comprised the entire assault, penetrating 150 miles into Jap territory. It was not the mere sealing off of an area where ground or seaborne troops would later attack.

Gliders are also used by the enemy in airborne raid operations, Maj. Noyes went on. "The Germans' use of gliders has been mainly in raid operations . . . Mussolini was rescued by troops that landed from gliders, and the surprise attack on Marshal Tito's headquarters in Yugoslavia was again largely a glider-borne force."

Foreseeing new applications for the glider, Maj. Noyes pointed out that ". . . utility possibilities include the evacuation glider which carries wounded, and the various field dressing stations which can be neatly packed for delivery by glider . . . standard field kitchens which would enable one glider load to serve 150 men with hot food . . . portable radio detection stations and weather stations which can be carried with their crews to any point within flying range for special reporting missions."

"There is obviously no limit to these possibilities, and we may soon see all sorts of service units provided by glider to front line outfits such as shower units, clothing and shoe repair shops, refrigeration units, and so forth," he concluded.

Science News Letter, August 12, 1944

Better Powered Planes

➤ EXPERIMENTS made with motorless planes or gliders will result in the greater refinement of powered airplanes, Charles Gale, one of the founders of the Soaring Society of America, stated in an interview.

At the low speed at which a glider flies, the pilot can note many things about the design and construction of the plane which could not be readily discovered in a power plane travelling at high speed, Mr. Gale pointed out. An aeronautical engineer equipped with measuring instruments could determine in a glider flight under actual flying conditions facts that are only approximated by models in wind tunnels.

"Soaring as a sport will return after the war," he predicted, "and there is every indication that there will be commercial applications of the technique, equipment and practices which have been evolved through the use of military gliders."

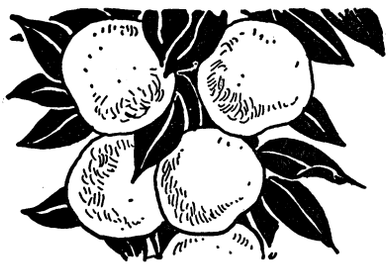
Science News Letter, August 12, 1944

Five factories in the United States are now producing *helium gas.*

PLANT PATHOLOGY

NATURE RAMBLINGS

by Frank Thone



A Sick Sadness

➤ PRACTICALLY all orange, grapefruit and tangerine trees in the United States and other major citrus-growing countries may be seriously menaced by a disease that is already known in South America, South Africa and Java, and that may become world-wide. It has been carefully studied by Prof. H. J. Webber of the California Citrus Experiment Station at Riverside, California, whose report was published as a translation in Portuguese in Brazil before it appeared in English in the United States.

Although trees were dying of this disorder in South Africa 40 years ago, its serious nature was not recognized until it appeared in Argentina and Brazil. There it was given the name "tristeza," which in both Portuguese and Spanish means sadness or melancholy. Prof. Webber suggests this name as appropriate for general adoption.

Tristeza is one of the most baffling diseases which plant pathologists have ever studied. It affects only grafted trees, and then only one particular type of graft, wherein orange, grapefruit or tangerine cions are set on sour-orange stocks. Similarly grafted lemons remain unaffected. No virus or other disease germ has yet been identified as its cause, neither has any insect or other possible carrier been placed under indictment.

Sour orange, a wholly inedible species of citrus, has become the most widely used of grafting stocks because its roots are more resistant to certain soil harbored diseases than those of the commercially valuable species which are grafted on it. But if young orange, grapefruit or tangerine trees with sour-orange roots are set out in a tristeza-infested region, growth stops in two or three years and the roots die. Yet the same species growing on their own roots show no sign of tristeza, nor do sour-orange trees that have been permitted to bear their own tops instead of the grafted-on cions.

Various theories have been proposed to account for the strange behavior of this disease. Prof. Webber's own theory is that the cause is a virus, which is held in check by some substance produced in the leaves of sour orange and lemon, but absent, or present in inadequate quantity, in the susceptible citrus species.

Tristeza has not yet been found in the citrus-growing areas of the United States or in the Mediterranean countries, but there is no assurance that it will not appear in either of these regions. If it does, total disaster can be averted by converting the orange groves into lemon groves by top-grafting, since lemon cions confer immunity. Diseased trees may also be saved by transferring them onto resistant stocks, such as the rough lemon: seedlings of the rough lemon are planted at the base of the old tree and their tops are grafted into the trunk of the diseased tree above the sour orange stock.

Science News Letter, August 12, 1944

INVENTION

Oat Flour in Ice Cream Improves "Eating Texture"

➤ AN ICE CREAM that ought to be popular in Scotland is the subject of patent 2,355,032, granted to Sidney Musher of New York. An essential ingredient is very finely ground oat flour, which the inventor states prevents the formation of objectionable ice crystals and at the same time improves the "eating texture" of the product.

Mr. Musher has also taken out several other patents on products incorporating oat flour, including one plastic.

Science News Letter, August 12, 1944