

the nitrate base and allows the scratch marks to flow smooth. The process is carefully timed because too much time in the solution would cause an excess of film base to dissolve and make the negative thin.

The Signal Corps Laboratory under the direction of Lieut. Col. R. C. Barrett has designed and put into operation the machine which automatically times the process of running the film through the scratch removing bath and drying it afterwards. The machine can process about two to four feet per minute.

*Science News Letter, December 5, 1942*

#### ZOOLOGY

### Red and Violet Snow Due To Minute Forms of Life

► FIELDS of red and purple snow in the Northland are due to microscopic plants. These single-celled algae, one of the most primitive groups of living things, were investigated by Erzsébet Kol, Hungarian woman scientist working under a Smithsonian fellowship.

Her report of the vivid "blooms" in Alaskan mountain ranges has just been published in Washington by the Smithsonian Institution.

In this forbidding arctic environment, she found nearly 50 examples of the tiny plants living in almost infinite numbers on perpetual ice and snow.

Collecting living specimens, Miss Kol headed for her laboratory high in the Swiss Alps where she planned to cultivate and study this strange form of life.

War has now severed communication with Miss Kol. Except for news of the loss of her living specimens, no word has been received on how the war has affected the project.

Her previous reports indicated that some of these algae are very fussy about their home surroundings. One wouldn't live on ice. Another wouldn't live on snow. And there are striking changes in algae types depending on whether surrounding mountain slopes are acid or alkaline in composition.

This is probably due to their reliance on air-borne particles of decomposing and shattered rock for food. Dust dissolves slowly in the moisture on snow or ice surfaces, providing the minerals essential for life.

The snow and ice plants perhaps serve as the chief food for some other form of life, it is believed, which in turn supports higher forms.

*Science News Letter, December 5, 1942*

#### AGRICULTURE

## Healthy Army in 1962

**Recruits twenty years from now will have sound teeth and solid bones if fields where their food is raised are properly fertilized now.**

► RECRUITS for the Army of 1962 (if we need one then) will have sound teeth and solid bones if farmers and dairymen of 1942 put the right fertilizers on their fields and take proper care of the soil. The health and strength of the coming generation lies in today's fields and pastures, Prof. W. A. Albrecht of University of Missouri pointed out before the National Industrial Chemical Conference in Chicago.

Soils are the halfway stage between rock in the mountains and silt on the bottom of the sea; mankind seizes upon this geologically brief interlude in the endless cycle of erosion to extract a living from this mass of mineral particles plus humus added to it by other living things. If his use of the soil is wise, man can slow down the erosional cycle to his own advantage; if he abuses the soil it takes revenge by hastening the erosional process and leaves him hungry and faced with a stone-bare cupboard.

When soil "goes into a decline" it shows any number of warning symptoms before it is really ready to die.

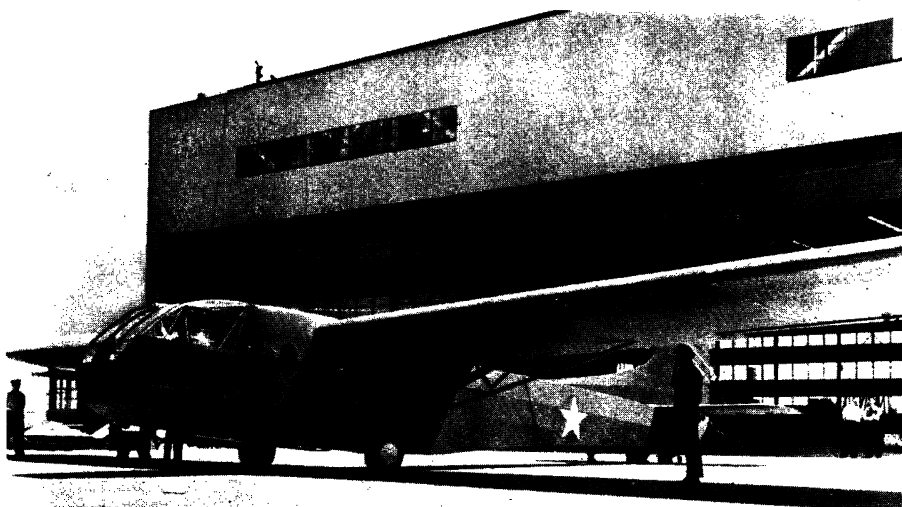
The speaker pointed out rising soil acidity, changes in the type of plants the soil will support, and various debilitating diseases in livestock pastured on the thinning range. A declining soil will not produce good crops of muscle- and bone-making plants; if an attempt is made to maintain total tonnage without regard to quality the new crops will have to consist more and more of "roughage" plants—bulky stuff with lots of woody tissue in it, but less and less of real food.

Prof. Albrecht suggested that one agricultural college's motto: "Our national wealth lies in the soil," might well be amended by the change of one letter: "Our national health lies in the soil."

