

American states alone have subscribed \$2,700,000 for their share.

I have been in correspondence for six months or thereabouts with electrical people in all parts of the world relative to the holding in Chicago in 1893 of an international electrical congress. I have arrived at a point in our correspondence and negotiation at which I can say the project is in the way of being successful beyond our highest hopes. We look for the presence in Chicago at that time of the ablest men in the greatest profession now in existence. The Europeans have promised to have their very highest authorities with us.

T. C. Martin said: Two and a half years ago, at least, at any rate before it was known that the World's Fair would go to Chicago, and when some of us still fondly hoped that it would not, the American Institute of Electrical Engineers, taking time by the forelock, appointed a committee to secure the holding of an Electrical Congress or conference in this country. A congress was then about to be held in France, at Paris, at the exposition, and we sent delegates to that congress. Those delegates—some of our most prominent electrical engineers and inventors, among them being Mr. Edison, Prof. Elihu Thomson and others of that rank—extended in the name of the Institute to the delegates to that Electrical Congress an invitation to attend such a congress in this country during the Columbian Fair year. The invitation was received and accepted.

#### THE GRAND FALLS OF LABRADOR.

Dispatches to the Associated Press bring intelligence of the complete success of the Bowdoin College scientific expedition to Labrador in search of the Grand Falls of that region.

The schooner Julia Decker arrived at Hawkesbury, C. B., Sept. 11, having on board the members of the Bowdoin scientific expedition. The results of the trip to Labrador have far exceeded the hopes of the projectors. Grand Falls have been discovered and photographed, and, though not as high as reported, present a beautiful sight. The total fall is upward of 500 feet, divided into one fall of 200 feet and six rapids and cascades varying from 100 feet to 25 feet.

The exploring party of four men, all graduates of the college, headed by Austin Cary, left their schooner on Sunday, July 26. They were provided with two Rushton boats and all the modern instruments for measuring heights and distances.

Their success in navigating the river far exceeded their expectations, and such good progress was made that on August 8 they had passed Lake Waminikapou and had reached a point five miles in advance of the furthest point reached by Mr. Holme in 1888. At this place, on account of a disabled arm, Mr. Young and a companion were obliged to turn back, reaching Rigolet on August 21.

Messrs. Cary and Cole proceeded on toward the falls, which had been reported to be distant fifty miles. After going a short distance they were obliged, on account of the rapidity of the current, to leave their boat and make the journey on foot. From this point their progress was necessarily very slow, the woods being very thick and the mosquitoes and black flies almost unbearable. The explorers found the falls to be much further away than they had expected, but on August 13, after a three days' tramp, their labors were rewarded by a deafening roar in the distance. Their provisions were now nearly gone, stores having been cached on the way up, but they pushed resolutely on to the height of the Labrador plateau called "The Height of Land." It is this plateau which is the source of the stream, and the descent of the river to the sea forms the falls and rapids.

As they neared the falls a magnificent sight spread before them. The spray, which was visible for twenty miles, rose in a cloud from the descent of the water, and the solid rock beneath their feet trembled perceptibly. From the falls the water flows through a cañon formed of arcæan rock, the sides of which rise to a height of 500 feet and are heavily wooded at the top. Through this cañon the water flows with terrific force, making it absolutely impossible for any boat to live in such a sea. The height of the falls has been exaggerated, and, while presenting a grand and beautiful sight, the falls measure only 200 feet in the perpendicular. The rapids increase the total altitude of the falls to 500 feet.

Above the falls the width of the river is 500 yards, narrowing until it reaches the falls to a width of only 50 yards, when it plunges with a terrific roar over the rapids and falls into the narrow gorge below. Mr. Cole descended to the foot of the falls and succeeded in obtaining some good photographs of them. Having completed the observations of the falls, the explorers kept on a few miles above to the Height of Land, were, from a peak christened by them Mount Hyde Bowdoin, they had a fine prospect of the surrounding country. The plateau is nearly all wooded, with a thick, though not large, growth of soft timbers.

