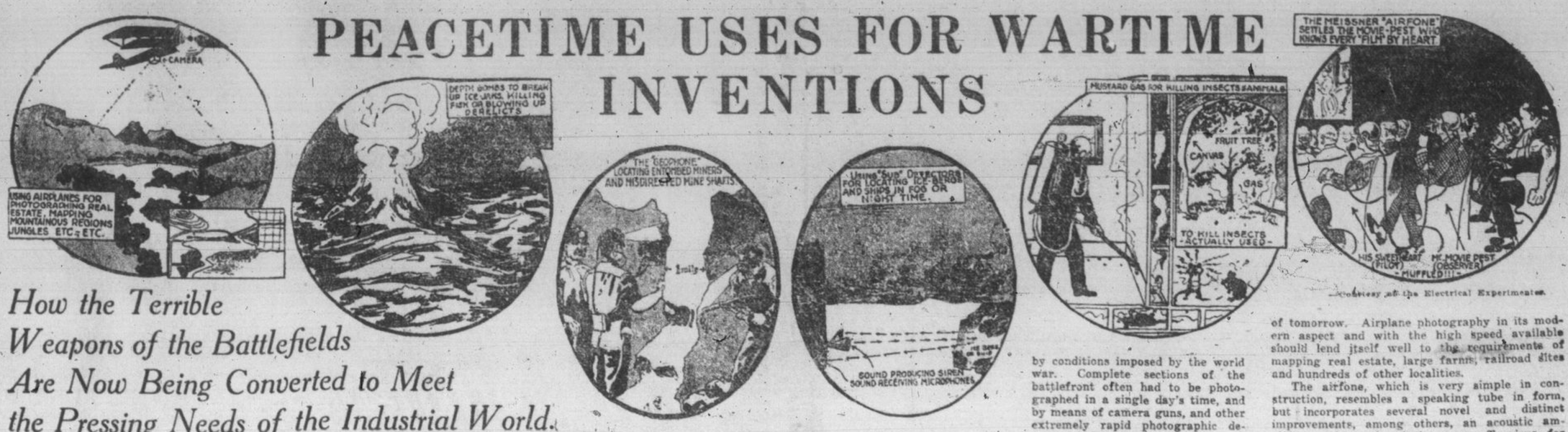
New and Interesting Facts from Science and Life

PEACETIME USES FOR WARTIME INVENTIONS



How the Terrible Weapons of the Battlefields Are Now Being Converted to Meet the Pressing Needs of the Industrial World.

THE war's invention of marvellous devices of destruction will not be lost to the reign of peace, for peace-time uses have been found for war inventions. How practically everybody will be benefited by the industrial application of some of the greatest inventions yet perfected by man, and many thousands more will live to reap the benefits accruing from the as yet undreamed of applications for both business and pleasure, of airplanes, tanks, wireless devices, submarines and a thousand and one other attainments of the world's master scientific minds, is pointed out by H. Winfield Secor, writing in the Electrical Experimenter.

Take the airplane, for example, whose wonderful development is attributed solely to the war. Many persons have an idea that the airplane is a peace-time luxury, not to mention a war-time necessity. But such is not the case. If for no other reason the airplane has come to stay in its everyday application to the transportation of mail and the lighter classes of merchandise as by multiplying its everyday utilities, the practical development of aircraft is bound to result. This country, as well as every other power, is keen, of course, to develop aircraft to the highest pinnacle of practicability. The United States army, as well as the navy department, has only recently put up a stiff fight for many millions of dollars with which to carry on much-needed airplane developments.

One of the best ways to train fliers, especially in this country, where a large standing army or navy personnel is never maintained, will be without a doubt to encourage in every way possible the commercial application of flying machines of all types. Already in England a piano has been transported across the English channel by airplane, and airplanes are at present available which can lift very heavy loads, and, moreover, they are daily becoming more reliable and less liable to accident, should any part of the machinery fail while in the air. Some of the latest types of airplanes are guaranteed to right themselves and land safely, even if the engine stops in mid-air and the control cables become tied or ruptured.

Tanks were already in use for agricultural and other purposes long before the world war, and in fact the first tanks used by the British army on the battlefields of France were reconstructed agricultural tractors, built in the United States. These tractors were armed with steel plates and fitted with rapid-firing guns. Besides the usual plowing and cultivating operations tanks are now used for hauling large logs in the lumbering districts of the great West. In these localities it is difficult to build even small railroads, and it doesn't pay to build any extensive trackage for such log railroads, as they are not apt to be used for any great length of time. Therefore, the tank tractors should prove very useful, as they can travel over practically any kind of ground, including ditches and even over logs.

