

## PLANT PHYSIOLOGY

**Wheat "Stuffed" With CO<sub>2</sub> Grows Larger**

**P**LANTS can be made to grow bigger, producing a larger seed yield, by "stuffing" them with carbon dioxide, the atmospheric gas which they use as initial raw material in food-making, Dr. Earl S. Johnston, of the Smithsonian Institution, has determined in a series of laboratory experiments.

Dr. Johnston grew wheat plants in open-topped glass enclosures, in which he maintained the carbon dioxide content at four times its usual percentage in the air. The plants produced more stalk and larger and more numerous heads than did similar plants in neighboring glass cages where only ordinary air was used.

As yet, Dr. Johnston's results, like somewhat similar results obtained in European experiments, have no practical application, since the cost of raising the carbon dioxide content of the atmosphere under ordinary field conditions is much greater than the increased yields thus obtainable would justify.

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## ENGINEERING

**Air Replaces Steel in Newest Type Auto Springs**

**A**IR springs for autos, consisting of bellows, are being used to replace the ordinary leaf springs, it was revealed at the meeting of the Society of Automotive Engineers by R. W. Brown of the Firestone Tire and Rubber Company.

Still under experimental study, the air springs look somewhat like two large hot water bottles laid one on top of the other. Through tubing they connect with an air reservoir. The bellows and reservoir are filled with air to a pre-determined pressure. As road shocks are encountered the air passes back and forth between bellows and reservoir.

Tests have already indicated, said Mr. Brown, that the rubberized fabric material in the air springs will stand 8,000,000 two-inch deformations under 25 per cent. overload.

Body roll on curves is eliminated by the use of a small pendulum device hung inside the air spring which controls a valve mechanism. By valve action the air pressure on the air springs outside (on a given curve) is maintained at a higher pressure than on those on side toward the inside of the curve.

In comparable fashion the pendulum

device is used to increase the pressure on the air springs of the front wheels when the brakes are applied and thus "nosing down" of the car is prevented.

Road tests of the newest development are under way on the Stout Scarab car and already indicate good driving characteristics.

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## ASTRONOMY

**300,000 "Shooting Stars" Strike Atmosphere Daily**

**T**HREE hundred thousand shooting stars as brilliant as the bright star Vega strike the earth's atmosphere each day, Prof. C. C. Wylie of the University of Iowa told the American Association for the Advancement of Science.

For years Prof. Wylie has been studying the shooting stars, or meteors, that flare into shining brilliance when they strike the atmosphere around the earth and burn themselves up.

From his studies and the investigations of other meteor observers, Prof. Wylie estimates:

1. At the present rate of fall of meteoric material less than an inch would have been deposited on the surface of the earth in the 2,000,000,000 years the earth is known to have existed.
2. Some 24,000,000 meteors daily strike the earth which are bright enough to be seen with the eye. With a telescope the number would be increased by millions.
3. About 130 meteors flaming as brightly as the full moon should be seen from a single spot on the earth's surface during a year. Six of the 130 should be of the type which detonate.
4. The fear of a giant meteor, weighing tons, striking the earth is small, for only about one meteor weighing 35 tons should hit the earth in 300 years.

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## BIOLOGY

**Bullfrog Eats Twice Own Weight in Five Months**

**B**ULLFROGS are not only big, they are big eaters.

Prof. S. W. Frost of Pennsylvania State College records (*Copeia*, No. 1, 1935) that one big bullfrog he kept in his laboratory ate more than twice its own weight in less than five months of spring and summer. Its menu included not only the conventional insect items but also such quasi-cannibalistic tidbits as toads, smaller frogs, and salamanders.

*Science News Letter, January 25, 1936*

**IN SCIENCE**

## ANIMAL PSYCHOLOGY

**Goldfish Prefer Blue To Other Colored Lights**

**G**OLDFISH have their color preferences, too. They like blue, Dr. N. Mookherji found from experiments reported to the *Indian Journal of Psychology*.

The fish were allowed to pick their favorite color by making a choice of four stalls into which they might swim. Each stall was lighted by a candle shining through a piece of colored glass. The number of times the fish entered each stall and the lengths of time they lingered were counted and tabulated.

Blue was the favorite, and then came green, yellow, and red.

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## MEDICINE

**Helium Treatment For Asthma Made Cheaper**

**R**EDUCTION in the cost of helium treatments for asthma is now possible through improvement in method, Dr. Alvan L. Barach of Columbia University School of Medicine has announced.

Dr. Barach is the originator of the method by which patients suffering from severe asthma are given relief by inhalation of a mixture of oxygen and helium. Because helium is a very light weight gas, it requires only half the effort to breathe the oxygen-helium mixture as to breathe ordinary air, Dr. Barach found. This gives the patient's breathing muscles considerable relief and rest. While not a cure for asthma, the helium treatment has been found an effective remedy in combination with adrenalin.

Helium, however, is an expensive gas, so only a few patients could get the benefit of the treatment. Dr. Barach announced a method of re-using the helium, thus reducing expense. After the gas has left the patient's lungs it is circulated through soda-lime and returned to the apparatus to be used again.

