into settling tanks. There are several points of resemblance between this process and the arrangement which characterizes the Pelatan-Clerici system. This process has been described in several papers, but, with one exception, it has never been criticised.

The Keith process is worked by the Keith Patents Syndicate, Limited. A great fault in this is that porous pots are the basis of the electro-deposition of gold, and porous pots are prohibitory in electrolytic tanks intended for the gold-fields.

Mr. Cowper Coles has been remarkably successful in the electrodeposition of zinc on a commercial scale, and his process has been adopted by several English firms, who work it on a royalty. He also deserves to be praised for his parabolic mirror, which he makes by first of all silvering glass which has the curvature of the mirror required, then depositing copper on the silver, which is finally coated with a deposit of palladium. The metallic film is detached from the glass by simply heating, when, owing to the different rates of expansion of the metal and the glass, they become very easily separated. In his gold recovery process he uses iron anodes and aluminum cathodes in a weak solution of potassium cyanide. The advantages he claims are that the gold is recovered as pure gold, not as base bullion; the consumption of potassium cyanide is much less than in any other process; the cost of labor is considerably reduced, as the anodes and cathodes only require renewing at long intervals; the actual weight of gold recovered can be determined daily; the cyanide solution can be used for a longer period, as it is not contaminated with any base metals, such as zinc; there is no consumption of zinc or lead, as in the MacArthur-Forrest and Siemens-Halske processes; no smelting furnaces are necessary; no zinc shavings are required.

Mr. Cowper Cowles uses iron plates at the positive pole, and it is therefore rather difficult to conceive how and why his gold-potassium cyanide solution would not become contaminated. Taking for granted that the deposition of gold on an aluminum cathode proceeds in a uniform manner, but in such a way that the gold is deposited as a metallic sheet which is easily detachable from the aluminum plate by stripping or peeling or rubbing, this is the worst thing which can happen in a gold extraction installation. We are not quite sure that a thick deposit can be obtained on aluminum, and that the gold does not fall to the bottom of the tank; but we are certain that no gold mining company will adopt cathodes from which gold can be stripped off by simply rubbing. It would be too much of an encouragement to gold thieving.

Mr. Cowper Coles speaks of a solution containing only 0.01 per cent. and 0.0075 per cent. potassium cyanide and $2\frac{1}{2}$ dwts. of gold to the ton, which is heated to a temperature of about 100° F., and of a current density of 0.03 ampere per square foot of cathode, the E. M. F. being 6 volts. He does not, therefore, seem to be aware of the actual condition of the electrolytic work in the Transvaal.

The writer has heretofore described the anodes made of peroxide of lead which he invented, and of which the patents for the Transvaal, the United States, Canada and Mexico have been sold to Mr. Charles Butters. The iron anodes used in the Siemens-Halske process become dissolved and contaminate the electrolyte, owing to the formation of oxide of iron and Prussian blue. The peroxide of lead anodes being insoluble in a solution of potassium cyanide, the solution is always clear. The gold is deposited on iron cathodes, which, when sufficiently coated with it, are dipped in molten lead, which immediately absorbs the gold, and a few minutes after the iron cathodes, bright and clean, can be put back in the tanks to become again coated with gold, and so on.

The Transvaal is at present the only country in the world where electrolysis is applied to the precipitation of gold, but in 1898 electrolytic installations will be started by Mr. Ch. Butters and some electro-metallurgists from his Johannesburg staff, in the United States and in Mexico.

The superiority of the electrolytic over the zinc method is now recognized in the treatment of the liquor obtained from tailings. This is due to some improvements which have recently been introduced, and which increase the yield of gold. The zinc process is of no value for extracting gold from the slimes solution. The electric current, on the contrary, precipitates it easily from even a very dilute solution.

In one year 76,000 tons of acid slimes were treated at the Robinson Mine, which on assay averaged 5 dwts. 15 grs. to the ton. This plant has been enlarged. Slimes plants will be erected during the course of this year in several mines in the Transvaal.

A novelty in metallurgy is the oxidation of the pulp by means of compressed air, and in all the slimes plants large low pressure air compressors are installed. The slimes are worked out according to a practical method, which consists in their being coagulated in battery water by means of lime, then in concentration in spitzkasten and in settlement in continuous overflow vats. The pulp is concentrated from $\frac{1}{2}\%$ to 7 or 10% of slimes. There is no possibility of leaching them. They are washed by decantation, and therefore there are from 6 to 8 tons of solution to every ton of slimes, instead of two, as in the case of tailings. The result is that instead of 4 dwts. of gold per ton of solution, the liquor of the slimes is so diluted that it contains only from 0.001 to 0.01% of potassium cyanide and from 6 to 24 grs. of gold to the ton. Our authority is the statement of Mr. Charles Butters, who has not only treated the fresh slimes, but has successfully started immense tanks for recovering gold from the old acid slimes. He says: "Precipitation of metals from solutions presents many curious and interesting problems, and one of these is that with the same reagents it is very much more difficult to produce perfect precipitation from a very dilute solution than from a concentrated solution. There are certain chemical and physical laws in connection with this question which are not very well understood. For instance, precipitating from its solution of its chloride by means of ferrous sulphate, a fairly rich solution containing 1 to 4 oz. of gold to the ton admits of a very perfect precipitation if sufficient time is given for settlement, more especially when there are few other metallic salts in solution. A similar solution, but containing only 1 or 2 dwts. to the ton, allows of very imperfect precipitation by ferrous sulphate. In electrolytic precipitation we have a very different set of laws governing the electro-deposition of metals from

those which operate in chemical precipitation. In the course of our experiments on the precipitation of dilute cyanide liquors we have tried many methods of precipitating solutions containing 6 to 12 grs. of gold to the ton, but failed completely with such dilute liquor; whereas, the same methods acted perfectly on 5 dwts. or 10 dwts. solution. With a dilution of gold down to 6 dwts. per ton, which is about 1 part in 100,000, it would be natural to think if it was 1 part in 100,000 or 1 part in 1,000,000 there would not be a very great difference in the resistance of such very minute proportions of dissolved gold to precipitation, whether by electro-motive force or by chemical reaction; but the difference between the action of a liquid containing 6 dwts. per ton and one carrying 6 grs. per ton is most marked, both in chemical precipitation and in electrolytic deposition. In general we have found that we could effect the precipitation of the gold in these dilute solutions best and most economically by means of electrolysis."

The principal points in electrolytic precipitation that it is desirable to study are the amount of current per square foot of anode and cathode, and the time the current is exerted, taken in conjunction with the value of the solution. One of the first points requisite in the electrolytic deposition of gold is that the liquor shall not contain any solid matter; that is to say, that it shall be absolutely clear. The clearness of the solution depends largely upon the solubility of the anode. The iron plate anode in use to-day in the Siemens & Halske boxes, with properly proportioned current, is a very perfect anode, easy to be obtained in any quantity, and as easily manipulated and secured in the boxes. With a current density as low as 0.03 or 0.04 ampere per square foot, very little decomposition of the iron anode takes place. An anode 3-16 in. in thickness and with a current density of 0.035 ampere per square should last for five years, and possibly much longer. There seems to be a limit of current density up to which an iron anode will show very little corrosion, but, beyond that point, oxidation seems to take place more rapidly than the proportionate rise of current density would indicate. Where the division of the current has been very carefully studied and regulated very little decomposition of the anode need take place. With the peroxide of lead anode, which was discovered by M. Andreoli in the early part of 1895, practically no corrosion of the anode plate takes place.

It may seem paradoxical to say that the electrolytic methods of the future will differ altogether from those which are at present applied to electrodeposition. But there is no reason to believe that the continuous current is the only one fit for electrochemical purposes. Not very long ago the alternate current and high tension were looked upon with diffidence, even by electricians of universally recognized ability. They reign to-day, nevertheless, and electric lighting, transmission of power, etc., could not in many cases be effected without making use of them. Why should we not assume that we may leave on one side the old electrolytic system, and adopt a new one based on the action of alternating currents and of high tension, in order to obtain in much less time and at a considerably cheaper rate some results with which the continuous current, at present actually used for electrolysis, could not compete? Swan has overruled the laws of electroplating by the use of weak currents, and deposited copper at the rate of 1,000 amperes per square foot of electrode; Wm. Crookes has already treated auriferous ores by the alternating current; their example has now been followed in quite a new direction, and there is no temerity in predicting, as an evolution in the application of electrical energy to the separation of metals and to the winning of gold, the use of high tension currents for electrodeposition.

GRAPHITE IN MORAVIA.—In the "Transactions" of the Bohemian Chemical Society Mr. F. Kover gives analyses of some minerals from the graphite mines at Maly Tresny in Moravia. The graphite obtained from the new adit level contains 39.60 to 42.35 per cent. of carbon, 57.48 to 55.63 per cent. of ash, and 1.91 to 1.40 per cent. of water.

GERMAN IRON PRODUCTION.—The production of pig iron in Germany in April was 583,416 metric tons. For the four months ending April 30th the production was: Foundry iron, 415,986 tons; forge iron, 532,700; Bessemer pig, 168,330; Thomas (basic) pig, 1,275,927; total, 2,392,943 tons, an increase of 173,044 tons, or 7.8 per cent. over 1897.

MANGANESE ORE FROM MILO.—A British Consular report states that the output of the several mines was most depressing in 1897, compared with previous years, due, no doubt, to the political crisis which equally affected all the other Greek islands. The amount of manganese ore shipped was only 11,802 tons, against 15,273 tons during the previous year. The prospecting works which were begun in September, 1896, by the Black Point Syndicate, Limited, at Milo for the exploitation of a manganese mine at Fourkovuni Point, gave very satisfactory results last year. The extent of the beds ascertained appears to be considerable, the ore existing in small pieces admixed with soft and hard clays. Large quantities have already been extracted, of which 1,500 tons, yielding from 30 to 32 per cent. manganese, have been shipped to England. The cleaning process, which has hitherto been done by hand, will now be supplanted by machinery, a large building having been erected for the purpose. The machinery consists of crushers, breakers, cylinder sieves, mud-cleaners and revolving tables for separating the ores from the clays; they have been made at the Laurium factories, and the engine, developing 30 horse-power, was sent out from England. By means of the new equipment, which is expected to be in full working order in a few weeks, the amount of ore prepared for shipment will be from 3 to 4 tons per day. A pier has also been constructed for shipping the mineral, and a railway of narrow gauge laid for transporting the same by means of tilting trucks. Provision has also been made for collecting water from the surrounding hills, consisting of a reservoir having a capacity of 200 cu. meters cut in the rock. Other exports in 1897 were sulphur, valued at 35,237 drachma; millstones, valued at 17,372 drachma, and gypsum, valued at 5,980 drachma, which were sent to Greece.

THE RECENTLY DEVELOPED OIL FIELD OF TEXAS.*

By Thomas D. Miller.

Petroleum is found in deposits of nearly all geological ages, from the Lower Silurian to the Tertiary epoch. It is most abundantly found in Argillaceous shales and sand stones, and not infrequently in porous limestone. While it is widely distributed throughout the globe there are only a few localities where it has been found in large enough quantities to justify its exploitation.

The first development of oil in Texas was near Nacogdoches, about 30 years ago, when oil was found at Oil Spring, about 15 miles south of the town. Nearly 100 wells were sunk at the time and oil was found at about 100 ft. depth. It is said that the yield of the first well was nearly 300 bbls. of oil the first day, and that it did not flow after that; but few of the succeeding wells flowed and the oil was either bailed or pumped. A pipe line was built to the railroad and a 2,000-bbl. storage tank erected. Upon examination of this product it was found to be unsuited for the manufacture of illuminating oil, and the industry was prosecuted no further. This oil, which is of high gravity, is well adapted to the manufacture of lubricating oils. These heavy oils are known to exist in other localities in the State, but no development of the fields has yet been undertaken to any extent. All the petroleum in Texas yet examined has an asphaltum base, and it would seem but natural that such should be the case, as asphaltum deposits are found distributed over a large territory in the western, northwestern and northern part of the State and in the Indian Territory. About many of these deposits a heavy asphaltic oil is observed exuding from the ground.

Oil was discovered at Corsicana some time prior to 1894 by Maj. Alex. Beaton while sinking an artesian well. In 1894 the city of Corsicana



FIG. 1.—SKETCH MAP OF TEXAS.

sunk an artesian well for a water supply, and at 1,027 ft. struck an oil vein. The oil was cased off and the boring continued to a depth of 2,470 ft., when a good flow of warm water was encountered, but no more oil. The oil, however, soon made its appearance through the soil on the outside of the casing and has flowed continually since. On this evidence of oil a company was formed and wells were sunk, which vary in depth from 1,000 ft. to 1,040 ft. to the top of the oil bearing sand, which is from 10 to 40 ft. thick. The oil rock lies very regularly and dips to the southeast about 1 ft. in 100. After oil is struck it usually requires about 24 hours for it to reach the surface; it is forced up by gas, and in several wells it has spouted out 100 ft. above the ground. The flow seems to be by heads of from 5 to 10 minutes duration, followed by a short period of complete cessation. There is also a diurnal period in the strength of the discharge, commencing about 4 p. m. and gradually increasing up to midnight, then diminishing until 9 a. m. The wells produce from 10 to 30 bbls. per day each. Some of the wells on the edge of the field have fallen off considerably, but those in the middle of the known oil producing area have held their yield well. The older wells, among the best producers, showed practically the same yield when one year old as when new.

There are now over 100 producing wells and some of them not over 200 ft. apart, and still there is no appreciable diminution in the flow of the individual wells. Before pumping was begun the total flow of oil was about 900 bbls. per day. Recently pumping was commenced and, as the result of this is not given out, as rather an inclination to secrecy is apparent, it is impossible to say positively what quantity of oil is being produced with the pumps.

Out of the total number of wells drilled not quite 10 per cent. have proved non-producers, or dry holes. The field in which oil is known to exist is about 2½ miles long, bearing northeast and southwest 20° to 22°, by one mile wide. At this time a regular system of drilling, called "wild-cattling," is going on, for the purpose of determining the exact extent of the oil field. These wells have not as yet shown oil outside of the territory named, but they have established the existence of an extensive gas field. One well sunk nine miles northeast of the

* Paper presented to the Engineers' Club of St. Louis, May, 1896.

town, near Chatfield, encountered at a depth of 862 ft. a strong flow of natural gas, which rushed out with such force that the fire in the boiler had to be extinguished to prevent the destruction of the plant. Another wild-cat well one mile south of the Union Depot in Corsicana struck a strong flow of gas at a depth of 1,040 ft. The static pressure of the gas in this well was over 200 lbs. Several other wells about three miles southwest of town have also reached the gas-bearing sand. About 70 miles south of Corsicana a gas well has been flowing for several years, which would seem to indicate that the territory in which gas can be reached is quite extensive.

The elevation of Corsicana is about 800 ft. above the sea, therefore the oil-bearing strata is something over 200 ft. below the sea level. The drilling is entirely through ponderosa marl. The oil-bearing rock is soft gray shale and can hardly be called a sand. In January last a pipe line company was formed and the entire output of nearly all the wells was contracted for. Storage tanks for over 60,000 bbls. have been erected and a refinery is now about to be built. At this time all of this oil that has been consumed has been used as fuel, with the exception of some used for gas making; but as there are few gas plants in the State and fewer water gas plants, the consumption for this purpose has been small. As a gas oil it gives very satisfactory results, yielding from 5.50 to 5.75 candles per gallon of oil used, and as high as 32 C. P. gas can be made with it.

A fractional distillation of Corsicana crude oil, made by Mr. E. H. Earnshaw, chemist for the United Gas and Improvement Company, showed the results given in the following tables. The oil is very

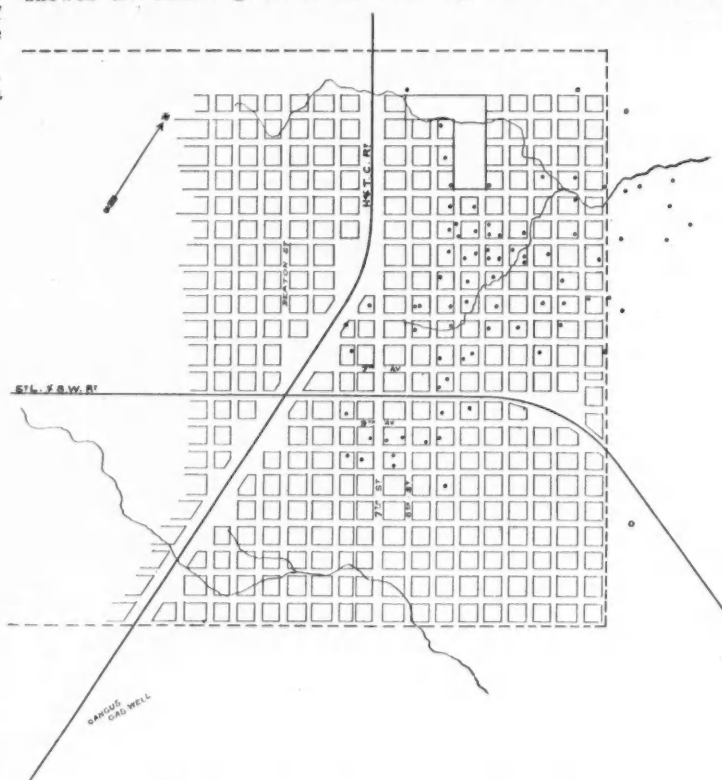


FIG. 2.—OIL WELLS AT CORSICANA, TEXAS.

Solid dots show producing wells; rings show "dry holes."

dark brown and opaque, but thin and fluid at 60° F.; the specific gravity at 60° F. equals 0.8292:

Temperature, Fahrenheit.	Per cent. by volume.	Per cent. by weight.	Baume'.	Specific gravity at 60° F.	Color, etc.
A—130° to 200°	2.80	2.24	80.00°	0.6653	Colorless.
B—200° to 250°	5.10	4.31	69.50	0.7017	"
C—150° to 300°	7.60	6.69	61.75°	0.7302	"
D—300° to 350°	8.20	7.44	56.00	0.7527	"
E—350° to 400°	9.40	8.75	51.25	0.7718	"
F—400° to 450°	7.40	7.07	46.75	0.7920	"
G—450° to 500°	8.30	8.05	43.00	0.8260	Very faint yellow.
H—500° to 550°	6.45	6.43	39.50	0.8404	"
I—550° to 600°	7.75	7.85	36.50	0.8555	Yellow.
J—600° to 650°	14.95	15.43	31.00	0.8687	Deep reddish yellow
K—650° to 685°	17.25	18.07	26.00	0.8972	Deep red—solid.
L—above 685°	1.30	1.41	14.50	0.9699	Dark red—brown
M—above 685°	1.40	1.63	.....	.....	solid.
Residue.....	.....	2.63	.....	.....	.....
	97.90	98.04			

Summary of the foregoing fractional distillation.

Temperature, Fahr.	Per cent. by volume.	Per cent. by weight.	Baume'.	Specific gravity.
130° to 200°	2.80	2.24	80.00	0.6653
200° to 300°	12.70	11.00	64.75	0.7191
300° to 400°	17.60	16.19	53.50	0.7680
400° to 500°	15.70	15.16	44.75	0.8012
500° to 600°	14.20	14.28	37.75	0.8345
600° to 685°	32.20	33.50	32.25	0.8627
Above 685°	2.70	3.04	19.75	0.9350
Residue.....	.....	2.63	.....	.....
	97.90	98.04		

In the accompanying illustrations, Fig. 1 is a sketch map of Texas, showing location of coal, oil and gas deposits; Fig. 2 is a map of Cor-

sicana, showing the location of wells; Fig. 3 is a diagram, showing the distillation of Corsicana crude oil, and giving the results expressed in the tables in graphic form; Fig. 4 is a diagram, showing the fractional distillation of petroleum, and giving a comparison between Texas and Pennsylvania oils.

RECENT DECISIONS AFFECTING THE MINING INDUSTRY.

Specially Reported for the Engineering and Mining Journal.

SERVICE ON ONE JOINT LESSOR BINDS ALL.—Where a grant is made to four persons, jointly, a notice, addressed to all four of them,

CONVEYANCE OF MINERALS DOES NOT CONVEY OIL RIGHTS IN OHIO.—A conveyance of a mining right in lands was made as follows: "Do hereby grant, bargain, sell and convey to the said Michael L. Deaver, his heirs and assigns, forever, all the coal of every variety, and all the iron ore, fire-clay and other valuable minerals in, on, or under the following described premises . . . together with the right in perpetuity to the said Michael L. Deaver, or his assigns, of mining and removing such coal, ore or other minerals; and the said Michael L. Deaver, or his assigns, shall also have the right to the use of so much of the surface of the land as may be necessary for pits, shafts, platforms, drains, railroads, switches, side tracks, etc., to facilitate the removal of such coal, ore, or other minerals, and no more."

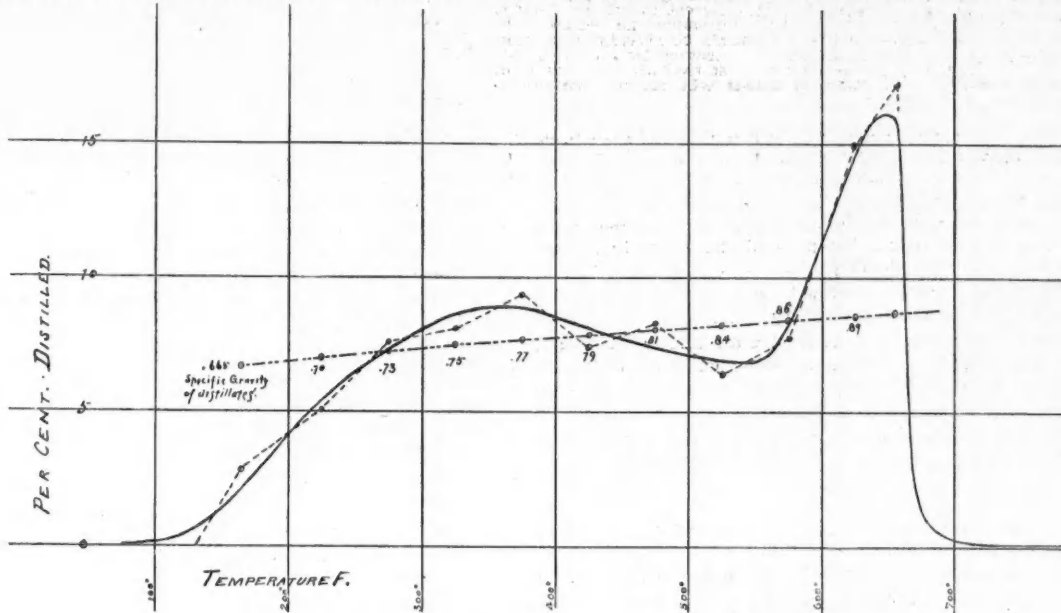


FIG. 3.—FRACTIONAL DISTILLATION OF TEXAS PETROLEUM.

that the grant has expired, and to keep off the premises, and served on one of them, is sufficient notice to all.—*Detlor vs. Holland* (49 Northeastern Reporter, 691); Supreme Court of Ohio.

does not convey title to the petroleum, oil and natural gas in the lands described in the deed.—*Detlor vs. Holland* (49 Northeastern Reporter, 690); Supreme Court of Ohio.

PETROLEUM A PART OF THE REALTY—Whether petroleum oil percolates through the rock or exists in pools and deposits, it forms a

NO RIGHTS AFTER FAILURE TO DRILL WELLS AS PROVIDED.—A written instrument was duly executed as follows: "Do hereby grant

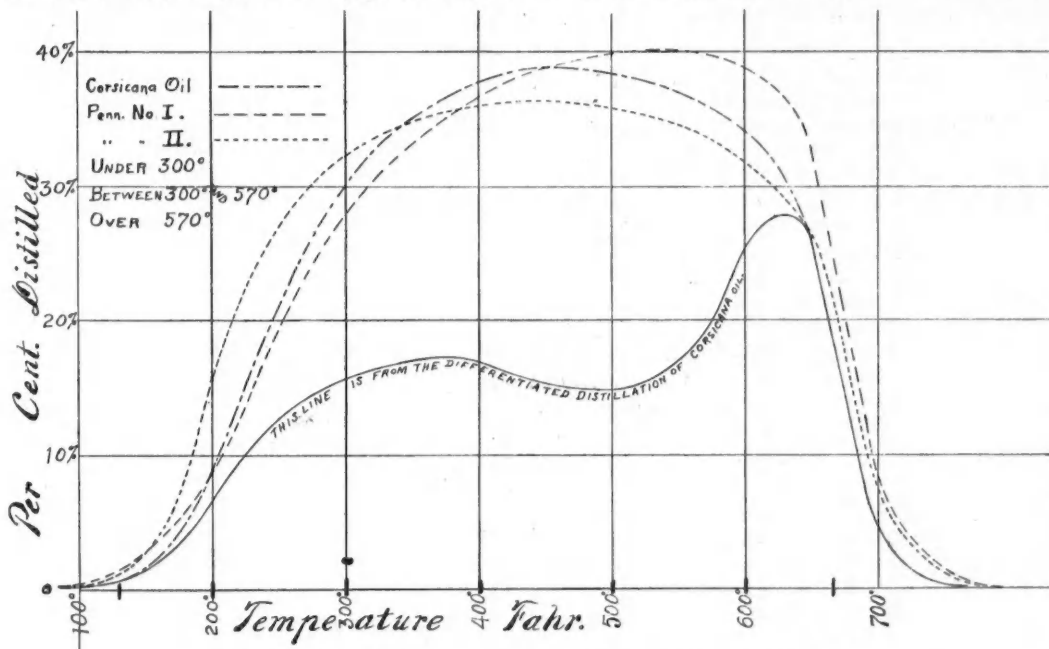


FIG. 4.—DIAGRAM OF FRACTIONAL DISTILLATION OF PETROLEUM.

part of the tract of real estate in which it carries for the time being; and when it leaves one tract and enters another it becomes a part of the realty of such other.—*Kelley vs. Ohio Oil Company* (49 Northeastern Reporter, 399); Supreme Court of Ohio.

SUBSTANTIAL COMPLIANCE SUFFICIENT.—Where a lessee of oil lands agrees to complete four wells the second year, two of them the first six months, and two of them the last six months, the completion of four wells during the second year is such a substantial compliance with the provision of the lease as will defeat a forfeiture. Where such lessee stipulated that 22 acres shall be forfeited for each well not so completed, the stipulation is void for uncertainty.—*Thomas vs. Kirkbridge* (15 Ohio Circuit Court Reports, 294); Circuit Court of Ohio.

unto second party, their heirs and assigns, the sole right to produce petroleum and natural gas from the following named tract of land: . . . ; specifically granting to said second party for and during the term of 90 days from this date, and as much longer as oil or gas is found, operated and produced in paying quantities, with the exclusive right to drill and operate oil and gas wells." The Court held that this was only a grant of the sole right to produce petroleum and natural gas for the term mentioned, and that upon the failure to drill one paying well within 90 days there was no right to drill thereafter. Also, expenses incurred by grantees in drilling wells on the land after the expiration of the grant, and after notice not to drill such wells, cannot be recovered from the grantor.—*Detlor vs. Holland* (49 Northeastern Reporter, 692), Supreme Court of Ohio.

QUESTIONS AND ANSWERS.

(Queries addressed to this department should relate to matters within the special province of this periodical, such as mining, metallurgy, chemistry, geology, mineralogy, machinery, supplies, etc. As it is manifestly impossible to devote space to all the questions and notes constantly received, preference will be given to topics which seem to be of interest to others besides the inquirer. We cannot here undertake to give professional advice on problems requiring special investigation and which should be referred to a consulting expert. Brief replies to questions will be welcomed from correspondents. While names will not be published, we request that all inquirers send their names and addresses. Anonymous questions will not be answered.—Editor E. & M. J.)

Fuel Consumption in Copper Smelting and Refining.—I want to secure data as to the consumption of fuel in smelting and refining copper; including roasting furnaces, reverberatory furnaces, etc. Where are such data available?—W. G.

Answer.—The most complete information on the points to which you refer can be found in Dr. Peters' work on "Modern Copper Smelting," and "Lead and Copper Smelting," by Hixon, both published by the Scientific Publishing Company, New York.

Superheated Steam in Roasting Ores.—We have been urged to try a newly patented process which provides for the use of superheated steam in roasting ores. It is claimed that it has a wonderful effect in freeing gold from ores carrying pyrites, tellurides, etc.—J. O. B.

Answer.—The use of superheated steam in the roasting of ores has been tried in several different ways, without advantage. The proposed plan is, therefore, not a new one. There are a number of roasting furnaces of approved types, the selection from which must be determined in some degree by the nature of your ores. Generally, we may say that it is not best to introduce new processes or new devices in new mines. Approved methods should be adopted, and experiments can be left to old and well-established concerns. In case of a failure, they can stand the loss which might break down a new company.

Magnesite.—What are current quotations for magnesite? Is there any considerable market for the mineral?—G. E.

