

A

SOUTH PACIFIC BULLETIN

QUARTERLY PUBLICATION OF THE SOUTH PACIFIC COMMISSION

FIRST QUARTER, 1981

Registered for Posting as a Publication—Category B



INSIDE: Food stereotypes and health care • Birth and growth of an atoll • Guam rabies conference • Paddles of the Pacific Islands
SPC Activities • Ponape Small Industries Center

LIBRARY

SOUTH PACIFIC COMMISSION



Look to LANE for quality chemicals

Look to Lane for quality agricultural chemicals and animal health products. The name Lane is known and trusted throughout the South Pacific by Government Departments and Primary Producers.

Look to Lane Mocap to protect your bananas against Nematodes and borers. Mocap is activated by water or moisture which carries the active ingredients into the root zone and destroys nematodes in the treated area. This means better root growth and more effective uptake of fertilizer. Buy Lane Mocap for your plantation now.

If you live in the South Pacific you can't afford not to use Lane quality products.



EXPORT DIVISION — Northam Avenue,
Bankstown, N.S.W. 2200 Telephone:
Sydney 709 5555 Cables Harbas Sydney —
Telex: 21421



ROCHE-MAAG LIMITED formerly Lane Ltd.

SOUTH PACIFIC BULLETIN

OFFICIAL JOURNAL OF THE SOUTH PACIFIC COMMISSION

VOL. 31, No. 1, 1st QUARTER, 1981

\$A0.95, SPC area; \$A1.00,
Australia; \$NZ1.20, NZ

Food stereotypes and health care	3
<i>Thomas K. Fitzgerald</i>	
Nutrition educators, health care workers and others should forget the myths and learn more about the food and eating habits of cultural minorities.	
Birth and growth of an atoll	7
<i>J.-P. Baillard</i>	
Summary of recent geological discoveries on the formation and development of atolls.	
Guam rabies conference	14
<i>Robert L. Haddock</i>	
Conference in Guam recommends steps to be taken to preserve rabies-free island areas such as Guam.	
Paddles of the Pacific Islands	17
<i>Bob Gillett</i>	
An enthusiast for canoeing and canoe paddles writes of the many and varied types of Pacific Islands paddles in his collection.	
Ponape Small Industries Center	23
<i>Daniel Graham</i>	
A very useful project which enables qualified craftspeople to work privately or co-operatively in the manufacture of some saleable product.	
Plant Protection News	25
<i>I.D. Firman</i>	
Reports on various matters concerning plant protection in the South Pacific Region, including an important symposium on genetic resources and a report on the Plant Protection Agreement for the Pacific Region.	
SPC activities	33
Ah, how I love to splash in my bath!	37
<i>Yvonne Hnada and Catherine Vallette</i>	
A successful three-week assignment by nursing students to promote personal hygiene among schoolchildren in a rural area of New Caledonia.	



OUR COVER

Fijian fire walkers practising their art; a must for tourists. Fiji is currently attracting some 275,000 visitors annually. Suva, capital of Fiji, is the home base of the SPC's Plant Protection Officer, Mr. I. D. Firman, whose article appears on Page 25 of this issue.

(Photo by courtesy of
Bruce Graham, Sydney)

Unless otherwise stated, articles may be reproduced without prior reference provided acknowledgement is made to the author and the *South Pacific Bulletin*. The South Pacific Commission does not accept responsibility for statements made in contributed articles. Please direct all enquiries either to the Secretary-General, South Pacific Commission, B.P.D5, Noumea Cedex, New Caledonia, or to the Editor, South Pacific Commission Publications Bureau, P.O. Box A245, Sydney South, NSW 2000, Australia. The original of all articles is English, unless otherwise indicated. Published by the SPC Publications Bureau. Printed by Bridge Printery Pty. Ltd., Rosebery, NSW. Editor of Commission Publications: **Kevin Earl**. Production Assistant: **Allan Johnstone**.

THE SOUTH PACIFIC COMMISSION

The South Pacific Commission is a consultative and advisory body which was set up in 1947 by the six Governments then responsible for the administration of island territories in the South Pacific region. These were Australia, France, the Netherlands, New Zealand, the United Kingdom, and the United States of America. Participation by the Netherlands Government ceased at the end of 1962. The Independent State of Western Samoa was admitted as a participating Government in October 1964, the Republic of Nauru was admitted in July 1969, the Dominion of Fiji in May 1971, Papua New Guinea in September 1975, Solomon Islands and Tuvalu in November 1978. The Cook Islands and Niue became Participating Governments in October 1980.

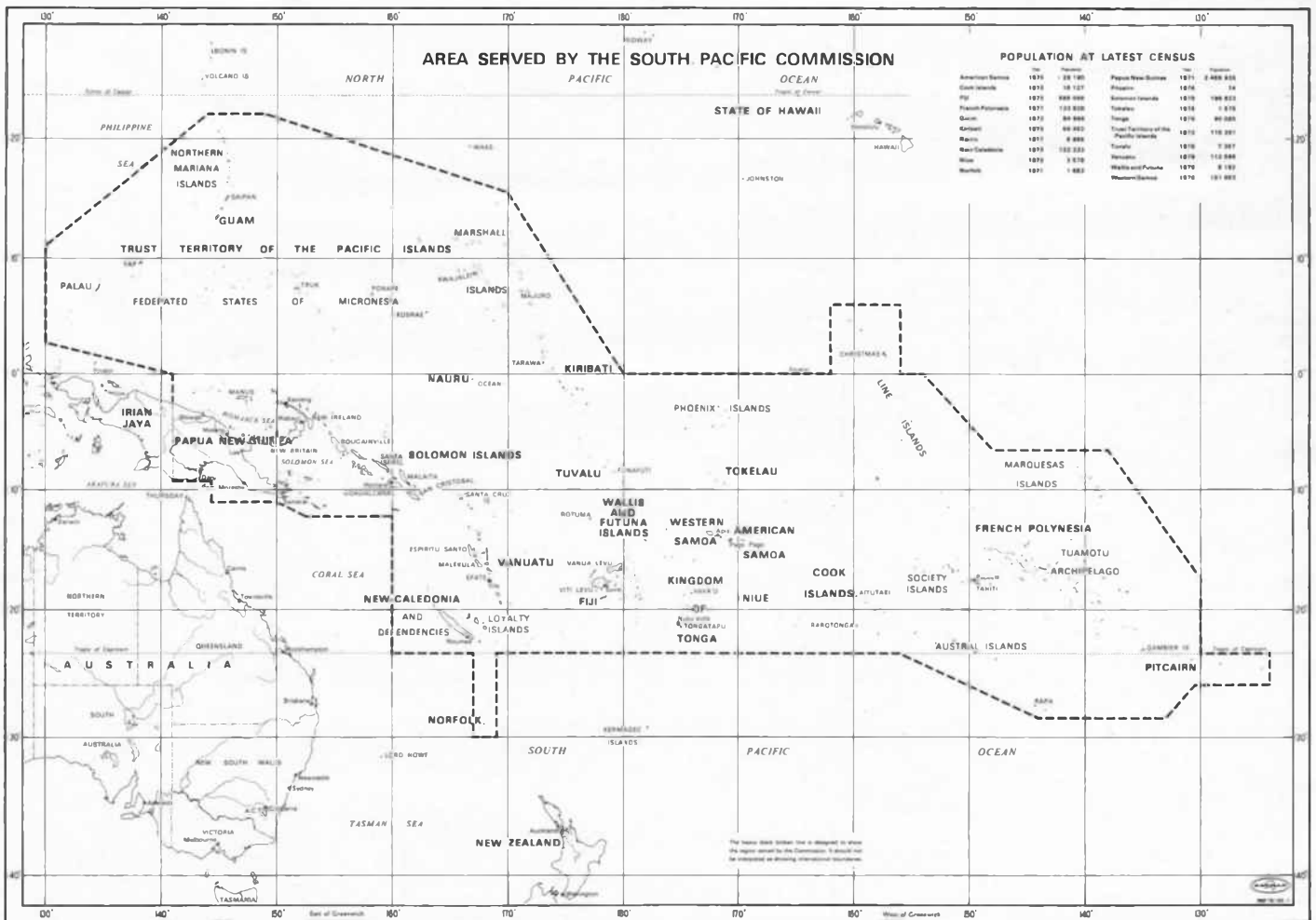
The Commission's purpose is to advise the participating Governments on ways of improving the well-being of the people of the Pacific island territories. The Commission's work programme provides for activities in the fields of food and materials, marine resources, rural management and technology,

community services and information services and data analysis. The Commission's headquarters are in Noumea, New Caledonia.

Until 1974, Commissioners from the participating Governments met in annual session. The South Pacific Conference first met in 1950, and became an annual event in 1967. It was attended by delegates from countries and territories within the Commission's area of action, and met immediately before the Session.

In October 1974, in Rarotonga, Cook Islands, representatives of the participating Governments signed a Memorandum of Understanding which provides for the Commission and the Conference to meet annually in a joint session known as the South Pacific Conference.

The Principal Officers of the Commission are: the Secretary-General, the Hon. M. Young Vivian; the Director of Programmes, Mr. W. T. Brown; and the Director of Administration, Mr. T. Pierre.





Food stereotypes and health care

One of the challenges of the anthropological investigation of food patterns – what some people call “nutritional anthropology” – is to help effect some balance between the rapid growth of nutrition knowledge, on the one hand, and the somewhat neglected understanding of the social and cultural significance of food behaviours, on the other (Freedman 1974:3–4). An anthropological study of human diet can give nutrition educators and health care workers more sensitivity to the cultural contexts of food behaviours, as well as furthering the interchange already begun between the disciplines of nutrition and anthropology.

Teachers are increasingly faced with multi-racial, multi-cultural classes; doctors and nurses are often confronted with people of diverse cultural backgrounds, and paramedical staff must become familiar with a variety of customs and lifestyles appropriate to the groups they

serve. Good baseline data on food practices are, then, prerequisites for improving programme development in nutrition education. Food is fundamental to any group, and a better appreciation of cultural differences might begin with its investigation.

The concept of food stereotypes

In trying to reach a minority, or culturally different, group through nutrition education, one of the most persistent problems is, first, to try to break through the folklore being presented by health care workers about the local population. Stereotypes about the supposed cultural

habits of minorities – and these include stereotypes about food habits – can and do act as barriers to further communication between professional and patient and ultimately only hinder the stated goals of nutrition education.

Before carrying out my own dietary surveys, principally in North Carolina (U.S.A.) and New Zealand, I have interviewed doctors, nurses and other health professionals who deal regularly with the population under study, in order to see how they view these groups and their nutritional needs. There is a lot to be learned from talking with people who have worked closely with a population

by Thomas K. Fitzgerald

Professor of Anthropology – University of North Carolina at Greensboro

over a long period of time. Even when some of their perceptions are more in the realm of "folklore," these notions can stimulate the researcher to ask more pertinent questions. Ultimately conclusions must be weighed against such folk generalisations.

In this article I will outline briefly some of the food stereotypes that I discovered in two separate studies, the first of middle-income Black Americans in North Carolina and the second dealing with migrant Cook Islanders living in Wellington, New Zealand.

Black-White food habits study

The North Carolina study, reported on in *Nutrition Today* (July/Aug. 1979: 16-21), makes the point that a great deal of what we know about peoples' eating habits is based upon assumptions founded more on folklore than upon actual observation. These romantic visions are especially true when people talk about Southern American eating traditions. Lay people and occasionally even professionals assume that Blacks eat differently from Whites.

A review of the literature on Black diet, however, revealed that most such studies have been concerned almost uniquely with low-income samples. We know virtually nothing concrete about nutritional patterns in middle-class Black households, or for that matter in middle-class White families.

Holding the class factor constant, I asked a simple question: Are there any significant differences in food habits between Blacks and Whites in a middle-class community?

The conclusions were fairly consistent. Food habits in this Southern community have certainly changed over the last hundred years. The traditional Southern breakfast – for Blacks or Whites – is, for example, largely now a thing of the past. Family eating patterns, too, are no longer traditional. Although there are some minor differences in meal scheduling (Blacks are slightly more individualistic in their pattern of meal taking than Whites) and some slight differences in snacking, food selection and ceremonial exchanges of food, Blacks and Whites do not differ appreciably in the *kinds* of foods they eat or necessarily in attitudes toward foods as health symbols.

Southerners, Black or White, who occupy the same class structure tend to eat the foods available to that class, these

being only regionally specific. Minor divergences between these racial groups seem to be related primarily to different educational disadvantages, certain survivals of the Negro folk culture (basically a more rural way of life) and some slight socio-economic disparity in work situations. This conclusion is not to deny the existence of *any* differences between Blacks and Whites (e.g., in the manner of cooking); nonetheless, this study, on the whole, suggests rather strongly that Southern middle-class Blacks and Whites have similar eating habits.

Cook Island Migrants in Wellington

In New Zealand the phenomenon of food stereotyping is also evident. From random conversations with educated, middle-class New Zealanders, from press accounts, and from more systematic interviews with teachers, health care workers and other professionals directly associated with the Island community, I discovered many stereotypes about how Pacific Islanders are *supposed* to eat.

go to school before the normal breakfast hour or not be provided with a school lunch. Further, a few professionals stated categorically that Islanders know nothing about gardening, don't eat "vegies" (greens) like other New Zealanders, but instead they prefer only root vegetables (starches such as taro or green bananas) or else take-away foods, like fish and chips (Fitzgerald 1978).

Hence – so the stereotype goes – all Islanders are obese or overweight; and one would guess they alone have a drinking problem. One nurse put it this way: "They (Islanders) have caught 'em on to our bad habits before they have caught 'em on to our good."

