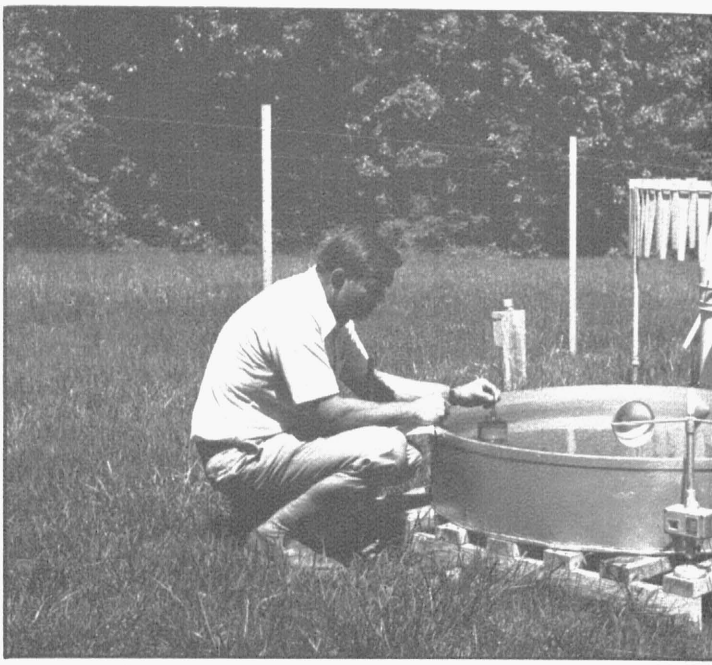
UNIVERSITY
FOREST
Poplar Bluff

University Forest is an important part of the program of the School of Forestry, Fisheries and Wildlife at the University of Missouri-Columbia. The Forest is located in Butler and Wayne Counties, 14 miles north of Poplar Bluff, near Lake Wappapello. The original lands were obtained in the 1870's by the State of Missouri under terms of the Morrill Act, which authorized land grants to state universities. The area was assigned in 1947 to the School of Forestry, Fisheries and Wildlife, then the Department of Forestry, for development as a field instruction area. In 1960 lands were exchanged with the U.S. Forest Service to consolidate both ownerships. Other tracts subsequently were exchanged with private landowners for the same purpose. University Forest now comprises 7,310 acres, almost all forested in upland hardwood cover types and some shortleaf pine. There are 53 miles of exterior boundary line. Thirteen miles of gravel-surfaced access roads have been constructed.

Twenty-two buildings house research laboratories, greenhouse, sawmill, wood processing plant, office, shops, resident forester's house, classroom, student and faculty cabins, and dining hall.

Field Instruction

Students majoring in forest management or recreational forestry at UMC attend one of two six-week summer sessions following their sophomore year. Instruction is by regular staff members in four courses concerned with forest measurements, ecology and silviculture, forest engineering, and wood use. It's a rough session, with long hours, hard work, and sweat, but necessary to a well-rounded educational program. For many, this is the first opportunity to use tools and instruments. They have a chance to see timber use and processing first-hand and to learn the problems of Missouri's wood industries. Course work in boundary-line surveying,



Water surface evaporation is directly related to total water watershed.

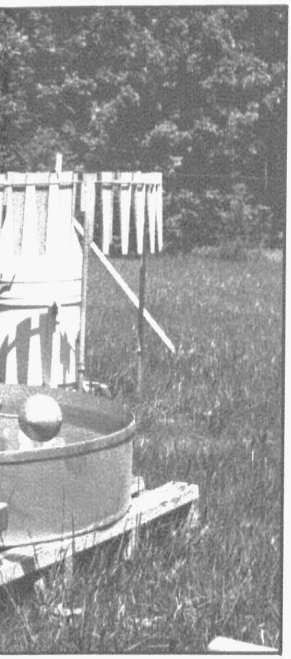
planning roads to engineered standards, measuring trees, and observing silvicultural operations, such as thinning tree stands, is designed to show the students basic field methods on which they base their last two years of university studies. These techniques are applicable no matter where graduates find their first jobs.

