

less elaborate in decoration. He finds the frog a form common to them all, and so the cougar's or tiger's face. But the Mexicans usually sculptured a face or figure, head downward, upon the external aspect of each leg of the tripod, a feature seldom or never seen in this ruder work. They also ornamented their jars with hieroglyphic inscriptions (which have never been deciphered, by the way), and the latter have no place in the collection of Mr. Lamson, with a single doubtful exception. Professor Putnam did not attempt to assign any special age to these remains.

**THE UNITED STATES DRILLING SCOW, EAST RIVER.**  
 [Continued from first page.]

and steadying the drills while at work had proved inadequate. At this stage of the undertaking the management of the East River Improvement was intrusted to Major-General John Newton, U. S. Engineer, whose first work was to devise means for meeting the difficulties which had defeated his predecessors. The result was the drilling scow, the construction and working of which is illustrated by the accompanying engravings.

The scow is at once a boat, a machine shop, and a fortification. Its great size, massive structure, and overhanging guard, faced with iron, were necessary for the protection of its works against collision. At first such nominal accidents were of frequent occurrence. In a little while it was demonstrated that the colliding vessels were sure to get the worst of the encounter, and since then the pilots have given the scow as wide a berth as possible. Still strictly unavoidable collisions are of almost daily occurrence, owing to the necessary position of the scow while at work, the narrowness of the channel, and the severity of the tides.

In the center of the scow is a well hole 32 feet in diameter, in which is hung a hemispherical dome of boiler plate on an iron frame. This dome, or caisson, is 30 feet in diameter, open at top and bottom, and carries a number of strong iron tubes for the protection of the drill bars. It is also furnished with a dozen stout legs, so arranged that they can be let go all at once, when one edge of the dome touches the reef to be operated on. The legs are held by self-acting cams, so that, when extended to fit the uneven surface of the reef the dome is to stand on, they are securely locked, and thus support the dome in an upright position. The hemispherical shape was chosen for the dome on account of its superior stability under the action of the fierce currents. By converting the transverse pressure of the moving masses of water into a radial pressure downward, the dome is sure to stand firm.

The dome, as shown in the cross section, is attached to the scow by chains connecting with the hoisting engines, by which it is raised and lowered. The drill engines are carried by the stout framework inclosing the well, and are so mounted that they can be placed directly over such drill tubes as may offer the best positions for drilling. Within the dome is another ingenious device, by which a drill tube can be brought directly over any point on the bottom within the 15 foot circle of the upper opening of the dome. It is rarely possible and never necessary to drill as many holes as there are drill tubes provided; the larger number—20 are in the outer circle of the dome, and an unlimited number possible in the inner circle—being furnished to make it easy to locate the drill holes to the best advantage. The drills and drill rods are together about 10 feet long, and weigh between six and seven hundred pounds each. The cutting edges of the drills are in the form of a cross, and are 5½ inches in length. Originally the drill holes were 3½ inches in diameter, but the speed of cutting was found to increase with the enlargement of the bits, and now the larger size is used exclusively. The cutting is done by the impact of the falling drill bar, which drops from two to three feet. The drill rods are connected with the piston rods of the drilling engines by ropes, a flexible coupling being necessary on account of the liability of the scow to slight movements caused by shifting currents and frequent collisions, while the dome is fixed. The length of the rope is regulated by a feed gear, to suit the changing level of the scow due to the rise and fall of the tides. The operations of the scow are grandly simple. With the

dome swung by the chains the scow is anchored over the rock to be operated on, head to the tide, by stout chains fore and aft, and side anchors to insure steadiness. The anchor chains are strong enough to withstand not only the stress of the tides, but also the shock of colliding vessels. The site of the blast has already been fixed by the divers, and the scow, when in place, lies so that the dome is directly over the spot selected. Then the dome is lowered, and as soon as it touches bottom the legs are let go and the dome is unhooked from the scow. The diver next selects the most suitable points for drilling, and the drill tubes are brought into position, if within the upper circle of the dome; if not, the nearest available tubes are selected. The drilling engines are then placed, the drill rods are inserted, and the work is

the dome is raised clear of the bottom, and the scow is swung out of position or taken to some other reef.

