

# A SIXTH SENSE FOR VESSELS

Hiram Maxim Has Plan to Prevent Collisions at Sea.—Takes Lesson from the Bat



**SIR HIRAM STEVENS MAXIM** fared already as the inventor of the Maxim gun, cordite smokeless powder, devices for aeroplanes and other ingenious things, now comes forward with a new and startling original idea for preventing collisions at sea.

Briefly stated, he wishes to provide ships with a "sixth sense," represented by an apparatus that will send out vibrations and record minutely the "echoes" caused by them if they strike against any hard object near the ship — an iceberg, for example. Sir Hiram got his idea of this sixth sense from the bat, which, according to him and other scientists, possesses such a sense, and is able by means of it to find its way about in the dark with perfect ease.

The inventor explains his invention in a pamphlet just published by him in London. "The wreck of the Titanic was a severe and painful shock to us all," he writes. "I asked myself: 'Has science reached the end of its tether? Is there no possible means of avoiding such a deplorable loss of life and property?' At the end of four hours it occurred to me that ships could be provided with what might be appropriately called a sixth sense, that would detect large objects in their immediate vicinity without the aid of a searchlight."

Then Sir Hiram set to work to study the bat's peculiar possession in an endeavor to apply it to preventing marine collisions, and soon hit upon the idea which he now makes public. Before describing the new Maxim apparatus, it is well to set down what he has to say about that which inspired it, the sixth sense of the bat.

"Every naturalist that has either experimented on bats or writes on the subject," he says, "seems to admit that the extraordinary appendages attached to the bat's face are organs of perception more or less allied to the sense of feeling, but not one of them, so far as I can learn, has ever suggested that these organs are for the purpose of receiving the echo from the vibrations of the wings. I think I was the first to discover this."

The inventor goes on to show that the wings of the bat are extremely sensitive and very well provided with nerves, which is also true of the various organs of the bat's face. These nerves, he maintains, are intimately connected with each other and with the brain. Thus a bat, flying about in total darkness, seems out, by means of its wings, a series of pulsations or wave-like sound waves, but too low to be considered a sound. These waves, striking against all surrounding objects, are reflected back to their source, just as sound and light are, and these reflections of the vibrations, being received by the sensitive organs on the face of the bat, enable it to judge the distance to any object by the lapse of time between the sending out and the receiving of the waves.

Coming, then, to his collision-preventer, Sir Hiram says:

"Suppose now that we construct an apparatus that will produce atmospheric vibrations of about the same frequency as those produced by the bat, but instead of using the infinitesimal amount of energy employed by the bat, we use 200 or 300-horsepower—that is, we send out waves that have an amplitude and energy at least 300,000 times as great as those sent out by the bat. These vibrations, although of great energy, will not be audible to our ears, but they will shake up and agitate light ob-

jects for a considerable distance, and will travel at least 20 miles, so that they could be received and recorded by a suitable apparatus at that distance, and would be able to travel at least five miles and send back to the ship a reflected echo that would be strong enough to be detected."

Sir Hiram points out that in providing a ship with a "sixth sense," three distinct devices must be combined: one for producing and sending out the necessary sound waves, one for receiving the reflected waves and making them audible by ringing bells and another apparatus for recording the amplitude of the waves. Here is his description of the apparatus he has invented:

"For producing the vibrations of waves I prefer to use a modified form of siren, the disk being rotated at a suitable speed by a motor of some kind, preferably an electric motor. I

