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ERICSSON'S REVOLVING TURRETED WAR SHIP.

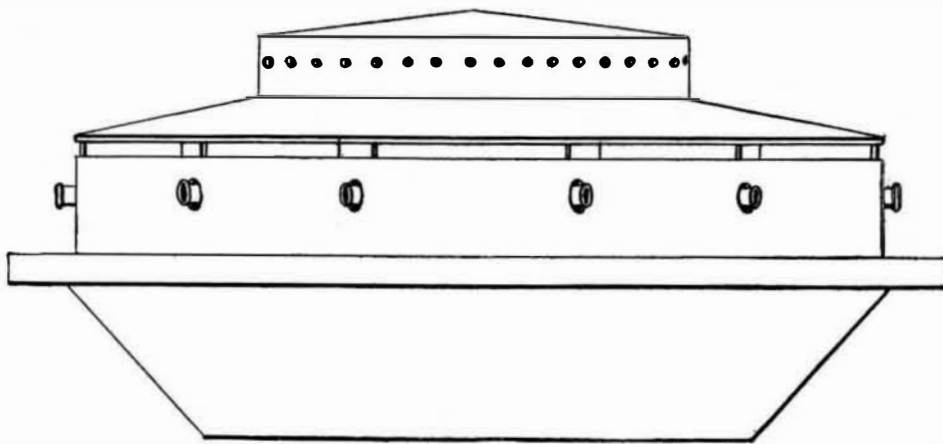
Nearly fifty years ago a young man named Theodore R. Timby, hailing from the village of Cato, Cayuga County, N. Y., filed in the Patent Office a caveat for what he termed a revolving metallic fort. Doubtless he thought the device was new, but it was in fact a very old idea, substantially the same thing having been described in 1805 in the *Nautical Chronicle*. A similar invention was also made about that time, or perhaps sooner, by Abraham Bloodgood of New York. Indeed, it seems probable that the ideas given in the *Nautical Chronicle* were derived from Bloodgood.

In the Transactions of the Society for the Promotion of Useful Arts in New York State, published in 1807, vol. 2, pages 230, 231, will be found a description and an engraving of Bloodgood's invention. This work may be found in the Patent Office library at Washington. We give from it the following description of Bloodgood's invention:

"A FLOATING BATTERY ON A NEW CONSTRUCTION.

"By the late Abraham Bloodgood.

"The model of this battery was exhibited to the society; with a verbal description only. The annexed plate shows an exact profile view of its body, the shape of which, as seen from above, is circular. It is to be connected at the center of its bottom with a strong keel, in such a manner that while the keel is held by cables and anchors in one position, the battery is made to turn round on its center. This motion may be given to it either by the tide acting on float boards, attached



to the body of the battery, by sails raised on its exterior parts, or by manual application. In this last way it may be effected by men in the hold, drawing on a lever fastened to a post fixed to the keel, and rising through a well-hole in the center of the battery. The strength of horses might perhaps be applied to the same purpose. The cables by which the keel is held are to be entirely under water and thus secure from an enemy's shot.

"The advantages of such a battery would be—

"1. The guns would be more easily worked than is common, as they would not require any lateral movement.

"2. Its rotary motion would bring all its cannon to bear successively, as fast as they could be loaded, on objects in any direction.

"3. Its circular form would cause every shot that might strike it, not near the center, to glance.

"4. Its motion, as well as its want of parts on which grapplings might be fastened, would render boarding almost impossible.

"5. The steadiness with which it would lay on the water would render its fire more certain than that of a ship.

"6. The men would be completely sheltered from the fire of the elevated parts of an enemy's ship.

"7. The battery might be made so strong as to be impenetrable to cannon shot."

In 1812 Colonel John Stevens, of New Jersey, proposed to construct an ironclad floating battery, which was identical in all its leading features with the circular battery. This odd craft was intended for harbor defense. It was to be a saucer-shaped vessel with a bomb-proof deck, and armed with a number of the heaviest guns. It was anchored by a swivel at its center, about which it was to be rapidly turned by a set of submerged screws driven by a steam engine. As each gun during its revolution came into the line of fire, it was discharged, and was reloaded before the completion of another revolution brought it into line again. The plan evidently resembled somewhat the Monitor in principle. This was probably the first ironclad of which plans were ever prepared.