The charges, inclosed in tin cases about 10 feet long and 5 inches, tapering to 4 inches, in diameter, are conveyed to the site of the blast on a small scow. Guided by the main line of the stoppers the diver, at slack water, descends to the first hole; the charge is passed down to him and inserted; then he proceeds to the next in order, and so on until all the drill holes are charged. In each cartridge is an exploding fuse, from which a fine wire leads to the exploding battery on the scow. When all the charges are down the diver returns to the scow, which is withdrawn to the proper distance and the blast is fired. The visible effect of the blast is the elevation of the water over the reef like a huge dome, which instantly bursts, sending up a huge tower of foam, water, and rock fragments from 50 to 200 feet in height. The appearance varies, of course, with the depth of water, the number of charges, and the amount of explosive used. The prevailing type under favorable conditions is that figured by our artist.

As many as twenty-one holes have been simultaneously fired on Diamond Reef, with a total charge of eleven hundred and forty pounds of nitro-glycerine. During recent operations the location of the dome has been determined by sextant observations, and its separate position and the position of each drill hole have been carefully laid out on a special plan of the reef. At first, the object being to remove with the greatest dispatch the more prominent points

of the reef, no attempt was made to secure a uniform removal of the rock. Latterly the work has been conducted by face blasting, with a view to the most complete and economical breaking up of the reef and to facilitate the removal of the rock, which is raised by grappling.

The scow has been used for the removal of the rocks and reefs known as Diamond Reef at the mouth of East River, between Governor's Island and the Battery; Coenties Reef, six hundred yards northeastward, in East River; Pot Rock and the Frying Pan, in Hell Gate; Way's Reef, Shell Drake, and a rock opposite 125th street, Harlem River.

During the past three years, though idle much of the time for lack of appropriations, a considerable portion of Diamond Reef has been reduced to the twenty-six foot level at low water; Way's Reef has been reduced from seventeen to twenty-six feet; Coenties Reef from fifteen to twenty-five feet; and the Harlem River Rock from nine to fourteen feet. Considerable work has also been done on Pot Rock and the Frying Pan.

**MISCELLANEOUS INVENTIONS.**

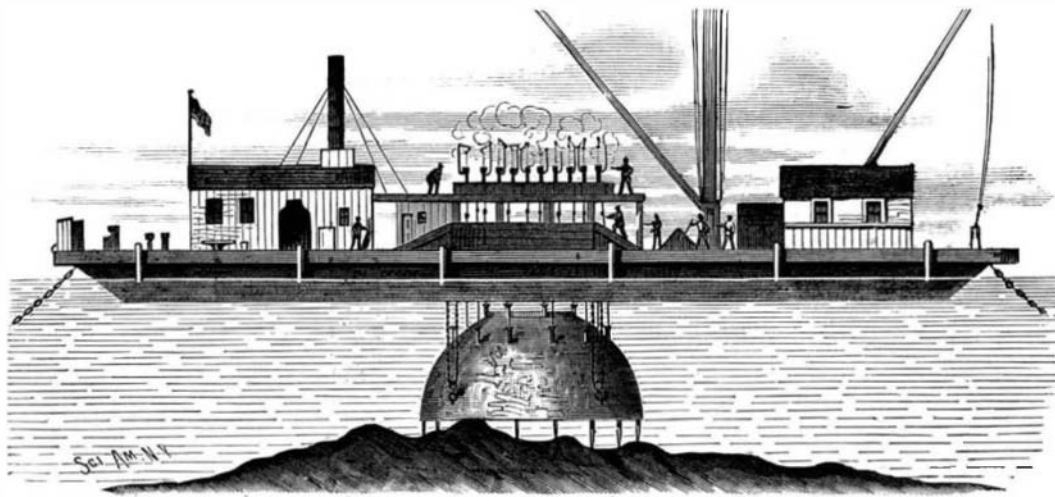
An improved window shade hanging, patented by Mr. Joseph Hemkeler, of Lowell, Mo., consists in combining with the curtain roller a second roll hung in loops of flat belts that are attached at one end to the window frame and connect the flanged spools on the ends of the rolls.

An insulator for telegraph wires, formed of a piece of glass perforated longitudinally, and a screw adapted to the perforation and having a round head provided with a square mortise for securing a key or screwdriver for driving the screw home, and having at each end a rubber ring, has been patented by Mr. J. H. Bloomfield, of Concordia, Entre Rios, Argentine Republic.

Mr. John Sherreff, of Dedham, Mass., has patented an improved mail box, provided with rawhide bunters or protectors. Its body is composed of stout paper board or vulcanized paper or fiber.

