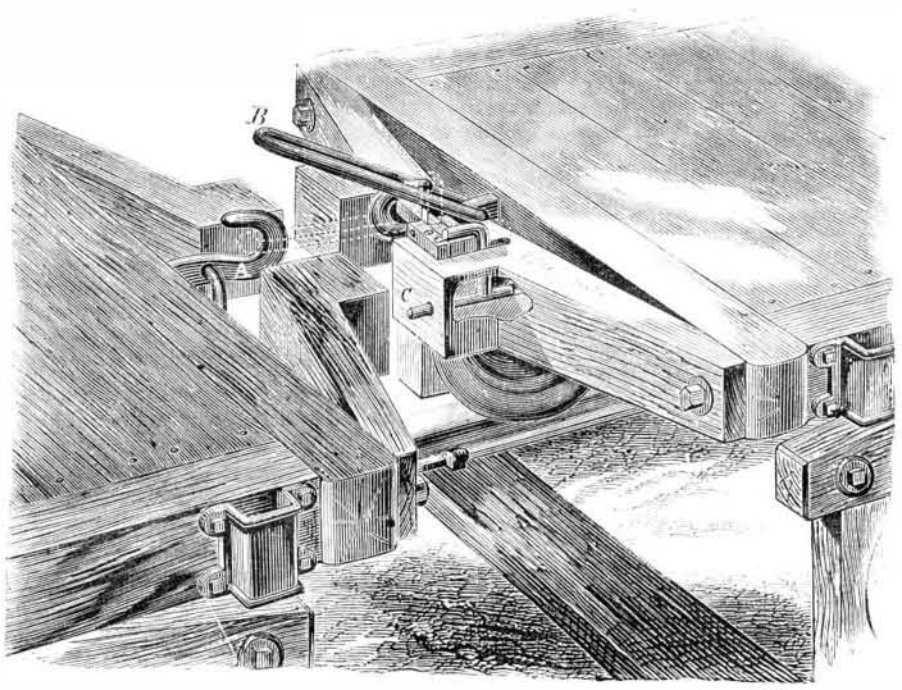
AMERICAN INSTITUTE POLYTECHNIC CLUB.

The greater part of a recent evening was occupied by a long lecture on longevity, of which the points of interest may be condensed in a few words, viz: 1st. That persons whose ancestors have long lives live long themselves, and *vice versa;* a fact well known. 2d. That persons with large, well developed trunks live longer than those with small trunks and short necks. 3d. That large noses and the ears low down on the side of the head is also a sign of longevity. The lecturer stated that he had taken the trouble of investigating these points during the last thirty years, among more than 200,000 people, and so far we have no fault to find, but object to a person spinning out three or four facts, which he can state in as many minutes, to a long address of more than an hour, and aiming chiefly at amusing the audience more than instructing them; even the amusement aimed at was of doubtful character, as the speaker said too much about himself, how he had too small a nose and too short a neck; how his ribs were too horizontal, so that he could not breath with his chest, but only with his abdomen. He complained that people commenced calling him an old fellow; said that his little fingers were crooked, which he demonstrated by exhibiting them repeatedly, that all his family and ancestors had such crooked fingers, etc. We confess we do not see the usefulness of this information for people who come to the Polytechnic Club to be instructed. but think that they care very little about the knowledge of these facts. Some of his arguments were rather unique; for instance, to explain hereditary tendencies, he proposed the question why a dog was a dog, and answered it by saying, because his father was not a cat.

Improvement in Self-Acting Car Couplings.

Although fearful accidents continually occur in the running of trains of cars, by which passengers are maimed and killed, and the records, with all the horrible details, are spread far and wide by the press, the injuries of railroad employés received in the performance of their duties are not so prominently noticed, and consequently comparatively few appreciate the extent of these accidents. Yet one cannot spend a day among railroad men without finding specimens of crippled humanity injured for life by some accident received while attending to the duties of their position. One of the most dangerous of these duties is that of going between cars for the purpose of coupling or uncoupling. The object of the inventor of the coupling herewith illustrated is to entirely prevent the possibility of such accidents, by providing a self-acting coupling.



