

MEDICINE

Curled Esophagus More Frequent Among Aged

► "CURLING" OF the esophagus, a life-threatening condition that once was very rare, will afflict more and more people as our population ages.

This prediction was made by two radiologists from the Mobile, Ala., Infirmary at the meeting of the Southern Medical Association in Miami.

They are Drs. Marshall Eskridge and John Day Peake.

In this condition, X-ray pictures of the esophagus, or food passage from the throat to the stomach, show a corkscrew or coiled effect of the esophagus. The cause of the condition is not known, although there are many theories.

Typical victims of curling of the esophagus are nervous, high strung persons over the age of 50 who usually also have other sickness, such as stomach ulcers or cancer, heart trouble, gallbladder disease or parkinsonism.

The patient's chief complaint is usually difficulty in swallowing. He may feel a pain back and below the breast bone. This pain may run up to the chest, neck, ear or jaw. It usually comes with eating or drinking and may be worse with different foods or drinks. It is not always connected with eating, however, and may wake the patient at night. It can seem like gallbladder pain, ulcer pain or the pain of heart trouble.

If the esophagus is so curled that it is completely closed, the patient may not be able to swallow at all and will be in danger of starving to death unless an artificial opening is made into his stomach.

Unfortunately, treatment of the condition is disappointing. Some patients do not have symptoms and the condition is only discovered in the course of X-ray examination for other conditions.

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AERONAUTICS

Proposed Convertiplane Has Helicopter Lift

► RUMOR FROM Poland of a new Soviet fighter airplane that can take off and land vertically, needing no runway, is without definite support but it calls attention to plans in America for a plane with conventional propulsion but which would take off and land like a helicopter.

Convertiplane is the name used for this proposed craft. It is not intended to be a fighter but a plane for private use. Flying would attract many more persons than it does now, it is thought, when an airplane becomes available that needs no take-off and landing runway, but which can fly forward in the air at the speeds of conventional airplanes.

The helicopter requires no runway, but is a short-range aircraft and relatively slow in forward flight. The speed limit for

helicopters is around 100 miles an hour, which is a slow pace for long distances.

The proposed aircraft would be a combination of helicopter and conventional plane. Rotary wings, like those of the helicopter, would be used in vertical ascent and in landing. Once safely off the ground, conventional propellers on its nose or wings, or turbojet propulsion, would give it forward movement comparable with other airplanes.

Aviation experts have faith enough in the convertiplane to have organized a group to promote the idea. They will meet at Franklin Institute, Philadelphia, on Dec. 12, to discuss technical and other problems, with the aim of promoting interest in the development of means to combine the flight characteristics of fixed wing and rotary wing aircraft.

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TECHNOLOGY

New Silicone Rubber In Airplane Deicer

► A NEW, high-strength, stretchable synthetic rubber, useful especially in high-flying airplane deicing systems, has been reported to the American Chemical Society by Dr. F. L. Kilbourne, Jr., research director at the Connecticut Hard Rubber Company, New Haven, Conn.

The rubber displays excellent durability at temperature extremes, a quality that makes it suitable for aircraft deicing systems. A silicone-type rubber, the material does not lose its "bounce" when it gets cold. Furthermore, it resists heat so well that it can be made into oven gaskets.

Although noted for their performance in heat and cold, other silicone-type rubbers cannot be stretched much over 200% and snap under comparatively mild stretching forces. But the new rubber, containing a fine sand as a reinforcing and vulcanizing agent, can stretch more than 600%. A one-inch-square column of it can withstand a pull of 1,900 pounds.

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GEOPHYSICS

Earth's Center 8,400 Degrees Hot

► THE TEMPERATURE at the center of the earth's core is a little greater than 8,400 degrees Fahrenheit (4,800 degrees on the absolute or Kelvin scale), Dr. J. A. Jacobs of the University of Toronto has determined through computations based on known relationships within the earth.

