SILVER MINING IN THE GREAT BASIN.

We have been favored, through the politeness of the author, with a copy of a paper read by Richard Williams, Esq., before the Buffalo Historical Society, on the Great Basin, with its Agricultural and Mineral Wealth. These personal observations of an experienced and practical eye, are interesting and instructive on whatever they touch. We reproduce a few leading points in a condensed abstract.

STRUCTURE OF THE BASIN.

The great chain of the Andes, extending the whole length of South America and the Isthmus of Darien, branches at the Isthmus of Tehuantepec, sending one of its arms up on the western side, very near the Pacific coast, under the name of the Sierra Nevada, in California, and the other to the east-ward, under the name of the Rocky Mountains. These branches diverge to a distance of nearly 800 miles apart, and come nearly together again where they are lost in the Arctic Ocean. Thus they form an intramontane Basin of vast extent, nearly one-fifth of the whole continent, 5,500 feet above the sea, and having only three fluvial outlets—that of the Rio Grande on the south-east, that of the Colorado on the South-west, and that of the Columbia on the north-west. This basin is broken up by transverse ranges, like bulkheads or girders from rim to rim, forming inferior basins, two of which—that of the city of Mexico, and that of Great Salt Lake—have no visible outlets whatever. The latter is the great mineral basin, 400 miles square, mainly occupied by the State of Nevada, where the chief interest of these remarks centers. Here the rivers find their outlets in "sinks," and go down into the unexplored bowels of the earth. The lakes are "salt," and the flats are impregnated with alkali, which Mr. Williams attributes to the settling of the rivers, leaving their suspended soluble contents filtered out in the earth or deposited by evaporation. The soil is not silicious—a sandy desert—but contains within it every element of fertility except water, and produces abundantly wherever irrigated by nature or art.

THE GOLD AND SILVER MINES.

In this basin, above all, occur those districts in which, throughout a square of ten to twenty miles, the rocky crust of the earth has been cracked in numerous fissures of unmeasured depth which the underlying volcanic ocean has injected and gorged with mineral treasure. These fissures are either entire, extending great lengths and to impracticable depths, and filled with silver-ore-bearing quartz; or they are but gashes in the surface, broken up by past convulsions which destroyed their continuity, and they cannot be followed to any considerable length or depth, or with continued profit. Appearances are very deceptive, being sometimes extremely flattering at an outcropping point, while the rest of the vein is barren. A true vein is not always rich; a rich vein is not always true, *i. e.* continuous. A fissure, both rich and true, is not always practically valuable for mining at the present day, from its remoteness or other difficulty of access, from the want of water, fuel, salt, or other supplies, from the neighborhood of hostile Indians, or the distance of any civilized community or from being covered with snow for two-thirds of the year. Difficulties from conflicting claims, crossing one another, sometimes occur. All these things, and more, have to be considered, and there is, in fact, but one way of getting at the certainty of any vein, and that is by personal examination of all the circumstances, and, regardless of representations from interested parties, mining engineers, or even eminent geologists, actually going down on the lead far enough to ascertain its true character, and by large assays determining the general productiveness of the ore. So great is the uncertainty attending these ventures at the best, that Mr. Williams thinks it the true policy for all who engage in silver mining to take up a sufficient number of lodes together to be morally certain by the average of chances that some one or other will pay.

SWINDLING OPERATIONS.

