

PALEONTOLOGY

**Million-Year-Old
Ape Men Ate Tortoise**

➤ ANCIENT AFRICAN ape men who lived long before modern man ate big tortoises for dinner. The same kind of tortoise is caught and widely used for food by Africans today.

Study of fossil fragments of the large tortoise is reported in *Nature*, 194:791, 1962, by Dr. D. G. Broadley, herpetologist of Umtali Museum in Rhodesia, Africa.

The fossil pieces came from a layer of rock in the Transvaal that may be a million or more years old.

One reason that Dr. Broadley believes the bits were tossed aside by Australopithecus and not a carnivore such as a hyena is that he found no marks of carnivore teeth on the tortoise fragments. The way the pieces were broken is such as would have occurred if the tortoise had been smashed against the rocks by the ape man and not torn apart by animal teeth.

The fossil fragments were provided Dr. Broadley by Prof. Raymond A. Dart of the University of the Witwatersrand Medical School, South Africa, famous for having discovered the first known remains of Australopithecus, the bones of a juvenile specimen popularly known as Dart's Baby or the Taung's Baby.

The tortoise fragments were found in early Middle Pleistocene gray breccia of Makapansgat Limeworks in the Transvaal.

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CONSERVATION

**Space for Recreation
Near Nation's Big Cities**

➤ JUST OUTSIDE America's crowded cities there is space for outdoor recreation, fishing, hunting, and other uses of nature.

The first White House Conference on Conservation held since the time of Theodore Roosevelt reported that three-quarters of the nation's natural resources are privately owned and that the task of conservation is for all the people, not just Government.

"We depend on our natural resources to sustain us—but in turn their continued availability must depend on our using them prudently," President Kennedy told the conference in Washington, D. C. "In the work of conservation, time should be made our friend, not our adversary."

Secretary of Agriculture Orville L. Freeman told the conservationists that land near our cities is the source of food and fiber and 69% of our commercial forests. It produces 80% of the game taken by hunting and has 85% of the wildlife habitat economically feasible of improvement.

Secretary of the Interior Stewart L. Udall listed issues now before Congress and that are fairly sure of passage which would lead to better conservation: The Wilderness Bill, the formation of a Youth Conservation Corps, the creation of a Land Conservation Fund and several proposed Federal parks.

Land and water conservation are becoming

more important to people of the crowded urban areas, especially in the East. U.S. population figures of the nation have risen past the point where there is an acre of land for every person.

Water supply and pollution prevention, preservation of timber, soil and other natural resources are on the long list of conservation objectives.

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AGRICULTURE

**Faster, Cheaper Milk
Deodorizing Possible**

➤ A FASTER, cheaper, cooler way of removing off-flavors from milk has been tested and proved by scientists from the U.S. Department of Agriculture at Beltsville, Md.

The new method uses steam injection to bring milk to pasteurization temperature around 165 degrees Fahrenheit and then deodorizes it by flash cooling in a vacuum chamber, where both the off-flavors and water are removed.

Milk is now pasteurized and raised to 195 degrees Fahrenheit or more, then siphoned of unwanted flavors by vacuum treatment: a two-step process.

The new method costs less to operate, scientists reported in *Agricultural Research*, 10:13, 1962. It combines the two-step process and operates at lower temperatures.

Milk flavors vary from place to place and from season to season. Milk is usually deodorized to remove flavors caused by wild onions, pasture grasses and feeds. Many dairies process the milk routinely to keep the flavor constant.

The improved process was developed by Drs. F. P. Hanrahan, H. E. Walter, A. M. Sadler and R. P. Tittler of the Agricultural Research Center.

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ZOOLOGY

**Giant Bears Go
Salmon Fishing**

➤ IN THE WILDS of Katmai National Monument, the world's largest meat-eating land animal is preparing for a three-month fishing season with the beginning of the salmon run.

The Peninsula Brown Bear (*Ursus gyas*) has spent the long Alaskan winter with thoughts of fat salmon playing in the crystal streams. The fish are now beginning their long treks upstream to spawn and the giant bears are lining the streams to test their luck.

Each year the beasts, living on the only year-long sanctuary afforded them, wade the streams accompanied by glaucous-winged gulls, magpies, ravens and bald eagles which scavenge the scraps left by the wasteful animals.