The actual findings give quite a different picture (Fitzgerald 1980): New Zealanders actually have little knowledge of Island customs, including food habits; thus, they tend to show relatively little sensitivity to the Islanders' need for cultural distinctiveness. The tendency is rather to lump all Islanders into a lower-class category in New Zealand and to



Cauliflower, beans, tomatoes and cucumbers.

The summary impression pictures Islanders as a migrant group with little knowledge of how Europeans manage a home, who are clannish and live in crowded quarters and generally who can't adapt well to European foods. They are viewed as a group who eat at odd times of the day, and hence their children must surely

assume, consequently, that *all Islanders eat alike*. The research data presented here refute a number of food-related stereotypes about Pacific Islanders.

It was not found, for example, that Islanders as a group have any particular problems adapting to New Zealand foods or to the New Zealand way of life. Some

Islanders (from tiny atolls) do; many do not. It was not found that their children routinely go to school without breakfast (Fitzgerald 1978). Island children often eat *different* kinds of foods for a morning meal – leftover taro or corned beef – but such a meal is not necessarily poorly balanced nutritionally.

Certainly, it was not found that all Islanders are ignorant of the mechanics

of gardening. Island migrants from atoll environments, where soil is minimal to non-existent, obviously are different in this regard from Islanders from lush volcanic islands. We too often generalise from the former.

Likewise, I did not find that Islanders avoid eating either vegetables or “greens.” In addition to common New Zealand vegetables, some 66 per cent of the

families I interviewed grow (for their own consumption) a green vegetable which Cook Islanders call “rukau.” This vegetable, rich in vitamins and minerals, is the leafy top of the taro plant – hence a form of “greens” in New Zealand.

On the other hand, some *real differences* were observed in the areas of meal scheduling, snacking patterns, food exchanges, food taboos and attitudes toward food and health. Not all of these differences were, however, “bad.” Certainly a teaching opportunity is being missed in not using this information as a natural channel for learning “good” food habits, whatever their cultural expression!

Stereotypes about Island food habits are often blatantly contradictory. The generalisations that all Islanders are overweight and even that all overweightness is a health hazard may itself need some revision. It is possible that obesity is really only a health hazard under certain conditions (Prior 1976). One must question, too, the common assertion that Islanders get drunk faster than the average European. As yet we do not have reliable figures to make such a judgment. Certainly statistics indicate that alcoholism is higher among European New Zealanders (Rose 1960).

Food stereotyping is part and parcel of a whole discriminatory package which groups all “Islanders” into a New Zealand lower class. To do so is to invite problems in communication that ultimately help to perpetuate an urban proletariat group in New Zealand. Non-Island New Zealanders might become more familiar with Island customs. One could start with knowledge of *Island* foods. More information about food values, of both Island and European foods, couched in good educational format, is the real challenge of health care workers in this area.

To rectify the situation, health care workers might begin to consider some of the *positive* contributions that Island food habits could make to the larger New Zealand diet. For example, the Island preference for fruits rather than candies/sweets should be emulated rather than discouraged. For a group, many of whom can't tolerate milk, the Island vegetables (taro or “rukau,” the tops of taro) may be reasonably good sources of calcium as well as the B vitamins.

Europeans, also, could learn a lot about the non-nutritional, subjective aspects of food consumption at almost any Island celebration (feast). Eating is



Taro and bananas.



“Rukau” – the leafy top of the taro plant.

certainly more than just nutrition. Here, too, nutritionists could learn from anthropology.

A major conclusion is the sad fact that too few health personnel know much about Islanders in Wellington – specifically, about how they eat. A consequence of this cultural indifference is that Islanders do not use the New Zealand health services to maximum advantage.

Some educational challenges

What basic principles of nutrition education can we deduce from this discussion that might be of interest to nutrition educators and to health care workers?

1. Nutrition education, to be effective, must surely be based on the belief that there is good in each cultural group's own food practices. Left-over taro, for example, may not, in proper proportions, be a bad source of calcium. There are other positive features of the Island diet. It is important that educators build on a group's natural food strengths.
2. It is, unfortunately, often necessary to break through the folklore presented by health care workers,

and others, about the *supposed* cultural habits of minorities. Such stereotypes, especially by professionals, become barriers to effective social programme planning. Islanders, for example, clearly are not the only ones who eat take-away foods. Some food stereotypes are especially amusing. Europeans, when asked what Islanders eat, often replied: "Beer, fish and chips." Some Islanders had the identical notion of Europeans!

If one thing emerges from this study, it is the realisation that there is room for more and better inter-cultural communication. Since the Island diet clearly has both positive and negative features, the real educational challenge is to capitalise on the good food habits while discouraging the bad ones.

3. Before educators can effectively teach nutrition in a multi-cultural setting, they need to have more knowledge of the interests, values, even prejudices of the persons being educated; in other words, they

need to learn to better appreciate the *cultural context* of such learning for the particular group(s) being educated. This emphasis on the cultural as well as the biological significance of food habits is fundamental. □

Selected Bibliography

- Fitzgerald, Thomas K. (1977). Anthropological approaches to the study of food habit: some methodological issues, In T.K. Fitzgerald (ed.) *Nutrition and Anthropology in Action*, Amsterdam: Van Gorcum, Ltd, pp. 69-78.
- Fitzgerald, Thomas K. (1978) Pakeha and Polynesia: what these kids eat. *Education*, Wellington, New Zealand, Vol. 1: pp. 15-17.
- Fitzgerald, Thomas K. (1979) Southern folks' eating habits ain't what they used to be: *Nutrition Today* 14, 4 (July/Aug. 1979): 16-21.
- Cook Island dietary change (1980). *Anthropologie d'alimentation, Social Science, Information sur les Sciences Sociales*, 415.
- Freedman, Robert L. (1974). Nutrition and anthropology: each can help the other. *Community Nutrition Institute Newsletter* 4: 3-4.
- Rose, R.J. (1960). Maori-European standard of health. Wellington, Department of Health, Medical Statistics Branch, *Special Report* 1.

Women embark on egg project

A dream came true for villagers at Nabukaluka, Naitasiri, 50 km away from Suva, when the Department of Agriculture, Fiji, launched a poultry egg production project in their village.

The Department initiated the project with the view to educating the villagers, especially women, on how to obtain fresh eggs throughout the year. Another aim was to encourage nearby villagers to carry out similar projects in their respective areas.

It all began after a visit by Mr Stephen Swan, a former poultry adviser with the Ministry of Agriculture and Fisheries.

Mr Swan recommended the Nabukaluka area as the project site after finding the villagers lacked chicken meat and eggs in their meals.

Buying chickens and eggs from shops and supermarkets was another problem since the village was isolated and had low income earnings.

The Department of Agriculture, in conjunction with the Women's Interest Section of the Ministry of Fijian Affairs, held discussions with the village women, who agreed to participate in the project.

The poultry project consists of a small wood, iron and wire mesh cage with 15 laying birds obtained from Fiji College of Agriculture in September last year.

The project is presently being looked after by the Nabukaluka Women's Group and supervised by Mr Peter Saville, Divisional Veterinary Officer Central, Ministry of Agriculture and Fisheries.

The women's group, which consists of 73 members, has been subdivided into four groups, with each group looking after the project for a week.

The ladies do the feeding, cleaning and collecting eggs twice a day. They feed the birds with chicken meals, bought from Crest Mills in Nausori. The groups meet once in every two weeks and discuss the progress of the project.

The 15 laying birds produce an average of a dozen eggs per day and the women sell them at the village at 80c a dozen.

So far the group has sold \$20 worth of eggs, and according to the leader of the Nabukaluka Women's Group, Adi Vonokula, the money will be spent on village developments.

Adi Vonokula said that, with the enthusiasm and interest shown by the members of the group, it was anticipated that the project would expand.

She said the group was thankful to the Ministry of Agriculture and Fisheries for initiating the project.

"We are also grateful to Mr Saville, who has spearheaded the establishment of the project."

She said that, without Mr Saville and Peni Qio, the Locality Extension Officer at Nabukaluka, they would not have progressed at all.

The Agriculture Department is encouraging similar projects in the rural areas, and villagers or community workers wishing to establish these projects are welcome to contact the Ministry of Agriculture and Fisheries. □

Birth and growth of an Atoll

by
J.-P. Baillard

Representative of the Atomic Energy Commission and Department Marine Affairs — French Polynesia.
With contributions by Messrs Demange and Granger.

This article summarises the most recent findings obtained in the world, including the results of work carried out by French geologists, particularly Messrs Demange and Granger.

On our Earth there are more than a thousand atolls or coral reefs (Fig. 1), lying between the tropics. In the Indo-Pacific region there are approximately 300 "genuine" atolls, according to the definition given by Mr J. Newhouse:

"An atoll is a living reef which is separated from the nearest land of volcanic origin by water having a depth greater than that at which hermatypic corals can grow."

What is an atoll?

Pacific atolls consist of two different structures one on top of the other: a volcano born on the ocean floor and which grew in size until its peak emerged some distance above the ocean surface, and a coral reef which succeeded in developing wherever it found a combination of favourable conditions, i.e., depths between 0 and 50 metres in clear and well-oxygenated waters.

We shall follow an atoll through the different stages of its formation and

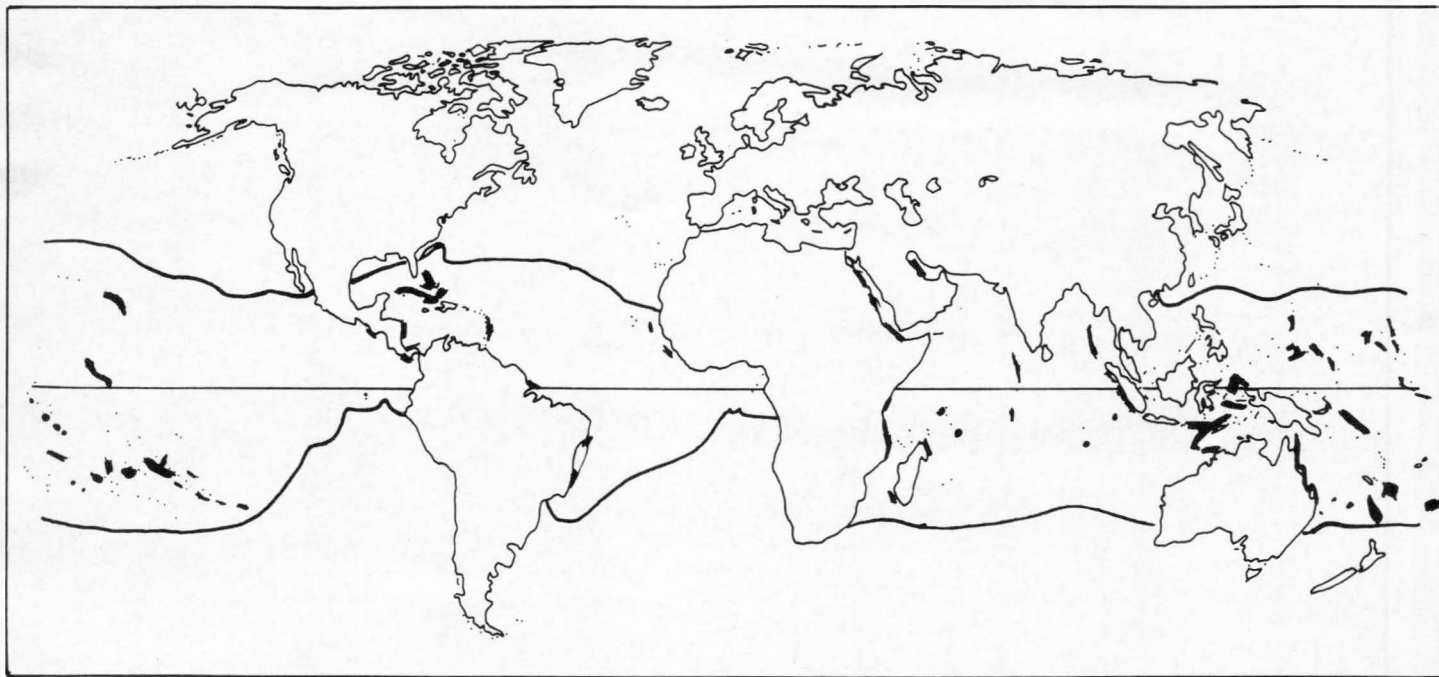


FIG. 1. Coral reefs and atolls lie in the intertropical zone.

study the factors which allowed it to develop: sea-level changes in the course of geological time, movements of the ocean floor, formative processes of submarine volcanoes.

A volcano foundation

Atolls originate as volcanoes on relatively flat ocean floors at depths between 4000 and 4500 metres. As a result of profound anomalies of the Earth's mantle and tectonic stresses which will be discussed further on, fractures occurred allowing flows of lava to well-up from the mantle and spread out over the ocean floor (Fig. 3). This action continued for some time and eventually aligned or random structures appeared along the fissures (Figs. 4 and 5). The flows accumulated to form a truncated flat-topped volcano called a guyot (Fig. 6). Its top sagged very slightly, but there was no crater.

