

GEOLOGY

Expedition to Study Formation of Limestone

► SCIENTISTS from the American Museum of Natural History have left for the West Indies to study one of the largest areas in the world in which limestone is still being formed.

The expedition, the second in a three-year project, is headed by Dr. Norman D. Newell, curator of historical geology at the American Museum of Natural History. Nine scientists are investigating the geology, fossils and living organisms in the Great Bahama Bank, a 60,000-square-mile limestone platform under the ocean southeast of Florida.

The investigations may yield valuable information that will help geologists locate valuable minerals, such as oil, in many regions of the earth. Important information may also be uncovered concerning the origin of oil.

The expedition will remain in the Great Bahama Bank area six weeks. Base of operations is the Lerner Marine Laboratory, the American Museum's field station on North Bimini Island, about 60 miles east of Miami.

The area is ideal for the study of the formation of limestone from limy shells, because rocks of the islands contain fossils of many animals now living in the Bank waters. The water, which is unusually clear, has an average depth of about 30 feet.

The study includes aerial and underwater photography, mapping the underwater hills and valleys with a depth recorder, and sampling temperatures, sediments, rocks and water.

Science News Letter, June 2, 1956

CHEMISTRY

Device Detects One Smog-Forming Chemical

► TWO LEADS to help scientists find a way to eliminate smog were reported at a meeting of the American Petroleum Institute's division of refining in Montreal, Canada.

They are a chemical missing link in the formation of smog, and a recently designed smog detector nicknamed "Silent Sam."

The missing link, called compound X, is so scarce it cannot be detected in air with ordinary chemical methods. In discovering the compound, "Silent Sam" proved its ability to identify many chemicals that contaminate air at low concentrations.

"Silent Sam," a spectroscopic device described by scientists as a long-path infrared absorption cell, will be used to attack hitherto unsolvable problems. Scarce air-polluting chemicals, such as the eye-irritant in the Los Angeles atmosphere and the chemical that damages plants exposed to smog, may be identified with the instrument. "Silent Sam" looks like a hot water tank

lying on its side in a jungle of pipes and tubes.

Discovery of compound X bridges a gap scientists encountered each time they approached a solution to the smog problem. Chemists had trouble finding the critical substance with conventional methods, because it has a brief life under smog-formation conditions and because there is so little of it in the atmosphere.

Scientists are not certain of the exact nature of nitrogen-containing compound X, but they think it is formed in a reaction between a free radical and nitric oxide. They do know it is the agent that carries the process of smog formation along, gives smog its durability and permits it to accumulate.

Compound X was isolated in the laboratories of the Franklin Institute of Philadelphia.

The scientists, Drs. E. R. Stephens, W. E. Scott, P. L. Hanst and R. C. Doerr, are cautious about the possibility of eliminating smog by reducing the amount of nitrogen oxides in the air, although this method is suggested by their results.

Science News Letter, June 2, 1956

ARCHAEOLOGY

Earthworm Community "Lost" 2,000 Years

► A "LOST" COLONY of earthworms, which may have thrived since Roman times in a ditch sealed over during the first century A.D., has been found by British scientists near St. Albans, England.

The worms are real bluebloods. They can trace their ancestry back to the dawn of the Christian era. Chances are they have not felt rain fall on their skins in nearly 2,000 years. They have been breeding under successive layers of stone, gravel and concrete since the Romans' sandaled feet pressed into the dust of ancient Britain.

In recent times their underground community has been overlain by a car lot near the Verulamium Museum.

The worms, 18 of them, were found between eight and 15 feet below the surface of the earth.

The ditch in which their ancestors crawled was filled in some time before the year 100 A.D. During the years following, many buildings were constructed over the ditch. Their floors, each of which was built on top of the last, were made of tile, gravel, mortar and beaten earth.

The floors formed a compact layer eight to 15 feet thick that archaeologists say had not been disturbed since Roman times. The ditch, which may have been intended for defense, contained oyster shells, pottery and bits of leather.

The discovery is reported in *Nature* (April 28) by Ronald M. Dobson of the Rothamsted Experimental Station, Harpenden, and J. E. Satchell of the Merlewood Research Station, Grange-over-Sands, England.

