Mountains' Effect on Weather Studied

Weather Modification Research Financed by $297,600 Grant

By JOEL MYERS

A detailed study of the processes by which the Appalachian Mountains modify and influence showers is being conducted by the meteorology department under the sponsorship of a $297,600 grant of the National Science Foundation.

The ultimate goal of the investigation is to achieve weather modification in central Pennsylvania.

Dr. Charles L. Hosler, professor and head of the Department of Meteorology, believes that artificial rain production can only be successful if attempted on a small scale.

Until now, most rain-making experiments have been performed on a large scale, and results have been inconclusive. Dr. Hosler believes that clouds may respond only to seeding at a certain period in their life cycle. At other stages of development, seeding may actually reduce rainfall.

WHEN SEEDING is attempted over a large area, clouds of all stages are encountered and the net result may be insignificant.

In order to statistically test the results of the planned seeding experiments, it is necessary to have a rather complete knowledge of the small-scale patterns of precipitation for various weather situations. Since much more has to be learned about individual showers and shower patterns, seeding experiments probably won't begin for at least another year.

Three years of research in this area have been concentrated at compiling radar data. The radar, which is located on the northeastern part of the campus, is operating continuously when precipitation is occurring in central Pennsylvania.

TIME-LAPSE movies are then made of the radar scope, and these films are analyzed in detail by graduate students working on the project. Some of the film information is punched onto IBM cards and the high-speed digital computer in Boucke is used to process the data.

It has been found that the topography exerts an important modifying influence on the formation, dissipation, lifetime and distribution of showers.

Part of this influence is brought about by waves in the atmosphere, which are induced by the mountains. A local wind flow between different mountains also appears to be important.

CHARACTERISTICS of individual showers and squall lines and the variations in the amount and distribution of showers with time of the day and season of the year have also been found.

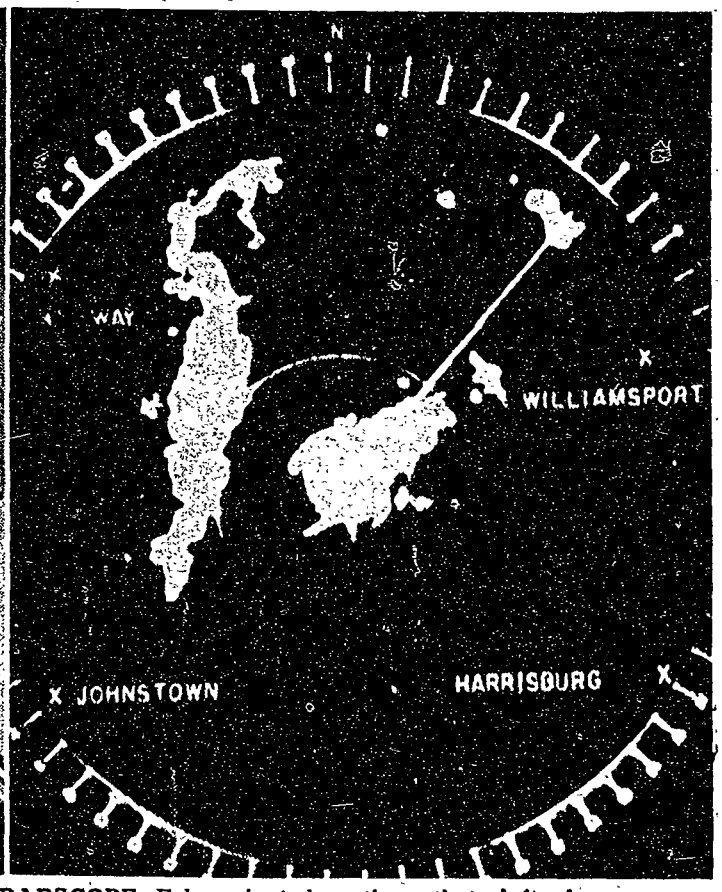
The radar films indicate that showers seldom develop in certain areas but develop frequently in other areas.

Balloons that have been tracked by radar have revealed the importance of mountain waves and further studies of these wave phenomena are planned.

Atmospheric electricity is also being investigated since there are indications that it may play a role in the growth of elements within clouds.

IT IS HOPED that many of the unknown quantities that determine the life history of a shower can be uncovered. Once these are known, cloud seeding might be used to change the natural course of events.

RADAR ANTENNA is checked by radar technician and research assistant.



RADARSCOPE: Echo oriented north-south to left of scope center is a squall line and the circular echoes in the upper right are showers.