Everything, good, bad or indifferent, is recorded among the mining claims of a district, and upward of 4,500 such recorded locations are referred to by Mr. Williams in a single district where not a dozen of them at present would pay the expense of working. All the good claims are sold readily in the state: the rest are sent east and jobbed off by mining agents and organizers of mining companies of mammoth nominal capital. Mr. Williams lays it down as a rule, that no one can make a purchase of these unscrupulous speculators in mining property without being swindled every time. This can be done, according to the common ethics of trade, in a perfectly fair manner. No man is held bound to reveal the disadvantages of his property: if he states only the truth, he sells "fairly," when the whole truth (which the buyer does not usually undertake the difficult task of ascertaining) if told, would be fatal to the bargain. Scientific opinions, however honest and eminent, as to what is to be found in the bowels of the earth under a particular spot, are treated as of no value: and just as little worth is attributed to the advice of the so-called "experienced men." They never agree as to a uniform law, and their deductions are from a narrow and unscientific range of observation. Above all, our lecturer is severe upon a class of self-styled mining engineers, professors, etc., who infest the country, whose names are found in every yellow-covered prospectus, and whose favorable opinions can always be had for a consideration. Of all the mammoth millionaire prospectuses he has seen, not one but was filled with the grossest misrepresentations. Beware of all such enterprises as are associated with the names of distinguished military and scientific men, governors, politicians, bishops and doctors of divinity. These names are generally connected with a present of stock, which the recipient perhaps may value highly. But "good wine needs no bush." The few, very few really valuable mines are owned by quiet unpretending men, and carried on, financially and practically, without public proclamation and parade. You never see their prospectuses and their stock in the market, are bored with the one, or importuned to buy the other.

[Our Foreign Correspondence.]

WATER SUPPLY OF TOWNS.

London, Dec. 29, 1866.

A variety of causes render the obtaining a good supply of water for the large cities here a more difficult problem than with us. Although the amount of annual rainfall is large, yet, as the drainage area is in no case large, the rivers are all small, and the water is made use of for manufacturing purposes. Then again, as the population is everywhere dense, the water-courses are all unavoidably contaminated with sewage, and though by acts of parliament towns and villages situated on rivers from which water is taken for city use have been prohibited from discharging their sewage into the streams, yet the impurities that will in any case, even with the strictest regulations, find their way into rivers flowing through such a country as that in which the Thames, for instance, lies, make it impossible to obtain potable water from such a source.

THE ISLAND TOO SMALL—WATER SUPPLY LIMITED.

As these rivers also are mere brooks, and the cities large and numerous, and as the water is claimed by the many manufacturing establishments situated on their banks, it follows that the amount which the water companies are able to supply to the towns is very inadequate for all the purposes to which it would be applied were the supply more abundant. This is strikingly shown in the relative amounts consumed daily per head of population in London and New York, being at the rate of about 33 gallons per head in the former city against 60 gallons in the latter. No doubt in New York, where the supply is so copious, a large proportion is wasted, but it is a luxury to feel that it may be wasted to some extent with impunity. To guard against waste, the water is not kept at constant service in the mains, but a certain quantity is supplied each day to the houses by "turncocks," who allow the water to run for a few minutes from the main into the service pipes of the dwellings, the water being received into tanks, and the supply is then shut off for the day. Although these tanks may contain enough for a day's use, it is evident that the knowledge that the amount is limited will enforce economy in its use. But as stated in my last, this is a serious inconvenience in case of fire, as it is often necessary to hunt up the turncock at a time when every moment is precious. On Sundays some companies do not supply water to their customers.

EXCEPTIONS—MANCHESTER AND GLASGOW.

There are some cities, however, which are more highly favored in their water supply and present a pleasing contrast to London and the majority of the large cities. Such are Manchester and Glasgow, in the latter of which especially the water is excellent in quality and very abundant. The works for the supply of this city are, I think, the most extended of any in Great Britain. The water is drawn from Loch Katrine, and those who have visited that charming lake as tourists will not have failed to be struck with the remarkable clearness of the water, objects being plainly visible on the bottom at a great depth. It is conducted a distance of forty miles to the city through two cast-iron mains.

NEW SCHEMES FOR LONDON.

There are at present several plans being brought forward with considerable earnestness for procuring a better supply for London, and no doubt some of them will eventually be adopted. One plan is to build an aqueduct more than two hundred miles in length, or rather a succession of aqueducts connecting together some of the lakes of Westmoreland (or as we commonly call them in America, "the English lakes") and conducting the surplus water to the metropolis. Another seeks an adequate supply in Wales: but while there will be great discussion in Parliament as to what plan shall be finally decided upon, there is no difference of opinion that some other source must be found than those now depended upon.