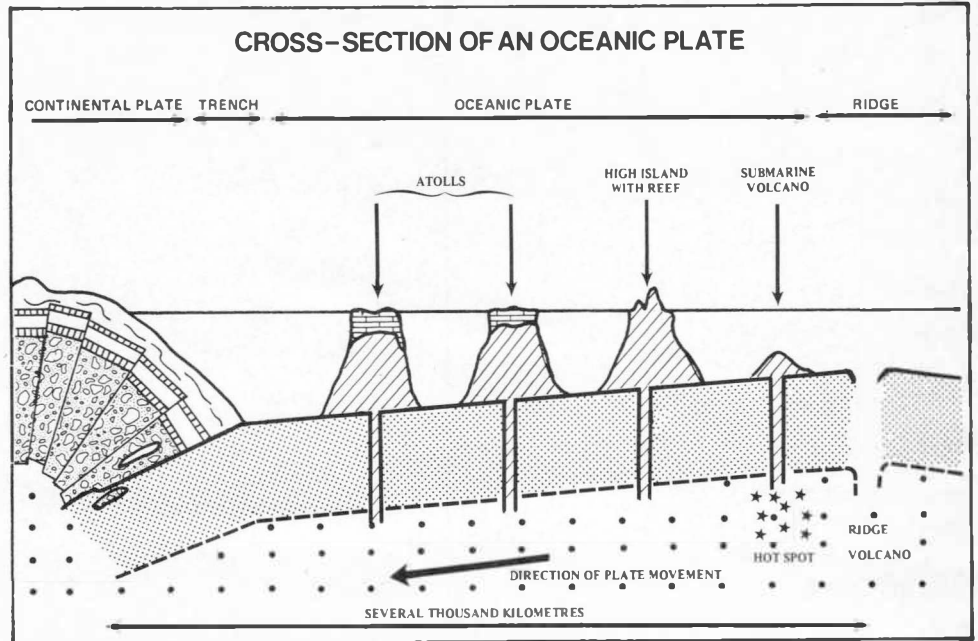


FIG. 2. Cross-section of an oceanic plate.

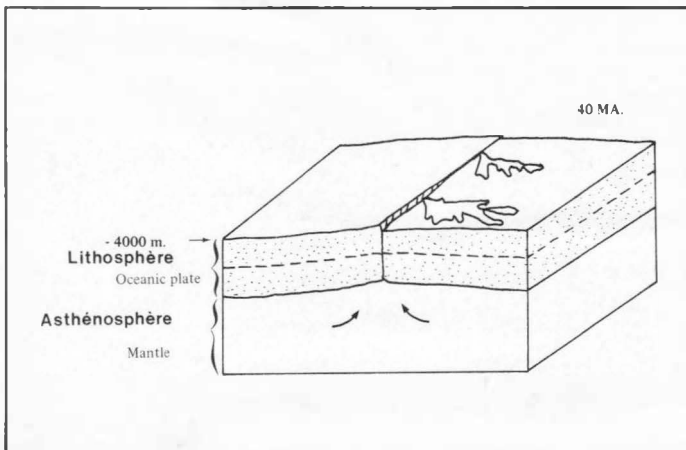


FIG. 3. Fracture of the plate.

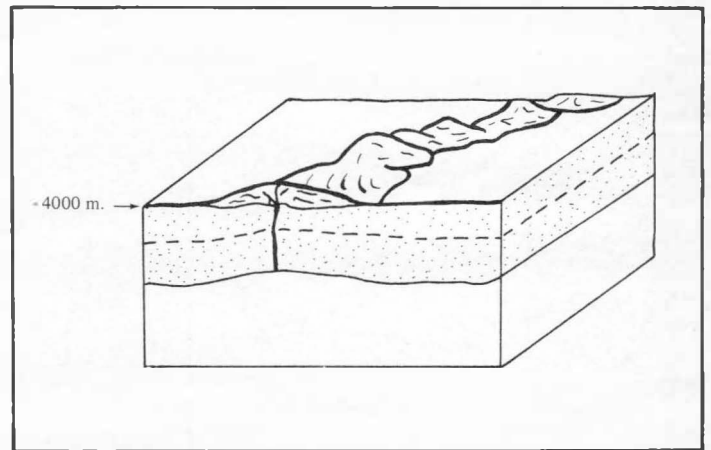


FIG. 4. Birth of the ridge.

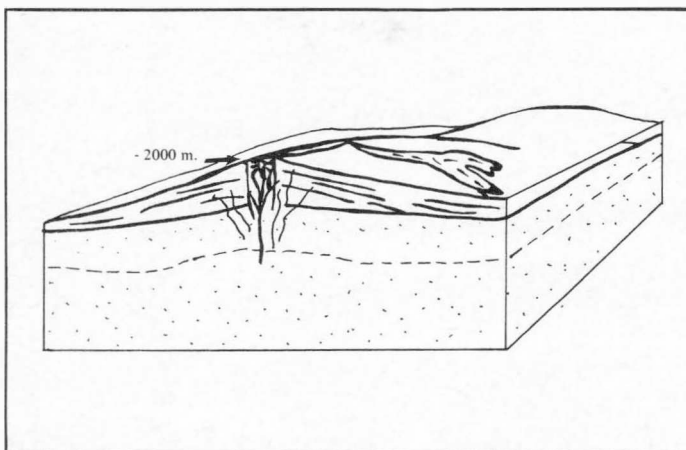


FIG. 5. Growth of the ridge.

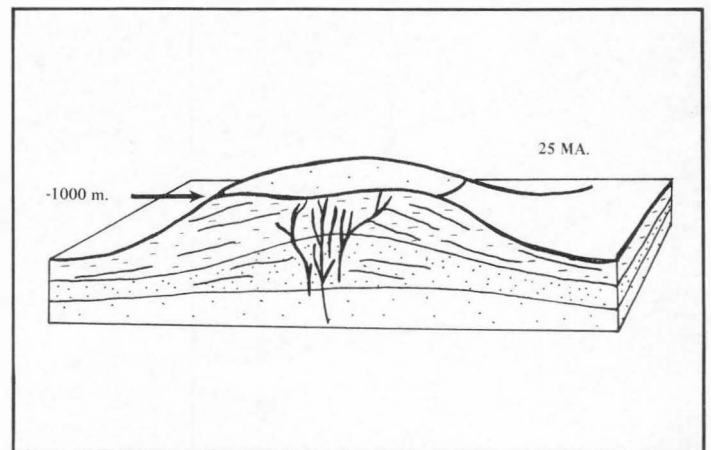


FIG. 6. Formation of a guyot.

The flows of lava continued to pour out through vertical intrusions called dykes that either occupied a radial position in the structure or were parallel to the fissures which had given birth to the volcano, and the volcano continued to grow. When it had reached a height of only some 200 metres from the surface, where the water pressure is no longer sufficient to prevent the release of the gases dissolved in the lava, the nature of the released products changed, the flows fragmented giving rise to autoclastic breccias, and the points of exit of the lavas (where the latter are degassed) became explosive and pulverised the lava into fine shards of glass (hyaloclastites).

When the volcano was almost level with the surface, i.e., about 8 million years ago, it appears to have had a great deal of difficulty in emerging since at that stage its lava supply was declining and erosion, mainly due to the action of waves on poorly consolidated materials, was causing it to grow in width rather than in height.

It finally emerged (Fig. 7) as a cone-shaped structure with slightly sloping sides (about 6° ; cf. Fig. 8). Its height could never have exceeded 600 metres above sea level. In the course of emergence, the central part collapsed, forming an elliptic caldera (kind of crater).

During the volcano's period of activity the ocean floor beneath it rose, probably as a result of pressures associated with the fusion process which generates the lavas, but as soon as the volcano died, it started sinking under its own weight, a phenomenon called subsidence which, in this area, proceeds at a rate of 1 cm per hundred years.

A coral top

Whenever conditions are right for coral establishment and growth – that is, while the volcano is emerging – the larvae of the corals contained in the plankton suspended in the sea water form scattered colonies on the volcano which begin to

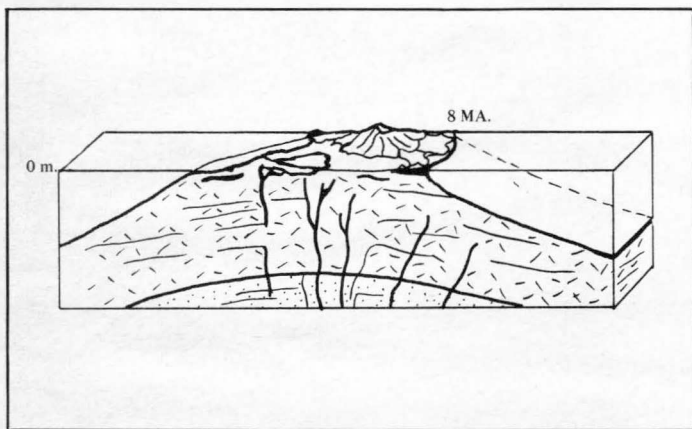


FIG. 7. Emergence.

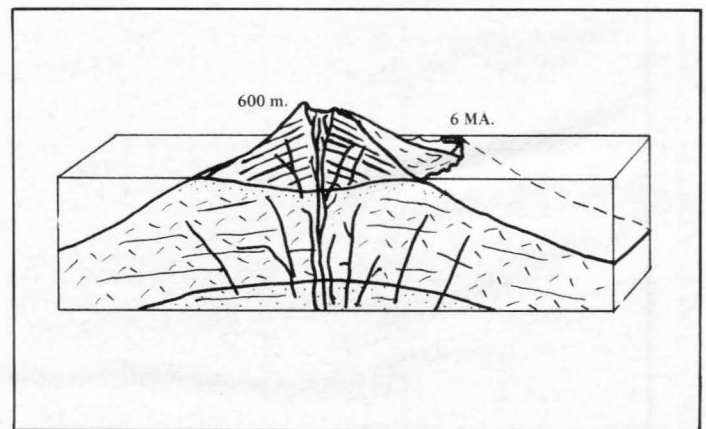


FIG. 8. Aerial volcanicity.

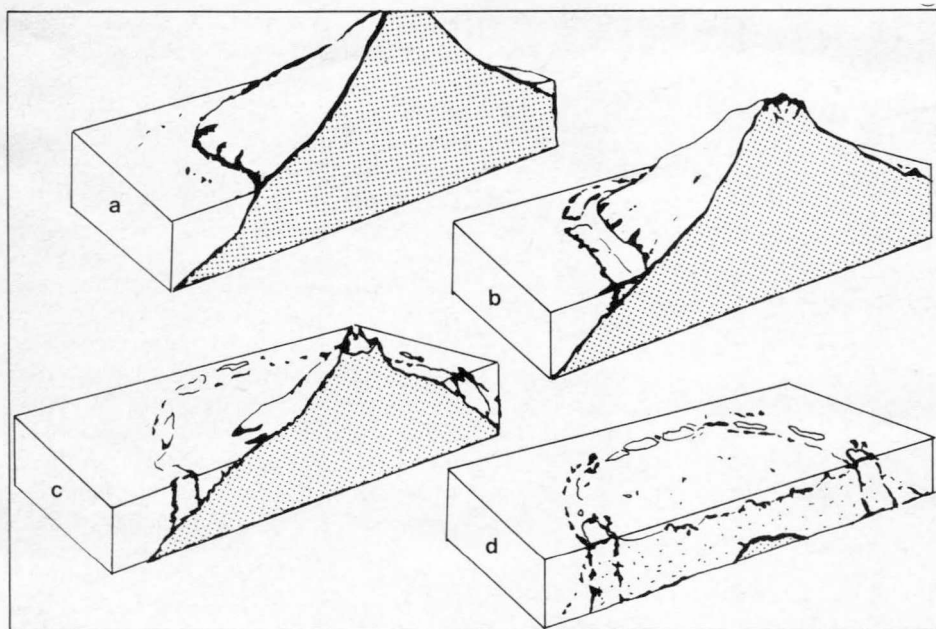


FIG. 9. Stages in the development of coral structures.

grow. Initial growth is impeded by falling ash from eruptions and mud from erosion of the sides.

Since the volcano is gradually subsiding, the corals are forced to grow in order to survive. They eventually form a ring (fringing reef stage) in the shape of the volcano when fully emerged, and small isolated growth zones on its sides (Fig. 9). This model is observable in Tahiti, with or without living coral along the coastline, a lagoon and a barrier reef.

As a result of subsidence and erosion, the volcano disappears under the water; it is, at this stage, completely covered with coral. Little by little the barrier reef restricts the circulation of water between the ocean and the lagoon to the "hoas" (passes) and in the lagoon sediments accumulate, allowing only a number of coral knolls to develop, after which coral growth continues mainly on the ocean side (Fig. 9d).

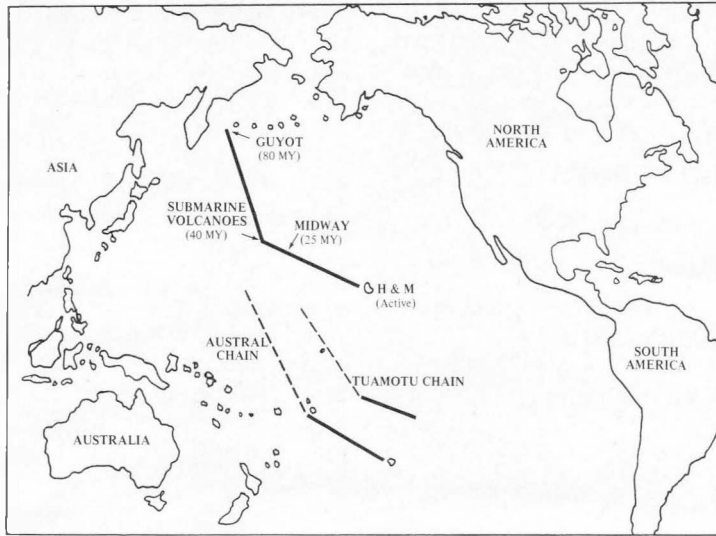


FIG. 10. Alignments originate above hot spots situated
 – for the Austral chain, near McDonald volcano;
 – for the Tuamotu chain, near Gala and Gomez;
 – for the Midway chain, in Hawaii.