By mid-August, however, the bears will tire of salmon, moving off through the deep forest and leaving the fish to return to the ocean, to repeat the cycle next spring.

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IN SCIEN

BIOCHEMISTRY

**Copper in Water Aids
Healthy Blood Vessels**

➤ COPPER in regular drinking water apparently has an important role in the healthy development of the body's blood vessels.

The mineral's part in the normal production of connective tissues is being studied by Dr. George S. Shields, assistant professor of medicine at the University of Cincinnati's College of Medicine, under a three-year grant from the National Institutes of Health.

His research may relate to such diseases as arteriosclerosis, rupture of the aorta in children and other congenital ailments, arthritis and dissecting aneurysm.

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SPACE

**H-Bomb Space Explosions
To Test Warning Systems**

➤ WHEN the United States explodes an H-bomb in outer space, it will test the effects of such an explosion on communications and our defense warning system. Similar tests apparently were conducted by the Russians last fall.

Such information, President John F. Kennedy said on March 2, is essential in order to determine how vulnerable our present defense alert systems are as well as how much of present plans for defense would thus be made useless, "blacked out, paralyzed or destroyed by the complex effects of a nuclear explosion."

It is believed that such high altitude explosions can be used to screen sneak atomic attacks by disrupting radar and radio communications. By creating havoc in electronic systems, they also would severely impair U.S. missile striking force.

But even if the effect of such explosions should paralyze ground missile defenses, the United States still would have its main force ready to strike when and where it may be required.

Machines and men are so deployed in the Strategic Air Command and in the U.S. Navy that a defense strike with atomic weapons could be made within seconds after attack.

Signalling for such defense action would be possible by using ultra-high-frequencies for such communication.

In Chapter X of "The Effects of Nuclear Weapons," published by the Atomic Energy Commission, it is stated: "Such systems, as those involving line-of-sight stations below the ionosphere, are essentially unaffected by nuclear bursts which disturb the ionosphere. They might be disrupted for a short time by a surface or low-altitude burst directly between the stations, but the effect would probably last no more than seconds."

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CE FIELDS

CHEMISTRY

Cyanuric Acid Data Available to Chemists

► RESEARCH CHEMISTS will have at their finger tips new information about cyanuric acid, a versatile chemical that is becoming increasingly valuable as an organic intermediate in industry.

Technical data prepared by the Monsanto Chemical Company, St. Louis, Mo., outline the chemistry of various reactions and applications of the acid as contained in 57 published references and patents. They also include descriptions of its chemical and physical properties.

Cyanuric acid has widely differing applications and is useful as a cross-linking and anti-blocking agent in the plastics industry, for coatings in the metals industry, as a finishing agent in textile manufacturing and as a herbicide in the agricultural toxicant field. In manufactured products it finds uses in glues, pastes and printing inks.

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MEDICINE

Eburacum Romans Had Better Teeth

► PEOPLE in Roman Britain had far healthier teeth than those of today. However, these ancient people were shorter, more thick-set, suffered severely from rheumatism and at least 75% of them died before they reached the age of 40.

Perhaps because of the greater perils of childbirth, only half as many women as men even reached their 40s, but survival of either sex beyond 50 appeared extremely rare. These conclusions are drawn by Prof. Roger Warwick of the anatomy department of Guy's Hospital Medical School in London, following his analysis of 290 skeletons discovered in a Romano-British cemetery in the ancient city of Eburacum, now known as York, in northern England.

The discovery of this cemetery was the largest and most significant of its kind ever made. Of the 290 individuals whose sex could be determined, men outnumbered women by four to one. This was due, it is believed, at least in part to Eburacum being an important garrison town and a colonia where veterans were settled.

"There was little sign of violent death and no sign of diseases of malnutrition, such as rickets. There were two examples of bone tumors, but both were nonmalignant," said Prof. Warwick.

"The commonest disease revealed by the skeletons was rheumatism in various forms, and at least 50 of them had suffered from osteo-arthritis of the spine. Those affected in this way were all well-built, strong males."

Tuberculosis was apparently non-existent

and appearances on some limb bones suggesting syphilis could have been due to yaws, the contagious disease still common in Africa.

