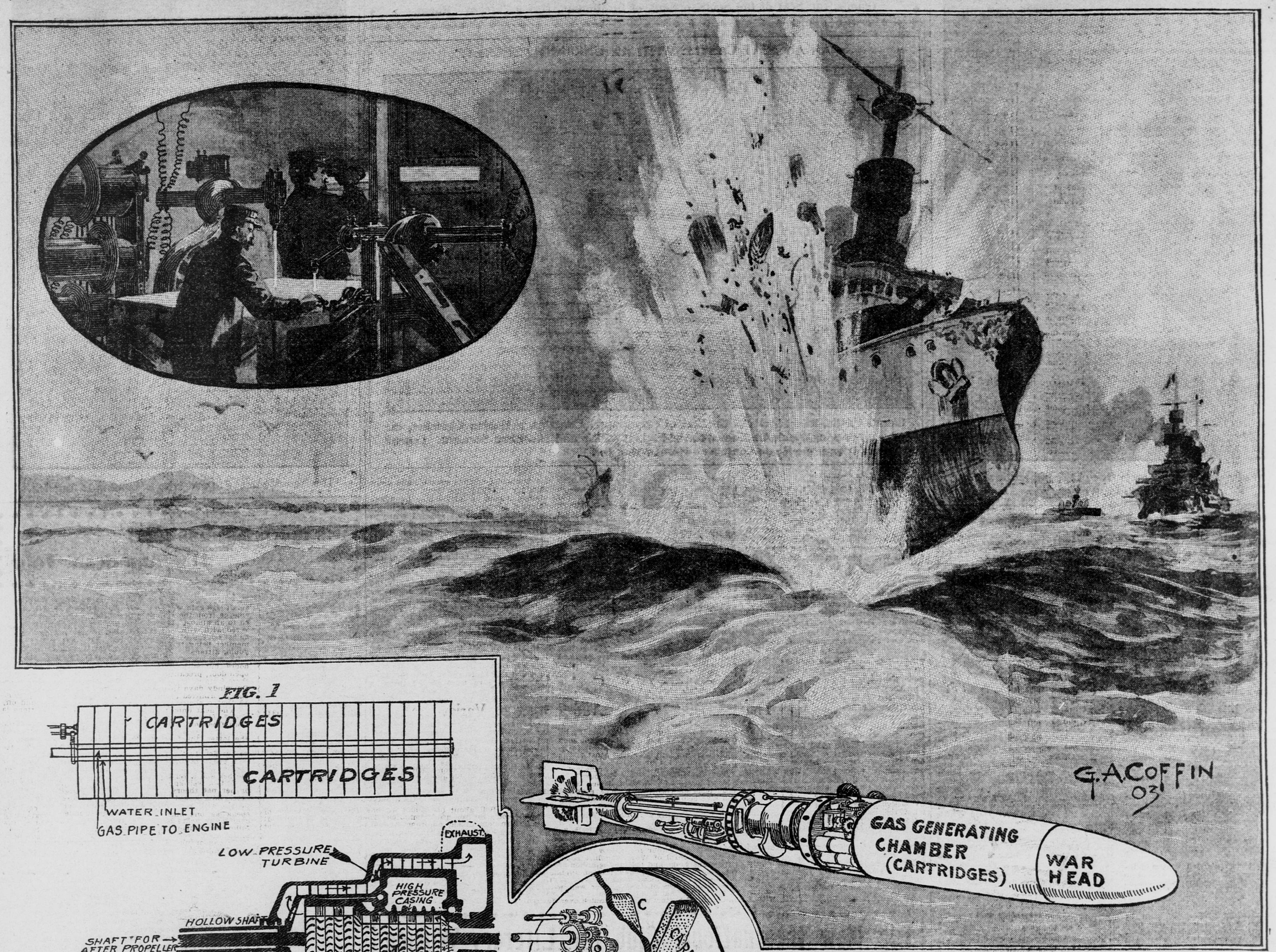
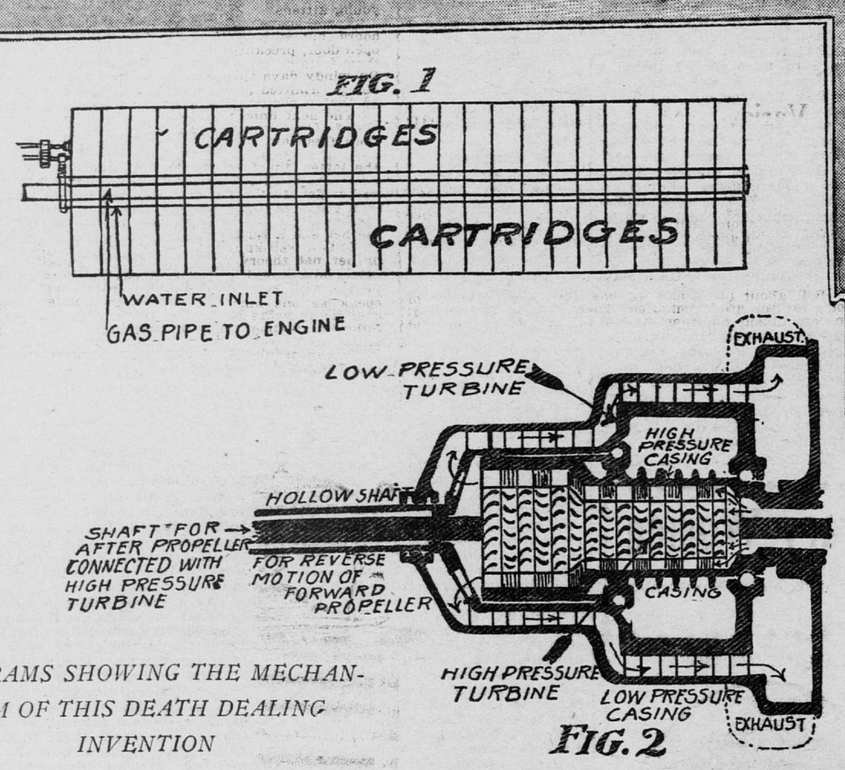
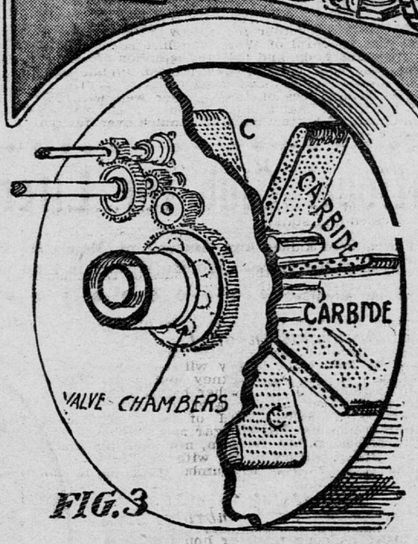
Wireless Electric Currents to Guide the Most Deadly of Torpedoes