Geological movements affecting atoll development

Now we have seen how an atoll is born and develops, we must place this process in the broader geological context of the Pacific Ocean and examine two phenomena that concurrently occur in our area: movements of the ocean floor and variations of ocean levels.

Movement of ocean floors

The development of the "plate tectonics" has focussed attention on certain parts of the world where plates are continuously being created or destroyed. We are located on a plate (Fig. 10) at the South Pacific ridge, which moves in a north-westerly direction at an average speed of approximately 10 cm per year towards a trench where it will be swallowed up. This speed, although high, is not sufficient to explain the origin of volcanic chains such as the Tuamotus (Fig. 11) by lava from the ridge. The youngest island in the chain (Ducie or Pitcairn) is situated at far too great a distance from the ridge to have been formed by it.

In 1970 Morgan proposed the theory of hot spots and mantle plumes to explain how island chains were formed a long way from the ridges. He postulates that in certain parts of the globe mantle anomalies exist which cause a partial fusion of the base of the plate that moves over them. Volcanoes are aligned in the direction in which the plate has moved in the course of successive geological periods, the oldest situated furthest from the mantle plume. The amount of lava pouring out of the mantle to feed and build up the volcano is therefore very great when it is first formed on the plume, but decreases rapidly as the plate moves on.

This phase of decreased feeding explains why the volcano has considerable difficulty in breaking through the water surface. Growth ceases at this stage and subsidence begins.

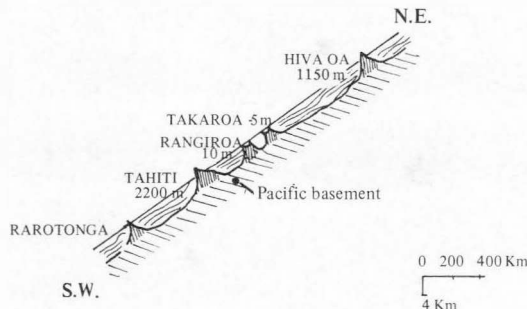
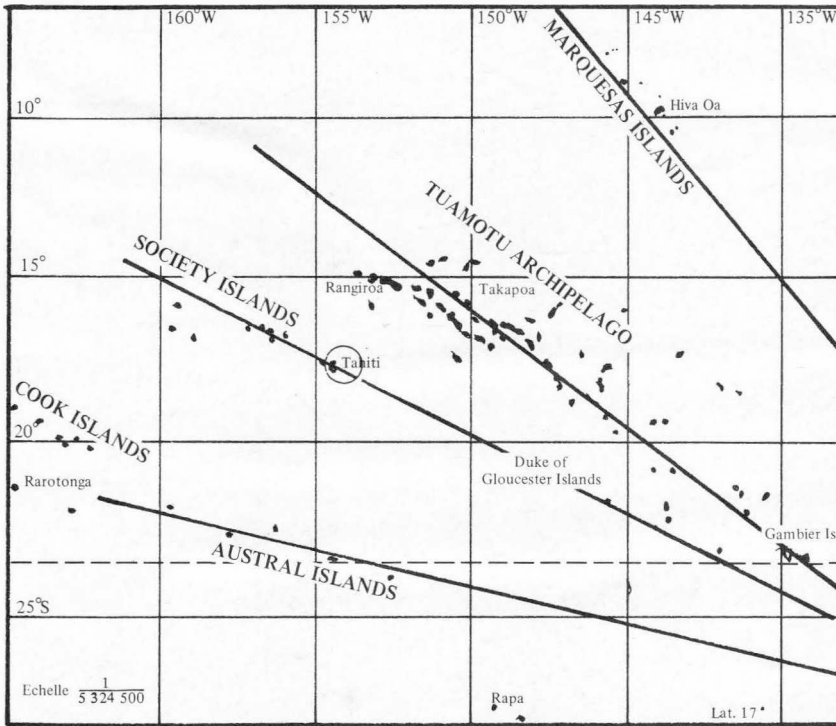


FIG. 11. Alignment of archipelagoes.

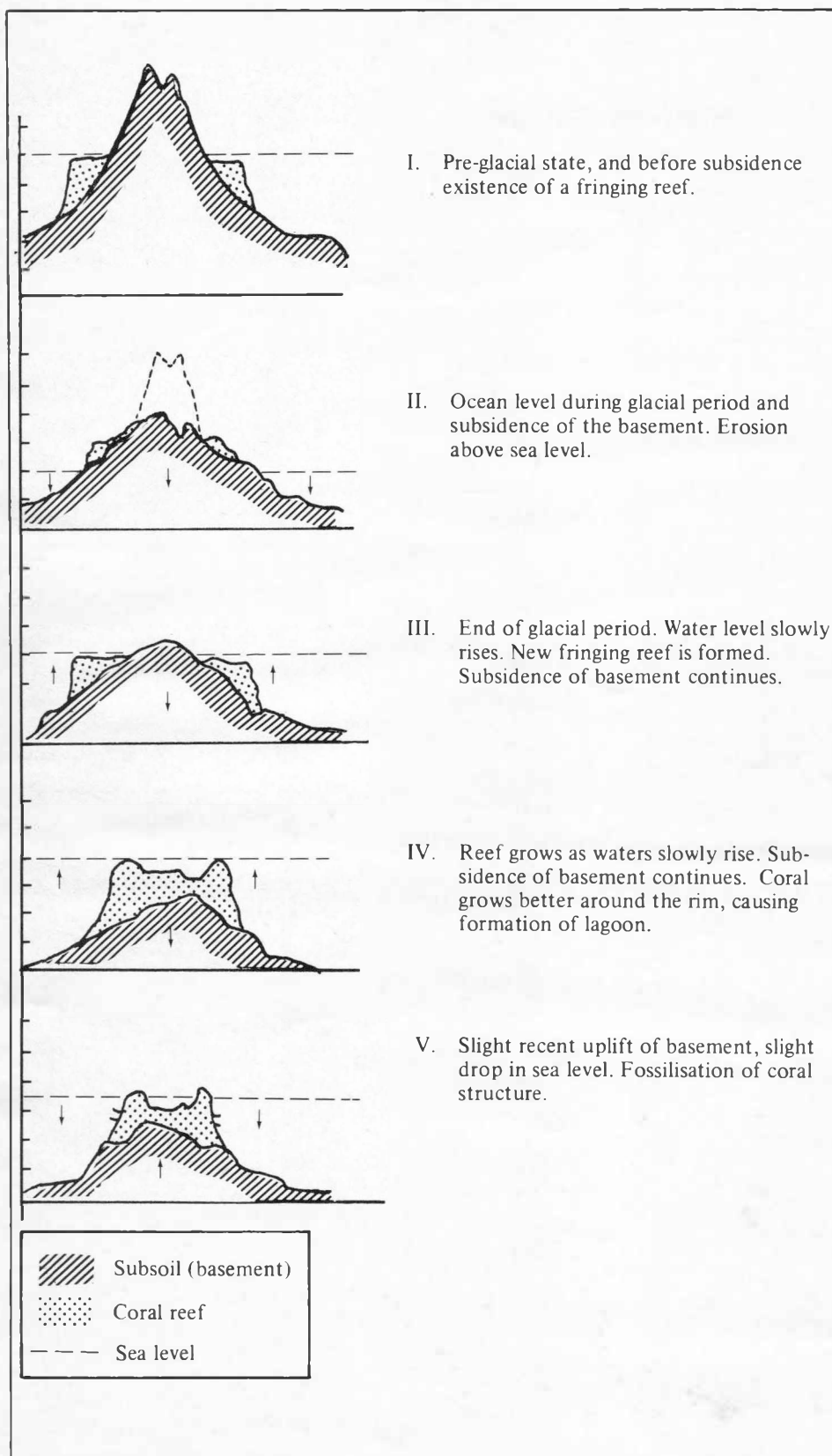


FIG. 12. Development of an atoll according to the combined theories of Darwin and Daly, supplemented by Sylvester and Ranson. (N.B. This development, which corresponds to Würm's glaciation, may have occurred several times in the geological history of the Earth).

Sea-level changes

Variations of the sea level (Fig. 12) during the Quaternary period (in the last two million years) are well understood. For the earlier periods, data are rather unreliable. The mechanism of these variations is related to the extension or reduction of the polar ice caps. During the reduction phase the ice melts, the sea level rises, and the reverse occurs during the extension phase.

These variations caused atolls to emerge more than 50 metres above the water surface. During emergences, and more generally on motus, rainwater can infiltrate and form layers and lenses of fresh water. A chemical reaction occurs where the fresh water meets the sea water contained in the sub-soil, calcium carbonate (limestone) being converted into carbonate of calcium and magnesium (dolomite). The coral skeleton is made up of aragonite* (CaCO_3) which, when the coral dies, is transformed into calcite* (CaCO_3). Rainwater seeping through the limestone dissolves part of the carbonate. When the fresh water containing CaCO_3 reacts with sea water containing magnesium salts, dolomite, $\text{CaMg}(\text{CO}_3)_2$, is precipitated out.

This is one of the processes by which dolomites are formed. The entire base of coral formations is thus converted into dolomite, giving a much denser rock.

During each emergence corals in the upper portion are fossilised and indurated. We discovered indurated foliations corresponding to known glacial periods at depths of -2, -11, -23, -44 and -66 m.

Thus an atoll is created by a volcano, which itself is formed by the passage of a plate over a mantle plume. As soon as the volcano moves away from the mantle plume, it is no longer fed with magma, dies and begins to subside. Corals then colonise it according to variations of sea level. The thickest coral formations are found furthest from the mantle plume: 350 metres south-east of the Tuamotus, 600 metres at Hao, 1000 metres at Rangiroa.

It remains to be explained why some atolls which were level with the sea surface now project as high as 70 metres above the water (Makatea).

In March 1978 the Americans McNutt and Menard put forward a clear and

* Aragonite - stable form of calcium carbonate at high temperature and pressure.

* Calcite - stable form of calcium carbonate at normal temperature and pressure.

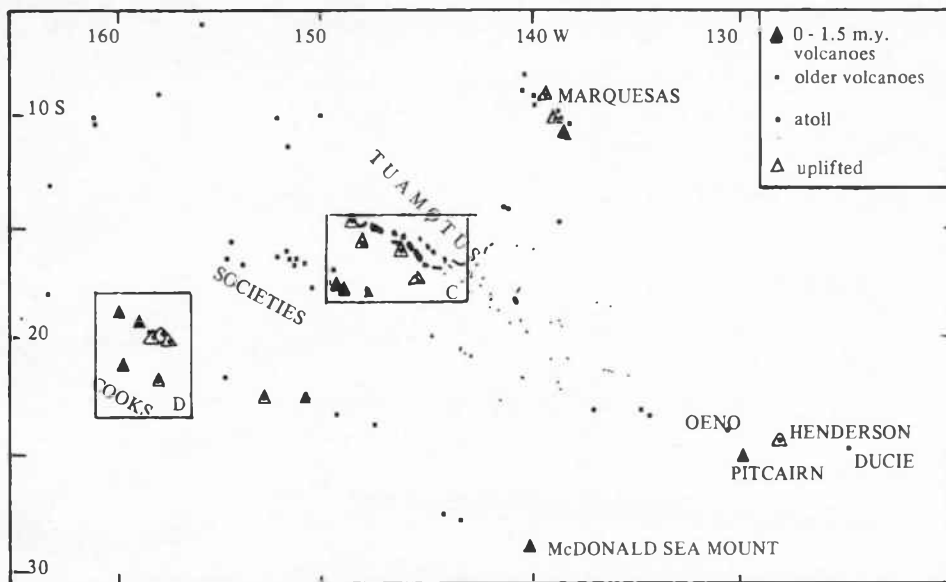


FIG. 13(a). Locations of elevated atolls, sea-level atolls, and active or recently active volcanoes in the equatorial Pacific. Outlined areas show the locations for the islands in Figs. 13(c) and 13(d).

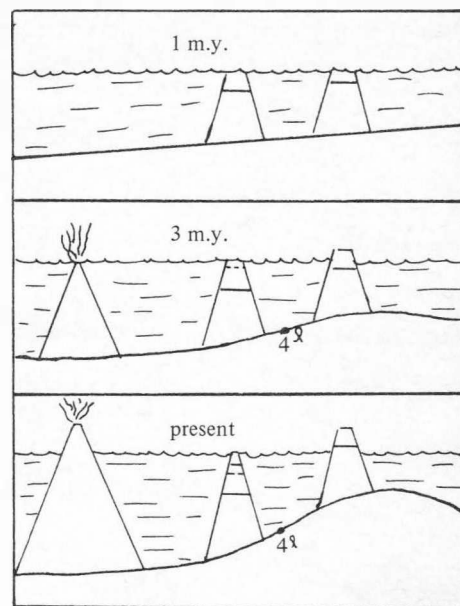


FIG. 13(b). Model of apparent sea-level change on coral atolls caused by volcanic loading on an elastic lithosphere.

Q is the flexural parameter which depends on the lithospheric flexural rigidity.

attractive theory. Glacial eustatism (i.e., oscillation of the sea level in glacial time) cannot account for the simultaneous existence of elevated atolls and atolls at sea level. The fact that active or recent volcanoes have been found close to elevated atolls suggests that they were raised tectonically by volcanic loading.

