Before burning the stump, remove it with a period in August and cover the stumps. Ignite the stump, have water available. If there is good, the stump

the stump is in again, using the size of the stump. Do not a substitute for treatment satisfactorily if (Fig. 4)
Thousands of elm trees in Illinois have been killed by disease in the last ten years. Many of these trees in residential areas had to be cut promptly to reduce the physical hazard, leaving stumps and the problem of removing them.

A simple and inexpensive method for the homeowner to use in destroying one or a few stumps on his property has been developed at the University of Illinois. The stump is treated with Stumpfyre, a mixture of four chemicals in spring or early summer. The chemical mixture is allowed to diffuse through the wood for 2 to 3 months; then the stump is burned. Tests carried out by the Department of Forestry showed that about 80 percent of the stump was destroyed when treated with Stumpfyre, whereas only 30 percent was destroyed when no chemical was used.

The schedule below gave good results in the field tests. It is recommended that you follow the instructions closely.

**CUT THE STUMP as close (flush) to the ground as practical.**

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*Patent application filed by the University of Illinois.*

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Most of the above-ground portion of this stump was removed with a power saw. Some of the holes were not located close enough to the bark, and an extra hole or two in some areas would have been desirable. (Fig. 1)
This root extension failed to burn, probably because the chemical was not distributed throughout the wood. Another hole should have been bored at the location shown by the small stone. (Fig. 2)

BORE VERTICAL HOLES 1 to 1½ inches in diameter on 5- to 6-inch centers. They should be about 6 inches deep in flush-cut stumps. Do not bore through the bottom. Keep outside holes within 2 inches of the bark (Fig. 1). In root extensions bore holes 3 to 4 inches apart and as deep as possible without going through the bottom (Fig. 2). A ½-inch electric drill with a Planetor Magic Feed Bit gave excellent service in the boring tests.

MIX STUMPFYRE. Mix powdered forms of the following chemicals:

<table>
<thead>
<tr>
<th>Chemical name</th>
<th>Formula</th>
<th>Parts by weight</th>
<th>Number of pounds for an 8-pound batch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cupric chloride</td>
<td>CuCl₂</td>
<td>3</td>
<td>1½</td>
</tr>
<tr>
<td>Sodium dichromate</td>
<td>Na₂Cr₂O₇</td>
<td>9</td>
<td>4½</td>
</tr>
<tr>
<td>Lead acetate</td>
<td>Pb(₃Ac)₂</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Manganese chloride</td>
<td>MnCl₂</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>

Thin the mixture with water to about the consistency of heavy transmission oil or thick molasses. To find how many pounds of thinned chemical mixture you will need, divide the number of holes bored in the stump by 4.

A list of companies that sell the chemicals may be obtained on request from the Department of Forestry, 219 Mumford Hall, Urbana.
POUR STUMPFYRE INTO HOLES, using about ¼ cup per hole. If they will not hold all the chemical at the start, add the remainder as soon as you can. Be sure that there is some Stumpfyre in each hole. Although you need not measure the amount exactly, distribute the chemical so that it can diffuse into all parts of the stump.

CAUTION! Be careful when handling and storing Stumpfyre. Wear rubber gloves to protect your hands and wash hands after handling the chemical. Stumpfyre will corrode metal and damage clothing. Store it in a glass container and keep it out of reach of children and animals.

COVER TREATED STUMP with a reflector-shield of aluminum foil to protect it from rain (Fig. 3) while the
chemical is diffusing into the wood. Before burning the stump, if any liquid remains in the holes, remove it with a battery syringe.

**BURN THE STUMP** after a ten-day dry period in August or September. Remove the reflector-shield and cover the stump with plenty of dry kindling (Fig. 4). Be sure to cover the outside edges and root extensions. Ignite the kindling and tend the fire for the first hour or so until the kindling is reduced to a bed of coals and the stump is smouldering.

During the first hour or so of burning, have water available to quench grass fires or flying embers. If there are small children in the neighborhood, the stump should be fenced.

Replace the reflector-shield once the stump is smouldering. If the fire goes out, begin again, using fresh kindling. Test stumps have smouldered from one to three weeks. The time depends on the size of the stump, the weather, and the completeness of treatment (Fig. 5).

A liberal amount of dry kindling was piled on this stump. Do not use kerosene or used crankcase oil as a substitute for kindling. Charcoal is expensive but will serve satisfactorily if enough is used.
This stump was almost completely destroyed. The hole will be filled promptly with soil, the soil tightly packed in place, and the spot seeded with grass. (CAUTION: Do not leave the hole uncovered so that it may cause someone injury.) If a tree is to be planted in the spot, remove as many ashes as you can and enlarge the hole slightly. Use fresh soil to plant the tree.

This circular was prepared by C. S. Walters, Professor of Forestry, and K. R. Peterson, Research Associate in Forestry.

Urbana, Illinois