U. S. Battleships to Run on Land

By H. GERNSBACK

EVERY war brings out a host of fantastic as well as ridiculous new inventions which are supposed to annihilate the enemy. Most of these wild-cat schemes are of course as impractical as they are fantastic, and while they look good on paper, the devices do not stand up in practise, either because of inherent defects or because science and technic have not progrest sufficiently to do justice to the device.

Thus a submarine invented by no less a genius than Robert Fulton, propelled by several men and which was actually run under water, was sanctioned by Napoleon, the inventors hoping to sink the blockading English fleet. The submarine failed miserably, to Napoleon's utter disgust. Nevertheless the failure was not due to the principle being inherently wrong. Rather science had not progrest sufficiently to make the submarine a success one hundred years ago. Napoleon, if he were to come back today, would certainly experience a radical change of mind, as to the success of the submarine.

In the same manner, when John Ericsson constructed the "Monitor" in 1862, he was met with a good deal of ridicule—at first. No one believed that his steel "cheese-box on a raft," war vessel could do much damage, or even give a good account of itself, let alone winning a battle. The world knew different after the "Monitor" defeated the famous "Merrimac."

Makeshifts have been used in every war, and every important battle has them. Sometimes these makeshifts actually prove decisive in a battle, perhaps for the simple reason, that insofar as they usually contain the element of surprise, the enemy, not being prepared for the unusual onslaught is defeated.

Perhaps the most famous instance where a big battle was won with a makeshift was the Battle of the Marne, in 1914. No more impossible or ridiculous weapon than an ordinary taxicab could be imagined to launch a modern army, equipt with the world's best artillery. Nevertheless, when the defender of Paris, General Gallieni, requisitioned every Paris taxicab, and flung these thousands of squeaky vehicles, which had never been designed for such work, against the German hordes, they simply had to give way; and the taxicabs won. One of the world's greatest retreats was mainly due to these peaceful fare-eaters. Perhaps taxicabs will never be used again in such a manner, but at any rate they did their full duty once. The experiment proved worth while.

Therefore when I propose to run battleships over land, I am fully aware of the ridicule I will be subject to. I am also aware of all the objections that will be cited against the fantastic-appearing plan. Nevertheless, I insist that the idea is not half as impractical as it may appear at first. And at any rate I believe I have found a way showing how it may be done in a simple manner. I give the idea to the country for what it is worth.

I do not claim to be the originator of the idea to run battleships or other ships over land. That idea is old already. Twenty-five years ago there was published in a German weekly an idea to run a powerful car, moving over a dozen closely spaced paralleling tracks, under a ship. This car, after the ship was made fast to it in a suitable manner, was then to be drawn overland—over the present Panama Canal route—by powerful locomotives.

Lately other plans have appeared showing battleships running thru cities and over the houses, but no one volunteered to show how it might be accomplisht. A battleship weighs anywhere from 10,000 tons upwards—quite a respectable weight. How then can we run such a monster on land? How can it be propelled?

Now that we are at war, our first duty is to help our allies, *and to help them quickly*. The time is too short to build new colossal war engines which could be used at the front at once. Our army will not be fully ready till a year from now. Our navy cannot help very much on sea. For if the British, French and Russian navies, which are at least four times as powerful as the German navy, cannot destroy the latter, the addition of our own navy will not matter much one way or another. The German navy simply stays behind her mine fields and bides her time.

But the U. S. navy has a number of battleships of the pre-dreadnought type, good ships as yet, but obsolete as first-line ships. I refer to ships of the *Oregon, Iowa, Illinois, Kentucky, Massachusetts, Indiana* class. These ships are fully equipt now, have good crews and good guns. But the chances are that ten years from now they will be used as targets or otherwise will be relegated to the scrap-heap. So why not send these ships to the front? Briefly, the idea is this:

Let us send these ships, men, guns and all, to France. In the holds of the vessels we pack channel irons and T, as well as I steel beams, cut to the right length before sailing. These pieces are fashioned much after the structural toy steel pieces—you can make almost anything out of them.

