NERVE BANKER—Dr. Paul Weiss, University of Chicago zoologist who has been experimenting with animals, hopes that some day banks similar to the blood banks may supply fragments for splicing torn nerves.

fiber and its sheath. The most important thing it does, Dr. Weiss believes, is to furnish a lengthwise pull on the fiber. Scientists have long speculated on how the blind nerve fibers ever find their way in the first place to the spot they are supposed to reach in the body. There have been theories that the region needing to be supplied by a nerve furnished some sort of chemical or electrical attraction that pulled the nerve in the right direction.

According to Dr. Weiss' theory, the growing nerve feels its way by contact with the surface along which it travels. The movement of the fibers and their direction are guided by surface forces, something as surface forces guide the spreading of oil on water. In the case of nerves, the surface forces guide by a lengthwise pull.

When anything upsets the molecular orientation of the surface over which the nerve travels, so that it does not exert this pull, the growing nerve fiber will wander about at random. An injury in which a nerve was cut might also cause disorientation of the surface so that the tiny tip of new nerve fiber could not find its correct road.

The artery sleeve helps remedy this situation because the blood clot inside it exerts a lengthwise pull as it shrinks in size. This pull guides the nerve fiber over the cut and onto the old nerve pathway on the other side.

Dr. Weiss is not the only scientist who has been studying this problem of nerve growth and methods of repairing nerve injuries. British surgeons have developed a method of using plasma to "glue" the ends of cut nerves together, instead of sewing them, and of fixing nerve grafts in plasma, something as vegetables are set "in aspic," to make the soft, slippery fresh nerve grafts easier to handle as well as to make them stay in place without stitches.

Early this year an American scientist, Dr. David Bodian, of Johns Hopkins University, reported still another way of closing gaps in cut nerves. He cuts loose the nerve sheath and underlying outer bundles of nerve fibers from one end of the cut nerve and slides this sleeve up to meet the other end, to which it is attached by stitches. New fibers growing from the living end of the nerve are protected by this sleeve from encroachment by non-nervous tissue and enabled to grow down their old pathways to their ultimate terminations.

Science News Letter, July 24, 1943

CHEMISTRY

Infra-Red Tests Fuels

A high speed analysis of complex chemicals can be made by shooting invisible rays through them, and the impurity of the chemical can also be estimated.

➤ HIGH SPEED analysis and impurity tests on certain organic chemicals, such as fuels and rubber compounds, can be made by shooting invisible infra-red rays through them.

Experiments reported to the meeting of the American Physical Society by R. S. Rasmussen, R. R. Brattain and O. Beeck of the Shell Development Company, Emeryville, Calif., revealed that the method can also help to show how the molecules of the chemical are constructed.

Infra-red rays—the heat rays of longer wave-length than ordinary light—cannot shoulder their way between all the atoms of the chemical tested. Some are blotted out; others pass through to form a pattern which scientists call an absorption spectrum.

Since the pattern is made up of heat rays, an apparatus is used to measure minute differences in heat along the spectrum. From this the scientists can interpret the identity of the chemical tested and roughly how much of various constituents is present.

Where characteristic bands of heat appear for specific chemical groups, the scientists reported that the method may also be used to help establish the structure of molecules. Sometimes the chemical mixtures are so complex that the many tell-tale bands are a jumble. To get around this the scientists separate the mixture into parts by distillation, then identify each one separately.

Workers at the Shell Development Company have applied the method to the organic compounds called the higher isomeric paraffin and olefin hydrocarbons.

Science News Letter, July 24, 1943

AGRICULTURE

Hot-Weather Plowing Kills Worm, Saboteur of Crops

➤ A LOW-LIFE saboteur of war-vital tomato and other vegetable crops has been defeated with no more secret a weapon than an ordinary plow, by a method developed under the direction of Dr. G. H. Godfrey, Texas Experiment Station plant pathologist.

The villain in the piece was a species of threadworm or nematode, that infests plant roots, makes big, ugly knots and cuts down yield materially. It lives in the soil from crop to crop, ready to attack the next roots that come its way.

Dr. Godfrey found that by giving infested fields three extra plowings, with the thermometer near 100 degrees, he could turn up and thus kill off the greater part of the troublesome worms, which are very sensitive to heat and dryness. A comparison of yields from treated and untreated fields showed increased tomato yields worth more than $100 an acre extra in favor of the treated soil, after deducting the increased cost of the additional plowings.

Science News Letter, July 24, 1943

America made 10,250,000,000 rounds of *small-arms ammunition* in 1942.