A very good use for the boche's far-famed poison gas is to annihilate the rats by asphyxiation—"sauce for the goose is sauce for the gander." The Germans thought they had something brand new in strictly war inventions when they tried poison gas on the allies, but among other recent applications of this invention to peace-time utilities and requirements was that of killing rats. Of course it goes without saying that before injecting a few dozen cubic feet of mustard or chlorin gas into a rat hole, that you had best provide yourself with a guaranteed gas mask and also buy a few dozen corks with which to plug up the other openings in the walls or floor boards.

Gas masks, as well as gas detectors, find


GAS MASK WORN BY FIREMEN

many uses in everyday life. The gas masks are useful to firemen and rescue squads and prove particularly efficacious for use in entering gas-filled mines and other subterranean passages. Gas detectors are not so well known to the general public, as these proved one of the extremely valuable keys to the success of the allied soldiers. One ingenious form of electrical gas detector also permits of the measurement of the amount and strength of the gas present; also a pair of resistance coils and a galvanometer, forming a wheatstone bridge system.

At the bottom of the apparatus is a metal block in which there are two cavities, each containing a gas detecting wire, and the gas reaches one of these wires through a series of perforations placed in the external wall of the block. This clever patent has been granted to Gilbert A. Shakespear of Birmingham, Eng. (United States patent No. 1,304,208).

Liquid fire should prove effective for several industrial uses, such as burning oil from iron and steel structures, vessels, etc., and, according to H. Gernsback, also for blazing a path or hole through ice jams, which frequently prove extremely dangerous during the American winters, when they clog rivers and streams, as well as dams. Under certain conditions it might also be used to blaze paths through jungle brush.

Airplane photography was pre-eminently one of the most highly developed sciences brought out by conditions imposed by the world war. Complete sections of the battlefront often had to be photographed in a single day's time, and by means of camera guns, and other extremely rapid photographic devices, thousands of pictures could be taken within a few hours in such a manner that when the films were developed and prints made, which took a short time with the perfected apparatus used by the army in the field, these prints could be patched up by map experts so as to give a true composite photograph of an entire region.

The work done by the photographic department of the army in this respect was nothing short of miraculous. At a recent exhibit of this department's work, one of the composite aerial photographs showed the entire city of Washington, D. C., and environs. The airplane flew over Washington in a certain prescribed course and took all of the photographs which composed the composite view in a little over two hours! The individual prints making up the composite view, usually measured about three inches square.

Imagine how easy it now becomes to obtain actual physical maps of such regions as the Rocky mountains and other inaccessible and treacherous localities so that geographies may indeed prove a marvellous revelation to the school students of tomorrow. Airplane photography in its modern aspect and with the high speed available should lend itself well to the requirements of mapping real estate, large farms, railroad sites and hundreds of other localities.

The airfone, which is very simple in construction, resembles a speaking tube in form, but incorporates several novel and distinct improvements, among others, an acoustic amplifier, making the device very efficacious for carrying on conversation between the pilot and observer in an airplane, where it is extremely difficult to hear under ordinary conditions, due to the great noise of the engine.

A new application of this device is here suggested, namely, to muffle the ever-present and detestable "movie pest." Not only are these miserable atoms of humanity present in the dark quiet of the movie theatre, but also in all of the regular theatres. These brilliant insects must have seen some of the shows about 999 times—so replete is their knowledge of the "star" and "staress" and all the lesser satellites appearing in the play. They will tell you loudly the climax half an hour before it comes off, and so on. So, thanks to the airfone, it should not be so very long before "ordinary mortals" shall be able to go to the theatre and enjoy a performance without having one of these human dramatic compendiums racing along two knots all the way through the play and telling his sweetheart every move just before it happens.

The geophone is a remarkable physical instrument greatly improved and perfected during the war by the engineers connected with the allied technical staffs, and used with great success for the purpose of locating enemy artillery and other military operations. Now it has found a distinct peace-time use.

The saving of many miners' lives has been made possible, thanks to the geophone, which can detect sound vibrations through the earth at surprisingly long distances. It has been used successfully in some government mine tests to pick up the sound of a pick-axe at a distance of about one-quarter mile. By means of this wonderful instrument, therefore, it is now possible actually to locate entombed miners at considerable distances. Communication with them is also possible by this means. Knowing the location of the entrapped men, it becomes much more expeditious to carry on rescuing and excavating operations in order to save them.