WEILER'S PATENT COUPLING FOR RAILROAD CARS.

At the base of a hook, A, secured to the end frame of a car platform or to the draw-bar, is pivoted a link, B, which engages with the hook of the next car. In operation the link is supported at an angle above a horizontal by the long arm of a latch lever pivoted between suitable blocks on one of the bumpers, the other end being sustained by a right-angled catch, the horizontal end of which, C, projects beyond the bumper in which it is seated when the link is supported in the position described above. The link being in this position, the bumper of the next car will strike against the projecting end of the catch, C, and, driving it in, release the link, which will fall by its own gravity and engage with the hook on the next car. The dotted lines in the engraving show the position of the parts when the cars are coupled. The bumpers may be made as show in the illustration, or as ordinary bumpers are made, in either case giving some elasticity, sufficient to relieve the shock of collision when the cars come together. The length of the upper part of the hook is sufficient to prevent accidental uncoupling on grades or curves. While one link is engaged that on the next car hangs free. The simplicity of this contrivance is such that it may be adapted to any car without radical alteration of parts, and it is adjusted from the car platform.

It was patented January 25, 1868, by Wm. Weiler, whom address for further particulars at Washington, N. J.

CONTROLLING WATER CURRENTS — DEEPENING THE CHANNELS OF RIVERS.

We have received a pamphlet issued by the New Orleans Academy of Sciences, containing a plan for deepening the mouths of rivers and reducing the hight of bars in navigable streams. It is illustrated by engravings, and the plan is based upon the well known mechanical law, "the angle of incidence is equal to the angle of reflection." Taking advantage of this law, in its action upon all movable bodies, the author of this plan, Lieut. E. Manico of the British Royal Marines, recommends the construction of jetties or dams built at an angle to the stream, the action of which shall be to divert the course of the current and confine it within certain limits.

He proposes to build caissons of iron or wood filled with stone, or heavy ballast. whose weight will hold them down, and whose angular forms prevent them from being moved by the currents or waves of strong or stormy waters. They are cubes of any dimensions, single, or joined together in the form of the letter L, or T, or any other that may be desired, or single cubic yards holding half a tun's weight, or eleven hundred pounds of stone. The crates in which queensware is usually packed for commerce, will give one a good idea of their form. Their cubical shape, and crossed bars of iron, or wood, possess many advantages for the work of "rip raps," or regular foundations for all submarine structures, whether jetties, breakwaters, forts, or light-houses upon bottoms of mud, sand, or rock. They are used by the British Government for such works on tempestuous and rock-bound coasts, but they are especially suited for such a bottom as that of the bed of the Mississippi, and of the bars at its mouth. Their ribbed planes prevent them from sinking deep into the mud or sand, and their ribs, and angular points and edges, hold them firmly upon rocks, or soft bottoms. Their cross bars furnish holds for the hooks of cranes by which they can be lowered down and placed with the regularity of bricks in a wall, or like the stones of the pyramids, terrace above terrace, or they can be chained together, or dropped irregularly and held by their angular points to make a submarine spine or *ridge*, against which loose stones may be dropped, and piled at an angle of 45°. Let them be dropped, or placed upon any bottom, or in any current, and experience proves that they cannot be moved by water. Every interstice between the stones they hold becomes filled with mud and sand, until the whole caisson is like a solid stone. Such an object, which cannot be removed by a current, controls it. The water fills and surrounds it with deposit. It is isolated, and made a bar, or island; and it turns the current in another direction. The wreck of a vessel, with its ribbed and angular skeleton, produces a similar effect; and sometimes becomes a dangerous impediment to navigation. One has recently made itself an obstruction to the navigation of the South-west Pass. It has divided the current and is forming an island in mid-channel.

Whether it is desired to make them of iron, or wood, inexhaustible supplies of cypress timber are convenient to us; and forests of it cover the bottoms of the Mississippi and its tributaries. The bluffs of stone above, forming its cliffs, and those of the Ohio and Tennessee, and the yet nearer and more accessible rock of the Washita in Catahoula parish, La., will afford us cheaply all the rock needed to construct jetties of any size, or length, at the mouth of the passes.

