

BIOLOGY

Fierce Worms Kill Prey With Hollow Spears

"DOG eat dog" is realized in the world of blind life underground, in fierce attack of worm on worm. One group of predatory worms kills its kindred prey with hollow spears that they carry in their mouths, and then suck their victims' body contents through the hollow of the deadly weapon, like a kid absorbing a malted milk.

Scenes from these small but sanguinary dramas are described (*Science*, March 19) by Drs. M. B. Linford and J. M. Oliveira, Pineapple Experiment Station, Honolulu. Their worms, belonging to the great group known as nematodes, were found in soils in Hawaii and other Pacific islands.

One group of these spear-bearing worms has big, heavy weapons with large hollows. So quickly do they suck in the flesh and blood of their victims that the speared worm has no time to struggle.

A second group has slender spears. Their victims might conceivably squirm around violently. This, however, is prevented by the paralyzing action of the slender spear's thrust, apparently due to the saliva of the attacker injected through the hollow shaft.

These strange hunter worms have a certain amount of economic importance, because some of the species that become their prey are feeders on the roots of crop and ornamental plants.

Science News Letter, April 3, 1937

MATHEMATICS

Princeton Scientist Analyzes Gambling; "You Can't Win"

PROF. John Von Neumann, Institute for Advanced Study mathematician, even applies his science to the gambling table.

He has warned Princeton students in a lecture that it is impossible to win at dice over long periods whether the "ivories" are loaded or not.

The magic "seven-eleven" combination is by far the most frequent throw, he said, but if it doesn't turn up on the first cast, the chances are reversed, and the stakes are as good as lost.

"That leaves a .490 winning average, so the game is not fair," he declared.

"Stone-paper-scissors," a form of gambling that originated among bored convicts and is as old as chess, is Prof. Von Neumann's specialty. This well-known game is won by "making each play the

same number of times, but at random, and your opponent will lose in the long run."

He termed the intellectual pursuit of chess to be merely a game of chance, and said that "white," which has the first move, can always win, although "if 'black' is wise to the theory, he can play defensively and tie 'white'."

Prof. Von Neumann divided "games of chance" into two categories: those like dice where explicit hazards are introduced by rules, and those like chess, poker, and "stone-paper-scissors," where chance is introduced by what the opponent does.

"In the latter type intellectual reasoning is sometimes needed, while in the former no decision is required except whether to bet," he pointed out.

In the case of dice, he showed that since seven can be thrown in six ways and 11 in two, while two, three, and twelve result from only one or two combinations, the conditions are favorable to win on the first throw. But if "seven-eleven" is missed, repetition of the first throw is unlikely, and the seven is now working against the player. The net effect is against the player.

In poker, which he had to simplify considerably to be able to analyze, Prof. Von Neumann stated that chances are one out of 300,000,000 to obtain any certain combination of five cards, although several different combinations satisfy the straight, flush, full-house or four of a kind.

The study of probability in games is mere recreation with Prof. Von Neumann, who has devised "continuous geometry," specialized in mathematical physics, and written an "elementary theory of quantum mechanics." He came to Princeton to teach in 1930 after education at Zurich, Switzerland, and Göttingen, Germany. In 1933 he joined Princeton's newly-organized Institute for Advanced Study.

Science News Letter, April 3, 1937

GENERAL SCIENCE

63 Guggenheim Fellowships Awarded, Totaling \$130,000

FELLOWSHIPS to 63 students of science and the arts, as well as to writers, musicians, etc., have been awarded for 1937 by the John Simon Guggenheim Memorial Foundation. The total sum granted is \$130,000.

The Guggenheim fellowships were established in 1925 by former U. S. Senator and Mrs. Simon Guggenheim as a memorial to a son.

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IN SCIENCE

ANTHROPOLOGY

Noted French Anthropologist Awarded Mendel Medal

PERE Teilhard de Chardin, noted for his researches on Peking Man, was given the Mendel Medal of Villanova College, Monday night, March 22. This medal is awarded to Catholics who have done notable work in scientific research.

Père Teilhard came to this country to participate in the International Symposium on Early Man, held in celebration of the 125th anniversary of the Philadelphia Academy of Natural Sciences.

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BIOLOGY

X-Rays and Neutrons Don't Act Alike on All Life

X-RAYS and neutrons, science's newest subatomic "bullets," vary in their destructive effects on different living things. If a beam of neutrons is twice as damaging as a beam of X-rays when tried on insect eggs, it is not safe to assume that the neutrons will be twice as damaging as the X-rays when fern spores are substituted as the target. Each type of cell seems to have its own differential of susceptibility between neutrons and X-rays.

This is the inference of caution to be drawn from experiments conducted by Dr. Raymond E. Zirkle of the University of Pennsylvania, and Drs. Paul C. Aebersold and Everett R. Dempster of the University of California. (*American Journal of Cancer*, March)

The three researchers exposed three types of living material, fruit-fly eggs, wheat seedlings, and fern spores, to the action of X-rays and neutron streams. They found the destructive effectiveness of neutrons on the fly eggs to be 2.1 times as great as that of X-rays. But with wheat seedlings as targets, the neutrons were five times as effective as the X-rays, while the ratio in the case of the fern spores was 2.5 to 1. Thus although the neutrons always appeared to be more destructive than X-rays the exact relative degree of destruction must be decidedly separate for each type of living tissue studied.

