U.S. DEPARTMENT OF AGRICULTURE

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PROJECT SKYFIRE

PROJECT SKYFIRE is a research project aimed at protecting our valuable mountain forests through (1) gaining basic information on lightning fires and storms, and (2) testing the possibilities of preventing or reducing the severity of lightning fires through cloud modification.

PROJECT SKYFIRE was started in the summer of 1953 in the mountain country of Idaho and Montana as a cooperative undertaking of the Intermountain Forest and Range Experiment Station of the Forest Service, U. S. Department of Agriculture, and the Munitalp Foundation, a privately endowed organization dedicated to basic research in meteorology. In succeeding years the program expanded and several other private and government agencies joined in. These include the U. S .Weather Bureau, National Park Service, and the President's advisory committee on weather. Plans are under way to continue the studies during the 1957 summer season.

F-481373

Mobile radar unit and atmospheric laboratory set up during the 1956 season on a mountain top in the Lolo National Forest, Montana, to check cloud conditions and related weather as part of PROJECT SKYFIRE. This proved to be tough equipment, performing well in the back country from Arizona to Montana.

F-480186

Much of the back country of the national forests of the West with its important timber, range, recreation, wildlife, and recreational resources is threatened each year by forest fires resulting from violent lightning storms. PROJECT SKYFIRE is aimed at finding ways to reduce this threat.

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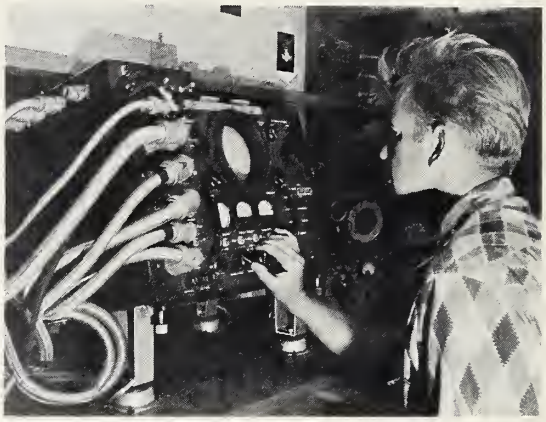
F-195374

Lightning strikes in the western United States caused nearly 100,000 forest fires in the 15-year period from 1940 to 1955, an average of more than 6000 per year. 79% to 84% of all forest fires in the Arizona-New Mexico area were caused by lightning, with the Idaho-Montana area running a close second with 69% to 71% lightning-caused fires.

PROJECT SKYFIRE is a pioneer effort employing modern electronic science to attack the lightning-fire problem. Use of radar is leading to new and improved methods for detecting, tracking, and analyzing lightning storms; rapid plotting of fire zones; controlling aerial patrols; dispatching fire fighters; and planning fire-suppression operations. Such information is essential for cloud-seeding operations. **(Photos 481374, 481377, and 481378.)**

F-481374



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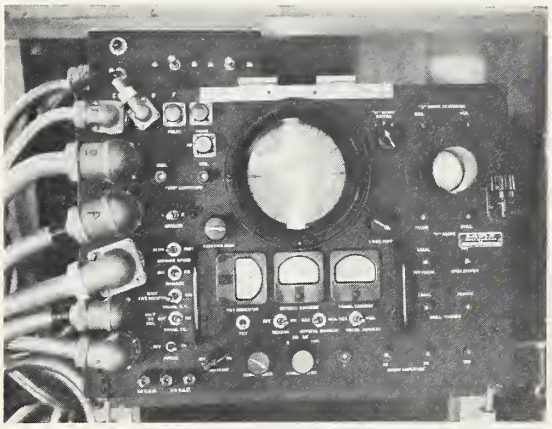

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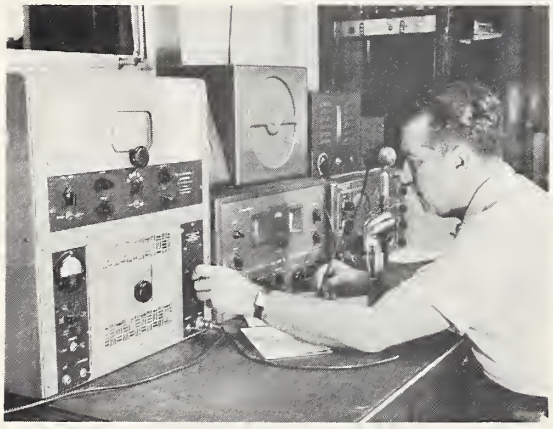