DIAGRAMS SHOWING THE MECHANISM OF THIS DEATH DEALING INVENTION

Like a Thing of Life This New Submarine Engine of Death Moves Under Control From the Shore. Government Officials Make Secret Experiments

THROUGH experiments just now completed by the United States government the stern yet subtle art of sinking battleships by means of dirigible torpedoes has reached a point of appalling perfection.

Like a thing of life, the modern submarine engine of death may be guided here and there through the water, controlled by wireless electric currents propelled from shore; may be exploded by heavier charges of electricity if contact with the enemy's vessel does not produce that result; this expedient failing, the torpedo, responding again to the guiding impulses of electric currents, will turn about like a trained water spaniel and return dutifully to the tube from which it was hurled.

This latest of all torpedoes is a wonder in mechanism. But most remarkable of all is the use to which the turbine wheel has been put in propelling it. The torpedo carries its own power—acetylene gas—which plays upon compounded turbines in such a way that the projectile not only travels at a high rate of speed, but it is virtually indifferent to the action of waves, tides or currents.

SECRETS CAREFULLY GUARDED

Wonderful advances have been made with the range finder, without which the excellence of even this torpedo system would be futile. Aided by electricity, the new mechanism follows the movement of hostile ships and plots them on a charted base, showing the exact location of all within a prescribed radius.

The operation of torpedoes may be carried on at a distance from the fort and can be pretty thoroughly concealed from the enemy.

The United States government, at its Newport station, has been experimenting with dirigible torpedoes and range finders for five years.

The war eyes of the world during this time have been turned toward Newport, and that place has been peopled with the secret agents of other governments. But Uncle Sam has guarded well his secrets—secrets that will one day be told in the roar of naval warfare and the cries of men going down to death.

The information contained in this article has been obtained only with the greatest of difficulty, but every statement may be regarded as one of fact.

It may be said, in passing, that the development of the controlled torpedo and its twin enterprise, the range finder, has followed closely the lines suggested by a number of well-known scientists. But these suggestions, not to mention their development, have not been given to the public until now.

In the natural order of things, the range finder must be considered first. These are placed at two points representing the base of a triangle, the moving ships of the enemy representing the other point of the triangle. An officer watches the ship through a telescope, and as the telescope follows the course of the ship the index or pointer travels around the arc upon which it is mounted.

This circle is composed of a series of plates, each representing a sub-division or degrees. The plates are connected by electric currents with a central station, from which the movements of the torpedo are to be directed.

The currents as they are projected from the different plates direct the operations at the central station to the precise point at which the enemy's ships are located. This is done by means of a table, four feet square, and ruled into minute blocks.

Over the table swings an arm the movements of which are regulated by the currents from the range finders.

The observation room is in semi-darkness, a small electric lamp concealed in the arm throwing a small point of light directly beneath the index finger of the arm. This point of light indicates the position of the enemy.

The torpedo, being adjusted and ready to be released, its position is indicated on the table in the operating room by a small light that hovers over a certain block or square of the chart.

As the torpedo proceeds after being projected it throws up little jets of water, which enable the operator to follow its course.

If it goes in a straight line it will be permitted to steer itself, but if it does not follow a straightt line to its destination the operator presses one of two keys, marked port and starboard.

These keys close their respective circuits and cause a series of electrical vibrations or impulses to radiate from the station until they reach the receiver in the torpedo. The currents direct the rudder to port or starboard and change the course of the torpedo as is needed. Two lights, one representing the position of the torpedo and the other the enemy, approaching each other on the table, show their relative positions.

THE TORPEDO ITSELF

Now if the connection by electrical impulses or waves, say from the starboard key, were to continue the torpedo would turn in a circle, but a careful series of tests has been made and charted, showing just how long the electrical impulses must continue in order to produce the proper divergence from a given course. As soon as this is accomplished the impulses cease, and the rudder, by the influence of the gyroscope and obry gear, is returned to its normal position and the torpedo continues on its new straight course.

While the two points of light are traveling across the table they leave a brownish gray line on a sheet of transparent substance which in appearance closely resembles celluloid. This material is not affected by sunlight, being sensitive only to a certain tone or quality of light, which so far has been kept a secret. The system is a modification of the wireless system of Marconi and many features suggested by Tesla and others.

Of course, in action the jets thrown from the torpedo would show the enemy the course of the torpedo. But experiments have progressed to such an extent that it will be possible to dispense with the jets and yet send the torpedo straight to the doom of a great ship.

A modification of this system is nearing a successful completion for use on ships while in action, but at present it is not perfected. In firing from the ship so far the operator depends on the jets of water to indicate the position of the torpedo.

As to the torpedo itself there are a number of features worthy of mention. Several styles or types of engines have been tried, but the one which has attracted the most attention is the turbine engine operated by gas.

An idea of its construction may be had from figure 2 in the illustration, where, in order to save space, it is doubled, rather compounded, without increasing its length.

The gas is admitted to the forward end of the torpedo and strikes the vanes or blades as indicated by arrows. This causes the rotation of the shaft. After passing through the turbine it returns through the low pressure turbine, which rotates in an opposite direction. This low pressure turbine fits over the shell or casing of the high pressure turbine like a sleeve. It is connected with one of the propellers by a hollow shaft or tube, within which revolves the other shaft.

