PALEONTOLOGY

Fossil Sea Lion Related To California Species

A RARE FOSSIL sea lion, some 20,000,000 years old, can now be seen with almost all its bones neatly in place.

In an exhibit prepared by William P. Otto of the Los Angeles County Museum in Los Angeles, the fossil bones are in a large block of matrix.

This extinct sea lion, named *Atopotarus courseni,* is related to the living California sea lion common along the Pacific coast from Mexico to northern California. It was found at a point 500 feet up on the northeast side of the Palos Verdes Hills imbedded in rocks of the early Miocene period. The sea lion was named in honor of Mr. and Mrs. Walter H. Coursen Jr., on whose property the fossil remains were found.

Science News Letter, October 24, 1959

SURGERY

Test Measures Heart Surgery Risks

A TEST has been devised that tells whether or not patients with high blood pressure in the lungs, associated with a hole between the heart chambers, can safely undergo heart surgery.

The test was developed by Drs. I. Hunter Crittenden, Forrest H. Adams and Harrison Latta of the University of California, Los Angeles.

It involves intravenous administration of a drug, acetylcholine. This drug tends to relax normal blood vessels of the lung causing a drop in pressure in them.

But diseased arteries, in which the inside wall is markedly scarred, offering much resistance to blood flow, show little or no response to the acetylcholine.

Patients with severe artery disease in the lung usually do not benefit by surgery. Thus the new test is an index to the degree of lung artery involvement and surgical risk of the patient.

Thirty-eight patients have been studied with the technique and results have been encouraging, the investigators said. All patients demonstrating reduced artery pressure in response to acetylcholine that have undergone surgery have survived.

Science News Letter, October 24, 1959

PHYSIOLOGY

Scientists Will Measure The Weight You Carry

EXACTLY how much weight you carry is being studied.

Scientists for the first time are trying to measure this load at Case Institute of Technology. Dr. John Scalzi, associate professor of civil engineering, and assistant Don Sherman of the Institute are collaborating with Dr. J. W. Blunt, of St. Luke's Hospital, Cleveland, to work on the project.

The answers they find will be important to surgeons in demonstrating how big a load is placed upon broken bones in the leg. Their findings will also be used by designers of mechanical bone and joint replacements.

Measurements of the load on the feet are also important to the men who design and manufacture shoes and to the millions of persons who wear them.

The scientists will study and measure the vertical load on the foot as an individual walks, as well as the sideways and forward twisting motions involved in each step. High-heeled shoes and running and jumping will also be studied, as well as the way a person's gait changes as he grows older.

The investigators plan to study the load on the foot itself. They will attempt to find a ratio between how much a person weighs and the maximum force which is placed upon his feet while he walks.

Next they want to determine if a person puts more weight on his left or right foot. Once the load on the foot has been determined, the researchers will move on to the ankle, knee, and hip. Tiny flat coils of wire one-eighth inch long called strain gauges are the key instruments in measuring the loads. The electrical resistance of a strain gauge varies with the mechanical load that is placed on it. The variation is recorded and is sensitive enough to measure the force of as little as one pound.

Strain gauges are located on four vertical metal rings placed at angles beneath a live panel in a runway across which an individual walks. Circuits on the strain gauges are so arranged that pairs of them respond to the three varying directions of the forces placed upon them.

Science News Letter, October 24, 1959

MEDICINE

Enzyme May Wash Away Ugly Scar Tissue

UGLY SCARS may soon be prevented or chemically erased away by an enzyme found in the pancreas. The chemical is called procollagenase and was found in the pancreas of a hog, Dr. John C. Houck of the Children's Hospital Research Foundation in Washington, D. C., reported.

The enzyme may also be obtained from the pancreas of other animals, he said. Enzymes regulate life's chemical processes.

The enzyme may be capable of dissolving scar tissue, the scientist said. Disfiguring scars consist of collagen, a fibrous protein that is found throughout the body. This enzyme can dissolve the form of collagen from which the tough fibers develop, the chemist explained.

In addition to its scar-erasing and known cleansing activity, the enzyme is expected to aid surgeons in removing collagen tissues that cause adhesions of the intestines.

Research scientists also welcome the enzyme discovery because it may shed light on the complex structure of collagen protein. Dr. Houck said he will next attempt to isolate the enzyme in pure form and determine its properties.