PRESENT LONDON SYSTEM—FILTRATION.

At present London is supplied with water by eight private companies, each supplying a certain district and drawing their water from the Thames and the sea. In all cases it is necessary to employ pumping engines, as there is no natural head, and many of the companies pump their water twice over. The drainage area of the Thames above Staines is 3,086 square miles, and its mean annual discharge is 900,000,000 per day. Five of the companies take their water from the Thames, and are authorized to withdraw altogether 100,000,000 gallons per day, the minimum flow of the river being estimated at 362,000,000 gallons per day. In most cases the water is taken from the river directly into subsiding reservoirs constructed directly on the river side, but in some works it goes immediately to the filter beds. The necessity for the use of these is quite imperative, as was clearly shown last summer, when some of the severest ravages of the cholera followed the delivery by one of the companies of unfiltrated water to its consumers.

They consist of a series of layers of gravel and sand of about five or six feet thickness in all, the arrangement being about as follows:—First, coarse gravel about twelve inches in depth is laid on the concrete bottom of the bed, and upon this nine inches of rough screened gravel, followed by nine inches of fine gravel, or in some cases six inches of cockle and other shells: upon this again is a layer of coarse sand twelve inches thick, and lastly fine sand two or three feet thick on top of all. The water is admitted by a main passing through the bed and having a vertical branch rising above the filtering material, the water welling over the top of this delivery pipe upon the filter. In the coarse gravel at the bottom are imbedded perforated pipes laid with open joints arranged as lateral branches of a central main, and these receive the water as it percolates through the gravel, and deliver it to the pump wells. The amount of impurity removed from the water by these filters varies largely with the season of the year. In summer the surface of the water in the reservoirs previous to filtering is often thickly covered with green vegetable matter, which forms with great rapidity. The upper film of sand requires cleaning on an average once a week. For this purpose the bed is emptied of water by a centrifugal pump, or otherwise and a layer of sand about three eighths of an inch in thickness scraped off and taken to be washed. Once a year the whole bed is made up anew. The washing is effected in a number of ways, one being by placing the sand in an iron cylinder seven feet six inches in diameter and three feet deep, having a perforated false bottom under which water is admitted under some pressure, and flowing up through the sand, stirs it up thoroughly and carries off the impurities as it flows over the top of the cylinder, the sand by its gravity remaining. When the water flows over clear the process is stopped and the remaining water drawn off by a cock. Another plan is to allow the sand to flow with a current of water down a flight of steps, the sand being caught in shallow ditches at the bottom while the water flows on with the impurities. Or again, a revolving cylindrical screen slightly inclined may be employed, a stream of water being admitted through the central shaft under pressure and allowed to play upon the sand, which is gradually washed through the meshes, while any lumps or stones are retained and fall out at the lower end of the screen.

PUMPING.

The pumping engines in use are of two classes, viz: Cornish and compound cylinder rotative engines. The advocates of each claim the superiority for their favorite style, and practically there is very little difference in the economy with which they work. On elaborate trials to ascertain their duty, they have raised from eighty to eighty-four million pounds of water one foot per hundred weight of Welsh coal, but with the ordinary Newcastle slack commonly used the duty is not seventy millions. The largest of the Cornish engines is at Battersea, being 112 inches diameter of cylinder with 10 feet stroke: it raises a weight of 75 tuns on a plunger 50 inches diameter. The steam is cut off at ·45 of the stroke. There are five other engines in the same building, with cylinders from 55 to 70 inches diameter, the latter being a "bull," or engine with the pump directly under the steam cylinder, and worked directly by the piston rod. Steam is furnished by 19 boilers, from 28 feet to 32 feet long and 5 feet to 6 feet diameter. The cylinders are all steam jacketed.