The temperature at the boundary of the metallic core and the mantle of material above it is 7,550 degrees Fahrenheit (4,350 degrees Kelvin). Thus the increase throughout the core is only 900 degrees Fahrenheit (500 degrees Kelvin). Dr. Jacobs reported his computations in *Nature* (Nov. 15).

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IN SCIENCE

AGRICULTURE

Everglades' Rich Muck Doomed by 2000 A. D.

► THE RICH muck and peat soils of the Florida Everglades may disappear completely by the year 2000 if controls are not put into practice, Victor E. Green, Jr., of the Everglades Experiment Station, warned the American Society of Agronomy meeting in Cincinnati.

Mr. Green said cultivation of rice on flooded Everglades' soil offers the best remedy against soil losses there. The system of terracing necessary in rice culture prevents erosion, he said, while the growing rice maintains the nitrogen and organic matter content and breaks down minerals for plant use.

Rice has been grown continuously in some flooded fields for 4,000 years, indicating its benefit to the soil, he said. However, he said, dry-land rice cultivation does not show the good results on the soil that floodland cultivation does.

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GENERAL SCIENCE

Standard Visa Proposed For Foreign Plane Travel

► LESS RED TAPE for international airplane travelers landing in foreign countries is expected with proposals just adopted by the Council of the International Civil Aviation Organization, representing 57 nations, at its meeting in Montreal. The goal is to cut time delays at airports.

Most important are the entrance visas, which are to be simplified and standardized by the proposal. They would show the date on which they expire and the number of entries permitted into a country. They would be printed in two languages, that of the issuing country and also in English, French or Spanish.

Arrangement for direct transit of passengers through a country is provided. This would include transfer from one airport to another without the necessity of visas or inspections. The plan proposes facilitating operation of private planes as well as other non-scheduled traffic, and would permit the entry of aircraft spare parts with less delays so that visiting planes can be rapidly serviced at points of call during international flights.

The International Civil Aviation Organization exists for the primary purpose of promoting international flying. Recommendations of the organization, ICAO for short, must be approved by any nation before becoming effective as far as it is concerned.

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THE FIELDS

ASTRONOMY

Suggest Iron Meteorites Are From Planet's Crust

► SOME OF the meteorites that flash into the earth's atmosphere as "shooting stars" may be lumps from the outer crust of a long-dead planet. Scientists have long thought the iron meteorites were chunks split from the central core.

That they come from the outer crust was suggested by Dr. E. P. Henderson of the Smithsonian Institution, Washington, at a conference on the abundance of the elements held at Lake Geneva, Wis., attended by about 50 astronomers, chemists and physicists from all parts of the country.

Dr. Henderson bases his suggestion that iron meteorites come not from the central core, but from the outer, silicate mantle, on a study of 27 meteorites. They all had surface markings too many and too deep to have been formed during flight through our atmosphere or after falling to earth. He believes that a gas or a liquid was probably confined within the cavities around which the meteorite material was originally formed.

If this is so, he suggests that these meteorites were small inclusions of metal from within the silicate zone, scattered somewhat like "plums in a pudding," and not fragments from the central core.

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CHEMISTRY

Pour Out Sugar From Salted Cup of Tea

► SUGAR CAN now be poured out separately from salt when both are dissolved in the same cup of tea. This is indicated by reports at a New York Academy of Sciences meeting.

Improved ion exchange resins which can either take salt out of sea water or hold back the salt and take out organic material were described by Paul N. Craig of Smith, Kline and French Laboratories, Philadelphia, Myer Ezrin and Harold G. Cassidy of Yale University, Arthur W. Davidson and William J. Argersinger, Jr., University of Kansas, Lawrence, Kans., J. I. Bregman of National Aluminate Corp., Chicago, and B. A. Soldano and Sigfred Peterson, Oak Ridge National Laboratory, Tenn.

Complex biological products used in medical research can be purified, according to these scientists, by choosing the best resin for the particular use from among many new synthetic resins recently developed.

How these ion exchange processes work was described by R. M. Wheaton of the Dow Chemical Co., Midland, Mich. Ion

exchange membranes which are responsible for separating such substances as salt and sugar were described at the same session by Karl Sollner of the National Institutes of Health, Bethesda, Md.