The enzyme activity of the new substance "cannot be duplicated by other existing crystallized enzymes," he stated. Furthermore, "this type of activity seems to be reasonably specific for procollagen," he said.

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IN SCIEN

ASTRONOMY

Telescope Mirror Blank Ready for Its Rubdown

FOR THE NEXT 24 months, specialists will be rubbing down a 4,000-pound piece of glass.

The specialists will be grinders and polishers, and the chunk of glass ultimately will be an 84-inch telescope mirror slated for the Kitt Peak National Observatory now being built 40 miles southwest of Tucson, Ariz.

Corning Glass Works, Corning, N. Y., has shipped the huge mirror blank to Tucson where a special grinding-and-polishing shop has been set up.

The mirror blank is the largest piece of glass ever produced by placing solid chunks of glass on a mold and sagging them into a single mass under temperatures of 2,300 degrees Fahrenheit. Sagging reduced bubble inclusions in the 13-inch-thick mirror blank. Borosilicate glass was chosen for the job because of its low expansion, thermal resistance, and mechanical strength.

The 84-inch mirror will be one of six to go into the telescope. It will throw concentrated light rays from the stars toward the upper end of the telescope. The rays then fall on the eyepiece or photographic plate.

Secondary reflective pieces range from 29 to 24 inches. They will send light to observing instruments. Two of the smaller mirrors will be at the top of the telescope tubes and mounted in the central structure. These hyperbolic mirrors will magnify the image returned to the instruments behind the mirror cell. Other auxiliary flat mirrors will send light down through the telescope's polar axis into the laboratory room.

Science News Letter, October 24, 1959

ENGINEERING

Generator May Be Ideal For Party Line Phones

A TRANSISTORIZED ringing generator may be the "ideal" source of voltage for party line telephones.

One such generator, installed on a field trial in a location where there were 4,000 telephones, has given trouble-free performance for 20 months, J. F. Kostelich and B. W. Howard of Lorain Products Corp., Lorain, Ohio, told the American Institute of Electrical Engineers meeting in Chicago.

The frequencies of this generator can be set precisely with a screwdriver and its harmonic content averages 5.2%, not enough to cause cross ring difficulty. The generator is self-protecting in case of overload or short circuit and operates from the telephone office 50-volt battery so it is not dependent on AC power. Power consumption is about one ampere at full load.

Science News Letter, October 24, 1959

CE FIELDS

PUBLIC HEALTH

USPHS Says Strontium-90 In Food Is Safe So Far

SLOWLY BUT surely the strontium-90 counts found in vegetables grown across the United States are dribbling out in the form of reports issued by the Department of Health, Education and Welfare.

The second such report, the latest, covered 402 samples of fresh vegetables collected within the last six months of last year, plus 139 collected so far this year.

The latest figures include the strontium-90 count of eight samples of vegetables from California, the highest of which is lettuce at 17 micro microcuries per kilogram. The maximum permissible level is 80 micro microcuries daily for a lifetime.

The remaining nine samples were taken from vegetables grown in Ohio, Texas, Minnesota, Illinois, Maryland and Kansas.

California leads the report's list of number of samples because it is a big food producing state, George Larrick, commissioner of the Food and Drug Administration, said.

The amounts of radioactivity being found in fresh vegetables are well within the safe limits recommended by the National Committee on Radiation Protection and Measurements, Arthur S. Flemming, secretary of HEW, stated.

Similar food samples from North and South Dakota and Utah, where previous strontium-90 samples of wheat were found to be several times the maximum permissible level, have not been reported as yet.

Secretary Flemming said that these reports would be issued from the Public Health Service monthly or every six weeks. They will contain samples from every state.

Meanwhile, PHS investigators rely upon the opinions of consulting scientists. The PHS will not consider the radioactivity in the air to be a threat to the general public health until the scientists so indicate.

Science News Letter, October 24, 1959

ROCKETS AND MISSILES

Mail Delivery by Missile Foreseen Soon in Europe

EUROPE may soon claim the first "Missile-mail" operating on a regular schedule. A project to deliver letters by means of guided missiles, bewteen Genoa, Italy, and Hamburg, West Germany, has been proposed by an Italian expert. Rocket delivery of mail over this 700-mile distance would take about 23 minutes.

The project, reported to be strongly supported by the Italian postministry, was described in detail by Capt. G. Partel at the Eighth International Rocket and Space meeting in Cuxhaven, West Germany. Negotiations are under way with officials of the West German postministry and the French postministry to materialize the plans as soon as possible.