Mr. Halliday, the chairman of the committee says:—"I cannot recommend the extension of parallel works. *They would exert no eroding power* such as will be produced by converging walls, reflecting the water from both sides, and throwing it with accumulated force upon a central line. Another objection is the danger of undermining. If a log, or the wreck of a vessel should sink diagonally between these walls; or if, what is more to be apprehended, a *mud lump*, one of those phenomena of our Delta, which Thomassey terms the "evil geniuses" of the passes, should be upheaved by the weight of the deposits, by gas, and artesian pressure, in the channel, the current would be deflected against one of these walls, and perhaps be reflected from it against the other, and undermine it, and destroy the work.

A better plan for their extension is, to throw out diverging flankers, and then perfect converging flankers ending in converging parallels to the original jetties.

This will continue the convergence of the water, and its erosive action, so far and so long as it may be necessary. The important desideratum supplied by Manico's patent, is a material which will not sink in soft mud and sand; and which cannot be removed by water from the hardest rock. The ribbed planes and sharp edges of their bars, the angular points of the rocks they enclose, and the angles of the cubic caissons effectually prevent them from both. Like the knotted toes, sharp nails, and outspread webs of the feet of the alligator and duck, they cannot sink in mud, or sand; and they cannot slip and be moved from a foundation of rock.

These patented caissons, I learn, have been used by the British Government to form the foundation of the most important light-houses on the East coast of England—the Goodwin lights, off the Island of Thanet, constructed upon the treacherous Goodwin sands, where the straits of Dover enter the North sea, in sight of which vessels from every continent must pass to enter the Thames. They have made a permanent foundation there which stands the shock of the storms which beat upon it from the coasts of Scandinavia, and the Arctic Ocean; and they will resist equally well the ground swells and the Typhoons of the Gulf of Mexico.

Wherever they are sunk, they will remain forever, unless lifted up by very powerful machinery, applied very soon after their deposit. For they become immediately filled; and their materials compacted with sand, clay, shells, and whatever else the water can drive into them; and even in the salt water the *teredo* would have but a short time to work upon their ribs, if made of wood, before they would be buried in the mass of deposit heaped by the waves against them and upon them. One important advantage secured by the construction of the jetties at the mouths of the passes, would be the permanency of the work. The new land would be made rapidly, and attach the jetties themselves to the permanent shore. Storms from the south-west might make temporary deposits and slight obstructions at the mouth of that pass; but as soon as the storm shall have subsided, the strong river current passing over the bar, at a rate varying from $1\frac{3}{4}$ to 3 miles per hour, condensed and accelerated by the converging jetties, will sweep them away into the deep waters of the Gulf. The Mississippi river, with a current of 4 miles per hour a short distance from the south-west pass, has cut itself a channel from 60 to 120 feet deep. It is self-evident that if it can be confined between converging dams, and extended into the Gulf, it will make for itself a similar channel where the bars are now formed.

The expense of the work is easily estimated, and when the benefits are considered which would accrue to the whole valley of the Mississippi, now occupied by 17,000,000 of inhabitants, and to the millions more in our own and other lands interested in its priceless commerce, the sum of 1,000,000, which would more than cover all the cost of removing the principal obstruction, the bars of the South-West Pass, seems contemptibly small."

Primitive Climate of the Earth.

The primitive atmosphere of the earth was greatly richer in carbonic acid than the present, and therefore unfit for the respiration of the warm-blooded animals. The agency of plants in purifying this atmosphere was long ago pointed out, and the great deposits of fossil fuel have been derived from the decomposition of this excess of carbonic acid by the ancient vegetation. In this connection the vegetation of former periods presents the phenomenon of tropical plants growing within the Polar Circle. Prof. T. Sterry Hunt considers as unsatisfactory the ingenious hypotheses proposed to account for the warmer climate of ancient times, and thinks that the true solution of the problem is to be found in the constitution of the early atmosphere, when considered in the light of Dr. Tyndall's researches on radiant heat. He has found that the presence of a few hundredths of carbonic acid gas in the atmosphere, while offering almost no obstacle to the passage of the solar rays, would suffice to prevent almost entirely the loss by radiation of obscure heat, so that the surface of the land, beneath such an atmosphere, would become like a vast orchard house, in which the conditions of climate necessary to a luxuriant vegetation would be extended even to the polar regions.—*Mechanics' Magazine.*

The Woodpecker's Foresight.