Science News Letter, June 2, 1956

IN SCIEN

GENETICS

Plant Hormone Reverses Dwarfism in Maize

► THE EFFECT of mutations that cause dwarfism in maize has been reversed by treatment with a new plant hormone in experiments at the University of California at Los Angeles.

Dr. B. O. Phinney, U.C.L.A. geneticist, has found that dwarf maize seedlings treated with gibberellic acid respond by normal growth. This plant hormone has only recently been isolated in England from the fungus, *Fusarium moniliforme*.

Six different dwarf mutants of maize were treated in the seedling stage with the hormone. Four of the mutants responded to the treatment by achieving normal growth. Two did not respond to treatment.

For each case, the ability to respond is under the control of a single gene, according to Dr. Phinney. The response of the four mutants and lack of response in the other two indicate that the reason for dwarfism can vary, depending on the particular gene controlling the expression of the dwarfing character. Studies are being made on the mechanism of this response.

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MEDICINE

Arthritis Drugs Cut Skin Disease Deaths

► ACTH AND CORTISONE, first famous as remedies for arthritis, have cut deaths from a serious skin disease by more than half, Dr. Samuel M. Bluefarb of Northwestern University Medical School and Dr. Leonard Hoyt of Cook County Hospital reported at a meeting of the Illinois State Medical Society in Chicago.

The disease is pemphigus. It causes blisters that, after absorption, often leave colored spots. Some types of pemphigus are mild, others may end in death.

Before ACTH and cortisone became available, there was no effective treatment, the doctors said. Although these hormone drugs do not cure, they have proved "the most effective and life prolonging" remedies available.

Of 34 patients who entered the hospital in a dying condition in the period 1945 to 1950, 19, or 56%, died in the hospital while under treatment.

In a second similar group of 31 patients in 1951 to 1954, ACTH was used in small amounts. The deaths numbered 10, or 32%. In 1955-56, with an adequate supply of ACTH and cortisone available, there were three deaths in 14 cases, or 20%.

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CE FIELDS

ORNITHOLOGY

Birds Change Feathers To Meet Travel Needs

► BIRDS change their feathers during the mating season to meet their travel needs.

Some kinds of birds put on new feathers soon after mating, others molt while their young are hatching. Some lose their head and body feathers at the start, while others shed their wing and tail feathers first.

The reason for this, British scientists have learned, is the varying distances birds fly between their summer and winter homes. Some of them need all their wing feathers for the trip.

For example, the great shearwaters, brown sea birds, fly from south of the equator to the north of the Arctic Circle each year. After they mate on Tristan da Cunha, an island in the South Atlantic Ocean, they keep their wing feathers until they have flown more than 6,000 miles to their Arctic summer quarters.

Another bird, the Fulmar, sheds his feathers while the young are hatching. The Fulmar breeds in his own native region so he does not have to keep his feathers for any long trips.

A. J. Marshall, St. Bartholomew's Medical College, University of London, and D. L. Serventy, Commonwealth Scientific and Industrial Research Organization, Perth, Western Australia, report their findings in *Nature* (May 19).

Science News Letter, June 2, 1956

METEOROLOGY

Iowa Rainfall Sets New U. S. Record

► A NEW United States and possibly a new world's record for the heaviest recorded one-minute rainfall was set in Iowa during the early morning hours of July 10, 1955, a Weather Bureau official in Des Moines has now calculated.

"Over a period of 1.4 minutes, the rate of fall was 0.69 inch per minute," his thorough study, just completed, of a rain gauge chart on the farm of Lawrence Nahnsen, 11 miles north of Jefferson, Greene County, Iowa, showed. For shorter periods, the rate was considerably greater.

Rain falling at this rate for one hour would amount to 41.4 inches, or nearly three and a half feet of water.

The heavy rain burst occurred during thunderstorms that covered several counties of west central Iowa on July 10 last year.

At Opid's Camp, Calif., a storm on April 5, 1926, produced heavy rain evaluated at 0.65 inch per minute. Rainfall of 0.82 inch per minute was reported from

Porto Bello, Panama, on Nov. 29, 1911, but the nature of the record leaves considerable doubt about its reliability.

If the Porto Bello record cannot be substantiated, the average of 0.69 inch of rain falling on Mr. Nahnsen's Iowa farm last July 10 establishes a new world's record.

