

PHYSICS

Ancient Shells Test Older Than Charcoal

► SHELLS FROM ancient seashore places of human living give evidence of being a couple of thousand years older than charcoal of campfires analyzed by the same radiocarbon dating method.

Scientists are puzzling out this discrepancy because they believe that shells and charcoal are really the same age.

Because radioactive carbon 14 is being constantly formed in the high upper atmosphere by cosmic ray bombardment of nitrogen, a convenient method of dating organic or carbon-containing materials was discovered a few years ago. Materials up to 30,000 years old can have their ages determined with an accuracy of several hundred years.

The radiocarbon dating investigators of Columbia University's Lamont Geological Observatory at Palisades, N. Y., have run determinations on archaeological samples from Peru, California, Japan and the Aleutians and found that shells there have lower amounts of radiocarbon, which means that their carbon is more ancient.

About a year ago Dr. J. Laurence Kulp, leader of this group, found that deep ocean water is about 1,700 years old, thanks to extremely slow oceanic circulation from the arctic regions. His explanation of the seemingly older shells is that they were formed in coastal areas with abrupt, deep troughs offshore. They seem to be old because they were made with ancient water from the ocean depths.

In the Columbia group reporting in *Science* (Oct. 17) are, besides Dr. Kulp, Lansing E. Tryon, Walter R. Eckelman, and William A. Snell.

Science News Letter, November 1, 1952

ENGINEERING

Welded Construction Now Used for Bridges

► WELDING IN bridge construction, replacing the use of rivets and bolts, was highly recommended to the American Society of Civil Engineers meeting in Chicago by Leonard C. Hollister of California's Division of Highways.

Welded joints are highly satisfactory, he indicated. Welding makes a saving in the amount of steel required. The greatly increased use of this type of joint, in both bridges and buildings, is due to the increased knowledge of physical and chemical phenomena surrounding welding of structural steel, along with great improvement in equipment and technique.

Mr. Hollister called welding one of the major tools in the hands of the structural engineer. A few years ago, welding on major buildings and bridges was limited to secondary details. Today, large bridges and some buildings are using welding to fabricate not only main stresses carrying connections and splices, but also heavy girders and

column sections from rolled plates.

Bridge designers of today should be a combination of engineer and artist, the civil engineers were told by David B. Steinman of New York, a well-known bridge designer. Tomorrow's bridge designers must have not only a thought to utility, but also an eye for the esthetic, he said.

During the past 25 years new attention has been concentrated on beauty in bridges, he stated. New goals of artistic design have been achieved through beauty and harmony of composition, beauty of line, form and proportions, through color and illumination. He predicted that "painting with light" will be an integral part of design. With phosphorescent color and fluorescent radiance, rainbow bridge spans will be arcs of radiant glow at night.

Science News Letter, November 1, 1952

INVENTION

Cigarette Case Time Lock Reduces Smoking

► CIGARETTE CASE with a time lock on it to prevent the owner from smoking too much has been invented.

There is a watch mechanism in the bottom of the case which keeps it locked for regular periods of time determined by the smoker. By this method, says the inventor, "the smoking habit of the individual may be reduced."

The case looks like an ordinary cigarette case, built to hold one pack. There is an attachment from the watch works in the bottom to the cover at the top. The watch movement is stopped while the case is open so that the time interval cannot be shortened by keeping the case open.

Nothing is said in the patent about methods to prevent an owner of one of these cases from cadging cigarettes from his friends.

The inventor is Garrett H. Harris, Jackson, Miss., and he received patent number 2,613,527.

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METALLURGY

Holes in Castings Filled by New Resin

► MICROSCOPIC HOLES in metal castings that wreak havoc with foundry economics now can be filled by a new process that should cut production costs considerably.

A new type of synthetic resin developed at Polyplastex International, Inc., New York, N. Y., combines with heat, vacuum and pressure to seal the tiny holes. The new sealing process does away with some of the disadvantages produced by other sealants now being used to salvage unsatisfactory castings.

