REPORT ON COUNTERMEASURES AGAINST COASTAL HAZARDS BY CYCLONE IN THE COOK ISLANDS

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JAPAN INTERNATIONAL COOPERATION AGENCY

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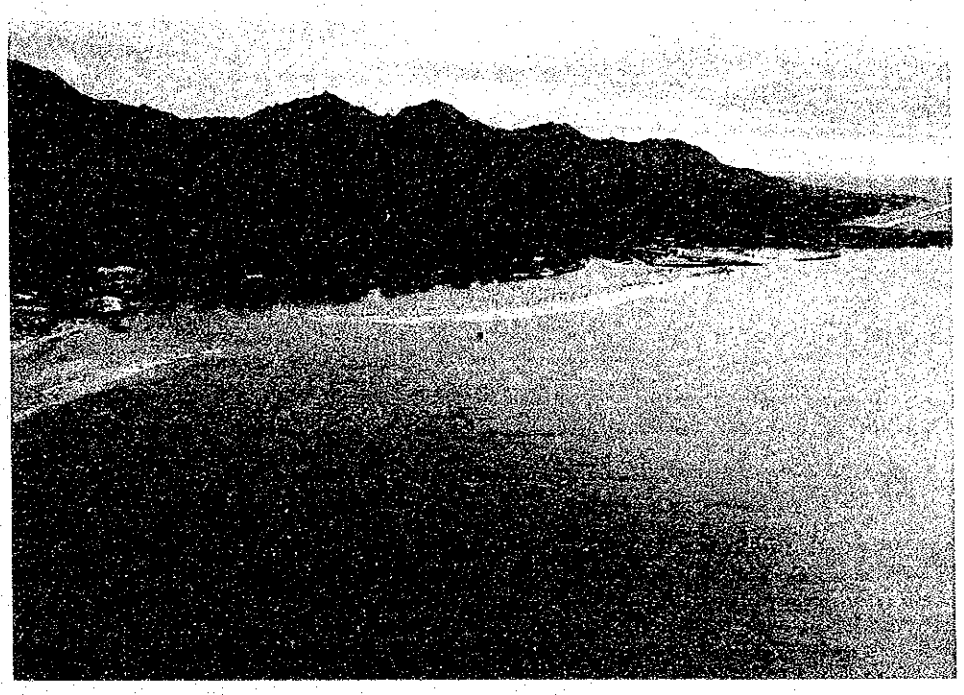
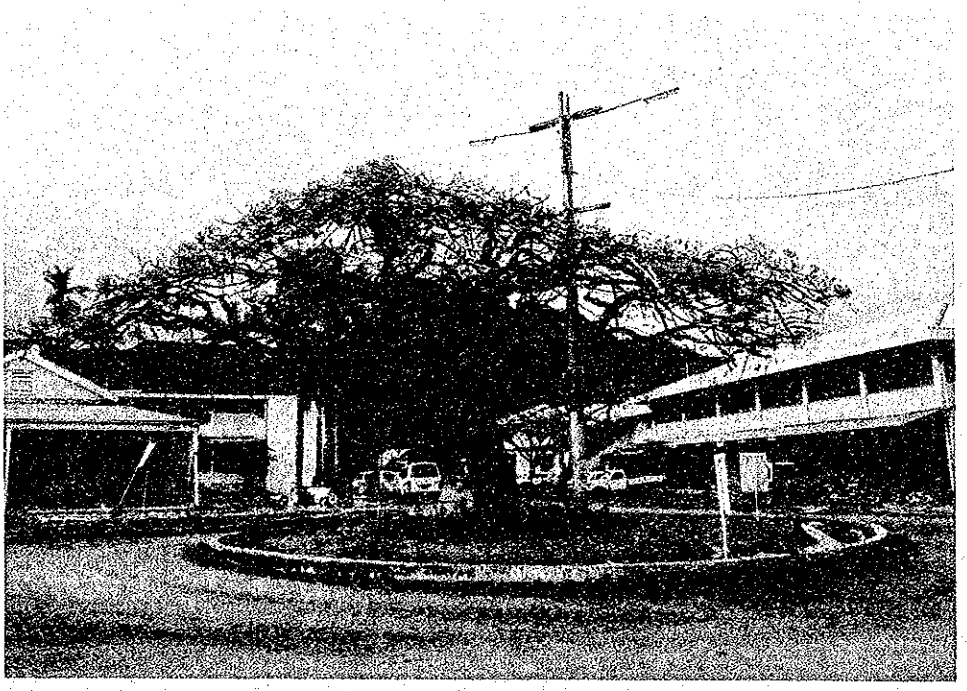
Rarotonga in the Cook Islands