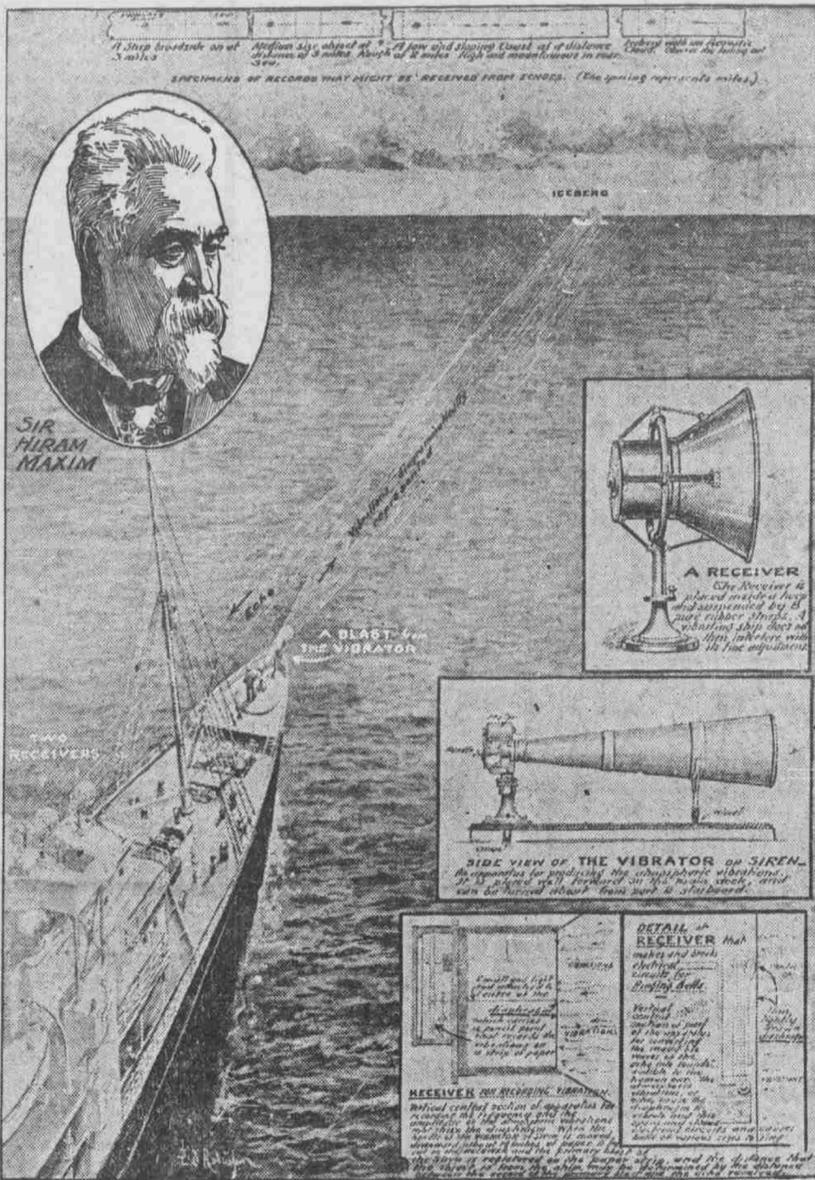
great amplitude and power they are able to travel over great distances, and when they come in contact with a body the waves are reflected back to the ship in the same manner that sound would be reflected back, but this echo would not be audible to the human ear.

"I therefore provide an apparatus which might be considered as an artificial ear. It is provided with a large diaphragm tightly drawn over a drum-shaped cylinder, and so arranged that the atmospheric pressure is always the same on both sides, quite irrespective of any air blast. It is therefore always able to vibrate freely in response to the waves of the echo, and its vibrations are made to open and close certain electrical circuits which ring a series of bells of various sizes. If, for example, the object is very small or at a very great distance from the ship, a very small

Instead of ringing a bell it produces a diagram of the disturbances in the air—that is, when there is no noise except that due to the action of the ship or the sea waves, a wavy line is produced, but whenever the vibrations sent out by the vibrator strike an object and return, the wavy line on the paper becomes very much increased in amplitude, so as to be easily observed, and the distance that the object is from the ship can be measured by the length of the paper strip between the giving off of the vibrations and the receiving of the echo; therefore, the distance can be determined with a considerable degree of nicety, and the size of the object may be determined by the amplitude of the waves that return.

The inventor says that the apparatus for producing the atmospheric vibrations should be placed well forward on the main deck of the ship or in any position where it can be turned about from port to starboard. It should be secured to the deck very firmly, and connected, by means of a three-inch pipe, with a high-pressure boiler. A straightaway valve should be placed in the pipe near the boiler, and some means should be found of preventing the accumulation of water in the pipe leading to the apparatus.

