

it, owns the new process, but President Land and everyone connected with the discovery is aware of the obvious fact that it must be developed in the public interest. The world has learned its lesson in allowing the Dutch quinine monopoly to control the price and production of a drug desperately needed by hundreds of millions of people. Land proposes to give non-exclusive licenses to whatever pharmaceutical firms are indicated by government authorities, and to use the income from these licenses to back further ventures in general research.

Meanwhile Woodward and Doering are plotting routes for further prospecting trips in atomic regions where man has never trod. Only scientists know the

hazards they will face. They and their fellow chemists are a bit irritated at the question people have been asking, "Why wasn't quinine synthesized before?"

"Well, why wasn't it?" I asked, to see what would happen.

"It's like this," one chemist explained with weary patience. "There are 52 atoms in the quinine molecule, and there are 52 cards in a deck. Everybody uses the same kind of deck; why can't everybody win at cards?"

Doering made it shorter.

"Because no one ever came along as smart as Bob Woodward," he said.

This background story on the synthesis of quinine will appear in Reader's Digest for July. See SNL May 13 for earlier story and photograph.

*Science News Letter, June 10, 1944*



**GETS THERE**—This little plane can land on a small clearing in the jungle, or on a small landing strip along a road, to pick up a man wounded in combat. In this U. S. Army Air Forces photograph it is shown being pushed back out of the enemy's sight until it is ready to take off again.

#### CHEMISTRY

## OEI Governs Molecules

Structure of giant synthetic rubber molecules is controlled by action of a new chemical agent. Makes possible uniform quality.

► A NEW CHEMICAL AGENT, extracted from a natural vegetable oil, controls the growth and structure of giant molecules which, in turn, determine the properties of finished synthetic rubber.

Facts about the chemical agent, developed by the United States Rubber Company, show that its use assures a standardized mixture of synthetic rubber at all times and permits the manufacture of completed tires, tubes, and other articles of war of known uniform quality.

Added to a mixture of butadiene and styrene, essential ingredients in the manufacture of GR-S synthetic rubber, this chemical agent controls the length of the molecular chains that determine the elasticity and strength of the product.

Too much of the chemical agent added to the mixture keeps the molecules too small, thereby producing a rubber that is soupy and of no practical use. Too little added to the mixture allows the molecules to become too large, making the rubber too stiff. Proper amounts of the chemical agent added to the mixture produces chains of molecules of optimum size and length, and the resulting rubber is of the desired consistency.

The exact chemical composition of the new chemical agent is one of the big secrets of the wartime synthetic rubber program. In speaking of it, chemists refer to it as OEI, "One Essential Ingredient,"

or by other specially coined terms.

The OEI chemical agent is being used today in practically all manufacture of Buna S synthetics. In order to meet the increasing demand for it by rubber producers, five major industrial chemical companies are manufacturing and experimenting with the chemical agent and substitutes.

*Science News Letter, June 10, 1944*

#### AERONAUTICS-MEDICINE

## Grasshopper Planes Used To Evacuate Wounded

► THE TINY grasshopper planes, or flying jeeps, are being used by the Army in the jungles of Burma for air ambulance work.

Up to the present time these planes

## Mesa Verde

### EXPLORERS' CAMP FOR BOYS

Healthy, active boys between 12 and 18 are being given an opportunity to do a summer's real field work under qualified professional supervision in locating and exploring Indian ruins, mountain-climbing, prospecting for fossils, ores and minerals, collecting specimens, etc. Headquarters in Mesa Verde National Park. Modern cabins with bath, "sleeping-out" field trips with pack train scheduled. Meat, milk, vegetables from our own ranch in Mancos Valley. Railheads at Gallup, New Mexico and Durango, Colorado.

Two six-week periods, beginning June 19 and July 31. Single-period, all-expense fee, \$289; entire 12 weeks, \$553. There are still a few openings for first period. Late arrivals for June period will be accommodated. Wire reservations to:

**ANSEL F. HALL**  
Mancos, Colorado

have been used mainly for reconnaissance work and directing artillery fire. This is the first time that they have been used as flying ambulances.

Because of their steep climb, low landing speed, and ability to land and take off after a run of only 65 yards, they can operate in and out of small jungle clearings where larger airplanes cannot possibly go.

They will save many hours in time required to move wounded soldiers from highly inaccessible places. Wounded been flown back to base hospitals in 45 minutes, a trip that would take litter bearers 10 hours.

Converted to ambulance work, each grasshopper will carry one standard stretcher. Probably the smallest warplane in use, it has a wing span of only 34 feet, a length of 24 feet, and is powered by a 185 horsepower engine.

Military surgeons, in praising the new use for tiny aircraft, stated that many seriously wounded soldiers, abdominal cases in particular, can be saved if operated on within the "golden period"—that precious four hours immediately after injury, before infections develop.

*Science News Letter, June 10, 1944*

Approximately 200,000 women are now employed in all branches of domestic transportation—rail, water, air, motor, street car and pipe line—or about 8% of the total employment in the field.



**Better Onions Coming**

➤ ONIONS in tomorrow's market-basket will be bigger and better as a result of a new method for producing hybrid varieties developed by two U. S. Department of Agriculture scientists, Dr. Henry A. Jones and Dr. Alfred E. Clarke. The two men have just been voted the Vaughan Research Award of \$500 for a paper describing their procedure, which was published in the *Proceedings of the American Society for Horticultural Sciences*.

Hybrid plants of any kind are very likely to be bigger and more vigorous than either of the parent varieties. This has been well demonstrated in hybrid corn. Hybrid onions, therefore, were

considered a most desirable kind of vegetable to try for.

To produce a hybrid plant, the pollen of one variety is placed on the pistil, or seed-producing part, of a different kind of plant. To make sure that fertilization with the female parent's own pollen does not occur, the pollen-producing organs, or stamens, must first be removed.

This is easy to do in a cornfield, for the stamens are in the tassel at the top of the stalk, well away from the silks on the ears, which receive the pollen and help complete fertilization. All the grower needs to do is go along the rows, pulling the tassels off the stalks that are to be the female parents of his hybrid corn.

This situation, however, is quite exceptional. In most plants, stamens and pistils are produced close together in the same flower, so that preventing self-pollination is a tedious job requiring fine-pointed tweezers. On a field scale this is obviously impracticable.

By close watching, Dr. Jones and Dr. Clarke discovered a strain of onions in which nature had obligingly done the job without prompting: the female parts of the flower were capable of producing seed, but the stamens contained no fertile pollen. Fertilizing these exclusively female flowers with pollen from different varieties of onion, it is possible to produce hybrids with any combination of qualities desired, and at the same time receive the advantage of the extra vigor and size that goes with hybrid growth.

Keeping the female parent strain going presents no particular difficulty. Like many varieties of onion, it produces bud-like bulbils, or "top sets," and since these are not sexually produced they carry only the hereditary characters of the plants on which they grow.

Market gardeners raising hybrid onions are not expected to grow their own seed. This will be a specialists' job, as the production of hybrid seed corn is at present.

*Science News Letter, June 10, 1944*

Extra *red corpuscles* are developed by persons living at high altitudes to take care of oxygen needs.

Carrot-corn *ensilage* recently tested on milk cows at the Ohio Agricultural Experiment Station proved palatable, gave good returns in milk, and a small favorable effect on the yellow color of the butterfat produced.

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