An improved article of hard rubber manufacture, formed of strips or sheets of metal foil and caoutchouc, has been patented by Messrs. Daniel F. Connell, of Brooklyn, and Edward Fagan, of New York, N. Y. The strips or shreds are distributed through the rubber to give it increased weight and density.

Mr. Prince H. Foster, of Babylon, N. Y., has patented an improved sanitary mask to be worn in sick rooms and in other places where persons may be exposed to infected or malarial air. It consists of a mask made of rubber or other suitable material, and secured air-tight to the head of the wearer by an elastic band. It is provided with valves and filters at the nose and mouth, and has transparent eye plates or windows.



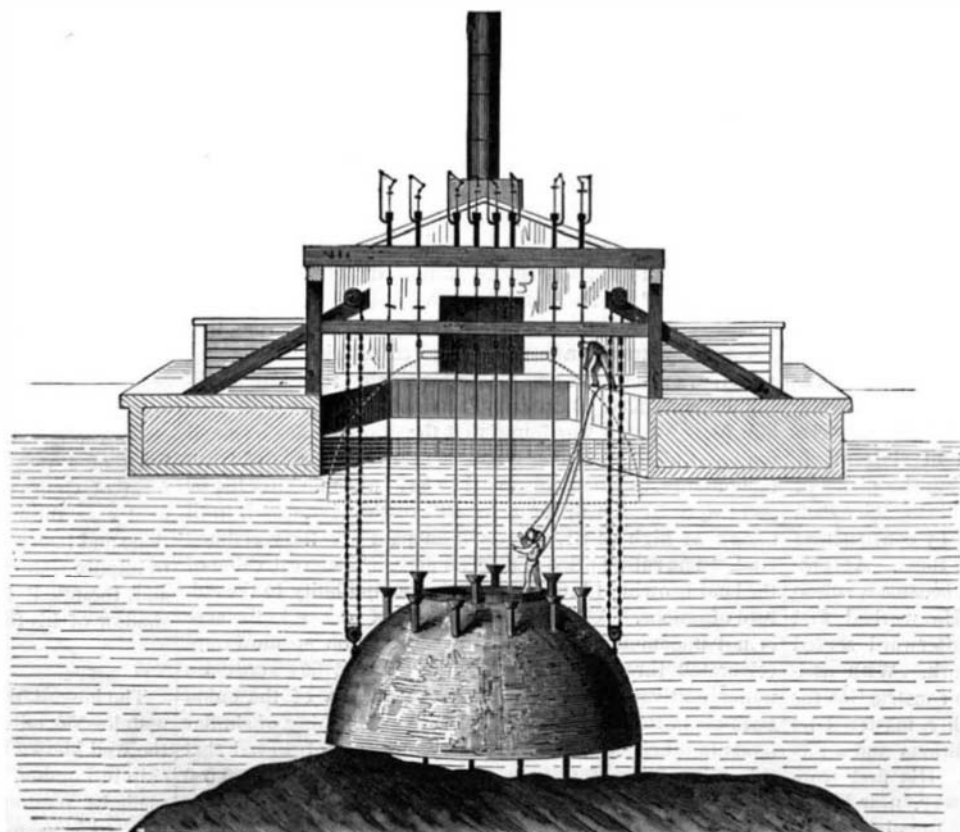
**SCOW AND DOME IN POSITION.**

set going. The average penetration of the drills during a shift of 8 hours is from 7 to 10 feet, according to the nature of the rock. The average penetration for each hole ranges from 8 to 12 feet. One sharpening of the drill bit usually suffices for a hole.



**THE DOME.**

The drilling completed, the diver descends and stops the holes with wooden plugs to keep them from filling with sand and mud, connects the plugs by cords, and the last one by a line to the surface. Then the chains are hooked to the dome,



**CROSS SECTION OF SCOW, SHOWING WELL HOLE.**

### Wire Rope Transportation at the Reading Iron Works.

The *Iron Age* describes a system of wire rope transportation at the Reading Iron Works, which is expected to do away with much expensive handling and carting, and will offer a good example of a system which is rapidly gaining ground in Europe, and has been repeatedly used with success both in Eastern and Western States, although not to that large extent which its advantages warrant. At the Reading Works there will be three lines of transportation, the first of which will be 1,000 feet in length. It will be used exclusively for conveying pipes manufactured in the establishment to a siding along the Reading Railroad, 90 feet in length, where the pipes will be loaded upon cars. The second line will be 800 feet in length, and will be used for the transportation of anthracite coal, while the third line will be 300 feet in length, and will carry soft coal and pea coal to the rolling mill. The trestles vary from 20 to 45 feet in height. The first line is supplied with two terminal and eight intermediate trestles, the second line with two terminal and four intermediate trestles, and the third line with two terminal and one intermediate trestle.

