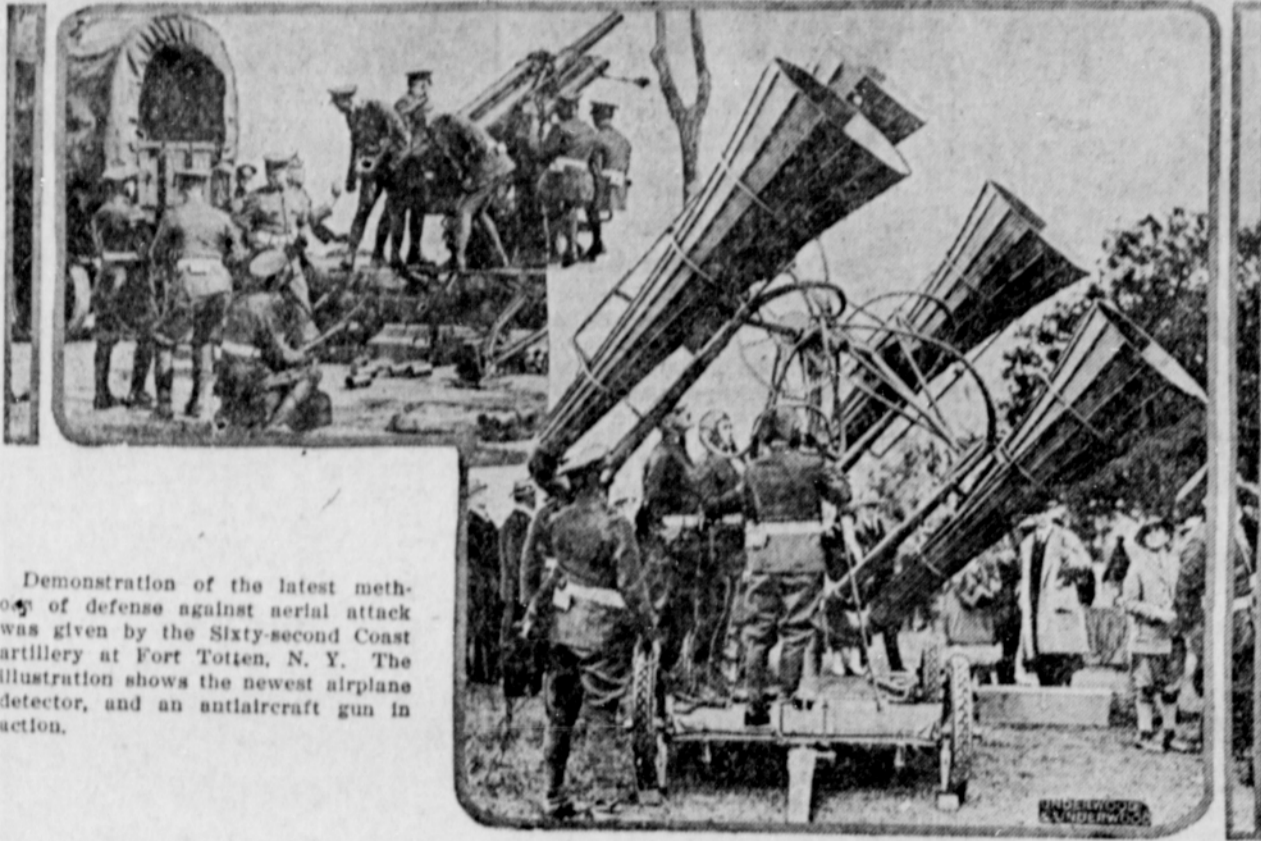


Guarding Metropolis Against Attack by Air



Demonstration of the latest method of defense against aerial attack was given by the Sixty-second Coast artillery at Fort Totten, N. Y. The illustration shows the newest airplane detector, and an antiaircraft gun in action.

Bromine at Last Gets Its Revenge

Once Defamed Chemical Comes Into Its Own.

Washington.—The Ethyl has gone down to sea for automobiles. The Ethyl is a specially constructed ship for robbing sea water of bromine.

"Bromine, in the last few years, has been getting revenge for defamation of character," says a bulletin from the National Geographic society from its headquarters in Washington.