The woodpecker in California is a storer of acorns. The tree he selects is invariably of the pine tribe. He bores several holes, differing slightly in size, at the fall of the year, and then flies away, in many instances to a long distance, and returns with an acorn, which he immediately sets about adjusting to one of the holes prepared for its reception, which will hold it tightly in its position. But he does not eat the acorn, for, as a rule, he is not a vegetarian. His object in storing away the acorn exhibits foresight, and knowledge of results more akin to reason than to instinct. The succeeding winter the acorn remains intact, but becoming saturated with rain, is predisposed to decay, when it is attacked by maggots who seem to delight in this special food. It is then that the woodpecker reaps the harvest his wisdom has provided, at a time when, the ground being covered with snow, he would experience a difficulty, otherwise, in obtaining suitable or palatable food. It is a subject of speculation why the redwood cedar or the sugar pine is invariably selected. It is not probable that the insect, the most dainty to the woodpecker's taste, frequents only the outside of two trees; but true it is, that in Calaveras, Mariposa, and other districts of California, trees of this kind may be frequently seen covered all over their trunks with acorns, when there is not an oak tree within several miles.—*A. B. Barton.*

Coloring of Zinc Plates.

A variety of beautiful colors, corresponding to those of the rainbow, can be imparted to zinc surfaces by a simple chemical application continued a length of time proper for the desired color. It is necessary that the metal be pure, and especially free from lead. It is therefore to be rubbed with siliceous sand moistened with hydrochloric acid, then dipped in water and rubbed vigorously with blotting paper. The zinc is then immersed in a solution of 3 parts by weight of dry tartrate of copper in 4 parts caustic soda, with 48 parts distilled water, the whole at a temperature of about 50° Fah. The colors will appear successively, in the prismatic order, according to the period of immersion. In two minutes, the violet will appear; in three, dark blue; in four and a half, a golden yellow; in eight and a half, a red purple. Intermediate terms give intermediate tints. When colored, the zinc is well washed with water, and for greater permanence of color may be varnished.—*Annual of Scientific Discovery*, 1868.

A Novel Gunboat.