At other times, the facilities may be used for short courses in sawmill operation and lumber grading. The area is well suited for courses in continuing education, such as aerial photo interpretation, and observation of new practices on nearby state and national forest lands.

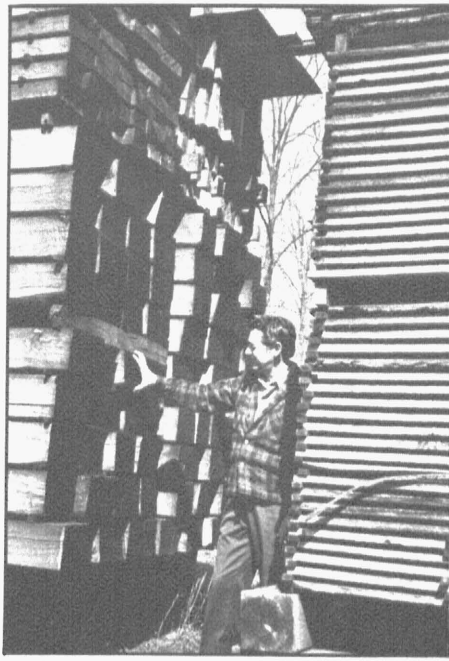
Hydrology Research

The major research effort is to determine the impact, if any, of clearcutting and conversion of timber to grassland on the water resources of small headwater Ozark watersheds. Information on rates of erosion, nutrient loading into streams, and water yields from treated and untreated watersheds is being gathered for later comparison.

Concurrently, research is also being con-



use by an entire forested



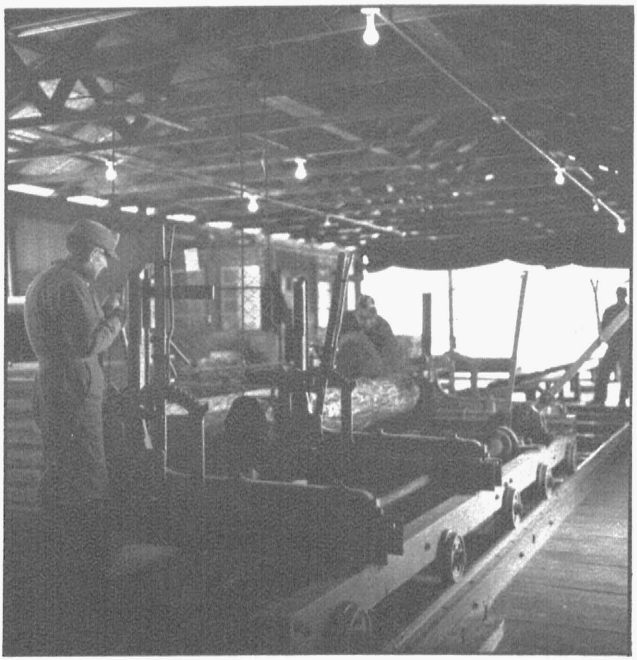
Oak cross-ties and lumber are proper stacked for drying.

ducted on nutrient cycling in oak-hickory forests. Data from this study will be used to help define mathematical functions relating movement and storage of certain elements in oak-hickory forests.

A computer model will be developed which may be used by the forest manager. The use of such a model by land managers will aid them in estimating changes in water quality and quantity that may result from various forest practices.

Fire Research

Missouri has had a long history of uncontrolled forest fires followed by timber deterioration and excessive soil erosion. To better understand the long-term effects of fire on trees, soil, stand composition and water infiltration, two sets of experimental plots have been burned periodicly since 1949. Even the casual observer can see the effects on trees and soil on these plots. Small trees are absent and surface soil is compact and will not absorb water as rapidly as unburned areas. Other studies relate soil properties and water relations to tree growth.



The saw mill at University Forest is used for teaching and research.