Rarotonga Island (by courtesy of Mr. D. Dorrell)



Avarua—Avatiu—Rarotonga International Airport Area



Governmental center at Avarua

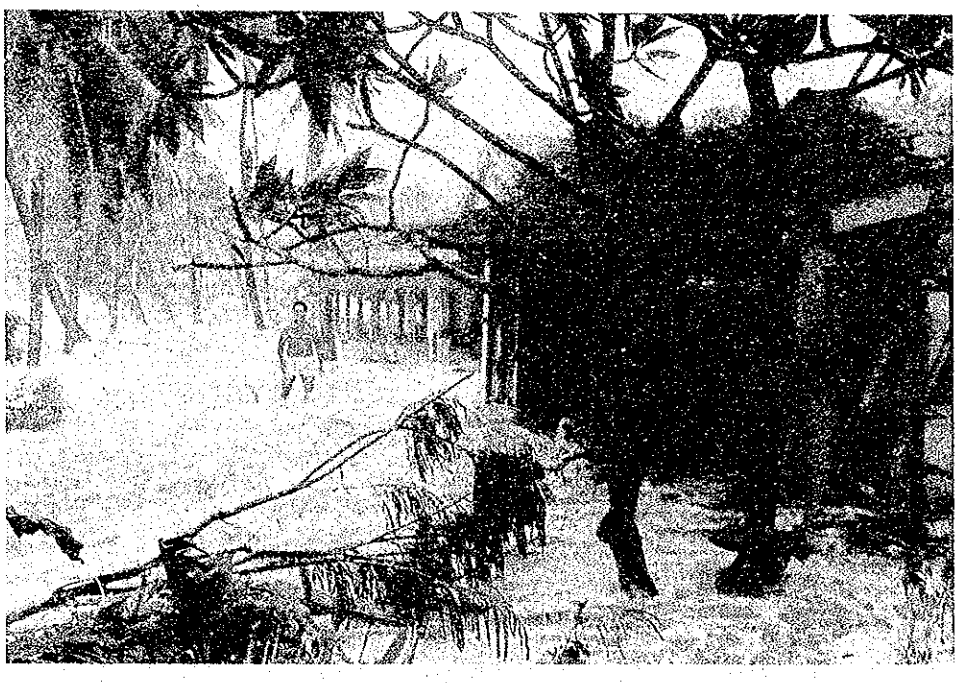
Main road, Avarua—Avatiu area

Storm surge and waves by Cyclone Sally

Avarua Harbour (8 PM 30 December 1986)

Coastline in front of Main Road, Avarua* (PM, 30 December 1986)