Answer.—Current quotations for magnesite in New York are \$7 to \$7.50 a short ton (2,000 lbs.) for crude, and \$14 to \$25 for calcined. There is a wide difference in the quality, as is shown by the range in prices. Magnesite is used in the United States in the manufacture of wood-pulp for paper-makers; for making refractory brick and linings for basic furnaces; and, in crude form, for making carbonic acid. The United States produced 1,907 tons in 1897. Some magnesite is imported from Greece and some, chiefly in the form of bricks and tiles, from Germany. The market is a comparatively limited one, but is increasing. An advertisement would put you in correspondence with dealers and show whether you could make profitable terms for your mineral.

Hardening Armor Plate.—I have heard of a new process for hardening armor plate. Can you tell me anything about it?—H. C. T.

Answer.—A new process (or processes) for making armor plates of exceptional hardness has been taken up by the great Krupp works at Essen, in Germany, the Creusot Works, in France, and some others. The process has so far been kept nominally secret, but it is understood that it consists in the substitution for nickel-steel of steel alloyed with molybdenum, uranium and probably some of the other rare metals. The use of this process may make a market for some of the metals which have been heretofore rather curiosities than anything else. The quantities used in steel making for some time will hardly be large, however, and the demand created will not be sufficient to warrant any considerable expenditure of money in prospecting for or developing deposits of ores containing those metals. An advertisement of the mineral offering it for sale would quickly bring bids from those who need it in Europe or this country.

Manganese Ore.—What is manganese ore worth that will run from 25 to 75 per cent., manganese? It has also a little nickel and cobalt. It is within a reasonable distance of a railroad.—W. S. B.

Answer.—Manganese ore is at present quoted at 21 to 22½ cents per unit for ore 50 per cent. or over. That is, a 50 per cent. ore would bring \$10.50 to \$11.25, delivered; 60 per cent. ore, \$12.60 to \$13.50, and so on. Ore less than 50 per cent. is not readily sold. The chief buyers are the steel-makers who use the ore in making spiegeleisen and ferro-manganese. The largest buyers are the Carnegie Steel Company in Pittsburg and the Illinois Steel Company in Chicago. The former obtains most of its manganese from abroad at present, and the Illinois Steel Company draws its supplies from Leadville, Colo., and from the iron ore mines in Michigan. There is a small demand for high-grade, high-priced ore in the chemical industry. From the prices given and the current railroad freights from your deposit, you can judge whether it would pay to mine the ore.

Leases of Copper Property.—What is the usual custom in leasing copper properties? If on the basis of fine copper produced, how much per pound should be charged for ores carrying 3 per cent., or up to

10 per cent. copper? Also, what percentage should be given the owner if other metals were found in the ore?—W. L. M.

Answer.—In this country there is no general rule in leasing of copper properties, and no recognized rate of rent or royalty. We do not, in fact, know of a single mine working on a royalty. Copper mines are usually sold outright, for cash or stock. It is evident, however, that a fair royalty could be determined for any mineral or metal from a careful investigation of the quantity and richness of the ore estimated to be contained in the mine, the cost of obtaining the metal from it, and the market value of the product. A royalty based on the selling price of the mineral or metal produced could be devised, but it would vary with many conditions peculiar to the mine itself, so that there can be no standard royalty applicable to all cases. The investigation of each would be a matter for expert professional advice.

Lake Ore and Coal Cargoes.—I have noticed many references to large cargoes of iron ore, coal, etc., on the Great Lakes. What are the limits of these cargoes?—C. C.

Answer.—Practically the limit to a lake cargo is set by the depth of water in the Sault Ste. Marie Canal and in the Detroit River, which fixes the extreme draft allowable in a lake steamer. With this restriction very large carrying capacity has been reached. The records, as given by the Cleveland "Marine Review," are as follows for iron ore cargoes: Steamer "W. R. Linn," 6,314 short tons, Escanaba to South Chicago; barge "Amazon," 6,307 tons, Duluth to South Chicago; steamer "Empire City," 6,296 tons, Two Harbors to Cleveland. For coal the records are: Barge "Polynesia," 5,654 short tons, Cleveland to Duluth; steamer "Carnegie," 5,369 tons, Cleveland to Duluth. The extreme draft of water on any of these cargoes was 17 ft. 2 in. It is claimed that some of the new carriers this season are able to take 6,500 tons, possibly 7,000 tons, on 17 ft. draft. A still larger cargo—the biggest on record up to date—was reported in the "Engineering and Mining Journal" for June 11th, page 711. This cargo was 6,824 net tons of iron ore taken from Duluth last week by the steamer "Superior City" on a draft of 16¼ ft.

Smelters' Prices for Ores.—1. What is the meaning of spot quotations in connection with the payment for silver and lead contents of ores? 2. If the spot quotations are accepted by a shipper, will he get as good a price for his silver and lead as he could by stipulating for any other quotations usually agreed to by smelting companies in the United States? If so, what quotations? 3. Are there any smelters in the United States who pay for the zinc in ores as well as for gold, silver and lead, when those metals are found?—J. V. A.

Answer.—1. We have frequently discussed this question of quotations for silver and lead. The spot quotations are those sent out from New York by telegraph daily, and supposed to represent prices of metals actually on hand as opposed to prices for future delivery.

2. Many producers now base their contracts on the quotations given in the "Engineering and Mining Journal." These are based on actual sales, and are the closest and fairest presentation of the market published. We have heard no complaints from the parties using these quotations.

3. The smelting companies not only do not pay for the zinc contained in ores which carry lead, silver and gold, but they usually impose a penalty, or higher smelting charge, when the ore contains zinc exceeding about 6 or 8 per cent., as the zinc makes the ores more difficult to treat. The only works which treat zinc-lead ores, utilizing both metals, are those of the American Zinc-Lead Company at Canyon City, Colorado.

PATENTS RELATING TO MINING AND METALLURGY.

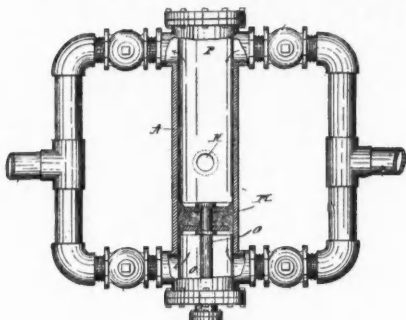
UNITED STATES.

The following is a list of the patents relating to mining and metallurgy and kindred subjects issued by the United States Patent Office. A copy of the specifications of any of these will be mailed by the Scientific Publishing Company upon receipt of 25 cents.

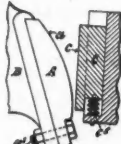
Week Ending May 31st, 1898.

- 604,717. AIR COMPRESSOR. Orman H. Brigham, Chatsworth, Ill. The combination of a receiver having an inner annular oil-cup at its lower end, an air-discharge pipe communicating with the lower portion of the receiver at a point below the oil-cup, and a weighted plunger operating in the receiver and serving as a means for charging the receiver and forcing the air out under pressure.
- 604,728. PROCESS OF PRODUCING SPIEGEL OR SIMILAR METALLIC ALLOY. Edmund A. S. Clarke, Chicago, Ill. The improvement consists in charging the converter or open-hearth with molten iron and thereafter delivering to it after the refining operation, a proper quantity of a molten metallic alloy (such as spiegel) while still in the molten condition in which it is received from the smelting-furnace (without remelting) suitable additions in proper quantity being made to the molten metallic alloy, before its delivery to the converter, in order to impart to said alloy a character that shall adapt it for use as an addition, after said refining operation, to the charge of the converter or open-hearth furnace.
- 604,762. CRUSHER. Alfred Jordan, London, England. Patented in England April 21st, 1896, No. 8,386. The combination of a movable jaw, the working face of which is shaped so as to form a segment of the involute of a circle and which is pivoted upon a central spindle; means for rocking the same, and a sliding jaw normally forced into its highest position by means of springs, but capable of being drawn downward by the material under treatment, when the movable jaw descends.
- 604,767. HYDRAULIC PRESSURE PUMP. Thomas A. Kugler and Joseph Gomes, New York, N. Y. The combination with the pump-cylinder

of an air-inlet directly from atmosphere to a point midway of the length of the cylinder and above the water-level and adapted to form a layer of air above the water in the cylinder, a check-valve on the air-inlet opening inward, an adjustable valve on the air-inlet outside of the check-valve, a reciprocating plunger in the cyl-



604,767.

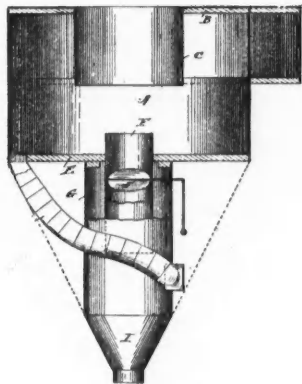


604,769.

inder having a periphery broader than the air-inlet, supply connections near the ends of the pump-cylinder, check-valves thereon opening inward, independent discharge connections from the ends of the cylinder, and check-valves thereon opening outward.

604,828. CONVEYOR. Harry F. Hodges, New York, N. Y. The combination of fixed guides having front and rear faces, a conveyor-chain running near and parallel to the guides, and a carrier attached to the chain, the carrier comprising contact devices at its upper part adapted to engage the rear faces of the guides, and contact devices at its lower part adapted to engage the front faces of the guides.

604,871. DUST COLLECTOR. William E. Allington, Saginaw, Mich. The combination with a primary separating chamber into which the dust-laden air current is delivered, of a secondary chamber of cylindrical form from which the separated dust is discharged, the axial

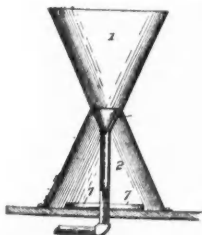


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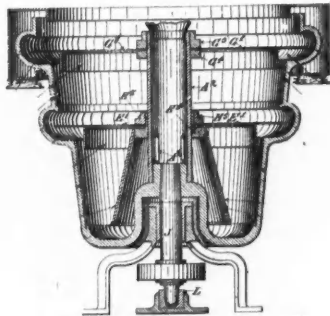
portions of said chambers being in open communication with each other for the return of the purified air from the secondary to the primary chamber and a pipe or passage connecting said chambers.

604,893. HOISTING AND CONVEYING APPARATUS. Jeremiah Campbell, Chelsea, Mass. The combination of a movable car or truck, a shovel and trolley operating engine mounted thereon, a space in which the steam-shovel may be held while it is being moved with the car or truck, and a movable boom-section adapted to hold the trolley while it is being transferred with the shovel and engine, and two or more stationary boom-sections with which the movable section is adapted to co-operate.

604,920. ORE CONCENTRATOR. Elmer M. Rich, Silverton, Colo. A concentrator and separator comprising similarly-formed funnel-shaped receptacles inversely disposed and joined at their smaller ends, the sub-receptacle having openings in its sides closed by means of a plug and a door, flumes communicating tangentially with the upper end of the topmost receptacle, a pipe for supplying water extend-



604,920.



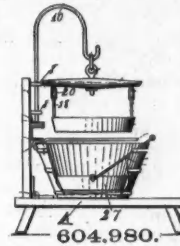
604,978.

ing vertically through the sub-receptacle and terminating in a flaring nozzle about in the plane of the juncture of the two receptacles, and a tray placed in the sub-receptacle and removable therefrom through the opening closed by the door.

604,978. CENTRIFUGAL AMALGAMATOR AND SEPARATOR. Charles L. Garland, Sydney, and John Murray and Sampson E. Murray, Cowra Creek, New South Wales. The combination with a bowl mounted on a central, hollow shaft having a feed-hopper, emptying into its upper end, the lower portion of said shaft having slots for the passage of the material, of a part mounted on said hollow shaft and having the shape of a truncated hollow cone, an amalgamating plate upon the inner face of said part, and one or more circular plates, or disks, mounted on said hollow shaft above the cone-shaped part, and having their edges projecting into a corresponding

number of catch-grooves, or traps, formed of the wall of the bowl which projects outward beyond the normal diameter of the latter.

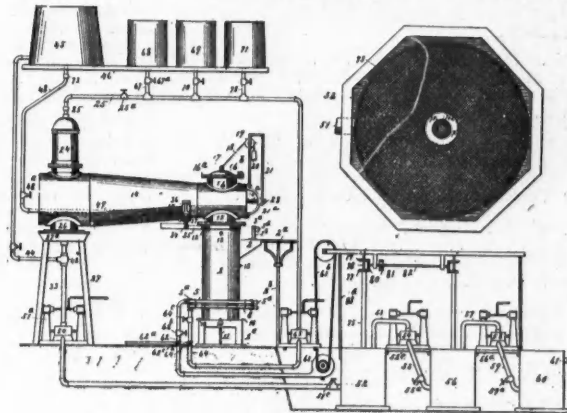
604,980. GOLD WASHER. Charles Grimes, Rapid City, S. D. A gold-pan comprising an outer body or rim, a flat bottom of smaller diameter than the body and situated in a higher plane than the bottom edge



604,980.

of the latter, and an inclined flange located inside the rim or body and connecting the bottom with the lower edge of said body, the flange being provided with vertically-disposed slots.

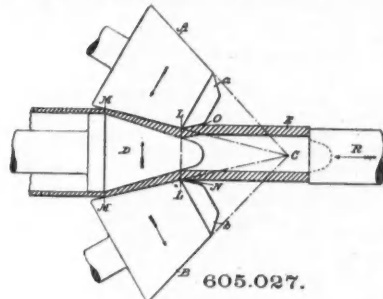
605,001. PROCESS OF AND APPARATUS FOR ROASTING AND SEPARATING ORES. Waitman M. Morgan and Francis E. Parker, Kansas City, Mo. The process consists first in roasting the ores with a flux and simultaneously drawing air through the heated



605,001.

ores, and separating the sulphur and arsenic, and also the sulphides and arsenides from the ores, and then investing the slag containing the metal with a separate mineral after the separation in the furnace.

605,027. MECHANISM FOR EXPANDING OR ENLARGING METALLIC TUBES. Ralph C. Stiefel, Ellwood City, Pa. Assignor to the Shelby Steel Company, Pittsburg, Pa. Combination of conical rolling bodies disposed to form a pass between them, the sides of which



605,027.

converge toward the entrance end, the diameters of the rolling bodies diminishing progressively in the same direction and in the same ratio as the width of the pass with a mandrel located in said pass.

605,042. MINERAL WOOL. David P. Doak, St. Louis, Mo. Assignor to the Missouri Smelting Company, same place. A mineral wool containing in chemical combination, silica from 30 to 40 per cent., iron from 15 to 25 per cent., lime from 30 to 40 per cent., aluminum and lead from 10 to 15 per cent.

GREAT BRITAIN.

The following is a list of patents published by the British Patent Office on subjects connected with mining and metallurgy.

Week Ending May 14th, 1898.

- 11,151 of 1897. ORE TREATMENT. G. H. Blenkinsop, Swansea. Removing small percentages of sulphur and arsenic from ores by heated air under pressure.
- 12,192 of 1897. COAL TIPPING. T. Archer, Gateshead. Method of regulating the tipping of coal wagons into screens.
- 12,325 of 1897. ALLOYS FOR BEARINGS. J. C. Bull, London. Alloys for bearings containing, in addition to copper and lead, a proportion of nickel.
- 13,665 of 1897. DISTILLING OIL FROM SHALE. W. Young and G. Fyfe, Glasgow. Improvement in retorts for distilling shale.
- 15,095 of 1897. ROCK DRILL. E. J. Rule, Redruth. Improved rocker for the pistons of rock drills.
- 25,213 and 25,314 of 1897. CONCENTRATOR. F. L. Roudebush, London. The concentrator known as the "Wilfley."
- 3,296 of 1898. ALUMINUM SOLDER. C. N. Burton, London. Soldering aluminum by an alloy of tin and aluminum.
- 5,900 of 1898. SCREENS. W. H. Baxter, Leeds. In screens, an appliance for returning the unreduced rock back to the breaker.
- 6,837 of 1898. DUST SEPARATION FROM BLAST FURNACE GASES. B. H. Thwaite and F. L. Gardner, London. Separating the dust from blast furnace gases so as to make it usable in gas engines.
- 6,955 of 1898. STEAM STAMP. F. A. Parnell, London, and C. S. Madan, Manchester. Steam stamps which twist while striking the ore.

PERSONAL.

Mr. C. A. Molson is examining Montana mining properties.

Mr. Jerome B. Wheeler has been devoting some days to Utah mining camps.

Captain J. R. De La Mar is expected in Salt Lake City before the end of June.

Mr. J. W. Cairns of Atchison, Kan., has been made superintendent of the Enterprise mine at Eldorado, Colo.

Mr. R. K. Farwell, of Freeport, Ill., one of the owners of the Big Four mine at Leadville, is spending a short time in that camp.

Mr. John Guth, one of the owners and resident manager of the Banker Mining Company, of Leadville, Colo., is visiting in New York city.

Mr. Algernon Del Mar passed through New York recently on his way to Los Angeles, California, where he intends to establish his mining business.

Mr. Charles Butters passed through Denver on June 8th on his way to Salt Lake City. Thence he expected to go to Central America by way of San Francisco.

Mr. J. F. Stone of Columbus, O., secretary and treasurer of the Boomer Coal and Coke Company, was at Boomer, W. Va., recently, to look after his company's interests.

Mr. William Barclay Parsons, of New York, has been made captain of Volunteer Engineers. He is a civil engineer, and is chief engineer of the New York Rapid Transit Commission.

Mr. J. P. Harrington, mining engineer, late mine manager of the Nigel Deep mines in the district of Heidelberg, South Africa, has returned to his home in San Francisco, Cal.

Prof. David Starr Jordan, of Stanford University, and Mr. Charles F. Lummis are members of an archaeological party that has left San Francisco for Flagstaff, Ariz.

Mr. Ross E. Browne, a mining engineer of San Francisco, accompanied by Messrs. Robert Kenzie and Karl Hoffman, who are studying mining under him, are in Washington, D. C.

Prof. A. W. French of the Thayer School of Civil Engineering at Dartmouth College, is to leave Hanover, N. H., in a few days to take charge of a machine shop at Niagara Falls, N. Y.

Mr. C. H. Blanchard, for 25 years recorder of the Tintic District, Utah, has returned from a visit to California. His many friends are congratulating him on his success in recent mining sales.

Mr. James Long, Jr., manager of the Breckenridge group, Gold Mountain, paid his customary semi-annual visit to Salt Lake City last week. He reports the mines of that locality preparing for an active season.

Señores Manuel de la Torre and Y. de la Peréz Gutunéz, silver mine owners of Mexico, visited St. Louis recently to purchase pumps for their mines, about 80 miles north of Mexico City, that were recently flooded.

Mr. F. A. Jones of the United States Assay Office at Kansas City, and chemist of the Missouri State Geological Survey, has been elected Director of the School of Mines of New Mexico, and will take charge early in the fall.

Messrs. John Leisenring of Pennsylvania and J. L. Kemmerer and P. J. Quealey of Kemmerer, Wyo., recently visited the property of the Upper Boise Hydraulic Company. Mr. Leisenring is the principal stockholder in the company.

Messrs. C. C. Sharp and Edw. H. Coxe, of the Sunday Creek Coal Company of Corning, O., recently spent several days in Boomer, W. Va., making surveys for the Boomer Coal and Coke Company, preparatory to erecting coke ovens and a new tippler.

Mr. Fred C. Woodbury, general manager of the Dunn Mining Company, operating mines on the Gogebic and Menominee ranges, Upper Michigan, has tendered his resignation to take immediate effect in order to accept a more favorable position with the Calumet & Hecla Company.

Mr. Thomas J. Williams of Scranton, Pa., has been appointed assistant superintendent of the mines of the Delaware, Lackawanna & Western Company, to fill the vacancy caused by the death of Mr. Thomas D. Davies. Mr. Williams is at present inside foreman at the Manville mines of the company.

Dr. W. B. Phillips, secretary of the Birmingham Commercial Club, has gone to Omaha to set up the display to be made by Jefferson County, Ala., at the Trans-Mississippi Exposition. The display, which will consist of coal, ore, limestone,

iron, steel, machinery and other products of this county, will be one of the most elaborate ever set up by Alabama. The display was forwarded this week.

Mr. Miki Saita, the Japanese Consul at Tacoma, Wash.; Capt. K. Sakurai, who will have command of the new cruiser "Chitose"; Lieutenant-Commander J. Ushida, of the battleship "Hiyabe," belonging to the Pacific squadron; Lieut. R. Kamava, chief marine engineer of the Japanese navy, and S. Hirabe, an inspector of naval machinery, recently visited the Carnegie Company's plant at Homestead, Pa., to inspect armor plate to be furnished the Japanese Government. Afterward the party went to Philadelphia to visit the Cramps' shipyards.

OBITUARY.

W. G. Howe, of Haverhill, Mass., died in that city on June 10th, aged 68 years. He had been a member of White & Howe, dealing mainly in Pennsylvania coal mines, and the mines of Nova Scotia and New Brunswick. At the time of his death he was treasurer of the Everhart Coal Mining Company, of Wilkes Barre, Pa.

Col. John D. Morrissey, one of the prominent old-time mining men of Colorado, died at Leadville on June 10th. He made a fortune out of the Crown Point in the early days of the camp, but died a poor man, having lost all his money in various speculations. He returned to Leadville about a year ago.

Isaac Bates died at the Howie mine, North Carolina, May 26th, aged 65 years. He was born in Cold Spring, N. Y., crossed the Isthmus in 1850 for the California gold-fields, and later went to Australia. For 20 years he operated the Howie and other mines in North Carolina. He was a successful gold miner and an upright man. He was a native of Cold Spring, N. Y.

SOCIETIES AND TECHNICAL SCHOOLS.

Ohio Institute of Mining Engineers.—The programme for the summer excursion, June 28th to July 1st, has not been definitely arranged, but probably the trip will be from Columbus to Sandusky, thence by boat to Kelly's Island, from there to Toledo and, after a day, back to Columbus.

Engineers' Club of St. Louis.—A meeting was held June 1st. Prof. J. B. Johnson made a verbal report for the committee appointed to memorialize the Secretary of War and the Missouri Congressmen regarding the enlistment of a volunteer brigade of engineers. He stated that telegrams and memorials had been sent as directed and that favorable replies had been received from the Congressmen. It was reported that a regiment of engineers was to be raised in the Mississippi Valley. The paper of the evening, by Mr. Charles Carroll Brown, was entitled "The Ethics of Engineering." It was stated that the standard of ethics in business and professional life was lower at the present time than formerly, and the reasons for this were given. The paper closed with a plea for the necessity for a code of ethics, in the engineering profession. In the discussion which followed, several of the members differed with the author of the paper as to the necessity of a code of ethics and contended that the standard of ethics in the engineering profession had always been a high one. The discussion was participated in by Messrs. Holman, Moore, Johnson, McMath, Crosby, Eranne, Ferguson, Flad and Laird.

American Chemical Society.—The New York Section held its meeting June 3rd at the College of the City of New York, 44 members present, and Dr. Wm. McMurtrie presiding. The following papers were read:

F. J. Pope, "A Preliminary Note on the Titaniferous Magnetites of Eastern Ontario;" E. J. Levine, "A Comparison of Some Methods Used for the Determination of Starch;" C. H. Fulton, "The Assay of Telluride Ores;" W. S. Meyers, "Note on a Convenient Method for Maintaining Reductions of Ferrous Solutions;" C. F. McKenna, "Slag Cements;" G. L. Heath, "A Short Study of Methods for the Estimation of Sulphur in Coal." Read by title.

Dr. McKenna's paper gave a very interesting resume of the status of slag cements, and was discussed by Messrs. Richardson and McMurtrie.

A report by the secretary showed that nine regular and two special meetings had been held, at which 35 papers had been read, with an average attendance of about 50. The membership of the section is 276. Dr. McMurtrie was unanimously re-elected chairman. Durand Woodman was re-elected secretary and treasurer, no other nomination being made, as also the Executive Committee—C. A. Doremus, A. C. Hale and A. A. Breneman. Delegates to the Scientific Alliance—E. E. Smith and Marston T. Bogert.

Manufacturing Chemists' Association of the United States.—The semi-annual meeting was held at Young's Hotel, Boston, Mass., on June 3d. Owing to the unavoidable absence of the

president, Mr. W. H. Nichols, the chair was occupied by the vice-president, Mr. Richard M. Atwater, of Syracuse. The following firms were elected members of the association: The Tartar Chemical Company, of New York, and W. H. Swift & Co., of Boston.

The meeting was called to order at 10 a. m., and after the routine business was transacted several places of interest in the beautiful suburbs of Boston were visited. Among the members represented were the following: The Ammonia Company, Messrs. W. H. and C. R. Bowler; Cochran Chemical Company, Hugh Cochran; Fairfield Chemical Works, L. S. Wolf; the Grasselli Chemical Company, H. C. Grant; Highlands Chemical Company, E. Waugh; Martin Kalbfleisch Chemical Company, H. H. Baker; Lazaretto Guano Company, W. H. Grafflin; Charles Lennig & Co., Nicholas Lennig; W. J. Matheson & Co., R. B. Blodgett; Merrimac Chemical Company, Messrs. Alonzo P. and Charles T. Howard; James L. Morgan & Co., James L. Morgan, Jr.; Passaic Chemical Company, C. A. Edwards; Pennsylvania Salt Manufacturing Company, Messrs. A. M. Purves and P. A. Bour; T. P. Shepard & Co., E. D. Pearce; Solvay Process Company, R. M. Atwater; Thomsen Chemical Company, A. L. Thomsen.

Engineers' Club of Philadelphia.—A regular meeting was held on June 4th. There were 89 visitors and members present. Mr. Joseph Appleton read a paper on Recent Developments in the Application of Storage Batteries, and illustrated his descriptions with diagrams and photographic views projected by the electric lantern. He first described the Buffalo Street Railway Company's installation, which is operated in conjunction with power from Niagara Falls. He next touched upon batteries for equalizing the load on generators and supplying current to fluctuating power loads, and gave a description with efficiency curves of an installation in an office building where Sprague electric elevators and incandescent lamps are run from the same dynamo. A description of the use of batteries in connection with the substitution of electricity for steam on suburban railroads was then given, showing how rapid acceleration can be obtained with a minimum amount of generating plant. Storage batteries in connection with large telephone exchanges have marked advantages over primary batteries. Mr. Appleton then spoke of motor vehicles, with special reference to those employing storage batteries and electric motors, and indicated the probable future of this class of carriages. The paper concluded with a description of the plant in the station of the Edison Electric Lighting Company, of Chicago, which is the largest storage-battery plant in the world.

The reading of the paper was followed by a general discussion upon its subject, participated in by Messrs. Carl Hering, L. Y. Schermerhorn, Chas. Hewitt, Henry G. Morris, P. G. Salom, P. L. Spaulding, Francis Schumann, W. W. Gibbs, E. A. Scott, Henry Leffman, W. C. L. Eglin, and the author.

By means of the electric lantern, Mr. L. Y. Schermerhorn exhibited a reproduction of the Hydrographic Bureau's map of the harbor of Santiago de Cuba, and called attention to the tortuous character of the channel, and to its widths and depths in various parts.

The first fall meeting will be on Sept. 17th. Messrs. F. E. Dodge, Emil L. Nuebling and Edward Page, Jr., were elected active members, and Mr. H. J. Samborn a junior member.

INDUSTRIAL NOTES.

The Wier Frog Company, Cincinnati, O., has shipped a car load of railroad track supplies to Mexico.

The Pennsylvania Tube Works at Pittsburg, Pa., has begun the manufacture of boiler tubes of all sizes.

Lanyon & Sons' smelter at Iola, Kan., was almost destroyed by fire recently. The loss is estimated at \$35,000. It will be rebuilt.

The Dixon Rock Drill Company of Denver has shipped a number of its drills to Ciudad Porfirio Diaz, Mex., for use in tunnel operations in that vicinity.

The Stewart Architectural Iron Company, Cincinnati, O., has a contract for several hundred tons architectural iron for the Rawson Building in Cincinnati.

L. Schierben Sons Company, Cincinnati, O., has a contract for upward of 3,000,000 lbs. of unchilled iron from the Cincinnati Edison Electric Light Company for its new building on Plum St.

The Bradford Milling Company, Cincinnati, O., is having orders for its lathes from Germany, Austria, France, Belgium, England and Russia. The calls are from one up to 30 lathes in an order.

It is stated that Mr. S. C. Edgar, proprietor of the Glen Dale Zinc works of St. Louis, will begin the erection of a zinc smelter at Cherryvale, Kan. It will be a two-block, 1,200 retort smelter and will cost about \$100,000.

The new 38-in. mill at the Homestead, Pa., steel works went into operation recently, the first ingot being rolled in the presence of President C. M. Schwab and several other officials of the Carnegie Steel Company, Limited. It is said to be the largest and best equipped mill in the world.

The Jackson Drill and Manufacturing Company, of Denver, Colo., manufacturer of the Jackson hand-power rock drill (described and illustrated in the "Engineering and Mining Journal" of April 9th, 1898, page 435), has opened a branch office at No. 120 Liberty Street, New York, where the drill can be seen in operation.

It is said that the Pennsylvania Railroad Company contemplates building a large number of new freight locomotives at its Altoona shops. The locomotives are to weigh 218,000 lbs. Two engines of this type are already completed, and in a recent test one of them hauled 643 tons of freight up the east slope of the Alleghany Mountains.