Except in foggy or stormy weather, the apparatus would be merely ornamental, of course, until it were used for communicating with other ships.



prefer to use a very high pressure of steam, to have all the parts large and strong, and to produce about 14 or 15 vibrations per second. These will not come within the range of the human ear, consequently they cannot be considered as sound, and as they are of

bell rings, while a large object at a distance of two miles would ring a larger bell, and a very large object a still larger bell. This apparatus gives an audible notice if anything is ahead of the ship.

"The other apparatus is similar, but

But just as soon as darkness set in and the captain began to suspect that icebergs or other dangerous objects were close at hand, it would become useful. Of its operation under such circumstances Sir Hiram says:

"It should be used constantly sending out the blasts in every direction. If the sea were perfectly clear, the blasts sent out would be recorded at the very instant of their production, but no echo would be returned other than that due to the waves of the sea, which would provide a zigzag line of small amplitude; but if there should happen to be an object of any considerable size at a distance no greater than two or three miles, the zigzag line on the paper would be changed, the amplitude of the waves would be greater and would be very noticeable.

"To make sure, the blasts could be repeated several times; and then, if the result should be always the same, it would indicate the presence of some object, and the length of paper between the primary blast and the echo would indicate the distance that the object was from the ship. It might be so arranged that one inch of paper represented a mile.

"The receiving instruments can be placed anywhere on the ship where they can be turned in the same direction that the siren is turned, and there may be as many of them as desirable."

Sir Hiram points out that there are vastly more accidents to ships caused by running ashore than by collision, and that a coast does not need to present a very bold sea front to produce a very strong "echo" on his apparatus. If a ship provided with his apparatus was approaching the coast of Ireland, he says, the echo would be sufficiently strong to show itself over a distance of at least ten miles.

# THESE SIX LETTERS From New England Women

Prove that Lydia E. Pinkham's Vegetable Compound Does Restore the Health of Ailing Women.

Boston, Mass.—"I was passing through the Change of Life and suffered from hemorrhages (sometimes lasting for weeks), and could get nothing to check them. I began taking Lydia E. Pinkham's Vegetable Compound (tablet form) on Tuesday, and the following Saturday morning the hemorrhages stopped. I have taken them regularly ever since and am steadily gaining."

"I certainly think that every one who is troubled as I was should give your Compound Tablets a faithful trial, and they will find relief."—Mrs. GEORGE JUNE, 802 Fifth Street, South Boston, Mass.

Letter from Mrs. Julia King, Phenix, R.I.

Phenix, R.I.—"I worked steady in the mill from the time I was 13 years old until I had been married a year, and I think that caused my bad feelings. I had soreness in my side near my left hip that went around to my back, and sometimes I would have to lie in bed for two or three days. I was not able to do my housework."

"Lydia E. Pinkham's Vegetable Compound has helped me wonderfully in every way. You may use my letter for the good of others. I am only too glad to do anything within my power to recommend your medicine."—Mrs. JULIA KING, Box 283, Phenix, R.I.

Letter from Mrs. Etta Donovan, Willimantic, Conn.

Willimantic, Conn.—"For five years I suffered untold agony from female troubles causing backache, irregularities, dizziness, and nervous prostration. It was impossible for me to walk up stairs without stopping on the way. I was all run down in every way."

"I tried three doctors and each told me something different. I received no benefit from any of them but seemed to suffer more. The last doctor said it was no use for me to take anything as nothing would restore me to health again. So I began taking Lydia E. Pinkham's Vegetable Compound to see what it would do, and by taking seven bottles of the Compound and other treatment you advised, I am restored to my natural health."—Mrs. ETTA DONOVAN, 763 Main Street, Willimantic, Conn.

Letter from Mrs. Winfield Dana, Augusta, Me.

Augusta, Me.—"Lydia E. Pinkham's Vegetable Compound has cured the backache, headache, and the bad pain I had in my right side, and I am perfectly well."—Mrs. WINFIELD DANA, R.F.D. No. 3, Augusta, Me.