The main line will be equipped with an endless steel rope,  $1\frac{1}{4}$  inches in diameter, which will run over sheaves or large wheels located upon the trestles, the rope fitting firmly into grooves in the circumference of each wheel. Grooved trucks will be fastened upon the chain, from which will be suspended hangers to support whatever articles may be transported. As this line will be used for carrying pipes almost exclusively, two trucks will be arranged in such a manner as to carry the pipes suspended upon the hangers. When the trucks reach the railroad siding they will be run from the endless rope upon the siding by an ingenious contrivance. From the center of the track to the center of the wheel the gauge is the same as from the center of the rope to the center of the wheel. Upon the truck reaching the siding, the rope shoots at an angle, and the truck is run upon the railroad tracks with its freight. The moment the wheel strikes the rail, the rope slips down and leaves the truck standing upon the rail. The truck is then disengaged from the rope and unloaded. While one line of loaded trucks is being conveyed from the pipe mill to the siding, a line of empty ones is being returned.

The operations of the other lines for carrying coal from the railroad sidings and dumping places to the pipe and rolling mills are of a similar character. The large sheaves, or wheels, are 8 feet in diameter, and the small sheaves are 2 and 3 feet in diameter. The coal will be carried in buckets suspended from trucks fastened to chains. The power used in operating the endless ropes will be transmitted from a stationary engine by the line of shafting in the flue-cutting department of the pipe mill.

### Poison for Rats and Mice.

Carbonate of baryta has been found to be a most efficient poison for rats and similar vermin. Indeed, at a special series of trials by the Zootechnical Institute, in connection with the Royal Agricultural College, at Proskaw, this substance was found to be more efficacious than any other. It occurs as a heavy white powder, devoid of taste or smell. In the Proskaw experiments it was mixed with four times its weight of barley meal, and pellets of the paste were introduced into the holes of the rats, house mice, and field mice. A small quantity proves fatal. It appears to cause immediate and complete paralysis of the hind extremities, so that it may be assumed that mice eating of it in their holes will die within them, and so not prove destructive in their turn to domesticated animals that might otherwise devour the carcasses. It was found in practice that neither fowls nor pigeons would touch the paste, either in its soft state or when hardened by the sun; so that its employment is probably free from danger to the occupants of the poultry yards. Some rabbits, on the other hand, that got access to the paste ate heartily of it and paid the penalty with their lives. Next to the carbonate of baryta paste the ordinary phosphorus paste proved most destructive, and this, it was found by experiment, is more attractive to the mice in a soft form than when hardened into pills. But it is considerably dearer than the baryta preparation, an important factor in the calculations of the farmer who has to wage war against rodents on an extensive scale.

### Albert Weber.

Albert Weber, the piano manufacturer, died on the morning of June 25th, at his residence in this city, after a lingering illness. Mr. Weber was born in Heiligenstadt, Bavaria, in 1829, and came to this country a youth of sixteen. It was his intention to make a living by teaching the piano or by obtaining a position as an organist, but his sagacity soon taught him that there was more to be made by constructing musical instruments than by playing upon them. Accordingly, he abandoned his earlier notions and became a voluntary apprentice to a piano manufacturer. He worked first with Van Winckle, of Port Chester, and afterward served an apprenticeship with Holder, of New York. With assiduity he devoted himself to the art of piano construction for about six years, in which time he thoroughly mastered its details and intricacies, and then, being ambitious and aspiring, set up in business on his own account. His first store was a little music shop on West Broadway, near White street. Later, he moved further up West Broadway, and opened a store near the corner of Lispenard street. During these years his business continued to increase, and in 1864

he moved to more extensive premises at the corner of Broome and Crosby streets. About this date he began to be known to the musicians of this city; teachers and players flocked to his store, and his pianos came rapidly into favor. In a few years he was well known in professional circles, and in 1869 his business had assumed such proportions as to render another step up town both expedient and necessary. In that year, therefore, he moved to the extensive warehouses on Fifth avenue, which have since been occupied by the firm. Here his business reached splendid proportions.