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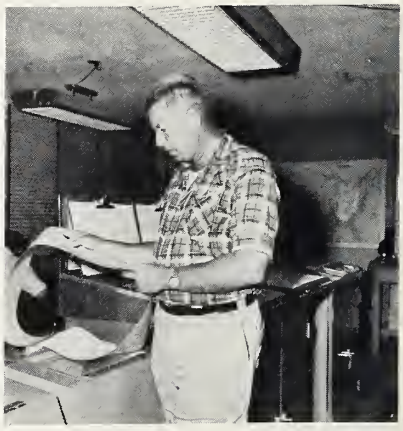

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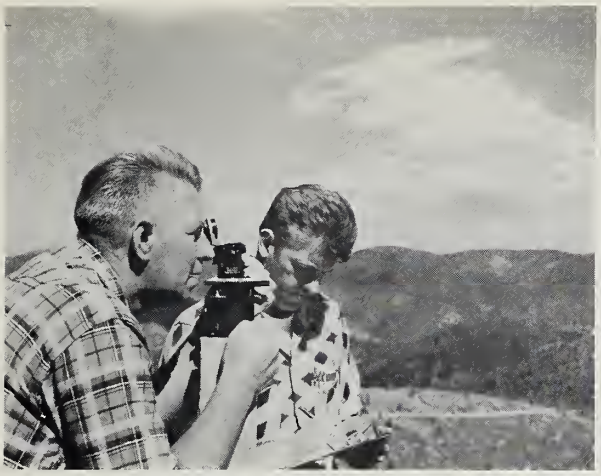
Each morning during the study season of PROJECT SKYFIRE in the western forests, data from weather stations, from a network of 22 forest fire lookout stations, and from other sources are assembled and analyzed. From this information concrete plans for the day's work are made. **(Photos 481365, 481364, and 481367.)**



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Dr. Vincent J. Schaefer and Donald M. Fuquay record data on clouds forming in the mountains of the Lolo National Forest, Montana. Both of these men are from the Munitalp Foundation, working on PROJECT SKYFIRE.

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(Right) Dr. Vincent J. Schaefer, of the Munitalp Foundation, measures the clouds of an approaching lightning storm with a cloud theodolite. Instruments on the weather mast measure wind speed and direction, and temperature and dew points at several levels, and feed this information to the mobile atmospheric laboratory used on PROJECT SKYFIRE.

F-481379

Use of silver iodide crystal generators on PROJECT SKYFIRE showed the need for a special type of ground-based generator for cloud-seeding operations aimed at lightning reduction. For efficient operation, the generator has to be rugged and easily serviced for field use, economical in operation, safe from a fire standpoint in flammable forests, and it must produce a high output of silver iodide crystals at relatively warm temperatures. Such a generator has been developed and will be tested during the 1957 fire season.

F-481372

Dr. Paul B. MacCready, Research Meteorologist of the Munitalp Foundation, adjusts a silver iodide generator in a Forest Service aircraft preparatory to a cloud-seeding flight. The generator was developed by Dr. MacCready for use in PROJECT SKYFIRE cloud-seeding experiments.

F-481370

Adjusting a portable cold box prior to a PROJECT SKYFIRE flight mission. Silver iodide used in cloud-seeding is an important ice-forming nucleus. The cold box is used to detect the presence of ice-forming nuclei in the atmosphere.

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Dr. Paul B. MacCready, Munitalp Foundation, with a portable cold box used in atmospheric nuclei studies; Jack Barrows, U. S. F. S., with map of flight area; and F. S. pilot Mac Johnson prepare for take-off on a PROJECT SKYFIRE research flight.

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F-481376

Light aircraft equipped with high-output silver iodide generators have proved very satisfactory for experimental seeding of potential lightning storms. The aircraft can fly underneath the target cloud, releasing silver iodide crystals which are then carried into the cloud by rising air currents. Cloud-seeding tests last year proved that local air-mass-type clouds can be modified. This could lead to a reduction in the severity of lightning and consequent reduction in lightning-caused forest fires.

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