SCIENCE NEWS

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MARINE VEGETATION IN UTAH ROCKS

ABOUT 500,000,000 years ago there grew in what is now Logan Canyon, Utah, masses of vegetation so abundant as to rival the most luxuriant growths of seaweed anywhere along our coasts to-day, according to observations made on a field exploration trip last summer by Dr. G. R. Mansfield, of the U. S. Geological Survey, and Professor Reed W. Bailey, of the Utah State Agricultural College.

Professor Bailey, the discoverer, guided Dr. Mansfield to this place where evidences of plant life in early geologic time were preserved in unusual profusion. On the west side of the main canyon just below the mouth of the Right Fork two great blocks of sandstone, each weighing several tons, had slid down hill from a ledge above and lay by the side of the road. They had turned bottom up in the process and displayed a mat of vegetation of the type usually called fucoids.

"Few, if any, traces of the original plant substance now remain," Dr. Mansfield explained, "but the sand which sifted into the tangle of vegetation as it lay on the sea bottom formed molds which were filled by later supplies of similar sand. Then the whole mass was buried beneath beds of sand and limy muds. As time went on these in turn gradually solidified into sandstones and limestones, which have since, by changes in the earth's crust, been raised above the sea and subjected to stream erosion and weathering."

Marine vegetation was undoubtedly one of the very first types of life to inhabit the earth. Indirect evidence of its presence in early times has been found in flakes or accumulations of graphite obtained here and there among cystalline rocks (schists) that were formed before the beginning of the Cambrian period, the time when the first of the great series of fossil-bearing rocks was laid down.

The rocks of the Cambrian and later successive early geologic ages contain abundant remains of animal life, but they do not so frequently preserve remains of plant life. Yet the very abundance of animal life implies equally or more abundant plant life, for plant life forms the basic food supply of the animal kingdom. Here and there under favorable conditions evidences of plant life are preserved in these earlier rocks, but such evidences usually consist of imprints or fillings of imprints, that is, of molds or casts rather than of remains of the actual plants themselves.

THE MAGNETO-OPTIC METHOD OF ANALYSIS

CRITICISMS of Professor Fred Allison, of Alabama Polytechnic Institute, on the reliability of experiments by which he claims to have discovered the missing element number 87, have been met by investigators at Emory University.

Professor J. L. McGhee and Margaret Lawrenz, using an improved model of Professor Allison's magneto-optic apparatus, confirmed his findings, they have reported to the American Chemical Society. Professor McGhee and Miss Lawrenz also say that they failed to get results to support the statement of Professor Jacob Papish, of Cornell University, the rival discoverer of the new element, that Professor Allison's results were due to traces of the known elements, tin and rhenium.

Professor McGhee began tests of the still widely doubted magneto-optic method by giving Professor Allison a number of mixtures of substances whose composition he knew, but which were "unknown" to Professor Allison. Analysis of their composition made by Professor Allison with his new magneto-optic method proved to be entirely correct, according to this report. Additional comparisons of results of the Georgia and Alabama instruments are also said to have shown substantial agreement.

In examining Professor Papish's attacks, Professor McGhee prepared solutions of pollucite, lepidolite, samarskite and caesium chloride, in all of which Professor Allison claims to have found element 87. The magneto-optic analysis of these solutions was then compared with that of tin chloride and rhenium chloride, the substances Professor Papish said might have been responsible for Professor Allison's findings.

Though certain "minima" were found in common, the six special "minima" of element 87 were not found in the tin and rhenium chloride solutions. The Georgia investigators believe that this test invalidates Professor Papish's criticism.

OAK FORESTS OF EUROPE

WHAT is possibly the oldest oak forest in Europe, containing specimens believed to be over eight centuries old, has its very existence menaced by a crowding host of upstart birch saplings. The soil is favorable for them and they grow apace—and not a single young oak tree is in sight to replace the giants when they fall.

This bit of menaced woodland stands in Oldenburg, in North Germany. It is only about 120 acres in extent, and is unique among western European woodlands in that the ground has been continuously in forest since at least the Middle Ages. It probably has never been anything else. Due to the medieval practice of feeding swine in the woods, the stand was for hundreds of years kept fairly open, and trees developed trunks twenty feet in circumference, with vast spreading crowns. Ferns and holly bushes, some of the latter reaching small tree size, flourished in their shelter.

The only other known area of virgin timber in western Europe is in Czecho-Slovakia, on the Bavarian-Bohemian frontier mountain range. Originally the property of Prince Schwarzenberg, it is now held and protected by the Czecho-Slovakian Government. It once had an area of about 3,300 acres, but in 1891 was reduced to a mere fragment of some 110 acres. Unlike the Oldenburg forest, this mountain woodland is principally in ever-

greens—firs and spruces—together with beech. Some of the trees are of extraordinary height for their species, their tops reaching up 150 feet or more. Since the policy of "let nature alone" has been followed here, much of the wood is choked with the trunks of great trees that have been blown down by the wind.