At this point, their provisions being all but gone, they set out for a return. On reaching the point where they

left their boat, they found that the camp fire which they had built had consumed their boat, and with it their whole stock of provisions, a gun, and an octant. There position was now somewhat critical. Three hundred miles on a river heretofore unexplored, with no boat, no help, and no provisions until they would reach their first cache. They set bravely to work, however, and with a small hatchet for their only implement, constructed a small raft, binding the logs together with spruce roots. On rafts made in this way they traversed the 300 miles to the mouth of the river, enduring the greatest hardship.

Their only weapon was a small revolver, for which they had but twenty-five cartridges. With it they shot a few squirrels, making a meal on each animal. On the way down five different rafts were constructed, the making of which, in their wasted condition, consumed a great amount of time and energy. They reached the vessel Sept. 1, receiving a royal welcome from their friends.

The falls which they have discovered are reported to have been seen by two employes of the Hudson Bay Company, but no authentic account of any such discovery has been given. The successful result of the expedition is due wholly to the heroic efforts of Messrs. Cary and Cole. and Bowdoin College may well be congratulated by her sister colleges for the addition which she has made to the heretofore scant knowledge of the geography of Labrador.

#### LEPROSY.

Leprosy, that "unclassified fossil in the paleontology of disease," as Sir Morell Mackenzie aptly terms it, though far more prevalent throughout the world at present than it was a century ago, is still, by medical men, a shunned and neglected contagion. I use the word *contagion* advisedly, and in the sense of "an infection," as given it by lexicographers. Though New Orleans and San Francisco have their leper colonies and leper houses, though the appearance of sporadic cases is not uncommon in our northeastern cities, still in the United States, as elsewhere in Anglo-Saxondom, the disease continues to be regarded and treated as incurable, and as only to be put out of sight and out of mind. Notwithstanding our regular trade with the West Indies, New Brunswick, Mexico, the Sandwich Islands, China, and India—all of these being forcing-houses from which the disease is supplied to the world at large—the medical profession in this country continues to ignore the disease, and only appears to be aware of its existence when the detection of one or two cases is announced in some center of population, as recently happened in the case of the two Chinamen in New York. Then the theories advanced are only limited by the number of doctors who rush into the arms of the interviewers, and the almost total ignorance which they exhibit is detected by most of their readers, though it is most apparent to one who has for a time dwelt in countries where leprosy abounds.

That leprosy has become firmly fastened in the Western World, and is no longer to be regarded as the scourge of "Bible lands" alone, is only too evident to any resident or leisurely traveler in tropical America; and even among the Creoles of Louisiana, the Chinese of California, the Scandinavians of Minnesota and Wisconsin, and the Mormon converts from the Sandwich Islands at Salt Lake, the disease now has a hold that is likely to be most difficult to overcome. Its very rapid spread throughout the countries under Anglo-Saxon rule has been pointed out by many English and German writers of note. When so eminent a specialist as Sir Morell Mackenzie says that "it is impossible to estimate even approximately the total number of lepers now dying by inches throughout the world, but it is certain that they must be counted by millions," and then adds, "That leprosy has spread considerably in recent times there can be no manner of doubt. . . . The seeds of leprosy take something like half a century to mature, and there is every prospect that unless the natural evolution of the scourge can in some way be prevented, a terrible harvest will be reaped before many years are past," it is time that our National Board of Health or some competent authority should begin a systematic and thorough inquiry into and examination of the disease.

But four centuries have passed since there were 250 leper houses in England alone, over 2,000 in France, and probably about 11,000 throughout all Europe. Then laws governing lepers were as carefully framed and as rigidly enforced as any on the statute books. In Oahu, near Honolulu, the advance guard of the coming scourge was first observed by Dr. Hillebrand in 1853. The disease was not officially recognized until 1859, when only a few cases were known to exist. Yet in six years the known cases had increased to 230 by government count, and the situation was becoming so serious that in the following year the segregation settlement at Molokai was opened. Since that over 3,500 cases have been received there; the place has become world famous by reason of the self-denial, the life and the wretched death of the Belgian missionary priest, Joseph Damien de Veuster, commonly called "Father Damien." Going as a volunteer to minister