The rotative engines have the high and low pressure cylinders close together and connected to the same end of the beam, the high pressure piston taking hold nearer the center, and hence the strokes are unequal. The expansion in these engines is eightfold, the steam being cut off at half stroke in the smaller cylinder. A number of this class are of the following dimensions:—High pressure, cylinder 28 inches diameter, 5 feet 3 inches stroke; low pressure, cylinder 46 inches by 8 feet stroke. The pumps are of the bucket and plunger type, with a stroke of 7 feet, the buckets being 24 inches diameter, and the plungers 17 inches, or half the area of the bucket. The pressure of steam is 40 lbs. The pump valves are of the double beat construction, with brass and soft metal bearings. In other cases wooden seatings are used. The steam pistons are packed with steel rings three quarters of an inch square, on Ramsbottom's plan: these are used in cylinders up to 60 inches diameter.

The engines pump the water through mains to reservoirs near the city. These are almost invariably covered, brick arches being used for this purpose. Some of the works also pump a supply of unfiltered water to be used for street watering in summer. The water works show a good deal of first-rate engineering, but the supply is intrinsically only passable.

Slade.

[For the Scientific American.]

HOW SHALL WE BURN COAL MOST ECONOMICALLY?

The smoke burning apparatus of Messrs. Roby, illustrated in the last number of the Scientific American, has caused some comment in English mechanical journals. The results are declared incredible and the principle paradoxical. It does not seem so to me, for reasons which I shall state presently. The invention is simply, as may be seen by the engraving, a device to reduce the tube area at the smoke-box end, by contracting the orifices of the tubes, thereby choking the draft apparently, and, as it would seem, retarding the combustion in the fire-box. That this result does not follow we have the public statement of Messrs. Roby; and from my own convictions I have no doubt of great economy from the use of it. It is generally conceded that but a tenth part of the heating power of fuel is utilized, the rest being dissipated in various ways: it is lost, at all events, to the pocket of the manufacturer. To save a portion of the missing nine tenths has been the object of inventors for many years, but in my opinion more attention has been given to devising peculiar shapes and motions for the steam engine to cut off the steam at any desired point of the stroke than in seeking greater economy by more perfect combustion in the boiler.

While such inventions are both desirable and necessary, it seems to me that in this respect the steam engine is as near perfect as possible, and that the proper place to save the fuel is in the boiler, a good steam engine with a good variable automatic cut-off being assumed in all cases. This is only another way of saying that fuel is improperly burned, or burned to waste, which is just what I desire to say.

If by any means whatever, by the employment of natural or artificial draft, we can urge the combustion of fuel and yet retain the heat or detain it from being driven off before it has given up its calorific power—if, I say, we can do this at a moderate cost, we shall obtain something approaching perfect combustion, and far greater economy than we have at present. A steam boiler furnace is in the nature of a retort for distilling the gases from the coal and applying them to the evaporation of water: but from its defective construction the gases are allowed to pass off without being ignited and the principal agents from which heat is derived are lost. In Siemens's furnace and in some others the gases are consumed in a combustion chamber, which is supplied with air when the gases are at a proper temperature to ignite, and great economy is the result. The same principle has been adopted in other ways, and the value of a given quantity of fuel noticeably enhanced. It has even been applied to cooking stoves with good results.

The efficiency of Roby's apparatus is in my opinion owing to the detention of the products of combustion in the flues (not in the smoke box as many do) until they are at the proper temperature to ignite. This view seems to me reasonable from the fact that the smoke is consumed. Smoke contains not only the watery vapor evolved from the incandescent fuel, but also pure carbon in the form of soot, which is nothing but unburned coal and is usually deposited along the surface of the tubes. In this boiler, however, no soot forms, for the simple reason that none is made: it is burned with the gases in the furnace before it is "born." I do not think that this apparatus would be universally successful in all cases, as the temperature at which the gases would ignite without escaping from the boiler would depend greatly on the length of the tubes and the diameter of them, also the velocity with which they passed through the tubes. The velocity could of course be regulated by the dampers, for such they are in effect.

Many years ago an apparatus similar to this was invented, having the same object in view. It consisted of a series of slats like a Venetian blind, hung in such a way that the exit of the gases was delayed, but I know nothing of its efficiency.