"In 1906 a popular author divided all people into two kinds, bromides and sulphites. The sulphites, transferring chemical character to men, were the effervescent, eager, bright, original sort; the 'bromides' the mild bores, people who were always saying the same things in the same old way.

"Most people are formally introduced to bromine, the element which forms a part of all bromides, in their high school days, and they remember it as a distinctly unpleasant smelling, dark brown, heavy liquid that gives off an ugly brown gas readily.

"How little does the world know its chemicals! In less than ten years bromine stepped out of the role assigned it. 'Mild, conservative, meek,' bromine was one of the first poisonous gases used in the World war. Bromine made civilization gasp in horror. And by a still more recent feat of chemical acrobatics bromine has taken to serving automobile engines. The Ethyl has gone for bromine to help in the making of an 'antiknock' aid. While it does not enter into the compound used, it has a finger in the fuel for those explosions which make it possible to describe an automobile engine as 'a Gatling gun firing 9,000 shots per minute.'

High Seas a Producing Area.

"The entrance of the 'high seas' in the bromine market divides the production between three major sources. The United States and Germany have been the chief producers. The Ethyl, which has been transformed into a floating chemical laboratory, is prepared to treat 7,000 gallons of water per minute. So small is the bromine content that this large amount of water will only yield between four and five pounds of bromine. Chlorine is employed to treat the water and the extraction process is fairly simple. The chlorine can be used over and over again.

"The Ethyl is sent to sea because of the impurities that might occur in shore waters. A further reason suggested is that water taken from the ocean at a great depth contains chemicals more highly concentrated and therefore with more bromine.

"Bromine is now obtained chiefly from Michigan and from Strassfurt, Germany. Michigan and Strassfurt happen to be the sites of large salt deposits and with the salt are other chemicals, such as iodine, bromine and potassium.

"In these deposits world history is salted down and preserved for our knowledge. It is possible to reconstruct prehistoric geography from an

exploration of the extent of the beds and the strata recorded in rock salt. At some distant time a great area of the Prussian plain was a bay of the ocean. It was a bay like some of those found today on the east shore of the Caspian sea where a shallow depression is practically cut off by a sand bar. Drawing the necessary water from the Caspian sea these bays crystallize tons upon tons of salt annually, gradually filling themselves up. When salt crystallizes a mother liquor of other minerals, highly concentrated, remains. If the feeder channel is deep this is drawn off as lighter water flows in. But if the stopper is firm in nature's huge crystallization vat, the mother liquors themselves crystallize out and leave

iodine, bromine, potassium and other substances.

"In places the salt deposits in the Strassfurt region are nearly 4,000 feet thick. It is estimated that at least 8,000 years were required for such a deposit. A basin of normal sea water would have to be 30 miles deep to form such a deposit, so it is certain that north Germany was once the site of a Caspian sea or a Dead sea.

In Medicine and Photography.

"Bromine is extracted from the mother liquor after the salt is taken out of the brine from the deposit. The process is simple chemically, but the percentage of bromine is so small that the price has long been high.

"In medicine and in photography bromine fulfills the part given it by the humorist. Certain bromides are considered excellent sedatives. In the dark room bromides hold back the silver salts in the emulsions on paper and films which are as sensitive to light as the eye of a bat. Bromine is also important to the dye industry.

"But it is hard to deny the irony of bromides in their newest roles of speeding enemies to destruction and speeding up automobile engines."

River of Gold Is to Be Drained

Untold Riches Buried in New Zealand Stream.

Wellington, N. Z.—Recovery of untold riches by damming at its source a river whose bottom is said to be virtually paved with gold will be made possible under plans initiated by the minister of mines.

The Kararau river—known as the "River of Gold"—taps some of the richest "diggings" in New Zealand, and its swift waters are believed to have carried enormous quantities of gold from tributary systems.

From one branch alone nearly \$100,000,000 in gold has been taken in the last half century, and other streams also have been prolific.

The "River of Gold" itself retains all of the gold that has been poured into it. Save in patches, where the water level was low during dry periods, it never has been worked. Extraordinary results were obtained during these few experiments.