to both the bodily and mental wants of these isolated wretches, starting in the prime and very flower of perfect manhood, but a short time had elapsed before we hear him beginning his address to his little flock with the words "We lepers." Yet a few years more and the sad story is ended, as he writes in his last letter to a friend, "I try to carry without much complaining and in a practical way the long foreseen miseries of this disease." It is inconceivable that Damien and his assistants should not avail themselves of every known appliance, treatment, and precaution whereby to avert the dangers of the contagion, yet, picked as they were from the healthiest volunteers, we find his death soon followed by the attack of his chief assistant, the doctor in charge, and of 66 *kokuas*, or helpers, 26 are known to have contracted the disease, and in nearly a score more it is reasonably suspected. In the West Indies the disease has been rapidly extending its ravages for at least 75 years back. In that space of time, in Trinidad, leprosy has increased nearly four times as rapidly as the population. In British Guiana there was, two years ago, one leper in every 250 of the inhabitants, their death rate was 16 per cent, and the disease was reported by the chief medical authority to be "spreading with great rapidity." Mr. Edward Clifford, who has given much attention to the present rapid spread of the disease, is confident that 250,000 cases is a moderate estimate for India. The present state of affairs in China beggars description and defies computation. In Canton alone one leper house contained 900 lepers in 1887, and 2,600 victims were known to be at large in the city. Do not these facts point in one direction? Are we to calmly await such another outbreak as Europe saw between the 8th and the 13th centuries, when the disease in certain years slew its tens of thousands and became so prevalent among the better classes that the Order of St. Lazarus, governed only by lepers, with its chief house in Jerusalem, numbered its chapter houses by the scores throughout Europe, and at last became one of the wealthiest bodies of the time, so great was its power to extort alms from all classes? No doubt the diet and the habits of life to-day are far in advance of that of five centuries ago, but the examples of the difficulty that is experienced in stamping out the contagion, even under the most favorable sanitary conditions, are ample; and while Norway's experience in the last 50 years has taught us what segregation, reasonable diet, and extreme cleanliness will do, it has also proved that time and eternal vigilance are potent factors in this problem. Why then shall we wait for the rapid increase of the disease in the more favored localities in this country—an increase that is bound to come in time if the present reign of neglect continues?

H. P.

#### Locomotive Explosion.

At Oyster Bay, Long Island, on September 9, the boiler of a 46 ton passenger locomotive exploded, killing the engineer and fireman and one brakeman. The body of the engineer was thrown two hundred feet away to the south of the track, while that of the fireman was thrown a hundred and fifty feet to the north, and the body of the brakeman was thrown over and twenty feet to the rear of the train, which consisted of three cars. The brakeman was on the tender, and the engineer and the fireman were in the cab, the train standing at the depot just ready to start, when the explosion occurred. The crown sheet of the firebox, with a portion of the cab, were thrown about a hundred and fifty feet away, while the locomotive was left in a nearly vertical position, its front portion being partially forced into the ground. The explosion was evidently in the water chamber over the firebox, but its cause is unexplained, although it is reported that the dead engineer had said the riveting in the crown sheet and some of the outer plates of the firebox was defective. The locomotive was built in 1889 and had been overhauled a few months ago.

#### Producing Marbled Surfaces.

This method, by Soren C. Madsen, of Sleepy Eye, Minn., is as follows: Place a piece of clear glass over a sensitized surface (paper or otherwise). Then sprinkle on the upper surface of the glass, in irregular patches, sand, broken glass, and broken smoked glass, with the smoke partially rubbed off in places. This material must be so distributed as to leave the surface of the glass almost clear in spots and nearly opaque in others. Then expose to the direct undiffused sunlight, or artificial light, and the marbled appearance will be produced or printed on the sensitized surface.

#### Converting Iron into Steel.

W. Hodge says this process is a modification of the ordinary method of cementation, and differs from it in the substitution of carbonized or partially charred spent tan for the charcoal generally used. It is claimed that the resulting steel is not blistered and that the grain of the iron bars is not deleteriously affected, so that the reheating or remelting is unnecessary. Articles of wrought iron may also be case-hardened by this process.