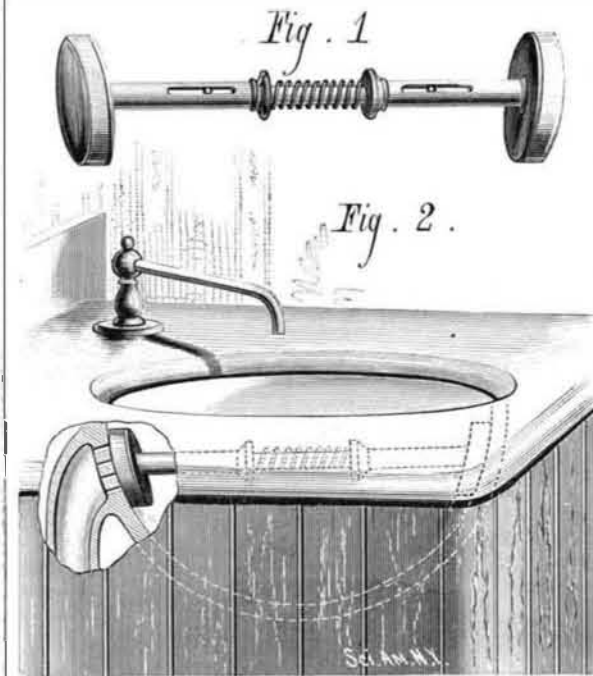
While he was in Broome street he built, in 1868, the manufactory in Seventh avenue, which, in 1876, was enlarged to a frontage of 262 feet on Seventeenth street, and of 204 feet on the avenue. About 400 men are regularly employed, and the yearly product is now between 1,800 and 2,000 instruments. Mr. Weber gave his personal supervision to the manufacture of 14,500 pianos.

About a year ago Mr. Weber was forced by declining health to transfer the management of the business almost entirely to his son, Albert Weber, who had been educated in all its departments, and who now inherits it.

### NEW SEWER GAS STOPPER.

The accompanying engraving represents a simple and apparently efficient device for preventing the entrance of sewer gas into a house through the overflow pipe of a washbasin. Its construction will be understood by referring to Fig. 1, and the manner of applying it is shown in Fig. 2.

The stopper consists of two longitudinally slotted tubes, each provided with a curved elliptical cap carrying an elastic pad. Each tube is provided with a flange at its inner



WEMPLE'S SEWER GAS STOPPER.

end, and both are placed on the rod carrying the spiral spring that forces the two tubes apart. The stopper is applied to the basin by pressing the two tubes toward each other, placing one pad over the overflow holes, and then allowing the device to expand by the pressure of the spring. These stoppers are made of different lengths to suit basins of various sizes.

Further information may be obtained from the inventor, Mr. Christopher Y. Wemple, Nos. 2 to 10 Worth street, New York city.

### A Great Swamp Reclaimed.

A correspondent of the *Times*, writing from Goshen, N. Y., tells how 500 acres of pestilential marsh east of that village have been converted into the richest of farm land through the wisdom of one man. The reclaimed swamp is crossed by the Erie Railway, and was one of the most serious obstacles encountered by its engineers. To construct a foundation for the road bed it was necessary to drive a multitude of piles to the depth of 100 feet, and cover them with hundreds of thousands of loads of stone and dirt; the building of one mile of road across the swamp costing more than any other five miles of the road from Jersey City to Piermont.

Twenty years ago a farmer conceived the idea of draining a portion of the tract and making it tillable soil. By ditching, he reclaimed 60 acres. The first acre he bought cost him \$1. When it was found that the draining left as a soil the finest of black muck, composed almost entirely of vegetable mould, the price advanced to \$17 an acre. After the 60 acres were reclaimed, the price still further increased, until to-day as high as \$1,000 has been paid for the reclaimed land. The ruling price is \$500 an acre. The great value of the land is owing to its extraordinary adaptability to the culture of onions. A crop of 800 bushels of onions to the acre is not uncommon, and the Greycourt onion meadows are celebrated throughout the country. About 300 acres are under cultivation this year, and the success of the onion business in the meadows has led to the reclaiming of similar lands in other parts of the country, until it is believed that the onion crop of Orange county will amount to 500,000 bushels this year. The average price received by onion raisers is \$1 a bushel. The average yield is 300 bushels to the acre. The crop is almost invariably sold for cash as soon as it is ready for market, and as it matures early in the season,

the farmer is allowed abundant time to keep his land in the condition necessary to its productiveness.