January 18, 1843, Timby filed his caveat, which reads as follows, as certified by the Patent Office:

"To the Commissioner of Patents:

"The petition of Theodore R. Timby, of Cato, County of Cayuga and State of New York, respectfully represents:

"That I have made an improvement which I call a metallic revolving fort and am now engaged in maturing the same preparatory to my applying for Letters Patent, therefore I do therefore pray that the sub-

joined description of my invention may be filed as a caveat in the confidential archives of the Patent Office agreeably to the provisions of the act of Congress in that case made and provided, I having paid twenty dollars into the Treasury of the United States and otherwise complied with the requirements of the said act."

A description of the above improvement is as follows:

"My fort, when completed, will form a circle levelling about two-third of its diameter from near the bottom of the fort is open space, the first deck being near the bottom upon this deck, and at the extremity of the open space alluded to are placed two propelling figures, one opposite to the other. When used on the land the engines act upon a shaft, each which are connected or made fast to the deck mentioned; upon these shafts each is a flanged wheel resting upon a circular railway track underneath and otherwise independent of the fort. Above the deck mentioned are several others, each a proper distance above the other and each forming a circle within the bulwarks of the fort, and upon the decks are placed the cannon when used. When used on the water I place the fort, as already mentioned, on a circular hull with the anchor to be cast at center and water wheels in the place of flanged driving wheels.

"Washington City, Jan. the 17, 1843.

(Signed)

"THEODORE R. TIMBY."

No drawing accompanied the above statement, which is a mere suggestion of an idea.

The contract with the Navy Department for the construction of John Ericsson's first monitor was dated October 5, 1861. Her first memorable battle in Hampton Roads with the Merrimac took place March 9, 1862.

It was then that Timby seems to have woken up to the recollection of his old caveat, and now he comes forward as a claimant as the original and first inventor. The official records show that he applied for a patent May 27, 1862, and that it was rejected June 13, 1862, on the ground that the application presented no novelty, the references cited being English patent No. 715, granted in 1858 to Minton and Thomas, also Coles English patent No. 778, granted in 1859. Both of these patents show revolving metallic fortresses, and with all the appurtenances for construction and operation drawn in full detail.

Furthermore, Timby was, according to the official records, referred to the revolving battery of Bloodgood above mentioned, as described in the Transactions of the Society for the Promotion of Useful Arts. Timby then asked to have the rejection set aside in view of his caveat of 1843, and strange to say his request was complied with by the Patent Office, and a patent was issued to him September 30, 1862, with the following broad claim:

"What I claim as new and desire to secure by Letters Patent is,

"A revolving tower for defensive and offensive warfare, whether placed on land or water."

This was clearly a bogus patent, because the Patent Office had in its possession at the time of the issue the clearest evidence that Timby was not the original and first inventor of the revolving tower, as he pretended and claimed. The issue of the patent was an error on the part of the Patent Office, and there are reasons for the presumption that it was brought about by a combination of official and non-official trickery, and that, by means of the fraudulent document thus obtained, the Treasury of the United States and probably the pockets of certain private individuals were depleted of considerable money.

Be that as it may, from the date of the fraudulent patent to the present time, Timby has posed as the original inventor of the Monitor, and has endeavored, with some success it must be admitted, to make the public believe that he was in truth the original Jacobs.

In the ninth volume of the *American Cyclopaedia*, published in 1874, is an article by General James Harrison Wilson, upon the subject of ironclad ships, in which, among other vessels, a description is given of Ericsson's original Monitor, being the first vessel ever constructed carrying an iron revolving tower upon its decks. We quote from the article:

"The plan upon which she was built is known as the turreted or monitor system, and was invented by Theodore R. Timby, of Dutchess Co., New York. On January 18, 1843, he filed his first caveat for the invention in the United States Patent Office. His specifications were for a revolving metallic tower and for a revolving tower for a floating battery to be propelled by steam. . . . His patents covered the broad

claim for a revolving tower for offensive and defensive warfare, whether used on land or water. When therefore the monitors were to be built, the constructors at once recognized the validity of his claim, and paid him a liberal sum for the right to use his invention."