It would also seem that this boiler must be fired or run for some little while as an ordinary boiler before throwing the dampers into gear; so as to allow the tubes to get hot enough to perform the office which is demanded of them. The increased evaporation may also be simply owing to the retardation of heat in the boiler by the dampers, checking the flow, as it were, and compelling it to give up its virtue: but in this case, unless combustion were nearly perfect, the tubes would soon be stopped with soot. No doubt if air in jets were admitted to the flues the result would be still more satisfactory.

I have no doubt but we shall find in the future that multitubular boilers are imperfect both in point of expense and heating surface. If we can get the same amount of fire surface in another form, I do not see any good reasons for continuing to use many-flued boilers. They are always leaking, get clogged with soot unless anthracite is used, are in no wise efficient in proportion to the amount of heating surface exposed to the fire directly and of that most remote from it, and are always a source of anxiety.

I do not see any reason why a funnel turned bottom side up would not represent a plan for an economical steam boiler. In this case we should have enormous grate surface which would enable us to carry light fires instead of piling coal on a foot deep as is universally the case. We should then roast the gas out of the coal and burn it in the boiler, not at the top of the chimney as is now done; we should have large fire surface, plain in form, to which no soot could adhere, and if necessary we might fill the top with short flues that could be easily cleaned and repaired and in which there would not be 600 degrees difference in the heat at the ends, as is now found. I noticed a boiler of this general plan in a late number of the London *Engineer*, as built by Messrs. Shand & Mason: but this design was made by me and described to the Editor of this paper a long time before the engraving appeared. This form of boiler would not require to be so large for a given efficiency, I think, as a locomotive boiler, (though I do not assert this for I have made no calculation) and could be as readily braced as any other generator.

Economy of fuel is a question of the greatest importance, and it seems to me that appliances, such as cut-offs, are often mistaken for principles, though I do not wish to be thought hostile to working steam expansively in saying so. I am confident that we are on the eve of reform in this respect, and that where we at the best evaporate ten or twelve pounds of water for one pound of coal we shall increase the evaporation four fold. EGBERT P. WATSON.

New York, Jan. 23, 1867.

VARYING IDEAS OF MODEL MAKERS.

In our last issue we spoke of model making as a business, and alluded to the beauty of which models are capable. It is singular to see what varying and sometimes crude ideas persons who attempt to ultimate their notions into visible forms have in relation to what constitutes a proper model. We have frequent opportunities to judge upon this subject. One of the most remarkable comparisons came under our observation a few days ago. One of the models was a simple household device, capable of being a working model if made no more than one inch square, yet it occupied almost as much room as an ordinary wheelbarrow, and was built in the most clumsy manner, of inch boards, fastened together with large nails, and betraying, in shape and workmanship, the clumsiest and crudest mechanical ability.

The other was a model of models. A grindstone for household and shop purposes, which could be secured temporarily to the edge of a bench or table, having its trough for water, its rest for the implement to be ground, and a scraper or detainer to prevent the water from escaping by centrifugal force. The stone was a real grindstone, and the frame was of brass, a perfect working model, complete in every part, yet weighing less than one ounce, and occupied less than a cubic inch of space. One was the effort of a man who either possessed small mechanical abilities or felt no pride in his handiwork, and the other was the product of a true mechanic.

Editorial Summary.

AMERICAN GREATNESS.—If the Yankees have acquired the name of great boasters they may be excused on the ground of having so much to be proud of, even in the natural features of their country. The greatest cave in the world is in Kentucky; the greatest river and the largest valley in the world are the Mississippi river and valley; the largest inland sea of the world is Lake Superior; the greatest mass of solid iron is the Iron Mountain of Missouri; the Falls of Niagara is the greatest cataract in the world; Chicago is the largest grain port and lumber market; New York has the largest acqueduct in the world, while Pennsylvania contains the largest deposits of anthracite, and Illinois the greatest extent of bituminous coal fields in the known world.