Photographs marked by * are by courtesy of Coco Photo, Rarotonga



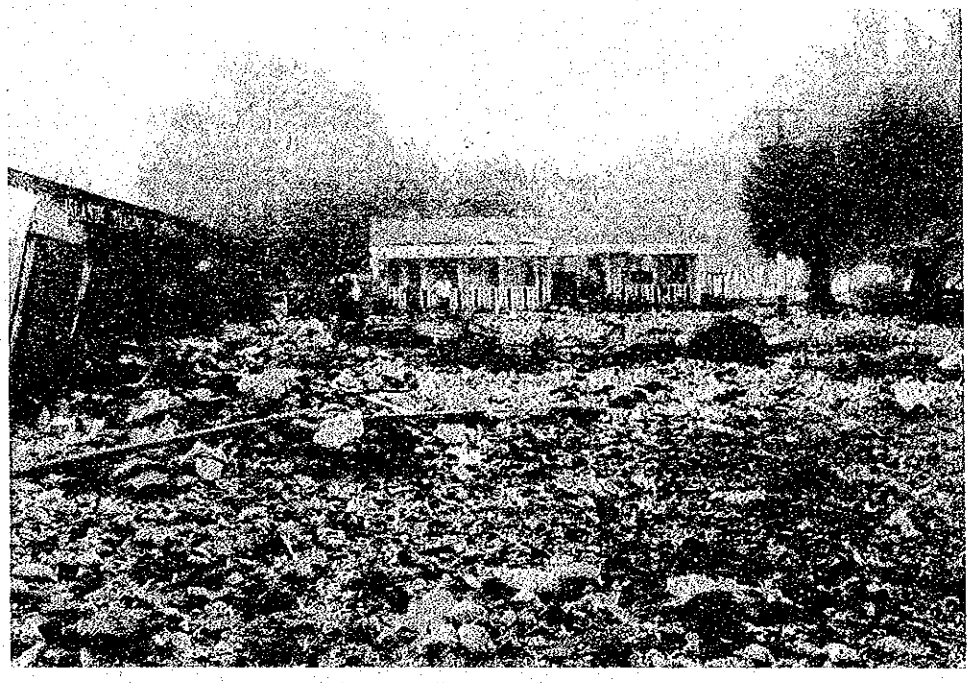
At the back of Main Road, Avarua* (10 AM, 2 January 1987)

Government buildings at the back of Avarua Harbour *

Apron and storages on Avatiu Wharf * (8 AM, 2 January 1987)

Waves attacking the Western Breakwater at Avatiu Harbour
(by courtesy of Mr. G. T. Shuma)