The submarine detector, which was wonderfully perfected during the world war, should find many peace-time applications, particularly on all ocean-going and inland lake vessels, for the purpose of locating other vessels in a fog or at night, and also for accurately locating the presence of icebergs and reefs. The submarine detector, of which several different types were developed during the war, operates on one general principle, that of sound wave transmission through the water. The sound produced by the propeller and driving motors or engines of the distant vessel is picked up by a sound-sensitive electrical instrument, known as a microphone. For locating icebergs or other obstructions, which, of course, do not produce any sound themselves, there is required a sound producer such as an under-water electric bell or siren.

Depth bombs apparently seem to be one of those peculiar inventions which follow the old adage—"killing two birds with one stone." Not only did they prove the undoing of the career of many U-boats, but they likewise show great promise of performing many useful peace-time tricks as well. Among other things, the depth bomb should prove uniquely successful in blasting ice jams in river gorges, etc. And as one of our naval officer friends recently told us, thousands of fish are stunned and killed every time a depth bomb is detonated on the water. Therefore, why fish with nets in the ocean, when by means of a few depth bombs detonated 30 to 40 feet below the water you can stun or kill thousands of fish? Then by a simple suction arrangement pull them into the fishing smack so fast that it would take 17 book-keepers and three adding machines to keep account of the catch. Another practical use for depth bombs is the clearing away of derelicts or other obstructions in harbors, lakes or on the ocean.

America and the other allied countries can make use of all the superfluous U-boats without a doubt. For exploring the flora and fauna of the undersea regions they are ideal. They can be fitted with powerful electric projectors, observation lenses and windows, when not only can visual observations of the deep sea life be studied, but even motion pictures can be taken. And for pleasure trips at the seaside resorts who would not like to explore under water?

Ripening Tomatoes by Wind Power

TOMATOES ripen slowly, unless they get sunshine on all sides; and as the first crops on the market get the best prices, a truck gardener decided not to wait until his tomatoes ripened on the vine, where the sun only reached them on one side. Accordingly he gathered half-ripened fruit and laid it, one layer at a time, on a turntable, which exposed all sides to the sun as it revolved. Next he mounted a light windmill on a plank base, fixed a small bevel gear on the horizontal shaft, and set it in mesh with a bevel gear of the same diameter which turned on a vertical shaft running down to the wooden base, a small spur gear being fastened to the lower end.

He then made a turntable by cutting a disk, two feet in diameter, of hard wood, with a compass saw, after which he cut notches in the edge so as to make teeth which would mesh with the spur gear on the vertical shaft. As the spur gear was very small, the gear ratio caused the turntable to revolve very slowly, thus providing

Wind-Driven Turntable That Exposes All Sides of Ripening Fruits or Vegetables to the Sun.

the best condition for ripening the tomatoes without unduly taxing the power of the mill.

A table of this kind, which is described in Popular Mechanics, works excellently with water power, and water wheel connections are easy to install if a stream runs near the garden; but whatever motive power is used it is necessary to load the table evenly, so that it will balance and turn without any unnecessary handicap.

STRANGE FORMS of GREETING

STRANGE forms of greeting are prevalent in various parts of the world. In Manila it is customary for women to caress the face of their man caller. In Iemnria, near the Philippines, two natives on meeting take hold of each other's foot and rub their faces with it. In the Fiji islands they tickle each other's nose with red feathers carried for this purpose. In Burham they grovel before you while uttering the melodious words "Hib-nib," whatever this means. In the South Sea islands they swing before you their necklace of shark's teeth.

The inhabitants of Socotra, an island in the Indian ocean, kiss the person to be honored on the shoulder, while those of the Great Cyclades, in the Aegian sea, pour water on his head. A Laplander greets you by rubbing his nose against your forehead, while a negro of Cape Lopez will kneel down before you and clap thrice with his hands. The Japanese takes off his wooden shoes and the Chinese, while shaking his own hands and inclining his head, will greet you with his "Tsin-tsin," etc.

All this may seem ridiculous to an American, but after all, it is not any more ridiculous than our own modern custom of almost crushing one another's fingers in shaking hands; nay, the custom of Manila women will appeal to many as the more acceptable one.

