

A CYCLONE IN NEW YORK STATE.

A cyclone is a horror which we are apt to consider indigenous to the West, as far as this country is concerned. Fortunately, in the East we rarely suffer from such terrible manifestations of the power of wind, but on September 26 a funnel-shaped cloud appeared out of Lake Ontario a little before 4 P. M., and, gathering force as it came from the lake, swept over the Niagara peninsula from northwest to southeast. Running parallel to the Welland Canal, it cut a swath 300 feet wide from lake to lake, and did an incredible amount of damage, besides killing five people and injuring many others. The section of the country involved includes Tonawanda, in New York State, and Merritton, in Ontario, Canada, where the damage was the greatest. In Tonawanda the tornado demolished houses, uprooted trees, overturned freight cars, and swept a clean path several hundred feet wide for a distance of ten miles. Our engraving shows some of the wrecked freight cars at Tonawanda, showing how box and coal cars were wrenched from their trucks and thrown off. Tonawanda is the great center of the lumber industry, so that naturally the damage to the lightly constructed wooden buildings was considerable. Thousands of feet of pine were swept into the river. After passing over Tonawanda, the tornado took a southeasterly course, and visited small towns further on. While crossing from Grand Island to the main shore, the tornado formed a waterspout in the Niagara River fifty feet high. As it swept east it destroyed buildings right and left; telegraph poles were demolished by the thousand.



THE WORK OF THE CYCLONE AT MERRITTON, CANADA.

As already stated, Merritton was the greatest sufferer by the cyclone. It is a manufacturing town, one and one-half miles from St. Catharines, Canada, on the Welland Canal. There are two large paper mills and a cotton mill there. The two buildings of the Lincoln paper mill were destroyed. The roof was picked up, the walls were smashed in, and the heavy machinery went tumbling through the floor. Eighty employes were at work, and it was a miracle that only one person was killed. Over \$150,000 damage was done to the two buildings of the paper mill. The ward schoolhouse, containing seventy-five pupils, was overthrown; one girl was killed and a score were badly injured. Twenty children were injured in another schoolhouse. "Orange Hall," the local home of the Orangemen, was razed to the ground.

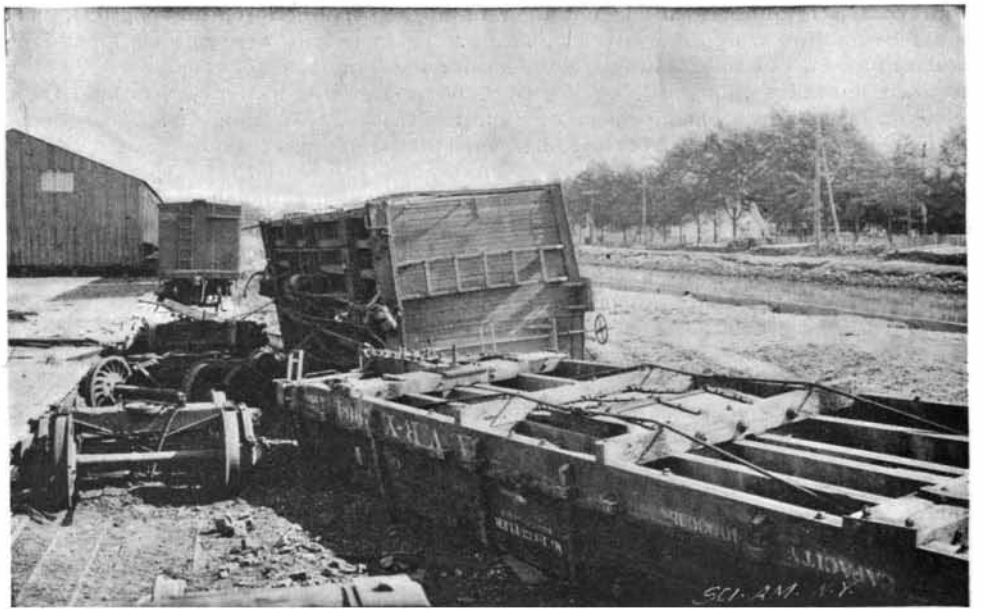
Our engraving shows the terrible destruction of the cyclone. In front are the ruins of Orange Hall, the schoolhouse in which the child was killed is in the background to the left, and the chimney of the Lincoln paper mill is shown to the right. Another engraving shows the house of John Gardner, showing the enormous power possessed by the cyclone, which in a moment turned a substantial house into kindling wood, and also wrecked a brick house. The Presbyterian church was completely destroyed. The spire of the Episcopal church was torn down and the power house of the Acetylene Gas Company was also wrecked. In all twenty buildings at Merritton were destroyed, and it was thought the loss would be \$225,000. The cloud took a zigzag course through the town near the paper mill, where there were several cars loaded with paper. They were tossed into the mill race and the air was filled with flying paper. Some bits were picked up five miles from Merritton. At Grantham the storm played several tricks. One house was blown down and a red hot stove picked up and carried across the road. A baker's wagon at Merritton was picked up