A boat named the *Staunch*, built for the Admiralty upon the proposition and plans of Mr. Rendel, of the firm of Sir W. Armstrong and Co, has just been tried off the Tyne. A correspondent gives us the following account: "This vessel, though wholly insignificant in appearance and cost, represents some very novel principles. She is only 79 feet long and 25 feet beam; her draft of water when loaded of 6 feet, and her displacement 150 tuns. She has twin screws driven by two pairs of condensing engines of 25 horse-power (nominal) combined, giving her a mean speed of 7½ knots. Such being her dimensions and power it is hard to suppose that she can be in the least degree formidable. She carries, however, as heavy a rifled gun as any in the navy, and to all appearance carries it most efficiently. The gun, a 12½ tun 9 inch Armstrong, is mounted in the fore part of the boat in a line with the keel, and fires through a bulwark or screen over the bow, which is cut down and plated something like that of a monitor. Thus placed, it is easily worked in a rolling sea, and its change of position by recoil does not appreciably affect the trim of the vessel. At the same time, to provide for heavy weather, it is made capable of being lowered into the hold, so as to relieve the little vessel of its deck load, and enable it to carry the weight as cargo. Machinery is also employed for the purpose of working the gun, by which means more than half of the ordinary gun's crew can be dispensed with. It is in these mechanical arrangements that much of the interest of this vessel lies. The operation of lifting and lowering is performed by simple but powerful machinery. During the trials the gun, with its carriage and slide, and the platform carrying them—weighing in all 22 tuns—was raised and lowered in a rough sea, with the boat rolling 11° each way, in from six to eight minutes. When the gun is lowered the gun well is closed and the deck left perfectly clear, but in a few minutes the gun can be again brought up ready for action. During the trials the 12½-tun gun was easily handled by six men, and fired with extra charges of 56½ lbs. of power and 285 lbs. shot. It must be observed that very little, if any, training is requisite with the gun of the *Staunch*. The vessel is so small as to be a sort of floating gun carriage. Her twin screws enable her to turn rapidly in her own length. Her helmsman is placed just behind the gun. The gun, therefore, can be laid by rudder right and left with far more ease and speed than any gun of similar weight otherwise mounted. During the recent trials, with the engines driving reverse ways, the vessel made the full circle in her own length in 2¾ minutes. With both engines going full ahead she made by the helm a complete circle of seventy-five yards diameter in 2¼ minutes. The *Staunch* is wholly unarmored. Her strength and security lie in her great gun and her diminutiveness. And she must be considered as one of a flotilla of similar vessels. Sixty such could be built at the price of a single armor-clad frigate, and ten of them, acting from different points, doubling in their own length, escaping into shallows, sheltering under forts, would drive off or render a good account of any hostile vessel venturing to attack our harbors. Primarily they are intended for harbor defence; but the power of lowering the gun and carrying it as cargo, would afford great security for these vessels at sea, and enable them to be sent from harbor to harbor with safety. The *Staunch* is now to be sent round to Portsmouth, where she is to be attached as experimental gunboat to the gunnery ship *Excellent*."—*Pall Mall Gazette.*

Trial and Loss of a Self-Propelling Vessel.

A San Francisco letter in the N. Y. *World*, says that a Mr. Robinson has from time to time, in the papers, put forward an invention which he claimed was to be almost self-propelling, without the use of steam power. The peculiar features of the new aquatic craft was, that two or three boats hitched together, one behind the other, by the action of the waves the series of boats was to obtain propulsive power. An experimental craft was built at an expense of about $8,000. Considerable curiosity was felt in the community as to the success or non-success of the new notion, and many went to view the craft during construction. If it succeeded, a revolution was to be worked in navigation. Sails and steam would be superseded. On the ocean and great lakes the rougher the sea the faster the boat would travel.

The inventor was sanguine that his new craft would travel the water by its innate propulsive power, independent of steam or other expensive motor, enjoying the tempest and glorying in the storm. The craft was completed, and the day for the trial trip appointed. So confident was the inventor of success that he took on board stores for a ten day's voyage. At ebb-tide the new (to be) sovereign of the seas put off from the wharf to which she had been fast since her construction had been completed, and started out on her voyage. There were on board four persons: the inventor, Captain Young (a pilot), and two sailors. She was hardly clear of the wharf when she swung around broadside to the tide and commenced a series of movements not very promising of success to the undertaking. She would not obey the helm at all, but lurched continually, in an uncomfortable manner for those on board; first one wheel house would be submerged, then the other. The new craft made excellent time, proceeding endwise like a crab, but the wheels seemed to have no effect whatever on speed or direction. The wheels, depending upon the water they were passing through for motion, would turn any light machinery on board the boat, but would not move the boat ahead an inch. The craft would simply move with the water, not through it. The inventor was still sanguine that, with regular waves, the boat would be an assured success. All he required was regular waves. Once outside among them, things would change; the rougher it became the better. The boat went on like a raft until it got outside the heads, then over the bar into rough water, and no sooner was it in rough water than the whole contrivance was turned over. The party on board sought the water for safety, and clambered into a boat which had been taken in tow in case of accident. The pilot boat *Caleb Curtis* picked up the unfortunate navigators. The steam tug *Rescue* came alongside the *Curtis*, and offered to tow the refractory craft up to San Francisco for $500, but Mr. Robinson did not seem disposed to give so much, so the unfortunate craft went on toward the resting sun, keel upward. Mr. Robinson is reduced to poverty by the result of his ill-starred experiment.