## Recent Mining Excitements.

The present year seems to be unusually prolific of mining excitements in the Far West. During the past month two new ones have blazed forth, the scene of one being the Pine Nut district in Nevada, and that of the other, La Plata in Utah. Concerning the former there is considerable mystery, as the tunnel in which the original (and so far, apparently, the only important) discovery was made is barricaded, and none but those interested are allowed to examine the breast. The stories of the wealth exposed there are, however, comparable only to the tale of Aladdin's cave. As was to be expected, there has been a rush from other mining camps of Nevada to the new district. Claims have been located in all directions, and with customary promptness several companies with large capital stocks have been organized in San Francisco to exploit property in the new field. Pine Nut is located in Douglass County, and is but a short distance from Austin.

La Plata camp, in Bear Gulch, Cache County, Utah, about 25 miles northeast of Ogden, has been heralded as a new Leadville. Ore was discovered at this place about one month ago by a sheep herder, whose sheep wore a path denuding the outcrop of a vein of rich lead ore. From the La Plata claim, located on this vein, the town which has since been established takes its name. This discovery being near Ogden and Salt Lake City, a stampede to the locality immediately followed the first news. It is estimated that within a week there were 500 men in Bear Gulch, where a town site had been laid out, saloons and gambling houses had been put in full blast, and, according to press reports, the place had taken on the look of a typical Western mining camp of five-and-twenty years ago.

The original discovery at La Plata has been followed by several others, and the district is said to be a promising one. As yet little is known concerning the nature of the veins which have been exposed. The formation is reported to be lime and porphyry, and the ore to bear lead and copper, carrying silver. No more definite information has yet been received.

Of the other new mining districts of 1891, Oro Grande, in Southern California, is still the scene of considerable activity; and there seems to be fair probability that some of the prospects there may be developed into mines. The discoveries at Oro Grande have attracted much attention to the mineral resources of Southern California; and there is more exploration work doing among the silver veins of San Bernardino County this year than for a long time past. The region is of considerable promise, and we may look for a gradually increasing product of silver in California as its resources are developed.

The excitement over the Deep Creek region of Utah and Nevada, which was the theme of interest three months ago, has almost entirely faded away. One mine there, the Buckhorn, is, we believe, making regular ore shipments, and others are sending occasional small lots to market; but the discoveries have not been of such a nature and extent as to warrant the immediate construction of a railway into the region; and its inaccessibility, lack of water, and other natural obstacles to profitable mining appear to have discouraged the influx of additional prospectors, or investments of capital in large developments, when there was no longer immediate prospect of a railway.—*Eng. and Min. Jour.*

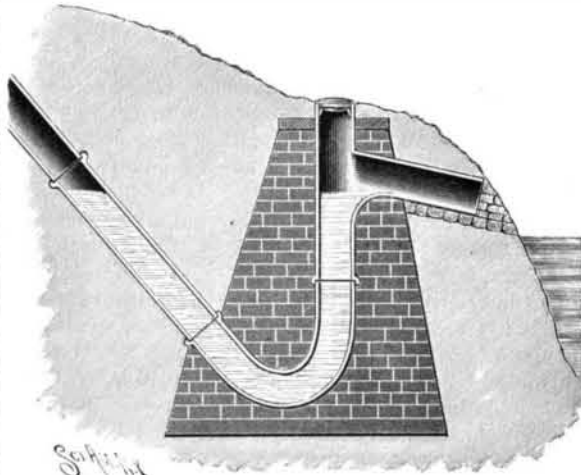
## Irrigation by Steam Pump.

Where years ago it might not have been, it is now possible to irrigate many fair and productive acres by pumping, and thereby be independent of all the present systems of water courses and charges. A gentleman who has a Byron Jackson centrifugal pump upon his place, says the *Bakersfield Californian*, has made a careful observation as to cost and capacity of this kind of work. The plant will cost as follows: Engine, \$900; pump, \$200; freight, \$200; average well, say \$200; or \$1,500 for plant. With thirty feet lift, the pump has a capacity of one cubic foot per second, and with ten or twelve feet lift, two cubic feet per second. The water should be used direct from the pump, as, if a storage reservoir is used, there is additional expense, and loss of water from seepage and evaporation. With small ditches and attention, one cubic inch of water per second is ample for 160 acres in vines and trees, and while using the pump it will keep two men busy handling the water, for, properly applied, from seven to eight acres can be irrigated each day. If alfalfa is laid out in narrow checks, so that the water can gently run over it, three acres a day can be irrigated in this manner. Of course, if flooding be practiced, each acre will require the old amount of one and one-fourth cubic feet per second for twenty-four hours.