After a heat treatment, the resin changes into a solid of "excellent physical and chemical properties." It fills all the tiny holes and does not shrink upon cooling, company officials reported.

Science News Letter, November 1, 1952

IN SCIENCE

ENGINEERING

Machines Not Human; Don't Make Decisions

► JUST HOW "human" are these new electronic computing machines that seem to do everything but put out the cat?

Not as human as people are led to believe, protests Reginald O. Kapp, of Croydon, England, in a simmering letter to the British science journal, *Nature* (Sept. 27).

It is all a matter of language, Mr. Kapp argued. Records on the machines are called "memories," he said, and simple codes are termed "machine language." What is done to the machines by the operator is now called "teaching." "In engineering, the words 'setting' or 'adjustment' have the same meaning. Why not use them?" he asked.

Perhaps worst of all, wrote Mr. Kapp, a predetermined sequence of events in an electronic computer has been called a "decision" of the machine. Careful scientists do not admit that lower animals make decisions—much less a pile of machinery, he concluded icily.

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AERONAUTICS

Delta-Wing Planes Go Into Production

► DEFENSE AIRPLANES of the delta-wing type are soon to be added to the interceptors of the U. S. Air Force. A production order for an undisclosed number has been placed with the Consolidated-Vultee Aircraft Corporation, San Diego, Calif.

It was four years ago that the first delta-wing plane made its initial flight. Consolidated-Vultee was the designer and constructor. The plane now under order is an improved version of the original. In this four-year period, other airplane manufacturers, both here and in England, have developed planes of the same general type.

The plane gets its name from its wing surface, which is triangular like the delta of the old Greek alphabet. The body, or fuselage, extends along the center of the triangle and projects far to the front. This leaves the leading edges of the wing swept-back from the usual right angle position by an angle of approximately 60 degrees.

The delta-wing conformation was developed for high speed. These new interceptors are capable of very high speeds at high altitudes, it is claimed. Officially they will be known as the F-102. They have no tailpiece, but do have a vertical fin-rudder to give directional control and stability.

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E FIELDS

MEDICINE

Hormone-Like Compound May Be Cancer Clue

➤ A NEW estrogen-like compound has been isolated at the University of California at Los Angeles School of Medicine and may be a clue to determining the role of certain hormones in the body and their relation to cancer.

The discovery was made by Dr. Josephine Garst, assistant research physiological chemist, in a study supported by the Damon Runyan Memorial Fund.

"The compound is apparently related to certain female hormones known as estrogens and may be a product of their metabolism," says Dr. Garst. "Estrogens are necessary in the development of secondary female sex characteristics. They also exert an influence on both skin and skeletal structure.

"There is reason to suspect that these hormones are related to cancer and other pathological conditions. The incidence of cancer is high in tissues which are intimately connected with the action of estrogens, for example—the breast and uterus."

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ELECTRONICS

Radio Interference Problems Still Unsolved

➤ STATIC HAS been crackling in radio listeners' ears ever since the early days of crystal radios. But aside from jiggling the cat's whisker for a better connection, little has been done about the nuisance.

Carleton F. Maylott, Bendix Aviation Corporation engineer, told delegates to the American Institute of Electrical Engineers meeting in New Orleans that control of radio interference is too unscientific in method.

The whole problem has been clouded by trade secrets, by poor dispersal of knowledge concerning radio interference control, and by pride in personal and group opinions of what to do about it. Great differences still exist between experts as to the best ways of limiting or controlling it.

"Test equipment, methods and specifications are not yet standardized, suitable and scientific," he said. "The situation approaches chaos and can only be rectified by improved organization."

Regulations already exist for certain static-causing electrical devices. The Federal Communications Commission may add more regulations to its list in the future, however, Mr. Maylott warned, if manufacturers do not take corrective steps on their own.

In addition to man-made static, other

radio interference comes from atmospheric disturbances, cosmic noises, poor electrical connections, wires and vacuum tubes.

Interference can be cut down by shielding radio receivers, by eliminating electrical "leaks" and static discharges due to friction in machinery, and by cleaning electrical contacts. Appliances that create static also should be replaced with non-interfering ones, he said.

