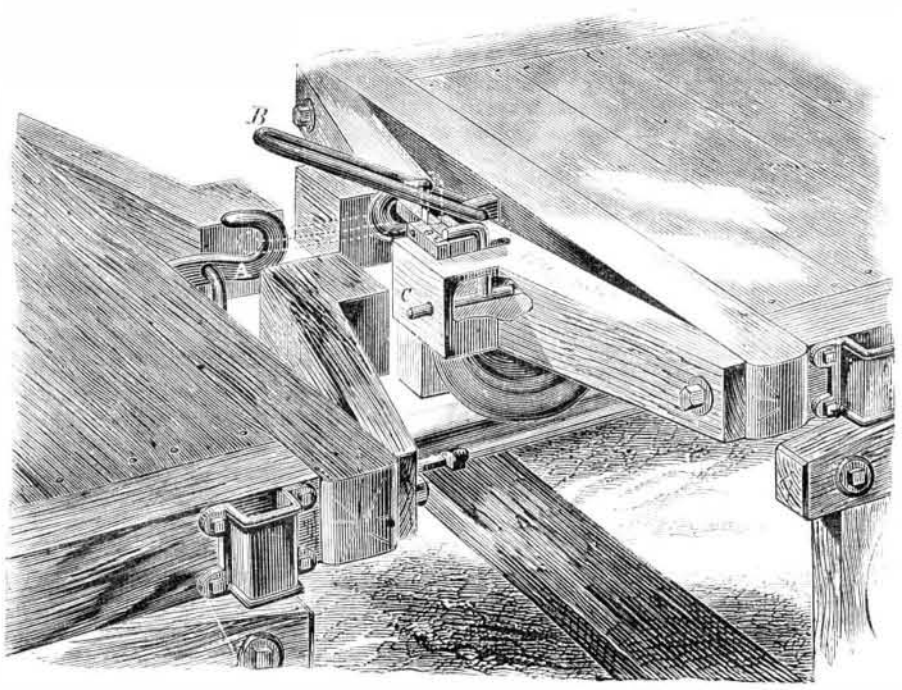
AMERICAN INSTITUTE POLYTECHNIC CLUB.

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.