The Dearborn Drug and Chemical Company, of Chicago, is extending its trade among the various mining districts of the country, the boiler compounds it manufactures having many consumers in places where the water supply contains mineral substances. Mr. W. H. Edgar, president of the company, is now visiting Western mining camps.

The Oliver & Snyder Steel Company of Pittsburgh, has placed an order for the building of a Uehling casting machine at their Rosena furnace at New Castle, Pa., and also for a second casting machine at their new Edith furnace in Allegheny. The Uehling casting machine which has been under erection for some time at Struthers furnace, operated by W. C. Runyon at Struthers, O., is about ready to be put in operation.

The Chambersburg Engineering Company, of Chambersburg, Pa., has been given a contract by the Pittsburgh Locomotive Works, Allegheny, for what is claimed to be the largest hydraulic riveting plant ever built. The riveter will weigh, when completed, 80,000 lbs., and is to be used for putting rivets in boilers of the heaviest types. It will stand about 16 ft. above the floor line and will extend 9 below. In connection with this the company has also received an order for a 20-ton hydraulic crane for handling the work to be done by the riveter.

The new power house now being erected by the Port Chester Street Railway Company, of Port Chester, N. Y., is a building 45 ft. x 84 ft., and consists of a boiler room, engine and dynamo room. The building has brick side walls in which are built steel columns supporting steel truss roof. In the engine room is a traveling crane arranged so that any part of the engines or dynamos on the floor below can be readily lifted and moved from one place to another. The power house is built in a substantial manner, and is a well designed modern station in every respect. The steel work for this building was designed and is being erected by the Berlin Iron Bridge Company, of East Berlin, Conn.

At the recent annual stockholders' meeting of the American Steel Casting Company at Jersey City, N. J., the following were elected managers: Daniel Egan of Philadelphia; William M. Wilson, Chicago; Charles I. Trevilli, Boston; Albert C. Wall, Orange, N. J.; Frank H. Buhl, Sharon, Pa.; Robert Wetherell, Chester, Pa.; N. H. Larzelere, Norristown, Pa. Daniel Egan was elected president; Wm. M. Wilson, vice-president, and John W. Booth of Thurlow, Pa., secretary and treasurer. A dividend of \$7 per share has been declared, payable June 29th. The company's mills are at Thurlow, Pa.; Sharon, Pa.; Pittsburg, Pa.; Alliance, O.; Syracuse, N. Y., and Norristown. All are in operation excepting the last two.

The Vulcan Iron Works of San Francisco have been awarded a contract by the United States Government for an ice making plant with a capacity of 5,000 lbs. every 24 hours. The specifications provide that the ice must be made of distilled water, for which purpose a distilling and purifying apparatus is to be provided, insuring wholesome ice, no matter what may be the quality of the water supply. A steam engine, direct-connected, operates the ice machine, and the steam is supplied by a 20 H. P. portable boiler placed on skids. The machine is of the Vulcan vertical duplex cylinder, single acting type, so arranged that either cylinder may be used alone in case of accident to the other. The plant is for use in the Philippines.

The Boston Elevated Railroad Company has placed a contract with the Walker Company, Cleveland, O., for a very large direct current generator. It will have a rated capacity of 4,000 H. P., and will be capable of delivering 5,000 H. P. for a few hours at a time. It will weigh over 300,000 lbs., the revolving armature alone weighing over one-third of this amount. The outside diameter of the field magnet will be about 24 ft. The field will contain 24 or 26 magnet poles. So massive will the armature be that it cannot be shipped after it is wound, and this

part of the work will have to be done in the power house at Boston. To construct this generator will require five or six months.

TRADE CATALOGUE.

The Thomson Electric Welding Company, of Lynn, Mass., issues a well illustrated pamphlet describing the apparatus which it constructs for electric welding, and also for tempering, annealing, brazing, forging and shaping metals. These are based on the inventions of Elihu Thomson, and are already finding numerous applications, as the lists and testimonials given in the pamphlet show. A considerable variety of machines is made by the company, and there are some interesting statements as to the work done.

The Baldwin Locomotive Works, of Philadelphia, in the June number of their "Record of Recent Construction," illustrate one of the heaviest locomotives ever built, a two-cylinder compound consolidation engine for the Norfolk & Western Railroad. The low-pressure cylinder is 35 in. in diameter and 32 in. stroke, the largest ever put on a locomotive. A number of others are illustrated, including locomotives for the Orekhoff Railroad in Russia, the Finland State Railroad and the Egyptian Government railroad in the Soudan.

The C. W. Hunt Company, of New York, issues a handsomely illustrated pamphlet describing its cable railways for handling coal and ore and generally for transporting all kinds of material. These railways are built to suit all sorts of places, and of heavy or light types as required. The company has for years made a specialty of industrial railways for use on docks, in shops, yards and similar places, and has a great variety of appliances and devices carefully worked out and adjusted to the work required of them. The cable railroad is applicable in a great many places. Another illustrated pamphlet from the C. W. Hunt Company describes its system of automatic or gravity railways especially designed for coal wharves and storage plants. These railways are very convenient and economical devices for handling material and have done good service where they have been put in. A number are in use abroad.

MACHINERY AND SUPPLIES WANTED.

If any one wanting machinery or supplies of any kind will notify the "Engineering and Mining Journal" what he needs he will be put in communication with the best manufacturers of the same. We also offer our services to foreign correspondents who desire to purchase American goods, and shall be pleased to furnish them information concerning goods of any kind and forward them catalogues and discounts of manufactures in each line. All these services are rendered gratuitously in the interest of our subscribers and advertisers; the proprietors of the "Engineering and Mining Journal" are not brokers or exporters, nor have they any pecuniary interest in buying and selling goods of any kind.

GENERAL MINING NEWS.

Oil Exports.—Exports of mineral oils for the United States in May were 86,431,145 gals., an increase of 1,716,151 gals. over May, 1897. For the eleven months of the fiscal year, from July 1st to May 31st, the exports were: Crude, 101,890,444 gals.; naphthas, 14,370,768; illuminating oil, 742,468,253; lubricating oils and paraffin, 52,807,897; residuum, 17,693,086; total, 929,230,448 gals., showing an increase of 61,876,027 gals., or 7 per cent., as compared with the previous year.

ALABAMA.

Cleburne County.

Endora.—The new machinery and mill are to be erected at once. Work on No. 2 tunnel is being pushed.

English & Cornish Consolidation Company.—This company is working a full force on Carr's Creek.

ALASKA.

Three hundred men have succeeded in reaching the interior of Western Alaska via Yakutat Bay. Parties arriving from there state rich diggings have been struck in Alsace River.

Alaska Bonanza Mining & Trading Company.—An attachment has been placed on the property of this company in San Francisco under a suit brought by the Golden State Mining Iron Works to recover a claim of \$459.

Connecticut & Alaska Mining and Trading Company.—This company has disbanded, and the members are returning home.

Denver & Alaska Company.—This company, which built a river boat at Seattle last winter to be towed to St. Michaels, has sold its boat and practically gone out of business.

North American Trading & Transportation Company.—According to a Tacoma paper, this company has been sued by G. M. Belden of New York for the recovery of \$18,500 for the failure, it is alleged, of the company to transport him

from Seattle to Dawson via the steamer "Cleveland" that left Puget Sound last July.

Stickeen River.

A dispatch from Victoria, dated June 15th, says that the Canadian Pacific Railway steamer "Athenian," which arrived from Wrangel, brought seven passengers returning from the Stickeen route, who state that persons can now drive a team of horses from Glenora to Telegraph Creek in one day, where it formerly took five days. The wagon road extends eight miles beyond Glenora. A pack-trail is now being built by the Hudson Bay Company through to Teslin Lake, which will make travel comparatively easy and shorten the route by ten miles. There is distress among the many persons camped on the trail. As they cannot pay 35 cents a pound for packing to the lakes, they are camped at Glenora, and are eating up their outfits. Numbers of Indians and some whites have been drowned in the canon.

ARIZONA.

Cochise County.

Copper King Mining Company.—Byron C. Davis, president of this company, was arrested in New York June 11th on a charge of obtaining money under false pretenses. The plaintiff, John Eisey, claims that he paid in all \$5,045 for 36,350 shares of stock on representations made by the defendant, which subsequently proved to be untrue. The case will come up June 21st.

Copper Queen Consolidated Mining Company.—The verdict in the case of the United States against this company to recover \$183,000, the estimated value on stumpage of a large area of timber cut several years ago in Ash Creek and Turkey Creek canyons, is in favor of the company. This is the third trial. The Government's action was based on a careful report of Mr. Waldemar Lundgren. The Government claims that the land on which the timber stood is not mineral. The case will probably be appealed.

CALIFORNIA.

Amador County.

(From Our Special Correspondent.)

Balliol.—The shaft at this mine, near Sutter Creek, is down 100 ft.

Lincoln.—The old shaft at this mine, near Sutter Creek, has been retimbered for a distance of 70 ft., and the debris is being cleaned out. New boilers and engines are being put in, and buildings erected. Everything about the mine is being put in first-class order.

Red Hill.—This mine, near Butte City, has been bonded for three years by Gaskill & Eudley, who will thoroughly develop it.

Calaveras County.

(From Our Special Correspondent.)

Illinois.—At this mine, on Copperopolis Road, 6 miles south of San Andreas, arrangements have been made for bringing water from springs on Hodecker Ranch through a 2 in. pipe to the mine. Work is progressing favorably.

Lightner.—The 100 ft. gallows frame at this mine, in Angels Camp, is almost completed, and sinking will be resumed.

Sheepbranch Gold Mining Company.—This company has been organized with a capital of \$600,000. Incorporators: W. H. Clary, B. F. Langford, G. R. Fletcher, G. F. Volz, C. A. Kern, L. Schumacher and C. L. Fuser. The Sheepbranch mine, 12 miles northeast of San Andreas, will be reopened and worked on a large scale.

Inyo County.

(From Our Special Correspondent.)

Dead Pine.—A new shaft on the lower end of this property is now about 100 ft. down. A new double friction hoist, bought from the Mine and Smelter Supply Company, of Denver, has been put in. The property is owned by Dennis Sullivan and others.

Gold Field Electric Power Plant.—The foundation work on the power house is being pushed, and it is expected that the machinery will soon be on the ground. This plant is being put in by the Smith-Moffat combination to generate power for the surrounding mines and also for lighting purposes.

Page.—This mine, in the Panamint District, is reported as producing some very rich ore, which is being shipped to the smelter.

Napa County.

Aetna Consolidated Quicksilver Mining Company.—This company has declared a dividend of 10c. per share amounting to \$10,000, payable July 1st. This makes a total of \$140,000 paid to date.

New Idria Quicksilver Mining Company.—This company has declared a dividend of 15c. per share amounting to \$15,000, payable July 1st, 1898. This makes a total of \$60,000 paid up to date.

Napa Consolidated Quicksilver Mining Company.—This company has declared a dividend of 20c. per share amounting to \$20,000, payable July 1st. This makes a total of \$930,000 paid to date.

Nevada County.

(From Our Special Correspondent.)

The United States Supreme Court has handed down decisions in two mining cases, namely: Providence Gold Mining Company vs. the Champion Gold Mining Company, involving end lines and extra-lateral rights, verdict in favor of defendant; and the Carson City Gold and Silver Mining Company vs. the North Star Mining Company, denying the right of the latter to go under the surface, verdict in favor of the defendant.

Empire.—At this mine, one mile east of Grass Valley, two dams are to be made to hold the tailings. The old buildings are to be replaced by modern ones, and the machinery will be repaired and improved.

Normandy.—At this mine, four miles south of Grass Valley, a vein rich in free gold is said to have been uncovered.

Placer County.

(From Our Special Correspondent.)

Hidden Treasure.—At this drift mine, at Sunny South, on the Forest Hill divide, a \$175 nugget has been found. A large force of men are employed, under the management of H. T. Powers.

Morning Star.—This drift mine, at Iowa Hill, has declared another dividend of \$5 per share.

Plumas County.

(From Our Special Correspondent.)

Claybank.—The operations at this mine, at La Porte, have been resumed, and the main tunnel will be run ahead about 400 ft.

Upper Dutch.—This mine, near La Porte, has been closed down for the season. The clean up is reported to have been very satisfactory to the management, although the conditions for mining this year were unfavorable.

Santa Clara County.

Quicksilver Mining Company.—The production in May was 550 flasks.

San Diego County.

(From Our Special Correspondent.)

American Girl.—At this mine, three miles southeast of Hedges, the 20-stamp mill moved from the old Cargo Muchacho mine is in position and will be in running order about July 1st. A cyanide plant is also being put up. The development work is progressing rapidly.

Cargo Muchacho.—The cyanide plant at this mine, which is handling about 100 tons of tailings per day, is making a good profit. This property is located 4 miles from Ogilby and 16 miles northwest of Yuma.

Pasadena.—A cyanide plant is almost completed at this mine, two miles east of the American Girl mine, in the Cargo Muchacho Mountains. The ore is very soft and, according to report, can be worked successfully by the cyanide process without crushing.

Senator.—The 20-stamp mill at this mine, on the Colorado River, 20 miles north of Yuma, is running on good ore.

Shasta County.

(From Our Special Correspondent.)

Big Four.—On this property, 1½ miles from Churntown, on Churn Creek, an incline has been sunk and a drift run on the 4½ ft. ledge. The ore looks very promising.

Sierra County.

(From Our Special Correspondent.)

Gold Bluff.—This mine, two miles northwest of Downville, which comprises four claims, has been bonded by I. Copeland. There is a 20-stamp mill on the property, besides other machinery.

Trinity County.

(From Our Special Correspondent.)

Burgess & Murphy.—This rich claim, at the head of Hickory Gulch, is being successfully developed. A second incline was started in April, and in a distance of 31 ft. 103 oz. of gold are said to have been taken out. The owners have also started a shaft on another claim, 300 ft. to the northeast, and will develop a ledge that prospects 20 ft. wide.

Headlight.—At this mine, in Red Gulch, 3 miles north of Trinity Center, considerable development work has been done during the past eight months, and a large amount of ore blocked out. Several open cuts and crosscut tunnels have been run.

Johnson & McLeod.—At this mine, on the East Fork of the Trinity River, nine miles east of Trinity Center, which comprises 13 claims, a rich ledge 2 ft. wide has been discovered on the Gold Hill claim. The rock is free milling. A 2-stamp mill is on the ground.

Ruhling, Goodyear & Harrigan.—The three claims, 2 miles from Carrville, owned by these parties, have been opened up by a 125 ft. tunnel which is connected with a 90 ft. shaft. The ledge is about 2½ ft. wide, and is said to assay over \$80 per ton. All three claims look promising, and an arrastra will commence crushing

ore about July 1st. A wagon road will be built from the mine at once.

Tuolumne County.

(From Our Special Correspondent.)

Black Oaks.—At this property, half a mile west of Soulsbyville, some high grade ore has been encountered on the lower level, at the north end of the mine, at a depth of 750 ft. Assays are said to average \$100 per ton. A large amount of this ore is said to be in sight. The water, which has given them some trouble, is now under control. W. P. Scott is superintendent.

Bob Gallagher.—This new find, located about a mile from Belleville, is a 4 ft. vein of good ore. The vein is "blind," lying 7 ft. below the surface. It is opened up by a cut enough to show the making of a good mine.

Providence.—At this mine, on the East Belt, the main shaft is down 300 ft., at which point a station will be cut and drifting begun. The bottom of this shaft shows a 6 ft. vein of good milling ore. At the 150 ft. ore is being taken out from both drifts. The mill in course of erection will soon be completed.

Santa Ysabel.—No. 1 shaft at this mine, on the south end of Quartz Mountain, has reached a depth of 400 ft. Crosscutting and drifting will now begin. A new steam plant is being put in.

Yuba County.

(From Our Special Correspondent.)

Yuba Gold Mining Company.—This company, organized by Chicago men to operate the old Berry mine, two miles north of Strawberry Valley, is crushing ore in the new mill with satisfactory results. The last clean up was very fair. C. F. Spangler is superintendent.

COLORADO.

Boulder County.

B. & M.—The shaft house at this Ward mine is being enlarged to accommodate the new Rand air compressor. Sullivan drills are to be used. The mine ships a car a week of smelting ore, and 18 tons of mill ore are taken out daily.

Mill Creek Gold Mining Company.—It is said this company has a deal under way by which Eastern parties are to exploit the Gold King mine at Ward. E. D. Dickinson, of the Protection mine, will superintend the work and represent the Eastern parties. A crosscut is to be driven south 75 ft. from the 220 ft. level.

Newmarket.—The mill is ready for work. The Wilfley table is the first to start in Ward.

San Blas.—The mill at Ward is being overhauled and improved. A Wilfley table is to be put in. Herman Dunham will have charge of the mill.

Utica Gold Mining and Milling Company.—The buildings about the shaft of the Utica mine burnt down recently. The machinery destroyed consisted of two boilers, two hoisting engines and a 10-drill Ingersoll compressor. The damage is estimated at \$25,000. The fire was the worst one seen at Ward since the burning of the Ni Wot mill 20 years ago. A. K. Davison, of Philadelphia, is president of the company, and C. A. Davison, of Ward, manager.

El Paso County—Cripple Creek.

(From Our Special Correspondent.)

The principal dividends paid by the public stock companies during May were as follows: Portland, \$45,000; Elkton Consolidated, \$20,000; Moon-Ancor, \$15,000; Lillie, \$27,000; Gold Coin, \$10,000; Anchoria-Leland, \$6,000; Jersey Mining & Leasing Company, \$8,000, making a total of \$131,000. This does not include the Independence, Last Dollar, Strong, Modoc and others which are owned by close corporations and private individuals. The Lillie, besides paying its regular dividend of \$9,000 during the month, declared an extra one of 2c. per share, or \$18,000. The Jersey Leasing Company has come to the front with its first dividend of about \$8,000. On the whole the condition of this district is very good, both as to output and dividends paid.

May Output.—The output of this district for the month of May amounted to 34,322 tons of ore of the value of about \$1,205,145. Of this, 9,917 tons, of the value of about \$60 per ton, making a total of \$595,020, were sent to the smelters, and 24,405 tons, of the value of about \$25 per ton, making a total of \$610,125, were sent to the chemical mills. The amount handled by the stamp mills was immaterial, and has not been considered, nor have the small amounts of very rich ore that were shipped by express been noted. The May output shows a considerable increase over that of April, both in smelter and mill ore, principally the latter.

Elkton Consolidated Company.—The annual meeting of this company will be held at Colorado Springs about the middle of June. The company has declared its regular monthly dividend of 2c. per share, making a total of \$20,000, to be distributed among its stockholders. This company has now paid over \$500,000 in dividends.

Doctor.—It is rumored that this property on Raven Hill is to resume work shortly. The mine has shipped considerable ore, but has not been worked very extensively of late. It is owned

principally by Messrs. Cone & Robinson of Canyon City.

Pinto.—The lessees on this property now have the shaft down about 450 ft. Considerable good ore is being taken out of the 350 ft. level. Three "Baby" Sullivan air drills are at work. The property belongs to the Free Coinage Mining Company. George Wrocloff, of Cripple Creek, has charge.

Work Mining & Milling Company.—The annual meeting of the stockholders was held this week in Colorado Springs, and the following Directors were elected for the ensuing year: J. Arthur Cornell, D. P. Ford, J. S. Luckraft, George Bonbright and Irving Bonbright. The report is for a period of thirteen months, ending June 1st, 1898, and shows that the company is not in a very flourishing condition. About 380 ft. of sinking and drifting were done during the year, and the fourth level on the Morning Glory was opened up with not very encouraging results. A lease has lately been let upon the ground below the fourth level at a royalty of 25 per cent., and sinking will be resumed in the shaft. Quite a number of other leases are in operation in the Morning Glory and other claims of this company. No work is being done at present by the company, and the leasing system will be adhered to for the present. The treasurer's report shows that the debt of the company has increased to \$5,151, with cash in hand amounting to \$593. It also shows the sum of \$8,422 received from the sale of treasury stock. All but 3,433 shares of the treasury stock have been disposed of. The total receipts for the thirteen months were \$55,445 and the total expenditures were \$55,766.

Gilpin County.

(From Our Special Correspondent.)

Fish Tunnel.—At this property, in the Pine mining district, the tunnel is in only 35 ft., showing about 18 in. of mineral mixed with coarse gold. Fish brothers are the owners.

Topeka.—Manager Sterling is going to build ore bins, so as to be able to ship by quartz haulers as well as by the tramway company. The mine is now outputting daily from 30 to 40 tons, nearly all mill dirt.

Gunnison County.

Maid of Athens.—This claim, which shows a large and rich body of silver ore, is situated 3 miles west of Quartz Station, on the South Park Railroad. What sinking and drifting has been done shows an ore body 14 ft. wide. The ore contains sulphides and carbonates and runs in silver, lead and some gold. The owners are Wm. Frend, Thomas Huxtable and Douglas E. Kimlin.

Lake County.

(From Our Special Correspondent.)

Dollie B. Mine.—This big Breece Hill property, in which the Connollys and other New York people are largely interested, has again met with a setback. On Friday last a terrific flow of water in their main drift, in some 650 ft., soon drowned out the workings and covered the pumps. Manager Connolly at once ordered new machinery from Denver by wire, and states that he will get control of the workings as soon as possible. This rush of water may mean another large find of rich ore.

Downtown Mines.—A committee from the local board of the Home Mining Company has been spending the past week in Denver, consulting about the purchase of the machinery from the Smith-Moffat people. No action has yet been taken.

The company has elected the following officers: President, John Harvey; vice-president, H. C. Mitchell, secretary; A. V. Bohn, treasurer, Eugene Stevens. These gentlemen and E. J. McCarty and J. S. Doddridge comprise the Board of Directors.

Preston Mining and Milling Company.—This new company has a lease and bond on the Preston, belonging to Sisbee et al., and the California Rose and another claim belonging to Harry Mamlock. This combination comprises 31 acres of ground on Long and Derry Hill. The management has put a good plant of machinery on the Preston. This shaft is 154 ft. deep. From one contact at 111 ft. rich ore has been shipped in the past, and an iron contact shows at the bottom of the shaft. They intend to resume sinking at once to see what is under the iron. There will probably be a great deal of new work put under way in this territory.

Stewart Group.—I learn that Mr. Myrick, who is operating the Stewart group in Empire Gulch, has just made a fine strike on the Stewart. An assay gives returns of 67 oz. silver, 0.02 oz. gold and 14 per cent. lead to the ton. It is stated that there are 2 ft. of ore in contact overlying the iron and under the porphyry. This property is operated through a tunnel now in over 200 ft.

Ouray County.

(From Our Special Correspondent.)

Camp Bird Mines and Mills Company.—The average clean up at this mill is 225 oz. of amalgam every 12 hours, running about 40% gold. A new furnace has been completed, and the amalgam will hereafter be reduced to bullion be-

fore leaving the assay office. A test run is being made on the tailings, and if satisfactory a process will be put in to catch the values which have heretofore escaped. Steam power has been discarded for the summer, the mill now being run by water power.

O. & N. Tunnel Company.—The ore has lately been almost exhausted, only small pockets being now developed. The tunnel is being pushed forward to open up several adjoining claims. G. R. Hurfurt, of Ouray, is manager.

Millersberg.—Prospectors lately created considerable excitement by the discovery of rich silver ore in the Millersberg, about 4 miles north of town, a property abandoned several years ago.

Morning Star.—A fair-sized streak of gold has been disclosed in the Morning Star, adjoining the American Nettie.

Ore Shipments.—Two hundred and seven cars of ore were shipped out from Ouray during the month of May. This is an increase of 57 cars over the preceding month, which can be attributed to the improved condition of the mountain roads.

San Miguel County.

(From Our Special Correspondent.)

Gold King Consolidated Mining Company.—Thirty stamps of this company's 40-stamp mill in Gold King basin are regularly dropping. The Gold King mine is worked exclusively by lessees. The ore, it is understood, runs from \$8 to \$20 per ton on the plates. J. B. Bailey of Telluride, is superintendent.

Clift Group.—Blake & Arnspeiger of Saw Pit, who have been working this property, in the Saw Pit district, under lease and bond, recently uncovered a blanket vein of carbonate ore 3 ft. thick. The property lies between the Jim Corbett and Belle Champion.

North American Exploration Company.—One of the company's experts recently made an examination of the Silver Chief mine, in Bear Creek, owned by Gov. Adams of Colorado and W. H. Trout. The property lies immediately below and on the opposite side of the creek from the Nellie. Unlike the Nellie, the Silver Chief is far from being a strictly gold mine, the ore carrying gold, silver and copper. The vein is from 3 to 6 ft. wide, and is considered an ideal concentrating proposition. E. I. Field of Telluride is resident manager.

Tomboy Gold Mines Company.—This company's mill, in Savage basin, is running its full capacity of 175 to 225 tons daily. Clean-ups of the plates are now made at regular intervals, and gold bricks weighing from 2,500 to 3,000 oz. are frequently sent from Telluride, where the local offices are, to the Mint.

Valley View Gold Mining Company.—The foundation has been laid for 10 additional stamps in this company's 10-stamp mill on Marshall Creek, just below the Smuggler-Union properties. Manager N. C. Banns of Telluride says the new stamps will be put in within the next 30 or 60 days.

Yellow Mountain Gold Mines Company.—This company, which is an offshoot of the Anglo-Continental Gold Syndicate, Limited, has started a new 30-stamp mill near Ophir station. The mill treats the Terrible and Butterfly group ore. It has a fine concentrating plant, and a capacity of 100 tons daily. Harry B. Adsit, whose postoffice is Ames, is general manager of the company.

GEORGIA.

Lumpkin County.

(From Our Special Correspondent.)

Calhoun.—S. M. Wharton, of Spokane, Wash., who bonded this mine last February, is so well satisfied with the present showing that he is to put in a dam across the Chestatee River, and will put in a large pump and pipe line for hydraulic work. John Huff, of Dahlonega, is manager.

Dry weather is interfering with the hydraulic operations of some companies about Dahlonega, but it also affords them a chance to repair mills and make needed improvements.

IDAHO.

Ada County.

Cyrus Bradley and W. A. Halteman, of Spokane, Wash., have, it is said, purchased the Franklin and Vixie mines at Pine Grove, owned by the Dave Ethel estate, on behalf of a syndicate of Spokane men. The new owners propose to do some extensive development. The property is developed by a 300 ft. tunnel.

Blaine County.

G. V. B. Mining Company.—Judge Beatty has decided the case of the First National Bank of Halley vs. this company in favor of the bank. The decision declares that the company's transactions have been often questionable, and is especially severe regarding H. K. Thurber, who came from New York in 1895 to manage the property, and "who has been since then the real G. V. B. Mining Company."

Boise County.

Basic Mining Company.—Theo F. Van Wageningen is in charge of operations at Placerville. The boat for the dredge has been built and the machinery is arriving. The boat is 100 ft. long, 40 ft. wide and draws 3½ ft. of water. The stream will be dammed to make a pond in which to float it. The dredge is to be operated by electricity; the plant for the purpose is elaborate. Fourteen miles of ditch and flume have been constructed and the power afforded will amount at the minimum to 500 H. P., the fall being 350 ft. The waters of Grimes Creek are used and the power will be conveyed to the dredge over 12 miles of wire. The company is also building 20 miles of wagon road and a telephone line will connect power house and dredge. The company owns 24 miles of creek bottoms along Grimes, Wolf and Granite creeks and in Boyles' gulch.

Idaho County.

Iron Crown.—The new mill will soon be erected on Newsome Creek for this Grangeville mine. It is a Kendall mill, with 20 tons capacity in 24 hours, and the outfit includes a concentrator. A. J. Lanterman of Cripple Creek, one of the owners, will manage the property.

ILLINOIS.

Macoupin County.

The State Board of Arbitration has rendered its decision in the controversy between the Chicago Virden Coal Company, the Virden Coal Company, the Chatham Coal Company, the Girard Coal Company, and the Ocara and King Mining Company, and their employees. The miners insisted on the rate of 40c. a ton, fixed by the sub-districts. The operators refused to pay, claiming they could not do so and compete in the market with other mines.

The board finds that while the agreement fixing the scale is not a contract in a technical sense, it has met with the general acquiescence of 853 miners in the State, employing more than 33,000 men. The scale has been accepted by all, with the exception of the operators of about a dozen mines, employing about 1,500 men. No case has arisen so far in which the miners refuse to abide by the scale, and the board finds no ground to interfere until the agreement shall have been mutually abandoned.

MICHIGAN.

Iron—Gogebic Range.

Iron Belt.—This company has begun a new shaft on the west end of its property. It will make the eighth shaft in operation.

Iron—Marquette Range.

Buffalo.—The water is about out of the mine and mining is beginning. Capt. Roberts, of Negaunee, says that there are from 75,000 to 100,000 tons of ore in sight, which will keep 100 men busy for nearly a year.

Lake Superior.—At the Lake mine ore is taken out by the caving process of top slicing. Ground is now worked underneath, where the pumping scow stood. No trouble has been experienced from mud breaking into the workings. James Trebilcock, of Ishpeming, is mining captain.

