

ELECTRONICS

# Airborne Television

It gave the Army and Navy "eyes" in remote-controlled aircraft during the war and now promises revolutionary peacetime developments.

## See Front Cover

► NOW IT IS "walkie-lookie". Airborne television, that gave the Army and Navy "eyes" in remote-controlled aircraft and other important weapons for victory, was demonstrated to the public with a promise of many revolutionary developments from the use of television in peacetime airplanes.

Two systems of aerial television, known during the war as "block" and "ring," were shown to the press at the Naval Air Station at Anacostia, D. C., by Navy and Radio Corporation of America engineers who worked on the projects. The official U. S. Navy photograph on the cover of this SCIENCE NEWS LETTER shows the way a moored blimp looked at a "ring" television receiving station eight miles away from the plane at the time of the transmission.

"Ring" equipment transmits clear television pictures from up to 200 miles, while a more compact unit, the "block" system, is a smaller installation for use over shorter distances.

"Walkie-lookie," the picture equivalent of the small remote voice instrument known as "walkie-talkie," will come from the "block" system's light-weight, easily portable television camera, according to Brig. Gen. David Sarnoff, president of RCA. He predicted literal eyewitness news coverage for events in the future with the small camera.

Other predicted peacetime developments from the war's airborne television equipment include:

1. Television test pilots in experimental aircraft to eliminate the risk of life. Airborne systems could not only transmit views of the plane's surroundings, but also give controllers on the ground a continuous picture of the plane's instruments.

2. Sight transmission of weather and traffic conditions to air pilots and marine navigators.

3. Television eyes for industry and science that will present pictures of operations or experiments to distant observers. Thus, dangerous work such as that involved in many phases of atomic energy investigation might be seen "close

up" by observers at a safe distance.

4. Airborne exploration of hazardous regions with remote-controlled aircraft using television.

5. Numerous commercial applications such as the use of television to provide visual stimulus to travel enterprises.

In the war, the Army and Navy used "block" and "ring" for many important life-saving duties. These television systems were used to guide both pilotless aircraft and surface boats, and explosive-laden bombers and crash boats could be sent against the enemy for "direct hits" accurately controlled by distant operators.

Television, the Navy revealed, guided free-falling, radio-controlled aerial bombs, flying torpedoes, assault drones and pilotless explosive gliders.

Eyewitness views of many hazardous positions came to remote headquarters

through television cameras in important operations, Navy experts reported. In amphibious landings, reconnaissance and gunfire were reported vividly from the spot of action by television, while observation planes for artillery spotting, gun control, map making and other important jobs used "block" or "ring" cameras.

Visual word messages, maps and charts were sent at high speed between ships and aircraft and from one part of a ship to another during battle by Navy television installations, it was explained.

The Army and Navy used visual cameras to record tests of equipment that required perilous conditions of experiment.

Both the Army and Navy used the "block" system during the war, while the long-range "ring" television equipment was produced in the latter stages of the conflict.

The names "block" and "ring" were used as code names to protect the projects, and the first work on airborne television was done under the unrevealing title "Jeepette." "Block" used on Navy gliders became "Glomb" and on over-age bombers used to fly remote control missions was called "War Weary." Navy



**WASP ENGINE PROTECTED**—Dr. Henry Butler Allen, secretary and director of the Franklin Institute, explains the protective refinishing of the Wasp No. 1 engine to Lieut. Gen. Hoyt S. Vandenberg. Through the moisture-proof wrapping of pliofilm can be seen the numerous bags of protek-sorb silica gel and (lower center) a humidity indicator.

crash boats with television eyes were designated as "Campbells," while the television system for guided bombs was "Roc."

Important future military uses of the new equipment include a combined photo-television communication system. Transmitting 100 words in less than one second, this communication operation would give almost instantaneous copies of television messages by automatic photographing. Photographs or charts could be sent in the same way. This system

could be used up to 20 miles, the Navy said.

In naval operations, pilots on several aircraft carriers could be briefed for missions from one control room, while oral instructions and orders that might be confused in noisy locations can be clearly understood using a television screen.

Future marine surveys, observations of fish life and salvage operations will probably use television equipment, the Navy revealed.

*Science News Letter, March 30, 1946*

#### ENTOMOLOGY

## Insect Fifth Columnists

The female ichneumon fly lays her eggs in the larvae of other insects, and the grubs devour the vitals of their living prey.

► FIFTH columnists of the insect world, that attack other insects by very literal boring-from-within tactics, were described before a special meeting of the Washington Academy of Sciences by Dr. Henry K. Townes of the U. S. Department of Agriculture. At the meeting, the Academy's Awards for Scientific Achievement were presented to Dr. Townes, Dr. Robert Simha of the National Bureau of Standards and Kenneth L. Sherman of the Carnegie Institution of Washington.