C. R. Elford, climatologist at the Weather Bureau Office in Des Moines, examined the rainfall chart and calculated the new record.

A radar set operating at the Des Moines airport, about 55 miles southeast of the point where the heavy rain was recorded, picked up echoes of the storm. A stationary front lay in an east-west line across northern Missouri. There was considerable shower and thunderstorm activity north of the front and numerous reporting stations measured total rainfall of from one to three inches during the 48 hours of July 9 and 10.

The record rainfall was collected in a nine-inch single traverse, unshielded Universal recording gauge belonging to the U. S. Weather Bureau, Mr. Elford reports in *Monthly Weather Review* (Feb.), official journal of the U. S. Weather Bureau.

Science News Letter, June 2, 1956

BIOCHEMISTRY

Chemical Makes Killed TB Germ Vaccine Work

► A WAY to make an effective killed germ vaccine against tuberculosis, long sought by tuberculosis fighters, has been discovered.

The trick is to add to the TB germ a chemical called n-hexadecane. The finding was made by Drs. Anson Hoyt and C. Richard Smith of the Barlow Sanatorium and Robert Knowles and Dr. Frederick J. Moore of the University of Southern California School of Medicine, all located in Los Angeles. Dr. Hoyt reported it at the meeting of the National Tuberculosis Association in New York.

They worked with cultures of BCG, the non-virulent strain of bovine tuberculosis germs used live to make the BCG vaccine now in use. This vaccine, although used in many places for many years, has always been feared by some TB workers because it is a live germ vaccine. They fear that the non-virulent germs might sometime acquire virulence and give the disease the vaccine is intended to prevent.

Adding the chemical to either the live or the killed BCG, Dr. Hoyt reported, "significantly increased the immunity resulting from one injection of either."

An injection of killed BCG with the chemical, he reported, was more effective in producing immunity than an injection of live BCG without the chemical.

The studies show, he said, that "reasonably small single doses of culturally dead tubercle bacilli (TB germs) can effectively immunize mice when combined with n-hexadecane."

Further studies of adjuvant chemicals, he said, seem warranted.

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BIOLOGY

Cattle Egret Becoming Established in U. S.

► THE CATTLE EGRET, common in southern Europe, Africa and the Middle East, is establishing itself in the United States. The small white bird stays close to cattle, usually near the head but sometimes near the feet.

Alexander Sprunt Jr. of the National Audubon Society, in a report to the Smithsonian Institution, states there are now about 2,000 cattle egrets in Florida, the state which it first visited in 1942.

How the bird got to the New World is not definitely known, but Mr. Sprunt believes it may have been carried across the Atlantic by wind currents. The cattle egret first appeared in British Guiana in 1937. It was not observed in the United States until five years later. Stray specimens have been found as far north as Maine and Newfoundland, but most of the birds are concentrated in Florida.

Mr. Sprunt says the egret's fondness for cattle may result from the cattle's tendency to kick up grasshoppers and crickets, which the bird eats.

"When an insect is disturbed, the bird darts out, catches it, and returns. Now and then, it reaches up and picks off something from the body of the cow, or its legs. Whether these tidbits are flies, ticks, or what, I do not know, but it is a frequent practice," Mr. Sprunt says.

Science News Letter, June 2, 1956

BIOLOGY

Australians Will Take Census of Marsupials

► THE FIRST MARSUPIAL CENSUS ever taken in Australia will start soon, F. J. Griffiths, chief guardian of fauna for the continent, has announced.

The survey will begin in New South Wales, where there are more than 40 species of marsupials.

'Possums, bandicoots, wombats, koalas, gliders, kangaroos and wallabies will be counted in the census. The animals range in size from a tiny mouse only three inches long to a great gray kangaroo that measures six feet.

"The advent of the white man," Mr. Griffiths said, "was a disaster for the marsupials of Australia. The settlement of the country and the introduction of the fox have been fatal to many of these harmless creatures. Some species have entirely vanished, while others have been so reduced in numbers as to be on the verge of extinction."

Small ground animals such as rat kangaroos, bilbies and little wallabies have suffered most, he said. Larger animals like the kangaroo have survived in greater numbers, while tree-dwellers have found some security living above the ground.

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