

MEDICINE

Tumor-Like Growth Spreads in Monkeys

► NEW EVIDENCE that tumors may be caused by a virus has come from Africa where an outbreak of tumor-like growths, resembling the spread of an infectious disease, has occurred among a group of experimental monkeys.

The outbreak occurred among caged Indian rhesus monkeys, W. G. C. Bearcroft and Margaret F. Jamieson of the virus research unit, West African Council for Medical Research, Yaba, Lagos, Nigeria, reported in *Nature* (July 19).

The scientists cautioned that they used the label "tumor" to describe the growths, without any implication that the tumors had been established as true neoplasms. Some of the animals were destroyed. Other recovered spontaneously, when the growth sloughed away and new fleshy masses grew over the affected areas.

Material from the growths has been examined by Dr. C. H. Andrewes, National Institute for Medical Research, Mill Hill, London. He has obtained evidence that the growth was caused by a virus, the scientists explain.

The first tumor growth was noticed on the right eyebrow of a rhesus monkey, June 15, 1957. During the following week the growth rapidly increased in size. Soon another monkey was found to possess a similar growth on the nose. During the ensuing weeks, the condition spread rapidly, and by the end of the year had affected approximately 20 animals. Animals of all ages were affected.

The rhesus monkey colony in which the outbreak occurred consisted of 35 animals housed in four pens placed adjacent to each other. Other types of monkeys were caged within limb reach of each other and of the rhesus monkeys. An unsuccessful attempt was made to limit the outbreak by separating tumor-bearing animals into individual cages.

The investigators successfully transmitted the disease to healthy rhesus monkeys and to two West African guenon monkeys. Attempts to transmit the condition to West African mangabeys, Patas monkeys and laboratory white mice failed, they say.

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MEDICINE

Radiation Slows Down Aging in Dogs

► AGING is a process that small doses of radiation may slow down, at least in dogs.

Dr. George W. Casarett, a radiation pathologist at the University of Rochester School of Medicine and Dentistry, described his life-extending work with dogs to the International Congress on Radiation Research meeting in Burlington, Vt.

He said very low levels of radiation in some cases seem to cause blood changes that enable the test animals to ward off microbial diseases more effectively. The white blood count in these cases rises, thus en-

hancing the body's natural defenses against disease.

Discussing his views at a press conference, Dr. Casarett described one experiment in which a dog received a huge, near-lethal dose of 400 roentgens and lived longer than non-irradiated control animals. He pointed out, however, that the control animals had a kidney disease that may have shortened their lives.

Dr. Casarett said he knows of no evidence that indicates the existence of a "built-in time clock" in humans or animals. He describes aging as "the pathological consequence of man to his environment." From a philosophical point of view, he said, man could be a potentially immortal animal.

In experiments on the aging of animals, he has been subjecting dogs to varying doses of radiation. Although his results are preliminary, he has found that aging in irradiated and non-irradiated dogs seems to be due to the same factors. Examination has shown that the size and number of the capillaries and arterioles are reduced in both groups.

Dr. Casarett is also working with the effects of radiation on the fertility of animals. Experimenting on the same male dogs for the past seven years, he has found that small doses do not affect the reproductive capacity. But some medium doses, about three roentgens a week in regular amounts, drastically depress the production of sperm.

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NUTRITION

Miniature Pigs Will Eat Fish Diet for Research

► MINIATURE PIGS are being fed fish oil fatty acids to determine the relationship of fish oil in the diet to cholesterol deposits in the circulatory system of the body, the Department of Interior has reported.

The little pigs, which weigh only 20 pounds when fully grown, will ultimately be killed. Their arteries will be examined to evaluate the effects of the fish diet.

Studies already completed under the Saltonstall-Kennedy Act for the improvement of domestic commercial fisheries have shown fish oils contain a greater amount and a greater diversity of these unsaturated fatty acids than do many other food fats. The current investigations are also being made under the Saltonstall-Kennedy program.

Another test will be made on rats to determine which of the many fish oil fatty acids are essential to physiological welfare. One object is attempting to determine the relationship of fish oils to metabolism and fat transport in the body, while still another is probing the properties of fish oil that may have pharmaceutical applications.

The nutritive qualities of fish in reference to heart disease and current related dietary research is explored in some detail in the *Commercial Fisheries Review* (July), published monthly by the Bureau of Commercial Fisheries.