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# E FIELDS

## BIOLOGY

### Vitamin C May be Essential For All Living Matter

**S**CURVY-preventing vitamin C, now obtainable in pure form as well as in fresh fruits and vegetables, may be essential for the continuance of even the simplest forms of life, according to the researches of Dr. Geoffrey Bourne and Russell Allen of the Australian Institute of Anatomy.

In recent technical communications to the scientific journal, *Nature* (Vol. 136, page 185, 1935) and the *Australian Journal of Experimental Biology*, (Vol. 13, p. 165, 1935), these two scientists pointed out that when the silver nitrate staining reagent, which is specific for vitamin C, was applied to such simple forms of life as protozoa, bacteria, yeast, seaweed and various parasitic fungi, black granules were found to be formed by its action, thereby indicating the presence of very small quantities of the vitamin. In view of these results the authors have "suggested that vitamin C is essential for the existence of living protoplasm."

These two scientists also find that the granules of vitamin C are greatest in number where the plant or animal is growing fastest and they consider that vitamin C plays a vital part in the chemical life of the living cell.

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## EVOLUTION

### Expedition Searches For Origin of New Species

**R**ENEWED search for the origin of new species among living organisms is being launched through a 10,000 mile scientific expedition into Mexico and Central America, under joint auspices of the National Research Council and Indiana University.

Dr. A. C. Kinsey, Indiana University zoologist and veteran of 65,000 miles of search to discover how new species develop, is at the head of the expedition. His interest lies particularly in the gall wasp, a tiny insect less than an eighth of an inch long. Dr. Kinsey's collection of these insects in the biological labora-

tories of Indiana University numbers 1,500,000 specimens, the largest collection of its kind in the world.

Dr. Kinsey's findings thus far as to the evolutionary chain of developing species are not in accord with Darwin's theory of gradual variation of species. Dr. Kinsey holds rather for a theory of mutation. He maintains that there is a sudden change in species.

Life histories of the gall wasp seem to prove that heredity exerts greater influence than environment in the evolution of species. Gall wasp larvae sent to the Indiana University laboratories from Finland mature at exactly the same time that they would have matured in Finland, despite the warmer climate of Indiana. Likewise, Mexican gall wasps mature there at the same time that they would have matured in Mexico.

Summarizing the results of his fifteen-year research on the nature and origin of species, Dr. Kinsey expresses the view that evolution is not of a treelike character. "The evolutionary pattern," he maintains, "is not that of a 'tree of life' in which the main branches represent older, ancestral stocks which disappeared as they gave rise by radiate evolution to the twigs (the species) which are the present-day ends of the tree." The pattern is that of an infrequently dividing chain of species in which the oldest may remain coexistent with all of the derived species.

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## PLANT PATHOLOGY

### Elms Attacked by Disease, Apparently All-American

**E**LMS, attacked in the East by the alien fungus of the Dutch elm disease, are now menaced in the Midwest by another fungus, apparently native American, Drs. Leo R. Tehon and Homer L. Jacobs of the Illinois State Natural History Survey reported to the American Association for the Advancement of Science.

The disease made its first appearance in the neighborhood of Dayton, Ohio, several years ago, attacking elms both in the natural timber and in street plantings. The symptoms include droop, wilting, yellowing and falling of leaves, rotting of small roots, and bark disintegration.

One fungus, to which the provisional name *Cephalosporium* has been given, has been isolated and in transfer tests under carefully controlled conditions has reproduced the symptoms of the disease.

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## AERONAUTICS

### Soviets Invent Glider That Packs in Suitcase

**L**ATEST Russian invention to advance interest in the sport of gliding is a rubber glider which, when deflated, will go into an ordinary suitcase.

The glider is a shapeless bag of rubber when removed from its case. It is spread out on the ground, a hard rubber tail piece and certain stiffening parts inserted and then the rubber is inflated through various valves. Tests in the air show the device does not collapse and well obeys the controls of flight.

Its weight is 92 pounds, its length 29 feet and its wingspread 30 feet.

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## ENGINEERING

### Huge Scoop Shovel Lifts Largest Truck With Ease

See Front Cover

**O**NE of the largest scoop shovels in the world, weighing 2,000,000 pounds and towering as high as a 14-story building, is in operation at strip coal mining operations at Seelyville, Ind.

Coupled with the mining operations are giant motor trucks and trailers which haul 30-ton loads of coal; so huge and heavy are they that they are not permitted on public highways and can be used only on the company's grounds.

The illustration on the front cover of this week's SCIENCE NEWS LETTER shows the shovel in the act of lifting the huge truck. In 1930, a 320,000-pound steam shovel with 20 cubic yard scoop capacity, then the largest in the world, was pictured on the cover. (See SNL, Jan. 18, 1930).

Strip mining is employed in regions where coal beds lie relatively near the surface. The top soil or caprock covering the coal bed is stripped off by shovels and the actual coal mining is of the open pit type. At Seelyville, a bed of high grade bituminous coal is being exposed which, it is expected, will keep the gigantic equipment busy for the next 15 years.

Movable under its own power on caterpillar treads, the shovel clears a path 75 feet wide for itself as it moves over the buried coal bed. From the giant 140-foot tower, the shovel, with a capacity of 30 cubic yards, can lift material and dump it as much as 215 feet away, and can deposit on a pile as high as 70 feet.

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