These two bits of woodland serve to give North Europeans some idea of the kind of world their ancestors lived in.

TERNS OF THE TORTUGAS

BIRDS with an extraordinary "homing sense" are the common terns, or sea swallows, which have been the subject of extensive study by the Carnegie Institution's Marine Biological Laboratory on Bird Key, one of the Tortugas Islands in the Gulf of Mexico, where a great colony of the birds migrate each summer for the nesting season.

Experiments conducted some years ago by Dr. John B. Watson, formerly of the staff of Johns Hopkins University, who cooperated with the institution to investigate the terns of the Tortugas, show that these birds can, without any training whatsoever, reach home from distances of at least a thousand miles even though the territory over which they fly is completely barren of any marks which might guide them. Terns were released by Dr. Watson at Key West, Florida, Cape Hatteras, North Carolina, and Galveston, Texas. The majority of them returned to their nests at Bird Key in the Tortugas. From Cape Hatteras to Bird Key by the alongshore route is 1,081 miles.

The world's long distance record for homing pigeons is, in comparison, only 1,010 miles, and was made by a bird selected and trained for the purpose. Terns, however, are entirely untrained and fly to suit their own fancies and without any idea of breaking "homing records." They make their way back to the nesting ground in spite of darkness, storm and unknown seas, Dr. Watson found. Just how to explain this marvelous ability of the terns of the Tortugas is to date beyond reach. The strange power remains a baffling mystery.

Not only are the terns adept at homing, but they never fail to identify their own eggs and chicks. This would appear an impossible task as the terns cover the sandy Bird Key with thousands upon thousands of similar-looking eggs. Yet when one tern comes back from patroling the shoals about the island in search of minnows to feed the young, he always locates the right spot and picks out his own eggs and babies from the countless ones that surround them.

The habit of catching minnows to feed the young terns has proved a boon to science. From the partially digested bits of food dropped by the adult terns, it is possible to classify various types of fishes. Through this method, Dr. W. H. Longley, who is in charge of the Marine Laboratory, has identified ten species hitherto unknown at Tortugas and two others little known any where. He has also learned that the terns catch fish which had been supposed to be of nocturnal habits, as well as others believed to live only on sea bottom in deep water.

THE LOCOMOTION OF SNAKES

SNAKES do not travel at high speed, popular opinion to the contrary notwithstanding, according to Dr. Walter Mosauer, zoologist at the University of California at Los Angeles.

Under repeated tests the famed blue-racer snake never exceeded a maximum speed of two and one half miles per hour. Reports of racing speed are usually the result of mental delusion promoted by fright, both of the observer and the snake, and by the winding motion of the creature.

The method by which a snake propels himself is revealed in a critical investigation described by Dr. Mosauer. An ingeniously planned research, in which the x-ray camera, scalpel and stop-watch were featured, included everything from African vipers to boa constrictors. From the report it is evident that the serpent's inside power plant is much more complicated than his externals.

Devoid of legs, fins or other reasonable propeller mechanism, the snake makes up for these shortages with an elaborate muscular layout. In general his backbone is connected with his ribs by a host of strap muscles, each tied to at least one vertebra and one rib.

Sometimes a rib is connected to a joint sixteen ribs away, sometimes to one near-by. These connections permit any kind of wiggle or bend in any direction. Nothing is connected at right angles, all forces acting obliquely. Accordingly, Mr. Serpent never gets on "dead center" and seldom feels mechanically awkward.

The well-known but mystifying locomotion of the "side-winder" rattlesnake was studied by Dr. Mosauer. The venomous creature apparently prefers to slide sidewise in two parallel tracks over the desert sand. In this performance he corresponds to a two-loop spiral, modified slightly by muscular displacement. Naturally the two loops make parallel tracks. At regular intervals the spiral leaves one track, and a new track is started one space in advance.

CANNIBAL REMAINS ON ALASKAN ISLAND

HUNDREDS of human bones plainly cracked open for marrow have been discovered on Kodiak Island, off the coast of Alaska, by Dr. Aleš Hrdlička, of the U. S. National Museum. This evidence, Dr. Hrdlička reports, gives unmistakable proof that prehistoric inhabitants of Alaska were cannibals.

The discovery marks the first time that traces of cannibalistic practice in the Far North have been unearthed. Just what it means on Kodiak Island, Dr. Hrdlička will not know until he has investigated further.

Cannibalism is known to have been practiced by some tribes in North America and in Africa and Australia. Human flesh is still eaten to-day by the Battas of Sumatra, in other oceanic islands, Australia, South America and parts of Africa.

Dr. Hrdlička found the bones last summer while he was excavating on the island, but chose not to reveal the information until the island was fully protected from curio seekers. It is now protected by the government.

Arm and leg bones, cracked open for marrow, were found scattered widely through layers of old house ref-

use. They were not charred, probably having been eaten raw or cooked in water. Their prevalence throughout numerous layers indicates that the practice of eating human flesh was kept up over a long period of years.

