

## AGRICULTURE

**CWA Employment Figures Rival War Recruiting Speed**

**D**RAMATIC as the speed with which the armed forces of the United States were increased for the World War from mere thousands up to millions, is the rate with which the Civil Works Administration, under Harry Hopkins, is recruiting its unarmed work-relief army from the ranks of the unemployed. Already the number thus re-employed totals into millions. In three days, between Wednesday, November 22, and Friday, November 24, nearly 60,000 recruits were added, all of them going into action for the U. S. Department of Agriculture.

One heartening thing about the campaigns of this unarmed army is the extent to which science figures, both in their present employment and in the benefits that will be derived from their efforts. The Forest Service takes over half of the agricultural increment, 30,000 men, and the Bureau of Entomology another 22,000. The remainder of the new forces are split among the Bureaus of Plant Industry, Animal Industry, Chemistry and Soils, and the new Soil Erosion Service.

This does not mean that all of the men in this swiftly recruited corps are scientists. The Army of the Re-employed is no huge brain trust. But even the laborers will be working for science—eliminating mosquito swamps, clearing wide areas of cattle tick infestation, warring on tree diseases and insect pests in the National Forests, and a score of other projects long wished for by the scientists and executives of the Department of Agriculture but never possible until the paradox of money made available by hard times made them so.

*Science News Letter, December 9, 1933*

## METEOROLOGY

**Tree Ring Forecasting Of Weather Still Distant**

**L**ONG-RANGE weather prediction is still far in the future, if it is possible. So declares Dr. A. E. Douglass, astronomer of the University of Arizona, whose sun and climate studies are attempting to bring the weather man's favorite dream nearer reality.

In a progress report of his researches, in *Scientific Monthly*, Dr. Douglass shows that before good years and bad years can be predicted, there must be

research to show the actual climatic cycles that the earth experiences, and the factors that interrupt the cycles, upsetting the complex rhythms.

Dr. Douglass' studies led most recently to an investigation of very ancient weather history as recorded in annual growth rings in petrified tree stumps. The width of 250,000 annual growth rings, precisely measured, reveals that climate millions of years ago manifested itself in cycles which are like cycles demonstrated in modern tree-rings, and which approximate in length the cycles that astronomers find when they study sunspots.

These cycles in which climate recurs are complex. No less than three or four cycles of varying lengths are found mixed in the sunspot and weather histories. There are puzzling breaks in the cycles which are not yet explained.

Complex as they are, however, the climatic cycles are real cycles, distinguishable from accidents if shown in long sequences, the astronomer states.

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## ASTRONOMY

**Five Billion Years Set as Minimum Age of Universe**

**I**N DISCUSSING the significance of the paper on the expanding universe, presented to the National Academy of Sciences by the Abbé Georges Lemaitre, Dr. Harlow Shapley, director of Harvard College Observatory, mentioned that some recent observations of his own had materially reduced the current estimate of the rate at which the cosmos is "exploding" and as a consequence its estimated age as well. The universe, at least that part of it we now know, does not need to be less than five billion years old, he said.

A still more dizzying figure was one which he gave as a very rough and tentative estimate of the density of matter in the greatest "super-galaxies"—vast aggregations of spiral nebulae, each individual nebula containing billions of stars as big as our sun or bigger. Despite this tremendous massing of matter, Dr. Shapley's estimate of its average for all the space occupied by such a super-galaxy in grams per cubic centimeter is represented by a fraction written as 2 over a 1 followed by 28 zeros. And this, he said, is very much thicker distribution of matter than that which exists in the space between the super-galaxies. (See *SNL*, this issue, p. 382)

*Science News Letter, December 2, 1933*

**IN SCIEN**

## ASTRONOMY

**Model Will Show How Earth Looks To Moon**

**V**ISITORS to the new museum of The Franklin Institute, Philadelphia, will soon be able to see how our earth appears to the "man in the moon." In a corridor to the side of the Fels Planetarium, there is being placed an 18-inch globe by Howard Russell Butler, of Princeton, N. J. Mr. Butler was aided by astronomers at Princeton University in painting the globe to show the appearance of the earth from out in space. From such a viewpoint the familiar continental outlines are not nearly as conspicuous as on the usual school globe, because of the effect of the earth's atmosphere, which gives it a bluish cast. The globe will be hung from a bracket, and turned once a minute by a small motor to reproduce earth rotation and bring the continents into view. From one end of the corridor the globe will appear the size of the earth as seen from the moon. A brilliant spotlight will shine on it.

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## PALEONTOLOGY

**Monkey-Like Fossils Found in South Dakota**

**L**ITTLE animals somewhat like monkeys but very much more primitive lived in what are now the Badlands of South Dakota 35,000,000 years ago or some such matter. Broken fragments of the skull and jaws of such a creature, found last summer by geologists of the Scott Fund Expedition of Princeton University, have just had their identity established at Princeton, N. J., by Prof. Glenn L. Jepsen.

The animals belonged to the primate sub-family Plasiadapidae, and lived during Oligocene time, which is well back toward the beginning of the Age of Mammals. The fossils are the first of their kind and age to be found in North America, and the skull is stated to be the most perfect representative of its zoological group yet discovered.