The physical model which explains regional deformations is based on the

hypothesis that the upper part of the lithosphere acts like an elastic envelope enclosing an incompressible fluid. When this elastic envelope is stretched taut, any weight on it is distributed over a far greater area than that of the actual load zone. As a volcano grows in size it therefore deforms the ocean basement and affects the apparent level of the ocean for neighbouring coral atolls.

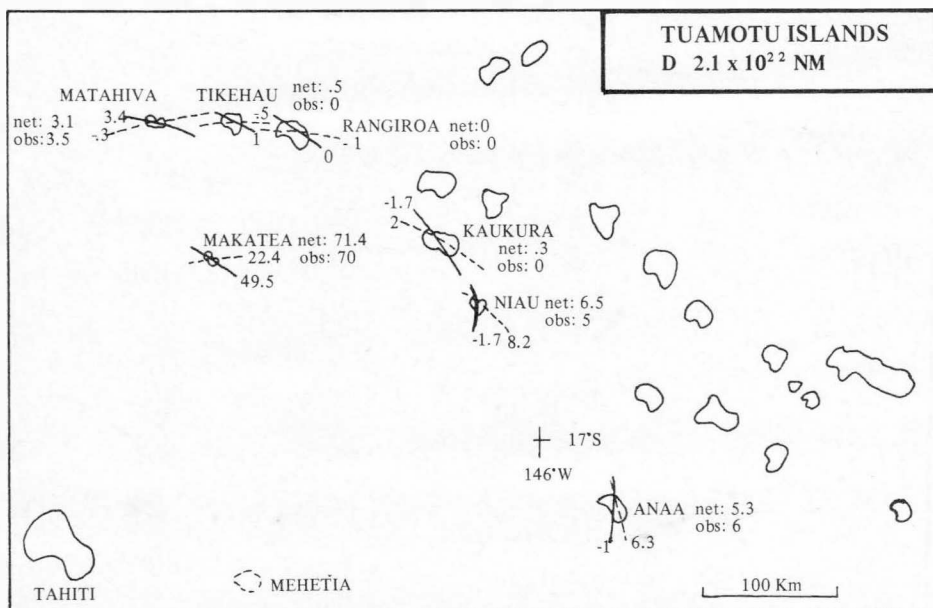


FIG. 13(c). Atoll uplift in the Tuamotu Islands. Uplift contours drawn through atolls correspond to the predicted flexure from loading by Tahiti (solid arcs) and Mehetia (dashed arcs). The theoretical sum is compared to the observed elevation.

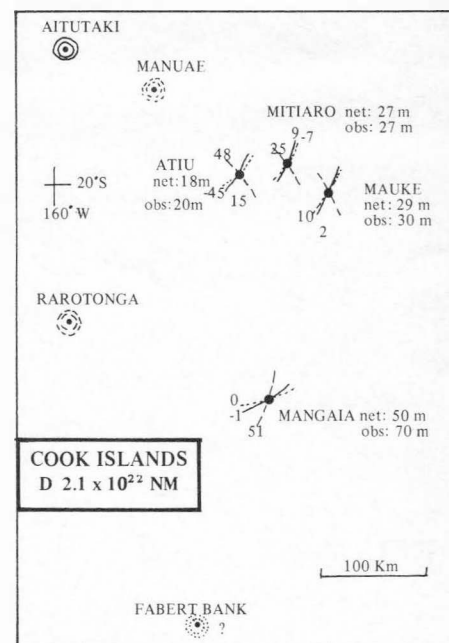


FIG. 13(d). Uplift contours keyed to three volcanoes are drawn through four atolls in the Cook Islands.

For each atoll the resulting sum from the theoretical uplift is compared to the observed uplift. Although Fabert Bank was not included in the calculation, it may also elevate Mangaia.

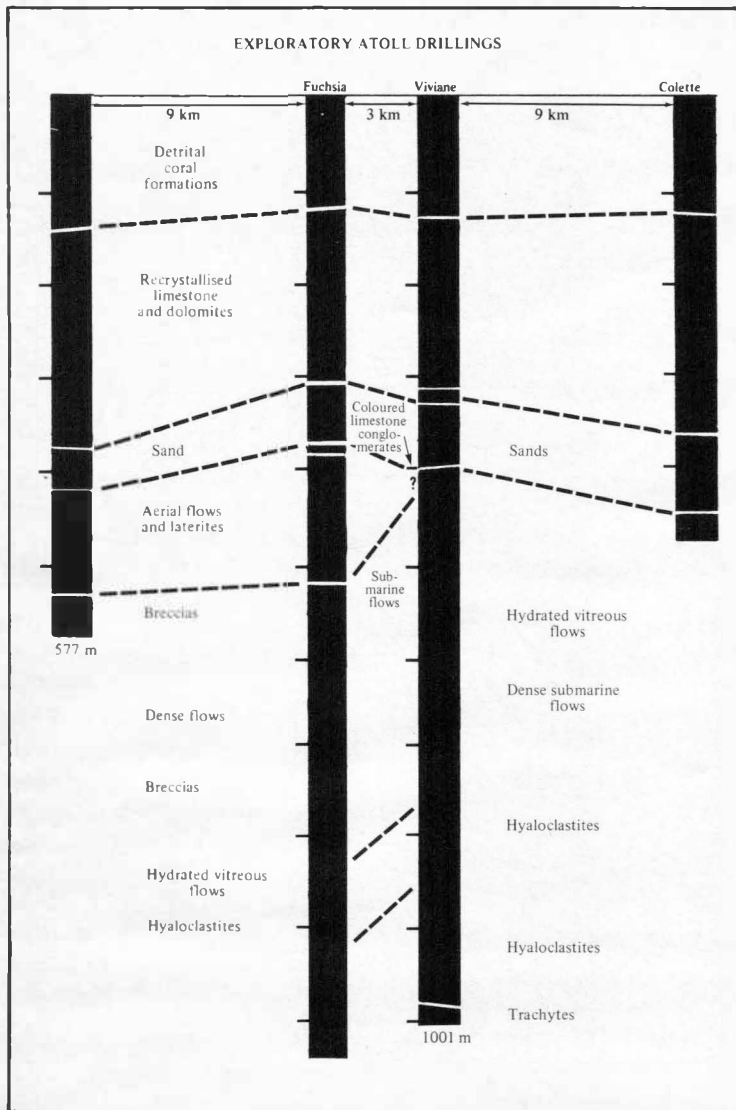


FIG. 14.

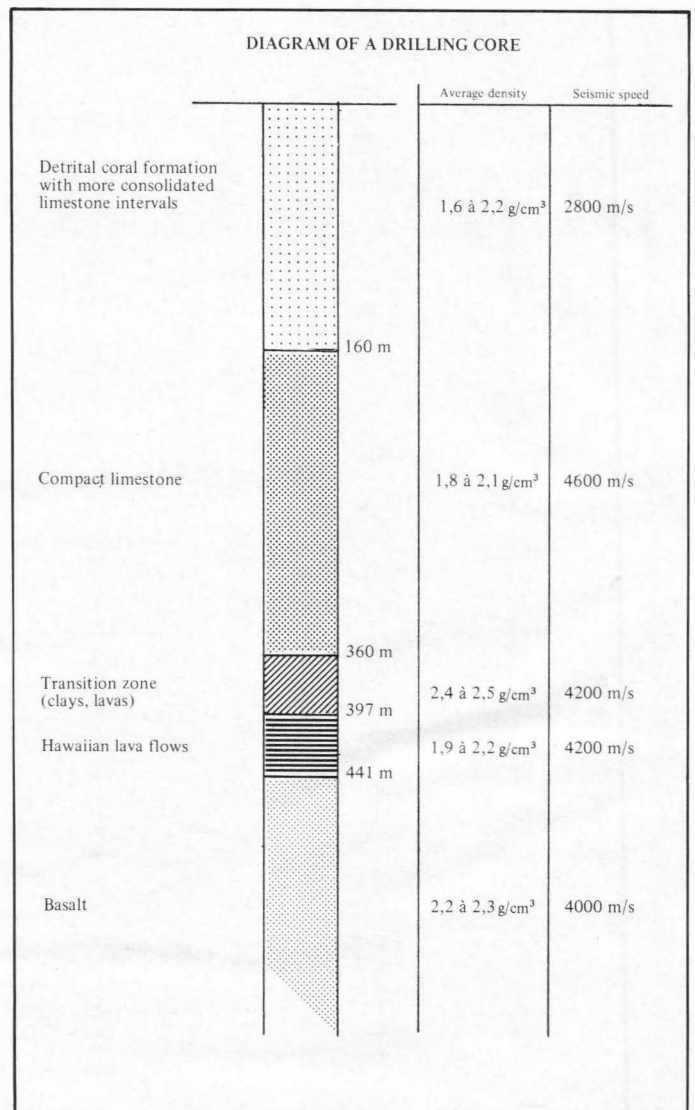


FIG. 15.

Using this theory, Menard was able to explain with remarkable precision the uplift of Makatea by the weight of Tahiti and Mehetia and the elevation of Atiu, Mitiaro, Mauke and Mangaia in the Cook Islands by loading from Rarotonga, Aitutaki and Manuae (Fig. 13).

What evidence is there to substantiate these hypotheses?

I shall not go into the plate tectonics theory, now generally accepted as a result of the *Glomar Challenger* expeditions and the Cyanheat operation which made it possible to observe the rift in different places along its 60,000-km length and the subduction zone where the African plate dips under the European continent.

To conclude, I shall simply give the results of drillings conducted in various places on one of the Tuamotu atolls,

illustrating them by a series of cores (of diagrams Fig. 14) which feature (from top to bottom):

- indurated coral surface layer.
- calcaranites.
- indurated dolomites.
- chalky dolomites.
- coloured dolomites.
- a transition zone containing detrital materials from the emerged volcanic sea mount:
 - volcanic scoriae.
 - clays.
 - river pebbles.
- aphyric basalt flows resulting from aerial volcanicity.
- hyaloclastites.
- autoclastic breccias.
- dense, vitreous basalt from dykes.

□ □ □

Jan Newhouse, author of the four articles:

- *What is an Atoll?*
- *Water Desalination for Atoll Agriculture*
- *Marine and Terrestrial Flora of Atolls*
- *Energy*

which appeared in the SPC Bulletin 3Q '80 has duties with:

- The Department of General Science and the Pacific Island Studies Program, University of Hawaii, and
- Ecole Pratique des Hautes Etudes, National Museum of Natural History, Paris.

GUAM RABIES CONFERENCE

by Robert L. Haddock

Territorial Epidemiologist Department of Public Health and Social Services – Guam

Background

In 1967 the Territory of Guam experienced the first and, so far, only rabies epizootic to occur in Oceania. Intensive stray dog eradication and pet dog vaccination efforts eliminated the disease from the island within one year, and in 1972 Guam was declared officially rabies-free. The success of this effort can be attributed, at least in part, to the fact that there was no feral animal such as the mongoose on the island which could serve as a rabies virus reservoir.

A total embargo on the importation of pet dogs and cats, enforced for over one year, was lifted in 1968 when pets which had undergone a 120-day quarantine in Hawaii were accepted. Since 1969 the Government of Guam has maintained a rabies quarantine facility locally. All carnivorous animals brought to the island must undergo a 120-day quarantine unless they are imported from Hawaii, Great Britain, New Zealand or Australia.

Rabies conference

The inconvenience and expense of having their animals quarantined, and kennel conditions that do not approximate the home environment, have led pet owners to press frequently for reduction of the quarantine period. This and other problems of rabies-related programmes of the Government of Guam were reviewed during a Conference held during April 1980. Individuals from the various government agencies involved and representatives from local medical and veterinary medical organisations were invited to participate. A survey form was sent to other Pacific island Governments to determine if there had been any significant changes in regional rabies control policies.

Finally, a panel of individuals with special expertise or experience in the area of rabies control was asked to comment on the topics proposed for the conference agenda. These topics included the following:

1. Are current animal rabies vaccines an acceptable substitute for extended (four months) quarantine in rabies-free areas?
2. Would reducing the quarantine period only for animals from areas where the incidence of rabies in pet animals is relatively low (e.g., U.S., Japan) present an acceptable risk?
3. Should the current local policies with respect to dog rabies vaccination (every two years) and dog licensing (every year) be modified?
4. What can be done to remedy Guam's severe stray dog problem when conventional (live capture) methods have failed?
5. If Guam taxpayers are unable to support both an intensive stray dog control programme and a four-month quarantine programme, which one should receive priority?

Recommendations

After review of the comments by the panel of experts and discussion by the participants, the conference adopted the following recommendations:

Recommendation 1: Although progress continues to be made in improving the efficacy of rabies vaccines, even modern vaccines cannot be depended upon to stimulate protective immunity in every animal vaccinated, because of differences in the immune response of

individual animals as well as differences in vaccines. A special problem is that vaccination during the long incubation period of rabies may not eliminate the virus but only prolong this phase of the disease. The Conference participants came to the conclusion that at this time even a programme incorporating rigorous vaccination requirements cannot safely substitute for the continued support of an extended (at least four months) rabies quarantine programme.

Recommendation 2: While it is recognised that the opportunity for pet animals to contract rabies is much less in some countries than in others, in view of the present "state of the art" with regard to both the diagnosis and immunisation of rabies, the relaxation of rabies quarantine requirements even for animals coming from those countries where rabies in pet animals may not be epidemic would entail some degree of increased risk. The Conference recommended that the policy of waiving quarantine only for animals from areas that are recognised as being rabies-free by the Government of Guam be maintained for the present.