The torpedo is arranged as follows: The head or nose contains (in action) about 200 pounds of wet guncotton. When exploded a charge of such magnitude will sink the largest ship in the world.

Immediately aft of the war head comes the gas cartridge section (figure 1), in which is generated the gas. The gas (acetylene) results from a mixture of carbides and water.

An electrically controlled gear (shown in figure 3) admits water to one cartridge at a time, a very small motion of the gear closing the apparatus through which the water is admitted.

Next after the gas generator cartridges is located the immersion chamber, containing a cylinder, which, adjusted by springs and a rubber diaphragm, operates the horizontal rudder, and, according to the pressure of the water, keeps the torpedo at a predetermined depth.

In the same space are several small motors, operated by sealed batteries, which act upon the valves of the vertical rudders, engines, steering gear and gas generator. These motors act in response to the different electrical impulses sent from the operator's station on shore.

In the next space is the turbine engine. Abaft the engine space is the obry gear or gyroscope, which steers the torpedo in a straight line. Aft is the tail of the torpedo, containing two propellers revolving in opposite directions, so that the torpedo will keep on an even keel and not roll.

The dirigible torpedo is now brought virtually within the control of the man concealed on shore. Not only may he direct its outward course, but he may cause it to run home with equal celerity.

In spite of the wonderful things accomplished, the development of the submarine engine of war will progress until—and the day seems not far distant—it will not be safe for a hostile fleet to approach within ten miles of an American fort.

QUAINT JAPANESE PICTURE ON CHICKEN SKIN

SIR EDWIN ARNOLD WRITES OF A PHASE OF HISTORY WHICH PRESENT EASTERN CONDITIONS MAY REPEAT

By SIR EDWIN ARNOLD

IF WAR be averted between Japan and Russia, as it now seems may be confidently hoped, it will be a new proof how strong those agencies are which everywhere in the present day silently work for peace. Taken each by each, some of these forces would no doubt be considered trivial and feeble, but they help each other, and the sum total of their influence is shown at this moment with equal plainness both in the Far and the Near East. Yet what may sometimes greatly depress an observer who loves his kind, and believes in the ultimate triumph of reason and concord, is to notice how slowly the race learns the simple lessons of its own welfare. Manchuria is an example of this. Does the name seem new to anyone, or the historic fact a novelty that the destinies of Russia, of China, and of Japan should all be mixed up with it? More than 600 years ago the same races were at war for much the same reasons as might to-day make a battlefield of the Chinese province. Manchuria was the domain and starting point of Gengis Khan and Kublai Khan. Thence rolled forth across all Asia and half-way over the Continent of Europe those Tartar hordes which nearly turned the globe into one vast barbarous and blood-stained China. In those days Kublai Khan launched his great expedition against Japan, and the story of the Spanish Armada and of England's triumph over it was almost exactly anticipated by what the Japanese people did not save their islands. A moat curious picture of that ancient struggle, painted on chicken-skin only a short time after the Tartar invasion, was brought to me in Tokio and offered at a price I would readily have given. But it was so plainly a precious document of state, with the strange costumes depicted and ancient forms of armor, weapons, boats, and bridges, that I sent the ignorant possessors to the Emperor's Palace, and his Imperial Majesty gladly enlarged the remuneration demanded, and placed in the Royal Library what was for Japan a duplicate of our own Bayeux tapestry. I almost wish I had not been so loyal. It was a quaint colored picture, stretching twice across the floor of our sittingroom, of that far-off time when

"In Xandu did Kublai Khan
A stately pleasure-dome decree,
Where Alph, the sacred river, ran
Through caverns measureless to man
Down to a sunless sea."

Yes! I must honestly confess that I wish sometimes I had been more selfish and had retained the wonderful pictured scroll.