To what tribe the victims belonged is not known, but not far distant from the site is evidence of persons of the same type who lived without cannibalism.

THE MATTO GROSSO EXPEDITION TO SOUTHERN BRAZIL

ADVENTURES with jungle Indians in Brazil who greeted an airplane bravely with a shower of long arrows and who regarded the fliers as strange and mysterious beings are among the highlights of the Matto Grosso Expedition, which has returned from its year of researches in this wild region of southern Brazil.

"For these Indians to try to bring down an airplane with arrows was an exhibition of the highest bravery," said Vincent M. Petrullo, anthropologist of the expedition, who is conferring with anthropologists at the U. S. National Museum.

"We dropped a sack of presents from the plane," he added. "It landed on a roof and one of the men climbed up to get it. The village people gathered and had a huge feast, and for weeks they looked to the south and called the strange bird to come back."

The expedition found that these things happened after the plane flew over, because the explorers followed up their air survey of the unmapped country by going up the rivers in canoes to visit villages 350 miles from civilization by airline. They found the Indians who shot at them to be a very primitive tribe. They did not even have dogs for companions, as Indian tribes often do.

To talk to this tribe, the Yawalapiti, it was necessary to relay the speech through four interpreters. One of the Bakairi Indians, who traveled with the exploring party and who understood a little Portuguese, would take the question from Mr. Petrullo. The question would be translated into the Anahuaqua language and relayed to a Mihinaku, who, in turn, spoke at last to the person really addressed.

At the village where the airplane battle occurred, some of the Indian men had seen white men before. They had encountered a party looking for the explorer, Colonel P. H. Fawcett, who was lost in 1925 and has been sought since by a number of explorers. Mr. Petrullo talked with the natives who ferried Colonel Fawcett across the last river, where the record of the explorer mysteriously ends. The natives say that Colonel Fawcett was sick. His son and companions wanted to turn back, but the Colonel insisted on pushing ahead to the next river where, the Indians say, he expected to get "big canoes" and travel would be easier. Before reaching the river, however, he would have to cross a stretch of high grass. Sickness, thirst or starvation appear to have overcome the daring party.

The Matto Grosso expedition, which was directed by E. R. Fenimore Johnson, has had better fortune. It has returned with many tales of adventure and a quantity of scientific data on the people, animals and plant life of a region that is famous because it is so little known.

The worst catastrophe the expedition has to report is the loss of three out of seven bark canoes. The canoes went down into a tributary of the Xingo River, carrying many photographs and notebooks filled with data. This happened on the field trip to the Yawalapiti. The explorers succeeded in bringing back sound and motion picture films of a number of eastern Bororo tribes. The Indians, shy at first of the microphone, the camera and the strangers, overcame microphone fright very successfully, and performed their songs, dances and demonstrated their rattle music for the records of science.

ITEMS

BECAUSE it can almost see invisible moisture in the atmosphere, the electric eye, or photoelectric tube, has been made robot operator of a humidifier which conditions air for human breathing. This unique application of the photoelectric tube is found in newly developed home humidifying apparatus. A window pane, playing the first-aid part of spectacles, enables the electric eye to detect moisture, because the amount of water that accumulates on a window can be taken as a good measure of moisture in the air. The apparatus directs a beam of light through the window on a photoelectric tube. When moisture is on the glass, the light is weakened and the tube responds to turn the humidifier off. When the moisture evaporates, the beam is strengthened and the tube responds to turn the humidifier on.

FREEZING fruits and vegetables to preserve them without first sterilizing them by heat does not kill the botulinus germ if it was present in the food originally, was reported by Dr. Lawrence H. James, of the U. S. Bureau of Chemistry and Soils, to the Society of American Bacteriologists meeting in Baltimore. However, there is no danger of botulinus poisoning if the frozen food is defrosted, cooked and used immediately when received from the store. Dr. James subjected the spores of the botulinus bacillus to the same degree of freezing that is used in commercial cold storage methods. He found that the number of these spores, from which new botulinus germs could develop, was not reduced at all by the cold temperatures, regardless of the length of time the temperatures were maintained. On the other hand, no poison had developed from the spores during the freezing.

APPLES come through cold storage safely without harm to their vitamin C. Frozen apples have been kept for four months without losing an appreciable amount of this vitamin. This important fact has been ascertained by Dr. S. S. Zilva and Miss M. F. Bracewell at the Lister Institute, London, and Dr. Franklin Kidd and Dr. Cyril West at the Low Temperature Station, Cambridge. The apples used were Bramley's Seedlings. It was found that they could be stored in air at 3 degrees centigrade for five months and yet contain as much vitamin C as they did originally. Experiments on the distribution of vitamin C in various parts of the apple gave remarkable results. The vitamin is not by any means evenly distributed through the fruit. There is far more vitamin C near the skin than in the center, and the peel contains six times more vitamin than the flesh near the core.