

## PHYSICS

## Humidity Controlled In Electric Refrigerator

► AN ELECTRIC refrigerator with accurately controlled humidity is the claim advanced by Wilson P. Boothroyd of Philadelphia for patent 2,424,735, which he has assigned to the Philco Corporation. Control is effected by means of what he calls a "humigrad". This is a plate of glass or other non-conducting material having on it a grid of thin platinum ribbon. Resistance to flow of an electric current rises when the humidity goes up, falls when humidity decreases. These changes can be used to turn on and off the necessary humidity control mechanism.

*Science News Letter, August 9, 1947*

## AERONAUTICS

## Helicopters Now Deliver And Collect Mail Sacks

► HELICOPTERS will soon be picking up mail sacks at the Los Angeles airport, delivering them to the central post office and carrying mail from the central office to other post offices with a range of 50 miles. They also will pick up mail at the suburban offices.

Los Angeles Airways, Inc., the first company to be given a government Civil Aeronautics Board certificate for helicopter mail and property service, will have three years in which to demonstrate the value of this new type of mail handling. The company will serve 30 post offices, traveling over three routes that total some 200 miles in length. Four Sikorsky S-51's are to be used. They will make three daily runs over their routes, greatly cutting down the present time for truck deliveries and collections, it is expected. Service will begin this fall.

*Science News Letter, August 9, 1947*

## RADAR

## Altimeters To Aid Safety In Commercial Transports

► WINTER bad-weather flying will be safer this year in commercial transports now being equipped with radar altimeters. These permit a pilot to know just how high he is above the ground.

One company, United Air Lines, has just revealed that it has purchased 200 of these instruments for installation in mainliners and that they will be in use late this fall.

The radar altimeter is an electronic instrument that indicates to a pilot his height above the surface of the earth below, or the distance to mountain obstacles ahead. Its effective range is approximately 8,000 feet, both below and ahead of the plane.

The instrument sends out a radio signal similar to the pulse emitted by radar devices. It is reflected back by the earth, and the elapsed time of its travel from the plane to the ground and return is measured and converted automatically into feet on an indicator on the plane's instrument panel.

The instrument can be pre-set to give a warning light at any altitude of less than 1,000 feet. In fact, it has three lights: a green one shows that the plane is well above the pre-set elevation, an amber light shows when the plane is approaching the pre-set altitude, and a red light indicates that the plane is at or below the safe level.

Planes will continue to use standard aneroid barometers. These indicate height above sea level, not the height above the underlying terrain. The two types of altimeters will be used in conjunction with each other.

*Science News Letter, August 9, 1947*

## CHEMISTRY

## Ammonium Nitrate Needs Careful Handling to Ship

► THE AMMONIUM nitrate explosion of a cargo ship in Brest Harbor, France, following so closely the similar Texas City disaster, will probably upset the idea of some explosion experts that additional regulations to be followed in handling and shipping this important chemical are unnecessary. They refer to pure ammonium nitrate, uncontaminated with organic material.

Ammonium nitrate, in peacetime, is used largely in fertilizers. In wartime it is used both for fertilizers and in explosives. Hundreds of thousands of tons were made during the war in the United States for the government.

Domestic production before the war was only a few thousand tons each year, but much was imported. Now it seems that very much will continue to be made in America because its use in farming has greatly increased. It probably will be a permanent competitor of sodium nitrate and ammonium sulfate for top-dressing and side-dressing crops. Interstate shipments will exceed greatly the quantities shipped in the past. (*See SNL, April 26.*)

*Science News Letter, August 9, 1947*

# IN SCIENCE

## ARCHAEOLOGY

## Early Natives Caught Cod 3,500 Years Ago

► CODFISH were caught in Massachusetts long before the Colonial "codfish aristocracy" built its fortunes on this lusty and profitable fish. Test borings on the Back Bay site of a new skyscraper in Boston have turned up fish weirs that Indians built of stakes and brushwood, estimated to be 3,500 years old. Marks of these early settlers' stone axes can still be seen on the wood.

*Science News Letter, August 9, 1947*

## MISSILES

## Proximity Fuze Tested In Bombing Forest Fires

► BOMBS triggered by the famous proximity fuze may be used to fight forest fires.

Carrying fire-fighting chemicals, the bombs would be dropped from Army bombers and exploded at the level of tree tops to battle the costly blazes which each fall take a high toll in American forests. Tests bombings of controlled, man-made fires in Montana have been successfully completed, E. F. Horton of the National Bureau of Standards disclosed.

The new attack on forest fires was born a year ago at a meeting of scientists at the Bureau of Standards. Dr. E. U. Condon, director of the Bureau, urged that some of the wartime achievements of the Bureau should be turned to peaceful uses. Harry Diamond of the electronics section, which played a leading role in the development of the proximity fuze, suggested using the fuze against forest fires.

In the Montana experiments, the 165-gallon auxiliary fuel tanks of Army Air Forces P-47's and one-ton general purpose bombs of B-29's were filled with water and dropped over the experimental fires set by the U. S. Forest Service. The fuze exploded the tanks and bombs over the fires, either putting out the fire or wetting the surrounding area.

Millions of dollars worth of precious timber may be saved by bombings on forests in this country if the new attack is carried to forest fires.