Taking off the hat by men, which for ages has been the accepted mode of greeting in the western world, was originally a sign of disarming or defencelessness or destitution in the presence of a superior. Polynesian or African chiefs require more or less stripping, such as uncovering to the waist, which is the custom in Tahiti. Eastern nations, on the other hand, are apt to see disrespect in baring the head, but insist on the feet being uncovered.

"Striking hands," used in the West to make the greeting more hearty, is the emphatic form of the original gesture of grasping hands, which makes its appearance in antiquity as a legal act symbolic of the parties joining in compact, peace and friendship. The American variety, called "shaking hands," appears not to have become usual until the Middle ages. Among African tribes the parties press their thumbs together.

Making VOICE Like CANNON'S ROAR

A MAN'S voice can be made as loud as the cannon's roar; it can be heard two or twenty miles. The ticking of a watch can be amplified until it sounds like breakers on an ocean cliff.

Wireless telephone operators say that it is no trick at all to magnify sound four or five million times or indefinitely. All that is needful is to connect a number of vacuum valves in multiple with a wireless receiving set and the thing is done. At the first receiving contact a voice will be normal. Cut in one vacuum valve and it is raised seven times; thereafter it squares itself—seven times seven to 49 for the next vacuum valve, and 49 times 49 for the next, and so on. Volume of sound is meant, not power of transmission.

In a test recently conducted in San Francisco a phonograph was connected with an amplifier to supply all the city with song and amusement, when the police urged the experimenters to desist.

In the stadium at Golden Gate Park the ticking of a watch was made audible all over the grand stand while an athletic meet was in progress. Capt. Robert W. A. Brewer, an experimenter, moved off 2000 feet and spoke quietly to his dog, and the dog couldn't be held. A wireless station recently received a telephone message from Europe and through its amplifier startled duck hunters in the marshes eight miles away.

The exterior of the vacuum valve used to amplify sound resembles an ordinary 16-candle electric light bulb. Through the glass, however, can be seen electric windings that are dissimilar. Around a filament are wound convolutions of wire called a "grid." Above the grid is an encircling metallic plate. The current, it is explained, passes through each in the order described. The incoming wireless signals travel down the aerial wire to the tuning set and then to the vacuum valve, which is a "detector" or receiver.

For practical purposes the vacuum valve has its use, as in warships, where the wireless telephone speaks its message through a horn to several officers instead of to one using earpieces. It can be availed of to address audiences.

How Fish Came to Be Sign of Christianity

SYMBOLS for many things seem to have been picked utterly at random and without any thought of any logical connection, but, in most cases, when the facts are known perfectly good reasons are found to exist for the choice of a particular symbol.

One very notable example of this was the selection of the fish by the early Christians as the symbol of their faith. Without a knowledge of the facts in this particular case no one could assign any real reason for the choice of such a

The "Ichthus" (Fish) of the Early Christians.

symbol of Christianity, for what possible connection could there have been between fishes and the faith of the early Christians?

How the fish came to be chosen as the emblem of the early Christians came about in this manner, as students of the Greek language will readily recognize:

The Greek word for fish is ICHTHUS and is made up of the initial letters of the five Greek words IESOUS CHRISTOS, THEOU UIOS SOTER, meaning Jesus Christ, Son of God, Saviour.

The icthus has been frequently found engraved on the tombs of the early Christians, on their ornaments, vessels and other objects, where it was used to indicate that the owner was of the Christian faith.

How to MAKE Inexpensive WATERPROOF GLUE

SOME of the new waterproof glues developed primarily for aircraft purposes during the war offer the possibility of overcoming a difficulty that has proved very annoying, both to the automobile owner and to the manufacturer, wherever linoleum is used on the running boards or as a covering for the floor of the car. Ordinary glues which are soluble in water are not very effective in cementing linoleum, and most autopobile owners have soon discovered that the glue disintegrates and the linoleum comes loose after the car has been washed a few times.

Casein glues are admirably adapted to this purpose, according to the Scientific American, and if the quality is right and they are properly applied the linoleum should give no trouble during the life of the car. Casein glues are exceedingly resistant to the action of water and retain a very high percentage of their original strength, even after long immersion under water. They are comparatively inexpensive, and the materials from which they are made are readily available in the market. They are applied cold and will set without the application of heat.

Information on casein glues and their application may be obtained from the Forest Products Laboratory of the United States Forest Service, which is located at Madison, Wisconsin.