The present plan is to dam the source of the main stream at Lake Wakatipu, and hold the water back during the dry winter season, when the mountain sources of the lake are frozen. With

the river drained dry, the gravel and sand in several promising pockets will be attacked and deposited about the flood level and then worked during the summer months.

This is considered the only feasible way to get at the gold-covered bottom, as the use of dredges is precluded by the swift current. If mining engineers are correct in their assumption, the virgin river will yield millions in gold during the first winter and summer.

The river is divided into 122 claims. They will be worked by individual claim-holders and companies, who will pay to the parent company 20 per cent royalty on gold findings for cost and maintenance of the dam.

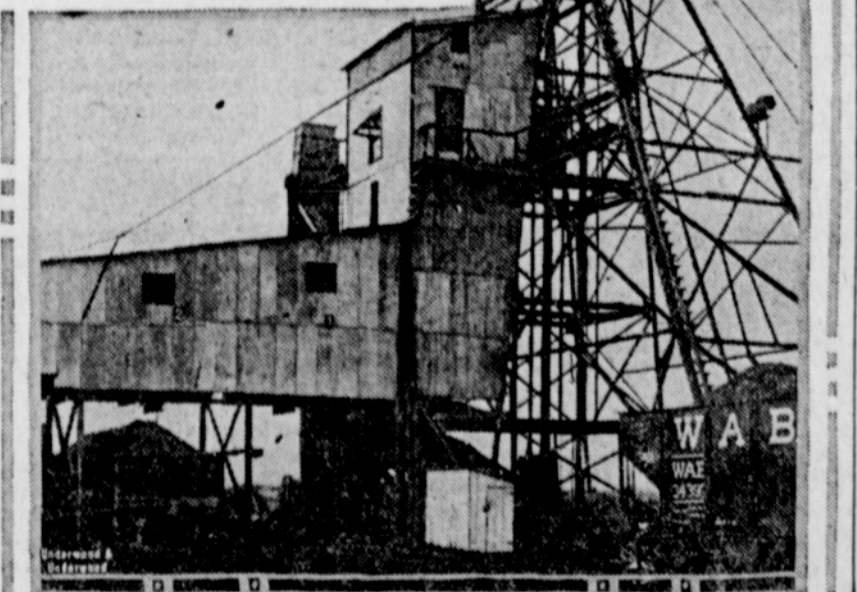
The scheme has been approved by the government.

Engineering Term

The term "four-cycle," used in connection with an internal combustion engine, means that there are four piston strokes for the accomplishment of the processes in the engine. These strokes are termed the intake stroke, the compression stroke, the power stroke and the exhaust stroke.

Electricity Digs the Coal Here

The only coal mine in the world which was dug by electricity, where the fuel is hoisted by electricity and then hauled to market by electricity, is the property of the West Virginia Coal company at Gillespie, Ill. Every detail connected with the operation of the mine, from the electrical drills along the coal face to the hoist, is electrical. The mine hoists 2,000 tons of coal per day.



Hen's 4 Adopted Pups Scorn Her Worm Diet

Springfield, Mass.—When a mother beagle hound on the farm of James W. Cesan in Agawam deserted her four puppies the orphaned family were taken over by a Rhode Island red hen. Now they are inseparable.

Mr. Cesan first discovered the waifs snuggled beneath the hen. The only drawback seems to be the hen's failure to interest the puppies in the worms and other choice morsels she provides.