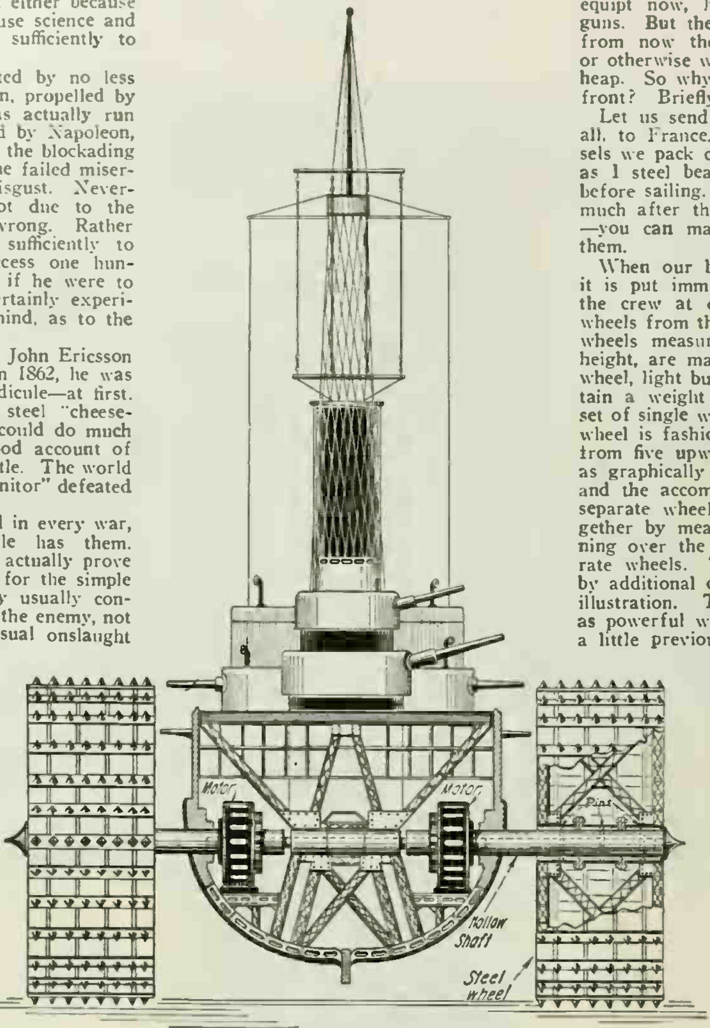
When our battleship arrives in France, it is put immediately into dry dock, and the crew at once proceeds to make the wheels from the channel steel. These huge wheels measuring over 50 to 60 feet in height, are made on the plan of a Ferris wheel, light but strong. Of course to sustain a weight of 10,000 tons or more, a set of single wheels won't do. Rather each wheel is fashioned of a number of wheels from five upwards, paralleling each other, as graphically shown on our front cover, and the accompanying illustration. These separate wheels are bolted or riveted together by means of steel "I" beams running over the circumference of the separate wheels. The latter are strengthened by additional cross-truss work, as seen in illustration. Thus a very light, as well as powerful wide wheel is formed. With a little previous drilling, the crew should be able to construct the necessary six wheels in less than one week—yes, it can be done; providing the pieces are cut to the right dimensions at home.

Next the *thirteen inch* hollow steel shaft is considered. This, of course, has been brought from America too. The hollow shaft is advised, first because it weighs less, and second because such shafts are equally as strong as solid ones, within a reasonable proportion.

The two wheels at the stern are "idlers," the same as the front wheels on an automobile. No power is applied to them, they simply rotate on the shaft, extending from one wheel to the other, clear thru the ship. The two small center wheels are also idlers. They serve to take up undue shocks, which might break the ship in two, when negotiating difficult terrain.

The two front (bow) wheels are the "drivers". They are bolted solid to the shafts, two of the latter being used as will become apparent at once. Our illustration shows that the two shafts revolve in a common bearing (which might be an old reconstructed gun barrel). Each shaft in turn is directly coupled to a slow-running electric motor armature, as clearly shown. And this, by the way, is the much discust electrical drive, adopted in our latest monster battle cruisers, now being constructed. From this it becomes apparent how the land battleship is propelled overland in a simple and practical man-

(*Continued on page* 216)



Putting Wheels on Our Battleships and How It Is Accomplisht. The Wheels Here Shown Are Fashioned of Angle and I Steel Beams, on the Plan of Structural Steel Toys. Such Wheels Are Tremendously Strong. Slow Running Electric Motors Coupled to the Steel Shafts Drive the New Monster Over Land.

and iodids of mercury and thallium are decomposed by light. (6) Upon heating nitrogen chlorid and nitrogen bromid in sunlight, the mixture explodes with violence. (7) A balloon containing hydrogen and chlorin will burst when exposed to the sun's rays. (8) Selenium lowers its electrical resistance when exposed to light. (9) In the Crooke's Radiometer the pressure of light causes a multi-blade vane or wheel to rotate in a vacuum.

It will be noticed in the cases cited above that the group of elements known as the *Halogens*, particularly the *silver salts*, are affected by the action of light, which acts in most instances like a reducing agent. Why the silver salts are singled out from all the other compounds and made an object of attack by the force of light is difficult to explain by the ether-wave theory. But if light were taken to be a gas, the above phenomenon would be more easily understood by the simple fact that light is then a reducing agent. The *light-gas* theory must thus assume that light possesses properties similar to other gases, such as chemical affinity, a definite valency, or possessing the power of a catalytic agent. Such properties appear to be consistent within the chemical effects of light as shown above.