Letter from Mrs. J. A. Thompson, Newport, Vt.

Newport, Vt.—"I thank you for the great benefit Lydia E. Pinkham's Vegetable Compound has done me. I took eight bottles and it did wonders for me, as I was a nervous wreck when I began taking it. I shall always speak a good word for it to my friends."—Mrs. JOHN A. THOMPSON, Box 3, Newport Center, Vermont.

Letter from Miss Grace Dodds, Bethlehem, N.H.

Bethlehem, N.H.—"By working very hard, sweeping carpets, washing, ironing, lifting heavy baskets of clothes, etc., I got all run down. I was sick in bed every month."

"This last Spring my mother got Lydia E. Pinkham's Vegetable Compound for me, and already I feel like another girl. I am regular and do not have the pains that I did, and do not have to go to bed. I will tell all my friends what the Compound is doing for me."—Miss GRACE B. DODDS, Box 133, Bethlehem, N.H.

For 30 years Lydia E. Pinkham's Vegetable Compound has been the standard remedy for female ills. No one sick with woman's ailments does justice to herself who will not try this famous medicine, made from roots and herbs, it has restored so many suffering women to health. Write to LYDIA E. PINKHAM MEDICINE CO. (CONFIDENTIAL) LYNN, MASS., for advice. Your letter will be opened, read and answered by a woman and held in strict confidence.



## MEANING OF "AT HALF MAST"

At First Universal Symbol Was Taken of Submission and Respect For Enemy.

Perhaps you have noticed that whenever a prominent person dies, especially if he is connected with the government, the flags on public buildings are hoisted only part of the way up, remarks the Toronto Mail and Express. This is called "half mast." Did you ever stop to think what connection there could be between a flag that was not properly hoisted and the death of a great man?

Ever since flags were used in war it has been the custom to have the flag of the superior or conquering nation above that of the inferior or vanquished. When an army found itself hopelessly beaten it hauled its flag down far enough for the flag of the victors to be placed above it on the same pole. This was a token not only of submission, but of respect.

In those days when a famous soldier died flags were lowered out of respect to his memory. The custom long ago passed from purely military usage to public life of all kinds, the flag flying at half mast being a sign that the dead man was worthy of universal respect. The space left above it is for the flag of the great conqueror of all—the angel of death.

## Motor Cars and Mosquitoes.

Mosquitoes, flies and gnats of every description are said to be more numerous in Paris this year than ever before. It has become a veritable invasion. The explanation usually given is that the swallows are much fewer this summer, and also that the ubiquitous sparrow is notably on the decrease. Nobody can find a reason for the desertion of the swallows, but the reason of the scarcity of sparrows is not far to seek. The enemy is mechanical traction, which is supplanting the use of the horse. Before long, horses will practically have disappeared in Paris, and when their nosebags go there will disappear one of the principal staples of food for the Paris "perrot," who is taking wing for the country in search of the grains of oats and barley once so plentiful on the boulevards and avenues.

A baseball player may be sluggish without being a slugger.

If your appetite is not what it should be perhaps Malaria is developing. It affects the whole system. OXIDINE will clear away the germs, rid you of Malaria and generally improve your condition.

## Electric Fans in India.

Although it costs but 6 cents a day in India for men to wave fans to keep the air circulating in houses, they are gradually being replaced by electric fans as cheaper and more reliable.

## Triumph of Machine Building.

English engineers have succeeded in building a paper making machine that will turn out 650 feet of newspaper, 17 1/2 inches wide, a minute.

As a summer tonic there is no medicine that quite compares with OXIDINE. It not only builds up the system, but taken regularly, prevents Malaria. Regular or Tasteless formula at Druggists.

Three is a crowd, but not in the eyes of the man who must pay the prima donna's salary.—Judge's Library.

TO DRIVE OUT MALARIA AND BUILD UP THE SYSTEM Take the OXIDINE Standard Glycerin Tablets. You know what you are taking. The formula is plainly printed on every bottle, showing its simple, scientific and safe nature. It is a simple, scientific and safe nature. It is a simple, scientific and safe nature.