and the boy driving was carried sixty feet and deposited in the street. St. Catharine's also suffered greatly. The cyclone lasted but five minutes at Merritton and its approach was watched by many of the townspeople. Outside of the tornado belt the sun was shining brightly. A cyclone of this nature has never been known in this region before. The cloud, its appearance and its method of working, as well as the devastation which it wrought, are all identical with the cyclone of the West.

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The Telephone Kite.

According to the journal *Electricity* some recent experiments have been made in England, in which a kite



FREIGHT CARS WRECKED BY A TORNADO AT TONAWANDA, N. Y.

until it was without difficulty dropped on the deck of H. M. S. "Dauntless," where it was secured and attached to a telephone apparatus. In this way vessels that are perhaps two miles apart can be brought into telephonic communication, and when no longer needed, the kite and telephone wire are reeled back to the first vessel without any loss. In the present case the experiment lasted four hours, during which time the kite remained suspended, held in place by the two wires and communication between the two vessels was uninterrupted.

It would seem that such a method of communicating between the shore and a vessel to windward wrecked in the breakers would sometimes be as useful as the Francis life-saving apparatus. The kite telephone, so called, would prove especially valuable at nighttime. The same method would seem to be as practicable for carrying a telephone wire over a difficult country or forest as over the ocean, and probably as useful in war times as in time of peace.

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Rats in the Azores.

A resident of Fayal, says the *Revue Scientifique*, complains of the abundance of rats and rabbits. The rats multiply fast, and make all sorts of depredations, not only within houses, but in the fields and gardens. They attack a great number of edible fruits, such as bananas, oranges, and grapes; they infest granaries, houses, and fields. Among other depredations, the rabbits have attacked a field of tea plants, and of 4,000 vigorous shoots that were set out by the proprietor, they have destroyed 3,988 completely, leaving him 12 by way of consolation. The farmers are beginning to ask what they shall do. Shall they import the mongoose? The example of Jamaica makes them hesitate. And still another example in the Azores is of a kind to render them cautious in matters of acclimatation. The pigs there have been allowed to run wild and live in a state of freedom; the result is that imported partridges have almost entirely disappeared, the young having been eaten by the swine. It is thus difficult to tell what to do, and meanwhile rats and rabbits are abandoning themselves to all sorts of excesses.



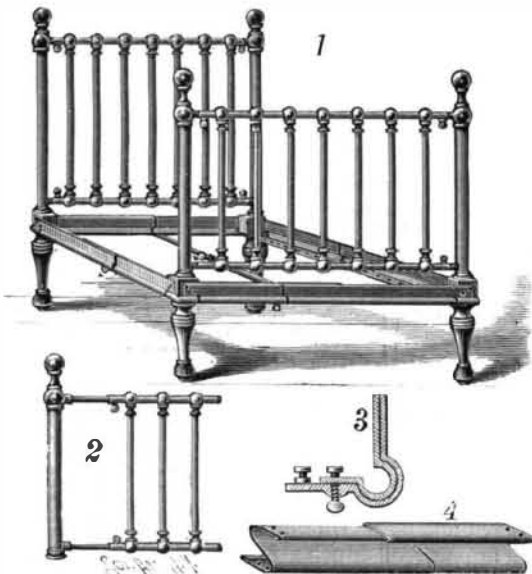
HOUSE COMPLETELY WRECKED BY A CYCLONE AT MERRITTON, CANADA.