Earth Circuit in Telegraphy.

The failure of the earth circuit of a short telegraphic line in the Pewabic copper mine, Lake Superior, is interesting from a practical point of view. The wire used was a one-sixteenth inch copper wire, wound in the same manner as waterproof fuse, the wire taking the place of the powder. To the surprise of all, no signals could be transmitted through the line. The end of the wire underground was put into a hole drilled into the rock and tamped in; a bed of earth was then made, and lastly a pool of water tried, but all to no effect. Above ground the line worked well enough.

Though the earth, generally speaking, will conduct electricity, some substances, of which any specific portion of the earth may be composed, will not conduct it; for example, dry sand and dry freestone rock will not, and quartz rock will not any more than glass; dry earth will not, as is recognized by all telegraph constructors, who bury the earth plates deep in damp earth. In this case an attempt was made to form an earth circuit in non-conducting material. The end of the wire in the mine was tamped into the solid rock, probably quartz, which would be about the same as tamping it into a glass bottle, filled with earth or water. The chances of electric communication would be still less, if the wire was not perfectly insulated in its whole length. The remedy would be to make a return circuit of insulated wire.—*Mechanics' Magazine.*

Mirrors Without Mercury.

The ordinary method of preparing looking glasses is with an amalgam of tin and mercury: four parts of tin to one of mercury.

In the invention, reported by M. Salvetat to the Society of Encouragement, in Paris, neither mercury nor tin is used at all. The tinfoil is replaced by platina, not applied in leaf form, of course, but chemically, in a metallic and brilliant powder. The operation is perfectly simple. The glass, having been carefully cleaned and polished, is covered, by means of a brush, with a mixture of chloride of platina, essence of lavender, and a dissolvent composed of litharge and borate of lead. When dry, the glass is placed in mufflers, when the essence, being volatilized, leaves a deposit of platina dust firmly united to the glass. While two or three weeks are necessary for the manufacture of ordinary mirrors, the new process only requires a few hours.

Insect Fabricators of Iron.

It is well known that some insects are skilful spinners, but it was not known that some of them fabricated iron. A Swedish naturalist, M. de Sjogreen, has published a curious memoir on this subject. The insects in question are almost microscopic; they live beneath certain trees, especially in the province of Smaland, and they spin, like silk worms, a kind of ferruginous cocoons, which constitute the mineral known under the name of "lake ore," and which is composed of from 20 to 60 per cent of oxide of iron mixed with oxide of manganese, 10 per cent of chloric, and some centimeters of phosphoric acid. The deposits of this mineral may be 200 meters long, from 5 to 10 meters wide, and from 8 to 30 inches thick.—*Rev. de Thérap. Med. Chirurg.*

MANUFACTURING MINING, AND RAILROAD ITEMS.

A report by the superintendent of the geological survey of India, shows that the British territories cannot be considered as either largely or widely supplied with coal. He ascertained that extensive fields existed, but they were not distributed generally over the districts of the Indian Empire. In the opinion of the superintendent, the very best coal from India only touches the average quality of English coal, and, moreover, the former is not capable of more than two thirds, in most cases not more than one half, the duty of the English coal.

The distance between London and Paris is now traversed daily by the South, Eastern and Northern of France railways, in less than ten hours. Two express trains leave the Paris terminus of the Northern of France system daily for England. More than 200,000 passengers passed over this route in 1867.

Among other sequences of the passage by the State Legislature of the Erie bill, is the prompt finishing of the Albany and Susquehanna railroad, now destined to become virtually a branch of the Erie road, running from Binghampton to Albany. The bill just passed requires the money received from the recent issues of bonds to be expended on the road, and as a consequence of this provision, and the late terrible tragedy caused by a broken iron rail, the entire Delaware division of the road is to be relaid with a double track of steel rails.

