

HYDROLOGY

# Weather Bureau Services Cost Each U.S. Citizen Five Cents

Besides 300 First Order Stations, Nickel Maintains 40 Radiosonde Stations, 144 Wind Study Stations

**S**ERVICES of the U. S. Weather Bureau cost each citizen an average of only five cents a year, Merrill Bernard, supervising hydrologist of the Bureau, told the Hydrology Conference at State College, Pa.

And John Citizen gets a big nickel's worth of weather, too. Among the agencies his five cents keeps at work for him throughout the year, Mr. Bernard listed the following:

About 40 radiosonde stations, sending up balloons carrying robot instrument kits, that automatically report by radio what the weather is like "up there."

Wind-study stations—144 of them—that send up small balloons, and by means of instrumental "tracking" obtain data on height, direction and velocity of air currents high aloft.

About 300 first-order stations in principal cities and at airports. These are

the places you think of when you say "Weather Bureau." Meteorologists stationed there not only forecast tomorrow's weather; they collect data on rainfall, temperature, atmospheric pressure, wind, cloudiness, river stages and a lot of other things, needed by aviators, farmers, shippers and other persons whose lives are in constant critical contact with the weather.

Automatic rainfall stations, now numbering about 2,000, where precipitation is automatically measured and recorded, with only occasional human tendence.

More than 5,000 cooperative stations, manned by volunteer observers, usually working without salary. Their records fill in the gaps between the less numerous first-order stations with government-paid staffs.

Mr. Bernard also traced the history of weather study in this country, from the first systematic record, started in 1644 by the Rev. John Campanius in the old Swedish settlement near Wilmington, Del., down to the organization of the Weather Bureau as a full-fledged research and service organization, late in the nineteenth century.

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## Traced Through Ground

**T**HE underground journey of water from a typical rainstorm was traced by H. S. Riesbol of the U. S. Soil Conservation Service. The fate of water sinking into the earth was learned from a study of wells sunk in the northern Appalachian region.

It took about a day, Mr. Riesbol said, for the storm water to sink into the ground. In about two and one-half days the water moved out to the drainage stream as subsurface seepage. The upper half of ground-water storage flowed into the stream in less than four days, while the remainder of the flow occupied the period between four and 45 days.

This history, of course, holds only for

the locality studied. Other watersheds, in other parts of the country, would vary the story according to regional and local conditions.

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## Rain Does Not Melt Snow

**S**NOW melts rapidly during spring rainstorms, yet contrary to popular impression the rain causes very little of the actual melting, Walter T. Wilson of the U. S. Weather Bureau told the Hydrology Conference.

During a spring rain, Mr. Wilson explained, the air near the ground is thick with water vapor, ready to condense and form dew on contact with any object only a little colder than itself. When water vapor condenses, it always gives off heat. In contact with the snow, rapid condensation takes place, with release of considerable quantities of heat, and it is this that melts the snow.

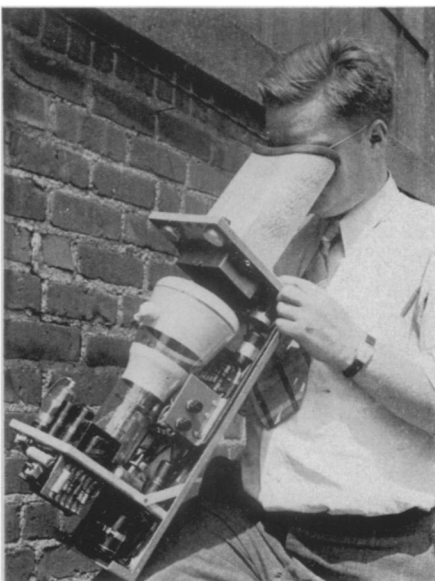
Mr. Wilson described a number of other interesting but little known phenomena to be found in melting snowbanks. As the snow partly thaws, then re-freezes at night or on colder days, the structure of the flakes within changes from fine and feathery to larger, straight-lined and coarse. Where frozen crusts were formed, then covered with later snowfall, horizontal layers of ice may be found. During thaws, these will often act as impervious strata, holding "perched water tables." Or they may melt at the top and form new ice underneath, so that they gradually sink clear through the drift and finally rest on the ground.

On the downhill edge of a melting snowdrift, the speaker continued, there will be a wet zone of soil, seldom more than ten feet wide. This is fed by water trickling out from under the snow, but evaporation prevents it from becoming wider.

*Science News Letter, July 12, 1941*

## Factors in Infiltration

**I**NFILTRATION of rainwater into the soil is governed largely by three factors, G. W. Musgrave of the U. S. Soil Conservation Service told the meeting. These factors are soil porosity, temperature, and vegetal covering. The right porous state of the soil is determined to a considerable extent by its past history. For example, a denuded soil hammered by rains may look superficially very little changed, but the pores and crevices that once welcomed the water



**VIEW FINDER**

Television cameras are now provided with a view-finder, serving the same purpose as the finder on an ordinary camera, but which actually picks up the television image being recorded, and shows it to the camera-man, looking into a light-tight hood.