

AGRICULTURE

Heavy Rains Don't Warrant Diminished Crop Output

► CROP LOSSES due to heavy rains soaking poorly drained farm areas represent an unnecessary loss to the nation's potential food supply, John G. Sutton of the U. S. Soil Conservation Service states in a report to the American Society of Agricultural Engineers.

With proper drainage to prevent crop drowning, Mr. Sutton estimates that production output of at least 6,500,000 acres of land now being farmed could be substantially boosted.

A U. S. Soil Conservation Service survey of "before and after" yields of farms which have recently benefited from construction of drainage facilities reveals that the average "bonus" attained in terms of extra bushels produced per acre is as follows: corn, 18; wheat, 5; grain sorghum, 20; rice, 18; potatoes, 39; soybeans, 9.

Drainage projects now in use are in many cases not functioning to best advantage. Of the 87,000,000 acres in organized drainage projects, the Soil Conservation Service estimates that almost 25 million acres are in need of rehabilitation. Cost of this land improvement is small in relation to the benefits, as reported by Mr. Sutton. Based on experience with large scale operations, he estimates that at least 80% of the rehabilitation of open ditch work could be reconstructed at a cost of less than \$10 per acre.

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NUTRITION

Soybean Curd Makes Good Cottage Cheese Substitute

► NOW THAT cottage cheese production has been curtailed, soybean curd can be used as a good substitute. Soybean milk, made from dry soybeans, is caused to form a curd which can be used in many dishes. It may be added like cheese to omelets, Welsh rabbit and creamed hard-boiled eggs, or served with other vegetables in hot dishes. Its mild, somewhat cheese-like flavor and soft texture makes its use as a stuffing for celery, pepper rings, or raw tomatoes desirable. It is good as a garnish on salads or mixed with salad dressing. It can be rolled into balls and served with crisp lettuce.

To make the soybean milk from which the curd is produced, soak the cleaned beans overnight. Remove the skins and

grind the beans very fine, then put them in a cheesecloth bag. Place the bag in a bowl containing three quarts of lukewarm water to each pound of soybeans. Work the ground beans thoroughly with the hands for five or 10 minutes, then wring the bag of pulp until dry. Boil the milk on a low fire for 30 minutes, stirring frequently to prevent scorching. Season the milk with salt and sugar.

From this milk, which itself can be used in almost any recipe calling for milk, is made the soybean curd. Three quarts of soybean milk heated to 180 degrees Fahrenheit is mixed well with 1½ cups of vinegar and allowed to stand for a few minutes. Put the mixture in a cheesecloth bag and wash away the excess acid by dipping the bag of curd in cold water several times. Drain for about an hour and press out the remaining liquid. Season with salt and pack the curd tightly into a dampened mold. Then cover and store it in a cold place until firm enough to cut.

Though the nutrient value of soybean curd is not equal to that of cottage cheese, it produces an appetizing substitute.

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OPTICS

Eye Muscles' Double Role Causes Visual Illusion

► MAYBE it has happened to you at the movies while President Roosevelt is making a speech in one of the newsreels. You may glance momentarily from the President to one of the men on his left and when you swing your eyes back immediately to the speaker, you find him to be quite still, with his mouth open or closed, while his voice goes on.

This impression lasts only a fraction of a second, but what has happened is that you're the victim of a visual illusion. In a report to the British journal, *Nature* (April 10, Sept. 18), F. W. Eldridge-Green, special examiner and adviser of the British Ministry of War Transport on vision and color vision, explains this illusion by his theory that the muscles of the eye play a double role, or function, one to move the eye and the other by pressing on the back of the eye and shifting the photochemical film in the direction in which the eye is moved.

The eye on moving takes a fresh photograph, he explains, which is seen for an appreciable length of time before another complete "picture" can be seen.

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IN SCIEN

ARCHITECTURE

Future Homes May Have Colorful Wiring Systems

► BEAUTY will be more than skin deep in the home of tomorrow. Plumbing and wiring systems—the veins and nerves of the building—will be transformed into streamlined colorful affairs, visible through transparent and translucent plastic walls, Alden B. Dow, architect, has predicted in a report to the Society of the Plastics Industry.

Light reflected from the brightly colored translucent walls and roofs will make the home resemble a giant glowing lantern in the night, Mr. Dow declared.

Variety will be the keynote in the decorative effect. The plastic walls may confine a chemical solution that remains perfectly clear above a temperature of about 60 degrees Fahrenheit. Below that temperature, the chemical should crystallize into a beautiful pattern, giving an opaque wall-paper effect. When the temperature rises again, this chemical, Mr. Dow hopes can be found, would return into solution, once more clear and colorful.

It's all still a dream, Mr. Dow admits.

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MEDICINE

Society Awards Medal To Human "Guinea Pig"

► THE SCIENTIST who spent a week in a glass case to test the effects of insufficient oxygen has been awarded the Copley Medal of the Royal Society of London, a medal originating in 1709. The left arm of Sir Joseph Barcroft is pulseless and has a long scar due to its being cut open to test his blood after the experiment.

The Society's historic Davy Medal was granted to Prof. Ian M. Heilbron for his notable contributions to the knowledge of organic chemistry. Professor at the Imperial College of Science and Technology since 1938, he has done important research on the purification and chemistry of penicillin, the germ-killing drug derived from mold.

