

ASTRONOMY

New Star Camera Will Film Moon and Planets in Motion

AN INSTRUMENT for making movies of stars has been built by a man who recently, in company with Walt Disney, was awarded a medal by the Society of Motion Picture Engineers.

However, the stars that this man, Dr. Robert R. McMath, Director of the McMath-Hulburt Observatory of the University of Michigan, will film, are of the heavenly, not the Hollywood, variety.

In a report to the American Astronomical Society he told of the newest telescope for these pictures. They will show sunrise and sunset on the moon, the spinning of Jupiter and the movement of his moons around him and other heavenly motions.

The new telescope is a memorial to his father, the late Francis C. McMath, who helped establish the observatory as an amateur institution more than a decade ago. With a smaller instrument, they first made such pictures. Later, however, they became particularly interested in motion pictures of the sun, from which remarkable new facts have been learned.

Now Dr. McMath has announced that for educational purposes they will make such pictures again, retaking many earlier subjects with the new and more powerful equipment.

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ENTOMOLOGY

Insect Pests Evolve New and Tougher Races

EVOOLUTION while you watch, producing distinctly recognizable new races of insects in less than scientist's working life, was described by Dr. Harry S. Smith of the California Citrus Experiment Station in his address as retiring president of the American Association of Economic Entomologists in Philadelphia.

The trouble with the evolution described by Dr. Smith, from the human point of view, is that the new kinds of insects are all undesirable ones—even less desirable than their ancestral races. When men spray their orchards or vegetable crops to kill off the pests, it only results, finally, in the production of new races on which the spray has greatly diminished effect. It is an origin of new kinds of pests through the survival of the toughest.

A suggestion that this sort of thing could happen was first put forth a quarter-century ago by Prof. A. L. Melander, now of New York City College, Dr. Smith stated. Entomologists refused to take the idea seriously then, but they generally accept it now.

The situation is even more serious than Prof. Melander imagined, Dr. Smith continued. In a number of instances, the new race of insects that originates by surviving one kind of poison also shows high powers of resistance to other, chemically unrelated kinds. Thus, codling moth larvae that have become resistant to arsenic prove hard to kill with pyrethrum and rotenone, and red scale insects that refuse to die under cyanogen fumigation resist other poison gases as well.

New races have evolved not only in response to man's unintentional substitution of himself for the force of natural selection. By supplying new types of homes and food, man also gives insects opportunities to originate new races adapted to the new conditions. This has happened in California, where since 1918 the codling moth, until then a major pest only in apple orchards, has produced an entirely new race that has become a scourge of the walnut orchards.

Recognition of these quick evolutionary changes in insect pests at once presents a new challenge and a new opportunity to the men who spend their lives leading the fight against them, Dr. Smith pointed out. It is now evident that the foe we are contending against never "stays put," but shifts his biological position as soon as we have got his biological range. At the same time, however, knowledge of this fact enables more intelligent and effective planning of campaigns.

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ENGINEERING

Molded Rubber Fenders Widely Used in Britain

MOLDED rubber fenders are coming into increasing use on trucks and buses in Britain, partly as a consequence of the blackout. Collisions are much more frequent, naturally, on darkened streets and roads, and owners of vehicle fleets find much to recommend in fenders that straighten out their own dents after being bumped into. Besides, substitution of rubber for metal releases just that much more steel for war uses. The rubber fenders are manufactured by one of the pioneer tire-making firms in England.

Science News Letter, January 25, 1941

IN SCIENCE

BIOLOGY

Colchicine Gives Chickens Double-Size Combs

COLCHICINE, wonder drug that produces giant plants and causes great speed-up in evolutionary changes, has been used successfully for the first time in producing apparently similar changes in animals by Dr. Edna Higgins of the University of Pittsburgh. Dr. Higgins reported results of her experiments on chickens before the American Association for the Advancement of Science.

Earlier experiments with colchicine on animals have uniformly resulted in the early death of the animals, when the drug was used in sufficient concentration to obtain any results at all. However, by injecting very small amounts of highly dilute colchicine solutions into eggs at various stages of incubation, Dr. Higgins has succeeded in obtaining six healthy birds that have survived to maturity.

In one group of four chickens, injected after 72 hours of incubation, now 17 months old, the combs and wattles of both males and females are twice the normal size, and the males also have two abnormally long tail-feathers apiece. Two others, out of a group injected during the thirteenth day of incubation, show less effect.

Further work is now being conducted to determine whether colchicine produced the effects directly, or whether it worked through the sex glands, which control such secondary sexual characters as combs, wattles and tail-feathers.

Science News Letter, January 25, 1941

FORESTRY

Deforested Lands Greater In Area Than All Italy

DEFORESTED lands greater in area than the whole of Italy still await replanting with trees, the U. S. Forest Service has reported at the close of its annual stocktaking. The total tree-stripped land amounts to 77 million acres, of which only three million are owned by the government and 74 million are held by private owners.