At the Section 16 exploration is going on to the south and west of the hard ore mine. The Section 16 mine is reported as not looking well and new ore bodies are wanted.

Lucy.—Three Negaunee men, Samuel Hoar, Matthew Chester and Benjamin Neeley, Jr., together with G. W. Spencer, of Chicago, have taken a lease of the Lucy mine and are now working about 25 men there. Ore is being taken from No. 5 open pit. The mine has not been worked for several years.

Ore shipments.—Shipments for the season to June 11th from South Shore docks at Marquette amount to about 250,000 tons, an increase of 20 per cent. over last year's shipments to the same date.

Copper.

The resumption of work on the Ashbed makes five mines now at work in Keweenaw County, where, except for the Central, all mining has been suspended for years.

Allouez.—Surface work has started, having in view the location and exploration of the Osceola lode.

Atlantic.—The crosscut on section 16 is in a hard, dense trap, which is thought to be the hanging wall of the Baltic lode.

Baltic.—The fine showing at No. 3 pit, which is down about 90 ft., continues. The bottom of the shaft contains so much barrel rock as to interfere with drilling. Another pit has been started beyond No. 5, to locate the lode which, as shown by No. 5, is bending toward the east.

Central.—Work on the 20th, 17th and 9th levels continues in a small way, but the indications are that the end is in sight. It is said that the company will do considerable surface work with the object of finding another body of ore.

Bay County.

North American Chemical Company.—Thomas Percy, of Ludington, has a contract to sink a salt well on this company's land near Bay City.

It is expected to strike rock salt at from 2,000 to 3,000 ft.

Wayne County.

Rock Salt Mining.—A company with \$1,000,000, promoted by the Mulkys, of the Detroit salt company, and A. E. Jennings, of Jennings & Cook, of Detroit, proposes to produce salt by mining. It is figured that a great economy can be effected by sinking shafts 1,000 or 1,200 ft. deep, where the salt lies, and excavating the salt after the methods employed in coal or iron mining. The company proposes to develop land in Ecorse Township.

MINNESOTA.

(From Our Special Correspondent.)

The new steel ship "Superior City," which broke the Lake Superior record by a cargo of 6,800 tons last week, has since loaded 7,568 net tons at Escanaba, on 18 ft. draft. She is owned at Duluth, and is 450 ft. long. The general expectation is that the Bessemer Steamship Company's forthcoming ship, 475 ft. long, will be a still larger carrier. Lake Superior ore shipments to June 1st were 1,630,000 tons, or about 450,000 tons more than the year before.

It is reported that the Duluth & Iron Range will have all planned improvements cut off on account of the demand for reduced freight rates. The road has recently received 300 70,000-lb. ore cars.

Mesabi Range.

(From Our Special Correspondent.)

Adams Iron Company.—This mine, operated by the Rockefeller Company, has stopped night work at 1 and 3 shafts, caused, it is alleged, by a scarcity of dock room at Cleveland. The miners disengaged are all employed on surface improvements.

Blwabik Bessemer Company.—This mine will double its shipments soon, and 300 cars of ore daily will leave it and the Duluth property, which joins it on the west.

Lake Superior Consolidated.—This company's new purchase, the Sellers mine, is now active underground for the first time since 1896. Stock pile is being loaded rapidly. The same company's Rust, Hull, Burt and Day mines, at Hibbing, continue idle, with no date set for resumption. Its Pillsbury mine there, a fee property, is busily engaged.

Penobscot Mining Company.—This mine, closed down by water in the shafts, has resumed operations.

Roberts Iron Company.—There is no prospect of a resumption of operations here for some time.

Several of the open pit mines, notably Oliver, Ohio, Sparta, Auburn and Norman, that were seriously impeded in shipments by heavy rains last week, are now in operation again. Sparta's pit had 25 ft. of water in it, and the loading steam shovel was completely covered for two days.

Vermillion Range.

(From Our Special Correspondent.)

Cummings & Randall.—These parties have suspended explorations in T. 63, R. 13, where they have been at work a long time.

Miller & Brown.—These parties, owners of the Section 26 property, under option to the Oliver Mining Company, have begun explorations on a part of Section 30. This is the section over which legal fights were under way 16 years over the Hyde and McDonald properties, in which the Minnesota Iron Company came off victorious.

Minnesota Iron Company.—Steam shovels in stock piles, shut down three weeks, have resumed work. Ore is going forward faster than ever, especially from Chandler. Some 25,000 tons of Vermillion lump ore have been sent to open hearth steel makers.

Pike River Land Company.—Operations on the new magnetic ore find, 8 miles south of the Vermillion range, are continuing most satisfactorily.

Vermillion Pine, Iron and Land Company.—This company is to begin explorations soon under charge of Capt. Jos. Bale. It owns thousands of acres in the range country.

MISSOURI.

Jasper County.

(From Our Special Correspondent.)

Joplin Ore Market.—The heavy demand for ore and the advance in price marks the past week as the banner week in the history of this mining district. The weather was favorable. It is probable that the \$30 mark would have been reached for lots of the top grade ore this week but for the burning of the Lanyow smelters at Iola, Kansas, in the natural gas belt. This will throw nearly 1,000,000 lbs. of zinc ore on the market next week, and the result will probably be somewhat lower prices. Top grades of zinc ore brought \$29.50 per ton during the week, and five cars of Joplin ore sold at that price, and about 4 carloads at Alba. In the other camps \$29 per ton was the top, and the average price throughout the district was about \$27 per ton. For the corresponding week last year zinc ore

sold at \$21.50 per ton, and lead ore at \$21 per 1,000 lbs., but the shipments were less than the past week by 2,697,340 lbs. of zinc ore and 184,100 lbs. of lead ore, and the value was less by \$60,498. For the corresponding 23 weeks, the zinc ore shipments for the same period this year were greater by 51,518,400 lbs., but the lead ore shipments were less by 596,410 lbs., but the value was greater by \$810,920. As compared with the previous week, the shipments show an increase of 1,037,010 lbs. of zinc ore and 15,060 lbs. of lead ore, and the value was greater by \$16,156. The price of lead ore was \$22.25 per 1,000 lbs. delivered all the week. There is very little surplus ore in the district. Following are the sales of lead and zinc ores from the different camps in the district for the week ending June 11th: Joplin, zinc, 1,376,840 lbs.; lead, 385,010 lbs.; value, \$28,166. Cartersville, zinc, 1,032,200 lbs.; lead, 194,400 lbs.; value, \$17,743. Webb City, zinc, 357,630 lbs.; lead, 32,990 lbs.; value, \$5,482. Central City, zinc, 442,880 lbs.; lead, 28,540 lbs.; value, \$6,614. Duenweg, zinc, 755,690 lbs.; lead, 167,370 lbs.; value, \$12,791. Oronogo, zinc, 715,190 lbs.; value, \$9,784. Aurora, zinc, 1,035,000 lbs.; lead, 20,600 lbs.; value, \$9,327. Stott City, zinc, 70,590 lbs.; value, \$952. Galena, zinc, 2,907,120 lbs.; lead, 323,000 lbs.; value, \$44,979. Alba, zinc, 162,000 lbs.; value, \$2,389. Carthage, zinc, 45,000 lbs.; value, \$652. Wentworth, zinc, 44,500 lbs.; value, \$623. Belleville, zinc, 91,290 lbs.; value, \$1,523. District totals for last week: Zinc, 9,035,930 lbs.; lead, 1,151,910 lbs.; value, \$140,845. District totals for 23 weeks: Zinc, 192,503,000 lbs.; lead, 25,466,060 lbs.; value, \$2,693,142.

Free Coinage Lease.—A. R. Darling, of Webb City, recently succeeded in organizing a company—Terre Haute, Indianapolis and Cincinnati parties—with a capital stock of \$100,000, to develop 22 acres of Free Coinage land midway between Joplin and Webb City.

Owl Creek Mining Company.—This company, in Leadville Hollow, is producing over 15,000 lbs. of lead ore weekly, with only a small force of men. A five-sixteenth interest has been sold for \$5,000 cash to G. B. Barber and Wm. Patton, W. Morgan and Dr. N. H. Kelso own the other eleven-sixteenths.

Sharp Lease.—This lease, on the Rex land, east of Joplin, owned and mined by Dr. R. B. Tyler, was sold last week to E. J. Camp, of Detroit, Mich., for \$10,000. This includes 30-acre lease and concentrating plant.

Stamp & Morris Mining Company.—On the Davey & Son's lease, at Cartersville, this company has been running its large concentrating plant for two years, and has sold over \$300,000 worth of ore. The ground is practically just opened up, as there are four lots. Last week the plant cleaned up 15 tons of zinc ore and 15,000 lbs. of lead ore in 10 hours. A big run of ore has been opened up by the Klondike Company, adjoining, at 60 ft., that crosses within 50 ft. of the shaft.

St. Francois County.
St. Louis Smelting and Refining Company.—L. A. Cole, president of the National Lead Company and of this company, in which the National holds a large quantity of stock, has about completed the details for the purchase of \$265,000 worth of lead property in this county. The tract is about four miles south of Bonne Terre, on the Mississippi River & Bonne Terre Railroad, and about 65 miles from St. Louis. It comprises 659 acres, and is owned by Judge J. H. Taylor, of Farmington, who last fall transferred an adjoining tract to President Cole for \$125,000. It is said about \$250,000 will be expended for mills and machinery to operate the mines. The prospecting was done with diamond drills by R. R. Moore, of Leadville, Colo.

MONTANA.

Jefferson County.

Liverpool.—At the bottom of the winze, 475 ft. from surface, a rich streak of silver ore over 1 ft. wide is exposed.

Pilot.—At this Clancey mine 30 men are employed in the mine and mill. The mine is said to look well. The ore runs in gold and copper.

Silver Bow County.

(From Our Special Correspondent.)

Boston & Montana.—The bottom levels of the company were never in so prosperous condition as at present.

Butte & Boston.—The company has quit sinking on the Blue Jay, which is down 1,000 ft. Since the reorganization of the company the shaft has been sunk 300 ft. At the 900 the lead, where struck, contains no ore, yet indications warrant development work, as ore is expected at no great distance. A station has been cut at the 1,000, and further work will be continued at this point. The 500 and 700 ft. levels are turning out the usual amount of ore, from 60 to 70 tons daily. The Butte & Boston furnishes about 275 tons daily to the concentrator, and small quantities of high grade ore.

Maud S.—This mine, about 5½ miles from Butte, will be equipped with a new 10-stamp mill in about a month.

Parrot.—At the meeting of the stockholders on

June 7th Manager R. D. Grant received praise for his enterprise in carrying on such extensive development work on the new properties. The Parrot is in good working order, and development work is in progress at the Little Minah and Bellona. Soon work will be resumed on the Oro, of Butte, Moscow, Autocrat and Banker, lying west of the Poulin. The new Parrot smelter at Gaylord will not be operated this year, although necessary improvements on the ditch will be made. Manager Grant's report for the 11 months ending April 30th was the best showing ever made by the Parrot Company. Dividends amounting to \$281,841 were paid during the year, leaving a surplus of \$1,620,998.

NEVADA.

Storey County—Comstock Lode.

Sierra Nevada.—The last official letter says of the Riley Tunnel: "During the week we stoped out from the fourth and fifth floors 175 mining carloads of ore. The average assays of car samples were as follows: Gold, \$42.96; silver, 10.31 oz. per ton. Have hauled to the Nevada mill during the week 234 tons and 600 lbs. of ore, and milled about the same amount. The average assays from battery samples was \$40.30 gold and 10.89 oz. silver per ton. On May 29th shipped 26,700 lbs. of sulphurets (undried) to Selby & Co., and received returns from 27,018 lbs. of sulphurets which were shipped to Selby & Co. on May 22d. The cash receipts from the 27,018 lbs. were \$11,375. On June 2d shipped one bar of bullion to the United States Mint at Carson, weighing 1,428.20 oz., having the par value of \$2,503.27. The west crosscut from the south drift from a point 50 ft. south from the tunnel has been advanced 24 ft. total length 84 ft.; face in porphyry and clay."

OHIO.

Hocking County.

(From Our Special Correspondent.)

Columbus & Hocking Coal and Iron Company.—This company has driven an entry 40 ft. wide around a portion of its Mine 19, at Longstreth, which has been on fire for several years, taking out everything in this 40 ft. space from the sand rock top to the fire clay bottom, hoping thus to prevent the fire from spreading.

Perry County.

(From Our Special Correspondent.)

New Hamburg Coal Company.—This company has got a Jeffrey coal cutting plant and two machines for the Sulphur Springs or No. 12 mine, which has heretofore been worked as a pick mine.

PENNSYLVANIA.

Anthracite Coal.

Lehigh & Wilkes-Barre.—Eleven men were terribly burned, four of them perhaps fatally, by an explosion of gas in the No. 5 mine of this company, at South Wilkes-Barre.

Bituminous Coal.

The Stonycreek Coal Mines, at Hooversville, Somerset County, were closed last week by the owner on account of the poor quality of the coal. The mines have been in operation for the past two or three years. There were about 50 men employed.

Twenty-two new entries are being driven at the Laurel Hill mine, No. 1, of W. P. Rend, to increase the mine's daily production to 1,500 tons. A ventilating plant will also be installed.

Conemaugh Coal and Coke Company.—This new company is reported to control 35,000 acres of coal land in Gallitzin, Cresson, Allegheny, Munster, Cambria and Summerhill townships, Cambria County. It is expected that a move toward the development of this tract will be made before long.

SOUTH DAKOTA.

Lawrence County.

Homestake Mining Company.—This company has declared the regular monthly dividend of 25c. per share and besides an extra dividend of the same amount per share, both payable June 25th, at the office of the transfer agents in New York. This means a total of \$6,806,250 paid in dividends to date.

TENNESSEE.

Polk County.

Ducktown Sulphur, Copper and Iron Company.—A furnace is to be put in to smelt the green ore as it comes from the mines, thus saving the expense of roasting. The plant is one of the Garretson type.

TEXAS.

Brewster County.

Quicksilver Mining.—Work at the quicksilver deposits in the southern part of the county continues with rather promising results. It is said that the retorts at the mill are not efficient and will have to be replaced.

Gillespie County.

Austin Mining Company.—This company's mine, 28 miles from Llano, is in charge of N. J. Badu. A steam hoist has been put in. The shaft is 75 ft. deep. The vein is 6 ft. wide, assaying, according to report, \$25 per ton in gold. According to Mr. Badu "none of the mines in

the Llano district have as yet been developed sufficiently to know what there is there in the way of gold."

Navarro County.

Corsicana Oil Field.—The output is now estimated at over 1,800 bbls. daily, and is steadily increasing. With new wells that will come in during June, it is believed on July 1st the daily output will not fall far short of 2,500 bbls. The pipe line company has now in its hands fully 60,000 bbls., while there is stored in individual tanks large quantities of oil.

UTAH.

(From Our Special Correspondent.)

At last summer has set in, and the decks are cleared for the season's active mining campaign. The long winter and stormy spring indicate a late fall, which is cheering. Smelters report a brighter outlook than on the opening of the summer of 1897. Of the reliable shipping camps honors are about evenly between Tintic and Bingham in important new undertakings and enlarged production, while Park City presents a better front than a year ago. Generally the big Tintic mines show well. The Grand Central assures a large addition to the output, while several properties about Silver City, of which recently little has been heard, are steadily producing. The copper uncoverings of Bingham grow in importance. Deep Creek, La Sals, Gold Mountain, State Line and Blue Mountains are beginning renewed exploration and each district has prospects which promise soon to be transformed into profit-paying mines.

In Utah mining circles the event of the week ending June 11th was the establishing of headquarters in Salt Lake by Mr. Samuel Newhouse, for more than a dozen years a mine promoter—in the better sense of the term—of Colorado. The rooms in the Dooley Building vacated by the Alta Club on June 1st are newly fitted up and in future will be known as the offices of prominent mining and ore treatment companies, of which he is the moving force. Again it should be said, in spite of carping critics, that the copper smelter immediately to be built in Salt Lake Valley is a certainty. Had it not been for this determination it is probable Mr. Newhouse would not have moved his office from Denver, notwithstanding his large mining interests in Utah and Montana.

Bullion and Ore Shipments East.—During the week ending June 11th there were 40 cars, or 1,225,040 lbs., lead-silver bullion; 1 car, or 40,996 lbs., copper bullion, and 49 cars, or 3,280,080 lbs., lead-silver ore forwarded from Utah smelters and camps.

Beaver County.

(From Our Special Correspondent.)

Beaver Lake.—The company is again considering putting in a copper matting plant, which will be decided one way or another before July. There is a small force on development.

Sheep Rock.—An assessment of 10c. per share has been levied, payable immediately. It is the intent to resume exploration as soon as there are funds in the treasury.

Grand County.

(From Our Special Correspondent.)

La Sals.—Prospecting could not be started to any advantage till after June 1st, but the snow is now rapidly disappearing. The district is about 30 miles long by 10 wide. Geyser Basin, across which is a wagon road to the Paradox country, divides the northern from the southern section. A railroad survey is in progress over Geyser Pass by the Rio Grande Western, the initial point being Cisco. The mountains rise from 10,000 to 11,500 ft., and are all in Utah. The Wisconsin folk are going ahead with their copper smelter, which will be fired in July, and express no doubt about an abundant ore supply.

Iron County.

(From Our Special Correspondent.)

Ofer.—A 3-ton lot of average ore has been sent to the Pioche, Nevada, reduction works. If the run pleases, a transfer to Chicago people will follow.

A good deal of new development is on foot throughout State Line. Frank Wilson, Ernest Godbe and William Lloyd, well known Western mining men, looked the district over last week. They are to return.

Suab County.

(From our Special Correspondent.)

Tintic Shipments.—In the week ending June 11th the following lots of ore were forwarded from the district: Bullion-Beck, 25 cars; Gemini, 6 cars; Centennial-Eureka, 5 cars; Grand Central, 9 cars; Utah, 3 cars; Martha Washington, 1 car; Swansea, 8 cars; South Swansea, 5 cars; Treasure Hill, 4 cars; Mammoth, 5 cars; Dragon Iron, 19 cars hematite for flux. The Mammoth shipped 8 cars concentrates and Sloux Mill 2 cars concentrates and 1 bar bullion; Eureka Hill sent out 24 bars of bullion and Mammoth 2 bars. Total, 90 cars ore, 10 cars concentrates, 27 bars of bullion.

Alaska.—Exploration will be resumed this month under flattering conditions. In Silver

City's boom in the '70's, this was the Ruby, which made large shipments of high-grade silver ore. It is perhaps the strongest north and south vein in the district and has exposed considerable good copper mineral. H. H. Green has been elected secretary in place of J. W. Neill, who recently resigned.

Bullion-Beck.—Although the ore treatment contract expired June 1st, the rumor of production being curtailed has no foundation. Another smelter contract is about consummated, and if there is any change in output it will probably be an increase.

Grand Central.—Manager C. E. Loose proposes to take a well-earned vacation, and President L. Holbrook has taken his place. The mammoth ore body at one point shows a thickness of 80 ft., and thus far it is proven over 200 ft. laterally and 140 ft. vertically. Negotiations are on foot for electric power to be supplied by the Telluride Company, from the Provo Canyon plant.

Iron Blossom.—A tram is built to the top of ridge, 500 ft., where ore bins are erected in which are about 3 cars of ore. A connection to the Sioux road is being made. The tram is operated by means of a whim. It is quite evident that M. J. O'Meara is preparing for profitable mining.

Martha Washington.—A car lot running 166 oz. silver, \$4 gold and 3 per cent. lead was settled for June 11th. Shaft is 350 ft. and is to be sunk to 550 before drifting. Messrs. William Hatfield, George Sutherland, L. E. Riter and H. C. Peery are the owners.

Picnic.—The boiler and hoist are put in position and the shaft house and entire surface plant are complete. Active exploration will now progress under more favorable conditions.

Treasure Hill.—From 4 to 7 tons oxidized silver ore, carrying an excess of iron, per week, is the present production, which affords a good profit in spite of the water annoyance—about 60 gals. per minute are handled. A pyritic copper chute is cut, which will be further tested. Manager F. B. Cook devotes most of his time to directing operations.

Salt Lake County.

(From Our Special Correspondent.)

Cuba Mining Company.—Incorporation articles were filed with Secretary of State June 10th. Capitalization, \$300,000; shares, \$1; 100,000 shares are set apart for treasury needs; stock assessable, no assessment to exceed 2% of capital stock, nor shall assessments be levied oftener than four times in any calendar year. Head office, Salt Lake City; annual meeting, third Monday in April. Officers and directors are: Duncan McVichie, president; H. H. Green, vice-president; W. H. Cunningham, secretary-treasurer; D. C. Jackling and John McDonald. The holdings consist of a bond for \$12,000, due July 20th, 1899, on Cuba, Akron and Silver Belt claims, forming a connected 40-acre tract, one-half mile north of Highland Boy. Development is in progress. Pyritic copper ore seam 2 to 4 ft. thick is exposed, which carries paying values in copper, gold and silver.

Erie.—Lessees Adam Stolper and George Evans in putting in a set of timbers the other day exposed a galena seam, which by following 30 ft. widened to a 2-ft. ore face. A carload was shipped June 9, and more will follow. Markham Gulch has offered numerous like surprises.

Last Chance.—At 100 ft. south from 500 level a 2-ft. ore seam is cut, of which 8-in. galena, carrying 41% of lead, 123 oz. silver, and the remainder a carbonate ore 8% lead, 73 oz. silver—a good shipping product. The mill is turning out the usual supply of concentrates.

Mackintosh Group.—A test run is in progress at Giant Chief mill on what heretofore was looked upon as sterile country rock. It is said to carry copper, and Manager Cohen of the De La Mar interests expects to achieve a marketable concentrate of this silicious porphyry. There is a vast supply and the undertaking is watched with keen interest.

Old Jordan & Galena.—The cyaniding plant will start its initial campaign next week. Col. H. G. Heffron is in charge.

Portland Cement Company.—Adjustment of loss by recent fire is practically settled and Manager Thomas C. Cairns has gone East for a conference in regard to rebuilding.

Washington.—Lessees T. J. Griffin and A. G. Green have uncovered a 3-ft. ore body of better than \$50 rock. This ground is on Carr Fork above the Highland Boy.

Tooele County.

(From Our Special Correspondent.)

Buckeye.—At the annual meeting held last week the following directors were chosen: George Westerfield, president; Isidore G. Meyer, vice-president; J. C. Gibson, treasurer; C. B. Marshall, secretary, and Thomas Robinson. It is the intent soon to resume active exploration.

Chloride Point.—Electric power connection with the Telluride Company's plant above Provo will be made by the time this issue is printed. The mill has been waiting for this power for three months. William Orr is to have

charge of the launching of the treatment undertaking and is confident that the mill will prove a success.

De La Mar.—It is said in the seven-acre fraction purchased December last from the Mercur Company for \$237,500, there are fully 480,000 tons of ore blocked out. In other words, if there is no more found this ore will have cost less than 50c. per ton, plus development and mining. Mill is now treating 400 tons per diem and the mechanical difficulties are about all adjusted.

South Daisy.—Experiments have shown that the expenditure for chemicals in treating the ore will not exceed 20c. per ton, which is also true of Daisy mineral.

Tioga.—President F. J. Moody's visit East was rewarded by securing the sinews for continued prospecting. The Susquehanna, adjoining Tioga territory on the north and west, has been purchased, where a shaft will be put down to cut a proven ore zone.

VIRGINIA.

Louisa County.

There is talk of erecting a chlorination plant to treat the sulphurets of several gold ore bodies that are now being explored. Pyrites mining is quite active, owing to a prospective increase in the demand for pyrites by the interruption of shipments from Spain.

WASHINGTON.

Stevens County.

Blacktail Gold Mining Company.—This company at Republic, with a capital of \$1,000,000, is to work the Blacktail property that has been partly developed by the Washington Gold Mining Company.

WEST VIRGINIA.

Fayette County.

(From Our Special Correspondent.)

Thomas-Scholz Coal Company.—Mr. Philip Carroll, of the Kanawha & Michigan Railroad, has made a preliminary survey up Boomer Branch to estimate the cost of a track to the land the Thomas-Scholz Coal Company contemplates opening. The property belongs to H. A. Robinson and comprises 1,000 acres.

Petroleum.

The old Fonner pool in Greene County is surrounded by dry holes. The original Fonner gusher is still producing about 50 barrels a day.

(From Our Special Correspondent.)

Mr. John H. Coe, of Toledo, O., who has been drilling a well on Big Coal River in Boone County, for the Fidelity Oil Company, has had his tools stuck in the hole for the past two months at a depth of 1,050 ft. The company has sent Mr. O. C. Hagen, of Corning, O., to the location to make a report of the situation, and a proposition for fishing out the tools and completing the well.

WYOMING.

Albany County.

Overland Placer Company.—It is stated that H. G. Wright, on behalf of Denver parties, has secured a lease of this company's properties on Foot Creek, near Rockdale, comprising 1,100 acres of placer ground. The lessees will construct a pipe line from Rock Creek, to furnish ample water. The main stratum of gravel to be worked lies about a foot beneath the grass roots and runs from 3 to 8 ft. thick.

(From Our Special Correspondent.)

Lake Creek Placers.—The new company will put in a plant immediately and attempt to work a block of ground this season.

Volcanic Ash.—A large bed of volcanic ash has been discovered near Laramie. The samples displayed are almost snow white and very pulverulent. The most of the ash would pass through a 100 mesh screen.

Laramie County.

American Gold and Copper Mining Company.—Machinery for the company's reduction works at Jelm has been shipped from Laramie. The mill is to be in operation soon.

(From Our Special Correspondent.)

Onyx Marble.—A Cheyenne company is opening the marble quarries near Fairbanks. The stone cuts beautifully, and in case a spur is built from the Chicago & Northwestern at Badger the company will be able to work the quarries continually.

FOREIGN MINING NEWS.

AUSTRALASIA.

New South Wales.

Broken Hill Proprietary Company.—This company's statement for the four weeks ending May 26th shows 23,472 tons ore treated. The refinery report shows the production of 1,095 oz. gold, 461,683 oz. silver, 2,606 tons lead, 53 tons antimonial lead, and matte containing 26 tons of copper and 26,245 oz. silver. The total silver output was therefore 487,928 oz. The average results were 0.05 oz. gold and 20.79 oz. silver per ton, and 11.3% lead.

New Zealand.

Mount Lyell Mining Company.—No. 6 furnace started May 26th. A dividend of 4s. per share has been declared. This company announces an issue of 25,000 new shares of £3 each, in the proportion of one share for every 10 held, at a premium of £3 per share.

Western Australia.

Gold exports reported for the month of May were 83,346 crude oz., which is 737 oz. less than in April, but an increase of 24,235 oz. over May, 1897. For the five months ending May 31st, the total exports returned were 389,943 crude oz., which compares with 211,977 oz. in 1897, showing an increase this year of 177,966 oz., or 83.9 per cent. The exports this year were equivalent to 350,949 fine oz., or \$7,254,116.

CANADA.

British Columbia—West Kootenay District.

(From Our Special Correspondent.)

Le Roi.—This company has temporarily suspended shipments.

Pay Ore B. C. Mines.—This company recently issued a prospectus. Its capital is \$250,000 divided into 2,500,000 shares of the par value of 10c. each. One million shares are reserved for working capital. The property consists of the Pay Ore, situated in the Grand Forks mining division. The Pay Ore is traversed by a quartz vein 30 ft. wide. No development work of any extent has yet been done on the claim. Assays of varying value have been made from samples taken from the property. Mr. Smith Curtis, of Rossland, is the chief promoter of this company.

Traill Creek Ore Shipments.—The ore shipments from Rossland mines from Jan. 1st to June 9th amounted to 35,000 tons.

War Eagle.—This company is now shipping about 1,200 tons weekly.

Nova Scotia.

Cheticamp Gold Mining Company.—A road to the mine is completed and work on the mill has begun. H. H. Harrison, of Cheticamp, is superintendent.

Torquay Gold Mining Company.—The product for May was 16½ oz. of gold.

Ontario—Petroleum District.

The recent shipments of crude oil from the Brooke field are leading other operators in that direction, and before long the territory will be thoroughly tested. Considerable property is being bonded in Enniskillen, Sarnia, Brooke, Dawn, Euphemia, Zone and other townships. The summer season bids fair to be exceptionally active in field development work.

Following are the shipments of crude and refined reduced to crude equivalent over the railways for the month of May: Grand Trunk—Crude, 11,680 bbls.; refined, 5,370 bbls.; equivalent, 25,105 bbls. Michigan Central—Crude, 2,800 bbls.; refined, 1,844 bbls.; equivalent, 7,410 bbls. Total, 32,515 bbls. crude oil.

Ontario—Sudbury District.

(From Our Special Correspondent.)

Bonanza Company.—Eight years ago this company was organized among the Germans of Waterloo County, Ontario. There was not a single mining man in the company, but the stock sold readily, and over \$50,000 was put up in a very short time to begin operations on a nickel prospect that an unscrupulous faker in Toronto had induced the directors to buy at double the price of a good mine. It was back from the railway 20 miles on the north side of Lake Wahnapiatae, and beyond the end of the nickel range. But on the advice of another faker the company went to work to develop the claim, and after spending about \$75,000 altogether not a ton of ore could be found in it. The owners of the property sued the company for the balance of the purchase money, and got judgment with costs.