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# CE FIELDS

## CHEMISTRY

## "Safe" Dry Cleaners Sometimes Dangerous

**E**XPLOSIONS of "safe" dry cleaning fluids have added another hazard to home dry cleaning efforts. Some of the so-called safe solvents sold for home use have been found to be decidedly unsafe. Fluids demonstrated to have been perfectly safe when first used have exploded after being used a few times.

This contradictory behavior has been simply explained by the results of laboratory experiments. These dry cleaning fluids are made up of regular cleaners' naphtha to which has been added enough of an inert solvent, carbon tetrachloride, to make them non-flammable. One-half carbon tetrachloride and one-half naphtha make a suitable mixture.

While in use the carbon tetrachloride evaporates more rapidly than the naphtha, thus leaving a mixture rich in naphtha and hence explosive. Experiments show, for example, that when 37 per cent. of a total mixture originally composed of 43 per cent. carbon tetrachloride and 57 per cent. naphtha had evaporated there remained a mixture made up of 29 per cent. carbon tetrachloride and 71 per cent. naphtha—a decidedly unsafe product.

Fluids made up entirely of carbon tetrachloride or other non-flammable solvents remain safe indefinitely.

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## ASTRONOMY

## Sun Is Believed Not Likely to Explode

**F**EARS of some astronomers in the past that the sun might some day become a "new star" and flare up in a sudden explosion, with disastrous effects to life on the earth, are unfounded, according to Dr. Dean B. McLaughlin, of the University of Michigan Observatory, Ann Arbor. His study of nova Ophiuchi, a star which a few months ago was seen to flare up in such a manner, the second time in 35 years, leads him to believe that a nova is real-

ly a peculiar type of variable star, and that the same star may show this behavior time after time.

Previously it was supposed that any star in the heavens might become a nova. As astronomical records showed that there are at least 10 to 12 such new stars observed every year, this gave rise to the view that it was only a matter of time before the sun would become one. Dr. McLaughlin thinks that as accurate astronomical records are kept over a longer period of time, it may be found that there are of the novae of the past will flare up again, and if this is the case, our sun may not be of the type that can become one.

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## NATURE STUDY

## Ranger Couple Witness End of Antelope Duel

**P**RONGHORN antelope, the most fleet and graceful of American game animals, impress most observers as gentle and inoffensive animals. But in the excited rivalry of the mating season they are capable of mortal enmity and most ruthless cruelty to each other, as Mr. and Mrs. Everett L. Arnold, of the ranger staff, recently witnessed. What the Yellowstone ranger and his wife first saw was a fine buck antelope butting and shoving with all his might at something half hidden by the high grass and sagebrush.

As their car was stopped the "something," a second buck, leaped to his feet and ran out of view behind a small hill. In a minute or so both animals reappeared, dashing directly toward the car, sides heaving and wind coming in great gusts, the foremost one smeared with blood. The pursued animal dropped behind a fallen tree, neck stretched and ears flattened to his head, endeavoring to hide from his enemy who almost immediately pounced on him.

The victor buried the full length of his pronged horns in the soft underparts of his foe, twisting, turning and pushing with all his strength. This took place only a few paces from the main highway and by this time the ranger had reached the scene, shouting and flailing his arms at the murderous buck. After one or two more horrible gouges the victorious pronghorn turned and bounced away. The conquered one was completely disemboweled and death came soon thereafter.

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## VOLCANOLOGY

## Mauna Loa, Great Volcano, Begins Predicted Eruption

By DR. T. A. JAGGAR, Volcanologist, U. S. Geological Survey

**M**AUNA LOA, Hawaii's loftiest active volcano, broke into eruption at its summit crater at 5:43 A. M., Hawaiian time (11:13 A. M., Eastern Standard Time) on Saturday, Dec. 2. Apparently there are three lava fountains, under three towering fume columns. The fumes rise 4,000 feet above the mountain, which itself has an altitude of 14,000 feet. The northern fume column hangs over the center of the crater.

I have undertaken an expedition to the summit, with a party from Hawaii National Park. The Interisland Airways dispatched a plane for aerial observation of the eruption.

There was an earthquake disturbance for an hour following the beginning of the outbreak, but afterwards the ground quieted.

A watch is being kept on the flanks of the mountain for possible lava flows, but as yet we have no means of telling whether these will occur.

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## BIOLOGY

## Short Rations Prolong Life, But Reduce Birth Rate

**S**HORT rations enable animals to live longer, but cut their birth rate materially. This conclusion has been reached by Lester Ingle of Brown University as the result of experiments on two species of cladocerans, small water animal related to shrimp and crayfish.

Mr. Ingle reports his work in *Science*, noting that his results are in general agreement with those of Dr. C. M. McCay of Cornell University, who worked with rats, which are about as far removed from cladocerans as it is possible for animals to be.

Mr. Ingle kept females of his animals separately in bottles. In one lot of bottles he put the normal culture fluid in which cladocerans thrive. In the other, he put culture fluid diluted from 24 to 36 times with pond water, thus giving them much less to feed on. The animals on short rations lived nearly 12 per cent. longer than did their well-fed sisters, but produced far fewer offspring.

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