The London *Colliery Guardian*, speaking of the presence of phosphorous in the Cleveland iron, which so seriously reduces its market value, and renders it necessary to bring iron from other districts to mix with it in the puddling furnaces—calls for some method of removing this sulphur, showing that if extracted, even in its lowest priced form—as a manurial ingredient—it would be worth at least $330 per tun. There is, therefore, a tolerable good margin for working expenses, while the iron now worth $12 per tun, and containing one per cent of phosphorus, would, if freed from this element, be worth at least as much as hematite iron, or say 13.50 per tun.

Engineer Roebling thinks that railroad draw bridges are a nuisance, which can readily be done away with. He would substitute high bridges, even with steep approaches, a stationary engine and a wire rope being provided to assist the trains over the rise. In other words, treat the bridge like an inclined plane, and draws will be unnecessary.

A new railroad project is exciting the wide-awake capitalists of Pittsburgh, Pa. It is proposed to build a road from Pittsburgh to Newbern, N. C., along the Monongahela river to its source in West Virginia; thence by Greenbrier Mountain and river to the junction of the latter with New River, and thence to Newbern. The road would penetrate a rich mineral region, and would bring large quantities of iron ore to Pittsburgh

The Metallic Cartridge Company, of East Bridgeport, Conn., have a contract from the government of Brazil for 6,000,000 cartridges. They have now supplied two thirds of the order, and after shipping the remainder the company will immediately begin the manufacture of 7,500,000 for the Russian government. The daily product of the works at present is 150,000 to 170,000 cartridges.

The Allentown Rolling Mill is one of the largest establishments of the kind in Pennsylvania. It is for the production of railroad iron exclusively, and turns out four hundred tuns of rails per week. The daily work is two hundred and sixty-six rails, thirty feet long and weighing fifty-six pounds to the yard, or five hundred and sixty pounds each.

The rails of the Union Pacific railroad are now being laid on the descending slope of the Rocky Mountains, the summit of the Black Hills, the highest point of the system being crossed on the 16th ult. According to Blickendorff's survey, the railroad crosses the mountains at this point at an elevation of 8,242 feet, being, as we have before had occasion to state, the highest point reached by any railroad in the world.

Professor Chapman, of Toronto, writes that he has discovered gold on Lake Superior, the metal existing in certain specimens of galena and copper pyrites, occurring together in well defined veins in the region of Black Bay. Surface specimens entirely destitute of "free" or visible gold, show a value of nearly $21 per tun, irrespective of the large amount of lead and copper present in the ore. The rocks are identical, in general age, with the gold bearing rocks of Nova Scotia.

All the conductors on the New York and New Haven railroad have made their appearance in new uniforms, furnished by the company. The largest part of the road lying in Connecticut, the law of this State, requiring railway officials to be thus distinguished, does not affect this company, and hence their action in this matter is the more to be commended. In this connection we note that our Legislature has empowered railroad conductors with the authority of special policemen, the better to preserve order on the railway trains. We hope they will use their authority by arresting some of the numerous pickpockets who infest the trains out of New York.

The Mount Washington Railway, in the White Mountains, was completed last fall one mile and thirty rods of the three miles up the mountain. For the next mile the tracks are covered with snow two feet deep. The number of hands will be increased in three weeks from fourteen to fifty. The present estimate of the cost is $100,000, though the figures may add differently at the completion of the work on the 1st of September. The road is built on what is known as the "Marsh" plan, illustrated in Vol. X., No. 10.

Recent American and Foreign Patents.

Under this heading we shall publish weekly notes of some of the most recent home and foreign patents.

MACHINE FOR MEASURING CLOTH.—George R. McIntire, Houghton, Mich In this invention the cloth is placed between two rollers, which are rotated by its motion, and the revolutions of which are recorded by a registering apparatus.

WATER WHEEL BUCKET.—Jacob Clark, Clarksville, Pa.—In this invention the bucket has two curves, one of which receives the direct impulse of the water as it enters the bucket, the other receiving an indirect or "reacting" impulse, as the water leaves the bucket.

SHINGLE MACHINE.—Smith Head, Halifax, Pa.—This invention has two carriages and two sets of saws, and cuts a shingle at each forward or backward motion of either carriage. It has a new apparatus for adjusting the bolts to the saws, and a new edging apparatus.