The company was reorganized some 15 months ago to go into gold mining on a large quartz lead in the same district. A test shaft was sunk about 80 ft., and the manager of the company says he got from \$8 to \$120 of gold to the ton, though old prospectors and local assayers could only find traces of gold in it. Last winter the company built a fine 10-stamp mill on the property, but on running through 100 tons of the ore, taken from several places on the vein, all the gold obtained from the clean up was only 67c. The mill has been closed down.

Bruce Mines.—Lord Douglas, of Hawick, is having the old Bruce mines pumped out, and an English expert is to make a report on the property. Large bodies of copper ore are said to be left in these old mines.

Canadian Copper Company.—This company is enlarging its smelting plant and opening up several new mines this season. A trestle—in one place 60 ft. high—is building for a railway track from the Big Jones mine to the Copper Cliff, and all the company's old mines are being worked most vigorously.

The Creighton Mines.—A new company is being formed to begin mining and smelting opera-

tions on an extensive scale on a fine group of mines in the township of Creighton. A favorable report has just been made on the property by a local mining expert, who has special knowledge of the mineral deposits of the district. The ore is high in nickel, though somewhat low in copper, and the property is well situated for economic mining.

Yukon District.

Dawson City is reported as having a big boom in real estate, and lots are selling at fancy prices.

Passengers on the steamer "Cottage City" from Alaska, who arrived at Port Townsend June 14th, report Lake Linderman free from ice, and extra steamers running day and night, taking miners across. Eight scows laden with supplies were crushed in the ice on Bennett Lake, losing everything aboard.

MEXICO.

Coahuila.

(From Our Special Correspondent.)

During April the Sierra Mojada mining companies turned out the following results: The Compania Metalurgica Mexicana, from its three miles, \$126,140; the Constancla, from seven miles, \$100,096; the Consolidated Kansas City Smelting and Refining Company, from four shafts, \$54,922; the Esperanza, from the Fortuna shaft, \$22,407; the Segunda Zona, from three shafts, \$7,497; Parrefia, from the Salvador mine, \$5,483.

Lower California.

(From Our Special Correspondent.)

Penamin Mining Company.—This is the name of a new company recently organized to operate some properties in the Calmall district. The Montezuma, one of their mines, has a 5 ft. vein of high grade milling ore in the 225 ft. level.

Michoacan.

(From Our Special Correspondent.)

Inguaran.—Mr. Laforge, the new director of the great Inguaran copper mines, in the State of Michoacan, which Carlos Eissenman lately sold to the Paris Rothschild syndicate, has just returned to Mexico City from an inspection of the work that is going on at the mines. He states that the country is rich in minerals. The survey for the railroad, which the company is building from Inguaran to Zihuatenejo, on the Pacific coast, is almost completed. The Rothschild syndicate owns the Boleo copper mines in Lower California, where extensive reduction works have been erected, and the railway from Inguaran to Zihuatenejo is to facilitate the transportation of ores, together with the Boleo output.

Sonora.

(From Our Special Correspondent.)

New York & Sonora Mining Company.—The shaft of the New York & Sonora Mining Company, at Las Cruces, is now down 230 ft., and the crosscut at that level shows the ledge rich and strong. The smelter at Las Cruces will be put up at once. Work on the railroad will also begin, and the construction will be pushed. The mine is about 30 miles from Hermosillo, on the Sonora River.

Railroad.—This mine, 40 miles east of Alamos, is shipping from \$10,000 to \$15,000 in gold bullion monthly. The question of doubling the capacity of the mill, which at present has 10 stamps, is being considered.

Yaqui Placers.—Notwithstanding the discouraging reports which have recently come from the Yaqui district, owing to the inability to secure fuel and water, prospectors are still going there in large numbers. Ten Colorado prospectors recently passed through Nogales on their way to the mines.

Thomas H. Ford, of Los Angeles, Cal., has just come out of the Yaqui country with rich specimens of gold and silver ore from a vein discovered by himself and companions in the mountains above the Yaqui River, about 45 miles east of Bacerac.

SOUTH AMERICA.

Chile.

Paccha & Jazpampa Nitrate.—The company in 1897 incurred a loss on trading of £3,995, to which has to be added £7,003 for repairs and additions to property, and £685 for depreciation written off animals, thus increasing the debit balance brought forward from last year to £31,267. The directors desire to take the opportunity of the meeting to confer with the shareholders as to the company's financial position and the means of providing funds for carrying on the company's business until an improvement in the price of nitrate enables the company to resume manufacture at a profit. The directors have since the last meeting found it imperative to stop working at the Jazpampa oficina, and both oficinas are now shut down. It is, however, impossible to avoid incurring expenses in Chile and London, and the directors will invite the shareholders to express their views as to the best mode—whether by reconstruction or otherwise—to raise the necessary moneys.

COAL TRADE REVIEW.

Anthracite.

New York, June 17.

There is no change in the general dullness that has pervaded the hard coal trade for some weeks. Shipments to the far East and to Sound ports amount to very little, although a considerable tonnage is moving yet to points away from the seaboard. Unless there is a considerable movement to lake ports, the prospects favor an accumulation of stocks before the end of the month, as it is probable that the June production will be close to 3,000,000 tons. The production for May is given at 2,350,000 tons, 350,000 tons over the estimate for the month, but 373,625 tons less than for May, 1897. The total output to June 1st this year is 13,115,750 tons, as compared with 13,194,070 for the same period last year. Taking into account the early buying on account of the war scare, which put seaboard consumers in a position to wait some time, the fact that the trade at lake ports is rather demoralized and that buyers mindful of last fall's cut in quotations will probably wait later than usual before laying in supplies for the winter, it is evident that only concerted action on the part of producers can keep the market in any sort of shape.

There is so far no indication of any desire by any particular road to force coal on the market at much below circular quotations, but a desire to keep prices at about the present figures during the summer.

The movement among the business men of the mining districts to boom anthracite coal seems to be attaining some size. It is plain, however, that the passage of resolutions and recommendations will accomplish nothing unless the authors look matters squarely in the face and refrain from foolish talk. The anthracite trade is in a bad way, no doubt, and a reduction of freight rates is desirable. Yet they insist on rates as low as those made for bituminous by roads which make no profit from the haulage. Freight rates are but one factor in the situation; there are the possibilities of cheaper mining by the introduction of machines, lessened royalties and such changes in methods of distribution as will lessen retail charges. Above all is there need of thorough reorganization. With unprofitable collieries closed and operations confined to the largest and easiest worked, there will be at least a living profit left. Yet it must be remembered that soft coal is likely to hold the field for steam production, and oil and gas will be used in continually increasing amounts for domestic purposes. Would-be reformers of the anthracite trade should look the whole field over before making suggestions.

Prices at New York are unchanged on a basis of \$4 f. o. b. for free burning white ash stove.

Notes of the Week.

At the recent annual meeting of the Philadelphia & Reading Company, the following directors were elected: Joseph S. Harris, A. J. Antelo, Charles H. Coster, George F. Baer, John Lowber Welsh, George C. Thomas, Henry A. Du Pont, Henry P. McKean and Samuel Dickson.

The only change in the board is the substitution of Samuel Dickson for Francis Lynde Stetson. The board met subsequently and organized by electing Joseph S. Harris, president; William R. Taylor, vice-president; W. G. Brown, secretary, and W. A. Church, treasurer. Little interest was taken in the meeting, the fiscal year not ending till June 30th, so that no report was submitted, and the stock being in the hands of a voting trust composed of J. P. Morgan and F. P. Olcott of New York, and Henry M. Paul of Pennsylvania.

Bituminous.

The seaboard anthracite trade remains dull. It is believed most consumers have fair stocks on hand and decline to increase their holdings, or even fill up any little holes. The shipments now going forward are on season contracts, and it is hardly probable that lower freight rates would do much to secure orders. This condition is general and is causing a reduction of tonnage at the mines in nearly all the regions.

The far East, on account of having larger delivered contracts, is taking more coal than any other territory; but the deliveries are on these contracts merely, and are smaller in comparative quantity than they have been. Sound trade is dead, as consumers are taking no coal at all. New York harbor trade is quiet—unaccountably so, as consumers here have limited storage capacity—and orders have fallen off greatly. Conditions are such that a considerable number of barges that rely on the coal trade are lying idle at New York. All rail trade is dull with tonnages slightly reduced. Transportation from mines to tide is better than it has been, though inclined to be irregular. Car supply is good.

In the coastwise vessel boats are in poor supply, even for the limited tonnage offered. This scarcity has not caused freight rates to rise, but has kept them firm. During the week there were heavy arrivals at the East. These vessels will soon be back light at the shipping ports, and will relieve the situation. We quote current rates of

freight from Philadelphia, as follows: Providence, New Bedford and the Sound, 55c.; Boston, Salem and Portland, 65c.; Wareham, Portsmouth, Bath and Gardiner, 65@70c.; Lynn and Newburyport, 75c.; Bangor, 70@75c.; Dover, \$1 and towages; Saco, 90c. and towages, with 5 and 10c. above these rates for further lower ports.

As to prices, it is difficult to give exact figures at which coal is often sold, but in general coal is quoted: George's Creek, \$1.75 at Baltimore; Poca-hontas, \$1.75 at Norfolk; New River, \$1.75 at Newport News. At Philadelphia the poorer grades sell for \$1.20@1.30, and the best grades for \$1.75. At New York harbor ports the poorer grades are \$1.50; best grades \$2.20.

Birmingham, Ala.

June 13.

(From Our Special Correspondent.)

There is much coal being mined in this State, and it is being sold as rapidly as it is mined. The mines are working a little better now than they were three weeks ago. Some good export orders have been received lately and especially for the coal mined in Blocton, in Bibb County. The demand of the miners for an increase in wages is causing much talk; they will hold their convention in Birmingham, June 20th, instead of the 17th, and the question of an advance in wages is to be discussed. The miners are bent on having some advance, and it will figure from 5 to 7½ cents per ton. The companies have not given an expression as yet, and so it cannot be definitely suggested what might occur. A refusal on the part of the companies is likely to cause a strike, as far as the miners in Jefferson County are concerned, but miners in a portion of Walker County have already made their scale for the coming year and are satisfied. The miners are attempting to organize solidly all over the State in order that they may be prepared, but the operators are showing no concern.

The blowing in of the by-product coke ovens at Ensley City, built by the Semet-Solvay process people, is set to occur this week. The ovens, however, are not quite finished, though the work is being rushed. This is one of the most important plants that has been built in the Birmingham district in several years. Pretty near all the coke ovens in the State are in blast. The furnaces are using much coke, while the outside demand is brisk also.

More miners are being given employment in Walker County every week. The mines at Corona, Patton, Day's Gap, America, Gambill, Carbon Hill and other places in that county are doing much work and are reporting large outputs. In Jefferson County all mines are working on full time, while from Bibb and Tuscaloosa counties come reports that the mines are working steadily also. In Shelby County some of the mines are working hard and are getting out much coal. An export order is being filled by the Blocton mines, belonging to the Tennessee Coal, Iron and Railroad Company.

Cincinnati.

June 15.

(From Our Special Correspondent.)

There is nothing of importance to note in the state of the coal market here this week. The most doing is delivering on time contracts, and a good quantity is moving in that direction every day. What orders come in are for only a few cars. Domestic trade is almost at a standstill and local trade for steam uses is slow. Coal on the river is plenty, and sales of large lots move very slow; no change to note in prices. Lump coal is \$1.75; run-of-mine, \$1.50; nut and slack, \$1.15; New River and Pocahontas smokeless coal, \$2.75; on the river, in barge lots, Pittsburg and Kanawha coal is 5c. per bu.; nut and slack coal, 3½c. per bu.

Coke.—The coke market is as dull as the coal market. There is considerable coming forward on time sales. The orders coming in daily from outside points are not very large in number or for large quantities. There is evidently a slacking up in foundry work. Local foundry men are not rushed with work now and not ordering or buying much coke. Prices remain steady at \$3.10 @3.40, delivered on cars in Cincinnati.

Pittsburg.

June 16.

(From Our Special Correspondent.)

Coal.—Affairs in the Pittsburg district do not move along very smoothly, and it seems that agreements made with officials of the mines do not always bind these people. Then, again, the fight of the thick and thin vein operators is a lively commercial one, and the arguments put forward are various. It is said that the thick vein people have an advantage in mining of about 14c. per ton, and about half as much more in other economies which they enjoy in the operation of their mines. They want to keep this advantage and they use every kind of suasion to make parties believe they have an advantage over the thin vein operators. District President Patrick Dolan of the United Mine Workers of America says that the strike of the Third Pool coal miners will begin this week in earnest. An effort will be made to close down every pit in the Third Pool where the rate is not paid. A number of miners' officials are to enter the field at once and lead in the movement to organize the men. Camps will probably be established at all

miners where men are now at work at the reduced rate. The Catsburg miners ignore the Chicago agreement and have returned to work; after holding a meeting, they decided to repudiate the miners' organization. The Fourth Pool mines are fully employed on regular local contracts; the consumption by local establishments is very large. The railroad mines are all running, but there is much complaint about low prices.

The prospect at this time is favorable for a large rise, but there is only a small amount of coal loaded. The rise will enable the boats detained on the river with empties to reach port.

Connellsville Coke.—The production last week reflected the general hesitancy of the iron trade, although the shipments increased 43 cars. For some time the furnaces have not been as busy as early in the spring, but many continued to make contracts for coke at favorable prices and stocked heavily. Surplus stocks at several furnaces are now as large as desired, and orders have been restricted accordingly. A large number of cokers have left for the old country, and others are preparing to do so. The falling off in production was quite large. The summary for week shows 14,083 ovens in blast, with 4,676 ovens idle. Week's production amounted to 143,974 tons, decrease 5,554 tons. In the running order, 3,316 ovens made six days; 10,677 ovens five days; 40 ovens four days, and 50 ovens, the Semet-Solvay by-product plant, seven days, an average of 5.24 days, as against 5.33 days the week previous. Week's shipments: To Pittsburg, 2,910 cars; shipped West, 3,933 cars; sent East, 1,064 cars; total, 7,907 cars.

SLATE TRADE REVIEW.

New York, June 17.

Business continues quiet, with a fair demand for roofing slate for home consumption. The trade has apparently begun to settle down for the summer vacation. The suggestion of active missionary work in behalf of slate, made last week in our columns, may be taken up later.

In school slates and blackboards there is about the usual summer trade. Ornamental slate and electric work are very quiet.

The export trade continues fair, notwithstanding the high freight rates. The demand is most active for unfading green.

The latest quotations per square for No. 1 slates of standard brands, f. o. b. at quarries, are given below:

Prices of Roofing Slate.

Size, inches.	Monson or Br'n ville.	Bangor.	Bangor Ribbon.	Alb'n. or Jackson Bangor.	Lehigh.	Peach Bottom.	Sea Gr'n.	Unfading Green.	Red.
24 x 16.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
24 x 15.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
24 x 14.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
24 x 13.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
24 x 12.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
24 x 10.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
22 x 14.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
22 x 13.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
22 x 12.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
22 x 11.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
20 x 14.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
20 x 13.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
20 x 12.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
20 x 11.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
20 x 10.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
18 x 18.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
18 x 14.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
18 x 12.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
18 x 11.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
18 x 10.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
16 x 16.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
16 x 14.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
16 x 12.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
16 x 11.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
16 x 10.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
16 x 9.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
16 x 8.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
14 x 14.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
14 x 12.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
14 x 10.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
14 x 9.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
14 x 8.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
14 x 7.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
12 x 10.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
12 x 9.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
12 x 8.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
12 x 7.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
12 x 6.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
11 x 10.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
11 x 8.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
11 x 7.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
10 x 12.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
10 x 11.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
10 x 10.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
10 x 8.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
10 x 7.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
10 x 6.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....
9 x 7.....	6.10	3.5	3.00	3.25	3.50	4.75	2.90	4.50	.....

A square of slate is 100 sq. ft. as laid on the roof.

In Brownville and Monson delivery quotations can be had somewhat lower than above, which is also true of other brands. No. 1 Bangor are 50c. extra when full 3-16-in. thick. Purple sizes run 24 by 12 to 14 by 7, and vary from \$3.75 to \$4 per square. Variegated and mottled are the cheapest roofing slates, at \$2.25@2.90 per square, according to size.

IRON MARKET REVIEW.

NEW YORK, June 17, 1898.

Pig Iron Production and Furnaces in Blast.

Fuel used.	Week ending				From Jan., '97.	From Jan., '98.
	June 18, 1897.		June 17, 1898.			
An'racite	F'ces.	Tons.	F'ces.	Tons.	Tons.	Tons.
Coke.....	24	13,800	26	17,600	422,286	449,450
Charcoal.	107	152,900	144	202,225	3,532,514	4,987,425
	15	3,450	20	6,925	122,636	134,425
Totals..	146	170,150	190	226,750	4,077,436	5,571,300

The usual midsummer dullness seems to be settling down on the iron market. There is a fair amount of business, but fewer new orders than for several weeks past. Nearly all mills are very busy on contracts, and there is nothing to complain of so far as work is concerned. There is a good deal of grumbling at low prices among producers, but no effective remedy is suggested.

The break-up of the Southern furnace combination seems to have had rather a discouraging effect on the proposed organization of a general pool, and nothing is heard of it this week.

In finished material business continues fair, though orders for structural work are falling off somewhat.

A recent letting of a contract for cast-iron pipe in Cleveland, O., brought out the lowest bids yet noted. The Addyston Pipe Company of Cincinnati bid \$14.93 per ton delivered on streets in Cleveland; while the Lake Shore Foundry Company of Cleveland bid \$15.10 per ton, same delivery.

New York.

June 17.

There is no particular change from last week, except that dullness is more widespread.

In the export market we note orders from Rotterdam amounting to \$12,000 for machine tools; shipments of 3,380 kegs of nails, and a large amount of railway material to Valparaiso; recent shipments of \$70,000 worth of agricultural implements and \$25,000 worth of metal working machinery to Havre; orders for \$25,000 of pumping machinery for Glasgow; shipments of \$23,000 worth of bridge material, and also rails, pipe, boilers, locomotives and engines for Japan; shipments of \$38,650 worth of mining machinery, and \$52,390 worth of car material to South Africa, and \$15,680 worth of locomotives and parts, \$7,000 worth of sewing machines and \$4,000 worth of bicycles to Brazil.

Pig Iron.—No large contracts are reported, but there is a steady hand-to-mouth business and considerable iron is changing hands. Quotations are, for Northern brands, tidewater delivery, No. 1 X foundry, \$11@11.50; No. 2 X foundry, \$10.75@11; No. 2 plain, \$10.25@10.50; gray forge, \$9.75@10.25; Southern brands, New York delivery: No. 1 foundry, \$10.75@11.25; No. 2 foundry, \$10.25@10.75; No. 1 soft, \$10.75@11.25; No. 2 soft, \$10.25@10.50; No. 3, \$10@10.50; basic, \$10.25@10.50.

Cast Iron Pipe.—There is little doing in the local market nor are there any large contracts in sight. Foreign business has felt the high ocean freights.

Bar Iron.—The demand is still slack and prices are no higher. In large lots on dock common can be had 1.02½c., refined 1.10c., while some poor stuff can be had for even less.

Plates.—The demand in the local market is rather light, but Eastern mills have plenty of work on hand and prices are reported well maintained. Inquiries have been received for large amounts on account of the West Australia pipe contract. The opinion is expressed, however, that the high ocean freights will bar out American bids. Sheared plates at tidewater in large lots are quoted 1.30@1.37c for No. 10 to 3-16, and 1.20@1.30c. for heavier, with some mills shading these figures slightly. Shell is 1.25@1.30c.; flange, 1.35@1.40c.; Universals are 1.15@1.20c.; charcoal iron plates, 2.25c. for shell, 2.75c. for flange, and 3.25c. for firebox. Rivets are 2.25@2.50c. for iron, and 1.75@1.85c. for steel.

Structural Material.—But one contract of any size was placed during the week, that for the extension of the Metropolitan Life Insurance building, yet the general outlook is decidedly better. Quotations remain for large lots at tidewater: Beams, 15-in., 1.30@1.35c.; angles, 1.20@1.25c.; tees, 1.35@1.40c.; channels, 1.30@1.35c.

Steel Rails and Rail Fastenings.—There is very little done, either in the domestic market or on foreign orders. We continue to quote: Standard sections, \$18@19; girder rails, \$23. Lighter rails are quoted: 12-lb., \$24; 10-lb., \$22; 20-lb., \$22; 25-lb., \$20; 30-lb., \$20; 35-lb., \$20; up to standard, \$19; with the usual 10 per cent. advance for small orders. All f. o. b. mills. Track fastenings are quoted: Angles bars, 1.10c.; fish plates, 1.15c.; spikes, 1.40@1.50c.; bolts, 1.60@1.75c.

Nails.—There is no change in demand and prices hold steady at \$1.45 on dock in large lots for wire nails, and \$1.20 in large lots for cut nails.

Birmingham, Ala.

June 13.

(From Our Special Correspondent.)

While a number of inquiries for pig iron are being made in this district, it is claimed that

concessions are being demanded. It is stated that there is quite a demand for Southern iron coming from rolling mills, pipe manufacturers and foundries. There has been no change in the amount of iron produced in this district, the same furnaces being in blast. Some of the furnaces, and especially those around Sheffield, in the northwestern part of the State, have been breaking their records recently by the lot of iron turned out. Unless a strike occurs among the miners, which will curtail the coke and coal supplies, the furnaces in this district will remain in full blast all during the Summer. There are enough orders on hand to warrant this. As stated before, there is a little difficulty in keeping a full complement of hands at the furnace as farm work becomes more plentiful. Quite a number of orders are being received. During the past week the Sloss Iron and Steel Company made a 40 carload shipment for export. It is also stated that large pipe manufacturers around Cleveland, Ohio, have been inquiring for about 15,000 tons of Alabama iron. Both the rolling mills in this district are in full blast, and though the time for the signing of the new scale has come, it will be done, and the mills closed down for a couple of weeks, or a month at the longest, for some repair work necessary. This will be the first Summer since the existence of rolling mills in this district that all wheels were not still for more than six weeks. At the Birmingham Rolling Mill an order received from the Government is being worked on. There was a little trouble at this mill in the guide mill department last week, but it has been straightened and all hands are at work. A visit among some of the foundries in this district showed much work on hand. There is much machinery being made and repaired in this district, and as a consequence much iron is being used by the foundries.

There are no changes given in the pig iron quotations. While it is admitted that some price cutting has been done on lower grades, still the quotations made public do not show it. The following are the prices made public this week: No. 1 foundry, \$7.50; No. 2 foundry, \$7.25; No. 3 foundry, \$7; gray forge, \$6.50; No. 1 soft, \$7.50; No. 2 soft, \$7.25.

The export trade is looking up a little, though no figures are obtainable. As long as the various companies are competing so sharply it is next to an impossibility to get any reliable information concerning the shipment of iron.

Buffalo.

June 15.

(Special Report of Rogers, Brown & Co.)

There has been more activity during this week than was anticipated, and the tonnage booked has been quite a little more than is usual at this time of the year. Prices have remained firm. The dissolution of the Southern selling arrangement has not affected the market in this vicinity. In fact, some foundry iron has advanced a trifle owing to the taking on of Bessemer contracts, which has relieved the pressure to sell foundry iron. Lake Superior charcoal is very firm, and one leading furnace interest has advanced prices somewhat: We quote for cash f. o. b. cars, Buffalo: No. 1 strong foundry coke iron, Lake Superior ore, \$11; No. 2 strong foundry coke iron, Lake Superior ore, \$10.50; Ohio strong softener No. 1, \$11; Ohio strong softener No. 2, \$10.50; Jackson County silvery No. 1, \$14; Southern soft No. 1, \$11.50; Southern soft No. 2, \$11.25; Lake Superior charcoal, \$11.50; coke malleable, \$10.50.

Cincinnati.

June 15.

(From Our Special Correspondent.)

Last week so much attention was given to entertaining visiting foundry men that the volume of pig iron trade was naturally small. The dealers had their entire traveling force at home to assist in this work. As this city is the largest distributing centre for Southern iron, it was natural it should be selected for this meeting, and all due attention given. There was one sale of 3,000 tons of gray forge, price not given. The Ohio Pipe Works, it is claimed, secured part of its order from a furnace outside of Birmingham, some 6,000 tons, and it was more difficult to get the price paid for it. Though there is more inquiry, sales are less, and generally small. While there are those seeking to place orders, some are reluctant to do so, and, though prices are low, many believe that by holding off they will be enabled to get what they need still lower in July. On the other hand, the feeling is prices cannot go much lower. It is claimed that \$7 at furnace for No. 2 foundry cannot be shaded in Birmingham. Some outside producers say they can and will go below this price, but will not say how much. Furnace men are slow to accept orders for delivery covering 12 months' time. There are many large buyers demanding this long-time delivery. It is claimed that dealers are not disposed to give out the actual correct conditions. The feeling is that they are working around into a stronger position. The struggle now is to get some orders at the best price attainable. In all this, however, nothing has transpired to change the ruling prices here, and we continue to quote for cash f. o. b. cars Cincinnati: Southern Coke, No. 1, \$9.75@10; No. 2, \$9.50@9.75; No. 3, \$9.25@9.50; No. 1 soft, \$9.75@10; No. 2, \$9.50@9.75; Ohio Silvery, No. 1, \$12@12.50; No. 2, \$11.25@11.50; Lake Superior Coke,

No. 1, \$11@11.50; No. 2, \$10.50@11; Standard Southern Car Wheel, \$14@15; Lake Superior Car Wheel and Malleable, \$14.50@15.25; Gray Forge, \$8.50@8.75; Mottled Coke, \$8.50@8.75.

Cleveland. June 15.

(From Our Special Correspondent.)

Iron Ore.—If there is any change in the condition of the iron ore market at this port it is for the better. Although a base of value of ores was fixed at the beginning of the season, the market is somewhat firmer at the present time, the cause being a belief on the part of some agents that the amount of ore mined this year will not be fully up to the estimate figured on at the opening of the season. A number of sales were made during the week, but none of the transactions were large. Some of the smaller iron mine owners, it is said, are loth to work their properties to their fullest capacities, on account of the prevailing low prices for ores, which in a measure accounts for the firm feeling on the market. The prices follow: Specular and magnetic ores, Bessemer quality, \$3.25@3.65; specular and magnetic ores, non-Bessemer quality, \$2.50@2.75; hematite ores, Bessemer quality, \$2.55@3.25; hematite ores, non-Bessemer quality, \$2.10@2.25.

The carrying rates for ores remain unchanged—40c. per ton from Escanaba, and 50c. from Lake Superior ports—and the present indications are that they will not be advanced.

Pig Iron.—The market has been very quiet during the past week, and only a few sales are recorded, on account of the disposition of buyers to hold off and wait more favorable conditions. Sellers are still holding for the same prices reported for several weeks, as follows: Lake Superior charcoal, \$11.75; Bessemer, \$10.75@11; No. 1 foundry, \$10.65@10.75; No. 2, \$10.25@10.50; No. 1, Ohio Scotch, \$10.75@11; No. 2, \$10.25@10.50; gray forge, \$9.50@9.75.

Philadelphia. June 17.

(From Our Special Correspondent.)

Pig Iron.—Business has not improved, but as the usual amount of pig iron is being used up by brokers and furnace men are contented. Still, the pressure is in the direction of lower prices, or at least buyers are finding it easier to obtain a better brand of iron, sometimes for the same money. The movement of Bessemer is interesting, as indicative of large sales at an early day. Basic iron is also looked after by purchasers who expect to need a great deal. Forge is the dullest on the list, but for all that no further concessions have been traced since Monday. No. 1 X foundry is \$11.50@12; No. 2 X foundry, \$10.50@11; No. 2 plain, \$10@10.25; standard forge, \$10.25; ordinary, \$9.75; basic, \$10; Bessemer, \$12; low phosphorus, \$15.50@16.

Billets.—No business is reported, but much stock is being used. Price named, \$17. There will be large sales before long.

Bars.—The bar iron market is in a rather bad way and there is no relief in sight. The quotations given to-day are: Common, 1.05c.; refined, 1.10c.; soft steel bars, 1.10@1.15c.; special steel bars, 1.20@1.30c.

Skelp.—No important business.

Pipes and Tubes.—Pipe work has slackened up since Monday, but boiler tube work has increased, and to-day's inquiries show an improvement is at hand, but quotations hug cost price.

Merchant Steel.—The stores have only moderate stocks. The pressure on steel mills in the West and the opening up of new work here points to a heavy midsummer demand for steel. Prices for the average purchases are firm, but an exceptionally large order is favored.

Plate and Tank.—Within a few days it has been noticed that better prices have been asked and agreed to without question on small lots of plate mill material. There is enough new work in sight as reported this week by mill agents and office men to keep mills in high feather for the summer. Competition is not so feverish and mill men think the market is edging around toward somewhat better prices. Ordinary plates are 1.20c.; universals, 1.25c.; flange, 1.35c.; fire-box, 1.60@2.40c.