Pretty Tableau Presented for Women's Council

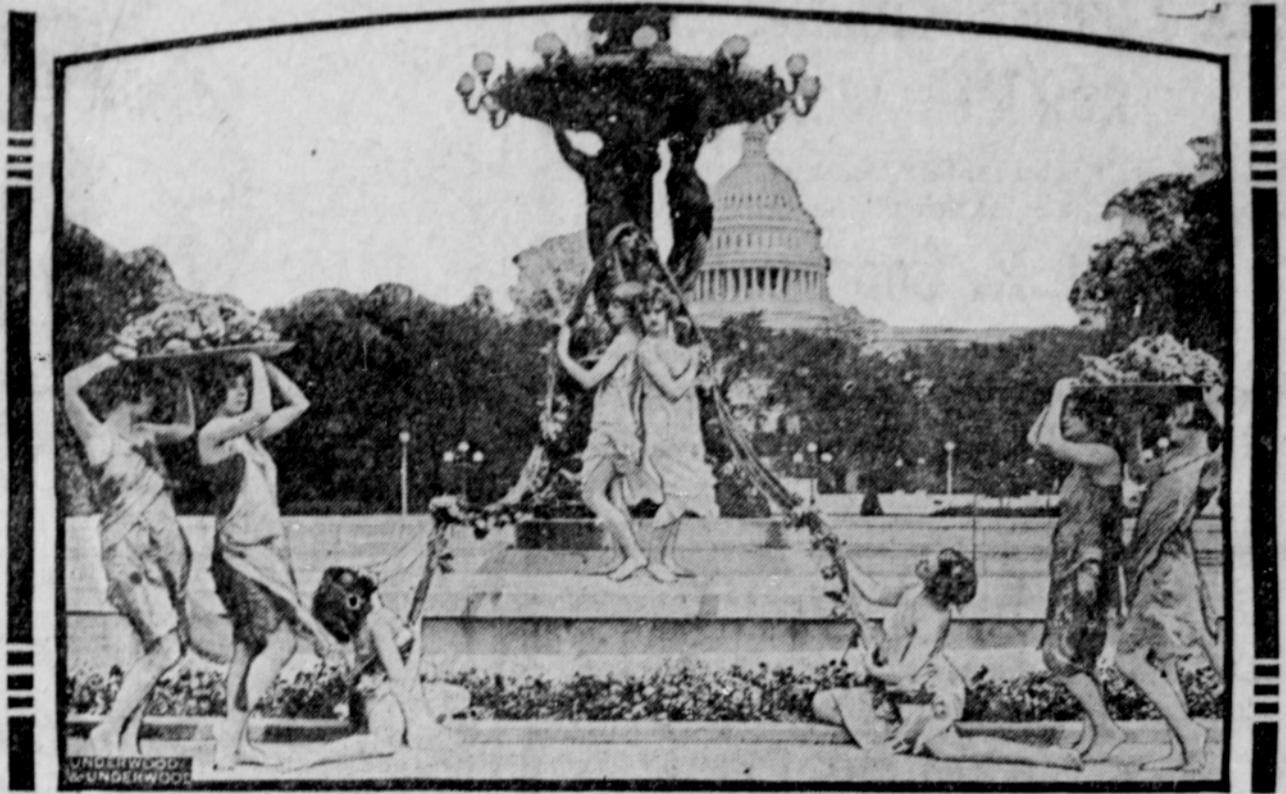


Tableau of "Peace and Plenty" from the pageant of "War and Peace" given in Washington in honor of the International Council of Women. The tableau was presented by the McKinley dancers in the National Botanic gardens.

Physical Defects Cause of Mishaps

Navy Airmen Given Keen Examination Before Flights.

San Pedro, Cal.—Flight psychanalysis, practiced to prevent aerial accidents, rather than mend broken bones or patch up luckless pilots and observers after a crash, if they survive, has increased the efficiency of United States naval aviators to a large degree, statistics aboard the U. S. S. Aroostook, naval aircraft tender, indicate.

Medical officers aboard the tender declare that 90 per cent of aerial accidents during the World war were due to physical and psychological defects of the flying personnel. Acting upon this percentage compiled from fatalities, the medical staff of the Aroostook has established a careful examination, scientific in every detail, over the 150 pilots and observers who take off in heavy bombers or light scout planes from the long, flat deck of the tender.

Flight Surgeon's Comment.

The flight surgeons observe the flyers each time before a flight is begun.

"I can tell by talking with a pilot in

the morning," declared Dr. Robert G. Davis, senior flight surgeon, "whether he is able to go aloft that day. If his psychological contentment seems shaky he has to stay aboard."

"We will not permit a man to fly who has domestic difficulties, or if his family objects to his going aloft. At the critical moment a pilot's mind may wander to what his wife said at breakfast and he ends in a fatal crash."

When an ensign is assigned to the Aroostook for flight duty, he first must be in 100 per cent physical condition; then he is subjected to a most searching psychological examination, Doctor Davis explained. Visual balance, visual muscle balance and tests of depth perception form the basis of the applicant's examination trial before he is awarded wings.