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AGRICULTURE

World Grain Crop Reaches Record High

➤ THERE WILL be more bread for the world's hungry mouths this winter. World production of wheat and rye, the principal bread grains, will reach a record peak of 258 million short tons in the 1952-53 season, the U. S. Department of Agriculture reports, (*Foreign Agriculture*, Oct.).

This year's grain harvest should be 10 million tons greater than in the previous record year, 1937-38. A tremendous increase in wheat production, especially in North America, is responsible for this optimistic estimate. Rye production may drop somewhat from the preceding year.

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NAVAL ENGINEERING

Now Warfare Demands Smooth-Sailing Ships

➤ WITH CARRIER-BASED airplanes playing an increasingly important role in modern warfare, the Office of Naval Research, through a Stanford University research team, is intensifying its efforts to find ways of preventing ship roll.

Ship roll presents one of its biggest hazards to airmen who must land their planes upon the tossing decks of aircraft carriers.

Smooth-sailing ships no longer are a luxury in this day and age, report Joseph H. Chadwick and Albert J. Morris, both of whom are working on the ship stabilization program. Stringent naval requirements now make even-keeled ships a necessity.

Besides making stomachs flip-flop, roll cuts the effective speed of a ship. It also makes it difficult to fire big guns with pinpoint accuracy. It complicates the antenna mechanism of vital radar sets which must sweep the skies from an even keel.

The scientists suggest that delicate instruments be arranged to measure roll angle, roll velocity and roll acceleration. As the ship begins to roll, the instruments would control anti-roll fins outside the ship.

Fluids also can be pumped from one side of the ship to the other to help offset the rolling effect. Such a system was developed in 1938 and tested by the Navy briefly before America entered World War II.

An efficient stabilizing system should be able to hold ship roll to about one degree, the men predict.

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METEOROLOGY

Easily Constructed Device Makes Clouds in House

➤ YOU CAN now make clouds right in your own home. However, the designers of the cloud-maker do not guarantee a silver lining.

The cloud-maker has been built in the Weather Bureau's Physical Research Section. It is described as the "first continuous and sustained source of clouds for the laboratory," by B. B. Phillips, one of the two meteorologists who constructed it. The other is R. H. Woessner.

All you need is a tin can to hold ice, a section of pipe with hot water circulating in it, a mixing chamber, an aging chamber and ducts to connect them all up. Air from the room is blown through the ice into the mixing chamber. More room air is blown into the mixing chamber through ducts on top of the hot water pipes. The mixture of hot and cold air forms the cloud, which then moves through another duct into the aging chamber. By the time the cloud droplets have moved to the top of the aging chamber, they become large enough to approximate a real cloud.

The two weathermen use a 20-gallon barrel for their ice and a 50-gallon barrel for their aging chamber, but Mr. Phillips said there was no bar to constructing a much smaller model. Anyone could make one in his basement, he said.

The big model is being used by weathermen to study how cloud droplets are formed, to learn something about atmospheric electricity and other physical facts about clouds. The laboratory model is described in the *Journal of Meteorology* (Oct.).

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AERONAUTICS

Helicopter Spraying Fights Forest Insects

➤ NEW SPRAY equipment is putting the helicopter in the front line of our agricultural defense just as this type of aircraft has become an essential in Korea.

The hovering sprayer can do jobs that no other aerial or ground spray machinery can accomplish, the U. S. Department of Agriculture and the Connecticut Agricultural Experiment Station have determined.

Helicopters can hover over normally inaccessible forest areas, covering them with insecticides to reach for insects that hide in bark crevices. They can fight mosquitoes, pests in cranberry bogs, place hormone sprays on orchards and weed-killers on fields with accuracy impossible with even slow airplanes.

The two 25-gallon tanks of spray carried are centrifugally pumped and atomized by both the air from the helicopter's engine fans and the engine exhausts. The revolving blades of the helicopter rotor waft the spray downward toward the ground.

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