Recommendation 3: Most rabies-free areas of the world do not require rabies vaccination of local (indigenous) dogs. However, since such a practice has been established on Guam in the past, is well accepted by local pet owners and adds a measure of protection for public health and well-being, the Conference recommended that this practice be maintained. It was further recommended that vaccinations be recognised as being valid for animal licensing purposes for the period of time that the vaccine can be expected to provide immunity. All animal rabies vaccination certificates issued by local veterinarians should therefore contain an expiration date corresponding to the duration of protection specified by the manufacturer of the vaccine.

Recommendation 4: The Conference

was unable to develop any new strategies for the control of stray dogs on Guam. However, the use of house-to-house surveys in areas where stray dogs are a problem has proved very successful, as evidenced by a total of 6141 stray and unwanted dogs being impounded in 1979 when such a programme was in operation compared with 2398 impounded for 1978 when it was not. The Conference recommended that the Dog Pound receive adequate support in terms of personnel and equipment (particularly functioning motor vehicles) to continue to operate this programme effectively.

Recommendation 5: At the present time, an extended quarantine period of at least 120 days is the most reliable means of protecting rabies-free island areas such as Guam from the introduction or reintroduction of the disease. The Conference recommended that this aspect of Guam's rabies control effort receive priority consideration in terms of resource allocation. However, should this support become inadequate to provide for maintaining a quarantine facility that, in addition to protecting the island from the reintroduction of rabies, adequately provides for the health and reasonable comfort of quarantine animals, then alternative approaches such as authorising quarantine in private facilities or reducing the quarantine period for some animals will have to be considered.

Conference participants

Jesus C. Cruz

Supervisor, Animal Control, Guam Department of Public Health and Social Services (GDPH&SS)

Luis P. Flores

Director, Public Health Laboratory, GDPH&SS

Robert L. Haddock, DVM

Territorial Epidemiologist, GDPH&SS

Marvin Meinders, DVM

Base Veterinarian, Andersen A.F.B., U.S. Air Force (USAF)

Walter F. Mestanza, DVM

Territorial Veterinarian, Guam Department of Agriculture

Jacob D. Samler, M.D.

Chief, Aeromedical Service, Andersen A.F.B., USAF

Prepidigno Terlaje

Environmental Health Specialist, GDPH&SS

Grover E. Wroe, DVM

Force Veterinarian, COMNAVMARIANAS/USAF

Panel of rabies experts

1. *Peter H. Bennett, M.D.*
Epidemiologist,
South Pacific Commission,
Noumea, New Caledonia.
2. *Dr K. Bogel,*
Veterinary Public Health,
World Health Organisation,
Geneva, Switzerland.
3. *A.J. Crowley, M.R.C.V.S.,*
Regional Veterinary Officer,
Ministry of Agriculture, Fisheries
and Food,
Hook Rise South, Tolworth, Surbiton,
Surrey, England.
4. *Wallace T. Nagao, DVM,*
Head, Division of Animal Industry,
Department of Agriculture,
Honolulu, Hawaii 96814.
5. *William G. Winkler, DVM,*
Chief, Respiratory and Special
Pathogens Branch,
Bureau of Epidemiology,
Center for Disease Control,
Atlanta, Georgia 30333. □

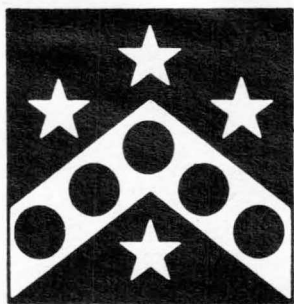
□ □ □

If you are in the Pacific for BUSINESS . . .



or PLEASURE . . .

BANK



BNZ



Branches at:
Suva, Sigatoka, Nadi, Lautoka,
Ba, Labasa and Mark Street.

Agencies in Fiji at:
Nausori, Navua, Deuba (Pacific
Harbour), Tavua, Savu-savu.
An agency service operates at
Nadi International Airport for
all flights.

Represented at APIA:
(Bank of Western Samoa)

Represented at NUKU'ALOFA:
(Bank of Tonga)

The Bank of New Zealand offers a complete commercial and personal banking service in the Pacific for residents, travellers and overseas businesses. These include: Export and Import Facilities—Currency Exchange—Financial Transactions—Trade Information and Introductions—Collections and Payments—Travellers' Cheques—Letters of Credit—Safe Custody—General Advisory Service—Travel Arrangements, Bookings, etc.—Savings Bank Facilities in New Zealand, Fiji, Western Samoa, Tonga and Australia.

Bank of New Zealand

4837

Established in the Pacific Islands since 1876

SPC MOBILE TRAINING UNIT ORGANISES COURSE IN VANUATU

The training course organised in Vanuatu by the Home Economics Mobile Training Unit ended on 6 February. An exhibition of trainees' work had been organised for the occasion. The Prime Minister, the Hon. Walter Lini, made the closing speech in the presence of the Ministers of Education and Social Affairs.

The 28 course participants, comprising community workers employed by the government, churches and associations, came from different islands of Vanuatu. The Commission's training team comprised Judith Whitmore, Field Co-ordinator, Naca Vosarogoci, Rural Development Instructor, Pulotu Cokanasiga, Home Economics Instructor, and Marie-Claude Teissier, Health Education Officer, who were given valuable assistance by Rolinas Lolo, a community workers group leader. The course, which was held in English and in pidgin at the English Language College of Kawenu, began on 5 January.

The Mobile Unit attempted to give students both theoretical and practical training, the former dealing with community education techniques (principles of community development, assessment of needs, development of a programme for action, group dynamics) and health education (nutrition and village hygiene, with a visit to the Village of Erakor), and the latter especially focussed on needlework, kitchen improvement (smokeless ovens) and practical cookery classes.

Daily course evaluation by participants showed sustained interest and an avid desire for learning. □



Paddles of the Pacific Islands

by Bob Gillett
Research Scientist
Skipjack Survey & Assessment Programme

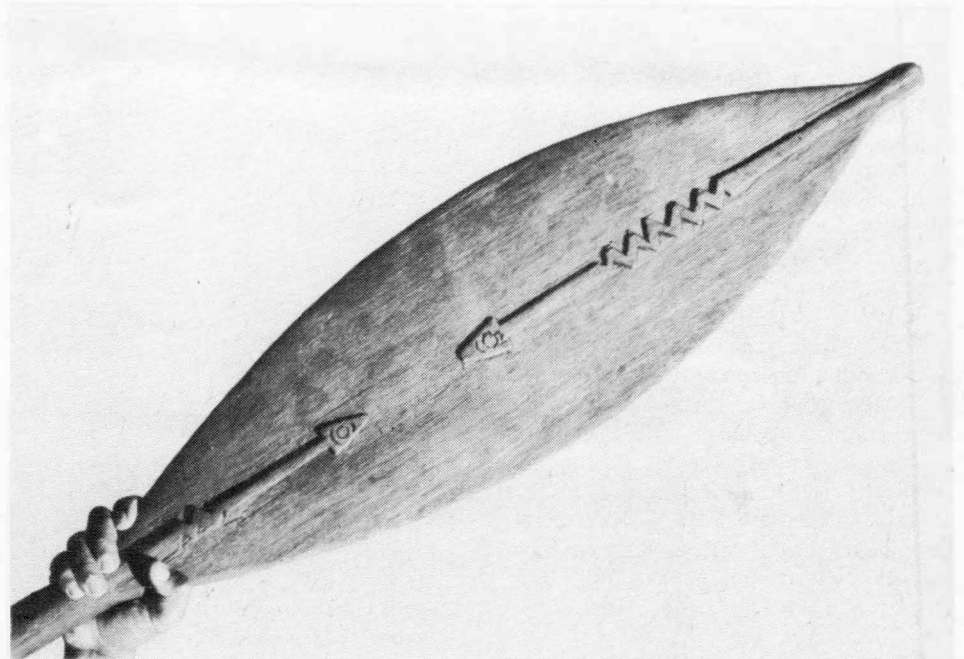


I first became interested in paddles when I was involved with outrigger canoe racing in Tahiti. This truly island sport takes place most afternoons at sunset in Papeete Harbour. Although it is easily the most strenuous and demanding sport I have ever participated in, there was something satisfying about putting 100 per cent of an individual's strength and concentration into an activity which afterwards leaves one pleasantly exhausted and feeling healthy. Damien Maino, coach of the Tere Moana canoe club and a veteran of decades of canoe races, carefully explained to me how important the design, construction and use of paddles are in the success of canoe racing. During months of afternoon racing practices in Tahiti, I became aware that it can take years of training to develop a classic paddling style.

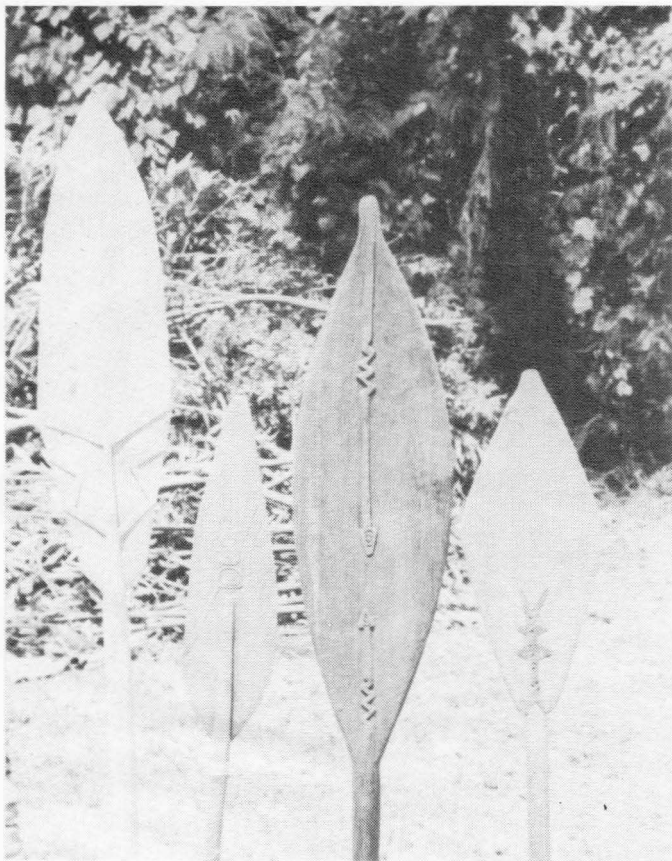
In my travels while working for the South Pacific Commission I have visited nearly every Island group in the Pacific. Because of my experiences with outrigger racing, I naturally paid very close attention to canoes and especially paddles in all these areas. I very quickly noticed that the design of the paddles went further than purely functional considerations and in many cases was clearly an art form with its roots in the local culture. I began to think of the carving of paddles as one of the few genuine, non-commercial arts practised throughout the Pacific Islands.

My work has taken me to 20 countries in Polynesia, Micronesia and Melanesia. In many of these places I was successful in obtaining a canoe paddle which I felt was representative of the general type in the area used at the present time. Some were bought and others were traded for; however, many were gifts.

Acquiring a canoe paddle in some places was a real challenge. I can remember standing in the rain on a dark night on an island off the coast of New Britain trying to explain to a villager why I wanted a paddle despite the fact that I did not own a canoe. In some places in the Pacific Islands, canoe paddles are a



Decorated Melanesian paddle from the north coast of Irian Jaya.



The design and carvings on canoe paddles can be thought of as a true art form with roots in the local culture.



Melanesian paddles (left) are usually smaller than Polynesian paddles (the two on the right).

thing of the past, and small-boat propulsion is exclusively by outboard motor. Considering what is happening with the world energy situation, in the not too distant future a return to the paddle is quite possible in these areas.

In general, Polynesian paddles are the largest in the present-day South Pacific and usually have broad blades which are rounded or elliptical. Their design seems to be fairly homogeneous on a geographic scale whereas the historically more sedentary Melanesian people have paddles showing diversity even between villages. Melanesians tend to decorate their paddles more than the other groups, and sizes of the individual paddles are frequently quite small.

A feature of many of the Micronesian paddles is the attention paid to detail. At Satawal, in the outer islands of Yap state, the paddles are almost perfectly fusiform and in cross-section have a very even taper from side to side and from tip to base. Probably the nicest carving on paddles I have seen comes from the Santa Cruz Islands in the Solomons. Here on



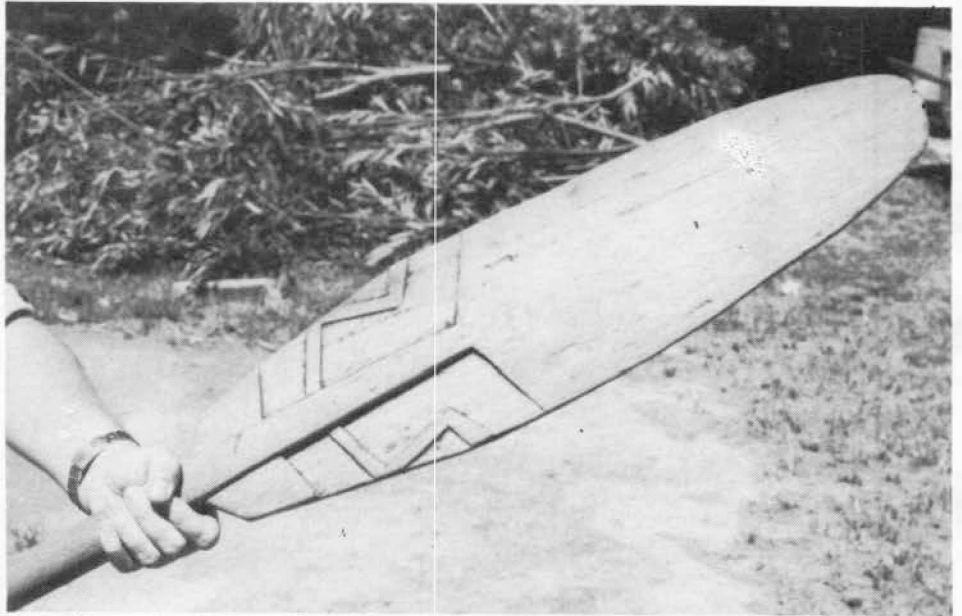
The Satawal paddle (left) has very even tapers, while the paddle from Tokelau (right) is made of beautiful marbled Kanava wood.