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E FIELDS

PALEONTOLOGY

Hundred Million Year Old Bugs at Smithsonian

TWO bugs about a hundred million years old have been received from eastern Colorado by the Smithsonian Institution, and have been studied by Paul W. Oman of the U. S. Department of Agriculture. Mr. Oman states that one appears to be a giant leaf-hopper, the other probably related to the present-day squash-bugs. Both fossils were wing-prints in sandstone.

Special interest attaches to these fragmentary fossils because they belong to a geologic age, the Cretaceous, from which very few insect remains have ever been recovered. The Cretaceous was the time, ranging from 55 to 120 million years ago, when the last of the dinosaurs ranged the earth. Without much question, the air must have swarmed with insects then, as it did in ages before and has done in all times since. Yet entomologically speaking the Cretaceous is almost a blank page in the record of life on earth. For this reason the two fossil bits of bugs received from Colorado are all the more highly prized.

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GEOLOGY

Mammoth Hot Springs Show Increased Activity

THE terrace-building hot waters at Mammoth Hot Springs, Yellowstone National Park, are showing more activity than has been noted in recent years, Superintendent Edmund B. Rogers of the park states.

The Palette Spring, now considered the most beautiful of all the active springs at Mammoth, is spreading over a greater area than at any time during the past three years, with the result that the terraces are building up very rapidly at the top and to the east. The coloring of the spring is the most beautiful in recent years. The temperature of the water in the Palette Spring is 143 degrees Fahrenheit.

Mound Spring, with water at 149 degrees, is again playing spectacularly from numerous vents along the top of the terrace.

Angel Terrace, once one of the leading sights at Mammoth Hot Springs, has exhibited renewed activity with three new vents and a resultant increase in deposition of new travertine.

Cleopatra Spring, with a temperature of 158.5 degrees, has increased flow.

The temperamental Baby Spring, which developed on Prospect Terrace three or four years ago, is a little bubbler that changes every month, sometimes almost weekly. Occasionally it ceases entirely, then shows a new burst of activity. At present its terraces and basins are an average of two feet high and 50 feet in diameter. True to its vacillating nature, it went entirely dry during February, then started flowing a good-sized volume of water.

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SEISMOLOGY

Earthquake Was Off Lower California Coast

THE QUAKE that shook parts of California and adjoining states on Thursday, March 25, had its center off the coast of lower California, in approximately 31 degrees north latitude, 118 degrees west longitude, seismologists of the U. S. Coast and Geodetic Survey announced after studying data gathered telegraphically by Science Service. The shock, of moderate intensity, began at 8:48.8 a.m., Pacific standard time.

Observatories reporting were: Dominion Meteorological Observatory, Victoria, B.C.; the University of California, Berkeley, Calif.; St. Louis University, St. Louis, Mo.; University of Wisconsin, Madison, Wis.; Montana School of Mines, Butte, Mont.; the private laboratory of Mrs. M. M. Seeburger, Des Moines, Iowa; the U. S. Weather Bureau, Chicago; and the U. S. Coast and Geodetic Survey, Tucson, Ariz.

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METEOROLOGY

Eastern Cities End Lent Under Pall of Western Dust

WASHINGTON, and other cities of the Middle Atlantic seaboard, observed the end of Lent with a penitential sprinkling of dust, that came all the way from the nation's dust bowl in western Oklahoma. The dust came down the wind on Holy Thursday. On Good Friday a wailing gale swept it up and spread it all over again.

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GENERAL SCIENCE

Undogmatic Bible To Fuse World Culture Is Project

A NERVOUS network, a system of mental control about the globe, knitting all the intellectual workers of the world through a common interest and a common medium of expression into a more and more conscious co-operating unity and a growing sense of their own dignity, informing without pressure or propaganda, directing without tyranny.

The fertile and practical brain of H. G. Wells, whom the future will remember as a social scientist first and a teller of tales second, has suggested an international project to accomplish this broad objective. Before the famous Royal Institution of Great Britain he has outlined what he called World Encyclopedia, not a mere collection of books but a new social organ and a new institution. It would play "the role of an undogmatic Bible to a world culture."

The World Encyclopedia would consist of selections, extracts, quotations, very carefully assembled with the approval of outstanding authorities in each subject, carefully collated and edited and critically presented. It would be the mental background of every intelligent person in the world. It would be alive and growing and changing continually. Every fresh mind would feed it. It would be the standard source of material for the instructional side of school and college work. It would do, says Mr. Wells, what our scattered and disoriented intellectual organizations of today fall short of doing. It would hold the world together mentally.

In the long run, Mr. Wells believes, such a World Encyclopedia would prove a better investment for the time and energy of intelligent men and women than any definite revolutionary movement, Socialism, Communism, Fascism, Imperialism, Pacifism, or any other current isms.

Mr. Wells sees catastrophe ahead for mankind if it does not take thought to end its present mental indecisiveness. Never was a living species more perilously poised than ours at the present time, Mr. Wells believes. Our species may end its strange eventful history, he suggests, as just the last, the cleverest, of the great apes. "The great ape that was clever—but not clever enough. It could escape from most things but not from its own mental confusion."

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