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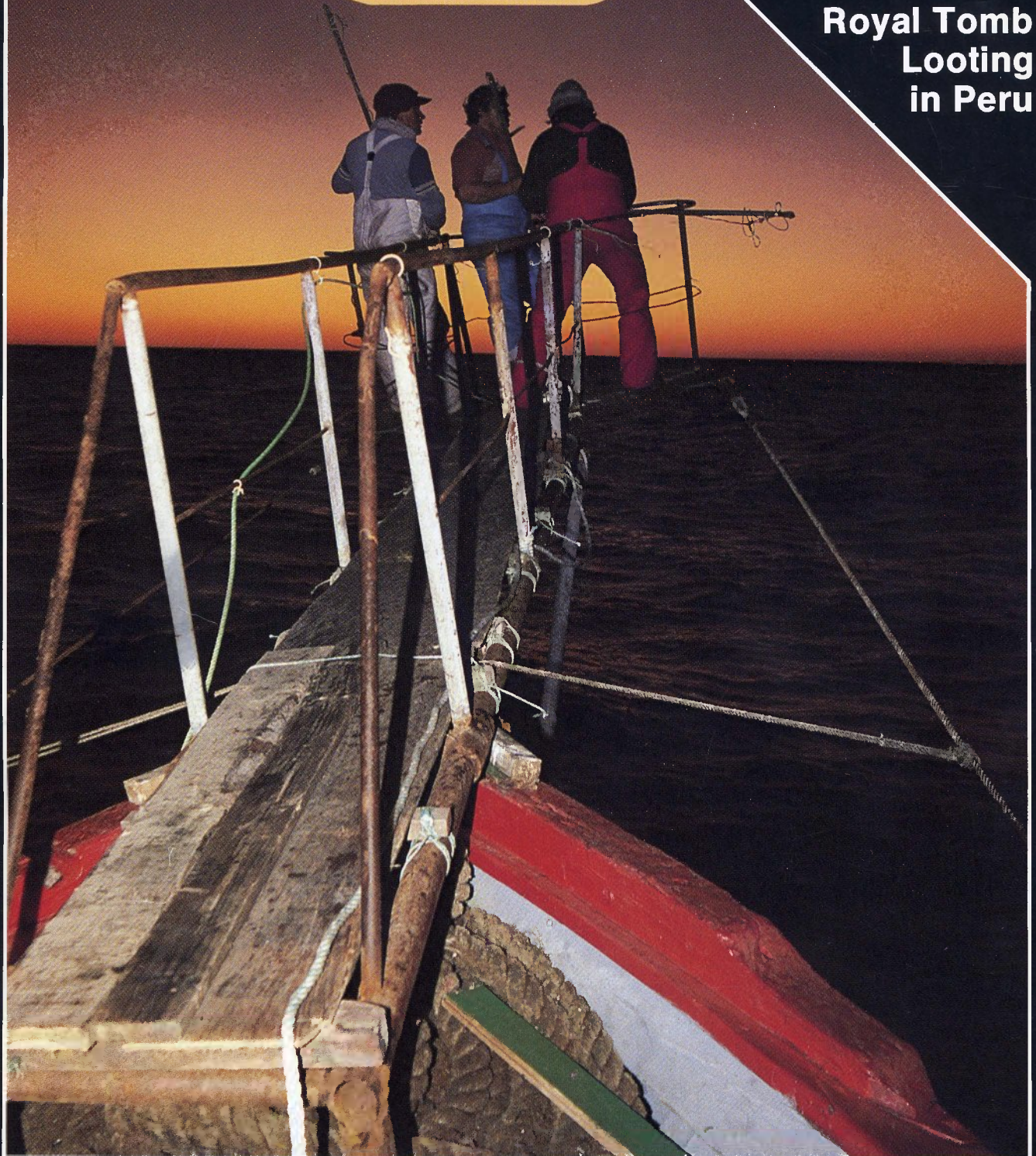
AMÉRICAS

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Hike to the *Lost World*

Brazil's Green
Thumb

Royal Tomb
Looting
in Peru



Dueling with Swordfish in Chile

An African Connection?

Frogs lay their eggs on land and skip the tadpole stage altogether on the strange, flat-topped *tepuís* in southern Venezuela and adjacent areas of Brazil and Guyana. Orchids live on the ground; hummingbirds pollinate four-inch red mistletoe flowers and pitcher plants sometimes top 10 feet on these isolated plateaus where plants and animals have evolved into unique species with sometimes bizarre characteristics.

Scientists are trying to learn why organisms on the *tepuís* are so different and where they came from. The most tantalizing theory is they may be remnants of an ancient biota that dates back millions of years to a time when South America and Africa were a single land mass. Gaps in our collection of data create real challenges in answering questions of lineage at this point. Several *tepuís* have never been adequately sampled by biologists and some of the specimens collected have not



provided all of the necessary information; however we do have some indications now.

Purple-red sunflowers, for example, have given us important clues. Researchers have found some members of these oddly-colored species on every summit that has been explored, whether rocky and sparsely vegetated or covered with wet savannahs and patches of dwarf forest. But these sunflowers don't seem to be related to anything in the forests that encircle the bases of *tepuís*, often about 6,000 feet lower than the summits. Indeed, the sun-



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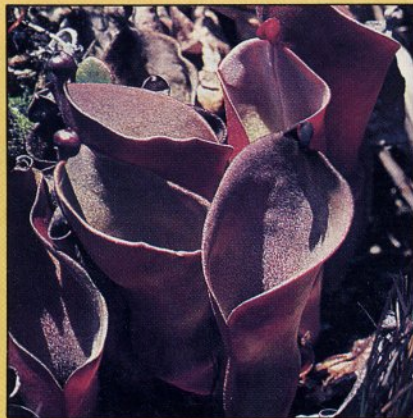
flowers appear to be more closely related to one another than to any other plants in the region. This fact supports the hypothesis that they came from a particular flora that grew on a vast, deeply-layered sandstone plateau many millions of years ago. (During the last 70 million years, this regional plateau weathered and fragmented into the 20 to 30 *tepuís* we see today—a variable number depending on whether several fractured mesas are counted as one or two.)

Given the sunflower indicator, along with additional ones, we and

A tiny frog species found only on Roraima walks instead of jumps, lays its eggs on land and bypasses the tadpole stage altogether. In this lost world, orchid species usually found in trees grow among the rocks and the insectivorous pitcher plant reaches startling heights. These bizarre forms may be remnants of ancient biota that existed when Africa and South America were a single land mass



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other researchers are looking for botanical and zoological links beyond the boundaries of the ancient plateau, either to groups of plants and animals in Africa or groups in southern South America.

Evidence points toward an African connection. There are mosses on the *tepuís* that are similar to ones growing in Africa. Also, sandstone formations similar to those on Roraima have been found in western Africa. This Precambrian sandstone is old enough to have been part of the united continents, but precise dating has been difficult because

few fossils, which are time indicators, were preserved over half a billion years ago during the Precambrian era, and no fossils are known to have been found in the *tepuís*.

Because of the paucity of geologic data reflecting age and history of the isolated mountains, much of what we will learn about the history of the *tepuís* will come from the evolutionary histories of the plants and animals.

To approach the problem of determining origin, botanists and zoologists are collecting extensive data at different times of the year to understand the distributions of species and studying the biochemistry and morphology of each species in the collections, looking for their closest relatives in order to reconstruct their lineage.

Clearly a lot of work remains.

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