Utapua Island, frigate bird wings are carved into the blade. On Tahiti each of the numerous canoe clubs has a different colour scheme on the paddle which frequently matches the design on the club's canoe.

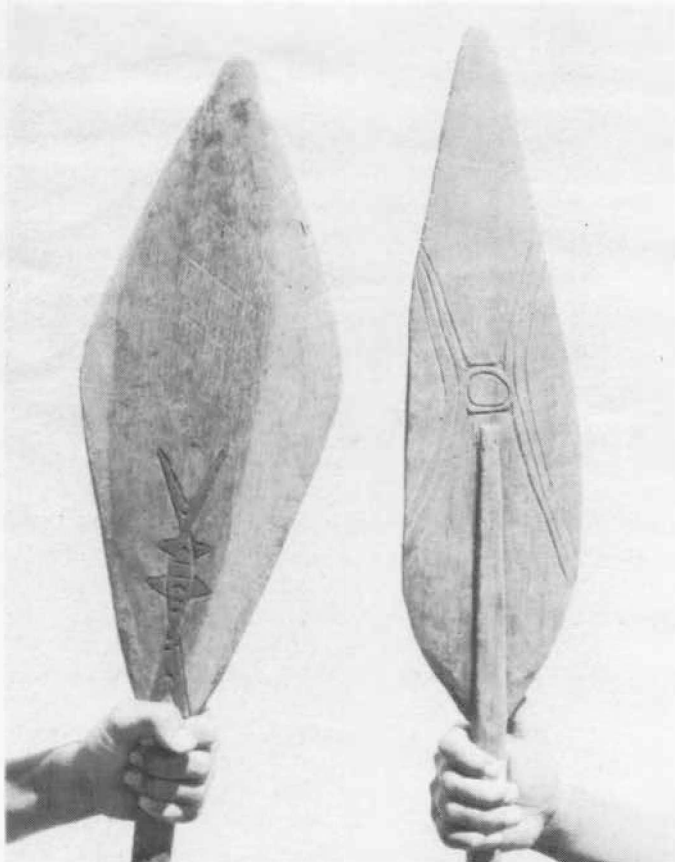
Ernest Beaglehole, in his monograph "The Ethnology of Pukapuka," states that in former times the knob on the top of the local paddle caused a peculiar noise in the water and this was thought to attract skipjack tuna.

The types of wood used to make the paddles are as diverse as the islands of the Pacific. On the larger islands, especially in the west where big trees are plentiful, builders have a number of choice woods at their disposal. In Papua New Guinea, wood that is easy to work with, resistant to rot or strong is readily available. The light and incredibly durable kauri is used often in the Solomons.

On atolls where large trees are scarce or absent, less desirable material must be used for paddles. The Rakahanga (Cook Islands) paddle in my collection is made



From Utapua in the Santa Cruz Islands -- the carving represents the wings of a frigate bird.



Decorated paddles from New Guinea.



The paddles from two Polynesian outliers, Kapingamarangi and Ontong Java, are quite similar.

In 1970, the world's smallest international airline.



In 1980, Air Nauru celebrates 10 We ask you, is there

There was a time, if you wanted to fly on Air Nauru, you had to get yourself and your baggage to Brisbane, Australia. Or to our home island, located, you will recall, 26 miles south of that point on the Equator marked as 166° 55'. (We had a fuel stop at Honiara on the island of Guadalcanal in the Solomons.)

Ten years ago, by any known standards of international aviation,

we were a very esoteric airline. Ten years ago, when we started to fly our Falcon fan jet, the Pacific never looked so big.

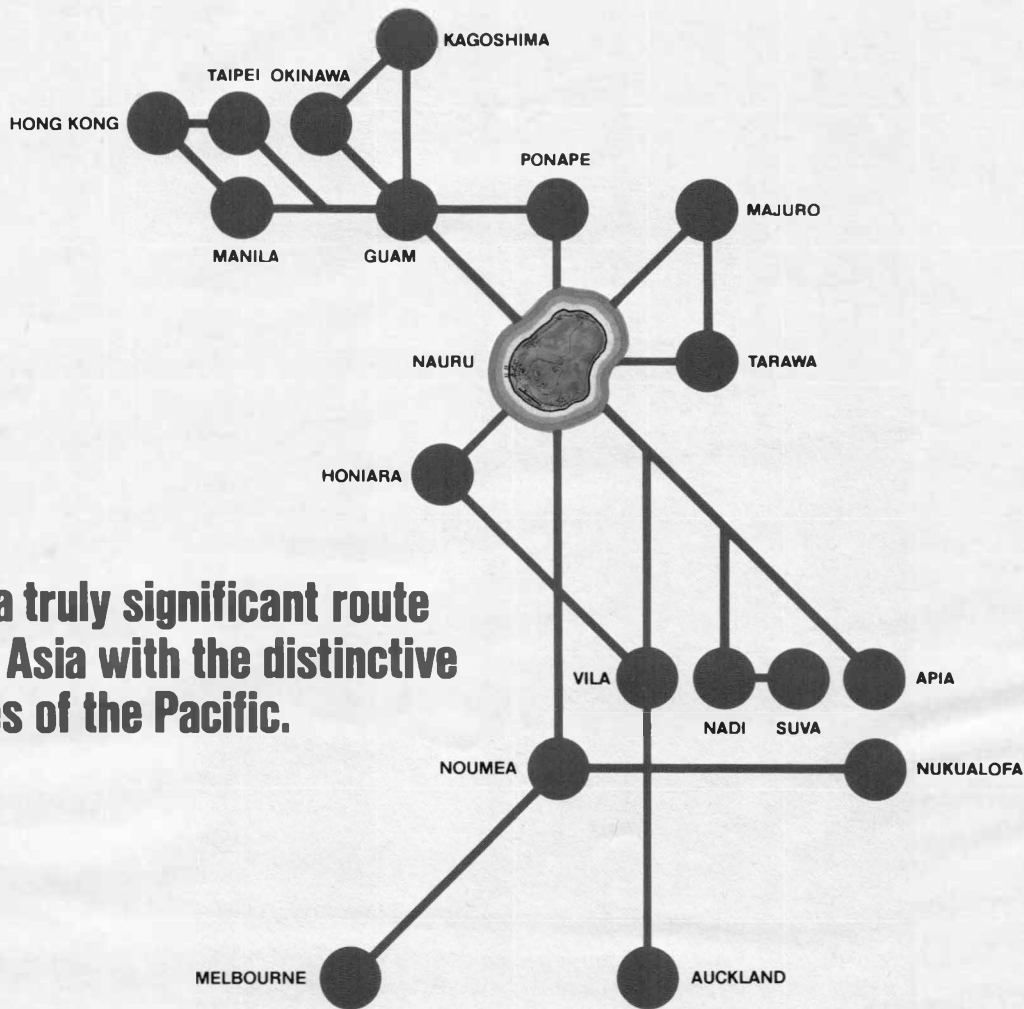
Fortunately, for us and for travelers who like their islands in all shapes and sizes, times have changed.

This year, Air Nauru will fly over 50,000 unduplicated route miles to 19 distinctive ports of call in Asia, the Pacific, Australia and

New Zealand. We will link with our all-Boeing fleet vital places that 10 years ago had never been linked by jet aircraft.

This year, we will fly to more Pacific islands than any other airline. Not to mention some of the more hospitable and interesting destinations in Asia.

This year, because of our pioneering air routes, you can move from one island to another easier



Today, a truly significant route linking Asia with the distinctive cultures of the Pacific.

years of flying from island to island. another way to fly?

and faster than ever, and in considerable comfort, too. The pleasures of the Pacific are simply more accessible on Air Nauru.

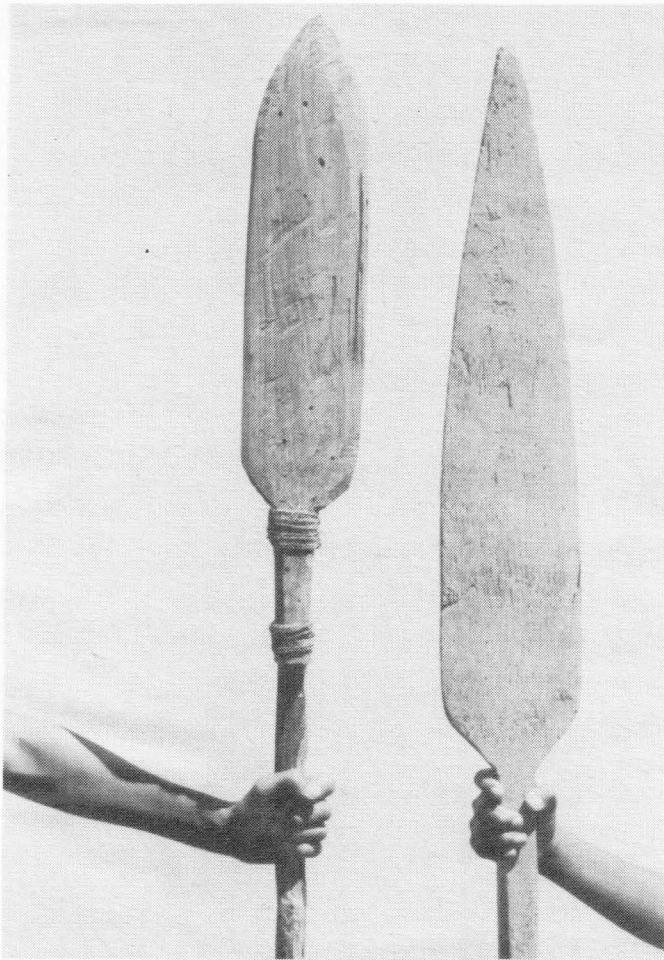
To sum it all up, we hope you come island-hop with us this year. And help us celebrate.

In the style of Pacific island cultures everywhere, we certainly can promise you a big welcome.

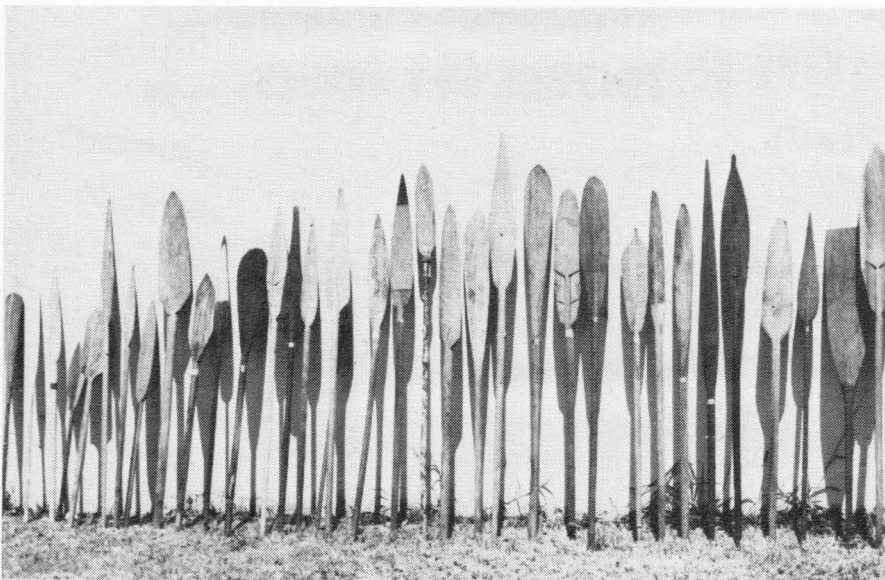


For ticketing, reservations and flight information, telephone: 740 in Apia, Western Samoa; 477-7106 in Guam; 595 or 727 in Honiara, Solomon Islands; 229 in Majuro, Marshall Islands; 312-377 in Suva, 72795 in Nandi, Fiji; 448 in Tarawa, Kiribati; and 653-5709 in Melbourne, Australia.

AIR NAURU
AIRLINE OF THE CENTRAL PACIFIC



The two-piece Gilbert paddle (left) and the coconut paddle from Rakahanga come from atolls where choice wood is scarce.



Some of the paddles in the author's collection were bought, others were traded for; many were gifts.

from the centre of a coconut log. People living on Butaritari Atoll in Kiribati lash a handle of local wood to a piece of larger, sometimes imported, timber for lack of desirable trees. The Kanava wood paddle from Fakaofu, Tokelau, with its marbled black, tan and white colours, is the most beautiful paddle material I have seen.

Canoe paddles have been used as clues in the complex issue of early Pacific migrations. The degree of cultural relations between areas is thought to be manifested by similarities and differences in paddle design. Taken singly, canoe paddles would not be adequate criteria for determining pre-European contact between various areas; however, along with linguistics, food plants, house design, etc, they can provide important evidence.

In the monumental treatise "Canoes of Oceania," by A. C. Haddon and James Hornell, the design of canoe paddles at the time of European discovery is discussed for several Island groups. The authors use paddles and other items as evidence to show that Mangareva (Gambier Islands) had more contact with the Marquesas than the nearby Tuamotu Archipelago, and that the Austral Islands had more in common with Rarotonga than the islands of the Society group.

