ing of maps, papers and messages in a blackout. Fluorescent-dyed paper sounds the death-knell for counterfeiting, and fluorescent inks are the modern answer to the problem of marking laundry invisibly.

Phosphorescent materials that glow in the dark are insurance against barked shins and frayed tempers for nocturnal navigation of bedroom and bathroom, Dr. Stutz stated.

Vitreous enamels treated with phosphorescent pigments, and activated by daylight, maintain an afterglow which assures visibility.

*Science News Letter, May 13, 1944*

PHYSIOLOGY

# Frog Hearts Transplanted

**Soviet scientist tells how he replaces the heart of a frog with that from another frog. Some of his animals live normally for 100 days afterwards.**

➤ THE FEAT of replacing an animal's heart by the heart of another animal through a transplantation operation has been accomplished by Prof. N. P. Sinitsin, of the Gorky Medical Institute in Moscow.

The animals whose hearts were transplanted were all frogs. Some have lived four months, apparently in good health. Electrocardiagrams show no difference in the muscle action of the transplanted hearts from that of frog hearts that have not been transplanted.

Frogs were chosen for the experiments because the heart of cold-blooded animals fits the conditions Prof. Sinitsin believes extremely important for solving the problems of successful transplantations of animal organs. Prof. Sinitsin, in a report written for the Soviet Scientists' Anti-Fascist Committee, describes his experiments as follows:

"Despite its great antiquity, the problem of transplantation of organs is still far from being solved. Of all the work done on this problem, that most deserving of attention was in cases in which the scientist dealt with tissues that are fed by liquids that wash over them. In other words the method of feeding approximates that of embryonic tissue.

"This is a factor which I consider to be of extreme importance in solving the problem of transplantation. The heart of cold-blooded animals is at the embryonic stage of development so far as its histological structure and feeding system are concerned. I based my experiments on these conceptions.

"I developed a method for rapidly sewing up blood vessels and my first series of experiments enabled me to place a second heart beside the animal's own heart. Observation showed that the transplanted heart worked well and that frogs with two hearts lived 30 days and sometimes more.

"A second series of experiments enabled me to cut out the heart of the animal and place the transplanted heart into the blood vessel system. In the first experiment this was done only temporarily but later the frog's heart was completely replaced by the transplanted heart.

"The transplanted heart functioned normally under the new conditions. Some of my animals lived over 100 days and did not show any differences in behavior from normal frogs. In the spring both males and females which had been operated on went through a normal nuptial period which ended with spawning.

"The third series of experiments carried out in the autumn and winter of 1943-1944 was the transplantation of the heart by a new method through the frog's mouth, the frog's own heart being removed at the same time and the transplanted heart immediately included in the blood vessel system.

"The operations were carried out under aseptic conditions with a minimum loss of blood and the smallest possible surgical injury of the tissue of the mouth so that it did not require stitching.

"Frogs operated in this third series do not behave in any way differently from unoperated frogs. Some have already lived 130 days. Electrocardiagrams of the transplanted hearts coincide exactly with those of the unoperated hearts. Observations are being continued."

*Science News Letter, May 13, 1944*

Nine federal *detinning* plants in the United States are now salvaging metal from tin cans.

An acid or caustic soda treatment of southern *pine* increases turpentine and rosin output.

BOTANY

## NATURE RAMBLINGS by Frank Thone

### Neglected Beauties

➤ WHEN the first settlers in the Colonies found time enough to lay out flower gardens and develop tree-and-shrub settings for their houses, they brought over old familiar favorites already known in western Europe: roses and peonies, irises and tulips, pansies and pinks. Some of these were native to Europe, others had been brought in from Asia—in some instances as early as the Crusades or even the Roman Empire. At any rate, they had become thoroughly a part of the European scene, and European gardeners had made, and continued to make, many changes in color and size and other appeals to the eye.

After independence was achieved, and American ships began to ply in the China trade, we made quite a number of direct importations from eastern Asia, especially into the mild-climated Southeast—such things as camellias, chrysanthemums and (surprisingly enough) the Cherokee rose.

Some native flowers and shrubs have found their proper places in American gardens: rhododendron, azalea, flowering dogwood, gaillardia, several species of phlox, to name only a random few. But the ones we cultivate are a mere corporal's guard compared with the hosts of fine flowers we still neglect.

One of the pities of the situation, too, is the fact that many of these neglected native species are particularly well adapted for growing in the shade—that perennial problem of the home-grounds gardener. Think of the fine flowers you have seen growing in the woods, but seldom or never in the average suburban flower garden or shrubbery: trillium,