The insect allies of the human race studied by Dr. Townes are known as ichneumon flies, though they are more nearly related to wasps than to flies. They are rather small, few of them being more than half an inch long, but their attack on other insects is deadly. The female lays her eggs in the eggs or larvae of other insects, and when the grubs hatch out they devour the vitals of their living prey. A few species prey on spiders—a case of man-bites-dog in the insect world.

Dr. Townes made a new classification of all forms of ichneumon flies known in the United States and Canada. He estimates that in this area there are some 8,000 or 10,000 species in the group, of which only about 2,500 have thus far been named.

### Air Electricity

► THERE'S electricity in the air, even when lightning is not flashing, Mr. Sherman told his listeners. A current of something like 2,000 amperes is continuously flowing into the earth, and nobody has yet found an explanation for it.

At the Carnegie Institution's Terrestrial Magnetism Laboratory, Mr. Sherman and his colleagues work constantly at measuring this fair-weather atmospheric electricity, and at developing better methods and improved apparatus for the work. Some of the instruments are of almost incredible delicacy: a vital part may consist of a fiber of spun fused quartz, finer than a cobweb thread yet thinly coated with metal. They are of corresponding sensitiveness; the speaker stated that "as many unit charges flow through an ordinary light bulb in one second as we would accumulate in our conductivity apparatus in 100,000 years."

### Molecules in Plastics

► THE STRENGTH and elasticity of synthetic plastics like GR-S rubber and nylon depend on the size and shape of the molecules, Dr. Simha stated. Molecules of these substances are huge, with molecular weights in the tens or hundreds of thousands, as compared with molecular weights in mere tens or hundreds for such simple substances as water and alcohol. These molecules are long and narrow, and normally coil like snakes, which is what gives them their high degree of "stretch and spring."

Since even these big molecules cannot be observed directly, their properties have to be determined by what they do. They are permitted to diffuse through and settle down in liquid media, and the rates measured. They are stirred with instruments that measure their resistance to stirring. In these and other ways the

sizes and shapes of their molecules can be determined, and plans can be made for the construction of even longer, curlier and better synthetic molecules.

*Science News Letter, March 30, 1946*

Crisp light-brown *salted wafers* with a slight cheese and toasted potato flavor may be made from potatoes and skim milk, following a simple method developed by government dairy experts.

"Ladybug prospectors" hunt hidden hordes of hibernating ladybugs for shipment to orchard and garden regions where they are released to feed on such agricultural pests as aphids, red spiders and potato beetle eggs.

## SCIENCE NEWS LETTER

Vol. 49 MARCH 30, 1946 No. 13

The weekly summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N. St. N. W., Washington 6, D. C. North 2255. Edited by WATSON DAVIS.

Subscriptions—\$5.00 a year; two years, \$8.00; 15 cents a copy. Back numbers more than six months old, if still available, 25 cents.

Copyright, 1945, by Science Service, Inc. Reproduction of any portion of SCIENCE NEWS LETTER is strictly prohibited. Newspapers, magazines and other publications are invited to avail themselves of the numerous syndicate services issued by Science Service.

Entered as second class matter at the post office at Washington, D. C., under the Act of March 3, 1879. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to Periodical Literature, Abridged Guide, and the Engineering Index.

The New York Museum of Science and Industry has elected SCIENCE NEWS LETTER as its official publication to be received by its members.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 393 7th Ave., N.Y.C., Pennsylvania 6-5566 and 360 N. Michigan Ave., Chicago, STAtE 4439.

#### SCIENCE SERVICE

The Institution for the Popularization of Science organized 1921 as a non-profit corporation.

**Board of Trustees**—Nominated by the American Association for the Advancement of Science: Edwin G. Conklin, American Philosophical Society; Otis W. Caldwell, Boyce Thompson Institute for Plant Research. Nominated by the National Academy of Sciences: Harlow Shapley, Harvard College Observatory; Warren H. Lewis, Wistar Institute; R. A. Millikan, California Institute of Technology. Nominated by the National Research Council: C. G. Abbot, Smithsonian Institution; Hugh S. Taylor, Princeton University; Ross G. Harrison, Yale University. Nominated by the Journalistic Profession: A. H. Kirchofer, Buffalo Evening News; Neil H. Swanson, Executive Editor, Sun Papers; O. W. Riegel, Washington and Lee School of Journalism. Nominated by the E. W. Scripps Estate: Max B. Cook, Scripps Howard Newspapers; H. L. Smithton, Executive Agent of E. W. Scripps Trust; Frank R. Ford, Evansville Press.

**Officers**—President: Harlow Shapley. Vice President and Chairman of Executive Committee: C. G. Abbot. Treasurer: Frank R. Ford. Secretary: Watson Davis.

**Staff**—Director: Watson Davis. Writers: Frank Thone, Jane Stafford, Marjorie Van de Water, A. C. Monahan, Martha G. Morrow. Science Clubs of America: Joseph H. Kraus, Margaret E. Patterson. Photography: Fremont Davis. Sales and Advertising: Hallie Jenkins. Production: Dorothy Reynolds.