As is well known, the element Selenium possesses the peculiar property of changing (lowering) its electrical resistance according to the intensity of the light cast upon it, and this strange phenomenon has been a strong argument against the wave theory, as it is almost impossible to conceive of the so-called ether waves producing such a tangible, material effect. Several theories have been advanced to explain this behavior of light. One is the formation of conducting selenids under the action of light. Another, the formation of conducting crystals. Still another, that it is due to electrolytic action and finally the electronic theory which assumes the releasing of negative electrons, due to vibratary resonance in the atoms.

Again, it has been demonstrated that light has a strong effect on bacteria, such as ferments. At the Paris Exhibition in 1900, the powerful results of light were forcefully illustrated by the culture of pathogenic bacteria in gelatin in glass bottles. Portions of the bottles were covered with dark paper, the bottles incubated at suitable temperatures in bright sun-light and the contents afterwards completely sterilized. Wherever the dark paper had prevented light action, dense colonies of bacteria could be seen, while in exposed parts the nutrient gelatin remained perfectly clear. Here again, light acts as a gas, for it can be easily shown that several gases such as oxygen, exert an influence on the growth of bacteria. Only a strong imagination could attribute these results to wave forms in the ether, it would seem.

In concluding, it may be well to take up the question of the speed of light and its relation to any of the accepted theories. The speed of light has been definitely accepted and proven as 186,000 miles per second, and this tremendous velocity has been for years a strong objection to the *corpuscular* or *material* theory, as it was unbelievable that any material form of matter could attain such terrific velocity. Of late years, however, there has been much progress made in the study and behavior of X-rays and radium emanations; and it has been conclusively proven by means of mathematics that the speed of the corpuscles emitted by metals under the impact of ultra-violet light, may be taken as anywhere from 10,000 *to* 90,000 *miles per second;* and it may also be stated that these corpuscles are *material* atoms of matter for their individual *weights* have been actually determined by mathematics.

In regards to the Alpha, Beta and Gamma-rays emitted by radium, it has been conclusively proven that the Alpha rays are streams of little bodies (matter) with a mass about twice the mass of the hydrogen atoms, flying off from radium with a velocity of 20,000 miles per second, while the Beta-rays given off by this innocent-looking little pinch of salt, are actual *material* corpuscles, with a known weight, and a speed of over 100,000 *miles per second.* This is now regarded as an established fact, and such being the truth, it is much easier to believe that a gas, such as light may be, could attain a velocity of 186,000 miles per second, and still be within the bounds of material matter.

As will be noticed, it was the author's object to present a few arguments in favor of the material theory, and altho this theory has not come into general acceptance by scientists, it is gradually gaining ground, and from the researches being made on radium emanations and all forms of radio-activity, it appears that the electro-magnetic-wave theory of light may have to be confined to more reasonable realms; it may well serve to explain wireless-telegraphy and such wave-activities, but the strange, material force known as "Light" certainly demands a more consistent explanation in view of its chemical effects.

U. S. BATTLESHIPS TO RUN ON LAND.

(*Continued from page* 170)

ner. The steering is equally simple and efficient. By running one motor at a slightly higher or lower speed, the ship must either turn to the right or to the left, as desired by its commander.

I have pointed out in previous articles, that the monster wheel is *the* prime requisite of all large war machines. A huge wheel, such as the ones here described, will easily ride over the widest trenches. Ordinary shell holes will be negotiated as easily as a cart wheel runs over a hole in the street due to a missing cobblestone. Rivers will be forded easily, if there is a fair approach. Even steep banks will be negotiated by running the craft diagonally thru the stream. Low hills will prove no obstacle at all, while steeper ones can be climbed by running the ship in a zig-zag line.

There will be less wear and tear, and less shocks too when running over land than when fording a tempestuous sea. The reason is that these huge wheels, just on account of their size, are rather elastic. They "give" a good deal. Then too, the earth as a rule is more or less soft. Thus we get a double spring action. Also due to the enormous width of the wheels—distributing the weight over a wide area—they will not sink into the softest earth much more than a few inches. This may seem surprising, but a simple calculation which any engineer may make in a few seconds, will prove the statement correct.

It goes without saying that in order to carry the enormous strain, the ship must be strengthened by a good deal of cross-truss steel work, as indicated in our illustration. Otherwise the shaft would rip clear thru the decks. This truss work, however, should not prove over difficult, nor a very long-winded operation. The reader has already guest that no new power plant is required. The old one is of course utilized, the ship burning coal the same as if it were on the ocean.