THOUSANDS TELL U. S. HOW TO END WORLD WAR; SHIPPING BOARD THE MECCA OF ALL INVENTORS

Seventy Thousand Inventions and Suggestions Placed Before Federal Body Here—Every One Investigated, and Some Prove Practical.

(By ED. A. GOEWEY.)

To the general public the average inventor, or would-be inventor, is just a plain crank, and when he is referred to in conversation it is as a "nut," and the tone used is one of pity.

That is the case up to the time the inventor makes a pronounced success. Then he is hailed as a genius—a modern mental marvel.

There was a time when Dr. Cornelius Van Drebbel, a Hollander, and the first experimenter with a submarine, was accredited with being a harmless crank. There also was a period in which the Wright brothers were quite generally looked upon as "nuts." What the submarines and airplanes have done in the world war, however, places a different complexion upon their efforts.

From the days of the first humans, man ever has been inventing things to lighten his labors, to produce increased output with decreased actual effort, to slay the beasts which threatened his existence, to kill his enemies. Evolution and invention ever have been synonymous.

In peace times the number of persons devoting all or a part of their time to inventions, useful and useless, are legion; but in circumstances such as those which have gripped the entire world since the Prussians in 1914 begun their mad dash for unlimited supremacy, the numbers is increased a hundred fold. In fact, to those whose duties make them intimately acquainted with existing conditions, it appears as if every other man and a great many women, are giving up a large portion of their days and nights to striving to invent new war machinery—offensive and defensive.

However, unlike the general public, the officials of the Army and Navy departments do not frown generally upon those who have the inventive bent, and do not turn a deaf ear to any one. All are given opportunity to demonstrate the feasibility of their ideas. No, the men at the head of the nation's war machinery are too wise in their generation to cast aside anything which might be of use to them until it first has been examined by experts for, while possibly not more than one in a thousand ideas is worthy of serious consideration and serious experiment, that one may mean the saving of thousands of lives, and it is to obtain that one that all schemes submitted are examined by men who are at the very forefront of their professions.

ONE MAN'S BURDEN.

When it became evident back in 1915 that sooner or later this nation would be compelled to play a part in the titanic struggle then rending civilized Europe, it was determined to organize a board of undoubted experts, whose duties it would be to take under consideration all ideas relating to a war device submitted, and pass upon their merits. This organization was given the name of the Naval Consulting Board of the United States, and not only was it empowered to pass upon ideas and accept inventions which could be used by the American navy, but it was supplied with sufficient funds for all necessary experiment.

The board formed was composed of Thomas A. Edison, president; W. L. Saunders, chairman; Benjamin B. Thayer, vice chairman and Thomas Robins, secretary, and also included such authorities as Howard E. Coffin, Hudson Maxim, Elmer A. Sperry, Alfred Craven, Joseph Bijur and Dr. M. R. Hutchinson.

This board began its labors in October, 1915, with headquarters in New York city, and here all ideas, blue prints and models intended for use in the navy are forwarded to be passed upon, no matter in what portion of the country they first may be sought by their creators.

A. T. Burleigh, manager of the Bureau of Invention at the New York office, who personally meets and talks with most of the inventors, attends to all complaints from those who are disappointed because their ideas are not accepted and who has a most intimate knowledge of the board's work, stated that since April 6, 1917, there had been received at the New York office more than 70,000 inventions and suggestions of devices and schemes to assist in the war work generally, particularly to overcome the submarine menace, and that these proposals had come from all parts of the country and from persons in every walk of life.

"The task of investigating, classifying and answering these 70,000 suggestions," said Mr. Burleigh, "has been one of gigantic proportions, but the work now is entirely up-to-date and all proposals received at the present time are answered within a week after their receipt unless they require special investigation.

"When a proposal is received it is classified according to the type of device conceived and given a first reading by a committee of examiners composed of eight experienced engineers, who determine whether it possesses sufficient novelty and merit to be sent for a second reading to the various special committees of the board.

"No proposal is rejected until it has been thoroughly investigated by at least two engineers, whose action is checked by another engineer before the reply to the inventor is mailed. If a proposal is referred to a special committee and reported favorably it then is brought up and passed upon by the board as a whole. Then, if it meets with their approval, it is sent with the recommendation of the board to the department of the government having use for such a device. A great many devices are rejected for reasons which sometimes it is difficult for the inventor to understand and appreciate.

ANTI-U-BOAT DEVICES.

The inability of the government to make use of most of the proposals submitted is due to the fact that the devices suggested either are in use, are less efficient than those now employed, have been suggested before or, for real reasons, are thought to be impracticable. A great many devices, while mechanically operable, often are rejected as being impracticable for some reason not connected with the invention itself, which reason it may not be policy to disclose to the inventor. It is interesting to note the hundreds of proposals which are submitted embodying identically the same principles. This is particularly true of devices intended to protect vessels from being torpedoed. Most of the proposals submitted are offered to the government without any thought of compensation and the board, when communicating with inventors, endeavors to express its appreciation of the patriotic spirit which prompted them to submit their proposals. In cases where compensation is expected we inform the inventors that, provided the invention is accepted, the matter of financial return will have to be taken up with the particular department using the device.