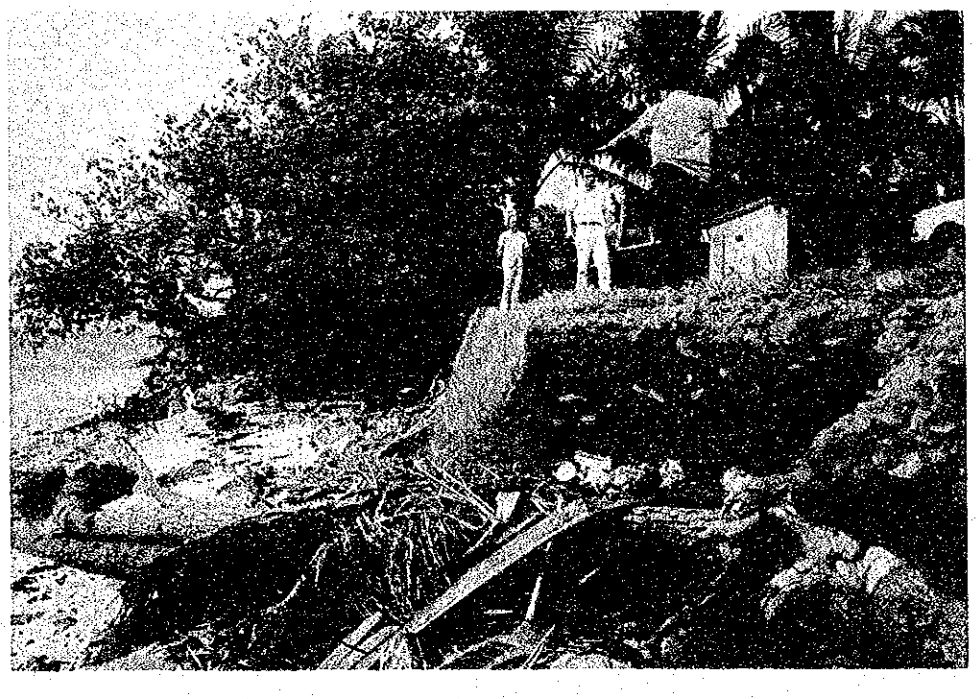
Damages by Cyclone Sally



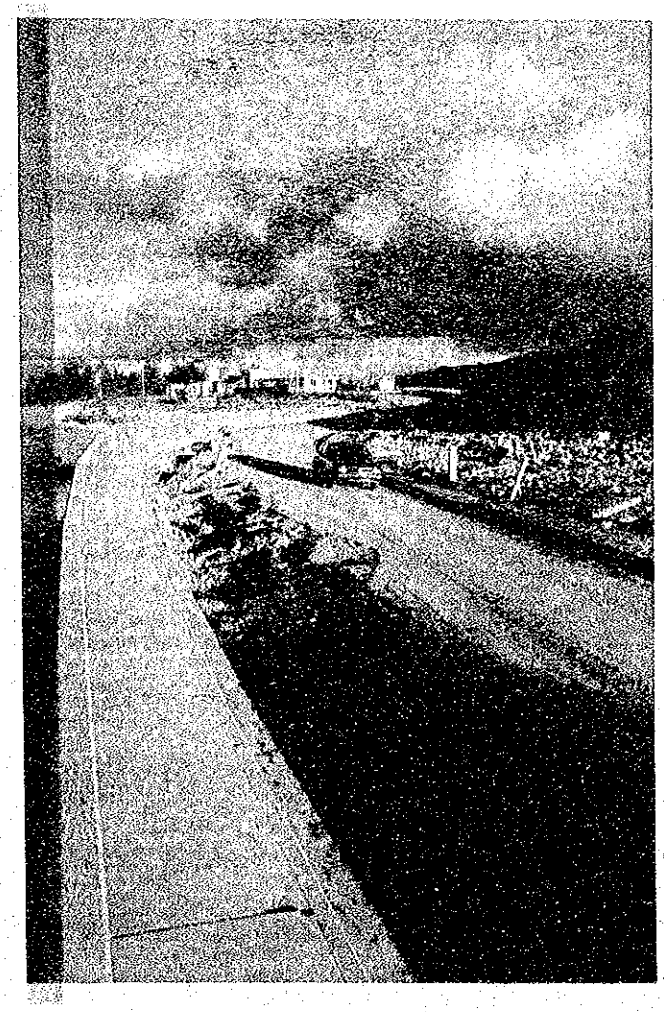
Stones brought on Avarua area *

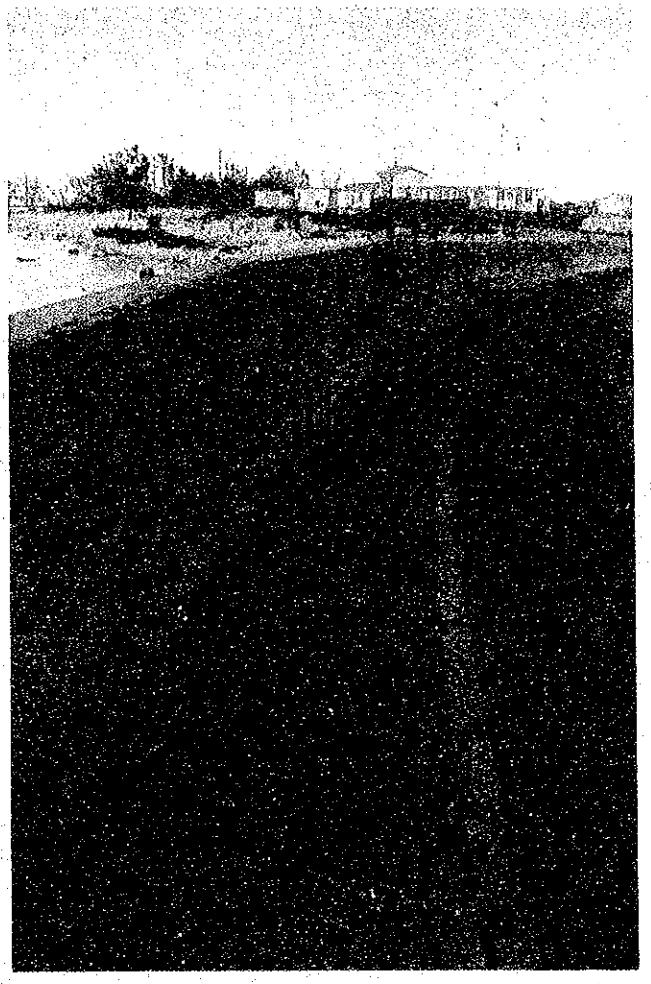
Broken houses, east of Avarua Harbour *

Boats and debris on the apron of Avatiu Harbour*



Beach erosion at a south coast





Road behind seawall at the west end of the runway
Damages due to wave overtopping (left*) and suction through seawall gaps (right)

