In America, little methyl bromide is used for this purpose because the gas is toxic. However, when used within the engine housing, where crash fires start from broken fuel lines and highly heated engines, there is relatively little danger to passengers and crew.

However, another gas, said to be equally as effective and not as toxic as methyl bromide, is now coming into use in American planes. Technically, the gas is monochlorobromomethane, called C-B for short. Both civil and military authorities are fully aware of the need of better fire protection in planes and are pushing forward plans to convert from carbon dioxide to C-B extinguishers as rapidly as practical.

At the present time, as well as during the past few months, giant Air Force bombers of the B-29 type are being converted to C-B. The same distribution system is being used, with the C-B in liquid form stored in a steel sphere with the fuselage. It requires only one-fifth the operating pressure needed for carbon dioxide.

In the British system utilizing methyl bromide, according to Mr. Lankford, separate containers for the chemical are located in each engine housing, the nacelle. This localizes the supply, in contrast to the more common American system of a central supply piped to the nacelles. In a crash such pipelines may become inoperative.

In the British system the fire extinguisher in each nacelle is connected with an impact switch which triggers automatically at a given deceleration force. However, they can be discharged selectively from the cockpit when it is desirable to do so.

Science News Letter, August 19, 1950

METEOROLOGY

Atmosphere Study Aid

➤ WIND velocities and temperatures of the little-known part of the earth's atmosphere 20 to 40 miles high will be studied by sound waves in the first large-scale, long-term program of its kind.

In an area 300 miles wide in diameter, explosions of 200 pounds of TNT will shoot sound waves 40 miles into the sky. When these waves reach a heated area of atmosphere, the inversion point, they will be refracted, traveling back to earth 150 miles from their starting point.

Here they will be picked up on specially constructed microphones and recorders. These waves will be in the low frequency range, so low that people cannot hear them. The rarefied upper atmosphere screens out the high frequency waves, Col. Victor Huffsmith, supervisor of the program for the Denver University Institute of Industrial Research in Denver, Colo., explained. A grant from the Air Forces Cambridge Research Laboratories has made the project possible.

In a way similar to that by which seismologists can learn about the structure of the earth's interior by the nature of the waves sent out by earthquakes, so these men will be able to tell certain conditions of the atmosphere by the nature of the waves sent out by TNT explosions. The air velocity and temperature of the particular area of the atmosphere will be determined by the time of travel and by the angle at which the waves return to the earth.

The nine-man staff of Institute researchers will be divided into four teams: Three in the field and one at the Institute in Denver. In the area around Wray, in northeastern Colorado, nine stations with the TNT will be set up. They will be 25 miles apart, in the shape of a cross. One field team will detonate the TNT in one arm of the cross, while the other two teams, traveling in a circle 300 miles in diameter, will pick up the sound waves as they travel back to earth.

These field teams will be in constant touch by radio with each other and with the Institute in Denver. Data will be calculated, analyzed and evaluated in Denver.

The technique of measuring sound waves from the upper atmosphere was worked out recently by the Cambridge Research Laboratories and given a short-range test in Panama and Alaska. At that time, army planes dropped bombs in the ocean and stationary teams recorded the sound waves.

This sound wave technique is superior to the use of either balloons or rockets in atmospheric research. Balloons sent skyward to radio back weather conditions can reach maximum elevations of only 20 miles. Although V-2 rockets can soar considerably higher, the expense of the missile and radio equipment is high, and both are often destroyed without providing the information sought.

Science News Letter, August 19, 1950

AERONAUTICS

New Omnirange Stations Near Completion

➤ OVER three-fourths of the new-type radio stations that provide "beams" for air pilots to follow are now in operation, officials of the U. S. Civil Aeronautics Administration state.

Slightly over 400 stations will be needed to blanket the entire country with these very high frequency radio beams. Over 300 are already erected and others are rapidly being installed.

This most modern pilot-guiding system, known as the omnirange, is so called because it provides radio beams in all directions, instead of only four as in the radio range system it is replacing.

Important, also, is the fact that the beams are of very high frequency which means that they are practically static-free. This is not the case with the beams of the older radio range.

Very high frequency radio waves follow a "line-of-sight" course. Thus they can be picked up by a ground station only some 40 to 50 miles from the ground station in which they originate, as owners of television and FM receivers have learned from experience.

But planes in the air can pick up very high frequency waves at much greater distances because hills and mountains do not cut their path. They can be received at 100 miles or more by planes at 5,000 feet altitude. The maximum reception distance from the stations being erected is approximately 200 miles for a plane at 20,000 feet.

These omnirange beams will be available for all planes—military, commercial and private. Planes must be fitted with special radio receivers that vary in price from $400 upward. The receiver is connected to four basic instruments in the cockpit.

One instrument is a radio dial for tuning, another is a bearing selector, the third is a round dial with vertical needle hinged at the top, and the fourth is an indicator to tell whether the bearing shown is to or from an omnirange.

For the benefit of pilots, public and private, the Civil Aeronautics Administration has issued a booklet to tell them how to use the omnirange. Information on local omnirange sites can be obtained from most of the CAA regional offices.

Science News Letter, August 19, 1950

Irish moss, a seaweed found on the coast from Massachusetts north, yields a gelatinous material called carrageenin, one use of which is to keep cocoa suspended in chocolate milk.