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IN SCIEN

ASTRONAUTICS

Interplanetary Dust Heavier Than Thought

► INTERPLANETARY dust that would bombard the skin of an earth satellite or space ship is much thicker than has previously been thought.

The dust blanket of meteor particles immediately above the earth's atmosphere may be as dense as 200,000 specks each cubic mile, Dr. David B. Beard of Lockheed Missile Systems Division and the University of California reported at the western regional American Astronautical Society meeting at Stanford University.

The dust could cause pitting and erosion to the outer skin of a space vehicle, raising the internal temperature and impairing its performance. The particles have a velocity of approximately seven miles a second, he said, so up to 20,000 will hit each square inch during a year.

However, the skin would probably not be punctured except from a hit by larger-sized particles, which occur much less frequently.

Dr. Beard's precise measurements of interplanetary dust are based on observations of the sun's very tenuous outer atmosphere and of the brightness of the night sky. The dust concentration, he reported, decreases with increasing distance from the sun.

The dust particles are concentrated in the plane of the space path taken by the earth and other planets around the sun, and also in the regions of the planets.

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PSYCHOLOGY

Influence May Be "Subliminal" Too

► PEOPLE who are worried by the thought that advertisers may influence their unconscious mind by hidden messages flashed momentarily on movie or television screens, should know that their subliminal influence on others is also a possibility.

Apparently each one of us is constantly attempting to influence the people around him by means of sounds and movements we are unconscious of making. And each one makes some unconscious use of the cues presented to him by the people around him.

This is reported in *The American Psychologist* (May) by Drs. James V. McConnell, Richard L. Cutler and Elton B. McNeil, University of Michigan psychologists.

As to whether a flashed message of which you are unaware can rouse you to go out and buy popcorn or drink beer, the case is not proved. People should remember, however, that "liminal" is a statistical term. It does not mean unconscious, but a stimulus value which gives a response half the time.

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CE FIELDS

ICHTHYOLOGY

Shrimp Operate Paying "Fish-Cleaning" Business

► SOME SHRIMP have a booming business going, standing room only, in fish-cleaning.

They even find it pays to advertise.

The tiny blue-and-white shrimp, found in the Bahamas, lives on the parasitic copepods or sea lice that infest fishes. The shrimp sets up permanent shop on the head of a sea-anemone. Protected from predators by the anemone's stinging tentacles, it advertises its place of business by swaying from side to side and waving its exceptionally long white antennae. Fish that want a cleaning apparently recognize this activity as a sign to stop for a clean-up.

The shrimp cleans its fish customer meticulously from head to tail, including the fish's insides, cutting away dead tissue as well as removing parasites.

Conrad Limbaugh of the Scripps Institution of Oceanography at La Jolla, Calif., says that although there are other fish and shrimp that act as cleaners in the sea, this example of fish-cleaning is "by far the most complex one ever reported."

Permanent cleaning stations may be established on individual coral heads, reef formations, in sea floor depressions or in certain general areas, Mr. Limbaugh says. Many famous fishing grounds off the Pacific coast may be cleaning stations, he points out.

Fish collect regularly at the stations. Fish, particularly an injured or sick one, may visit more than one station or return many times during the day.

When fish cleaners were experimentally removed from a small area, Mr. Limbaugh reports, other fish of economic importance shortly disappeared. While the cleaners were gone, other fish examined had various fungus growths and other signs of ill health.

Specimens of the de-lousing shrimp, collected by Mr. Limbaugh, have been added to the marine invertebrate collections of the Smithsonian Institution.

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GEOPHYSICS

Suggest Earth's Magnetic Field Can Reverse

► REVERSAL of the earth's magnetic field may have changed the rate of production of carbon-14, the radioactive chemical used to date ancient archaeological material.

This is suggested by two University of Cambridge scientists in separate reports in *Nature* (Aug. 16). Dr. D. W. Allan, using the electronic computer EDSAC II, investigated mathematically the possibility that the earth's magnetic field could change its polarity. (A north-seeking compass would then point to the South Pole.)

He found reversal can occur under a wide

range of conditions. The theory is that the earth's molten rock core acts as a huge dynamo, generating electric currents and, therefore, magnetism. Although normal and reversed fields could exist with equal chance, it was not known whether a field could reverse.