Structural Mills.—A good deal of new business has been quietly booked in the structural mills within a few days, mostly, however, small work, some of it being in the way of an extension of orders placed some time ago. Angles are 1.20c.; beams and channels, 1.30c.

Steel Rails.—Nothing new can be had.

Old Rails.—There is very little to say and no one has any explanation of the dullness. Quotations for old iron are \$12; old steel, \$10.50.

Scrap.—Quotations for scrap are: Choice railroad, \$12; heavy steel scrap, \$10.50; old car wheels, \$10.50; old iron axles, \$15; No. 1 yard scrap, \$10.50.

Pittsburg. June 16.

(From Our Special Correspondent.)

The same general conditions prevail as during the past few weeks. Work continues abundant in all departments of business, but the productive capacity is so large that sellers have to be continually on the alert if they wish to keep up with the procession. In some lines there is ex-

ceptional activity, and particularly the shops that can turn out war material, or its adjuncts, are running day and night when competent men can be secured, and this is likely enough to continue all through the summer months. For some weeks past deliveries have been in excess of new orders, so that there is less business on the books and little prospect of adding to it to any important extent in the immediate future. It is not to be supposed that there is likely to be any serious falling off, but with midsummer close at hand and production on a large scale, it is only natural that the period of dullness should set in for a short time. There is nothing unfavorable in the situation except a little too much pig-iron, and until that end of the market is adjusted it is not likely that there will be any distinct improvement. The foreign demand is picking up again, and, with easier rates for ocean freights, it is expected that some important deals will soon be put through. In less than two weeks is the time for shutting down the mills for repairs and stock taking.

Structural Material.—The buying for some weeks has been light, and the prospects of keeping the mills running on shapes is an uncertain one. Competition between the pool and anti-pool mills is very strong; prices rule low.

Steel Rails.—The situation is unchanged; mills are well supplied with contracts for the balance of the year.

Wrought Iron and Steel Pipe.—Business continues active; there is a considerable demand for exports. All the plants in this vicinity are running full; prices unchanged.

Wire Nails.—The nail trade is demoralized, prices are irregular; competition among makers strong.

Old Rails and Scrap Material.—Market active and sales liberal; prices fairly maintained.

Ferro Manganese is steady; \$49@49.75 delivered.

Latest.—The market shows but little change; prices are weak and buyers are asking concessions. The near approach to the first of July will cause a halt. Valley Bessemer sold at furnace, \$9.65@9.75; Pittsburg Bessemer, \$10.35@10.40. Mill iron, \$9.25, with an improved inquiry. For sheet iron the demand was less active. In billets prices about hold their own. Old rails and scrap sold freely.

COKE SMELTED LAKE AND BLOOMS, BILLETS, BAR ENDS.

NATIVE ORE.		Tons.		Cash.	
6,000 B. J. J. P.	\$10.30	1,000 Billets, P.	\$10.00		
5,000 B. J. A. V.	9.75	SKELP IRON.			
5,000 C. B. P. P.	9.50	350 Sheared, P. \$1 27½ 4 m			
4,000 B. J. A. V.	9.75	300 W. Gvd. P. 1.15 4 m			
3,000 B. J. J. P.	10.30	275 N. Gvd. P. 1.15 4 m			
3,000 B. J. J. V.	9.70	SKELP STEEL.			
3,000 B. J. A. V.	9.75	400 Sheared, P. \$1.10 4 m			
2,000 B. J. J. P.	10.35	350 W. Gvd. P. 1.00 4 m			
2,000 B. P. D. V.	9.85	300 N. Gvd. P. 1.00 4 m			
1,500 B. J. V.	9.75	FERRO MANGANESE.			
1,000 Mill, J. P.	9.25	100 80% Imp., del, P. \$49.00			
1,000 B. J. V.	9.75	50 80% Imp., del, P. 49.75			
1,000 B. Spot, V.	9.75	OLD RAILS.			
500 Mill, Spot, P.	9.25	1,000 Iron Rails, gr. V. \$13.75			
200 No. 2 Fdry, P.	10.15	1,000 Iron Rails, gr. V. 13.85			
100 No. 3 Fdry, P.	9.0	1,000 Iron Rails, gr. P. 13.75			
50 No. 3 Fdry, P.	9.60	1,000 Steel B. Hs, gr. P. 10.25			
50 No. 2 Fdy, P.	10.00	400 Steel Rails, gr. P. 10.50			
25 No. 1 Fdy, P.	10.75	300 Iron Rails, gr. P. 13.50			
25 No. 3 Fdy, P.	9.60	SCRAP MATERIAL.			

BLOOMS, BILLETS, SLABS.	
2,500 Blts. J. A. P.	\$15.30
1,800 Blts. D. P.	15.30
1,500 Blts. D. P.	15.20
500 B. O. H. M. M. P.	18.00
500 Blts. D. P.	15.00
500 Blts. P. P.	15.15

SHEET BARS.	
2,000 Delivered, P.	\$17.70
1,500 Delivered, P.	17.65
500 Delivered, P.	17.75

STEEL WIRE RODS.	
1,000 Delivered, P.	\$19.80
500 Delivered, P.	20.00

CHARCOAL.	
50 Cold Blast, P.	\$20.75
50 No. 2 Fdy, P.	15.00
25 No. 2 W. B., P.	15.00
25 Charcoal C., P.	13.50

METAL MARKET.

NEW YORK, June 17, 1898.

Gold and Silver.

Price of Silver per Ounce Troy.

June.	St. Ex.	London Pence.	N. Y. Cts.	Value of Sil. in \$.	June.	St. Ex.	London Pence.	N. Y. Cts.	Value of Sil. in \$.
11	4.85½	26½	57¾	.448	15	4.85½	26¾	58¼	.467
13	4.85½	26½	57¾	.447	16	4.85½	26¾	58¼	.450
14	4.85½	26½	58	.449	17	4.85½	26¾	57¾	.448

The market has lapsed into a quiescent state. Orders are moderate, and the disposition is to buy at current rates only as necessities demand. The United States Assay Office in New York

reports the total receipts of silver at 109,000 oz. for the week.

Average Monthly Prices of Silver.

In New York and London, per ounce Troy, from January 1st 1898, and for the years 1897 and 1896.

Month.	1898.		1897.		1896.	
	London Pence.	New York Cents.	London Pence.	New York Cents.	London Pence.	New York Cents.
January...	23.29	56.77	29.74	64.79	30.69	67.13
February...	25.89	56.07	29.68	64.67	31.61	67.67
March...	25.47	54.90	28.96	63.06	31.94	68.40
April...	25.95	56.02	28.96	61.85	31.10	67.92
May...	26.31	56.98	27.86	60.42	31.08	67.88
June...	.....	.....	27.58	60.10	31.46	68.69
July...	.....	.....	27.36	59.61	31.45	68.75
August...	.....	.....	24.93	54.19	30.93	67.34
September...	.....	.....	25.66	55.24	30.19	65.68
October...	.....	.....	26.77	57.57	29.68	65.05
November...	.....	.....	26.87	57.93	29.46	64.98
December...	.....	.....	26.83	58.01	29.70	65.24
Year.....	.....	.....	27.55	59.79	30.67	67.06

The New York prices are always per fine ounce, or ounce of pure silver; the London quotation is per standard ounce or for metal 925 fine.

Gold and Silver Exports and Imports

At all United States ports, May, 1898, and years from January 1st, 1898 and 1897:

GOLD	Coin and Bullion.		In ores.		Total excess, Exp or Imp.
	Exports.	Imports.	Exports.	Imports.	
May.	\$109,157	\$13,119,383	\$72,441	\$199,517	\$13,209,743
1898..	5,673,031	87,059,977	72,441	2,493,204	83,507,709
1897..	17,377,326	3,066,605	93,068	1,788,903	E. 12,614,886
SILV.					
May.	4,184,432	488,568	.....	1,080,881	E. 2,614,983
1898..	20,236,278	2,402,361	112,699	8,047,223	E. 9,899,393
1897..	22,808,037	3,465,067	250,150	8,550,708	E. 11,051,412

This statement includes the exports and imports at all United States ports, the figures being furnished by the Bureau of Statistics of the Treasury Department.

Gold and Silver Exports and Imports, New York

For the week ending June 9th, 1898, and for years from January 1st, 1898, 1897, 1896, 1895.

Pe-riod.	Gold.		Silver.		Total Ex-cess, Exp. or Imp.
	Exports.	Imports.	Exports.	Imports.	
Week	\$11,700	38,195	\$521,265	\$5,194	E. \$489,676
1898..	4,453,639	68,952,764	15,525,127	1,755,944	E. 50,729,942
1897..	11,646,491	1,723,844	18,985,462	1,204,938	E. 27,113,171
1896..	29,649,427	17,107,090	17,672,996	1,071,901	E. 29,143,132
1895..	35,534,147	19,825,487	16,373,170	802,182	E. 28,279,648

The movement of gold for the week was very small. The silver exported went chiefly to London; that imported came from South America.

Financial Notes of the Week.

General business shows little change, but it is more evident each week that people are getting used to the war and that the effects of heavy crops and high prices for grain are beginning to reassert themselves. There has been a break in wheat prices resulting from the collapse of the Chicago speculation, but export demand is so strong that good returns for all we have to sell are assured. The fact that the farmers have more money to spend than for a long time past is the strong feature, which cannot be put aside.

The new revenue bill was signed by the President and became law on June 17th. The Secretary of the Treasury immediately sent out circulars asking for bids for \$200,000,000 bonds of the \$400,000,000 authorized by the law. These bonds will be in denominations of \$20, \$100, \$500 and \$1,000 coupon bonds, \$5,000 and \$10,000 registered bonds. They will be dated August 1st, 1898, will be payable in coin August 1st, 1918, but redeemable at the option of the Government after ten years. The indications are that the loan will be largely oversubscribed, at least three offers to take the whole amount having been made. The bill also authorizes the issue of \$100,000,000 in short bonds on Treasury bills.

No gold imports are noted, and sterling exchange continues at a point which will not warrant such reports. The easy money market in New York and continued purchases of securities in London for American account prevent the movement of gold this way, notwithstanding the heavy trade balance in our favor. From London it is reported that Russia is again buying gold on a considerable scale.

Specie shipments by water from San Francisco for the five months ending May 31st were as follows:

	Gold.	Silver.	Totals.
Hong Kong	\$19,448	\$2,102,106	\$2,121,554
Shanghai .....	.....	196,578	196,578
India .....	.....	415,900	415,900
Honolulu	170,000	27,000	197,000
Tahiti	2,411	82,740	2,411
Central America.....	22,425	.....	105,165
Total foreign	\$214,284	\$2,824,324	\$3,038,608
New York	15,866,755	92,326	15,959,081

Totals 1897

The silver exports this year included \$73,202 in

United States coin; \$69,400 in Peruvian soles; \$845,446 in Mexican dollars; \$1,928,602 in bar silver. The exports of Mexican dollars were \$200,694 in April, but for the five months they were \$666,121 less than last year.

The preliminary statement of the Bureau of Statistics of the Treasury Department shows that merchandise exports from the United States continued heavy in May, reaching a total of \$110,239,206, or \$32,367,930 more than in May, 1897. The imports for the month were \$53,258,847. For the eleven months of the fiscal year from July 1st to May 31st, the statement is as follows:

Table with columns for 1897 and 1898. Rows include Exports, Imports, Excess exports, Add excess of exports, silver, Total, Deduct excess of imports, gold, Net apparent balance.

The gold and silver movement in detail will be found in the usual place, at the head of this column.

The statement of the United States Treasury on Thursday, June 16th, shows balances in excess of outstanding certificates as below, comparison being made with the statement for the corresponding date last week:

Table with columns for June 9, June 16, and Changes. Rows include Gold, Silver, Legal tenders, Treas. notes, &c., Totals.

Treasury deposits with national banks amounted to \$28,645,291, a decrease of \$124,501 during this week.

The statement of the New York banks including the 66 banks represented in the Clearing House for the week ending June 11th, gives the following totals, comparisons being made with the corresponding weeks in 1897 and 1896:

Table with columns for 1896, 1897, 1898. Rows include Loans and discounts, Deposits, Circulation, Reserve, Specie, Legal tenders, Total reserve, Legal requirement.

Changes for the week this year were increases of \$9,144,200 in loans and discounts; \$14,791,200 in deposits, \$3,680,200 in specie, \$1,609,000 in legal tenders, and \$1,591,400 in surplus reserve; a decrease of \$11,400 in circulation.

The following table shows the specie holdings of the leading banks of the world at the latest dates covered by their reports. The amounts are reduced to dollars, and comparison is made with the holdings at the corresponding dates last year:

Table with columns for 1897 and 1898. Rows include Banks, N. Y. Assoc., England, France, Germany, Austro-Hun., Spain, Belgium, Netherlands, Italy, Russia.

The returns for the Associated Banks of New York are of date of June 11th, the Banks of England and France, June 16th, and the others are of date of June 10th, as reported by the "Commercial and Financial Chronicle's" cable. The New York banks do not report silver separately, but the specie carried is chiefly gold coin. The Bank of England reports gold only. The Imperial Bank of Germany and the Belgian National Bank do not report gold and silver separately.

Shipments of silver from London to the East for the year up to June 2d are reported by Messrs. Pixley & Abell's circular as below:

Table with columns for 1897 and 1898. Rows include India, China, The Straits, Totals.

Arrivals for the week this year were £115,000 in bar silver from New York, and £32,000 from Chile; a total of £147,000. There were no shipments this week.

Imports of specie at San Francisco by water for the four months ending April 30th were:

Table with columns for Gold, Silver, Totals. Rows include Coin, Bullion, Totals.

The imports came from the following coun-

tries: British Columbia, \$92,552; Mexico, \$813,804; Central America, \$10,591; Hawaii, \$142,092; Japan, \$756,247; Australia, \$7,257,588; miscellaneous, \$2,614. There was a large increase this year, chiefly made up of gold from Australia.

The movement of gold and silver in Great Britain for the four months ending April 30th is reported by the Board of Trade as below:

Table with columns for Imports, Exports, Excess. Rows include Gold, Silver.

Of the gold exported this year £6,229,781 went to the United States. Of the silver imported £2,798,349 came from the United States.

The foreign merchandise trade of Great Britain for the four months ending April 30th is given by the Board of Trade returns as follows:

Table with columns for 1897 and 1898. Rows include Imports, Exports, Excess, imports.

There was an increase of £6,552,841, or 4.3 per cent., in imports, and a decrease of £4,503,312, or 4.5 per cent., in exports.

Indian exchange continues firm, and Council bills were taken in London at about 16.03d. per rupee. The amount of bills offered has again been reduced, and for the present will be only 40 lakhs weekly. The higher price of silver has temporarily stopped shipments of the metal to India.

Prices of Foreign Coins.

Table with columns for Bid, Asked. Rows include Mexican dollars, Peruvian soles and Chilean pesos, Victoria sovereigns, Twenty francs, Twenty marks, Spanish 25 pesetas.

Other Metals.

Copper.—The demand has continued rather poor and some of the producers evidently became tired of waiting, with the result that rather lower prices have again been accepted for all descriptions of copper. While some of the larger Lake companies are still holding out for 12c., some transactions in Lake copper have been reported at 11 1/2c., at which price there are further sellers, and it is said that some sales from second hands have taken place somewhat below this figure. For electrolytic copper we have to reduce prices to 11.35@11.45c. for cakes, wire bars or ingots, and 11.15@11.25c. for cathodes, but even these concessions have not stimulated business and only limited transactions took place. Casting copper is quoted at 11 1/2@11 3/4c. The decline from the highest prices recently recorded is now between 1/2 and 3/4c., and under the circumstances it would not be surprising to see quite an active business set in before long.

The foreign market has been rather lifeless and also shows a large decline. The market opened at £50 10s., or about 10s. below the closing price of last week, and declined slowly, until it reached £50@£50 2s. 6d. for spot and £50 5s. @ £50 7s. 6d. for three months prompt, which are the closing quotations and about £1 lower for the week. According to our cable, the visible supplies of copper for the first half of June have again declined 400 tons, and, considering the very reduced stocks and the good consumption, the heavy decline in prices cannot be easily explained. For refined and manufactured we quote: English tough, £53@£53 10s.; best selected, £53 15s.@£54 10s.; strong sheets, £60 10s.; India sheets, £57; yellow metal, 5d.

Consumption of sulphate of copper has been rather disappointing this year, and shows a considerable falling off, in consequence of which a great many manufacturers have closed their works.

Copper production, as reported by Mr. John Stanton, who acts as statistician for the producing companies, was as follows, for May and the five months ending May 31st, stated in long tons (2,240 lbs.) of fine copper:

Table with columns for May, Five months. Rows include U. S., reporting mines, U. S., outside sources, Total United States, Foreign reporting mines, Totals, Exports, United States.

The United States production shows an increase for the five months of 12,099 tons, or 13.6 per cent. over last year; while the foreign production decreased 3,336 tons, or 9.1 per cent. United States exports have increased 6,535 tons, or 12.4 per cent. over 1897.

Tin.—The demand leaves little to be desired, but every order is eagerly competed for and prices here are, if anything, just slightly below the price at which tin can be laid down on this

side. This appears to be due to the rather heavy stocks which are still held here. We have to quote for both spot and futures 15 1/4@15 1/2c.

The London market continues very firm, although fluctuations have been more frequent. The opening price was £68 10s.; afterwards a decline set in down to £68 2s. 6d., followed by a quick recovery, and prices close somewhat higher than last week, viz., £69@£69 2s. 6d. for spot, and £69 7s. 6d.@£69 10s. for three months.

Lead.—A very active business has been done at gradually rising prices. Very little lead could be obtained for either prompt or future shipment, and under the circumstances, the market closes at its best, with a very strong tendency at 3.90c. New York. In the West also a large business was done, and sales are reported in St. Louis at 3.77 1/2c.

The foreign market continues dull, with buyers holding back. A further decline is reported, Spanish lead being quoted £13 8s. 9d.@£13 10s., with English lead 5s. higher.

St. Louis Lead Market.—The John Wahl Commission Company telegraphs us as follows: Lead is strong and advancing. The latest sales are on a basis of 3.77 1/2@3.80c., for both common and corroding lead. Demand is fairly active and quite a number of sellers look for still higher prices.

Spelter is in quite an abnormal state. Spot and nearby delivery are almost unobtainable, and belated consumers had to pay exceedingly high prices. Consumption, especially for galvanizing purposes, is simply enormous, and there is also a good demand for July and August delivery. To our regret we have to report the burning down of the plant of Robert Lanyon's Sons, which will make the scarcity of spot material still more marked. It is rather difficult to give close quotations, considering the great irregu-

Imports and Exports of Metals.

Large table with columns for Port, Week, June 9, Year, 1898. Rows include New York, Baltimore, Philadelphia. Sub-headers include Expts., Impts., Expts., Impts. Various metal categories are listed.

*New York Metal Exchange returns. †From our Special Correspondent. ‡Week ending June 16.

larity in the market, but business has been reported for immediate shipment at from 4%@4 1/2% c. St. Louis, and 5@5 1/2% c. New York. For July, some business has been doing at 4%@4 1/2% c. St. Louis, and 4 1/2@4 3/4% c. New York, but these prices are not obtainable for future delivery.

The London market remains firm, good ordinaries being quoted at £19 17s. 6d., and specials 2s. 6d. more.

Antimony.—The demand continues large and prices are again somewhat higher; Cookson's, 9% c.; Hallett's, Japanese and U. S. Star 9@9 1/2% c.

Nickel.—Business continues on unchanged lines, and no alteration in prices can be reported. We quote for ton lots 33 1/2@36c. per lb., and for smaller orders 35 1/2@38c. London prices are 14@16d. per lb., according to size of order.

Platinum.—Demand is steady. The metal can be had in large lots at \$14.40; for smaller orders it is quoted at \$15@16 per oz. in New York. The London quotation is 58@60s. per oz. Prices are firm.

For chemical ware (crucibles and dishes) best hammered metal Messrs. Elmer & Amend, New York, furnish the following prices: In lots of 250 grams or more, 56c. per gram; in lots of 100 grams or more, 57c. per gram; less than 100 grams, 58c. per gram; unmanufactured platinum will be supplied in same quantities at 2c. less per gram.

Quicksilver.—There has been no change in the quotation this week, and it is still \$43 per flask, New York. The London price is unchanged at £7 12s. 6d. per flask, with the same figure named from second hands.

The Minor Metals.—Quotations are given below for New York delivery:

Aluminum	Nickel alloy, # lb. 33@29c.
No. 1, 98% ingots, # lb.	Bismuth, # lb. . . . \$1.30@1.80
# lb. 33@40c.	Phosphorus, # lb. . . . 40@50c.
No. 2, 90% ingots, # lb.	Tungsten, # lb. 70c.
# lb. 31@34c.	Ferro-tungsten, 60% 60c.
Roll sheets, # lb. 38c. up	

Variations in price depend chiefly on the size of the order.

Average Monthly Prices of Metals.

In New York, for the years 1898 and 1897; in cents per pound.

Month.	COPPER.		TIN.		LEAD.		SPELTER.	
	1898.	1897.	1898.	1897.	1898.	1897.	1898.	1897.
Jan.	10.90	11.75	13.87	13.4	3.65	3.04	3.96	3.91
Feb.	11.28	11.92	14.08	13.59	3.71	3.28	4.04	4.02
March.	11.98	11.80	14.38	13.43	3.72	3.41	4.25	4.12
April.	12.14	11.48	14.60	13.34	3.63	3.32	4.26	4.13
May.	12.00	11.03	14.52	13.44	3.64	3.26	4.27	4.21
June.	11.11	11.11	13.77	13.33	3.33	3.33	4.24	4.24
July.	11.11	11.11	13.89	13.89	3.72	3.72	4.32	4.32
August.	11.16	11.16	13.80	13.80	3.84	3.84	4.26	4.26
Sept.	11.30	11.30	13.98	13.98	4.30	4.30	4.18	4.18
October.	11.13	11.13	13.88	13.88	4.00	4.00	4.17	4.17
Nov.	10.88	10.88	13.79	13.79	3.76	3.76	4.03	4.03
Dec.	10.78	10.78	13.71	13.71	3.70	3.70	3.89	3.89
Year.	11.29	11.29	13.67	13.67	3.58	3.58	4.12	4.12

CHEMICALS AND MINERALS.

(For current prices of chemicals, minerals and rare elements see also page 754.)

New York, June 17.

Heavy Chemicals.—The market is quiet, with little movement in either alkalis or bleaching powders. The hot weather serves as a reminder of the near approach of the vacation season and rather disinclines people for business. Buying in all lines has been rather limited.

Quotations are: Caustic soda, domestic high test, \$1.50@1.55 per 100 lbs. f. o. b. works; foreign, \$1.65@1.80 delivered, according to test and quality. Powdered caustic soda, 2%@3 1/2% c. per lb., according to make and test; alkali domestic 58% basis 48%, 55@60c. for bags; foreign, 55@60c. from dock, as to style of package. Bleaching powder, English prime brands, \$1.75@1.95 per 100 lbs.; ordinary, \$1.60@1.75; Continental, \$1.55@1.60, and French, \$1.35 per 100 lbs. Bicarb. soda, domestic, ordinary, \$1.25@1.50 per 100 lbs. f. o. b. works, less the usual discounts; foreign, \$2.12@2.25 per 100 lbs., according to brand and style of package. Sal soda, domestic, 50@55c. per 100 lbs. f. o. b. works, less the usual discounts; English, 62 1/2% c. to arrive, and 65@67 1/2% c. per 100 lbs. for spot. Concentrated sal soda, foreign (crystal carbonate), \$1.60@1.65 per 100 lbs.; domestic (monohydrate crystals), \$1.25@1.50 per 100 lbs. Chlorate of potash, powdered, 9 1/2@10c.; crystals, 11@12c. per lb.

Acids.—This market continues quiet, and what deliveries are being made are on existing contracts. No change noted in prices. Quotations are, per 100 lbs. for New York and vicinity, as follows: Acetic acid, commercial, No. 8, \$1.40@1.55; redistilled, 2%, \$2@2.15. Muriatic acid, 18°, \$1.10@1.75; 20°, \$1.20@1.87 1/2; 22°, \$1.35@2.25, according to quantity and brand. Nitric acid, 36°, \$3.50@4.75; 38°, \$3.75@4.62 1/2; 40°, \$4.00@4.87 1/2; 42°, \$4.62 1/2@5.25. Oxalic acid, \$6.50@7. Mixed acids, according to mixture. Sulphuric acid, 66°, \$1.10@1.75. Chamber acid, 50°, in jobbing way,

\$11.50@12 per ton f. o. b. factory. Blue vitriol, \$3.62 1/2@4.12 1/2 for extra grades, and \$3.50@3.62 1/2 for ordinary.

Brimstone.—So little has been doing in spot that quotations are entirely nominal. It begins to look as if the war interference with imports would not be a serious matter, and supplies are expected to come in freely. Futures are lower, and the quotation for cargoes to arrive is \$24 per ton for best unmixed seconds, with \$21.50 named for thirds.

Nitrate of Soda.—Prices continue a little uncertain, with rather a downward tendency. This has not stimulated buying; nor has the report of a probable general closing down of the oficinas at all hastened purchasers' movements. Apparently they feel sure of a supply when it is needed. The quotations are unchanged at \$1.87 1/2@1.90 per 100 lbs. for spot, \$1.77 1/2 for July arrivals, \$1.70 for August, \$1.65@1.67 1/2 for September, and \$1.62 1/2@1.65 for October-December, inclusive.

Fertilizing Chemicals.—Trade is only fair for the present, but a good fall business is looked for. Sulphate of ammonia is in fair demand and prices are firm.

Quotations are: Sulphate of ammonia, gas liquor, \$2.50@2.52 1/2 (basis of 25%); bone, \$2.45@2.47 1/2 per 100 lbs. Dried blood, high grade, Western, \$1.95@1.97 1/2 per unit; New York, \$1.85@1.90 per unit. Azotine, \$1.70@1.75, basis New York Concentrated phosphates (30% available phosphoric acid), 57 1/2% c. per unit. Acid phosphates, 13@15%, av. P₂O₅, 55@60c. per unit at sellers' works in bulk. Dissolved bone black, 17@18%, P₂O₅, \$16@16.50 per ton. Acidulated fish scrap, \$11, and dried scrap, \$18.50@19 f. o. b. fish factory. Ammonia super-phosphates, high grade, \$25@26 per ton. Tankage, high grade, \$16.25@16.75 per ton f. o. b. Chicago, \$20@20.25 at New York; concentrated tankage, \$1.50 per unit, f. o. b. Chicago; low grade, \$13@13.50. Bone tankage, \$18@18.50; ground bone, \$19@22. Bone-meal, \$1.40@1.50, f. o. b. Chicago.

Potash salts are quoted in large lots as follows:

Delivery.	Double Manure Salts, # @ 85 (100 lbs.)	Kainit, 12.4% (long ton.)	Muriate of Potash, 80@95% (100 lbs.)	Sulphate of Potash, 90@95% (100 lbs.)	Sylvinit (100 lbs)
New York.	\$1.01	\$8.55@	\$1.78@	\$1.90 1/2	\$0.30 1/2
Boston.		8.80	1.81	2.03 1/2	37 1/2
Norfolk.		8.90@	1.76 1/2@	1.89@	37 1/2
Philadelphia.	1.02	9.15	1.79 1/2	2.02	38 1/2
Charleston.		9.05@	1.78 1/2@	2.00@	.38
New Orleans.	1.03 1/2	9.30	1.81 1/2	2.04	.39
Savannah.					
Wilmington, N. C.					

Phosphates.—The demand for export continues fair and more charters are reported. There is more phosphate moving now, apparently, than for a good while past. Prices show no change.

Quotations on Florida high grade, 75% to 80% rock, sold on guarantee of 77% iron and less than 3% alumina, are \$7@7.25 per long ton, f. o. b. Fernandez. The freight rate to New York is about \$1.90 per ton. Florida land pebble is quoted at 7%@8c. per unit, delivered in New York, exclusive of war risk insurance. South Carolina ground rock is worth \$5.50 to \$5.75 per short ton, delivered in New York; undried, \$3 per 2,240 lbs., f. o. b. Ashley River; dried, \$3.25 to \$3.45, f. o. b. same place. Tennessee phosphates, \$1.45@1.55 f. o. b. Mt. Pleasant.

Liverpool, June 7.

(Special Report of Joseph P. Brunner & Co.)

There is no new development to report in heavy chemicals and the export demand generally is far from satisfactory. Soda ash quiet at late rates. We quote spot range for tierces, as to market, as follows: Leblanc ash, 48%, £4 10s. @ £4 15s. per ton; 58%, £4 17s. 6d. @ £5 per ton. Ammonia ash, 48%, £4 @ £4 5s. per ton; 58%, £4 5s. @ £4 10s. per ton. Bags, 5s. per ton under price for tierces. All net cash.

Soda crystals in fair request and firm at £2 17s. 6d. @ £3 per ton, less 5% for barrels, with an allowance of 7s. per ton if taken in bags.