The costs of running this pump are one cord of four-foot wood, \$2.50 (or three loads of sage brush at about the same cost); labor running engine, \$1.65; incidentals, 35 cents; a total of \$4.50 for, say, seven and one-half acres, or 60 cents per acre. The engine of fifteen horse power is ample for a pump of double the capacity given above, and the said pump only costs \$100 more originally.

## IMPROVED SEWER AND DRAIN PIPE OUTLET.

Sewers and other drain pipes, emptying into rivers and streams whose banks are unstable, frequently cause the washing away of the bank to an extent to injure the pipes or obstruct the outlet. To obviate this difficulty the improvement shown by the accompanying illustration has been invented and patented by Mr. James H. Elliott, of the city engineer's office, Memphis, Tenn. A suitable abutment is constructed near the outlet, and the main drain pipe enters this abutment at an incline, then

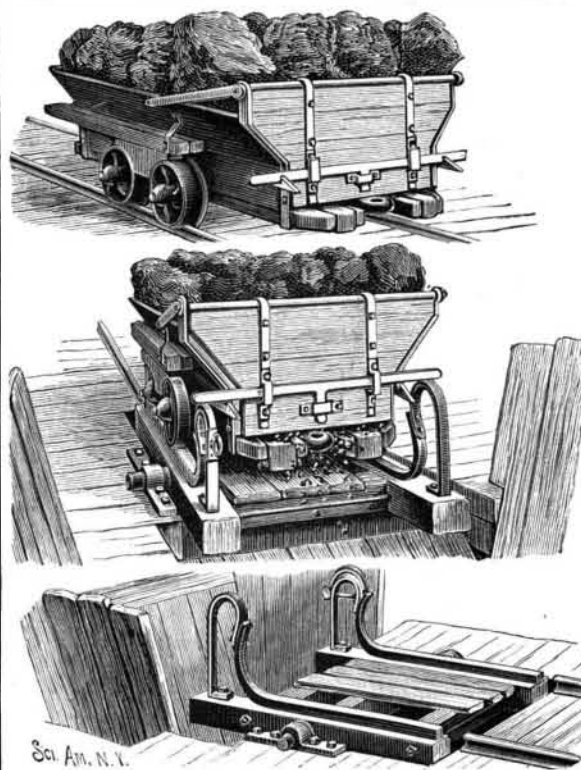


ELLIOTT'S OUTLET FOR DRAIN PIPES.

bends upward to a point near the top of the masonry, when it again bends outward, to discharge the flow into a paved gutter above low water mark. The vertical portion of the pipe is also continued upward to the surface, where it has a removable cover or grating to facilitate inspection and cleaning. The water always remaining in the lower bend of the pipe is designed to break the force of a rushing torrent, and prevent violent outflow, the masonry or concrete wall holding the pipe permanently in place.

## AN IMPROVED MINING CAR AND TIPPLE.

The illustration represents a car and tippie, with automatically opening and closing latch, which has been successfully employed in practical work for some time past in Clearfield and Indiana counties, Pa., and is highly spoken of by miners in the soft and hard coal regions. It has been patented by Mr. Cornelius Burns, of Burnside, Pa. The first figure represents a loaded car with its gate at the rear held closed by the latch, the second view showing the latch as raised before dumping, and the third view showing the tippie. The gate is pivotally held on a transverse rod, and on its outer face are keepers in which a latch-bar is loosely held, its outer ends being engaged by latches extending rearward from each side of the car. The tippie, or



BURNS' MINING CAR AND TIPPLE.

tilting platform, has rails in line with those of the mine system, and the rails are curved upward at their outer ends, on which are bolted curved extensions or goosenecks, the outer portions of which are carried down vertically and bolted to the platform beams. A removable cap is held on one or both of these curved extensions by a rod with a projecting eye, by which the cap may be tightened or loosened or entirely removed. As a loaded car is run on the tippie, and its rear wheels come against the curved rails, the latch-bar strikes the curved extensions, and is thereby disengaged, the door swinging open as the car tips downward on the tippie, to discharge its contents into the

chute. After the car is unloaded it comes back to a horizontal position by its own weight, the door closing and latching itself as the car returns to a level. Many advantages are claimed for this improvement over the old style of car and tippie. The latch is not liable to open in the mines, it does not require to be lifted by an operator in discharging the load, and the cost to remodel old cars and tipples to conform to this style need be but slight.