Bananas *

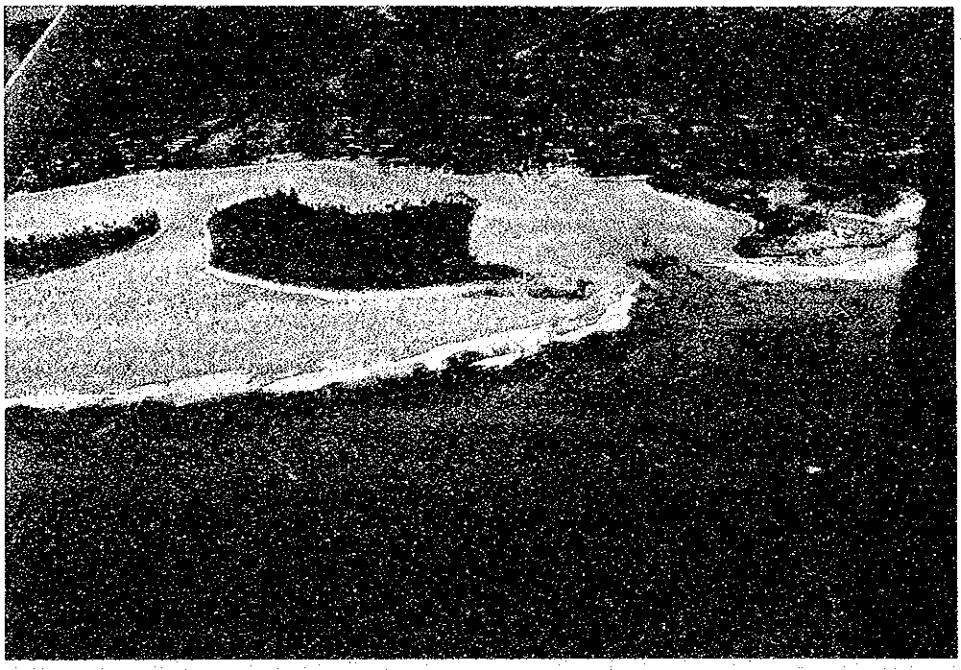
Fallen trees and electric cable *

Coastal Conditions of Rarotonga

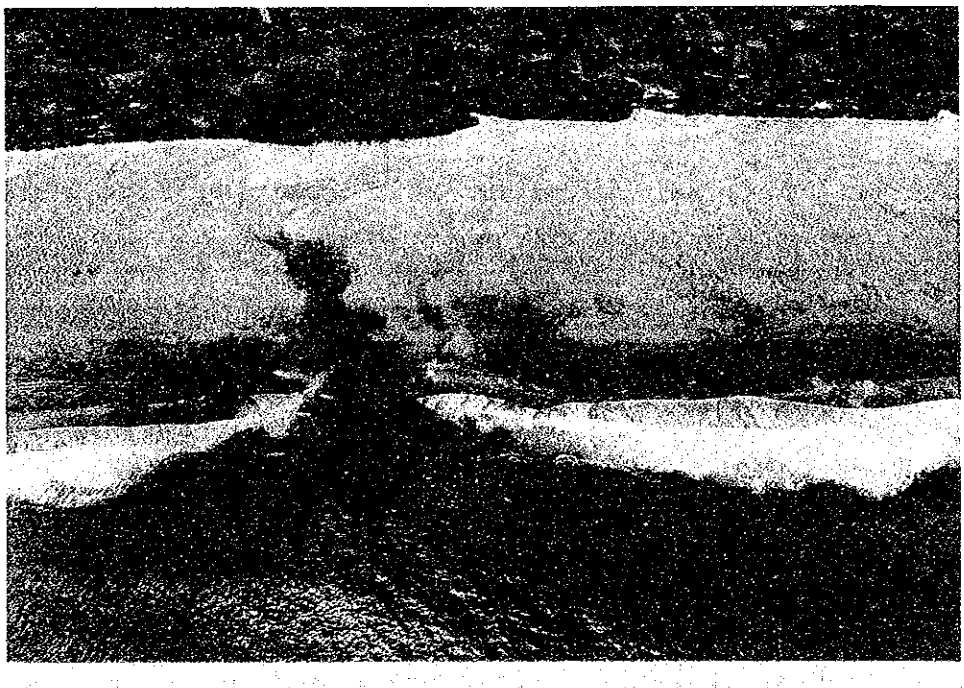
Avatiu Harbour

Lagoon between Avatiu and Avarua

