MILITARY SCIENCE

War Weapons in Korea

Korean fighting techniques are not utilizing discoveries of World War II. However, new weapons may soon make tank warfare obsolete.

See Front Cover

➤ WARFARE in Korea came too early for the scientific promises of new defense weapons to be fulfilled. Secretary of the Army Frank Pace, Jr., speaking at West Point's commencement in June, declared: "With guided missiles and rockets, target-seeking equipment and the possibility of tactical use of atomic weapons, it may well be that tank warfare as we have known it will soon be obsolete."

The North Koreans, with their tank-led advances, are now proving that "tank warfare as we have known it" is not yet obsolete.

The Korean war, in fact, has used little even that was learned by scientists during World War II. The retreat of the South Koreans dates back more to the rout of the French in 1940 than to the end of World War II.

Even the fast jet planes, developed largely since the end of World War II, have proved unsuitable both in ground support of the South Koreans and in combat against the much slower Russian Yaks.

The problem seems to be not whether our side is taking advantage of the scientific advances in warfare since 1945, but whether our side can use to any advantage at all the weapons that are available.

Bazookas—recoilless weapons easily manageable by one or two infantrymen—were developed during World War II. They are said to be extremely effective against tanks. The United States turned over to the South Koreans more than 2,000 anti-tank bazookas with 40,000 rounds of ammunition when American troops left a year ago. Their presence in South Korea had little effect on the first advances of North Korean tanks. The question seems not to be whether they were effective but whether they were used at all by the South Koreans.

Early in June the Army Department determined on a policy of revealing some of the scientific advances in new defensive weapons, hoping thereby to bolster the morale of western Europe. It was said that, with these new defensive weapons, in time western Europe could defend itself against the superior manpower of Soviet Russia.

The weapons mentioned included guided missiles, atomic warheads in artillery, 75 millimeter recoilless weapons, as shown on this week's cover of SCIENCE NEWS LETTER, new versions of the bazooka. One of the results of this war may well be to speed up development and production of these new defensive weapons.

Science News Letter, July 15, 1950

AERONAUTICS

Missile Models Give Data Of 6,000-Mile Speed

➤ WRAPS were removed at Moffett Field, Calif., from a new and unusual wind tunnel in which tiny models of missiles are fired from guns against a powerful air current to provide the equivalent of speeds of some 6,000 miles per hour.

The new installation, known as a supersonic free-flight wind tunnel, is at the Ames Aeronautical Laboratory of the National Advisory Committee for Aeronautics. Additional equipment to be installed will permit aerodynamic studies up to 11,000 miles per hour, approximately 15 times the speed of sound.

The tunnel is already in use to study the characteristics of missile-type models at high supersonic speeds. The models used are only a few inches in length but with this tunnel, research results obtained are comparable with those for far larger models. Conventional wind tunnels would require a model more than 10 feet long.

The hypersonic speeds in this free-flight tunnel are achieved by generating an air stream of from two to three times sonic speed and launching the model into this oncoming air stream at high velocities. Launching guns vary from .22 caliber up to three inches.

In the gun barrel, the model is housed in a tiny carrier which protects it from the hot discharge gases, keeps it properly aligned during launching and acts as a piston. Once out of the muzzle, the carrier falls away, leaving the model free to fly by itself through the tunnel.

The tunnel is of the type known as a "blowdown." The air is supplied by an adjoining 12-foot pressure tunnel at a maximum pressure of six times that of the atmosphere. The air passes through a settling chamber, supersonic nozzle, test section and diffuser and thence into the open air. Guns to fire the models are placed in the diffuser.

