

Stranger returned to San Diego after 2 years studying waters of Gulf of Thailand and adjacent South China Sea.

June 28, 1961

The research vessel *Stranger* of the University of California's Scripps Institution of Oceanography has returned to San Diego after two years spent studying the waters of the Gulf of Thailand and the adjacent South China Sea. She carried a cargo of scientific collections and data that may help the people of southeast Asia get more of their food from the sea.

Particularly, her collections may offer clues to the life history of a small fish called *Rastrelliger*. This variety of mackerel supplies most of the protein in the diet of the people of Thailand, according to Dr. Edward Brinton, Scripps biologist who recently returned from a year in Thailand. When and where it is spawned is not known. In the samples of plankton, the tiny floating plants and animals of the sea, taken by the *Stranger* on her five cruises in the Gulf of Thailand, may lie answers to these questions.

The *Stranger* has been based in Bangkok, Thailand, on *Naga Expedition*. (The *Naga* is a legendary sea-snake, an oceanic deity of the cultures of southeast Asia.) She conducted the first extensive oceanographic and biological studies of the shallow, sheltered Gulf of Thailand and of the portion of the South China Sea lying off of Vietnam. Her work abroad was sponsored by the U. S. International Cooperation Administration with the assistance of the governments of Thailand and South Vietnam.

The expedition had two missions: to carry out oceanographic survey cruises and to train citizens of southeast Asia in oceanographic techniques. Approximately 100 scientists and technicians from the area worked aboard the *Stranger* and ashore, along with Europeans and Americans, says James L. Faughn, Scripps engineer who was project officer for the expedition. They included citizens of Korea, Japan, the Philippines, Hong Kong, and Indonesia, as well as Thailand and South Vietnam. Upon her return to the U. S., 16 of the 22-man scientific party and crew of the vessel were citizens of Thailand. They will visit in this country a few weeks before returning home.

Naga scientists found a sharp contrast between the Gulf of Thailand and the adjacent South China Sea. The latter is relatively barren of animal life, as are many tropical waters. The Gulf is far richer, approaching in amounts of plankton the plentiful waters of northern California, according to Brinton.

Although detailed scientific studies will require several years of analysis, the observations already worked up draw a general picture of the oceanography of the Gulf of Thailand. Shallow, almost completely land-locked, about the size of the Gulf of California, the Gulf of Thailand is dominated by the monsoon climate of the tropics. The southwest monsoon in fall brings heavy rains, runoff from land, and upwelling on the western edge. The northeast monsoon in summer causes upwelling on the eastern shore. Upwelling means that nutrients rise toward the surface of the sea, offering plentiful food for plants and small animals. Larger creatures, such as fishes, thrive in these regions. As a result, the fisheries follow a seasonal pattern-working their way along the western edge of the Gulf during the southwest monsoon, the eastern during the northeast monsoon.