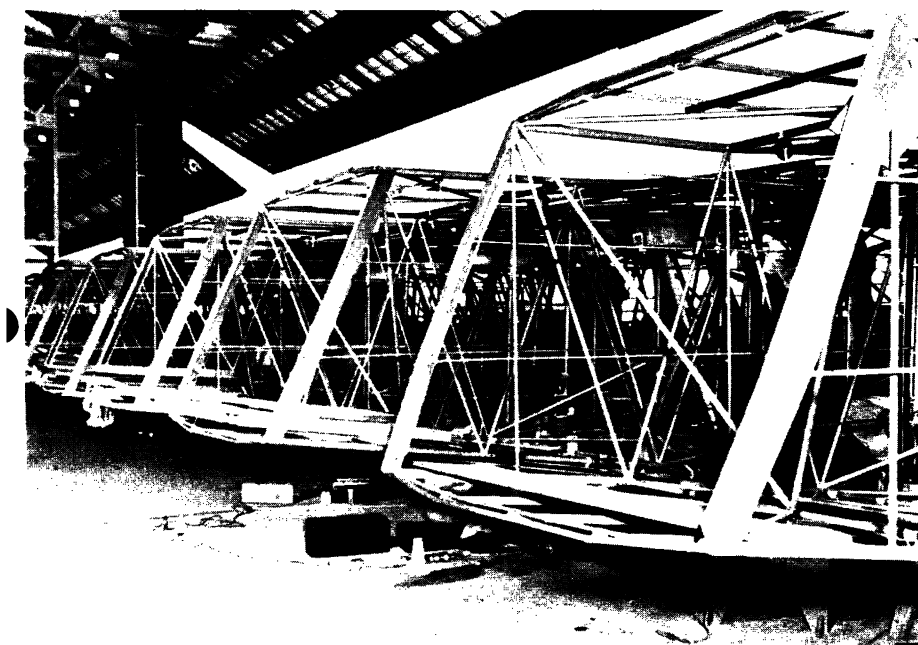
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### Many Factors Affect Plants

► MANY FACTORS influence plants in their use of elements taken from the soil to produce nutritional value, Dr. L. A. Maynard of the U. S. Department of Agriculture pointed out. With the



**GLIDER**—This little motor-less craft will carry fifteen soldiers. It is the CG-4A transport glider, designed by the Waco Aircraft Company, of Troy, Ohio, under the direction of the experimental department, U. S. Army Air Forces, Wright Field.



**SEGMENTS**—Modern swift production for war calls for manufacture of the fuselage of the CG-4A transport glider in two segments, later slapped together. Here is a row of tail segments being produced at the Boeing Airplane Company plant.

same kind of soil nutrients available, but different rainfalls, two crops of bread wheat will have entirely different protein contents. The amount of ascorbic acid, one of the most important of vitamins, in tomatoes is powerfully influenced by the number of hours of sunlight per day received by the plants. Light intensity, as well as length of daylight period, affects

the vitamin content of certain fruits and vegetables.

A great deal of research on this subject yet remains to be done, Dr. Maynard stated, and he emphasized: "Consideration needs to be given to yields of nutrients as well as to tons or bushels per acre, to nutritional quality as well as to market quality."

*Science News Letter, December 5, 1942*

#### MEDICINE

## New Surgical Dressing

Sulfa drug film like a paper tissue is developed for use on burns, cuts and skin grafts. Its usefulness in war surgery is foreseen.

➤ A NEW KIND of surgical dressing for burns and wounds, expected to be of great use to our armed forces, has been developed by Dr. Kenneth L. Pickrell, of the department of surgery at Johns Hopkins University and Hospital.

It is a film which looks something like rough waxed paper but which carries a powerful wallop against germs in its 30% to 50% content of sulfadiazine.

These sulfa drug films have been used in more than 100 cases, about 50 of which were patients with burns, Dr. Pickrell reports. (*Bulletin, Johns Hopkins Hospital*, November.) In 30 of the

burned patients, bacteriological studies showed no evidence of infection. In the other cases bacteriological studies were not made but no signs of infections were seen on inspection of the wounds and burned areas.

When used on burns, the burned surface and surrounding skin is first cleaned with a surgical detergent if there is gross contamination. The area is then washed with salt solution, sulfadiazine or azochloramid solution, and while the area is still wet the sulfa drug film is put on, over which a smooth, firm pressure dressing of gauze is applied. The sulfa film

is left in place for three to five days, at the end of which time, in second degree burns, new skin will be forming.

In third degree burns and in wounds or sores with discharge, the film may be renewed as desired. Since the film is translucent, the surgeon can inspect the wound or burn without removing the film.

The sulfa film is made by preparing an emulsion of 3% sulfadiazine or 3% sulfanilamide, 2.5% methyl cellulose (this is one of the newer plastics materials), 3% triethanolamine and 0.5% sorbitol with 50% alcohol or acetone to make 100 cubic centimeters (about three ounces). This is sprayed on a smooth horizontal glass surface with a pressure gun or paint spray apparatus and allowed to dry, after which it is removed in a single sheet.

The sheets can be made any size, but at Hopkins they are cut in three-inch widths and rolled just like any bandage. They keep well and can be sterilized by dry heat. They are light in weight and can be packed easily in sheets, tablets or rolls.

Physicians who have seen them on visits to the Hopkins Hospital have been interested and enthusiastic about them and several of the larger commercial houses are beginning to prepare them. The films were developed following Dr. Pickrell's discovery that a solution of sulfadiazine in triethanolamine was effective in treatment of burns and his and other Hopkins doctors' successful use of this solution in combating sinus infection, complications of the common cold, irrigating infected wounds and sinuses, preparing the surgical site for operations around or in the eyes and various body openings, and for fighting infection in skin grafts. Certain disadvantages of this solution, such as slow drying time and the thinness and fragility of the film it formed, led to development of the stronger film with methyl cellulose.

*Science News Letter, December 5, 1942*

#### GENERAL SCIENCE

## Northwest Scientists Cancel Their Meeting

➤ LATEST war casualty among scientific meetings is the Northwest Scientific Association, whose officers have voted to cancel plans for a forthcoming meeting. Research activities and grants will be continued.

*Science News Letter, December 5, 1942*

There is no staple food which cannot be grown in the Americas.