Avarua Harbour, breakwaters are underconstruction

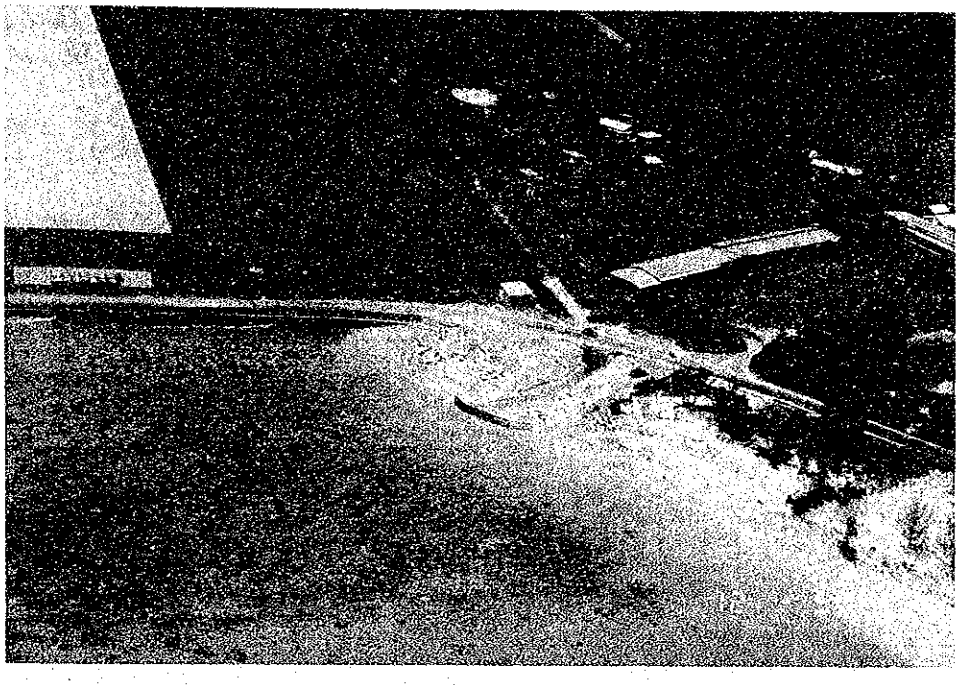


Oneroa and Motutapu Islands and Ngatangiia Harbour

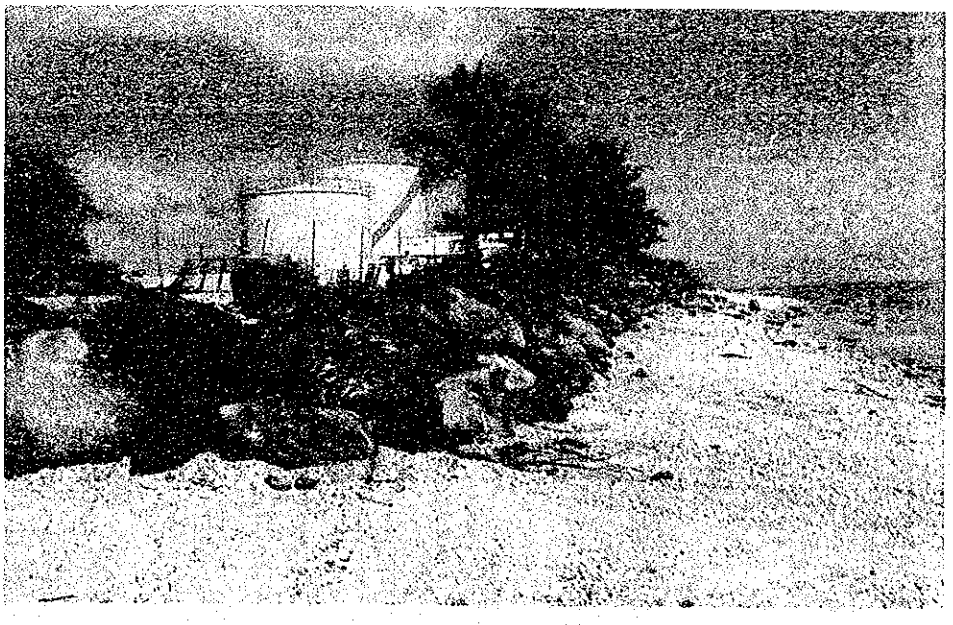


