



CANNED PATTERN—Besides the movies taken of the student 4F flyer and his plane's instrument panel (shown in picture on facing page) in the research program of the Institute of Aviation Psychology, records will also be made on a magnetic voice recorder of what the instructor says to the student. The girl above is using a ground model of the wire recorder which also serves as a playback machine for recordings made in the air on the lighter model on the left.

cial project committee of the University of Tennessee.

"Through this Institute, and we hope others like it, we will avoid the unfortunate cessation of basic and practical research in aviation psychology which occurred at the close of the last war," Dr. Brimhall said. "The Institute will be unique in its use of human guinea pigs who, in return for the opportunity of free flight instruction, will be required to take training under conditions which will make it possible to determine the effect of various teaching methods upon the acquisition of flying skill. Some of the student pilots, who will be drawn from residents of Knox-

ville and vicinity and trained at the University airport, will be men rejected for physical reasons by the armed services. This will provide an opportunity for the exact experimental determination of what constitutes a physical handicap in flying."

A special motion picture camera will be used at the Institute to record the way the student flyer handles his controls and this record will be compared with a simultaneously made record of all the movements of the plane. It will also be compared with what the instructor says to the student, as recorded on a magnetic voice recorder.

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PHYSIOLOGY

Fighting Men Need Water

Cannot be conditioned to exist on only one quart of water daily in desert and jungle warfare. Minimum of 7½ quarts a day is needed on Sahara Desert.

➤ FIGHTING in the steaming tropics, or on shadeless desert expanses where the mercury climbs to 100 degrees Fahrenheit or over, men in the armed forces perspire excessively, losing on an average at least seven quarts of water a day. According to old-time theory, men could be hardened to get along under such conditions on as little as one quart of water a day. Present-day research has

revealed, however, that no physical conditioning can suppress the water requirement of the body, and that this loss must be fully replaced by drinking water.

How much water our fighting men require for survival is now graphically illustrated in maps prepared by the Research and Development Branch of the Quartermaster Corps of the War Department.

At average temperatures of 82 degrees Fahrenheit and below, where little exercise is involved, one quart of water a day will suffice, the maps indicate. Above that temperature, however, man's requirement increases in proportion to his activity and the relative climatic conditions.

Northern Africa was mapped out for July, its hottest month, in relation to its water requirements. Of this area, the eastern part of the Sahara Desert has the highest recorded temperatures, and a daily minimum of 7½ quarts of water is required there for men engaged in maneuvers. The only hotter place in the world, according to officially recorded temperatures, is Death Valley in California.

Daily water requirements for areas surrounding the Sahara Desert are as follows: for a temperature range of from 94 to 97 degrees Fahrenheit, 6½ quarts; 91 to 94 degrees, 5½ quarts; 87 to 91 degrees, 4½ quarts; 82 to 87 degrees, 3½ quarts.

To determine whether men adrift at sea have a fighting chance to obtain enough rain water to keep them alive until rescued, required rain catchment areas on their rafts and lifeboats have been charted on seasonal maps of the oceans. In some cases, during certain seasons, absence of rainfall in ocean areas completely erases any hopes of survival. These fatal areas include an area along the eastern coast of Africa and the western coast of India, including the Red Sea and the Persian Gulf; and smaller areas off the west coast of South America, and off the West Coast of Australia. During the summer, some parts of the Mediterranean Sea do not receive any rainfall, but because of the relatively small area involved, survivors have a good possibility of reaching land before dying of thirst.

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There is only a little over one ounce of calcium in 20 gallons of sea-water, yet out of this low concentration shellfish build their shells.