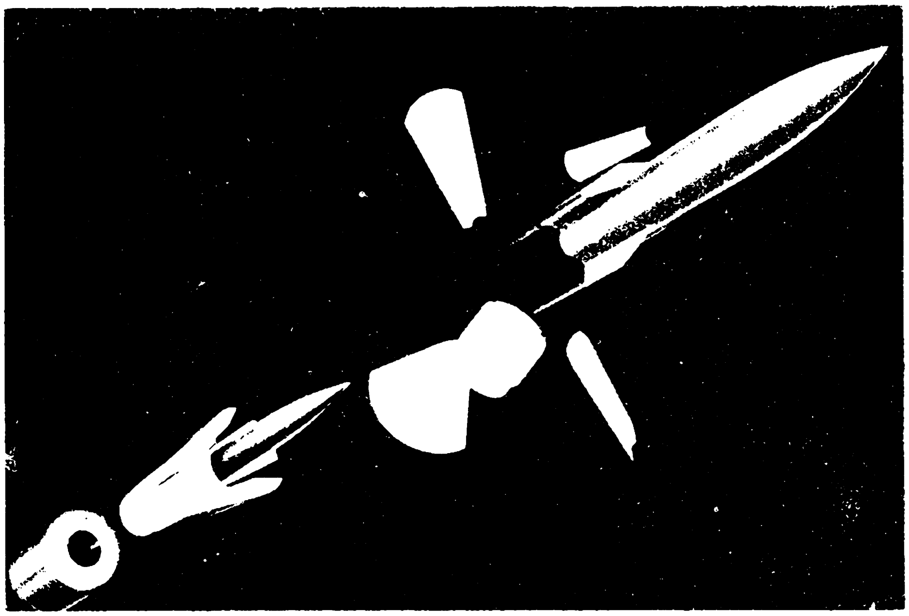
Science News Letter, July 15, 1950

PHYSICS

Say "Fishing" to Use All Speech Sources in Mouth

➤ SAY "fishing" and you will run the gamut of apparent sources of speech in your mouth.

Two Radio Corporation of America sci-



SABOTS SEPARATE—Models launched from guns in the new NACA wind tunnel leave the gun barrel in plastic "sabots" which keep the models correctly aligned and act as pistons on firing. When the model leaves the gun muzzle, the sabot separates and falls away, leaving the model free to continue its flight through the test section, where measurements are made.

entists measured the apparent location of the point sources of sound in people's mouths and came up with the tentative conclusion that the sound of "f," for instance, comes from only one-twentieth of an inch behind the lips. But the "ng" sound comes from farthest back—one and one-tenth inches behind your lips.

They made the measurements because certain microphones discriminate against sound from a distant source with respect to sound from a close source.

In all, 38 standard sounds—each ranging over 18 frequency bands—were measured. It was found that the unvoiced consonants like "f," "k," "p," "h" and "t" come from closest behind the lips; vowels are mostly in the middle, from a half to three-quarters of an inch back; and semi-vowels, like "a" as in pan and "o" as in pole are farthest back.

"Ng" seems to be an exception to all the rules. It is farthest back but, instead of retreating into the mouth as the frequency of the sound rises, as most other sounds, it gets closer to the lips.

According to the data in this study, the sound of "Truman" comes from a greater area in your mouth than the sound of "Dewey."

The scientists are Mones E. Hawley and H. H. Kettler of the government sound engineering section of RCA's Victor Division. Their study was published in the JOURNAL OF THE ACOUSTICAL SOCIETY OF AMERICA (June 6).

Science News Letter, July 15, 1950

MATHEMATICS-ENGINEERING

Giant Brains Shrink

➤ "GIANT brains" are shrinking in size but not in efficiency. The newer complicated electronic computers, that solve mathematical problems in seconds that otherwise might take weeks or months, require less space and cost less money.

One of the newest, office-size, "tests" equipment even before models are made. It is the REAC. Spelled out, it is the Reeves Electronic Analog Computer.

It was developed by Claude Neon, Inc., in its research center, the Reeves Instrument Corporation. Harry D. Belock is the inventor. It is an outgrowth of U. S. Navy guided missile work and, while relatively new, is already in production and in use in aircraft and other laboratories.

The role of the REAC in industry and science, ranging from aircraft to television, is that it makes economically feasible the solution to a wide range of the most intricate mathematical problems. In the automotive field it solves problems with respect to internal combustion engines in performance, ignition and carburetor development work and improvements in a car's riding ability.

In engineering it computes problems with respect to bridge vibrations, stress analyses and many other matters.

The REAC specialty is solving what mathematicians know as differential equations. The equations used usually describe the motion of a body in space, motion of the links in a mechanism, and the like, as a function of time. Their solution results in an accurate picture of the particular dynamic motion under a desired variety of conditions.

The standard REAC, in appearance, looks like any conventional type of telephone switch board. It consists of a computer unit, a servomechanism unit, a recording unit and an associated power supply. Equations are plugged into the board. This simple method facilitates changing equations and adjusting computations until the desired design change is produced on the plotting board.

Science News Letter, July 15, 1950

Question Box

Photographs: Cover, U. S. Army; p. 35, National Advisory Committee for Aeronautics; p. 39, U. S. Army; p. 48, Bell Telephone Laboratories.

● RADIO

Saturday, July 22, 1950, 3:15 p.m., EDST

"Adventures in Science" with Watson Davis, Director of Science Service, over Columbia Broadcasting System.

Mr. Davis will continue his discussion "Our Atomic Future."

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