Perhaps in the next edition of the *Cyclopædia* the editor will take occasion to correct the foregoing and give the true history of the invention.

The long and short of the whole matter appears to be this: Captain Ericsson was the first to design and construct a war vessel carrying an armored revolving tower or turret; and he was unquestionably entitled to all the honors and emoluments that pertained to that great production of his genius.

TYROTOXICON.

A number of cases of poisoning from eating ice cream have recently occurred. On June 30 some forty people in the neighborhood of Third Avenue and Seventy-fifth Street, New York, were poisoned in this way, the cream having been purchased of a confectioner in the neighborhood. A few weeks previous to this, a man was poisoned by cream partaken of at a saloon in New York. He was confined in St. Vincent's Hospital for several weeks, and has since instituted a suit against the proprietor of the establishment where the cream was purchased. On August 18, some twenty-five guests at Hotel Berwick, Narragansett Pier, were poisoned from eating ice cream, and a number of them were reported to have been very seriously ill. Cases of poisoning from eating cheese and drinking milk have also been of sufficiently frequent occurrence to stimulate inquiry and experiment regarding their true cause. Among the most successful of these investigators have been Doctor Victor C. Vaughan and Doctor Frederick G. Novy, of the University of Michigan, who have made an exhaustive study of the nature of poisons which are introduced into the human body from without, and those which are generated within the body. They have recorded the results of their investigations and experiments in a volume entitled "*Ptomaines and Leucomaines*," in which is also given the results of the labors of other eminent chemists in the same field. Vaughan and Novy succeeded after a series of most interesting experiments in isolating tyrotoxin, and have cited a number of cases where it has been found in poisonous cheese, ice cream, and milk. Tyrotoxin, however, is but one of a number of basic poisons which these scientists have designated as ptomaines, and in order to convey a comprehensive idea of the place assigned to tyrotoxin, as well as ptomaines in general, in the chemistry of putrefaction, the following definition by Vaughan and Novy is given:

"A ptomaine is a chemical compound which is basic in character, and which is formed during the putrefaction of organic matter. On account of their basic properties, in which they resemble the vegetable alkaloids, ptomaines may be called putrefactive alkaloids. All putrefaction is due to the action of bacteria, and ptomaines result from the growth of these micro-organisms, the kind of ptomaine formed depending upon the individual bacterium engaged in its production, the nature of the material being acted upon by the bacterium, and the conditions under which the putrefaction goes on, such as the temperature, amount of oxygen present, the electrical conditions existing, and the duration of the process. Different ptomaines will be formed in decomposing matter freely exposed to the air and in that which is buried beneath the soil or from which the air is largely excluded. Even when the same ferment is present, the product of the putrefaction will vary, within certain limits, according to the extent to which the putrefying material is supplied with air.

"The kind of ptomaine found in a given substance will depend also upon the stage of putrefaction. Ptomaines are transition products in the process of putrefaction. They are temporary forms through which matter passes while it is being transformed by the activity of bacterial life from the organic to the inorganic state. Complex organic substances, as muscle and brain, are broken up into less complex molecules, and so the process of chemical division goes on until the simple and well known final products, carbonic acid gas, ammonia, and water, result; but the variety of combination into which an individual atom of carbon may enter during this long series of changes is almost unlimited, and with each change in combination there is more or less change in nature. In one combination the atom of carbon may exist as a constituent of a highly poisonous substance, while the next combination into which it enters may be wholly inert."

The case of ice cream poisoning which is cited above as occurring in New York on June 30 was thoroughly examined by the New York Board of Health, and Dr. Martin, the chemist of the board, made an analysis of a sample of the cream; but while the symptoms of those who suffered ill effects from eating the cream all pointed to poisoning by tyrotoxin, it was not found in the sample submitted for test. The failure to find tyrotoxin in this case may be due to the fact that

this poison is present under certain conditions and not present under others.