Awavaroa Passage, no breakers at the outlet and return flow

Beach around Rarotongan Hotel, strong lateral current



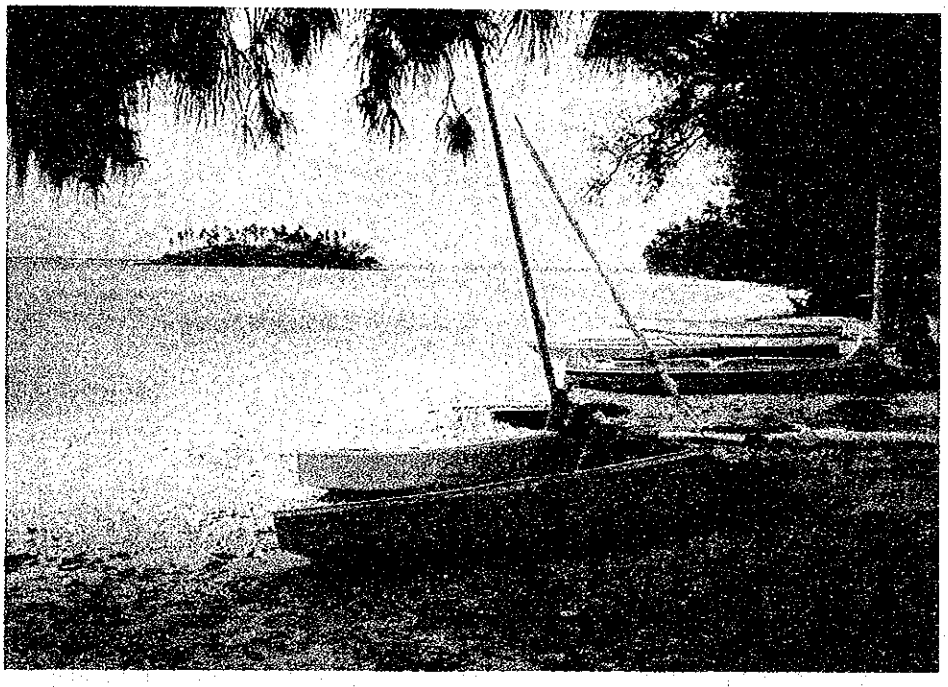
Concrete seawall and accumulated sand at the west end of runway