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CE FIELDS

PUBLIC HEALTH

2,000 Eyes Lost Yearly In Preventable Accidents

PREVENTABLE accidents in industry cause the loss of 2,000 eyes and more than \$50,000,000 yearly, Dr. Thomas D. Allen, of Rush Medical College, Chicago, declared at the Third Annual Congress on Industrial Health, sponsored by the American Medical Association.

The \$50,000,000 loss does not include such indirect losses as subsequent reduction in earning power of the worker with impaired vision. These losses, Dr. Allen and Dr. Henry F. Carman of San Francisco estimate, are probably four times as great as the direct loss.

Besides the 2,000 eyes that are completely lost each year in preventable industrial accidents, there are 300,000 eye accidents which incapacitate the worker for one day or more.

Suitable goggles are the best means of protection, Dr. Allen said, because about 80% of all industrial accidents involving the eyes are due to flying bodies.

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ZOOLOGY

Groundhog Has Good Alibi: Never Asked For That Job

See Front Cover

MARMOTA MONAX, alias Groundhog, alias Woodchuck, has a good alibi to offer in his own defense when he is arraigned before the Bar of Superstitious Injustice on the charge he has to face every year, of unduly prolonging the winter through the black (or at least gray) magic of looking at his shadow. He never asked for the job; it was wished on him by silly human beings, who, finding no hedgehogs in the New World, thrust upon his harmless shoulders the load that the prickly little Old-World creature has had to carry for centuries.

Moreover, while it is not unreasonable to expect the European hedgehog to see its shadow on Feb. 2, there is no sense whatever in looking for a like performance on the part of the American groundhog. Hedgehogs do come out on sunny

days in winter, but groundhogs are sound sleepers. In the parts of this country that have real winter weather, they do not commonly break their hibernation until about mid-March. St. Patrick's Day, rather than Candlemas Day, would be more appropriate as Groundhog Day, if we paid any attention at all to the actual habits of the animal.

The photograph reproduced on the front cover is in itself testimony to the pointlessness of looking for groundhogs, with or without shadows, on Feb. 2. The date of its taking (by J. Southgate Y. Hoyt's Graflex camera) was June 22, 1939. It is being shown in Boston now, at the International Salon of Nature Photography.

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PHYSICS

First Commercial Electron Microscope Now In Use

THE first American commercially built electron microscope — an instrument capable of magnifying 100,000 times — is now in use in Stamford, Conn.

Constructed by the RCA Research Laboratories in Camden, N. J., the new super-microscope, which takes pictures with electrons instead of light waves, is in the laboratories of the American Cyanamid Company. Already used in studying pigments for the paper industry, it has shown that the very minute particles have the same crystalline structure as the larger ones observed with old type microscopes, disproving a widely held theory.

Science News Letter, January 25, 1941

NUTRITION

Vitamin C Destroyed In Discolored Fruit

BBROWN, discolored fruit is not only unpleasant to look at and frequently flat and flavorless to taste, but it also cheats you of the vitamins you are paying for, Dr. M. A. Joslyn of the University of California Agricultural Experiment Station has found.

Dr. Joslyn has made a particular study of the kind of discoloration known as browning. This is a result of an oxidation reaction, in which vitamin C is destroyed along with the pigments that give the fruit its attractive coloration. In dried fruits, treatment with sulfur dioxide, long a standard practise for maintaining light color, was also found to check the lowering of the vitamin content.

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PHYSICS

Yeast Cells Provide Test For Presence of Silver

LIVING cells of brewer's yeast seem to act like giant molecules in a reaction with silver, affording an extremely delicate test for this and other metals. Members of the American Physical Society, meeting at the California Institute of Technology, were told this by two scientists from the host institution, Drs. Alexander Goetz and S. Scott Goetz.

They gave a demonstration before the session, showing how the yeast cells could be used to reveal the presence of about three billionths of an ounce of silver. The test became possible after they had found a new method of staining the yeast cells. After this treatment the cells are examined under the microscope and those that have been killed by the metals can easily be distinguished from the others.

By such an examination it is possible to measure the proportion of cells that the metals have affected. Using mathematical formulae, the amount of metal can be calculated.

Science News Letter, January 25, 1941

ENGINEERING

Put Microphone Off Stage To Increase Realism

BY PLACING the recording microphone where the audience would be, rather than among the musicians or speakers, increased realism will be obtained in sound movies, phonograph recordings and radio broadcasts. Speaking before the meeting of the Society of Motion Picture Engineers, Dr. H. F. Olson, of the R.C.A. Research Laboratories, described a new microphone which makes this possible.

It is called a "line microphone," and picks up sounds in a number of tubes, equally spaced along a line eight feet long. Only sounds coming along the line are effective, so it is sensitive exclusively to sounds in the direction that it is pointed.

"With this microphone," said Dr. Olson, "you can pick up a symphony orchestra at 100 feet, the best location from an audience standpoint." In many cases, he said, the microphone could be placed alongside the camera, instead of being suspended from a boom above the heads of the actors or musicians. With the older types this is necessary, since they are more or less sensitive in all directions.

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