

most of the world's grain stocks were depleted. Should drought persist and the conditions of 1972 be repeated, Nobel laureate agronomist Norman Borlaug told a Senate hearing recently, without the grain reserves to fall back on 50 million persons around the world could die from famine.

This awesome prospect has lent new urgency to preparations for the November World Food Conference in Rome and a reassessment of America's Food for Peace program (SN: 5/11/74, p. 306 and 5/18/74, p. 322). The man in charge of U.S. preparations for the conference, Ambassador Edwin Martin, told the Senate Foreign Relations Committee July 11 that diplomatic efforts have begun to seek help from other nations in preparing to meet a possible emergency. But no firm U.S. position on the establishment of grain reserves or commitment to foreign aid could be made, he said, until after this year's domestic crops can be firmly determined, possibly as late as Sept. 1.

Martin's hesitancy immediately brought a reaction from the president of the Overseas Development Corporation (ODC), James Grant, who pointed out that other countries had already responded to a U.N. call for aid and that American foot-dragging was "jeopardizing the global situation." Behind the indecision appears to be another of those internal power struggles that continue to plague the Administration, with Secretary of Agriculture Earl L. Butz reportedly opposing internationally controlled stockpiles in favor of reserves held by private (American) interests, the State Department worried about the political instability that would surely accompany a major famine, and the Office of Management and Budget fussing over what the whole thing might cost. Martin and his staff—widely respected as thorough-going professionals—are caught in the middle.

One American contribution seems assured: Greater scientific and technological assistance to developing countries to help them increase their own agricultural productivity will begin shortly. In his Senate testimony, Martin outlined areas that could expect major funding in the near future: research on storage of perishable goods in tropical climates; establishment of regional research centers in developing countries to help adapt new crop strains to local conditions; several aspects of fertilizer research, including ways of cheaply recycling animal wastes, adapting commercial fertilizers from temperate zone countries to tropical conditions, and especially developing methods of "bio-fixation"—in which bacteria create natural fertilizer continually in the soil.

But such projects can only be considered long-range solutions. Since

North America now supplies 85 percent of the world's internationally traded grain, should famine develop anywhere, all eyes will turn toward the harvest in the United States and Canada. There the wheat crop has now been mostly harvested and is running a good 10 percent below expectations. Corn is in even worse shape, following late planting due to heavy rains and a failure to form ripe kernels due to drought during the crucial tasseling period. Current estimates by growers run 18 percent below original expectations. Fortunately, the Soviet Union should not suffer the crop failures it experienced in 1972, which led to the infamous "wheat deal" that depleted American reserves.

Should famine and millions of deaths come, however, weather will not be the determining factor. Enough food will

be harvested that the world *could* be fed; the problem remains how to distribute that food. Even in India itself the government has been unable to obtain half of the legally required portion of the domestic harvest needed to feed the urban poor. Fertilizer shortages would already have accounted for a major crop failure in developing countries, and ODC's Grant says that the extra fertilizer Americans spread on their lawns, cemeteries and golf courses more than equals the missing quantities needed for crops abroad. Dressed in her simple white robes, a nun working in the slums of Calcutta, Mother Teresa, expressed the dilemma in deeply human terms to the Foreign Relations Committee: "In the name of the poor of the whole world, don't miss the *chance* of giving until it hurts." □

Final piece in the Gondwana Game

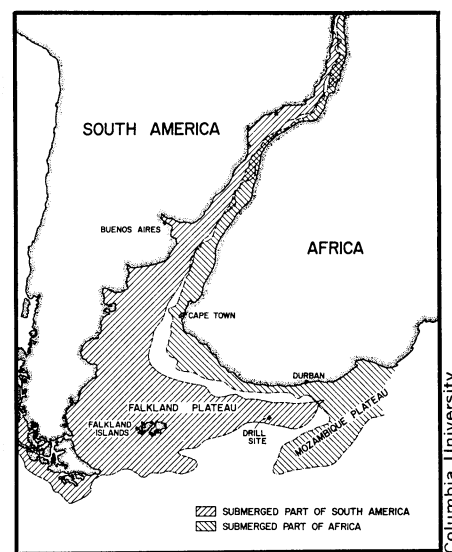
The Gondwanaland Game is a little like that geometrical brain-teaser in which a T-shaped figure can be taken apart and reassembled into a square. Nature has played it for the past 200 million years, breaking up the ancient supercontinent of Gondwanaland and shifting around the pieces atop plates of the earth's crust until they reached their present arrangement.

Ever since they realized the game was going on, earth scientists have been trying to play it backwards, reuniting the pieces in their original configuration to see how the game began. A major sub-plot in the Reverse Gondwanaland Game has been to rejoin Africa and South America, by hunting up the missing continental bits that would make their facing coastlines fit exactly instead of just approximately.

Last week, researchers from Columbia University and the University of Birmingham, England, announced that they had dropped in the sub-plot's final piece—a 750-mile tongue of submerged land thrusting eastward from the Falkland Islands off the Argentine coast that used to border what is now the southeastern coast of South Africa.

"It completes the puzzle," says geologist Ian W. D. Dalziel of Columbia. "All the other points along the Atlantic contours of the two continents had been proved by various scientific means to have been joined long ago. Now, with deep sea drilling, we've identified a large area of founded continent, and the last piece is in place."

The past piece was discovered during Leg 36 of the remarkable journey of the research ship *Glomar Challenger* (SN: 6/15/74, p. 382), as part of the Deep Sea Drilling Project. With Dalziel and Peter Barker of the University of Birmingham as co-chief scientists for the leg, the drill team had to send their



Africa and South America: A comfy fit.

drill string down through more than a mile and a half of water and 1,835 feet of bottom sediment before they struck the hard base of continental granite that would later prove to be the missing fragment.

For the first 50 million years or so of the Gondwanaland Game, starting about 200 million years ago, the African-South American rift-to-be remained locked together and dry, in fact with a rather balmy, Mediterranean-type climate. When it finally began to separate, the land along the facing edges, no longer supported at the junction, started sinking, reaching its present depth about 80 million years ago.

The missing piece was discovered when Dalziel and Barker realized that they had struck continental granite in an extension of the Falkland Plateau that reached so far to the east that it must formerly have filled in a vast, canyon-shaped space northwest of the tongue of the Mozambique Plateau. □