What makes me recall it and wish there may be no second Manchurian conflict is that there were groups of women in several of its sections, Chinese and Japanese ladies and waiting-maids nursing the wounded, so that even in so distant a day war with its terror and ruin had also its tenderness. And this, again, set me thinking that the greatest force which could be exercised against warfare and in favor of the universal peace for which the planet yearns will come when women do their part to break the swords and silence the drums. They might do much more than they know. I do not think there is any need to teach Japanese women about the pity and the misery of warfare.

That great and true friend of peace, the present Tsar of All the Russias, has journeyed among the quiet, bright, happy cottages of the Island Empire, and well knows how unwelcome would be the necessity which took the fisherman from his nets and the peasant from his rice fields all along the sunny shores which look to Korea and to Manchuria. He knows, moreover, even if his turbulent colonels on the frontier forget, how strong is the loyalty in every Japanese home and how formidable is the strength which the unchanging patriotism of the Mikado's subjects gives to his arms.

In the matter of medical help and well-kept hospitals, a Japanese army is perhaps better equipped than any in the world.

The Tsar cannot have forgotten an incident of his own sojourn in Japan, when a crack-brained fanatic struck a blow at that head sacred to the whole land as being the head of its guest. One young girl, more heart-broken than even the others at the stain thus imprinted upon the hospitality of Dai Yippon, did a deed which the Tsar well remembers. She composed a pathetic letter to her lord, the Mikado, deploring the disgrace which had come to his people and the whole country by such an act of frenzy, quoting in it examples of ancient days, when the humblest were sometimes permittted to become a sacrifice for the highest and most noble.

Provided with this letter, she carried it herself to the threshold of the palace, upon which, in accordance with the old customs, she laid her little foolish but faithful forehead, and then, retiring to a lonely spot in the neighborhood with misguided but sublimely unselfish devotion, she put an end to her own existence, and was found lying dead, an offering, as she conceived, which the gods and the Emperor—nay, perhaps, even the august and illustrious stranger himself—might accept to the excuse and purgation of Japan.

A nation which contains children of such a spirit cannot be conquered and will never be lightly attacked by prudent enemies.

HUSBAND-ROBBING ON A LARGE SCALE BY MANY WOMEN

"YOU wouldn't believe me if I would tell you how many women in Philadelphia systematically rob their husbands," said a man whose business it is to keep well versed in criminology.

"By this I do not refer to the occasional or even regular filching of small coin from the trousers pocket. I am talking about husband-robbing on a large scale. The public hears of few of these cases, as they usually are hushed up, but a man in my line gets to the inside.

"In justice to the fair criminals, it must be admitted that most frequently the crime is committed for the benefit of another—to keep the knowledge of a son's debts from the father or to help a loved brother out of difficulties, for example.

"One of the cleverest forged checks I ever saw was executed for the first-named purpose. The mother stole a blank check and made it out to her son for a considerable amount. So well had she imitated her husband's handwriting and signature that both the bank officials and the youth himself were deceived, and the fraud was only discovered when the husband, examining his bank book, noticed a payment for which he could not account. Even then, so good was the forgery, he could not be certain that he had not writen it until I pointed out several minute but distinct differences.

"Another victim was a wealthy man, whose wife—the child of poor parents—had married him for his money. Her family soon discovered, however, that, though generous enough to his wife, he would give little to her relations, and, driven by their demands and reproaches, the young girl stooped to a means of supplying them as base as it was ingenious. The wife contrived to make an arrangement with three of her tradespeople—her milliner, dressmaker and jeweler—by which everything she purchased from them was charged double price. Then, when her husband paid the bill, the overcharge, less a commission for the storekeeper, was handed to her. In this way she had robbed her husband of nearly $5000 before an anonymous letter, written by a discharged employe of one of the storekeepers, brought about an investigation.

"A writer of fiction, whom I also know, recently realized that he was being forestalled in the magazines by a new writer, whose plots were identical with those he himself had thought out and noted down for use. At first he suspected his amanuensis, but then a plot was used which he had not even written down, but only talked over with his wife.

"Smitten with a literary fever, and apparently unable to invent a plot herself, she had betrayed her husband's confidence and used his.