*Science News Letter, August 9, 1947*

# E FIELDS

## ORDNANCE

### Permanent Magnet Gives "Snap" to Trigger Action

➤ GOOD SHOOTING with small arms is always faced with a dilemma. The novice is always told not to jerk the trigger but to "squeeze" it. This, however, introduces the mechanically undesirable factor known as "creep." To overcome this and obtain "snap" in rifle or pistol firing mechanism, Lt. Col. J. F. McCaslin of the Army places within the gunstock, just in front of the trigger, a small but strong permanent magnet. A horizontal arm of the trigger, made of a metal only lightly attracted by the magnet, is in contact with it. As the trigger is squeezed, this paramagnetic arm resists just enough so that when it does break free the desired "snap" is imparted to the action.

Rights in Col. McCaslin's patent, No. 2,424,247, are assigned royalty-free to the government.

*Science News Letter, August 9, 1947*

## BACTERIOLOGY

### New Machine Kills Germs With "Death Whispers"

➤ A MACHINE that makes germ-killing with "death whispers," or supersonic waves, more effective by putting a quaver in them is the subject of U. S. patent 2,424,357, issued to C. B. Horsley of Stamford, Conn.

Supersonic waves, which are like sound waves but come so fast no human ear can hear them, have been known for some 25 years to be effective in killing microscopic life forms. However, they have not been used as widely as they might, partly because there seems to be a critical lethal wavelength for each species—possibly more than one for some species, according to its age or other condition. So Mr. Horsley has undertaken to lay down a barrage of wavelengths by rapid modulation of a basic wavelength over any desired range or rate.

This is accomplished simply by placing a piston facing the vibrating diaphragm in the chamber containing the fluid to be sterilized, and moving this piston rapidly in and out while the diaphragm vibrates. This increases and

decreases the effective wavelengths in accordance with what physicists know as the Doppler effect.

Another machine that produces the same effect with both audible and supersonic waves in air is covered by patent 2,424,375, granted to W. A. Van Allen of Cambridge, Mass. In his machine, the face of the piston becomes a reflector for a "beam" of waves striking it at an angle, and modulates them in the same way.

Both patents are assigned to the Ultrasonic Corporation of Boston.

*Science News Letter, August 9, 1947*

## RADIO

### Planes To Use Static-Free Microwave Communication

➤ U. S. ARMY planes of the near future will be equipped with static-free radio communication systems, Brig. Gen. F. L. Ankenbrandt of the Army Air Forces told the General Electric Science Forum. This will be accomplished by using the so-called microwaves, better known perhaps as exceedingly short radio waves.

These are transmission waves of ultrahigh frequency similar to those used in television. They follow "line-of-sight" paths, so can not be used for long distances except where no obstacles intercept them. Ordinary radio waves follow the curvature of the earth, or are reflected from air strata high above the earth. The great objection to their use is due to static; very-high and ultra-high frequencies are practically static-free.

The installation of very-high frequency communication at all airports under the supervision of the Civil Aeronautics Administration is a definite plan of that organization, and many such installations have already been made. The CAA so-called radio-ranges will also use very high frequency known as VHF for short. These ranges provide the radio "beam" which pilots "ride." The beams, shot from carefully located stations along air routes, are followed by pilots with the assistance of instruments on their airplane panels.

"We are developing a great many devices which show promise of minimizing the effects of noise on our aircraft communication systems," the general stated. "We have found most types of atmospheric noise to be practically nonexistent in the ultra-high frequency or micro-wave region of the radio frequency system."

*Science News Letter, August 9, 1947*

## ENTOMOLOGY

### Grasshoppers Get Late Start on Wheat Crop

➤ GRASSHOPPERS were held back so effectively by the chilly, rainy spring and early summer weather over the Plains area this year that the bumper crop of wheat is being harvested without their being able to do it any harm. They are showing up in numbers now at the northern end of the Plains. However, state U. S. Department of Agriculture entomologists, it is not planned to attack them with poisoned bran bait until just before time to do the fall seeding for next year's crop.

There is heavy grasshopper infestation in Arizona and parts of California, and in these states poisoned bait is being distributed.

During the war, when all supplies of arsenic were needed for other purposes, sodium fluosilicate was substituted for the arsenicals formerly used in grasshopper baits. This was found so satisfactory that its use is being continued in most places. Arsenic baits are necessary under certain special conditions, such as heavy hopper infestation in alfalfa.

*Science News Letter, August 9, 1947*

## CHEMISTRY

### Five-Minute Francium Turns into Astatine

➤ A NEW TWIN of one of the most recently discovered chemical elements turns into another rare element after existing only five minutes.

Prof. F. A. Paneth of Durham University called the attention of the International Chemical Congress to this new isotope of element 87. This fundamental chemical building block was christened francium only this year by Mlle. Marguerite Perey of the Paris Radium Institute, who first discovered a radioactive isotope of element 87 with a half-life of 21 minutes.

The new isotope of 87 with a half period of five minutes emits alpha particles and changes into the element astatine number 85.

The discovery of the new five-minute francium isotope will be reported in a scientific paper by Drs. A. C. English, T. E. Crawshaw and their collaborators to be sent to the Physical Review, U. S. scientific journal.

*Science News Letter, August 9, 1947*