

advantage as far as its military effectiveness is concerned.

If the rocket bombs could be flown in the stratosphere there is a slight possibility that they might be effectively used over moderately long distances, since the speed of such projectiles in the stratosphere is greater than at lower altitudes, and the amount of fuel needed is much less.

Should the Germans decide to use radio-controlled rockets to bomb the United States, it would be a simple mat-

ter for us to tune in the rocket frequency and cause them to drop harmlessly into the ocean, or turn about and head back towards Germany like boom-crangs.

The facts seem to show that we have nothing to fear from transatlantic rocket bombs. The present state of progress in the field of rockets, jet propulsion, and aircraft in general does not indicate that such ocean-spanning terrors have been developed, or will be developed before the present war is over.

Science News Letter, July 15, 1944

HORTICULTURE

Soilless Farms on Islands

► FRESH VEGETABLES for United States Army Air Force personnel living on barren atolls and islands in the Atlantic and Pacific Oceans, and on isolated tropical posts will be provided by hydroponic or soilless farms now being established by the Air Quartermaster.

Growing vegetables by hydroponics, a system of raising green-stuffs in water with the use of chemicals, on isolated islands is not new. Experiments on Wake Island in the Pacific in 1938, using the system originated by Dr. W. F. Gericke of Berkeley, California, have proved that vegetables can be grown by this method. When the Japs captured Wake they acquired this pioneer installation (*See SNL, May 14, 1938*).

The vegetables are grown in boxes four by 11 feet. These are filled with water in which mineral fertilizer salts are dissolved in the right concentration to feed green plants. Over the tops of the boxes, wire netting is stretched, on which, supported in sawdust, excelsior, or other suitable material, tomatoes, peas, beans, carrots, and other vegetables grow, drawing their water and minor nutrients out of the tanks in which their roots dangle.

In experiments, tomatoes reached their maximum growth in about 2½ months. They were about the size of a baseball, had smooth skin with unbroken surfaces and fine texture as well as excellent flavor.

This water-chemical method of vegetable farming is not practical for a large number of troops, but has application in isolated areas for feeding a small number of men, according to the Air Quartermaster, Colonel H. R. W. Herwig.

"The serious problem of preservation in transportation and storage prevents

men in some isolated areas from getting fresh vegetables," he stated.

Air Force pilots and crews need fresh vegetables rich in vitamins and minerals to keep them in the best condition for carrying out their missions successfully.

Gardens will be set up at Ascension Island in the Atlantic; Canton Island in the Central Pacific; Espiritu Island in the South Pacific; Port Moresby, New Guinea; and Karachi, India. It is expected that trained crews to establish and train other personnel in soilless gardening will leave the United States in 60 days.

Science News Letter, July 15, 1944

ASTRONOMY

Faint Double Star Is In Constant Turmoil

► A FAINT double star has been discovered to lead a life of constant turmoil. Material is ejected from the star, known to astronomers as HD 214419, with such force that its composition changes radically in less than twenty-four hours, Dr. William A. Hiltner of the Yerkes and McDonald Observatories of the Universities of Chicago and Texas states.

The greenish-white star is of about the ninth magnitude and therefore invisible without the aid of a telescope. Located near the less-familiar constellation of Lacerta, the Lizard, in the northern hemisphere, the Wolf-Rayet star is very massive and is one of the hottest of heavenly bodies.

Little is known about the companion star, but the more familiar component is made up largely of helium and nitrogen. The system varies periodically in brightness, although the Wolf-Rayet component has never been seen to be eclipsed. The variation is slight, how-

ever, and can be explained as due to reflection of the light of the other star on the Wolf-Rayet component, Dr. Hiltner reports in the *Astrophysical Journal*.

"Since the contribution by the companion star to the total light is appreciable, it is remarkable that no spectral features of the companion have been observed," the astronomer points out.

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