Then there is the low pressure chamber to climax the examination. The applicant is placed in the chamber and subjected to atmospheric changes

that he would encounter above the clouds.

The air in the chamber is rarefied until the aspirant to wings is near collapse. A chart then shows exactly what altitudes the man could operate in most effectively.

Many men, Doctor Davis said, are excellent flyers below 12,000 feet, while others are competent at 20,000 feet. Thus one pilot may be capable in a bombing squadron while another may be at his greatest efficiency in a flying or fighting squadron.

Surgeon in Full Control.

The fleet's flight surgeon has absolute control over all pilots in the aircraft squadrons. He declares them off duty if he thinks their physical condition demands. Constant flying, the surgeons say, produces a condition of staleness requiring frequent rests. Without these short vacations breaks occur in the efficiency and men and machines would be lost.

The flyers' quarters aboard the Aroostook are kept well ventilated. The food is carefully prepared and served; even as the college athletes' training table is spread, so it is with the navy's athletes of the air.

To sum up their ceaseless efforts for the pilot's welfare, the flight surgeons say, "It is easier to build planes than keep men alive."

Old Tombs Are Found in Greece

Ancient Vases and Bronze Age Dagger Unearthed.

Princeton, N. J.—Important, archeological discoveries have just been made according to word received here by Prof. Edward Capps of Princeton university. Professor Capps is chairman of the managing committee of the American School of Classical Studies in Athens, under whose auspices the excavations are being made. Twelve chamber tombs of various periods have been found, containing a vast amount of material, as they had never been plundered.

The Argive Heraeum is situated on the top of a hill midway between Argos and Mycenae. It was a temple to Hera and was at one time one of the most important sanctuaries in Greece and the foremost temple of Hera in the Peloponnese.

Left Money for Project.

Dr. Charles Waldstein did some excavating on the site in 1892 and then abandoned it. One of his assistants, Prof. Joseph Clark Hoplin of Bos-

ton, came to the conclusion that important discoveries were possibly there. He believed that an investigation might disclose the remains of a prehistoric settlement and also that there were more Mycenaean chamber tombs besides the two discovered by Doctor Waldstein. Last year he made plans to return, but died in January before he could carry them out. He left a fund, however, to be used by the American school in carrying out his cherished project.

The work so far has completely justified the beliefs, and there is no doubt that an important settlement existed on the site in prehistoric times. Trial trenches have been sunk in the terrace above the old temple and have revealed house walls and pottery from all three periods of the Bronze age.

On the eastern branch of the Yerogalero ridge the excavations resulted in the discovery of 12 chamber tombs in three groups fairly close together. The tombs are in general of two types, one with a short, broad dromos, or entrance passage, and a comparatively small chamber; the other with a long, tapering dromos and a large chamber.

Three Tombs Excavated.

Three tombs of the first type have just been completely excavated. They date from the late third Helladic period, about 1400-1100 B. C. The tombs yielded good vases of the late third Helladic period and also gems, beads and a very fine bronze dagger inlaid with gold, with a design of flying birds. The remaining tombs are now being excavated, and one tomb of the second type of impressive dimensions has been found. It has a dromos 12 meters long and 2 meters wide, and the chamber measures roughly 5.6 by 4.6 meters. This and the remaining tombs are furnishing material for the archaeologists, who will probably complete their work in June. The excavations are being made under the supervision of Dr. Carl W. Blegen, assistant director of the American School of Classical Studies at Athens.

Tries New Way

Denver.—John Wentz tried to end his life by swallowing safety razor blades here. The blades cut his mouth and throat, but would not go down. Doctors expect him to recover.

In its extensive coal mining operations Pennsylvania uses practically half of the country's total production of permissible explosives.

Whale Trapped on Texas Coast



This big whale strayed past the shoals from deep water at Sabine Pass, Texas, and was unable to return to the Gulf of Mexico and freedom when low tide came. Members of the Sabine Pilots' association turned whalers for the day and caught him. For a time he was kept "in leash" and exhibited to thousands; but when he snapped three-inch lines like pack thread he was killed.