"See these," and Mr. Burleigh pointed to a mass of models of all kinds placed on the floor in the rear of his desk. "These save us a great deal of time. An inventor comes in and shows his sketches or blue prints, believing that he has hit upon something new. Most times it is not, and I can turn around here and pick out the model of the device which already has been submitted by many inventors.

GENERAL CASES.

"We are most willing to examine and pass upon all manner of war devices, but we discourage the making of models in most cases. The reason is that they seldom are accurate and the inventor may waste time and money making something which is imperfect or is old in principle. In making a model a man may devote three months of his time to the work, but he can make a sketch which will answer all purposes in two or three nights. We don't need models. If there is merit in the idea sufficient to make us believe that the government can use the device, we have the money to go ahead and experiment and develop it. It costs a great deal to do this and few inventors have the necessary money.

"There is an exception to this rule, however, and it is in the case of perpetual motion devices. If a man wants us to consider a perpetual motion idea we require that he submit a working model. For obvious reasons no inventor likes the words 'perpetual motion' when applied to his proposal, and in rejecting ideas of this character stay unaccompanied by a model we use this phraseology: 'Devices in which the general power is generated by machinery operated without the source of energy being clearly defined.'

"Since this Board was organized we have had about 2,000 proposals for perpetual motion contrivances out of a total of about 70,000 varied proposals. At the time that the United States entered the war there was a perfect avalanche of ideas every week, but after a time these fell off. The average now is about 200 proposals a month. However, the work of the inventors appears to be largely in cycles.

FANTASTIC IDEAS.

"Some of the ideas which have been submitted to us for use in the navy are more than impossible—they are fantastic. One man came here with what he stated was a sure method of ridding the seas of German U-boats. Asked to explain, he stated that the sea lion possesses about the keenest scent known and suggested that the destroyers and other vessels of the navy be equipped with several sea lions each. When in a suspected U-boat zone the lions were to be dropped overboard and they would detect and stop over any submarine in the vicinity. All that would be necessary then would be to drop a depth bomb and, factor, the unfortunate craft of the enemy. He admitted that the explosion probably would kill the sea lion, but suggested that the sacrifice was cheap considering that each dead sea lion would mean another U-boat put out of commission.

"Another man, a resident of Newark, wrote that he had a great idea, but wanted to talk it over personally, explaining that he could come to the office of the board only on Saturday afternoon. Usually we close for a half day on Saturday, but I wrote to him to come over and remained at the office to see him. After asking me if I ever had seen any lariat throwing and being informed that, as a one-time resident of the Far West, I had, he unfolded his idea. It was to recruit a large number of cowboys, proficient in the use of the lariat, and distribute them among the destroyers. A cowboy, rope in hand, would be stationed upon a special deck and then, when the periscope of a U-boat appeared, would lasso it and make fast. Then the men of the destroyer could take their time about completing the work of capture. He naively explained that it would not be necessary to tie up the submarine fast as soon as the periscope had been roped, but that the cowboy could play with it as an angler does a game fish. These things sound ridiculous, but the persons who suggested them were in deadly earnest and take the rejection of their ideas to heart. It is the hardest task imaginable to convince an inventor that his idea won't do. His ideas are his children and he simply refuses to see them killed. It is like having a mother walk in here with an infant, have us cut its throat, hand it back and then have her depart smiling. It simply can't be done. Incidentally, most of those suggesting submarine catching devices come from persons in the Middle West who seldom or never see the ocean.

ONE ASKS $40,000,000.

"Another wrote to us from Europe and wanted $40,000,000 for a device which he said would be of great value to our navy, but the nature of which he did not divulge. Asked for an explanation he refused information before he received payment, stating that he could not be caught and was not going to have his idea pilfered without remuneration. As an evidence that he was a real inventor and had worth while ideas, he sent us a model of a miniature celluloid airship, explaining that an airship so constructed when in the air would be invisible, for the rays of light would penetrate through it. He called it an invisible airplane, wanted only $2,000,000 for the use of the invention, but neglected to explain how to make the machinery and aviator also invisible and just how a celluloid machine could be made which would carry them.

"Another man said he had a net device for catching submarines. He wanted to have his invention used on a royalty basis, the government to pay him a certain sum for every U-boat which it caught.

SUBMARINE IDEAS.

"One of the most frequent devices suggested is a steel net to be fastened to the sides of vessels which would arrest and turn aside torpedoes before they could do damage.