Cross Lighting.

Some traditions die hard, being accepted without examination by nine persons out of ten and by all who are in or under authority and, like officials generally, opposed to, or suspicious of, innovation. Among these is the belief in the hurtfulness of cross lighting. This method of lighting would seem only to be held injurious in schools, for in our own houses we are only too pleased if we can have windows on two or more sides of a room. Even in Germany, where statistics and experimental investigation pervade every department of administration, and where in each detail the executive is guided by an order in council somewhat inappropriately called an "Erlass," we find cross or double lighting still expressly condemned. Yet Cohn and Förster, Javal and Ferrand, Rumbold and a Royal Commission on School Construction have urged the groundless nature of the prejudice. Provided always that the eyes are not dazzled and that no shadow falls on the reading or writing, it is impossible to have too much diffused daylight or its artificial equivalent. The loss of intensity with increasing obliquity of the rays of light is acutely felt in wide rooms, especially when not high in proportion, on the side opposite the windows; whereas if there be windows or lights on each side, the intensity of illumination is equalized and its total amount doubled. It is only necessary that that coming from the right should be naturally or artificially the weaker, as by having the windows north and south or by filling those on the right with clouded glass. Windows in front are always objectionable, but light from behind, if not so strong as to cast a shadow, can but serve to increase the illumination derived from the proper quarter. As Cohn and Förster long since pointed out, reading or other work demanding clear but effortless vision is in the open air when the sky is overcast a real luxury. Under these circumstances the light is ample but shadowless; it comes from everywhere, but from no one quarter more than from another. The most perfect artificial illumination conceivable is that obtained by Hrabowski's arrangement of hemispherical milk glass reflectors with prisms and mirrors by which the light of an electric lamp is diffused equally throughout the building, though the source is hidden from view. The light is photometrically equal to that of a clear summer day and as free from color; it is almost shadowless and is, in fact, superior to daylight in not being liable to fluctuations, although its intensity can be regulated at will.—London Lancet.

A NEW EXTENSION BED.

An extension bed has been patented by Alfred W. Furnival and Henry Martin, of Second Avenue, Astoria, N. Y., which may be adjusted in length and width to meet various requirements. With this object in view, the side and end rails are made in two parts adapted to slide one upon the other. As indicated in the cross section in Fig. 3, these rails are constructed of plates so bent as to form vertical and horizontal flanges which are united by a bulb. The rail sections may slide longitudinally, but are prevented from being laterally displaced by the peculiar construction of the bulb. By means of a screw, the two parts of each rail may be held in any desired position. To the rails corner-blocks are secured and provided with legs. Corner-posts are carried by the blocks and have adjustable connection with the head and foot pieces. As shown in Fig. 2, the head and foot pieces are composed of hor-



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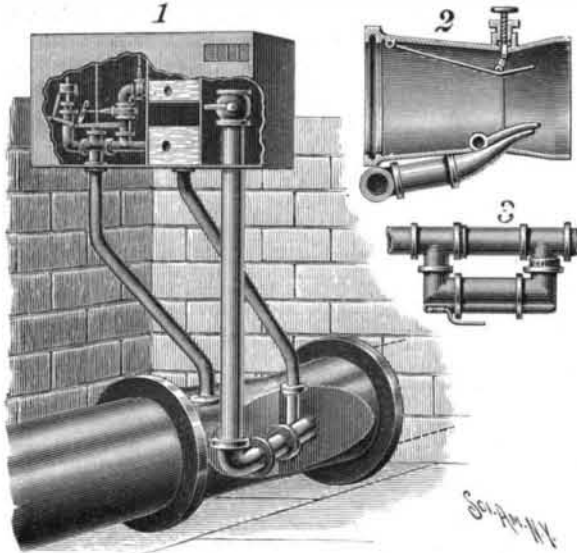
izontal tubes and vertical connecting rods. The horizontal tubes slide over rods fixed to the corner posts and are held in any desired position by means of screws. The springs for this bed are shown in perspective in Fig. 4. These consist of reversely curved plates adjustable longitudinally and rolled over or beaded to prevent lateral displacement. The springs are held within the bed by means of holes engaging pins on the side rails, and are supported at their central portions

