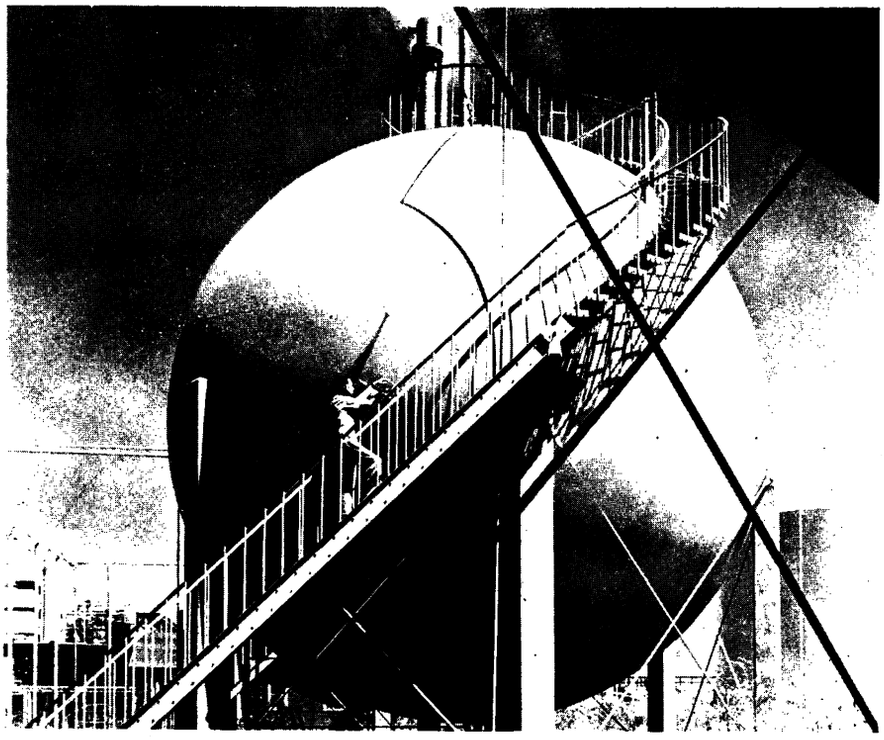

***FOR PRESSURES—Huge hollow steel balls like this are necessary to store the highly volatile products used in making 100-octane aviation gasoline. This is a Standard Oil Company (New Jersey) photograph.***

CHEMISTRY

# Dye from Sassafras

## Simple and economical method of getting coloring matter from root bark may lead to substitution for coal dyes now war-short. Tan, brown and gray obtained.

➤ DISCOVERY of a simple and economical method of obtaining natural dye from the root bark of the sassafras tree has been announced by Dr. Arthur C. Shead, associate professor of chemistry at the University of Oklahoma. Dr. Shead stated that the discovery might lead to the eventual replacement of some coal dyes of which there is a present shortage.

Colors obtained from the dye are tan, light and dark brown, rose brown and a close resemblance to pearl gray. The shades are varied by the concentration of the dye and the kind of mordant used.

The nation is returning to the use of natural dyes in the present war, according to Dr. Shead, just as it did in World War I. The reasons for the present shift, however, are different from those of the last war. In 1917-18, America had to turn to natural dyes because the German synthetic market was cut off as a source of supply. In this conflict, ways of making the synthetic dyes are known in the United States, but there is a shortage of chemicals which are used in processing the synthetic coloring agent.

That the dye is present in sassafras root bark is not a new discovery in itself. Pioneer women often colored their clothes by boiling them in a solution of the root bark and water. However it was a slow and tedious process and impractical for many types of material.

The new process of extracting the dye, discovered by Dr. Shead, is so simple that a high school chemist could make the dye from the articles, sassafras root bark and ammonia, found in many homes. The residue from the distillation of sassafras oil is put into a solution of ordinary household ammonia. The dye is extracted by the ammonia's action and is then precipitated with acid.

If the dye could be produced on a commercial basis, it might become the nucleus of a new industry. The sassafras tree is found growing abundantly in the midwestern states of Oklahoma, Arkansas and Texas and grows in parts of every eastern state. It will grow abundantly wherever there is sufficient rainfall and will thrive on land that has lost its fertility for general farm purposes.

*Science News Letter, October 31, 1942*

PLANT PATHOLOGY

## Microscopic Worms Are Champion Chiselers

➤ MICROSCOPIC in size, but champion chiselers just the same, are the larval roundworms that cause the destructive and costly plant disease known as root-gall or root-knot. Details of their method of attack have been studied by Dr. M. B. Linford of the University of Hawaii, with an eye to the eventual development of control means. (*Phytopathology*).

Dr. Linford placed a number of the tiny pests, along with a lettuce rootlet, in a drop of water under a microscope magnifying them 600 times. This made them appear about as big as medium-sized earthworms, so that their activities were easy to follow.

One of the wormlets would push its sharp snout against a cell at the surface of the root, and start jabbing away with its long, needle-like tongue. At the outset, Dr. Linford counted 52 strokes in 30 seconds; then the worm warmed up to its work and hammered faster.

Finally the cell wall was pierced. The worm then rested from a quarter to half a minute, after which it proceeded to suck the cell juices. Then it moved on to another cell and repeated the performance.

The lumpy growths on the roots, which give the disease its names, are produced when the roundworm chooses to penetrate into the root, boring from cell to cell as a house-wrecker might go through the rooms of a house by breaking through wall after wall. The worm's saliva, released while feeding, slows the root's growth in length but stimulates side growth, causing the galls or knots. These harm the plant by hindering the transportation of water and soil nutrients from roots to top, also by making it easy for other disease organisms to attack.

*Science News Letter, October 31, 1942*