There are 17,000 acres of swamp land in the Walkkill Valley, which will eventually be converted into this muck soil, which is the best in the world for vegetable raising. The land, after draining, is tilled with the slightest labor. Onion seed is sown by a hand drill, and the greatest labor is in keeping down the weeds after the plant begins to grow. This work is done by boys and girls. Hundreds of these may be seen in the growing season on their hands and knees between the onion rows, pulling up the weeds that the rich soil calls rapidly into existence. The weeding requires skill and care, as the soil is so loose that there is constant danger of tearing up the young and tender plants by their roots, or removing their covering of earth. The red onion is the variety grown most successfully, as the dark muck gives the white onion a dirty hue, which injures its marketable value. When the onion tops are at the height of their growth, their odor fills the air for great distances around.

### An Inscribed Cavern in Wisconsin.

The *Chronicle*, of La Crosse, Wis., of June 15, prints half a dozen rude engravings, said to be exact tracings (reduced) of some of the pictures on the walls of a small cavern recently discovered in Barre township, some miles from La Crosse. The cave is described as thirty feet long by thirteen wide, and at its largest dimensions about eight feet high above the sand, which is from three to six feet deep. Upon the walls are very rude carvings representing men, animals, arms, implements, and something that appears to be hieroglyphics. One picture represents a man with bow and arrow, shooting at an animal. There are three buffaloes and one rabbit represented; three animals which, if large, must have been hippopotami; one that appears to represent the mastodon, and one moose, quite plainly delineated. There are eight representations of what are either canoes, much carved, or, which they more resemble, hammocks. One sketch of a man is quite plain. He wears a kind of chaplet, or crown, and was probably chief of his tribe or clan. There are many fragments of pictures where the rock has decomposed. It is coarse, soft, white sandstone. On one side there is a space about two feet high and two and one half feet into the wall, that has in time decomposed and fallen out. Above are the upper fragments of pictures and below the lower, showing that they were made when the rock was entire. From the depth to which the decomposition had reached in a dry and dark cavern, they must have been quite ancient.

These carvings, as copied by the *Chronicle*, are such as are commonly made by savages the world over. The alleged mastodon looks more like a hog, while the hippopotamus might be any square muzzled animal. The *Chronicle* says: "Every one who has visited the spot so far has come away convinced that the cave far antedates anything short of the ancient cave dwellers, and it needs only a sight of the interior of the room to convince the most hardened skeptic that there is no possibility of humbug." Among the visitors named are Dr. H. G. Miller, who, it is said, has made careful studies of the remains of the mound builders; and Hon. Hugh Cameron, who is described as a well informed geologist. The latter pronounced the discovery as a very important one. This, we take it, will depend entirely on the correctness of the conjecture that some of the animals represented are the prehistoric creatures named.

### New Diseases.

Professor Winckel, the Director of the Royal Lying-in Institution at Dresden, has reported to the Congress of Children's Doctors, lately held in Berlin, observations upon a mysterious children's disease, which he had an opportunity of clinically studying in his own institution. An epidemic broke out toward the end of March. Of 23 children attacked, 19, or 82 per cent, died, and the average duration of illness in the fatal cases was 32 hours. The illness began with a sort of sudden stupefaction of the children. The respiration became hoarse, accompanied with groaning and occasional foaming at the mouth. The change in the blood was remarkable. Dr. Winckel made incisions in some cases, but it was only by using pressure that he was able to squeeze out any blood. It was a thick, brown-black fluid, of the consistency of a sirup. The body became flaccid, the liver much swollen; presently convulsions supervened, during one of which the child expired. The President of the Congress, Privy Councilor Dr. Gerhardt, of Würzburg, suggested that this new disorder should be designated "Winckel's disease." Another disease has become apparent in the heart of a very crowded portion of London. It is a new form of Cyprus fever, and a diagnosis of a recent malignant case shows the patient to be suffering from hallucinations and lowered vitality. The faculty ascribe the disease to impure water, and have given it the name of *detephobia*, and, though it is seldom fatal, the sufferer remains but a shadow of his former self.

### Weston's Walk.

The longest distance ever made in a six days' walking match—550 miles—was accomplished by Edward Weston, the well known pedestrian, in the contest for the championship in London, June 16-21. The best previous record was made by Weston's opponent, Brown, in April last, when he covered 542½ miles. In the last contest Brown broke down on the third day, and made, in all, only 453 miles. Weston's daily records were respectively 123, 97, 93, 77, 83, 77 miles.