THE FIRST SUBAQUEOUS TUNNEL IN AMERICA.—Chicago, having made a good beginning, goes on tunnelling. The next work in order is a tunnel under the Chicago river, where it is crossed by Washington street, which will be 1,800 feet long, having two passage ways for trains, each eleven feet wide, with a third for general purposes. The masonry will be protected by a heavy sheathing of lead. Instead of boring under the bed from the ends in the usual way, this tunnel will be constructed by sections in coffer dams, taking up a portion of the river bed at a time, so as to obstruct navigation as little as possible. We see it stated that the contractors have agreed to complete the work in March, 1868, for $271.646·04—mills, we suppose, not counted.

OUR WONDERFUL CLIMATE.—Here we are in the midst of what is conventionally called "winter," with roses blooming in the open air, strawberries ripening as in summer, orange trees in blossom where there are any orange trees at all, bouquets of open air violets selling at a bit on the streets, second crop apples that have just ripened exhibited in market, and grapes that have never suffered from contact with sawdust, still plump, plentiful and cheap at all the fruit stands. Gardening to supply the city with early vegetables has actively commenced around the bay, and young radishes and green peas can even now be bought at luxurious prices. Winter! The word should be abolished from our vocabulary as a superfluity.—*San Francisco Bulletin, Dec. 29th.*

MERCURY IN HUMAN REMAINS.—A French journal relates a story of a wealthy farmer who died many years ago, and on digging a grave in close proximity to where he had been buried, the bones were accidentally exhumed. On examination brilliant particles of a metallic luster were found, which on being collected presented a considerable quantity of oxide of mercury. Thus for thirty-five years the mercury had been preserved almost without alteration in the body of the deceased who had probably made frequent use of the metal during the latter part of his life.

MORTALITY AMONG MINERS.—In the county of Redruth, England, which abounds in copper mines, it is stated that in every 100,000 of the population 220 males annually die of pulmonary diseases more than females, This is not so bad as in the lead-mining districts where the excess is 320 in every 100,000 and the death rate of men is double that of women. In the tin-mining districts of Penzance the superior waste of male over female life in the mining population of all ages is 104.

SUBTERRANEAN CITY RAILWAYS.—The London tunnel railway, with its enormous cost, from peculiar local conditions, of five and a half millions of dollars per mile, has paid from the start, five per cent in 1863, six and a half per cent in 1864, and seven per cent in 1865, which are considered very large returns for money invested in England. Over twenty millions of passengers were conveyed by it in 1866.

NATIVE SILVER.—The most celebrated silver mine in Europe is that of Kœnigsberg, in Norway, which is 180 fathoms deep. In the Museum of Natural History at Copenhagen an enormous mass of native silver is on exhibition, taken from this mine, which measures six feet in length, two feet in width, and eight inches thick, and is estimated to contain five hundred pounds of pure silver.

PHOTOGRAPHERS who use large quantities of nitrate of silver should allow all the excess of silver acetic acid and other matters from the plates undergoing development to run into stone jars containing fragments of zinc. By this means the metallic silver may be collected, digested with dilute sulphuric acid, washed and dried in the oven, and thus by a little pains quite a large saving may result.

STREAKY WEATHER.—During the tremendous rain storm of December 20th in California, a curious exception is reported to have occurred at Fair Oaks, near Menlo Park, where for the greater part of the day little rain fell; men plowing in their shirt sleeves while torrents were falling at San Jose and Redwood City, on both sides. The rainfall at San Francisco was 7·16 inches in 20 hours nearly double the heaviest on record.

SMALL ARMS IN THE WAR.—A report by the Chief of Ordnance shows that the Springfield armory furnished 801,997 new rifled muskets, of calibre .58, for the suppression of the rebellion, average cost $11.97; besides 670,617 of the same description purchased of American manufacturers at $19.23 and 54,117 at $28.15: 393,961 breech-loading carbines were purchased of American manufacturers at an average of $22.73, and 359,449 revolvers at $15.92, with 548 at $6.10. Foreign arms: 428, 292 Enfield rifles, at $20.07; 736,049 other muskets at $13 66; 10,251 carbines at $6.90; 12,374 revolvers at $16.57. This foots up nearly three and a half millions (3,467,655) of small arms of all sorts and sizes.