by means of a rod made of telescoping sections and extending between the end rails.

Among the many advantages claimed for this bed are its structural firmness and its ready adjustability to conform with the accommodations afforded by various rooms. The construction of the springs is noteworthy for the novel means employed to prevent sagging of the central portions.

AN APPARATUS FOR PURIFYING WATER.

The methods usually employed in purifying water require costly pumping and filtering stations and



McELROY'S APPARATUS FOR PURIFYING WATER.

special machinery. It is the purpose of an invention patented by the designing engineer of the Brooklyn Water Works, Mr. Samuel McElroy, 170 Broadway, New York, to supersede these expensive appliances by providing an apparatus in which the force of gravity becomes the agent of applying air or antiseptic solutions to the water running in a conduit.

In the line of the conduit the inventor places the induction valve shown in Fig. 2, the casing of which is contracted between its ends, so as to produce an increased velocity of water in the throat thus formed. This valve is further provided with inlets for the entrance of air and of antiseptic gases or solutions, and with a deflecting plate adjusted by a screw rod to promote the increased velocity of the water. A casing, as shown in Fig. 1, is placed near the induction valve and is provided with an air chamber properly connected with an inlet to the induction valve and with a check or stop valve to guard against reactions. The casing is furthermore provided with a solution chamber and with a mixing chamber also connected with the induction valve and guarded by proper check and stop valves. The solution and mixing chambers supply the antiseptic gases as they are required. A coil pipe is applied to the conduit as shown in Fig. 3, for the purpose of collecting the organic matter with which the water may be impregnated.

In operation the water flowing through the conduit will produce a draft which draws through their respective pipes the air from the air chamber in the casing and the antiseptic solutions stored in the solution chamber. The impurities of the water coming into contact with these corrective agents will be destroyed or neutralized.

Among the advantages claimed for this apparatus are its automatic action and its cheapness.

The Slime on Fishes.

A fish just taken from the water, if handled, says The New York Sun, is found to be slippery and coated with slime. All fishes, the meanest and the noblest, killifish and shark, shad, salmon, and trout, wear this slime. They could not exist without it.

The slime is secreted usually in a continuous series of ducts with numerous openings, arranged in a line extending along the side of the fish. Some fishes have one line on a side, some have five or six. The lines may be plainly visible, and in some cases appear to be a marking on the fish. More often they are not observable at all. Some fishes store this secretion in pores distributed over the whole surface of the body, the larger number, however, in pores in lateral lines. There are also pores for the secretion of mucus or slime in a fish's head.

The slime is exuded through the divisions between the scales to the outer part of the body, over which it spreads, forming a sort of outer skin or covering, transparent, and having elasticity and tenacity, and often considerable body. It would not be remarkable for a fair sized fish, say a fish of two pounds weight, to have a coating of slime a thirty-second of an inch in thickness. Fishes vary greatly in the amount of slime which they secrete; the eel will suggest itself as one that is very slimy.

The fish's slimy coating reduces its friction when in motion and helps to increase its speed. It aids in pro-

tecting the scales from injury, being of sufficient substance to serve in some measure as a cushion. The slimy covering makes the fish hard to hold, and so enables it the more readily to escape from its enemies. It is sometimes repugnant to other fishes, which are repelled by its odor. It is the slime from the fishes handled that makes the angler "smell fishy" as the expression goes.