"The principal objections to these devices are that the nets heavy, difficult to hold in position, unmanageable in a heavy sea, and that they interfere with the speed and with the ability of the vessel to maneuver. Many of the suggested devices would prevent the launching of lifeboats or rafts from the vessel. It is barely possible, however, that there may be developed some form of this general plan which will be found practicable.

"Here are a few of the thousands of things which would-be inventors should know about U-boats and torpedoes before they attempt to suggest offensive and defensive devices.

"Many hundreds of proposals have been received advocating one-man submarines and submarines of small size. This subject has been given exhaustive consideration and it has been conclusively proved that no small submarine can be provided with the necessary power, speed, equipment and living quarters for the crew to enable it to operate successfully in the submarine zone.

"The submarine when submerged so that its periscope does not project above the water is blind, but not deaf, for it is provided with sound detectors which will indicate the approach and direction of a vessel, if its own machinery is at rest or moving slowly, with noise so slight as not to interfere with the listening. The propagation of sound through the water is more rapid and efficient than through the air, because water does not have so great a cushioning effect upon sound waves. The human ear can detect sounds having periods of vibration as low as sixteen a second and as high as 40,000 in extreme cases, so that there is a very wide range of pitch over which the listening devices can be used.

"When a submarine is cruising on the surface the top of the periscope may extend to a height of twenty-four feet above the water, thus giving a range of vision of about six miles to the horizon if the day is bright, while an observer standing upon the conning tower can see the horizon at a range of only about four and one-half miles. However, the observer usually can see much more distinctly by his direct vision. The upper parts of vessels can, of course, often be seen above the horizon.

"As the submarine approaches an enemy's surface vessel it submerges, the periscope being the only evidence of its presence. Periscope sighting of the target is necessary, as it has been found impossible to see through an underwater window far enough for practical observation. If the sea is rough or the weather misty or foggy, the periscope may not be detected until its prey is destroyed by a torpedo.

MODERN TORPEDOES.

"The modern torpedo varies in size according to the service for which it is intended, and ranges from fourteen inches in diameter and fifteen feet in length to twenty-one inches in diameter and twenty-one feet in length and weighs from 1,800 to 2,000 pounds. It is capable of a speed of thirty miles an hour, and when travelling at normal speed possesses great momentum, about 62,000 foot second pounds.

"The modern torpedo is self-propelled, being driven through the water by its own compressed air motor, the air being supplied from a strongly built reservoir within the body of the torpedo itself. The range of a torpedo is approximately a mile, those designed for use on battleships and destroyers being longer range than those for use on submarines. The torpedo keeps a fairly accurate course by means of a gyroscopic steering mechanism, which is immune to outside magnetic disturbances. The depth at which a torpedo travels may be regulated to strike the most vital part of a vessel, and that is about ten feet below the surface.

"The torpedoes usually are provided with means to cut, more or less effectively, through nets placed in their path. The detonation of a torpedo is accomplished through a mechanism placed within its war head. And here is a point which is not but should be understood. If the torpedo is checked in its forward motion or turned from its course, the firing mechanism instantly ignites the heavy charge of explosive contained within the war head. It is not necessary to strike a firing pin at the head of a torpedo to detonate the charge. I always have on hand a number of photographs showing the tremendous size of the holes which torpedoes make in vessels, and a display of these is sufficient to silence the inventors who have schemes for 'plastering' over or filling the holes as rapidly as they are made. Really, some badly informed persons appear to believe that it is almost as easy to plug up a torpedo hole as it is to cover a tire puncture with a patch."

As fully ninety per cent of the proposed inventions are intended to combat the U-boats of the enemy, it is obvious that there is a considerable duplication of ideas. Also, it has been noted, a great majority of the would-be inventors are lamentably ignorant of the technical side of submarine warfare. Because of this the Naval Consulting Board has issued a booklet entitled, "The Enemy Submarine," dealing fully with this division of sea warfare and now is prepared to send it to all who apply. A careful study of this booklet should set those striving to perfect defensive devices against U-boat attacks on the right track, thereby saving a considerable amount of time, money and energy now wasted.

Offerings Range from the Ludicrous and Fantastic to the Impossible, but None Is Turned Away—Many Complaints Heard.

American Dugout Street Scene

The above official American photograph shows United States soldiers, members of the famous Forty-second Division, at rest outside their dugouts on the American sector (presumably somewhere near the present fighting front) after a sharp engagement with enemy. Americans soldiers are noted for neatness of up-keep of their quarters.

American Wounded in England

Wounded Americans are receiving the best of care in England. In the above picture are shown some of General Pershing's men recuperating in the beautiful garden of the Red Cross Hospital No. 21, at Paignton. The hospital formerly was the country home of an English woman, who has graciously donated it to our countrymen for war relief, and the surroundings are certainly cheerful and ideal for the purposes.