

METEOROLOGY

Jets Survey Jet Streams

Two jet planes, operating as a team, have started the first survey of the fast-flowing air currents found about 30,000 feet up, known as the jet streams.

► JET PLANES, for the first time, this week started tracking jet streams, the 200- to 300-mile-an-hour air currents found about 30,000 feet above the earth. Better weather forecasts and faster long-range airplane flights are expected to result from this first direct survey of air movement high above the earth's surface.

Covering six or seven hundred miles each flight, the jet planes, based at Patuxent River, Md., will chart the westerly flowing air rivers over both land and ocean. Data gathered by the two planes, operating as a team, will be recorded on film and analyzed by meteorologists at the University of Chicago.

"Precipitation sits on the nose" of the jet stream, Dr. Herbert Riehl, meteorologist at the University, explained. Generally, the ground air is moist if the jet stream is coming toward us, dry after it has passed high overhead, he said.

Jet streams were first found during World War II when high-flying B-29's making bombing runs on Japan were left almost literally hanging in mid-air trying to fly against the fast-flowing air currents. Two main streams are known, both covering the middle latitudes, one in the northern hemisphere, one in the southern. They twist and turn, meandering in much the same way as brooks, rivers or the Gulf Stream wanders, occasionally looping back on themselves.

Storms are formed where the jet streams meander, meteorologists believe. These storms are related to those that rage on the surface. The formation of clouds, the amount of rain, snow and other precipitation, and the movements of warm and cold fronts are controlled by upper air currents.

From the jet-plane study, weather forecasters will get data on such things as the changes in temperature at different points and levels in the jet stream, the amount of turbulence and the formation of ice crystals. Using such information, Dr. Riehl and his co-workers will make ground weather predictions, then compare their forecasts with the actual weather.

If their predictions hold, jet stream records will give meteorologists a new and important tool for ground weather forecasting.

The study, under a grant from the Navy's Bureau of Aeronautics, is known as AROWA, for Applied Research Operational Weather Analysis. It is an example of the recent trend towards "bridging the gap" between the meteorologists, who are figuring out theories as to how and why the weather, with the forecasters who do the

daily, five-day and 30-day prediction, in order to give the latter group a chance to take full advantage of the latest theories.

Another example of this trend are the Air Force, Navy and Weather Bureau forecasters taking special courses in theoretical and practical meteorology at the University.

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ELECTRONICS

Television in Autos Not Practical Idea

► ALTHOUGH 25,000,000 American automobiles are now claimed to be equipped with radio receivers for the information and amusement of motorists, few will be equipped with television sets in the near future. The reason is both legal and technical.

Legislation has already been enacted in many states prohibiting television receivers in motor vehicles in a position where they can be seen by the driver. This does not prevent their installation for passengers on the rear seat. But they require many times the amount of electric power used for radio

receivers. This means that a car will need a heavy duty generator.

In a car traveling the highways, television reception would probably be unsatisfactory. Television is much more sensitive to outside interference than radio. The constantly changing distance from the broadcasting station means reception would be unreliable. With "back-seat" television, "viewing" distance between the television screen and the passengers is much shorter than usually regarded as desirable.

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ASTRONOMY

Vast Bridges of Stars Connect Distant Galaxies

► BRIDGES OF stars, some more than 10,000 million million miles long, have been found to connect gigantic groups of stars such as the Milky Way galaxy to which our sun belongs.

Many of these stellar highways have been spotted by Dr. Fritz Zwicky, professor of astrophysics at the California Institute of Technology, Pasadena. The chains of stars show up when great contrast is used in developing plates taken with the 48-inch Schmidt telescope on Mount Palomar.

"Once the observer knows what to look for, it is easy for the discerning eye to pick up thousands of similar cases," Dr. Zwicky states in the *Publications of the Astronomical Society of the Pacific* (Oct.). The most important of the systems so far spotted are now being photographed with the 200-inch Hale telescope.

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FINAL CHECK—Rigid tests given to optical range finders insure that the slightest imperfection will be detected before they are crated and sent to the Detroit Arsenal for installation in the new M-47 tanks.