The new ion exchange resins combine techniques from the new field of chromatography and the old process of dialysis through a semi-permeable membrane to accomplish separations not able to be made earlier, according to scientists reporting to the New York Academy of Sciences meeting. Chemical changes formerly brought about by fuel-consuming processes can be carried out simply by allowing a solution of the material to trickle through a glass tube packed with one of the new electron exchange resins.

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VOLCANOLOGY

Volcano Built Eniwetok Atoll, H-Bomb Test Site

► A VOLCANO, many times more powerful than the H-bomb, built Eniwetok, scene of the H-bomb test.

This was discovered this year by scientists who made drill holes 4,000 feet through the hard crust of coral that covers the atoll to find base rock of volcanic lava. Dr. Harry S. Ladd, U. S. Geological Survey and scientific staff member of "Operation Crossroads," reported this finding to the Geological Society of America.

The significance of this discovery is that scientists now have a new proof of the volcanic origin of coral atolls.

Charles Darwin, father of modern evolutionary theory, was the first to present the idea that coral atolls are built from volcanic origins. During his famous voyage around the world in the Beagle, Darwin noted that atolls are characterized by a circular reef of coral around a central body of shallow water, like a basin of water floating on a pond. The rim of the basin would represent the coral reef; the water in the basin, the center of the atoll, and the pond would be the deep sea.

Darwin deduced from this that an atoll represents the crest of a volcano that rose from the ocean depths. Coral began to form around the rim of the belching cone of fire and lava that was many times more powerful than any man-made H-bomb. Then as the volcano died and began to sink back into the ocean, the coral continued to build up.

Finally the volcano disappeared completely beneath the sea. But it left its mark as the basin of shallow water surrounded by a new coral reef.

This theory of the origin of atolls has long been the most popular among scientists. However, until the borings carried on at Eniwetok by American geologists, there was no definite way to prove it. The recent discovery of volcanic rock beneath the coral crust seems to add to the factual basis for the volcanic origin theory.

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OPERATIONS RESEARCH

Chance Tells When Radar Will Play Out

► HOW TO figure out the length of time complicated airborne equipment such as the radar used in guided missiles will last has been revealed for the first time at an open meeting.

The time length itself is still a military secret, but the method for figuring out the breakdown time was told to scientists attending the first national meeting of the Operations Research Society of America in Washington.

Dr. D. M. Boodman of the Operations Evaluation Group working at the Pentagon reported that there are three possible sources of failure of mechanical equipment: manufacturing defects that can be eliminated by more thorough inspections; worn out parts for which an adequate number of replacements must be kept on hand, and chance, such as the number of rough landings undergone. It was the chance possibility for which Dr. Boodman presented the mathematical formulas to tell how long equipment will last.

The more complicated the electronic equipment, the shorter the time before it gives out. TV sets are probably rugged devices compared to some of the electronic equipment now being developed for jet airplanes. It is possible, Dr. Boodman suggests, that the United States is now reaching the point where it is too expensive to produce, install and maintain more complex radar equipment for the value received from the extra job such devices do.

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ENTOMOLOGY

Invading Pests Stopped At Borders of Nation

► SABOTEURS THAT can cause great damage to American food production if they are not caught in time are constantly trying to get into the United States. And catching them before they do is the job, not of the Federal Bureau of Investigation, but of the U. S. Department of Agriculture.

These enemies are insect pests and plant diseases that slip into this country with imported goods, food and animals, or on the clothes of passengers. The job of the department's Bureau of Entomology and Plant Quarantine is to intercept these invaders before they cross the border.

For the fiscal year of 1950-51, the bureau reported 7,684 cases of harmful insects and plant diseases detected and kept from entry into the United States. Nearly 5,000 of this total were insects, any of which might have caused great damage to agriculture if it had become established here.

Plant diseases, like a narcissus fungus brought over with bulbs from Holland, were found in 2,776 cases. The destructive giant African snail was discovered in several cargoes from the Far East.

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