



Measurement of transpiration. Note higher humidity inside glass cage as indicated by gauges inside and out.



means that with a limited water supply—as water almost always is in this area—more forage could be produced by grasses than by the mesquite. Another fact of importance here is that much of the mesquite growth is out of the reach of livestock and so is unavailable as forage.

Studies made by the Forest Service in central Arizona indicate that shrubs use more water than grass. These studies also showed that perennial grasses use little water until late summer. This is probably because they are dormant most of the year, and absorb water primarily only when they are green and actually growing.

A dense stand of trees or shrubs intercepts a great deal of moisture and pre-

vents it from reaching the ground. In a region where moisture supplies are usually inadequate, this can be a factor of great importance. Some of the studies currently under way are designed to tell whether replacing trees and shrubs by grass will result in appreciably more water reaching the ground and thus becoming available to produce forage and to grow an erosion-controlling plant cover.

The continually increasing number of people who are coming to live in the Southwest makes the need for water ever more critical. Consequently, the importance of research of the types outlined above becomes ever more urgent.

It is the hope of the Watershed Management Department of your College of Agriculture to continue to find added ways of saving water on our forests and ranges. These ways must be discovered before our water supply becomes critically short.

# FORAGE and WATER

**R. R. Humphrey**

Department of Watershed Management

The College of Agriculture of the University of Arizona is embarking on a new research and teaching program — that of watershed management. This field of study will deal primarily with three replaceable natural resources, forage, trees and water.

The production of forage and timber uses water in various ways. These are for the most part (1) interception of a portion of the rain or snow that falls, thus preventing it from reaching the ground; (2) reduction of soil erosion and runoff, permitting water to soak into the soil that would otherwise be lost; and (3) absorption of rather large amounts of water in the growth process. Most of the absorbed water is evaporated into the air through the plant leaves.

## Study Water Use

Little is known concerning the amounts of water used in these three ways. Studies currently under way by the Forest Service and by the College of Agriculture are designed to provide much-needed information on all of these phases. In some of these studies the effects of replacing a vegetative cover of trees or brush are being studied. In others, exact measurements are being made of the water used by various kinds of plants as they grow.

Earlier research by the Experiment Station indicated that all of the commoner desert grassland grasses used about the same amount of water to produce a given amount of forage. All of them were much more efficient in their use of water than the mesquite that is replacing the grasses over so much of the Southwest. This

# Watershed Management

## A New Department of the UA College of Agriculture

**D. F. McAlister**

Assistant Director  
Agricultural Experiment Station

In recognition of an increasingly important field in agriculture, a new department of Watershed Management has been established in the College of Agriculture at the University of Arizona. It is one of the first departments of its kind in the United States and has a bright future.

Our watersheds are the source of that vital natural resource, *water*. Since they are used to produce livestock, timber, wildlife, and for recreation as well as water, their proper management is of great importance to every person in Arizona. The new Department of Watershed Management will provide a means for an organized, scientific approach to the many and varied problems associated with our watersheds.

The Department of Watershed Management will place primary emphasis on soil and water conservation, forestry and range management. The present range management program of research and teaching will continue and expand in this

new department.

Cooperation between this and other departments at the University, including such fields as hydrology, soils, animal science, botany, wildlife management and agricultural extension, will provide the basis for solution of the perplexing problems now facing us in the management of our watersheds. The staff of the new department will work closely with other state and federal agencies who are concerned with the improvement of Arizona's watersheds.

To encourage the development of a Department of Watershed Management, the Charles Lathrop Pack Foundation made a grant of \$120,549 to the University of Arizona. These funds, plus those already available for the range management and forestry programs in the College of Agriculture, provide for a professional staff of seven. In addition, there are six graduate student assistants in teaching and research. This staff of specialists in watershed management will be responsible for a research program on the forest and range lands of Arizona and the training of young men for a career in range or forest management or the newer field of watershed management.