CORN PLOW, PLANTER, AND CULTIVATOR.—Isaiah B. Arthur, Sidonsburgh, Pa.—This invention combines a new arrangement of the plows' cultivator guards, and covering roller, with a new and greatly simplified method of operating the seed distributor.

CRYSTAL FOUNTAIN.—J. C. Johnson, Louisville, Ky.—In this invention the water is mingled with air in the apparatus, and is found in the form of beads or spray from the fountain, forming a beautiful jet for scenic and ornamental purposes.

SAFETY TRUCK.—S. Y. Bradstreet, Monticello, Iowa.—This invention has for its object the prevention of railroad cars from bouncing off of the track, and consists in the employment of an auxiliary truck of peculiar construction, which guides the main trucks, and which cannot by any ordinary obstructions be thrown off of the rails.

NAILS.—F. Davidson, Richmond, Va.—This invention relates to a machine for making cut nails, and it consists in a peculiar construction and arrangement of parts, whereby a very simple and efficient machine for the purpose is obtained.

LOCK.—H. H. Elwell, South Norwalk, Conn,—This invention relates to a lock of that class which are provided with a reversible slide catch so arranged that it may be adjusted to suit either a right or left hand door—that is to say, be capable of being applied to a door which swings in either direction. The object of the invention is to obtain a lock of the kind specified, which will be simple in construction, and which will not be liable to get out of repair, and require but a simple manipulation to adjust the slide catch as circumstances may require in applying the lock to the door.

SAWING MACHINE.—Thomas Jenkyn, Thetford Centre, Vt.—This invention consists in a novel arrangement of circular saws and rotary cutters, in connection with frames and tables, whereby a machine is capable of performing various kinds of work, such as slitting boards, planks, or other stuff, cross-cut sawing, the cutting of shoulders or tenons, grooving or beading, and chamfering or cornicing.

CLOTHES WRINGER.—M. Pierce, Winona, Minn.—This invention relates to a simple arrangement of parts, which is a great improvement on ordinary designs.

CAR BRAKE.—L. J. Smith, Hamilton, Ohio, and D. S. Knight, New York city.—This invention relates to a combined railroad car brake and starter, the device being so arranged that when the brake is applied the starter will be wound up, so that when the brake is again released the cars to which the device is applied will receive a start, thus overcoming the inertia of the car, whether the same is at rest or in motion.

MACHINE FOR BENDING RINGS.—Wm. H. Peckham, New York city.—This invention relates to a machine for bending metal bars into perfect and correct rings, of any suitable diameter, and it is particularly intended for jeweller's use, to form finger rings, bracelets, and other suitable articles, and may, if desired, be used with equal advantage for shrinking tires and other large and heavy rings.

LARD PRESS.—Solomon S. Avis, Pens Grove, N. J.—The object of this invention is to furnish a cheap, simple, and effective lard press for household use.

FLUID METER.—Charles E. Moore Elizabethport N. J.—This invention consists of a measuring cup affixed to a lever beam, properly weighted, by means of which the quantity of spirits filling the cup is both weighted and measured. The cup being filled is decanted automatically by its own weight, at which instant the spent pipe is cleansed by a proper mechanism, and the supply cut off until the cup returns to its first position, when the spirit is again permitted to flow. The trimmings of the lever are connected with suitable registering mechanism, and the whole apparatus contained in a locked case of sheet metal, having a dial plate in front for the registering pointers.

GATHERING TURPENTINE.—A. Pudigon, Charleston, S. C.—This invention relates more particularly to the gathering of crude turpentine from the pine tree, but may be employed for the collection of all resinous gums of a kindred character, which exude from wounds in trees.

MAKING ROOFING.—James H. Cole, Adrian, Mich.—This invention is designed as an improvement upon the device recently patented by Edmund Richardson and James H. Cole, for a process for making roofing and machines for the same, and consists in supporting the rolling instrument employed in said process, by an arm which reaches to and travels upon ways overhead, so that the operator can travel alongside of the instrument and direct the same.