Postage for a rocket-letter, it was said, will not be much more than it is today for a regular airmail letter provided, however, that each hour a mail-missile leaves Hamburg for Genoa, and vice versa.

Capt. Partel's guided mail-missile is started with the aid of a booster rocket and then continues its flight on the ram-jet principle. Its speed is about Mach 2, twice the speed of sound, at an altitude of 8,500 feet.

The 13-foot-long missile, which weighs about 200 pounds, can deliver a cargo of 750 letters and postcards weighing 12 pounds. Price of a single craft is estimated at $16,000.

For landing, the missile is slowed down by several braking rockets. Capt. Partel claims his missile will be able to land on an area not larger than its own length.

At the destination point the missile is simply turned around, refueled, reloaded and given a new booster rocket.

The project is regarded by the Italian post office as the first step toward the realization of a world-wide rocket-mail system. Plans are being worked out for establishment of a central rocket-post office in Europe for intercontinental rocket-mail service.

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PUBLIC HEALTH

Should Warn Children Against Smoking

SCHOOL children should be the targets of all of those warnings about cigarette smoking and lung cancer, an English physician has said.

Much has been written and said about a connection between smoking and cancer and whenever a new statement is made, tobacco shares in England drop, Dr. Harvey Flack, editor of the British Medical Association's magazine for the public, *Family Doctor*, said.

"This is duly noted in the evening papers, but 15 days later the shares are back where they were, so that there has been a tiny temporary hysterical effect on the stock exchange only," he said at the seventh National Conference of Physicians and Schools meeting in Highland Park, Ill.

The total consumption of cigarettes has not dropped, he noted. Furthermore, the behavior of most adult smokers has not been appreciably altered.

"Although we have been able to get across a message, which is clear, that there is a significant correlation between cigarette smoking and the incidence of lung cancer, the message has not proved acceptable to the audience to which it is directed," he said.

The effectiveness of any health education program depends somewhat on what is acceptable to the audience, he reminded colleagues. Referring to the lung cancer message, he suggested that it be altered, forgotten or directed at a different audience, such as school children rather than adults.

It is difficult to give up smoking. It is easier never to start, he said.

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MEDICINE

Sons With Ulcers Have Dominant Mothers

MEN WHO get duodenal ulcers early in life tend to have dominant mothers and submissive fathers.

In a Medical Research Council report, a research team recorded that two-thirds of a group of men who got ulcers before they were 25 had mothers who were "dominant and controlling personalities and made the major decisions in their families."

These mothers were often "very conscientious women with a high sense of duty who were exceedingly houseproud and devoted to efficient routine."

They showed three main tendencies: to protect their children excessively, restrict them or over-indulge them.

Dr. Jeremy Morris, director of the Social Medicine unit of the Medical Research Council, supervised the team consisting of a psychiatrist, Dr. P. M. Turquet, a psychologist, Victor Kanter, and psychiatric social worker, Miss E. M. Goldberg. This team examined the family histories of 32 men between 16 and 25 who had ulcers. They compared these with the histories of 32 men in the same age group without ulcers.

Among the various factors considered were the fathers of the ulcer sufferers. Many of them, said the scientists, "showed a characteristic steadiness and unassertiveness both at work and at home.

"Twenty had been with the same employer for 15 years or more. Although some of them had obtained promotion, it was generally within certain limits and with a tendency to avoid the burden of executive responsibility."

Science News Letter, October 24, 1959

TECHNOLOGY

Aid to Infrared Detection Has Aviation Significance

A TINY cooling device that super-cools infrared detection equipment to minus 350 degrees Fahrenheit by a new refrigerating technique is expected to be a great boon to military and civilian aviation.

Because all matter generates infrared energy, every object is subject to infrared detection. Cooling infrared detectors to extremely low temperatures increases their sensitivity and makes them responsible to a wider range of infrared wavelengths.

This makes it possible to detect small temperature differences between an object and its surroundings. Thus, an airborne infrared detector equipped with this new cooling device would be able to detect the presence of an aircraft or missile from a great distance.

The cooling device, known as min-IR-cooler, is the result of a two-year research project into low-temperature equipment conducted by Arthur D. Little, Inc., Cambridge, Mass. It weighs eight ounces and was shown at the National Missile Industry Conference in Washington, D. C.

Science News Letter, October 24, 1959