A most important function of the fish's slimy coating is to protect it from the attacks of fungus, a form of plant life found in all waters, salt and fresh, including the purest. The slime covers the entire exterior surface of the fish, including the fins. Fungus does not attach to the slime; but if the fish were to be injured so that there was upon it some spot uncovered by the slime, upon that spot some minute fragment of fungus, so small as to be scarcely more than visible, would be likely to lodge. Once lodged, the fungus is reproduced very fast.

Fish sometimes recover from attacks of fungus, but much more often they do not. The fungus displaces the skin, inflammation is set up, and the place attacked becomes practically a sore. With its continued growth the fungus may cover the side of the fish and extend over the gills and finally kill it.

THE "SENTINEL" BICYCLE-LOCK.

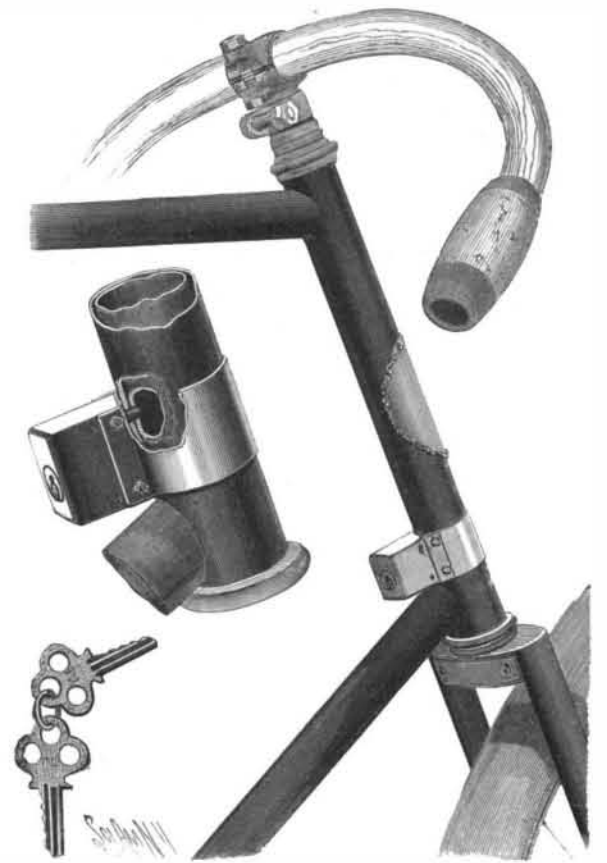
An ingenious bicycle-lock, which will no doubt find very general favor with wheelmen, is now being introduced by the Yale & Towne Manufacturing Company, of No. 9 Murray Street, New York.

The lock, as shown in the illustration, is intended to be permanently fastened to the steering-head of a bicycle, and is designed to hold the front wheel at an angle to the frame, thus rendering it impossible for the bicycle either to be led or ridden away.

The locking mechanism is that of the well known Yale pin-tumbler type, which makes the number of key changes practically limitless, thus absolutely precluding the possibility of other keys being in existence which may fit the lock.

We learn from the manufacturers that, during the past summer, a number of these locks have been in use by riders, and that it is their unanimous testimony that they are of the greatest service.

The lock is of neat design and finish, and, to quote one rider, "no better insurance can be put on a wheel."



THE "SENTINEL" BICYCLE-LOCK.

It is thought that it will be extensively placed on bicycles by manufacturers, as a special feature for the coming season; but it may be easily applied to any wheel. While shown in the present cut attached to the head with a separate band, it may also be used directly behind the name plate; the latter being employed as a band to secure it to the wheel.

We hear that one of the largest bicycle manufacturers in the country, having an extensive export trade, has undertaken to introduce the lock throughout Europe.

A VELOCITY of 8.3 or 10.6 kilometers per second is obtained for the wave front of the Indian earthquake of June 12, 1897, the two values being obtained by means of the two times recorded for the start of the earthquake at Calcutta. The velocity of the propagation of the maximum inclination of the earth's surface to the vertical comes out 2.61 or 2.76 kilometers per second.—G. Agamennone, in Science Abstracts.