Caustic soda receives only a limited amount of attention from buyers. Nominal spot range, as to market, is about as follows: 60%, £6 3s. 9d. @ £6 5s. per ton; 70%, £7 3s. 9d. @ £7 5s. per ton; 74%, £7 16s. 3d. @ £7 17s. 6d. per ton; 76%, £8 @ £8 5s. per ton; net cash.

Bleaching powder is selling in a moderate way for home consumption, but there is little passing for export, and £5 15s. @ £5 17s. 6d. per ton, net cash, is nominal range for hardwood packages. Chlorate of potash in limited demand and quoted at 3 3-16d. @ 3 1/4 d. per lb.

Bicarbonate of soda varies considerably in price, according to market, the finest quality in 1-cwt. kegs being quoted from £5 15s. @ £6 15s. per ton, less 2 1/2%, as to market, with usual allowances for larger packages.

Sulphate of ammonia is less firm at £9 8s. 9d. @ £9 10s. per ton, less 2 1/2% for good gray 24@25% in double bags, f. o. b. here, as to quality.

Nitrate of soda rather slow again at £7 17s. 6d. per ton, less 2 1/2% for double bags f. o. b. here.

Carb. ammonia dull and easier at 2 1/4 d. @ 2 1/4 d. per lb. for lump, and 1/4 d. extra for powdered, less 2 1/2% per cent.

Valparaiso, Chile, April 23.

(Special Report of Jackson Brothers.)

Nitrate of Soda.—Owing to the holidays little was done in this article until April 12th, when some producers reduced their former limits for season nitrate, sales resulting at 4s. 7 1/2 d. for August, 4s. 8d. for September and 4s. 8 1/2 d. for October delivery of 95%, and in a few cases even 1/2 d. more was paid. For prompt shipment several cargoes have been placed at 4s. 6d., with combined freight of 25s. The production for March was 2,300,000 qtls., making a total of almost 4,000,000 qtls. for the 3 months of 1898. At the close sellers ask 4s. 6 1/2 d. for May-June, 4s. 8d. for July-August and 4s. 9d. for September-December, while buyers offer 1/2 d. less. The price of 4s. 6 1/2 d., with 25s. freight, stands in 4s. 3 1/2 d. per cwt. net cost and freight, without purchasing commission. Sales for the fortnight amounted to 1,402,000 qtls.

MINING STOCKS.

Complete quotations will be found on pages 750, 751 and 752 of mining stocks listed and dealt in at:

Baltimore.	New York.	Mexico.
Boston.	Philadelphia.	Paris.
Cleveland.	Pittsburg.	Rossland.
Colo. Springs.	Salt Lake.	Shanghai.
Denver.	San Francisco.	Toronto.
Helena.	London.	Valparaiso.

New York, June 17.

War news and the wheat market have again combined to limit the interest in mining stocks, and the dealings have been very limited.

The Comstocks seem to be hopeless, and sales were few and at about the lowest prices on record. Sierra Nevada still feels some effect of its recent boom, and sold at 58@59c.; but Consolidated California & Virginia ranged between 36 and 42c. Hale & Norcross was quoted at 75@76c., but this stock is so closely held that the quotations mean very little.

Very little was done in California stocks. One sale of Standard Consolidated was made at \$1.55. Brunswick brought 16c. Quicksilver, which has not been traded in for some time, was \$2@2.50; while the preferred is \$6@7.

A few transactions in Homestake are reported at \$48@50.

The only Utah stock receiving much attention was Horn Silver, which sold at \$1.50.

In Colorado stocks most of the dealing on the Mining Exchange was in the low-priced stocks, and fluctuations were not important. There was a little business in the better class of stocks, however. Iron Silver sold at 65@70c.; Portland at 96c. @ \$1.03; Elkton at 90 1/4 @ 90 1/2 c.; Isabella at 25 1/2 @ 27c.

The outlook is for a quiet time for some weeks, as the vacation season is on, and there is nothing to excite special interest.

The Mining Exchange has instituted three calls a day instead of two, and trading will be done at 10.30 a. m., 12.30 and 2 p. m.

Boston, June 16.

(From Our Special Correspondent.)

The decline in active copper stocks has continued during the week and paper profits have disappeared in a number of cases. The market was evidently much over-bought, and on realizing sales much lower prices have been recorded and the closing is weak and at the lowest. Calumet & Hecla sold down to \$550 from \$570, while Boston & Montana broke from \$208 1/2 to \$196 1/4. Osceola records a decline from \$52 to \$48 and closes weak; Old Dominion has shrunk from \$27 to \$25. Butte has been fairly steady and is supported at about \$22 1/2. Centennial has not varied much, pending a ready market at about \$15. Arnold has declined from \$17 to \$14 1/4, at which price good buying appeared, but the stock did not rally any. Franklin is quiet at \$13 and Wolverine at \$23. Quincy lost three points to \$113 and Tamarack declined from \$162 to \$158. Atlantic shows strength at \$30@31, and Parrot is steady at \$23. A feature to-day was the attempt to sell a small block of Baltic stock, which knocked the price from \$21 to \$19 1/4, showing the weak condition of the speculative "fancies" on any attempt to market stock. The stocks of the low-priced non-producing properties are steady and rather inclined to advance, Tecumseh selling at \$3 and Humboldt advancing from \$4 1/4 to \$5. Alouez is strong about \$5, Ashbed at \$4, and National selling at 75c.

Quicksilver stocks are dull, with prices firm, New Idria bringing \$6% and Napa \$8.

Gold stocks are quiet, with prices inclined to run off a little. Merced has declined to \$4, Pioneer from \$6 to \$5 1/4, and Ysabel to \$4 1/4. Gold Coin sold at \$1 and Cochiti finds a ready market at \$7 1/4 to \$8.

Los Angeles, Cal., May 27.

(From Our Special Correspondent.)

Dealings in mining stocks for the week ended

to-day were as follows, values given being per 1,000 shares: East Amagosa, 10,000 shares at 75c. @ \$1; Gold Bug, 5,000 at \$10; Lucky Star, 1,000 at \$5; Mohawk Acton, 125,000 at 60@80c.; Maganetta, 9,000 at \$6.50@7.50; Old Dominion, 1,000 at \$10 @ \$30; Pacific Consolidated, 675,000 at 75c.@ \$1; Rand Mountain, 25,000 at \$1.25@ \$1.75; Sun Dance, 1,000 at \$350@ \$450; Wedge, 2,100 at \$75@ \$80.

Salt Lake City. June 11.
(From Our Special Correspondent.)

A lower range of prices among the prominent traders has afforded the surprise of the week. It is noteworthy that the strongest shares were the prominent silvers. The announcement of the lowering of the Mercur dividend from \$36,000 to \$25,000 had a demoralizing effect. For the past few years this stock has been viewed as the backbone of Utah paying mines; hence the general astonishment when it was reluctantly given out that this change was necessary. I own to being taken off my guard, particularly as a recent visit to the mines showed larger resources than ever.

Notwithstanding the \$237,500 paid by Captain De La Mar for seven acres of Mercur ground but six months ago there is less than \$100,000 in the treasury. From what is now known it appears that the net earnings per month for the past half year did not exceed \$20,000. However, some improvements were made, and the physical condition to-day is certainly excellent. Much of the stuff recently sent to the mill was \$2.50 to \$4.50 mineral, which, while it afforded a profit, cut down the average. There are now five veins proven, one under the other, and systematic mining requires working out the top vein first, then the second, and so on, irrespective of the grade of the ore. With a large surplus it would have been wise to have further increased the mill's capacity last winter. The shares are down to \$7, and not overly strong.

Northern Light's assessment, just declared, proved 10c., in place of 5c., which dropped the stock to 4c. It will place the company out of debt. Sacramento's weakness is attributable to mill mishaps and delays in treating a larger tonnage. Geyser Marion is lower than last Saturday, though stronger than in the middle of the week. Chloride Point well holds up in spite of the overturnings of its neighbors. Overland and Omaha present a strong point.

Grand Central pays its initial dividend of 12½c., or \$31,250, June 15th, and one is promised monthly hereafter. The shares stand at \$7.05 bid, another noteworthy advance. Swansea paid its customary \$5,000 monthly yesterday. The shares are remarkably strong and earnestly sought for. Silver King makes another record at \$20 bid. The dividend was paid yesterday. Horn Silver maintains its output, and a quarterly dividend is booked by July 1st. South Swansea is unchanged, and is expected to appear on the dividend roster. Bullion-Beck has just declared the usual \$10,000, payable June 15th.

Mammoth is slumpy; frictions among the large owners continue. The mine shows well, mill is doing good work and the dividend is being earned. Ajax is featureless. The Emerald and Homestake assessments are delinquent on the 15th and the Sunbeam's on the 14th.

Dexter is considerably weaker. Recent yield is below anticipations. Utah and Galena are both lower, it is said, due to the lower silver quotation. Anchor shows no change. Ontario is firm. The mine shows well and the Marsac mill is achieving good results on the tailings. Daly and Daly West furnish no comment.

Centennial-Eureka has moved up a few points since last Saturday, though there is no near prospect of a dividend. Dalton is weak. Four Aces is 7c. bid, in lieu of 9c. a week ago. Reports from the mine do not warrant this. Dalton & Lark failed to show any life, in spite of continued announcements of more active mining soon.

San Francisco. June 11.
(From Our Special Correspondent.)

Another dull week has passed, with light business and trifling fluctuations in prices. Stocks are very low, but buyers are not attracted by such prices. The deep level drainage is being talked up again, but the public pays no attention.

Sierra Nevada sold at 56c.; Consolidated California & Virginia, 40@42c.; Ophir, 29c.; Best & Belcher, 20c.; Yellow Jacket, 20c.; Potosi, 12@13c.; Chollar, 10c. For Standard Consolidated \$1.60 was asked.

For the month of May, 1898, the mining, milling and other corporations on and around the Comstock paid out a total of \$53,955 to employees. The pay rolls were about \$3,000 less than for the previous month. The amounts disbursed by each company were as follows: Andes (estimated), \$400; Consolidated California & Virginia, \$7,679; Ophir, \$2,002; Mexican, \$1,626; Best & Belcher, \$1,936; Gould & Curry, \$2,259; Utah, \$741; Occidental (estimated), \$1,500; Alta (estimated), \$2,500; Brunswick Lode (shafts Nos. 1 and 2), \$6,035; Crown Point, \$914; Belcher, \$1,423; Yellow Jacket, \$1,464; Confidence, \$103; Challenge, \$103; Imperial, \$261; Segregated Belcher, \$66; Savage, \$2,700; Chollar, \$1,896; Bullion, \$87; Potosi, \$2,462; Union Shaft, \$2,091; Sierra Nevada, \$1,575; Alpha, \$652; Overman (estimated), \$1,000; Caledonia (estimated), \$500; Nevada Mill (estimated), \$880;

Electric Light (estimated), \$500; Water Company (estimated), \$3,000; Quartz Mills (estimated),

London. June 7.
(From Our Special Correspondent.)

In spite of the Whitsuntide holidays and the Derby race week there has been considerable activity in one section of the London mining stock market—the West Australian. This activity has been centered in the group of gold mines at Kilgoorlie, and it is due chiefly to a sudden revival of buying on the part of those who considered that the quotations had fallen during the past three months solely from neglect. Operators both in London and Australia evidently thought the present a good opportunity to buy and hold for a rise later. The little boom has no interest to practical mining men, as it is not due to any new feature as regards the gold production.

The West Australian market has also been enlivened by the rehabilitation of Horatio Bottomley's West Australian Market Trust. Readers will remember that this Trust was caught severely by a bear raid on its specialties. Its funds were entirely exhausted, and a heavy liability incurred. One would think that shareholders would lose their faith in Bottomley after such a clumsy piece of bungling. But, no! They turned up in force at the general meeting, and greeted him with enthusiasm. Not only so, but they cheerfully consented to an assessment of 5s. per £1 share to enable their hero to embark once more in bubble speculation. As the capital of the Trust is £1,500,000 the assessment will provide him with £375,000. The subscribers of this sum would be indignant if any one advised them to put it into legitimate mining, instead of using it on the Stock Exchange to cheat each other with.

The Mount Lyell Mining and Railway Company has been much in evidence this week. In my last letter I mentioned that the price of the shares had dropped considerably, and had found a more reasonable level. The £3 shares now stand at £10, and as the paid-up capital is £660,000, this price is quite high enough. I have made further inquiries as to the cause of this sudden fall, and find that it is chiefly due to original Australian holders selling. These sellers obtained their shares at less than £3, and, owing to recent developments at the mine, they consider it best to realize now. The mine has been very thoroughly examined, and the total ore in sight re-estimated. Of course, as copper mining companies proceed there is always a tendency to extend the limit of payable ore. In this case, by including other ore not previously mentioned, the average contents of copper is now given at 3½%, instead of 4½%. This policy has been mistaken by many people who are not fully acquainted with practical mining, and they attribute it to the original estimate having been wrong. The company have decided to issue 25,000 more shares at £6 each, to be offered solely to present holders in the proportion of one new one to every ten held, an arrangement which will give holders a small bonus. The new capital thus raised is to be spent in increasing the number of furnaces in order to allow of a total treatment of 1,000 tons of ore a day.

The South African market remains featureless. The continued dispute between Kruger's Government and the British Government about the suzerainty, although of a pettifogging nature, is sufficient to prevent any expansion of the market.

The American section has been enlivened by two new Klondike companies this week. The first is the Klondike Twenty-Mile Concession, Limited, with a capital of £100,000, to acquire four tracts of river bed of 5 miles each. These concessions are Lease 225, on the Yukon River, between Dawson City and Cudahy; Lease 121, on the Lewis River; Lease 194, on Big Salmon River, and Lease 110, on Pelly River. Dr. A. M. Eastman, of St. Paul, Minn., reports on these concessions, but the presence of gold in the river beds is not proven. In fact, the prospectus states candidly: "The presumption is that vast quantities of coarse gold must be deposited in these channels." This property has been introduced by Mr. Franklin Wiley, who is connected with mines in Rainy River District, Ontario. This company cannot be taken seriously.

The other company is the London, Yukon & British Columbian Mining and Investment Corporation, Limited, with a capital of £175,000, to acquire: 1. Claim No. 52, below discovery on Bonanza Creek; 2. Claim 17, on the Right Fork of Deadwood Creek, a tributary of Yukon River, a little north of Dawson City; and 3. The Black Diamond Mine, on Trout Creek, which runs into Harrison Lake, Yale District, British Columbia. The price asked by the vendors of these three properties is £47,000 in shares and £62,000 in cash. The company asks the public to subscribe £128,000 in cash to pay the vendors and provide £63,000 as working capital. But they will go to allotment if the British public subscribes £5,000, and they will pay the vendors in shares. The company is fathered by people who have been hitherto identified with West Australian promotions, in which the subscribers' money has been squandered and wasted.

Paris. June 6.
(From Our Special Correspondent.)

The mining stock market is receiving a little more attention, the interest of operators being less exclusively absorbed by the international securities.

The speculation in the metallurgical shares has been taken up again and there are evidences of some extensive operations for a rise. This is especially the case with the Russian group, and prices are on the increase again.

The copper shares, on the other hand, are quiet and rather heavy, with some reaction in Boleo, Rio Tinto, Tharsis and Cape Copper.

The Transvaal gold shares have been firm, but with comparatively few dealings.

The Compagnie des Charbonnages d'Anzin reports for 1897 an output of 3,132,747 metric tons of coal, an increase of 100,000 tons, or 3.4 per cent. over 1896. The net profits for the year were 6,641,454 fr., out of which the company declares a dividend amounting to 5,760,000 fr. for the year. This is 20,000 fr. per "denier," as the original shares are called. There were 288 of these shares, but they are now sold on the market in fractions, 100 to each "denier." The dividend on each fraction is 200 fr. The selling price is now about 5,500 fr., so that the return on the current price is 3.6 per cent. The company is an old one.

The new treaty of commerce with the United States has been signed. It provides for a reduction of duties on certain food products on our side; on yours on wines and some other matters. The duty on works of art in your country will remain at 15 per cent. on their value.

The movement of gold and silver in France for the four months ending April 30th, was as follows:

	Imports,	Exports,	Excess,
	Francs.	Francs.	Francs.
Gold:			
1898.....	76,500,856	45,917,776	Imp. 30,583,080
1897.....	59,609,722	26,249,616	Imp. 24,360,106
Silver:			
1898.....	58,019,849	35,934,928	Imp. 22,084,921
1897.....	67,456,648	57,199,726	Imp. 10,256,922

Imports of copper and nickel coins at their face or coinage value were 35,100 fr. in 1898 and 35,000 fr. in 1897. Exports of these coins were 239,400 fr., against 8,494,100 fr. in 1897.

The new Panama Canal Company is said to be considering a plan for raising more money. This is the purchase from the old company of 670,000 unissued bonds of the loan of 1888, for which an issue of 2,000,000 bonds was authorized. Less than 1,500,000 were subscribed, but a part of the remainder were subsequently realized. The new company proposes to purchase the 670,000 unissued bonds at the price of 120 fr., which is a few francs above the market price of those issued and all paid up. The company would convert them into the same number of new bonds, paying 15 fr. annual interest, which it hopes that the public would take up at about 360 fr. The receipts of the Panama Railway, which are expected to amount next year to 10,000,000 fr., would be given as a guarantee for the payment of the interest. The system adopted in the original issue of the bonds would be continued. It consisted of the funding of one-sixth of the capital raised, or 60 fr. of the issue price of 360 fr., for lottery prizes and the gradual reimbursement of the capital. If this plan were successful it would produce 200,000,000 fr., or one-third of the sum required to complete the canal. The new bonds will be offered to the public, it is said, in July.

It is very doubtful whether this plan will succeed, since the public may—and probably will—refuse to pay 360 fr. for the new bonds. Panama is not now an attractive name to investors, and there is much doubt as to the sum which will really be needed for the completion of the work.

The war news is confusing. Most of our people are inclined to take Spanish accounts, even when they are so manifestly distorted and exaggerated as to be ridiculous. It is a very great pity.

Negotiations have been undertaken for some agreement between the "coulistiers" and the "agents de change," with regard to dealings in stocks and quotations, but no conclusions have been reached. The "coulistiers" regard the demands of the other party as exorbitant.

The foreign trade of France for the four months ending April 30th is reported by the Ministry of Commerce as below:

	1897.	1898.
	Francs.	Francs.
Imports.....	1,328,923,000	1,474,144,000
Exports.....	1,157,016,000	1,132,733,000
Excess, imports.....	171,907,000	341,411,000

The large increase in imports was due almost entirely to the heavy purchases of grain made abroad and brought in during the suspension of duties.

MISCELLANEOUS DIVIDENDS.

Dominion Coal Company, semi-annual dividend of 4 per cent. on the preferred stock, payable July 1st.

STOCK QUOTATIONS.

NEW YORK.

Table of stock quotations for New York, listing companies like Alamo, Amer. Flag, Anaconda Gold, etc., with columns for location, par value, and various price points.

Table titled 'COAL AND INDUSTRIAL STOCKS' listing companies like American Coal, Central of N.J., etc., with columns for par value and bid/ask prices.

Official quotations New York Stock Exchange Mining, 54,550 shares; other stocks, 54,733 shares; Consolidated Stock and Petroleum Exchange Mining, 12,975 shares; Mining Exchange, 24,700 shares. Total shares sold, 1,016,125 *Bid and ask quotations. *Ex-dividend.

PHILADELPHIA, PA.

Table of stock quotations for Philadelphia, PA, listing companies like Cambria Iron, Choctaw pref, etc., with columns for location, par value, and bid/ask prices.

Official quotations Philadelphia Stock Exchange. Total shares sold, 28,57.

PITTSBURG, PA.

Table of stock quotations for Pittsburgh, PA, listing companies like Allegheny, Carborundum, etc., with columns for location, par value, and bid/ask prices.

BOSTON MASS.

Table of stock quotations for Boston, Mass., listing companies like Atna Con., Alhousz, c., etc., with columns for par value, number of shares, and bid/ask prices.

* Official quotations Boston Stock Exchange. Total shares sold, 81,861.

BALTIMORE, MD.

Table of stock quotations for Baltimore, MD, listing companies like Atlantic Coal, Big Vein Coal, etc., with columns for location, par value, and bid/ask prices.

* Official quotations Baltimore Stock Exchange.

CLEVELAND, O.

Table of stock quotations for Cleveland, O, listing companies like Aurora, Chambliss, etc., with columns for iron range, par value, and bid/ask prices.

COLORADO SPRINGS, COLO.

Table of stock quotations for Colorado Springs, Colo., listing companies like Alamo, Anaconda, Arg'nium, etc., with columns for par value and bid/ask prices.

* Official quotations Colo. Springs Mining Stock Exchange. Sales: Listed stocks, 33,719; unlisted, 254,640; total, 588,359 shares.

By Telegraph.

Table of stock quotations received by telegraph, listing companies like Alamo, Anaconda, etc., with columns for par value and bid/ask prices.

STOCK QUOTATIONS.

DENVER, COLO.

Table of stock quotations for Denver, Colorado, listing various mining companies and their share prices across multiple dates from June 6 to June 11.

Official Quotations Denver Stock Exchange. Sales: Mines, 176,000 shares; Prospects, 122,400 shares; grand total, 304,400 shares.

SALT LAKE CITY, UTAH.

June 11.

Table of stock quotations for Salt Lake City, Utah, listing various mining companies and their share prices.

*From Our Special Correspondent. †Utah companies. ‡Mines in Vanderbilt, Cal. §Mines in Tuscarora, Nev.

HELENA, MONT.

June 10.

Table of stock quotations for Helena, Montana, listing various mining companies and their share prices.

*Special Report of Samuel K. Davis. Total shares sold, 2,600.

SAN FRANCISCO, CAL.

Table of stock quotations for San Francisco, California, listing various mining companies and their share prices.

† Official telegraphic quotations, San Francisco Stock Exchange.

TORONTO CAN.

Table of stock quotations for Toronto, Canada, listing various mining companies and their share prices.

Total sales, 190,302.

ROSSLAND, BRITISH COLUMBIA.

June 9.

Table of stock quotations for Rossland, British Columbia, listing various mining companies and their share prices.

*From Our Special Correspondent.

MEXICO.

June 4.

Table of stock quotations for Mexico, listing various mining companies and their share prices.

NOTE.—In most of the older Mexican mining companies the shares have no fixed par value. The capital is formed of a certain number of shares, the total value not being nameless. Many newer companies have a nominal par value, usually \$50 or \$100. Prices are in Mexican dollars.

VALPARAISO, CHILE.

May 7.

Table of stock quotations for Valparaiso, Chile, listing various mining companies and their share prices.

† Special Report of Jackson Bros. Values are in Chilean pesos or dollars.

SHANGHAI, CHINA.

May 16.

Table of stock quotations for Shanghai, China, listing various mining companies and their share prices.

† Special Report of J. P. Bissett & Co. The prices quoted are in Shanghai taels.

STOCK QUOTATIONS.

LONDON. June 3. Table with columns: NAME OF COMPANY, Country, Authorized capital, Par value, Last dividend, Quotations. Lists various mining and industrial companies with their financial details.

PARIS. June 2. Table with columns: NAME OF COMPANY, Country, Product, Capital Stock, Par value, Latest div., Prices. Lists various mining and industrial companies with their financial details.

MEETINGS.

Table with columns: NAME OF COMPANY, Location, Meeting, Date, Place. Lists various company meetings and their locations.

DIVIDENDS.

Table with columns: NAME OF COMPANY, Current dividends, Paid since Jan. 1, 1898, Total to date, NAME OF COMPANY, Current dividends, Paid since Jan. 1, 1898, Total to date. Lists dividends for various companies.

ASSESSMENTS.

Table with columns: NAME OF COMPANY, Location, No., Delinq., Sale, Amt. Lists assessments for various companies.

* May dividend paid.

* New assessment.

DIVIDEND-PAYING MINES.

NON-DIVIDEND-PAYING MINES.

Main table with columns for Name and Location of Company, Capital Stock, Shares (No., Par Val), Assessments (Total Levied, Date and Amount of Last), Dividends (Total Paid, Date and Amount of Last), and Shares (No., Par Val), Assessments (Total Levied, Date and Amount of Last).

G. Gold. S. Silver. L. Lead. C. Copper. B. Borax. * Non-assessable. + The Deadwood previously paid \$275,000 in eleven dividends and the Terra \$75,000. † Previous to the consolidation in August, 1894, the California had paid \$31,320,000 in dividends and the Cons. Virginia \$42,280,000. ‡ Dividends paid since consolidation. § Bodie, Bulwer and Mono transferred to Standard Cons., January, 1897. Previous to consolidation Bodie paid \$1,677,572, Bulwer paid \$190,000, and Mono \$12,500. ¶ Dividends have not been paid in several years. Note.—This table is corrected up to June 14. Correspondents are requested to forward changes or additions so as to reach us before the end of each month.

CHEMICALS, MINERALS, RARE ELEMENTS, ETC.—CURRENT PRICES.

NOTE.—These quotations are for wholesale lots in New York unless otherwise specified, and are generally subject to the usual trade discounts. Imported articles are subject to increase on account of war risk. This table is revised up to June 6th. Readers of the ENGINEERING AND MINING JOURNAL are requested to report any corrections needed, or to suggest additions which they may consider advisable. See also Market Review of Chemicals and Minerals.

Table with multiple columns listing various chemicals and minerals such as Abrasives, Benzole, Magnesium, Pyrites, and others, along with their respective units and prices.

THE RARE ELEMENTS.

Prices given are at makers' works in Germany, unless otherwise noted.

Table listing rare elements such as Argon, Barium, Beryllium, Boron, Calcium, Cerium, Chromium, Cobalt, Didymium, Erbium, Gallium, Germanium, Glucium, Helium, Indium, Iridium, Lanthanum, Lithium, Molybdenum, Niobium, Osmium, Palladium, Rhodium, Rubidium, Ruthenium, Selenium, Silicon, Strontium, Tantalum, Tellurium, Thallium, Thorium, Titanium, Uranium, Vanadium, and Wolfram, with their units and prices.

ALPHABETICAL INDEX TO ADVERTISERS.

(-) Indicates every other week or monthly advertisements.

Table with 3 columns: Advertiser Name, Page Number, and Advertiser Name. Columns are labeled A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z. Includes entries like 'Abbott, J. W.', 'Detroit Lubricator Co.', 'Lambert Hoisting Engine Co.', 'Raymond, Rossiter W.', etc.



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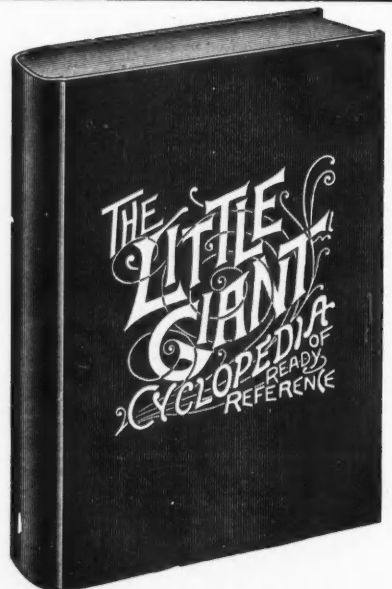
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 Western Plating and Mfg. Co., Denver.

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 Smith & Thompson, Denver, Colo.
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Blasting Caps.
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C.
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 Vivian Younger & Bond, London, E. C.

Crucibles, Graphite, Etc.
 Denver, The, Fire Clay Co., Denver.
 Dixon, Joseph, Crucible Co., Jersey City, N. Y.

Cyanide.
 Fuerst Bros. & Co., New York, N. Y.
 Roessler & Hasslacher Chemical Co.

D.
Diamonds.
 Lexow, Theo., New York, N. Y.
 Motley & Co., New York.
 Yawger, I. C., New York.

Diamond Drills.
 American Diamond Rock Drill Co.
 Bullock, The, M. C., Mfg. Co., Chicago.
 Motley & Co., New York.
 Sullivan Machinery Co., Chicago, Ill.

Diamond Drill Carbons.
 Lexow, Th., New York.
 Yawger, I. C., New York.

Drawing Materials.
 Altender, Theo., & Sons, Philadelphia.
 Besly, C. H., & Co., Chicago, Ill.
 Buff & Berger, Boston, Mass.
 Gurley, W. & L. E., Troy, N. Y.
 Heer, P., Chicago, Ill.
 Jackson, The, A. Co., San Francisco, Cal.
 Mahn & Co., St. Louis, Mo.
 Queen & Co., Philadelphia.
 Wittstock, F. & R., Berlin, Germany.

Dredging Machinery.
 Bucyrus, The, Co., So. Milwaukee, Minn.
 Jeffrey Mfg. Co., Columbus, O.
 Lambert Hoisting Engine Co., Newark.
 Marion Steam Shovel Co., Marion, O.
 Risdon Iron Works, San Francisco, Cal.
 Vulcan Iron Co., Toledo, O.

