Films of The Week

Listing for readers' information of new 16mm and 8mm films on science, engineering, medicine and agriculture for professional, student and general audiences. For further information on purchase, rental or free loan, write to distributor listed.

AEROSPACE BIOTECHNOLOGY. 16mm, color, sound, 16 min. Experiments underway in weightlessness and other aspects of simulated space environment. Audience: general. Free loan or purchase price from Douglas Aircraft Company, Inc., Film and Television Communications, 3000 Ocean Park Blvd., Santa Monica, Calif. 90406.

IN A MEDICAL LABORATORY. 16mm, color, sound, 28 min. Shows how the laboratory team works together to track down the causes and determine the presence or extent of disease. Audience: high school, general. Will be available for loan from state and local pathologist and medical societies, American cancer societies and medical schools. For more information, write National Committee for Careers in Medical Technology, 1501 New Hampshire Ave., N.W., Washington, D.C. 20038.

MEAN, MEDIAN, MODE. 16mm, color, sound, 13 min. Reviews dictionary definition of "average," and examines three measures of central tendancy (mean, median, and mode) showing use and computation of each. Audience: grades 6-9. Purchase for $150 from McGraw-Hill Text-Films, 330 W. 42nd St., New York, N.Y. 10036.

NEOPLASTIC CHEMOTHERAPY—A PANEL DISCUSSION—K-1266. 16mm (kinescope film), b&w, sound, 51 min. Three panelists present their own specialized approaches to chemotherapy, with discussions by group of each. Audience: professional biomedical personnel. Free loan from Public Health Service Audiovisual Facility, Atlanta, Ga. 30333.

OPERATION HEARTBEAT. 16mm, color, sound, 29 min. Aerial expedition over Mexican waters to record an accurate measurement of the heartbeat of whales. Audience: general. Free loan or purchase for $197.12 from Douglas Aircraft Company, Corporate Offices, Santa Monica, Calif.

THIS LAND OF OURS. 16mm, color, sound 28½ min. How land water resources are rebuilt and strengthened utilizing financial and technical help through the Agricultural Conservation Program. Audience: general. Available for loan from state university film libraries or inquire of Motion Picture Service, Office of Information, Dept. of Agriculture, Washington, D.C. 20250, for loan and purchase information.

ASTRONOMY

Triton on Collision Path

Within the near astronomical future, 10 million years, Neptune may have rings like Saturn's

➤ TRITON, the larger of Neptune's two moons, is on a collision path that will crash it into the planet or break it into pieces to form a ring like the rings around Saturn.

The event will not occur for at least 10 million years, and perhaps not for a billion years, Thomas B. McCord, a California Institute of Technology graduate, has calculated. Considering that the solar system has existed for nearly five billion years, 10 million years is actually a very short time.

Astronomers are especially interested in Neptune and its two moons because Triton, the nearer and larger, has a retrograde orbit while Nereid, the smaller and more distant, has a highly elliptical orbit. Triton orbits clockwise around Neptune while the planet spins counterclockwise on its axis.

Only five other, much smaller satellites have retrograde orbits. The earth's spin and the moon's orbit are in the same direction, and scientists have calculated that the moon is gradually moving away from earth.

Triton ranks as one of the giant satellites among the 31 known "moons" in the solar system. It and Jupiter's Ganymede and Saturn's Titan are each about twice the size of earth's moon.

Triton, which may be a big iceball, is about the same distance from Neptune as the moon is from earth—240,000 miles. Tidal friction is causing Triton to move closer to Neptune.

The action of forces like the attraction between the moon and earth causes ocean levels to rise and fall, and even causes small up-and-down movements of the solid earth.

However, in the case of Neptune and Triton the situation is exaggerated, partly because their masses are larger. Neptune's diameter is about 28,000 miles or nearly four times earth's.

A bulge is raised on the surface of Neptune by the attraction of Triton. However, because the planet is spinning away from the direction in which Triton orbits, the bulge lags several steps behind. By the time the hump is formed it is no longer pointing directly toward Triton.

The raised area of the surface causes a "dragging" force that contributes to the satellite's ever-tightening orbit. Neptune, the eighth most distant planet from the sun, is too far from the earth for the bulge to be visible by telescope.

However, telescopic photographs pinpointing Triton's position now and then again 10 or more years from now should allow scientists to calculate the rate at which Triton's orbit is changing.

Triton's orbit may be changing at a measurable rate, Mr. McCord reported in The Astrophysical Journal, 71: 585, 1966.

If Triton crashes into Neptune, the results are not likely to be catastrophic for the planet. Neptune is about 19 times more massive than earth, although less dense. It is believed to be composed chiefly of ammonia, methane and ice.

"It is quite reasonable to believe that Triton will break into pieces when it gets too close to Neptune and end up as a set of rings like those around Saturn," Mr. McCord said. "That is quite possibly how Saturn's rings originated."

Mr. McCord used a computer to calculate the past and future orbits of Neptune and Triton based on available information about the orbits and on what is known about gravitational interactions.

His calculations raised the possibility that the gravitational fields of Triton and Neptune's other satellite, Nereid, once affected each other's orbits. Nereid, much smaller and farther from Neptune than Triton, has a highly eccentric orbit.

"There probably was interaction between the two bodies when they were closer together," Mr. McCord said. "Triton, being the larger body, could have bounced Nereid around a bit in its orbit and might account for Nereid's wild path around Neptune."

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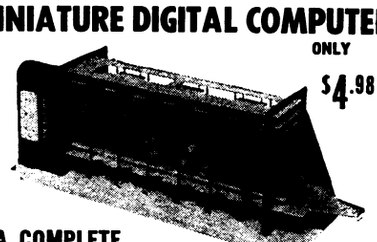

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