Doctors Vaughan and Novy found tyrotoxin in ice cream which made many persons sick at Lawton, Michigan. Vanilla had been used in flavoring, and it was at first thought that this was the cause of the sickness, and a similar error has been made in other cases of ice cream poisoning. Each of the gentlemen took twenty drops of the vanilla extract, and one of them took two teaspoonfuls more without results, which clearly proves the non-poisonous nature of the vanilla. It was found that the portion of the custard which had proved to be poisonous was allowed to stand for some hours in an old building which was surrounded by shade, had no underpinning, and the sills of which had settled into the ground. There were no eaves troughs, and all the water falling from the roof ran under the building, the streets on two sides having been raised since the building was erected. The building had been unoccupied for a number of months, without ventilation, and the back end, where the cream had been frozen, was previously used as a meat market. The symptoms of the persons poisoned were severe vomiting and purging, griping of the stomach and abdomen, with headache and backache. The tyrotoxin obtained from this cream was administered to a kitten about two months old, and in ten minutes it began to retch and soon vomited, and was unable to retain food upon its stomach.

It seems clear from the statement just made that the cream absorbed the putrefactive elements from the old and unsanitary building in which it was made, and other cases of ice cream poisoning can be traced to similar causes. The cream which poisoned forty people in New York on June 30 stood in a cellar two days without freezing, which was ample time for putrefactive germs to enter into its composition. The copper found in the sample of cream by the New York Board of Health was not sufficient to cause the poisoning, neither was there any other poisonous element discovered. The further tests regarding poisoning by tyrotoxin made by Vaughan and Novy are most interesting, and the facts they elicited and recorded should be better understood than they are. Not only are laymen generally in ignorance of these important discoveries, but many physicians are yet unfamiliar with them.

Natural Gas Phenomenon in Indiana.

On August 11, at 9 o'clock A. M., the farmers near Waldron, which is eight miles southeast of Shelbyville, Ind., were startled by a terrific explosion. When they reached the Ogden graveyard, which is on a bluff near the Flat Rock stream, they discovered that fully ten acres of the earth was in commotion. Geysers were shooting up to the height of six and eight feet, and gas was blazing from ten to fifteen feet above the water of the geysers. The river bed was torn up and the water had stopped running below the graveyard. Flames are still shooting from fifty different fissures in the earth.

The county had not been considered in the gas belt, although local companies have sunk many wells. At Waldron a sufficient flow of gas was found to supply the citizens with fuel. Nobody thought that a gusher was slumbering near the town, and few have entertained the idea of permanent flow of gas in this locality. A little stream known as Flat Rock runs southwesterly through the county, and about three miles south of Waldron, on the banks of Flat Rock, is a sort of butte upon which a country graveyard has been in use for many years. The river at this point runs west, and Conn's Creek empties into it from the north, forming a kind of horseshoe-shaped strip of land opposite the graveyard. Edmund Cooper owns the land on the north side of the river, and it was in this strip that the explosion occurred.

J. H. Lowe, who lives on the Cooper farm, heard a terrific report, and felt the earth quivering beneath his feet. He went toward the graveyard, and was soon confronted by a sheet of flame 200 feet high.

Then fifty or more fountains of fire burst from the earth. These were interspersed with six or eight active geysers. At the east side of the eruption a large stack of straw was in flames, and a field of green corn was drooping before the excessive heat from the ten acres of flame. The river bed was torn to pieces, and huge fissures were receiving the river's water. Sheets of flame swept over the water, and an area of about one acre was quickly converted into a huge hole, from which a continuous roaring and rumbling noise proceeded.

Within the bend of the river and for one-eighth of a mile along the stream great rents were seen in the earth and river bed. At the bend of the river, which is of limestone, is a fracture a quarter of a mile in length and stones the size of a house have been hurled from their places. The graveyard was shaken up, the skeletons of the dead being distinctly seen in the fractures of the earth. Gas flows freely from the entire surface of the ten acres.

