

not being rationed to soldiers in warmer sections of the same territory. Around Annette Island and Metlakatla in the panhandle, January temperatures average near 32 degrees Fahrenheit.

America remembers the report that

too heavy equipment burdened down British soldiers sent to Norway last spring. Norway in spring was far milder than winter in Finland. Understanding local climate conditions is important in dressing an army.

Science News Letter, February 22, 1941

PSYCHOLOGY-AERONAUTICS

Pictures on Screen Train Crews of R.A.F. Planes

Students Must Plot Course from Navigation Instruments Under Control of Instructor and Landmarks on Screen

PICTURES thrown on a screen from a projector fundamentally similar to the kind once used in the home to show postcards or snapshots, are playing an important part in the ground training of crews for R. A. F. bombing planes. (*Flight*, Jan. 9.)

A row of six cubicles, each fitted with navigational instruments under the control of an instructor, is at one end of a room, facing a large white screen on which the pictures are shown. The students enter these cubicles, where they have only "radio" contact with the instructor.

"Each member of the crew does his job exactly as though he was in the air," says the writer. "Only the normal cockpit lighting is available. Out on the screen the words 'take off' appear and the clock is set. The navigator plots his course and the wireless operator, with his direction finding loop, gets 'fixes' every so often. The pilot watches his speed and compass bearing. Now and again the instructor causes an aerial picture to be shown on the screen with the note that it has appeared, say, two miles on the port side or some such observation. It is only there for a very short while, and the crews have to identify it and check their course.

"Occasionally when a landmark should appear, the picture is of ten-tenths cloud and the flight must go on by direction finding and dead-reckoning. As the target is approached the pictures are almost obscured by shining the searchlights (i.e., torches) directly in the crews' faces, making it difficult for them to see the picture. Meanwhile a series of tiny pinpoint flashes appear on the picture to imitate gun flashes. The whole illusion is very complete, especially when, as is often the case, the tracks covered are those leading to actual targets which the crew will soon be bombing."

Another device trains the gunners in use of the power-operated turrets. Earlier planes were equipped with machine gun turrets that were turned by the gunner himself. At high speeds, however, the rush of air made it necessary to use considerable force to operate the turret, so that accuracy was impaired. To avoid this, power turrets are now used, which are moved mechanically by the gunner's lightest touch. American planes, as well as those of Great Britain and other countries, are now equipped with them.

"For the instruction of air-gunners there is the Spotlight Trainer," it is stated. "This is in a darkened hangar. On a Whitley airframe there is the standard Nash and Thompson power-operated turret with a central barrel fitted between the guns. This central barrel can—at the will of the instructor—be made to shine a point of light on a screen. The instructor has a hand projector which throws moving images of enemy machines on the screen. The gunner shoots at these, allowing the necessary deflection for speed and altitude, and every few seconds the instructor switches on the central barrel spotlight to check the gunner's aim."

The writer quotes a volunteer Amer-

RADIO

Ivan Booker, of the National Education Association, and William S. Gray, director of Teacher Training, University of Chicago, speaking from the N.E.A. meeting, will discuss the subject "Learning to Read" as guest scientists with Watson Davis, director of Science Service, on "Adventures in Science," over the coast to coast network of the Columbia Broadcasting System, Thursday, Feb. 20, 3:45 p.m. EST, 2:45 CST, 1:45 MST, 12:45 PST. Listen in on your local station. Listen in each Thursday.

ican airline pilot who had joined the R. A. F. and finished the training course. "Although I am the pilot," he said, "I must know everybody else's job. I must know wireless, I must know meteorology, I must know navigation of all kinds, I must know how to drop bombs, I must know my guns, my bombs, my flares, my camera, my oxygen apparatus, my airframe, my engine and, above all, I must know my crew."

This same pilot explained the difference between a good fighter pilot and a good bomber pilot as follows:

"If you're a fighter-pilot and you're careful you're as good as dead. If you're a bomber-pilot and you're not careful you're even deader."

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CHEMISTRY

Washers for Faucets From Artificial Rubber

WASHERS for faucets are among the latest items to be made from artificial rubber. They are said to have twice the shelf and service life of washers made from natural rubber. (*Kirkhill Rubber Co., 811 W. 58th St., Los Angeles, Calif.*)

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INTERESTED? in Science



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