

to virtually all the States of the far West. A downward tendency was likewise evident among some, but not all, of the nine Northeast States. In the States of the South and Middle West, forced sales did not show any general declining tendency over the 3-year period for which information is available. Here and there they have even crept upward, as for example, in Indiana, Illinois, and Iowa. Involuntary transactions of all kinds, including "deeding back," are included.

Generally speaking, the forced-sale rate remains high. For the last three surveys it has averaged 23 farms per thousand for the United States. About a third of all transfers have been forced sales. The rate has been smallest in the Northeast, with approximately 8 to 9 farms per 1,000, and largest in the West North Central States, with almost 32 per 1,000, and in the mountain section, with almost 45 (fig. 93). How far above pre-war these rates are can not be told for lack of comparable data. The number of farm bankruptcy cases concluded in the courts during the last few years has averaged from seven to nine times the pre-war rate.

Voluntary Buying Low

Voluntary buying remains generally low, and during the three years even dropped somewhat for the country as a whole, from 30 farms per thousand in 1925-26 to 28 in 1926-27 and to only 26 in 1927-28. The only area of much improvement was in the Dakotas, Montana, Wyoming, and Idaho, where voluntary buying increased while forced sales declined, and an encouraging tendency developed toward steadiness in values. How far below normal voluntary buying is, is uncertain, but a rate of about 17 per thousand for 1927-28 in Iowa, compares with an estimate of 60 once made as the pre-war Iowa normal. Disparity is also indicated by the fact that the States of the Middle West which ordinarily enjoy land markets among the most active in the country have, in recent years, shown rates much below other sections which ordinarily have less active markets. Iowa, for example, had a rate of 17 farms per thousand, Minnesota and Wisconsin had 18, and Illinois had 20, but in 1927-28 only four other States in the entire country fell as low as 20.

A complete table of the results of these surveys is given in this Yearbook.

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FOREST-FIRE Fighting With a Power Pump Is Found Effective Are gasoline motor-driven pumps effective in controlling forest fires? A small woods fire in southern Massachusetts on a 1928 May day brought under control by the use of such a pump was convincing evidence of their effectiveness under the conditions encountered. The fire occurred at the height of the spring forest-fire season, which means warm cloudless days and a low relative humidity. Given a good start, spring fires in this portion of New England have covered 1,000 to 3,000 acres of land in the course of an afternoon. The area in which the fire occurred was grown up to chestnut and oak sprouts, gray birch, northern white pine, and pitch pine. There was also some meadow covered with dry grass.

A Massachusetts district forest warden got a call for this fire just as he had finished another job a mile or so distant. He had good equip-

ment in the shape of a powerful 1½-ton truck which carried his pump and about 5,000 feet of 1-inch fabric hose. Collecting a crew of several men, he drove rapidly to the fire, where he found he could drive his truck to a brook within 50 yards of one point of the fire. In the spring it is nearly always possible in Massachusetts to find water enough for operating a motor-driven pump. Four men unloaded the pump and set it down beside the brook. The other men coupled the hose to the engine, strung out and coupled together several 50-foot lengths, and everything was set to go. In the meantime the mechanic at the pump had coupled on one end of the intake hose and thrown the other end in the brook.

Half a Mile of Fire Line

At this time there was fully a half mile of blazing fire line, which a number of men from the neighborhood were attempting to extinguish with shovels, brooms, and pails of water carried from the brook. The chut, chut, chut, of the pump was a welcome sound, and the 25 or 30 gallon stream of water which soon came from the nozzle of the hose was an even more welcome sight. The man handling the nozzle knew his business. Coming up to the line of fire, he turned left and, walking rapidly, sprayed the edge of the fire as far as it was burning on that side and part way around its end. He then retraced his steps to his starting point and sprayed the right-hand edge of the fire. He again retraced his steps to the starting point and walked directly through the area already burned over until he reached the far edge of the fire. Here he repeated his tactics of first turning left and spraying the left wing of the fire, then coming back and going around the right wing. Thirty minutes after the fire truck arrived on the scene the running fire was stopped. A patrol was put on, but the fire did not break out again.

Let anyone who wishes compare this with the time it would have taken a crew of 10 to 20 men to build a fire line around and control a fire which was one-half mile in periphery when the crew arrived. Are these pumps effective? They certainly are where there is water and where they can be transported within a reasonable distance of the fire. That is generally possible in the Northeastern States. Further, they are fully as effective for direct attack on fires as they are for mopping-up purposes.

C. R. TILLOTSON.

FOREST-FIRE Patrol by Airplane Greatly Helps Ground Force

The first experiments with airplanes for forest-fire patrol in the United States were made in California in 1920. The work was conducted for the Forest Service by the Army Air Service and was sufficiently promising to warrant its continuation in the two succeeding seasons. It was then discontinued until 1925. In that year Congress appropriated \$50,000 for renewed cooperation between the Forest Service and the Army Air Corps in aerial forest-fire control.

Beginning July 1, 1925, the Forest Service hired civilian pilots and mechanics. The pilots were Army reserve officers with pilot's training and operated its own patrol in the national forests and adjacent forest areas in California, Oregon, Washington, Idaho, and Montana. An Army officer was detailed for technical inspection of equipment. Liberty-motored Army DeHaviland planes were loaned by the Army