Dr. Allan's analysis showed reversals can occur, although the time scale indicated by his mathematical models are still so much too short that he is continuing his studies. Such changes in the earth's magnetic field would affect radiocarbon dating.

Dr. C. Crowe has investigated carbon-14 activity of samples covering the past 5,000 years and found that errors in such dates during the last 3,000 years might well be consistent with an increase and then a decrease of earth's field. He calculated the difference between the actual age and the radiocarbon age of specimens in cases where both a radiocarbon date and a reasonably accurate historical or archaeological date are available.

Any difference, Dr. Crowe believes, shows that the carbon-14 production rate before death of the specimen was not the same then as it is now.

Dr. Crowe found that radiocarbon activity appears to follow a cycle, with a maximum change of about ten percent in the last 5,000 years. The changes in activity, he suggests, could be due either to one or to combinations of the following effects:

1. Variations in the intensity of the earth's magnetic field.
2. A cyclical variation in intensity as suggested by Dr. Allan and others.
3. Variations in vertical mixing of carbon-14 in the oceans.
4. Large changes in the intensities of the secondary cosmic ray neutrons and other secondary effects following large solar flares.

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PUBLIC HEALTH

Malaria Still Plagues Parts of World

► SOME 150,000,000 men, women and children still suffer from malaria, Dr. John Henderson, medical director of Johnson and Johnson Company, told the 12th general assembly of the World Medical Association meeting in Copenhagen, Denmark.

Malaria, fatal dysentery, trachoma and other infectious diseases still threaten some parts of the world, he said. Even though the "exotic" diseases are no longer exotic, we concern ourselves with the now major causes of death in the Western world, heart disease, cancer, arteriosclerosis and the aging process itself. However, in other quarters of the world, schistosomiasis is rampant, the tsetse fly continues to transmit its deadly disease, cholera can still occur in raging outbreaks, and any one of a hundred diseases that "aren't supposed to" can appear on our doorstep at any time.

"Our task—and one which is immensely difficult—is to clear and to still the waters, not by half measures of self-deception, but by mobilizing with all mankind to end hunger, poverty and disease," Dr. Henderson said.

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VIROLOGY

Safe Vaccine Developed For Newcastle Disease

► A SAFE, effective killed-virus vaccine has been developed to combat Newcastle disease in chickens.

Chickens can be protected throughout the broiler growing period, as long as 12 weeks, with a single injection, Dr. Eugene Gill of the U. S. Department of Agriculture's research service told scientists at the American Veterinary Medical Association meeting in Philadelphia. Ordinarily Newcastle disease has a high fatality rate in infested chicks, as well as causing reduced egg-laying in older chickens.

The new vaccine combines a high degree of immunity and safety. USDA scientists used one of the most potent strains of the Newcastle virus, in combination with various chemicals that inactivate the virus, making it safe, and that heighten the animal's immune response.

The use of killed vaccines offers the best possibility for the eventual eradication of Newcastle disease, USDA scientists believe.

A few cases of human infection with the virus have been reported. Symptoms may include headache, chills and inflamed eyes. While the illness is apparently not very serious in humans and will usually disappear without treatment, poultry raisers and veterinarians are warned to use care in handling infected birds.

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BACTERIOLOGY

Antibiotic Given Orally Helps Treat Ringworm

► AN ANTIBIOTIC has been found that can be successfully used to combat ringworm and other fungus infections of the skin.

The reason for the drug's success lies in the fact that it acts as a systemic antibiotic, affecting the infection from "within." In the past, surface applications of antibiotics have failed to control the ringworm because they could not penetrate the tough, horny layer of the keratin of skin, hair and nails to get at the fungus.

Guinea pigs experimentally infected with ringworm showed the beneficial effects of the drug, which is called griseofulvin, after only four treatments, Dr. J. C. Gentles of the University of Glasgow's department of bacteriology reports.

Griseofulvin, which is not very toxic to mammals, was effective against a number of kinds of ringworm, Dr. Gentles reports in *Nature* (Aug. 16).

It seems clear, he points out, that the uninfected part of the hair had been formed during treatment with the antibiotic and was resistant to invasion by the fungus.

Griseofulvin appears to have many of the characteristics of the "ideal antifungal drug" since its action persists, cells affected by the fungus continuing to resist it, and it can be administered in safe doses internally.

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