Drills (Rock).
 American Diamond Rock Drill Co., N. Y.
 Allis, The E. P. Co., Milwaukee, Wis.
 Bullock, The, M. C. Mfg. Co., Chicago.
 Burleigh Rock Drill Co., Fitchburg, Mass.
 Dixon Drill Co., Denver.
 Frazer & Chalmers, Chicago, Ill.
 Ingersoll-Sergeant Rock Drill Co., N. Y.
 Jackson Drill & Mfg. Co., Denver.
 Motley & Co., T. N., N. Y.
 Rand Drill Co., New York, N. Y.
 Rogers Boat, Gauge & Drill Co., Gloucester City, N. J.
 Sullivan Machinery Co., Chicago, Ill.

Dryers.
 Colorado Iron Wks. Co., Denver.
 Cummer, F. D., & Son Co., Cleveland.
 Denver, The, Eng. Works Co., Denver.

Dump Cars.
 Allis & Co., E. P., Milwaukee, Wis.
 Colorado, The Iron Works Co., Denver.
 Davis, F. M., Iron Works Co., Denver.
 Denver, The, Eng. Works Co., Denver.
 Fairbanks, Morse & Co., Chicago.
 Frazer & Chalmers, Chicago, Ill.
 Gillette-Herzog Mfg. Co., Minneapolis, Minn.
 Hendrie & Bolthoff Mfg. Co., Denver.
 Koppel, A., New York.
 Krupp, Fried E., Magdeburg-Buckau.
 Mine & Smelters Supply Co., Denver, Col.

E.
Educational Institutions.
 Columbia University, New York, N. Y.
 Chicago School of Assaying, Chicago, Ill.
 International Correspondence School, Scranton.
 McGill University, Montreal, Can.
 Massachusetts Institute of Technology, Boston, Mass.
 Michigan College of Mines, Houghton.
 Missouri School of Mines.
 Rose Polytechnic Institute.

Electrical Batteries.
 Macbeth, James & Co., New York, N. Y.
 Weston Elect. Inst. Co., Newark, N. J.

Electrical Machinery Supplies.
 Besly, C. H., & Co., Chicago, Ill.
 Chicago Edison Co., Chicago, Ill.
 General Electric Co., Schenectady, N. Y.
 Jeffrey, The, Mfg. Co., Columbus, O.
 Link-Belt Machinery Co., Chicago, Ill.
 Okonite, The, Co., New York, N. Y.
 Sprague Electric Co., N. Y.
 Westinghouse Electric & Mfg. Co., Pittsburgh.
 Weston Electrical Instrument Co., Newark, N. J.

Elevators, Conveyors.
 Bacon, E. C., N. Y.
 Brown Hoisting and Conveying Machine Co., Cleveland, O.
 California Wire Works, San Francisco.
 Colorado, The Iron Works Co., Denver.
 Cooper, Hewitt & Co., New York, N. Y.
 Davis, F. M., Iron Works Co., Denver.
 Denver, The, Eng. Works Co., Denver.
 Frazer & Chalmers, Chicago, Ill.
 Freiser & Le Blanc, Rutland, Vt.
 Jeffrey, The, Mfg. Co., Columbus, O.

Lambert Hoisting Engine Co., Newark.
 Lidgerwood Mfg. Co., New York.
 Link-Belt Machinery Co., Chicago, Ill.
 Montgomery, J. H., Mch. Co., Denver.
 Nelsonville Foundry & Machinery Co.
 Ropeway Syndicate, London, Eng.
 Vulcan Iron Works, San Francisco, Cal.
 Vulcan Iron Works, San Francisco, Cal.

Emery and Buar Mills.
 Sturtevant Mill Co., Boston, Mass.

Emery Wheels.
 Besly, C. H., Co., Chicago, Ill.

Engineers and Chemists.
 See pages 4, 5 and 6.

Engineers' Instruments.
 Altender, Theo., & Sons, Philadelphia.
 Brandis, F. E., Sons & Co., Brooklyn.
 Buff & Berger, Boston, Mass.
 Bullock & Crenshaw, Philadelphia, Pa.
 Gurley, W. & L. E., Troy, N. Y.
 Heer, P., Chicago.
 Liets, The, A. Co., San Francisco, Cal.
 Mahn & Co., St. Louis, Mo.
 Queen & Co., Philadelphia.
 Wittstock, F. & R., Berlin, Germany.

Engines.
 Bacon, E. C., N. Y.
 Jeffrey Mfg. Co., Columbus, O.
 Bullock, The, M. C., Mfg. Co., Chicago.
 Colorado, The, Iron Works Co., Denver.
 Davis, F. M., Iron Works Co., Denver.
 Denver Eng. Wks. Co., Denver.
 Fairbanks, Morse & Co., Chicago.
 Frazer & Chalmers, Chicago, Ill.
 Lambert Hoisting Engine Co., Newark.
 Lidgerwood Mfg. Co., New York, N. Y.
 Risdon Iron Works, San Francisco, Cal.
 Stillwell-Bierce & Smith-Valle Co., The, Dayton, O.
 Union Gas Engine Co., San Francisco.
 Union Iron Works, San Francisco, Cal.
 Weber Gas and Gasoline Engine Co., Kansas City, Mo.
 Webster, Camp & Lane Machine Co., Axton, Va.

Excavators—See Steam Shovels.
 Bucyrus, The, Co., So. Milwaukee, Wis.
 Jeffrey Mfg. Co., Columbus, O.
 Marion, The Steam Shovel Co., Marion, O.
 Risdon Iron Works, San Francisco.
 Vulcan Iron Wks. Co., Toledo, O.
 Weber Dredge Co., Kansas City, Mo.

Explosives.
 Lau, J. H., & Co., New York, N. Y.
 Macbeth, J., & Co., New York, N. Y.
 Metallic, The, Cap Mfg. Co., New York.

F.
Filter Press.
 Ferrin & Co., Wm., Chicago, Ill.
 Stillwell-Bierce & Smith Valle Co., Dayton, O.

Fire Brick and Clay.
 Chur, Walter, New York, N. Y.
 Denver, The, Fire Clay Co., Denver.

Fiuorspar.
 Fuerst Bros. & Co., New York, N. Y.

Forgings.
 Bethlehem Iron Co., So. Bethlehem, Pa.

Fuel Economizers.
 Detroit Lubricator Co., Detroit, Mich.
 Fuel Economizer Co., Mattawan, N. Y.

Furnaces.
 Allis, The E. P. Co., Milwaukee, Wis.
 Billin, C. E., & Co., Chicago, Ill.
 Colorado Iron Wks. Co., Denver.
 Denver, The, Fire Clay Co., Denver.
 Garretton, O. S., Buffalo.
 Hoskins, W., Chicago, Ill.
 Krupp, F., Magdeburg-Buckau.
 Moore, S. L., Son's Co., Elizabeth, N. J.
 Nichols Chemical Co., New York.
 Pollock, W. B., & Co., Youngstown, O.
 Sargent, E. H., & Co., Chicago, Ill.

G.
Gas Engines.
 Allis, E. P. Co., Milwaukee.
 American Well Works, Aurora, Ill.
 Fairbanks, Morse & Co., Chicago.
 Union Gas Engine Co., San Francisco.
 Weber Gas and Gasoline Engine Co., Kansas City, Mo.
 Witte Iron Works Co., Kansas City, Mo.

Gauges, Recording, Etc.
 Besly & Co., Chicago.
 Bristol, The, Co., Waterbury, Conn.

Gearing.
 Besly, C. H., & Co., Chicago, Ill.
 Chester Steel Casting Co., Philadelphia.
 Denver, The, Eng. Works Co., Denver.
 Frazer & Chalmers, Chicago, Ill.
 Link-Belt Machinery Co., Chicago, Ill.

Grease, Graphite, Etc.
 Besly, C. H., & Co., Chicago, Ill.
 Dixon, J., Crucible Co., Jersey City, N. J.

Grease Cups.
 Besly & Co., C. H., Chicago, Ill.
 Detroit Lubricator Co., Detroit, Mich.

Grinding Mill Machinery.
 Sturtevant Mill Co., Boston, Mass.

H
Hoisting Machinery.
 Bacon, E. C., New York, N. Y.
 Bullock, The, M. C., Mfg. Co., Chicago.
 Colorado, The, Iron Works Co., Denver.
 Davis, F. M., Iron Works Co., Denver.
 Denver Engineering Works Co., Denver.
 Fairbanks, Morse & Co., Chicago.
 General Electric Co., Schenectady, N. Y.
 Hendrie & Bolthoff Mfg. Co., Denver.
 Jeffrey Mfg. Co., Columbus, O.

POSITIONS VACANT

Free Advertising.

Inquiries from employers in want of Superintendents, Engineers, Metallurgists, Chemists, Mine or Furnace Foremen, or other assistance of this character, will be inserted in this column WITHOUT CHARGE, whether subscribers or not.

The labor and expense involved in ascertaining what positions are open, in gratuitously advertising them and in attending to the correspondence of applicants, are incurred in the interest and for the exclusive benefit of subscribers to the ENGINEERING AND MINING JOURNAL.

Applicants should inclose the necessary postage to insure the forwarding of their letters.

1611 WANTED. A PRACTICAL ARSENIC burner, a man capable of taking charge of works making all grades of arsenic from mispickel ores. Works in Canada. State experience, references, and salary expected. Address ARSENIC, ENGINEERING AND MINING JOURNAL.

1614 WANTED—AN ASSISTANT ENGI- neer to learn ordinary construction work on coal plants in West Virginia, at a nominal salary, temporarily. Address WEST VIRGINIA, ENGINEERING AND MINING JOURNAL.

1615 WANTED—A PRACTICAL MAN accustomed to clay mining in all its branches. State experience, references, etc. Address S., ENGINEERING AND MINING JOURNAL.

1616 YOUNG MAN WANTED AS AS- sistant Assayer, having practical experience as melter. Address, stating age, experience and wages expected. MELTER, care ENGINEERING AND MINING JOURNAL.

1617 THERE IS A VACANCY IN THE chair of metallurgy at a well known state school of mines. The incumbent will be called upon to teach metallurgy and ore dressing. Address "PROFESSORSHIP," ENGINEERING AND MINING JOURNAL.

1618 WANTED—DIAMOND DRILL OP- erator. State experience, references and salary expected. Address "CALIFORNIA," ENGINEERING AND MINING JOURNAL.

1619 WANTED—ASSISTANT FOR chemical laboratory in the South. Must have some knowledge of phosphates and fertilizers. Fine possibilities for an energetic man. Address, with references and statement of salary expected, "SOUTHERN," ENGINEERING AND MINING JOURNAL.

1620 WANTED. FOR*MAN FOR ZINC and Lead Concentrator. Give experience, reference, and salary expected. Address ZINC AND LEAD, ENGINEERING AND MINING JOURNAL.

1621 WANTED. A PRACTICAL MAN accustomed to mining zinc and lead. State experience, reference, and salary expected. Address, VIRGINIA, ENGINEERING AND MINING JOURNAL.

1622 WANTED. A TECHNICAL MAN familiar with the best practice in lime burning, capable of writing a report upon the subject. Address, stating experience, etc., CALCIUM, ENGINEERING AND MINING JOURNAL.

1623 WANTED. SALESMAN TO travel in Old Mexico. Must have some knowledge of the Spanish language, good address, and some experience in selling goods. Address, POWDER, ENGINEERING AND MINING JOURNAL.

SITUATIONS WANTED.

Advertisements for SITUATIONS WANTED will be charged only 10 cents a line.

A BLACKSMITH, FIRST-CLASS IN ALL kinds of mine and mill work, from diamond drill setting to the heaviest or most complicated forgings, desires a permanent situation in a healthy locality, where he can have educational advantages for his children. Highest recommendations from employers. Refers to the ENGINEERING AND MINING JOURNAL. Address BLACKSMITH, ENGINEERING AND MINING JOURNAL.

MINING ENGINEER. AGE 32, WITH TEN years' practical experience in gold and silver mining; assayer, expert bookkeeper and close business manager, wants position as superintendent or assistant. Some knowledge of Spanish. Would go to Mexico. References from present employers. Address "A. L. W." ENGINEERING AND MINING JOURNAL. No. 18,261, June 25.

MINING ENGINEER, TWENTY YEARS' experience in general mining, including all details from actual pit work to full charge of a mine, including exploring, surveying, chemist, desires position as engineer or superintendent. A 1 references. Address "CHARLES," ENGINEERING AND MINING JOURNAL. No. 18,260, June 25.

WANTED—POSITION AS CHEMIST OR superintendent, by a scientific school graduate, who has had several years' experience with a large chemical manufacturing concern. Best references furnished. Address CHEMIST, ENGINEERING AND MINING JOURNAL. No. 18,258, June 25.

COMPETENT COPPER REFINER WISHES situation; 20 years' experience on all grades of copper. References furnished. Address REFINER, ENGINEERING AND MINING JOURNAL. No. 18,257, July 2

WANTED—A YOUNG MAN, GRADUATED from one of our best technical schools in both engineering and chemistry, who has had considerable experience in both professions, and is fully capable of carrying on special work in either, seeks to place himself in some permanent life work where his training may be of value. Address B. M., 355 Willow street, New Haven, Conn. No. 18,256, June 25.

CHEMIST AND ASSAYER.—THOROUGH experience in analytical work and assaying, of a modern copper smelter, desires position. A 1 practical experience in mining and concentrating. Best references. Address, "B.," ENGINEERING AND MINING JOURNAL. No. 18,253, June 25.

CHEMIST, (FELLOW OF THE INSTITUTE of Chemistry and Chemical Society) desires a position as manager of a cyanide plant or mill using the cyanide process. Has been engaged exclusively, in cyanide work since 1891 in Colorado, Arizona, California and Old Mexico, and has special experience in the starting up of plants and in putting unsuccessful plants on a satisfactory basis. Unexceptional references. Address, "B. H.," ENGINEERING AND MINING JOURNAL. No. 18,254, June 25.

WANTED. BY YOUNG MAN, POSITION of ANY KIND. 12 years' experience draughting, designing instruments, large and small machinery, and handling men. Also good practical knowledge of electrical apparatus. A-1 references, etc., on application. No objections to leaving country. Address, E. C. Means, 2819 Highland Ave., Denver, Colo. No. 18,264, June 25.

CONTRACTS OPEN.

TREASURY DEPARTMENT.—Office Super- vising Architect, Washington, D. C., June 13th, 1898. Sealed proposals will be received at this office until 2 o'clock P. M. on the 9th day of July, 1898, and then opened, for the construction (except heating apparatus) of the U. S. Post Office building at Pottsville, Pa., in accordance with the drawings and specifications, copies of which may be had at this office or the office of the Postmaster at Pottsville, Pa. JAMES KNOX TAYLOR, Supervising Architect. Orig.

ELECTRIC LIGHT PLANT.—SEALED PRO- posals will be received by the Council of the village of Huron, Ohio, at the office of the Village Clerk until 12 o'clock, noon, on Wednesday, the 29th day of June, 1898, for furnishing the necessary materials, machinery, etc., and performing the necessary labor to construct, erect and install the following: 1.—Building for power station. 2.—Steam plant, consisting of two 30-horse power boilers, two high speed engines, steam fitting, etc. 3.—One 60-arc light dynamo, one 1,000 candle-power alternation switchboard, pole, line and equipment, etc., and everything necessary to make a complete lighting plant. All in accordance with the plans and specifications therefor on file in the office of the clerk of said village. Each bid must be accompanied, as a surety of good faith, by a certified check on some bank in the village of Huron, Ohio, in the sum of eight hundred dollars, made payable to C. M. Ray, Mayor. Envelopes containing bids must be addressed to T. W. Berry, Clerk, and indorsed "Proposals for Electric Light Plant." The Council reserves the right to reject any or all bids. By order of the Council. Plans and specifications may be found on file at the office of the Village Clerk, or at the office of the engineer in Chicago.

NOTICE TO WATER COMPANIES.— Sealed proposals, based upon specifications to be furnished by the persons submitting the same, will be received by the Board of Village Trustees of the village of Ridgewood, Bergen Co., N. J., at the usual meeting room of said Trustees, on Wednesday, the 27th day of July, 1898, at 8 p. m., for the furnishing of a supply of pure and wholesome water to said village. By order of the Village Trustees of the Village of Ridgewood. JAMES CORNELIUS, President; H. G. WARD, Village Clerk.

DRAWBRIDGE.—Sealed proposals are invited and will be received up to 10 o'clock a. m. of Wednesday, the twenty-ninth day of June, A. D. 1898, at the office of the Board of Chosen Freeholders of the County of Camden, in the Court House, in the City of Camden, in New Jersey, for removing the present bridge over Cooper's Creek, at State street, Camden, N. J., and building a steel highway drawbridge across said creek at said point in accordance with plans and specifications on file and on exhibition at said office of the Board. Full information, including all measurements and data of every kind, may be found upon detail drawings which, together with copies of specifications, will be furnished upon application at the above office. A certified check for One Thousand Dollars, drawn to the order of Mahlon F. Ivins, County Collector, shall accompany each bid, which check shall be forfeited in case the successful bidder refuses to sign the contract within five days after the time the contract is awarded him. Bids will be publicly opened at the time and place aforesaid by the Director in the presence of the Board, and the Board reserves the right to reject any or all bids. Proposals should be indorsed "Proposals for State Street Bridge," and addressed to Harry F. Wolfe, Director, Court House, Camden, N. J.

ELECTRIC LIGHT PLANT.—Sealed proposals will be received by C. W. Clasen, Village Recorder, of Gaylor, Minn., until July 15th, 1898, for constructing a plant of 12 arc and 600 16-c. p. incandescent lights.

BRIDGE.—Sealed bids will be received at the office of the County Auditor, Chillicothe, Ohio, until 12 m. on July 13, 1898, for the repair and re-erection of one span and for two new spans for the Main Street, Scioto River, bridge, total length about 650 ft. Also for substructure for the same, except one abutment. There will be two piers, one with foundation on slate about 30 ft. and the other 24 ft. below low water. Bids will be received for different forms of foundation. General specifications and instructions to bidders will be on file after July 2d, 1898, at the office of the County Auditor, or copies may be obtained by addressing the Engineer. The County Commissioners reserve the right to reject any or all bids.

LIFT BRIDGE.—Sealed proposals will be received by the Superintendent of Public Works, at his office in Albany, N. Y., until Tuesday, July 5, 1898, at 12 o'clock noon, of that day, for the construction of a lift bridge over the Erie Canal at Fitzhugh street, Rochester, N. Y. Plans and specifications may be seen from the date of publication of this notice to the date of receipt of bids, at the office of the Superintendent of Public Works, Albany, N. Y., and at the office of the Assistant Superintendent of Public Works, Thomas Wheeler, Syracuse, N. Y., and at the office of the Assistant Superintendent of Public Works, R. G. Lay, Rochester, N. Y. Every proposal for said work must be accompanied by a draft or certified check upon some good banking institution in the city of New York or Albany, issued by a National or State bank in good credit within the State, payable at sight to the Superintendent of Public Works, for the amount expressed below as required to be deposited with bid for the proposed work. The amount of deposit with bid for same will be 10 per cent. of the proposal, and will be retained as a part of the security until the completion of the work; the amount of labor bond required on execution of contract will be 35 per cent. of the proposal; the amount of bond for faithful performance of contract, on execution of contract, will be 40 per cent. of the proposal. All proposals for the above work must be addressed to the Superintendent of Public Works, at Albany, N. Y., and must be indorsed on envelope "Proposal for a lift bridge over Erie Canal at Fitzhugh street, Rochester, N. Y." The right is reserved to reject any or all bids.

BRIDGE.—Proposals for erecting the substructure and the superstructure of a railroad bridge crossing the Main Drainage Channel, will be received by the Clerk of the said Sanitary District at Room 1110 Security Building, Chicago, Illinois, until 12 m. (standard time) of Saturday, the 25th day of June, A. D. 1898, and will be publicly opened by said Board of Trustees at a special meeting held for that purpose, or at the next succeeding regular meeting of the board. The bridge for which said tenders are invited is an eight (8) track structure for the use of the Pittsburg, Cincinnati, Chicago and St. Louis Railway Company; Chicago and Northern Pacific Railroad Company, and the Union Stock Yards and Transit Company, on the line of Campbell Avenue, in the City of Chicago, and on Contract Section "O." The work for which said tenders are invited includes the supplying of all materials for the substructure and superstructure of said bridge, according to one or other of two sets of plans furnished by the Sanitary District of Chicago, on the respective designs of C. L. Strobel and of the Scherzer Rolling Lift Bridge Company, and conforming to specifications furnished by the said district. Tenders will also be received upon any other design which may be submitted in competition with the two before-mentioned designs, provided such tenders are accompanied by written approval and acceptance from each of the three railroad companies interested in this structure; and further provided, that in its design, workmanship, strength and quality of material it conforms to the requirements of the Sanitary District of Chicago. Each bid must be accompanied by a certified check or cash to the amount of three thousand (\$3,000) dollars. All certified checks must be drawn on some responsible bank doing business in the City of Chicago, and be made payable to the order of the Clerk of the Sanitary District of Chicago. Said amount of three thousand (\$3,000) dollars will be held by the Sanitary District until all of said bids have been canvassed and the contract awarded and signed, the return of said check or cash being conditioned upon the appearance within ten (10) days after receiving notice of award to him of the bidder to whom the award of said work shall have been made, with bondsmen, and executing a contract with the Sanitary District for the work so awarded, and giving a bond satisfactory to the Board of Trustees for the fulfillment of the contract. The amount of said bond to be seventy thousand (\$70,000) dollars. All bids must be upon the blank forms furnished by the Sanitary District. No bid will be considered unless the party making it shall furnish evidence satisfactory to the Board of Trustees of his experience and ability in this class of work, and that he can control sufficient capital to enable him successfully to prosecute the same in case the contract therefor shall be awarded him. Bidders are required to state in their bids their individual names and places of residence in full. Specifications are now ready and plans may be obtained at the office of the Chief Engineer, Room 1010 Security Building, Chicago, Illinois, on or after May 31st, 1898. The said Board of Trustees reserves the right to reject any and all bids.

(Continued on Page 21.)

LANDS AND MINES FOR SALE.

MISSOURI Lead-Zinc Mines

Write for particulars and illustrated pamphlet of large dividend paying properties. Address E. HEDBURG & CO., Joplin, Mo., U. S. A.

COPPER MINE.

FOR SALE.—Copper Mine, developed, shipping regularly. Colorado. Court closest inspection. Particulars by interview. Address, "J. H. M.," ENGINEERING AND MINING JOURNAL.

MACHINERY FOR SALE.

FOR SALE. CONCENTRATING MILL.

Adapted for copper, lead or zinc ores, capacity 30 to 50 tons per day, complete, new, first class, and in perfect running order, delivered on cars, cheap for cash, with or without the steam power plant. For specifications address P. K. MINING CO., Antelope, Idaho.

Locomotive Dummy For Sale.

Built by the Baldwin Locomotive Works. In good condition. 4 feet 8 1/2 inches gauge; weight on driving wheels 24,000 pounds; cylinders 9x12; driving wheels 30 inches outside diameter. Will be sold cheap. Dummy can be seen and specifications of same can be obtained from PASSAIC LIGHTING COMPANY, PASSAIC, N. J.

FOR SALE.—A Number of Second-Hand Split Switches for 30-lb. Rail,

(3 ft. gauge of track), including 4 ft. Frog, Ground Lever, Switch Points and Connecting Rods. New and Relying STEEL RAILS BOUGHT AND SOLD.

ROBINSON & ORR, No. 419 Wood Street, Pittsburgh, Pa.

FOR SALE.

Two second-hand Little Giant Hand Drills, No. 2, with tripod and weights; first-class condition. Address THOS. WEAL, Ticonderoga, N. Y.

MISCELLANEOUS WANTS.

WANTED BONDS

of the Canada Consolidated Gold Mining Company dated about 1882. Address BONDS, ENGINEERING AND MINING JOURNAL.

HONDURAS CONCESSION.

WANTED.

PARTY to take an interest and the MANAGEMENT of PLACER CONCESSION IN HONDURAS, same yielding \$5.00 PER YARD. Property will stand a most rigid examination, and the best of inducements offered. Address, E. M. WYMAN, Office Nos. 4 and 5 Bryson Block LOS ANGELES, CAL.

LONDON AGENCY WANTED

for specialty. Excellently situated showroom and office. American and English references. Address J. S. B. MYERS, 73A Queen Victoria Street, London, E. C., England.

AMERICAN MINING ENGINEER, IN THE employ of wealthy syndicate, wants a good gold and silver, silver, lead or copper property in the Western States or Northern Mexico upon which considerable development work has been done. Will take up on lease and bond or put up a plant for an interest, or, if considerable ore is in sight, will buy on equitable basis. Send full particulars of mine; amount of water, timber and fuel available; transportation facilities, standard wages, etc. Address A. N., ENGINEERING AND MINING JOURNAL.

WANTED. BIDS FROM RELIABLE PARTIES who have necessary machinery to put down a shaft about 11' x 32' by about 300 ft. deep. COLLINS COLLIERY COMPANY, Glenjean, West Va.

\$35,380,500

Paid by Utah active mining stock. Stocks pay from 15 per cent. to 40 per cent. annually. Weekly Market Letter and quotations upon application.

JAMES A. POLLOCK, SALT LAKE CITY, UTAH.

References: McConeick & Co., Bankers, Salt Lake City; Laidlaw & Co., Bankers, New York City; Martin's Bank, Limited, London, England.

NOTICE OF ASSESSMENT.

(Civil Code of California.)

CONSOLIDATED CALIFORNIA AND VIRGINIA MINING COMPANY, location principal place of business, San Francisco, California; location of works, Virginia City, Nevada.

Notice is hereby given, that at a meeting of the Board of Directors held on the 17th day of June, 1898, an assessment, No. 12, of 25 cents per share was levied upon the capital stock of the corporation, payable immediately in United States gold coin to the Secretary, at the office of the Company, 309 Montgomery St., San Francisco, California.

Any stock upon which this assessment shall remain unpaid on the 22d day of July, 1898, will be delinquent, and advertised for sale at public auction; and unless payment is made before, will be sold on Friday, the 12th day of August, 1898, to pay the delinquent assessment, together with the costs of advertising and expenses of sale. By order of the Board of Directors, A. HAVENS, Secretary. Office 309 Montgomery Street, Room 29, San Francisco, California.

CONTRACTS OPEN.

Continued from Page 20.

WATER MAINS.—Bids will be received by the City of Montgomery, Ala., until July 16th, 12 m., proximo, for the construction of about ten miles of cast-iron water mains, including gates, hydrants, etc.; also bids for the material alone, landed here, freight paid. For specifications, address City Engineer. The city reserves the right to reject any and all bids.

GOVERNMENT OF WESTERN AUSTRALIA.

Coolgardie Water Supply.—Welded Steel Pipes.—The Government of Western Australia is prepared to receive tenders for the supply and delivery in Western Australia of about 32 miles of Welded Steel Pipes of from 24 to 28 inches internal diameter. Form of tender with Drawings, Specification, and Conditions of Contract annexed, may be obtained on payment of a fee of Two Guineas, in Europe at the Office of the Agent-General for Western Australia, 15 Victoria Street, Westminster, London, S. W.; in America, at the Office of Messrs. Seward, Guthrie & Steele, 40 Wall Street, New York, and in Western Australia, at the Office of the Honorable the Director of Public Works, Perth. Tenders sealed and endorsed "Tenders for Welded Steel Pipes" are to be delivered addressed, either to the Agent-General, at his Office aforesaid, or to the Honorable the Director of Public Works at Perth, Western Australia, on or before 12 noon, on Tuesday, the 23d day of August next. No tender will be considered unless on the prescribed form without being detached from the Specification and Conditions of Contract. The Government does not bind itself to accept the lowest or any tender. By order of the Hon. the Director of Public Works.

C. Y. O'CONNOR, Engineer in Chief. Public Works Office, Perth, Western Australia. 20th May, 1898.

GOVERNMENT OF WESTERN AUSTRALIA.

Coolgardie Water Supply.—Riveted Steel Pipes.—The Government of Western Australia is prepared to receive tenders for the supply and delivery in Western Australia, of about 246 miles of Riveted Steel Pipes of about 31 inches internal diameter. Form of tender, with Drawings, Specification, and Conditions of Contract Annexed, may be obtained on payment of a fee of Two Guineas, in Europe, at the Office of the Agent-General for Western Australia, 15 Victoria Street, Westminster, London, S. W.; in America, at the Office of Messrs. Seward, Guthrie & Steele, 40 Wall Street, New York, and in Western Australia, at the Office of the Honorable the Director of Public Works, Perth. Tenders sealed and endorsed "Tender for Riveted Steel Pipes," are to be delivered addressed, either to Agent-General at the Office aforesaid, or to the Honorable the Director of Public Works at Perth, Western Australia, on or before 12 noon, on Tuesday, the 23d day of August next. No tender will be considered unless on the prescribed form without being detached from the Specification and Conditions of Contract. The Government does not bind itself to accept the lowest or any tender. By order of the Hon. the Director of Public Works.

C. Y. O'CONNOR, Engineer in Chief. Public Works Office, Perth, Western Australia. 20th May, 1898.

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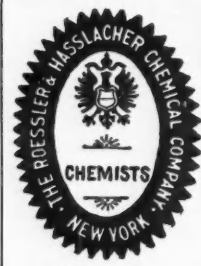
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