



Falling Leaves

► GENERATIONS OF poets have perpetuated a dismal autumnal picture of "melancholy days, the saddest of the year," with trimmings of wailing winds and "leaves both brown and sear."

But this is not fair. Autumn is a grand season, a time of both fulfilment and preparation. And for the trees that shed their leaves it in no more a time of doom and death than any other season of the year.

The leaves die and drop off, it is true, but the trees themselves stand and survive; they are no more dead in autumn and winter

than they are in spring and summer. We humans, egotists that we are, are simply reading our own feelings and reactions into beings whose lives are quite unlike our own.

The trees, as a matter of fact, are very business-like about this letting their leaves go. In their purely automatic, unconscious way they prepare for the coming winter and the spring that is to follow a great deal better than self-styled *Homo sapiens* manages his own future.

The first thing that happens, as the nights grow longer and chillier, is the draining back into the tree's branches and trunk of practically all the foodstuffs in the leaves. Leaves, as we all know, are the ultimate food factories and during their active life always contain a good deal of sugar, starch and protein. That is why grazing and browsing animals eat them while they are green—nobody ever saw a deer, or even a goat, try to get a living out of fallen leaves.

After the foodstuffs have been drained out of the leaves, the green coloring matter that helps to make them breaks down

chemically, and in doing so becomes colorless. It is then that the leaves begin to glow in their autumn glory of yellows and reds and purples.

These colors have been there all the while, the yellows as microscopic solid bits of pigment, the reds and purples as dissolved dyes in the cell-sap. Only during the summer there is so much more of the green pigment in most leaves that it covers up and masks the bright hues.

While the color change is going on, a double layer of cork cells forms right across the base of the petiole, or leaf-stem—the only common case in nature of a bandage being applied before a wound occurs.

After this cork layer is formed, it splits apart, one half going with the leaf, the other covering the scar on the branch and sealing it against the entry of decay-causing germs and spores. Students of plant life call this cork layer the "absciss layer," which in plain English means simply the "cutting-off layer."

And so the leaves drop off.

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#### FORESTRY-METEOROLOGY

## Fire Hazard in Southeast

### See Front Cover

► UNLESS 12 to 15 inches of rain fall on southeastern forests in the next few weeks, that area of the United States will be approaching a critical forest fire level.

It may wreak as much havoc as the dry 1952 season which plagued the Ozarks, southern Appalachians and southern Alleghenys with many large fires and heavy economic damage.

Carl A. Gustafson, chief of the U. S. Forest Service's fire control section, told Science Service that southern California now constitutes the country's most critical area.

Forest fire conditions are moderating in the lake states, and in Oregon, Washington, western Montana and as far south as Boise, Idaho. In some cases, they have eased off considerably. The front cover of this week's SCIENCE NEWS LETTER shows the terrible destruction in one Oregon forest fire.

Colorado, Arizona and New Mexico are in "pretty fair shape," but central California is "not out of the woods yet."

If rain does not make up the "moisture deficiency" in the Southeast by the time leaves fall off the trees, the conditions will be ripe for fires. Although the situation is not yet "desperate," rain should begin falling not later than Nov. 10.

Should bad forest fires spring up in the Southeast, helicopters probably will not be used, Mr. Gustafson declared. He explained that the machines are useful in the West where fires start in out-of-the-way places.

But the Southeast is covered with a web of roads that permit fire-fighters to rush equipment close to the battle line. Mechanized plows, hauled on two-ton trucks, form the Forest Service's front line of de-

fense in the flat wood areas of the southern states.

Using the plows, a small crew of men can ring the blaze with a trench to prevent its spreading. In an average year about 700 to 1,000 miles of these trenches are plowed to control about 1,600 fires, Mr. Gustafson reported.

The "tanker truck" is also a popular piece of equipment, especially in California. It resembles a fire truck and can be operated by a few men. It carries water which is squirted on the fire.

Tankers, plows and men equipped with hand tools, plus the Service's 260 smoke jumpers, are able to control 95% of the 11,000 fires a year that the Forest Service combats.

Over all of the national forest areas, the Service may build 3,500 miles of fireline in a year's time. Half is done with equipment and half is done by hand.

New methods proposed for fighting forest fires are given trials by the Forest Service. Chemicals have been tried. Bombing the fire with water also has been tried. But no panacea has been found. The best equipment to use, with economics considered, is still the mechanized plow, the tanker truck and teams of stout-hearted men.

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