Tree Pruning

Upland hardwood trees tend to retain their limbs after the limbs die. When these trees are harvested and sawed into products, knots are present which lower the quality. To determine whether it is economically feasible, limbs are removed by sawing from the lower 16 feet of stems on experimental trees. Wood growth added after pruning is clear. Periodically, as the trees get larger, some are sawed into products to note the increase in grade. When intensive timber production becomes more common in Missouri, pruning may be used to increase the yield of wood suitable for furniture and other high quality products. If pruned trees are open-grown, water sprouts may develop at the branch sites. Solution of this and other problems are needed to perfect pruning methods.

Harvest Demonstrations

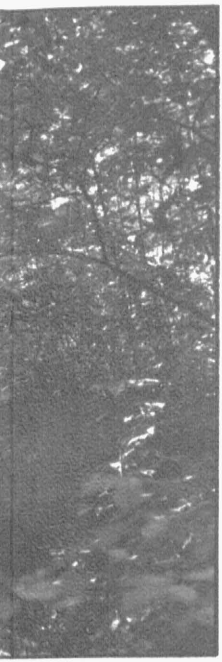
Trees on areas several acres in size have been harvested by different methods to observe the response of young trees in regenerating the area.

Scientists use stream gauging station to measure runoff from a f

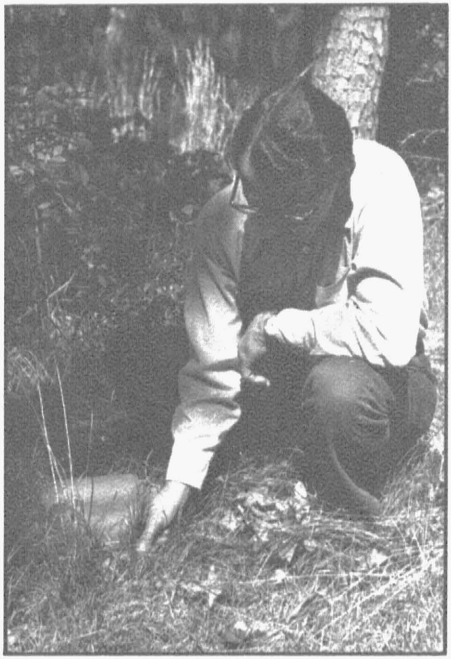
One area was harvested using "typical" commercial standards, leaving defective and small stems. Other methods include selection of single mature trees, clear cutting in small patches and complete removal of all stems including small ones (which are made into fireplace fuel). Demonstration areas are shown to groups that visit University Forest.

Pine Regeneration

After a harvest of mature trees, shortleaf pine seedlings require open sunlight, exposure to mineral soil, and control of competing vegetation to become established and to grow rapidly. Ten to fifteen-acre stands of large pine trees have been harvested using three plans. One clear-cut area was shaped to permit pine seeds to regenerate the area from adjacent stands. Another area was burned after cutting to expose more mineral soil, followed by manually seeding the area for prompt regeneration. On a third area, individual large trees were removed and mineral soil ex-



forested watershed.



New seedling grows in area where mature trees were removed.

Exper

posed to determine whether small patches of resulting seedlings will develop properly.

Other studies concern thinning of shortleaf pine stands and a trial of planted loblolly pine from Southern sources.

Forest Management

The character and development of the timber resource is monitored periodically on 480 randomly located sample growth plots. Records show that timber volume has more than doubled during the past 15 years. Control of wildfires and prevention of trespass require alertness on the part of the Forest staff. Maintenance of boundary line marks and roads require continuing effort.

Use of the Forest by the public for hunting and hiking, which is permitted, demand patrolling to reduce carelessness and abuse, particularly the protection of active research areas. Efforts during the past 30 years to rehabilitate the forest resource and learn about its management are paying off.

ts check effect of harvesting on water quality and runoff.

Visitors Welcome

If you'd like to visit University Forest or make group tours, contact Resident Forester, University Forest, Route 2 Box 91, Williamsville, MO 63967; telephone 314-755-8373.