Stone revetment in front of the airport

Stone seawall at a south coast

Coral rubble stone beach at a north coast, steep slope

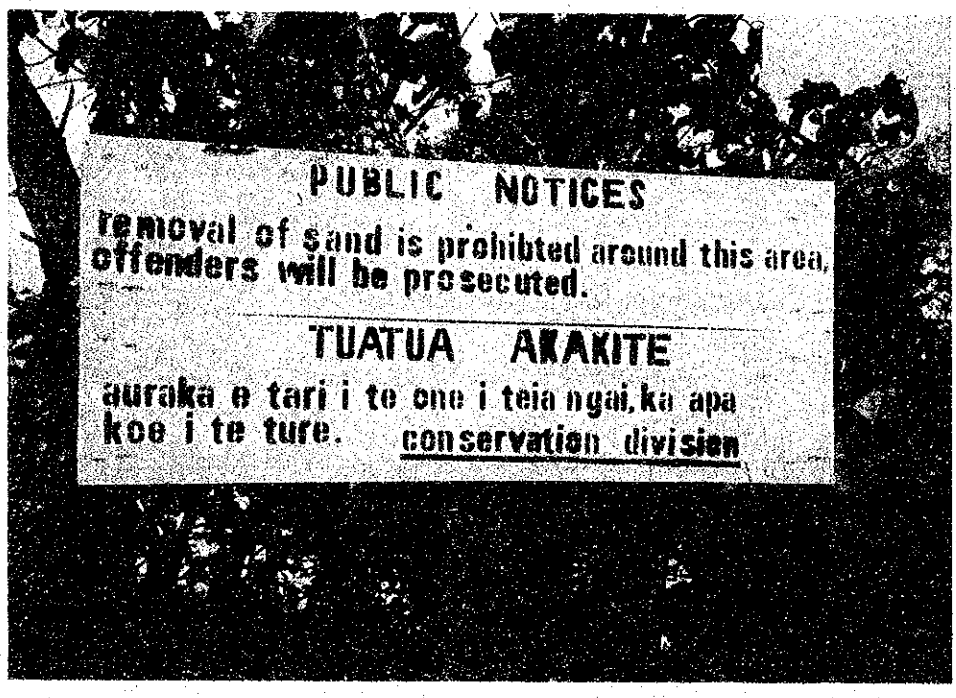


Sandy beach at Muri area, wide lagoon, gentle slope

Black rock coast

Beach rock coast at a south coast

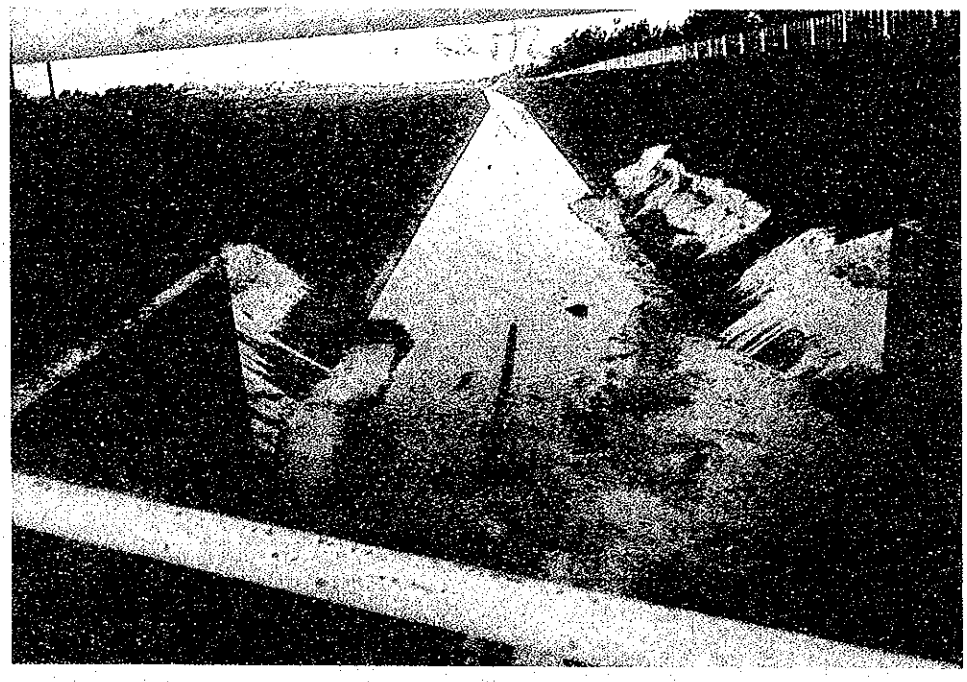
Sand removal, only one place allowed at Ngatangiia



A poster to prohibit sand removal

Near the mouth of Takuvaine Stream to where coral debris reached

Mouth of Takuvaine Stream where a breakwater is under construction



Stream in the airport, buried by seaborn sand and coral rubble stones.