Royal medals were awarded to Sir Harold Spencer Jones, royal astronomer, and Dr. E. B. Bailey, geologist.

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CE FIELDS

CHEMISTRY

Synthetics May Replace Scarce Porpoise Jaw Oil

► SCARCE porpoise jaw oil, superior to other fish liver oils or to any oil derived from petroleum for the lubrication of telephone dials or other light instruments that must operate for a long time without attention, may be replaced by new synthetics recently developed.

This welcome news was announced by Dr. S. Bloomenthal, of the Automatic Electric Laboratories of Chicago, in a paper presented to the American Physical Society meeting in Evanston.

The long-lasting qualities of porpoise jaw oil, the speaker said, were probably due to its exceedingly low volatility, by virtue of which the tenacious films it forms on metal surfaces take a long time to evaporate. The new synthetics, of complicated chemical formulas, also have extremely low volatility, and remain liquid at 30 degrees below zero.

Aid in the research was had from the Laboratory of the Distillation Products Company of Rochester, N. Y., which also puts out a low volatility synthetic oil. All of these oils gave far better results in the lubrication of telephone dials than light petroleum or fish liver oils, Dr. Bloomenthal said, and he believed that a satisfactory substitute for porpoise jaw oil has been found.

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ASTRONOMY

Astronomy Prize Awarded To Woman Star Classifier

► THE COUNCIL of the American Astronomical Society has awarded the Annie J. Cannon prize for women astronomers to Miss Antonia C. Maury of Hastings, N. Y., for her distinguished work at the Harvard College Observatory in the early days of spectral classification.

Miss Maury at the turn of the century devised her own system of classifying the spectra of the stars on the basis of detailed descriptions of their characteristics as obtained from high dispersed spectra. These details have since been shown to have great significance in revealing the physical characteristics of the stars.

The present chief means by which astronomers identify the super giants among the stars is by the extreme sharpness of the lines in their spectra. This so-called "C" characteristic was discovered by Miss Maury.

The award itself is named for another Harvard woman spectroscopist, the late Dr. Annie J. Cannon, who classified the spectra of some 500,000 stars for the *Henry Draper Catalogue*.

The American Astronomical Society has elected Sir Harold Spencer Jones, astronomer royal of England, to an honorary membership. Such memberships are granted to distinguished foreign astronomers. Sir Harold is known for his recent redetermination of the distance of the sun as being very close to an even 93,000,000 miles. His work was based on world-wide observations of the close approach of the minor planet Eros in 1931.

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OPTICS

Optical Device Invented To Aid Football Linesmen

► IF IN FUTURE football games you see the head linesman peering along the line of scrimmage through what looks like a short telescope mounted on a pistol-grip handle, that will be the invention on which Mirabeau B. Lamar of Manassas, Va., has received patent No. 2,335,066. It sights very accurately on the position of the ball, and at the same time a pair of mirrors at angles throw into the picture the images of the line stakes. With this device, if adopted, it should be possible to decide in close cases whether or not a first down has been made, without having to trot the line out and measure it quite so often.

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HORTICULTURE

Apple Tree Is Patented That Matures Fruit Early

► PLANT PATENTS continue to be issued rather sparingly—only three in a recent week as compared with 535 ordinary patents. One of these, taken out by Robert Campbell of Grand Forks, B. C., is on an apple tree. It matures its round, glossy, red-skinned fruit very early—in August, in British Columbia. A particular feature is the tree's branching habit: the originator states that the limbs tend to come out at right angles to the trunk, making a very desirable tree for orchard-management purposes.

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MEDICINE

Sulfadiazine Helps Bronchiectasis Patients

► SULFADIAZINE, or possibly other sulfa drugs, may prove a valuable aid in the treatment of bronchiectasis, it appears from a report by Dr. Charles M. Norris, of the Chevalier Jackson Bronchoscopic Clinic, Temple University Hospital, Philadelphia. (*Journal, American Medical Association*, Nov. 13)

In ten patients given the sulfa drug by mouth and bronchoscopic aspirations, the daily volume of sputum was considerably reduced and the more harmful germs inhabiting their bronchi were apparently routed, since sputum examinations showed less harmful varieties after the treatment than before.

The patient must spend a week or ten days in the hospital while undergoing treatment. It should, in Dr. Norris' opinion, prove definitely valuable as a preliminary to operation for removal of one or more lobes of the lung, and is worth trying for possible beneficial effects in cases not suitable for operation.

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ENGINEERING

Post-War Auto Engines Will Use High Octane Gas

► THE POST-WAR automobile will run with high octane gasoline and incorporate many features of aircraft engine design, it was predicted at the meeting of the American Petroleum Institute in Chicago.

A survey of five years of intensive research to produce a high octane gas suitable for aircraft engines was presented by C. L. Thomas, N. K. Anderson, H. A. Becker and J. McAfee, of Universal Oil Products Co., Chicago. In this process, the heavy molecules of raw oil are broken down, or cracked, with the aid of a synthetic catalyst, a highly porous white granular solid, silica-alumina.

Small refiners, as well as the big ones now using this process, will be able to use it in the future, the engineers forecast.

Equipment of the catalytic process of producing aviation type gasoline is at present too expensive for the small refiner, the speakers admitted, but many large commercial installations are the proving grounds for making this process economically feasible for all in the future.

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