## American and Canadian Railroads.

I do not believe that the extreme measure of requiring a license of the Canadian railroads to do business as part of lines connecting points in this country, and authorizing the abrogation of such license if they shall be held to have violated the Interstate Commerce law, is either wise or necessary. The power should never be granted to any one man or any body of men to put a stop to the business of a great railroad. In such case it is not the railroad or its stockholders that would be the chief sufferer, but the men who have made their business arrangements dependent upon the service which the railroad is to render them. I do not believe that the great cities or the great manufacturing districts of New England, that Buffalo, Toledo, Rochester, St. Paul, Minneapolis, the great cities of the Northern Pacific, or even Chicago or New York, would long submit to such an arrangement.

It is said also that by helping build up the railroad system of Canada, we create what would be a great military danger to us in case of war with Great Britain. On the contrary, it seems to me that we are getting a hostage which will forever bind Canada and Great Britain, so far as she cares for Canada, to good behavior toward us. All the property of the Canadian railroads, or which Canadian or British capital have invested in connecting lines in the United States, at once becomes worthless to them and a means of attack to us if war breaks out. The five million people of Canada are stretched out along the boundary line of nearly four thousand miles, if you follow its curves. I suppose nine-tenths of them dwell within an average of less than fifty miles from the American border. Their lines of railroad could be taken possession of by a military force in many places, if we find it necessary to do it. Canada is a chain easily severed in a hundred places. When she is broken at one point, she is broken at all. Our population is to hers as at least thirteen to one. Our wealth, our military resources, our power of producing military equipments and supplies, exceed hers in a vastly larger proportion. On the other hand, our transcontinental communications can be maintained in spite of anything that Canada or England could bring against them. It is said that special action may be taken by the British or Canadian government to enable their roads to underbid ours. If that happens, we shall know how to take care of ourselves, and the more interest they have in the American connection, the more they get into our power. No such action yet appears, or seems likely.

American railroads are as much entitled to protection against foreign hostility or unfair competition as any other form of capital or of labor. The railroads of the United States employ at least 850,000 persons, who in their turn have dependent upon their labor at least 5,000,000 persons, a thirteenth part of the population of the United States. The operating expenses of the railroads of this country were \$352,000,000 in 1880. The figures for 1890 are not yet accessible, but there must have been an increase in this respect of from thirty to fifty per cent in the past ten years. Of this vast sum more than one-half is paid directly for labor, without reckoning the cost of labor which enters into the price of equipment, supplies and materials used during the year.—*Senator Geo. F. Hoar, in The Independent.*

## Iron Paper.

It will not, perhaps, be remembered, says the *Paper Maker* (London), that in the great exhibition of 1851 a specimen of iron paper was exhibited. Immediately a lively competition ensued among ironmasters as to the thinness to which cold iron could be rolled. One ironmaker rolled sheets the average thickness of which was the  $\frac{1}{1600}$  part of an inch. In other words, 1,800 sheets of this iron, piled one upon the other, would only measure one inch in thickness. The wonderful fineness of this work may be more readily understood when it is remembered that 1,200 sheets of thinnest tissue paper measures a fraction over an inch. These wonderful iron sheets were perfectly smooth and easy to write upon, notwithstanding the fact that they were porous when held up in a strong light.

It is claimed the steamer *Majestic* is the most economical coal burner of any of the Atlantic "high fliers." She burns 220 tons of coal a day, shows 19,500 horse power, and makes an average of over 20 knots, or 23 miles, per hour throughout the Atlantic passage. There are only two other ships that have reached this speed, namely, the duplicate ship the *Teutonic* and the *City of Paris*. But there are a few other vessels that come near this speed.