# SCIENCE NEWS

*Science Service, Washington, D. C.*

## CONSTRUCTION OF AN EMERGENCY TELEPHONE LINE

PHOTOGRAPHIC surveys, made from planes flying about 20,000 feet from the earth, are responsible in part for the rapidity with which an inland emergency long-distance telephone line was constructed in 1942, stretching over 1,300 miles from Washington State to southern California. The project was undertaken as a war measure to assure telephone communication between Pacific coast states in case Japanese activities cut the existing lines nearer the ocean.

The route of this war-constructed line is east of the Pacific coast ranges extending from Yakima, Wash., to The Dalles and Klamath Falls, Ore., Reno and Las Vegas, Nev., and ending at Danby, Calif. From The Dalles to Klamath Falls, poles of an existing line were used for the wires of the new line; for the other 892 miles, poles and wires had to be erected.

Information relative to this war undertaking is now made public in the *Bell Telephone Magazine*, published for the supervisory forces of the American Telephone and Telegraph Company. After the decision to construct the line, the first step was to survey a route from Klamath Falls to Reno. Two planes were used, one flying south from Klamath Falls, the other going northward from Reno. The pre-determined altitude of the planes was from 17,000 to 22,000 feet.

The aerial photographs proved very satisfactory, showing details of the terrain so perfectly that locations for the line could be easily selected and plotted. So closely did the completed line follow the path selected from the pictorial survey, that 95 per cent. of the original route was unchanged.

Building this line, particularly because of the rapidity with which the work had to proceed, was a gigantic undertaking. The survey for the line started on April 25, 1942, and the last stake driven on August 20. The first pole was set on June 15. The first step of construction work, which was to set poles with crossarms and hardware, string wire for the top arm of the main lead, and build two side leads, was completed on August 31. Other construction was completed on October 15. The final clean-up work was out of the way by November 20, and the project office from which the construction was directed was closed on December 1.

A difficult part of the project was to assemble labor, experienced telephone construction men, the necessary trucks, machine diggers and other machinery, and to obtain poles, crosswires, hardware and wires. A roadway had to be constructed along the location for practically the entire distance for trucks delivering poles and equipment. Poles, creosoted and ready to be put in the ground, were brought by railroad from Texas and Mississippi. Other equipment was obtained wherever possible. Engineers, experienced telephone men and operators were borrowed from the various Bell companies.

## ITEMS

A PARTIAL eclipse of the moon on Monday, June 25, will be visible to our fighters in the Pacific, although we in the United States will not be able to enjoy the spectacle. The moon will partly enter the shadow of the earth for people in the Pacific, Indian and Antarctic Oceans, Asia, Australia and southeast Africa. Instead of light being cut off from the entire moon, only 86.4 per cent. of the moon at most will be eclipsed. The moon will enter the shadow proper, or umbra, at about 1: 37 P.M., Greenwich Time, and will leave it at 4: 51 P.M.

HELIUM, the exclusively American balloon gas, can be used economically to inflate the huge tires of passenger airliners, it has been found by engineers of the Consolidated Vultee Aircraft Corporation of San Diego, Calif. Use of this gas instead of air saves weight and permits an increased payload. Air required to fill the tires would weigh 180 pounds, as compared with 26 pounds for helium. Tests have proved that the puncture-proof tubes will hold the lighter helium gas at the required pressure. An ample supply of helium is available, as the government is now producing more than is needed in balloons and dirigibles, and is releasing some for other uses.

AMERICAN scientific museums and universities will soon have opportunity to get seeds and herbarium specimens of Russian plants, in exchange for American botanical material. Large-scale preparations for this scientific cooperation are being made at the Central Botanical Gardens in Leningrad, the Academy of Sciences of the U.S.S.R. has cabled to Science Service. Greenhouses and other buildings of the gardens, which suffered severely during the long siege of Leningrad, are being rebuilt, and more than 700 acres of new land have been added to the working area. Approximately 10,000 trees, shrubs and flowers are already growing in the nurseries. The Leningrad botanical institution traces its origin to a garden of medicinal plants set out in 1713 under the direction of Czar Peter the Great.

BLOOD plasma was successfully fired in artillery shells to Allied troops cut off by Nazis in Europe, reports Major General Paul R. Hawley, surgeon to the European Theater of Operations, in a report appearing in the *Marine Corps Gazette*. This adds a new item to the list of many ways in which blood plasma has been delivered to American fighting men. In the past, plasma has gone to the front by plane, ship, on horseback and in jeeps, and it has been dropped from the air in parachutes. General Hawley reports also that pre-invasion estimates of the amount of plasma that would be required to fill the needs of the Army were far too low. Instead of one transfusion required for every five men wounded, battle experience has shown the need for one transfusion for every two men wounded.