STATIONARY-ENGINE PLOWING.—Mr. James Howard, the implement maker of Bedford, Eng., patents a mode of working two gangs of steam plows or cultivators by two stationary engines on opposite sides of a field. Each engine has two winding-drums, one connected with each gang, by means of which each is drawn to the meeting point in the middle of the field by one of the engines, and then drawn back by the other engine while the other gang goes forward; all without shifting the connections.

A FRENCH FIRE ALARM, invented by M. Robert Houdin, the well known ex-conjuror, is set in operation by the action of a very slight degree of heat upon a thin metallic strip formed of a ribbon of copper and another of steel, soldered together by their flat surfaces. The copper expanding by warmth more than the steel, bends the strip so as to bring it in contact with a conductor and complete an electro-magnetic circuit, causing an alarm bell to ring continuously as long as the warmth is kept up.

EXTINGUISHING FIRES by the gaseous products of combustion, is an expedient which has been brought forward in England by Messrs. Dawson & Broadbent. They propose to connect buildings, by means of pipes similar to the gas system, or otherwise, with reservoirs of gas collected from furnaces and cooled, from which it can be driven by steam power into any apartment in which a fire may occur; thus displacing and shutting off the supply of oxygen by the energetic interposition of incombustible gases.

SALT ON CITY CAR TRACKS.—One who knows, a Philadelphia conductor, says that to protect his feet from cold when the tracks are salted, he is obliged to wear boots that are not only double-soled, but that have two thicknesses of upper leather, and over these a pair of extra thick fur-lined moccasins, and even then he suffers from extreme cold." The City Council has prohibited the use of salt in the streets.

THE ELECTRIC LIGHT has been used on a large scale in the construction of the Northern Railway of Spain, to enable work to be done by night during hot weather, as well as in tunnelling, where the absence of ordinary combustion and its products proved a great advantage. The entire expense involved in illuminating a space of 4,000 by 1,500 feet did not exceed, as reported, $1.75 per hour.

FIVE SNOW STORMS have been experienced at New Orleans, in 87 years. In December, 1800, snow fell for the first time in twenty years. Snow again fell in 1817, and again on New Year day, 1822. The next snow storm was on February 8th, 1831, after which twenty-one years elapsed before the next snow storm occurred, in 1852. Since that period no snow has fallen in Louisiana.

A NEW COMPETITOR IN SUGAR.—The Sandwich Islands exported 3,005,603 pounds in 1862, and 5,262,112 pounds in 1863, and in 1864 the exportation almost doubled, having reached 10,414,441 pounds. New sugar plantations are constantly started, and the area of sugar land as yet untouched is very large.

THE GOLD AND SILVER PRODUCT.—The report of J. Ross Browne, Special Commissioner on the mineral resources of the States and Territories west of the Rocky Mountains, gives an estimate of the product for 1866 of gold and silver at $106,000,000 from California, Montana, Idaho, Colorado, Nevada, Oregon and other sections.

GOLD MINING IN VERMONT.—Parties interested report that from four to six mills will probably be put up next season at Bridgewater, Vt., for reducing the quartz of that region, and that a yield of from $15 to $30 per tun is expected. Work has been going on constantly during the past season, and four or five new and promising openings have been made.

SKATING GIRLS.—A young lady of fifteen summers (not winters) skated one day this winter from Minneapolis to Dayton, 40 miles, in six hours. Another miss of the same age is performing fancy skating to the admiration of large assemblies in western cities.

BREECH-LOADING RIFLES.—About eighty a day of the new breech-loaders are now being turned out at the Springfield armory, and the number will be constantly increased until in February two hundred will be the daily production.

THE PRUSSIAN LEGISLATURE voted to Count Bismarck $375,000, and to the war minister and five generals, 150,000 each, in acknowledgment of services in the late war. The presents were delivered on Christmas eve.

THE LONDON TELEGRAPH boasts a daily circulation of 138,704 copies—the largest daily newspaper circulation in the world.

HEAVY PUNCHING.—The patentees of the punched gun manufacture have punched a 10½ in. hole down through a steel ingot four feet high and weighing three tons.