It is said when the explosion occurred, rocks and trees were thrown 200 feet high.

A correspondent of the New York *Sun* who visited the locality the next day says: Birds, snakes, rabbits, and fish in profusion are dead, and the fish, thoroughly cooked, are thickly scattered through the waters.

A log fire was blazing on the ten acre tract when, without warning, the earth belched forth flame. Great rocks and trees were hurled skyward, a part of the adjoining graveyard was torn off and reduced to dust, and the waters of Flat Rock were converted into foam and steam. A vast pocket of natural gas under or near the log fire had exploded. The gas had accumulated apparently under the creek bed, held in by a thick stratum of bluish clay, and fed from the great depths below, whence the somewhat meager natural gas supply of Shelby county is obtained.

The explosion threw great volumes of the blue clay into the air, and left yawning caverns, some of them big enough to hold a house. Through the caverns and holes the gas continued to pour after the explosion. It blazed fiercely up above the trees. The gas escaped under such pressure that the flame was forced as high as the tree tops. The flames at times would rise 100 yards. This continued all of one afternoon and the same night.

On August 12, the fire had been extinguished, but the gas, under reduced pressure, still escaped. The gas is odorless, like the Pennsylvania natural gas.

The general conviction is that no other agency than gas could have produced the effect. Neighbors who saw the flying debris and heard the roaring noise say they thought for a moment that a tornado was doing the mischief, and many hurried with their children to places of shelter.

One of the marvelous results is the effect upon the water. Not a drop of Flat Rock's water has gone below the cavern since the upheaval. The great caverns have taken in the current, and a wild foaming Niagara is created on the edges of the abysses as the volume of gas comes in contact with the falling water.

At noon to-day the holes are about full of water and the creek begins to deepen with the back water. The water is even flowing up stream, but presently will doubtless cut a new channel and flow on its downward course.

Across the river from the Haban farm are fissures, and the explosion in its scope took in many more acres besides the ten where its damage was greatest. In these, every living thing apparently was killed, and the fish, if not killed outright, were cooked by the gas blazing on the river's surface. The water still boils to-day, but the fires are out.

The excitement over the natural gas explosion still prevailed on the third day, August 14, throughout the country, and thousands of people were flocking to the scene. It is now discovered that the soil for many miles around is impregnated with the combustible, and by piercing the soil with a stick or crowbar the gas may be ignited and a blaze produced large enough to cause considerable illumination. In Van Buren township, twenty-four miles north, the gas has broken into the water wells, and the use of water from them has been abandoned. Some of the farmers cased the wells, and are using the gas from them for fuel.

The whole neighborhood in the vicinity of the young volcano is saturated with natural gas and the soil is full of it.

This would indicate that the gas from the wells has found its way below the limestone, and in many places fractures in the stone permit it to escape into the sand and gravel immediately below the surface soil, which partially prevents its escape into the air. This bears out the theory that gas has for some time been escaping from the sides of the gas wells and diffusing itself in the sand and gravel below the limestone.

The whole township seems to be filled with the combustible and the inhabitants are threatened with disaster. No telling but the lighting of a match may blow two or three townships into smithereens. It is altogether probable that the diffusion of gas into the soil more or less affects the growing crops. The great question may yet be as to the advisability of sinking gas wells, or if sunk at all whether other methods should not be used to cause and confine the explosive. Pockets of gas are no doubt forming beneath the limestone all over the region of the gas belt, and it is only a question of time when it will break forth in terrific force. It is yet a question as to which is the most hazardous, the accumulation of gas in pockets, followed by eruptions similar to the Waldron blowout, or permitting it to permeate the soil as it is now doing in Van Buren and Noble townships, poisoning the water and air. On August 14, boys were roasting corn by gas jets produced by sticking canes down in the soil a few feet near the volcano.

THE shipbuilding industry on the American lakes is active, and Cleveland claims to lead the way. Since January 1 the vessels built number 78 steamers, the gross tonnage being 63,922, and 18 barges and sailing ships of 15,315 tons. Last year the vessels built on the great lakes measured 107,080 tons.