

# space sciences

## Polar cap for Jupiter's satellite

Jupiter's fourth largest satellite, Europa, has a polar cap that extends from the north pole down to a latitude of about 30 degrees, according to Robert E. Murphy of the University of Hawaii in the Aug. 31 *NATURE*.

Although he cannot determine the exact boundaries of the polar cap from his data, he speculates that the snow covers from 30 to 40 percent of the surface. If a similar polar cap exists in the southern hemisphere, then between 60 to 80 percent of Europa's surface would be covered with snow.

The existence of bright regions on Europa was first suggested several years ago by drawings made of its surface. Murphy's data are the result of photoelectrical observations of two occultations of Europa by another satellite, Io. Observations were made with a 61-centimeter telescope and photometer at Mauna Kea Observatory.

The Pioneer 10 spacecraft, which will pass by Jupiter Dec. 3, 1973, will fly within 200,000 miles of Europa and will be able to get a better look at the satellite.

## Canaveral: Well, is it or isn't it?

Is it Cape Canaveral or Cape Kennedy? Ask any Floridian and he'll tell you Canaveral. He will also tell you that the prominent cape on the east coast of Florida where NASA's launch site is located was called Canaveral on maps for more than 400 years—making it one of the oldest geographic names around.

The name of the cape was changed to Kennedy in 1963 following the death of the President. Floridians didn't like it then or now. In April 1973 the State Senate voted to restore the old name. The State House followed in May. The U.S. Senate voted a similar change in 1972, but the bill never passed the U.S. House of Representatives.

Now, the Domestic Names Committee of the Federal Government's Interagency Board on Geographic Names will consider the issue. The committee meets on Oct. 9. Bills to restore the old name have been introduced again in Congress. Any name change would not affect the name of NASA launch site. It will still be the Kennedy Space Center.

## Attack on the North Sea

This month the Europeans have launched a frontal attack on one of their oldest enemies—the North Sea. Klaus Hasselman of the West German Hydrographic Institute is in charge of an international study to find out the relationship between the sun, wind and wave formation. Working with him are several U.S. universities, NASA, the National Oceanic and Atmospheric Administration, the National Center for Atmospheric Research (NCAR), and the Naval Research Laboratory (NRL).

A NASA C-54 aircraft is making daily flights over the North Sea with radiometers, narrow-pulse radar and a laser profilometer. These are used to study the effects of the sun's glint and sea foam on wave formation. One radiometer is being used to evaluate both foam and the geometry of the wave slopes. The information will be correlated with measurements taken in the sea from sensors on buoys and towers. The Dutch are participating with two helicopters, and NCAR is flying an instrumented Buffalo aircraft.

En route to Sylt Island off the shore of Denmark, the C-54 flew beneath the orbital path of the Skylab over Newfoundland and the Azores to get measurements of sea-surface conditions that can be compared with the Skylab remote-sensing data.

september 22, 1973

# earth sciences

## Earth's magnetic field has its own axis

Since the discovery that earth's magnetic field is drifting steadily westward relative to the surface of the planet, many other intricacies have added to the picture. Some parts of the field apparently do not drift at all, while others vary with latitude. Now two British geologists have theorized that some of the complication may be due to the field's rotating on an axis different from the geographical axis of the planet.

Using previously developed magnetic field models covering five-year intervals from 1945 to 1965, S. R. C. Malin and I. Saunders of the Institute of Geological Sciences in Sussex indeed found a westward drift of about .18 degrees per year. However, they report in the Sept. 7 *NATURE*, the field's pole of rotation did not move in a random distribution around the geographic pole, as it would have if the two axes coincided. Instead, it has apparently moved in a fairly regular line from one side of the earth through the north polar region to the other. This may also imply, Malin and Saunders believe, "that the absolute rotation of the outer core (of the earth) is about an axis slightly different from that of the mantle, so that the rotation poles of the core and the mantle will be on opposite sides of the total angular momentum pole . . . and they will rotate around it with a period very close to one day." The difference between the core and mantle rotation axes seems to be about .037 seconds of arc.

## Souvenir of a storm

An unusual tropical storm that struck Funafuti Atoll in the South Pacific has left a large new landmass that oceanographers believe may be a permanent addition.

Tropical cyclone Bebe struck the atoll last Oct. 21, leaving six dead and 800 homeless, destroying thousands of coconut trees and wrecking six ships. It was only the third severe storm to hit Funafuti in 140 years and the first ever known to cross the southwestern Pacific in October.

In its wake, Bebe left a huge rampart of rubble around the southeastern side of the atoll, 18 kilometers long with only a single gap. The new structure, according to James E. Maragos of the University of Hawaii and Graham B. K. Baines and Peter J. Beveridge of the University of the South Pacific at Fiji, is estimated to contain more than three million tons of material, most of it in chunks nine to ten centimeters across but with some ranging up to seven meters across.

A moat from two to fifty meters wide separates the new shoal from the original shoreline. "It appears," the scientists report in the Sept. 21 *SCIENCE*, "that the new rampart will be a permanent part of Funafuti in one form or another."

## Scars on earth recall punches from space

Two more astroblemes, geological scars left on the earth apparently by the impacts of large meteorites, have been added to the more than 40 already reported.

The more positively identified of the two, according to Robert S. Dietz of the National Oceanic and Atmospheric Administration and Bevan M. French of Chevy Chase, Md., is the Araguinha Dome in southwestern Brazil. The 40-kilometer circular pattern contains numerous impact features such as shock lamellae and shocked and partly melted inclusions. The other "scar," the Serra da Canghala structure in northeastern Brazil, is less certain, the geologists report in the Aug. 31 *NATURE*, but it apparently lacks the igneous rocks typical of earthly volcanism and has a structure resembling other, better-established astroblemes.

183