Some people boast in order to keep others from doing so.

# Time!

One of the Principal Advantages of a

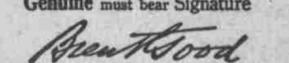


is that you have a pen that will always respond immediately wherever you want to write. The Spoon Feed regulates an even and steady flow and prevents overflow. Gold Pens to suit every hand.

Sold Everywhere. The Pen That Big Men Use."

## Constipation Vanishes Forever

Prompt Relief—Permanent Cure CARTER'S LITTLE LIVER PILLS never fail. Purely vegetable—act surely but gently on the liver. Stop after dinner—cure indigestion, improve the complexion, brighten the eyes. SMALL PILL, SMALL DOSE, SMALL PRICE. Genuine must bear Signature.



5 or 6 doses 666 breaks any case of Chills & Fever; and if taken then as a tonic the Fever will not return. Price 25c.

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FOR BACKACHE, RHEUMATISM KIDNEYS AND BLADDER

# FOLEY KIDNEY PILLS

Contain No Harmful or Habit Forming Drugs

# WAR MEDALS NOT CLAIMED

Only Decoration That the British Soldiers Value Highly is the "Victoria Cross."

The fact that there are no fewer than 50,000 medals stored at Woolwich awaiting claimants causes one to wonder whether the soldier puts so high a value on medals as is usually supposed.

Nearly all of these medals are for the Boer war, and there is a special government department with a staff of clerks endeavoring to trace the owners. Besides these Boer war medals, there are 4,000 medals for the Zulu war which have never been claimed, and even to this day belated claims are still put in for medals for the Crimea and Indian mutiny.

A short time ago, for example, a veteran named James Crystal applied for and received a medal for Afghanistan, after a lapse of thirty years.

Most of the Boer war medals at Woolwich belong to irregulars, who joined on the outbreak of the war, and, after it was over, scattered all over the world. But many regulars have not troubled to claim the medal, alleging that it is too cheap, and considering that 750,000 of the medals were struck, it is certainly never likely to become a rarity.

Before the days of Waterloo very

few medals were issued. The first medal ever issued was that given to the Elizabethan seamen who defeated the Armada, and the earliest military decoration was a silver badge issued by Charles I in 1643 for presentation to soldiers who had distinguished themselves in forlorn hopes.

Waterloo was the first occasion when there was a general issue of medals, and since that time, instead of issuing too few medals, England has gone, perhaps to the other extreme. Soldiers point out that the same decoration is awarded to the man who has been fighting at the front and carrying his life in his hands for months, as to the man in a regiment which has never stirred from the base of operations or so much as seen the enemy.

Every effort is made by the authorities to see that medals reach their owners, and if the owner of a medal happens to be dead, the medal is forwarded to his next of kin. Yet there are still large numbers unclaimed, and according to the regulations now in force, at the end of ten years' time the medals will be broken up and the silver debited to the mint.

The Victoria Cross, of course, is a decoration of quite another character, and a soldier would as soon think of parting with his life as with his Vic-

toria Cross. But this is far from being the case with other medals, and Rudyard Kipling tells how he has seen soldiers wager their Indian general service medal on the toss for the price of a pot of beer.—Pearson's Weekly.

## Parthenon in Danger of Collapse.

A shock will be given to lovers of antiquity by the suggestion made in the Revue des Beaux Arts that the Parthenon is in serious danger of collapse. Within the last twenty years the columns seem to have lost their rigidity, and unless the work of strengthening the foundations is taken in hand disaster may follow. The cause of the threatened collapse is the removal by archaeologists of sculptured ruins of an earlier temple on the Acropolis which served as foundations for the Parthenon, and which have been taken to various museums for display and preservation. No effective precautions were taken to replace these relics by fresh masonry. Modern Greece has no money to spare for the necessary work of restoration, but it should not be difficult for those countries which have benefited from the spoliation of the treasures of Athens to raise funds to prevent the destruction of one of the wonders of the world.—Westminster Gazette.