One outstanding feature revealed by the skeletons was that their teeth were well-formed, better spaced than those of most people today and largely free from dental caries.

Of 5,000 teeth examined, only about 200 showed any signs of decay. But many people, in their 30s, had their teeth ground almost flat, presumably due to grit in the flour from which their bread was made.

In general build and physique, the Eburacum Romans were strong, hardy and well muscled. The long collar-bones and wide pelvis of the men showed them to have been of broad build.

"Compared with modern standards, the men were of medium stature," Prof. Warwick said, "while the women were relatively small. The average height for 100 adult males was 67 inches and for 30 women about 61 inches. The disparity between the sexes was thus more marked than it is today and children were generally smaller."

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MEDICINE

"X-Ray Vision" Used In Stroke Diagnosis

► "X-RAY VISION," or angiography, a complicated diagnostic method, is being used to locate the trouble spots in stroke cases at the University of Cincinnati.

Patients with cerebral vascular disease (stroke) at the University's General Hospital and the Cincinnati Veterans Administration Hospital are being studied in research aimed at improving the understanding and treatment of stroke.

A five-year program financed by grants from the National Institutes of Health was announced by Dr. Stanley E. Dorst, dean of the University of Cincinnati's College of Medicine.

In angiographic studies, radioopaque material is injected into the blood vessels suspected of being so blocked or obstructed that blood flow into the brain is hampered. In certain strokes, these vessels narrow and cut down or cut off blood supply to the brain.

As the material goes through the vessels, it helps to make visible, via X-ray, the narrowed or obstructed pathways. Physicians, spotting the trouble areas, must then determine their next move to restore circulation: Operate to remove the obstruction, by-pass it with a nylon graft, or administer anti-coagulant substances that in some manner enable blood to flow past a partial obstruction.

Long-term records will be kept of the patients in the two hospitals to determine whether surgical or non-surgical treatment seems best in restoring circulation and preventing further trouble.

Dr. Charles D. Aring is principal investigator, with Dr. Samuel A. Trufant, co-principal investigator. Working with them will be Dr. Charles P. Olinger and Dr. Luis L. Gonzalez.

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MEDICINE

Living Heart Minced For Scientific Studies

► LIVING HEART tissue has been minced, separated into individually beating cells, and regrown in a laboratory dish into synchronously beating tissue in an effort to increase scientific knowledge of the heart's energy processes and mechanics.

Dr. Isaac Harary and colleagues of the Laboratory of Nuclear Medicine at the University of California, Los Angeles, Medical School have learned the following things through this experimental procedure:

1. Individual cells beat by themselves at varying rates, ranging from 10 to 150 times a minute.

2. The cells eventually send out filaments which make contact with each other.

3. As individual cells make contact with one another, a net which beats synchronously at the rate of the fastest beating cell, is formed. The net evolves into fiber-like structures that continue to beat.

4. There appear to be two kinds of heart cells: (a) long, irregular ones that beat spontaneously and are probably the leading or pacemaking cells, and (b) smaller, rounded ones which beat only on contact with one of the leaders.

5. Individual beating heart cells may serve as "model" hearts to test reaction to new drugs or in the study of energy processes and mechanics which make the heart beat.

The experimental procedure consists of mincing the heart tissue and using an enzyme which breaks down the protein cementing the cells together. Thus separation of individual cells is achieved, apparently without harming them.

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PSYCHOLOGY

Monkeys Rewarded By Removing Light

► TURNING out a light, previously associated with an electric shock, caused monkeys to work harder. The light, by conditioning, had become unpleasant to the animal; putting it out is a reward and has an effect on behavior similar to eating a morsel of banana.

This discovery was reported in Science, 136:781, 1962. The experiment was reported by Drs. N. H. Azrin, W. C. Holz and D. Hake of Anna State Hospital, Anna, Ill.

In the reported experiment, the investigators first subjected a group of five spider monkeys to brief (0.3 second) electric shocks. The shocks were delivered at irregular intervals of time while the experimental chamber was illuminated by a dim white light. While the chamber was darkened, no shocks were delivered.

Next the monkeys learned that they could turn off the light for a period of two minutes by pressing on a lever. This was a reward to the animals.

The researchers noted that putting out the light was ineffective as a reward unless the light had first been paired with the electric shock.

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