In my collection it is easy to see affinities that transcend political boundaries. The Polynesian island of Ontong Java in the Solomons and another Polynesian outlier, Kapingamarangi, in the Federated States of Micronesia, have nearly identical elongate paddles. Tobi Island, south-west of Palau, and locations on the north coast of Irian Jaya have paddles which are remarkably similar.

My collection of paddles from the islands of the Pacific is far from complete. There are still a number of places where, through scarcity of paddles or lack of bargaining ingenuity on my part, I was unable to obtain a specimen. Fiji, Tonga, Niue and the Marshall Islands fit into this category. If at some time in the future the collection does become complete, I would like very much to donate it to an institution such as the Bishop Museum in Honolulu or Musee des Iles in Tahiti, where they may be appreciated long after the author of this article has taken his last paddle stroke.



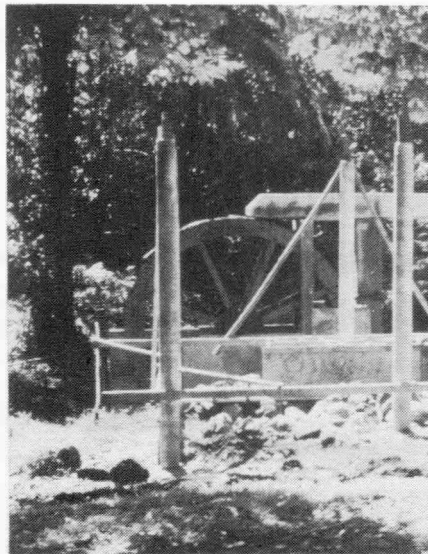
(Top) Furniture manufacturing groups are among those who have been assisted by the Ponape Small Industries Center.

(Bottom left) Water wheel, with wood machines installed. (Bottom right) A steel diesel barge, used for carrying timber, built with the help of the Ponape Small Industries Center.



PONAPE SMALL INDUSTRIES CENTER

by Daniel Graham
Chief of Small Industries Division



The State Government of Ponape in the Federated States of Micronesia sponsors a Small Industries Center whose function is to assist qualified craftspeople to become privately or co-operatively employed in the manufacture of some saleable product. The Center, which has operated since early 1978, consists of approximately 4000 square feet of workshop space, modest tools and equipment and a permanent staff of four people. The present staff includes a manager, a mechanic, a helper and, recently a United Nations woodcraft volunteer.

An important feature of the Small Industries Center, unique in Trust Territory government programmes, is its important and realistic emphasis on self-reliance. The craftsman-participant at the Center must derive his or her earnings from the product made there during the testing or developing stage. The Center is not a school as such, but rather a place where someone who is already skilled in making a product can get started in business.

The participant is provided with work space, use of essential machines but not

hand tools, business advice and some design assistance. This does not include any form of allowance, cash loan or aid that might thwart or lessen the self-reliant aspect of development. In short, the participant must be capable, with the assistance given, of economically producing a saleable product. The time involved for those craftspeople at the Center may be from a few weeks up to several years, but whatever the time there must be constant evidence that a self-supporting status is being achieved.

Since 1978 the Ponape Small Industries Centre has led to the re-establishment of a local co-operative sawmill which produces beautiful furniture and handicrafts lumber from mangrove timber; several furniture manufacturing groups, one of which produces nearly all of the furniture requirements of the Federated States of Micronesia and State Governments; dozens of family-type shellcraft home industries; a black coral jewellery manufacturing shop; a small water-powered wood products shop that makes specialised wood containers for Ponape's famous black pepper; and a processing facility operated by the growers of this pungent Ponape spice.

Jose Lucious, manager of the Ponape Furniture Shop, was the Center's first participant and is now firmly established as a private businessman, turning out office desks and home furniture as fast as he and his three assistants can work.

The water-powered wood products shop was the work of Greg Cane, a Peace Corps volunteer assigned to the Small Industries Center, for a two-year period. The water wheel, flume and reconstructed dam located in the town of Kolonia alongside the State Museum are not only functional but of real beauty. They clearly illustrate the potential of water power as well as the application of appropriate technology to harness that power. Tourists are usually amazed to see this 12 feet high by 4 feet wide wooden wheel directly coupled to some ancient wood-working machines that turn out a product as easily as any costly, energy-consuming modern machines.

The shellcraft activity, which has been quite an interest of the Center, is not, of course, new to Micronesia. Things both functional and decorative have been made from shells by the Island people since times lost in antiquity. This established involvement in shells, along with the fact that there is an abundant resource, provides good reason for promoting various small shellcraft industries.

Aside from traditional artifacts, there is a good market for many modern souvenirs and handicrafts made from shells. Shell pictures or mosaics consisting of shells arranged to simulate flowers, little animal-like creatures often called "critters," or simply a very attractive shell mounted on a slab of exotic wood or coral, are all products of Center participants which catch the eye of souvenir-hunting tourists.

For many of the smaller out-islands of Micronesia, shellcrafts could become an important source of income. This, of course, will require proper consideration of the ecology of the island environments.

The Ponape pepper processing facility is comprised of the machines one would expect to find in spice processing, differing, however, in that the Ponape facility is largely locally fabricated and uses alternate energy sources for most of its needs. The pepper is dried at a mild 100°–120° temperature supplied from the sun's heat trapped in the attic of the processing building. On cloudy days a wood-burning furnace using scrap wood from the furniture factory supplies the heat. A solar water heater, which will supply the first 160 degrees of heat for the scalding process, is almost finished. A small wood-fired heater will bring the water up to the required 200°–220° heat. Local farmers, who have formed a Growers' Association, are seriously planning to take over full responsibility for this facility.

In summary, the Small Industries Center attempts to provide the kind of assistance needed to overcome the usual impediments that a craftsperson may encounter in trying to break into private, self-supporting business. Many who aspire fail to reach the goal and drop out, but even in these cases the loss is not total, since an important lesson is learned and a second effort may end in success.

Ponape's Small Industries Center has caught the attention of other States in the Federated States of Micronesia which are now planning to establish similar facilities on their islands. □



SPC HANDBOOKS

Each Handbook is priced at \$A1.50 post free and this series now consists of:—

- No. 1—**Rat Control in the South Pacific** by F. P. Rowe. English and French. (English edition revised by F. P. Rowe, J. M. Williams and E. J. Wilson.)
- No. 2—**Cocoa Production in the South Pacific** edited by K. Newton. English only.
- No. 3—**Improving Land Tenure** by Ron Crocombe. English only.
- No. 4—**Laboratory Techniques in the Diagnosis of Some Intestinal Parasitic Infections** by Lawrence R. Ash. English and French.
- No. 5—**Banana Production in the South Pacific** edited by M. Lambert. English and French.
- No. 6—**Coconut Production in the South Pacific** edited by M. Lambert. English and French.
- No. 7—**Urban Youth Work in the South Pacific** by Jean-Michel Bazinet. English and French.
- No. 8—**Market Gardening in the South Pacific** edited by M. Lambert. English and French.
- No. 9—**Bacteriology** by Dr. J. Saugrain. English and French.
- No. 10—**Weed Control in the South Pacific** edited by M. Lambert. English and French.
- No. 11—**Haematology** by Dr. J. Saugrain. English and French.
- No. 12—**A Handbook of Hospital and Health Service Administration** by D. Horne and V. Williams. English only.
- No. 13—**Manuel de Reutilisation des Effluents d'Origine Animale dans le Pacifique Sud** by Claude Richard. French only.
- No. 14—**Citrus Production in the South Pacific** edited by M. Lambert. English and French.
- No. 15—**Beef Cattle Husbandry and Herd Management** by W. P. Bewg. English and French.
- No. 16—**Arabica Coffee Production in the South Pacific** edited by M. Lambert. English and French.
- No. 17—**La Culture des Legumes dans le Pacifique Sud** by M. Lambert and J. M. Soriano. French only.

All orders and enquiries should be sent to:

SPC Publications Bureau
P.O. Box A245, Sydney South
N.S.W., Australia 2000

PLANT PROTECTION NEWS



IVOR FIRMAN

B.Sc. (Hons) Nottingham 1957; Dip. Agric. Sci. Cambridge; D.T.A. Trinidad; Fellow of the Institute of Biology. Before joining SPC worked as a plant pathologist in Kenya, Brazil and Fiji, was consultant to F.A.O. on coffee diseases in South and Central America and taught at the University of Bath, U.K.

Compiled by SPC Plant Protection Officer, I.D. FIRMAN

The material in this section is compiled by SPC's Plant Protection Officer. Enquiries concerning any article should be addressed to: SPC Plant Protection Officer, P.O. Box 2119, Suva, Fiji.

Previous issues of Plant Protection News have appeared either in the SPC Information Circular series or in the South Pacific Bulletin or in both. The Information Circular is distributed to agricultural departments whereas the inclusion of news in the Bulletin brings plant protection to the notice of a wider public.

IBPGR

Pacific Island countries were very well represented at a "Symposium on the Genetic Resources of the Far East and Pacific Islands" held in Tsukuba, Japan, from 20-24 October, 1980. The meeting was sponsored by the International Board for Plant Genetic Resources (IBPGR) in co-operation with the Government of Japan.

IBPGR was established in 1974 and receives funds from members of the Consultative Group on International Agricultural Research (CGIAR). Its Secretariat is provided by FAO, Rome. The Board seeks to develop a world-wide network of genetic resource centres. Such a network would have two principal dimensions; a crop-specific one based on specialist institutions and a geographic one based on regions of the world where there is a significant genetic diversity of cultivated plants and their wild relatives.

The aims of the symposium were to assess the nature and extent of various genetic resource activities in the region and to make recommendations to IBPGR to help evolve effective networks for collection, exchange and utilisation of genetic resources.

Asian countries represented were China, Japan and Korea. The representatives from the Pacific Islands, all of whom presented interesting papers on their countries' genetic resources, were Dr M. Krishnamurti, Director of Sugarcane Research, Fiji; Dr R. Muniappan, University of Guam; Dr G.V.H. Jackson, Plant Pathologist, Solomon Islands; Mr T. Moss, Crop Agronomist, Tuvalu; Mr P.N. Byrne, FAO Cocoa Development Adviser, Vanuatu; and Mr M.P. Hazelman, University of the South Pacific, representing Western Samoa. SPC was represented by the Plant Protection Officer.

The SPC plant protection programme's main interest in genetic resources is related to the search for resistance to plant

pests and diseases and to the quarantine aspects. Knowledge of these matters enables plant material to be more fully utilised and helps to make international exchanges of germplasm safe from the phytosanitary point of view. But of course the meeting was concerned with a much wider range of topics than this.



Breadfruit.

Because they were subject to genetic erosion and/or not dealt with adequately already and/or needed collecting within the region, the Pacific Island countries named the following crops as particularly important to them and worthy of special attention by IBPGR: *Abelmoschus manihot* (aibika/bele), aroids, especially *Colocasia* (taro) and *Cyrtosperma* (giant swamp taro/babai), *Cocos nucifera* (coconut), *Dioscorea* spp. (yam), *Ipomoea batatas* (sweet potato), *Manihot esculenta* (cassava), *Pandanus* spp., *Psophocarpus tetragonolobus* (winged bean) and *Saccharum* spp. (sugarcane).

It was notable that these plants were almost entirely absent from the lists of importance drawn up by the Asian countries. It is this difference of emphasis that makes the attendance of Pacific Island representatives so important at what are often joint meetings of Asian and Pacific interests. Although there are clearly floristic links between the regions and a need for exchange of genetic resources and information, IBPGR may eventually have separate working groups for the East Asia, South East Asia and Pacific Regions.

Following an initiative from Pacific participants a recommendation was made to set up crop expert committees and regional working groups to look at specific needs for each of the crops considered important. They would look at all aspects of exploration, evaluation, conservation and storage, exchange of genetic material and quarantine as well as training requirements. In the case of the Pacific Region it was also recommended that IBPGR appoint an expert to assist and advise the working groups.

It was noted that some of the crops important to the Pacific Islands are propagated vegetatively. It is necessary to free this material of disease and to be able to keep it. This needs to be done outside the region, and the meeting recommended that IBPGR seek ways to do this. As just one example, a project has already been initiated to free from virus a few Solomon Islands cultivars of *Dioscorea alata*, selected for resistance to *Colletotrichum* dieback (see SPC Advisory Leaflet 12). This project requires funding so that all 50 cultivars maintained can be similarly treated, both for the use of Solomon Islands and for the region as a whole.



Breadfruit, pandanus, taro and bele (Abelmoschus manihot) . . . four of the crops that Pacific Island participants at the IBPGR meeting thought especially important.



Pandanus.

PPC/SEAPR or APPPC?

The main objective of the Plant Protection Agreement for the South East Asia and Pacific Region is to prevent the introduction and spread within the region of destructive plant pests and diseases. The Plant Protection Committee for the South East Asia and Pacific Region (PPC/SEAPR) oversees the implementation of the Agreement and, among other things, makes recommendations to the contracting Governments and considers problems requiring regional co-operation.

SPC was represented at the Twelfth Session of PPC/SEAPR held in Chiangmai, Thailand, from 27 October – 3 November, 1980. The FAO Council has approved an amendment to the title so that the body can become the Asia and Pacific Plant Protection Commission (APPPC), but so far acceptance of the amendment has not been received from the necessary two-thirds of member countries.

At the meeting the news that Solomon Islands is the 22nd and newest member of the Committee was welcomed; it is one of the countries which has already signified its acceptance of the new APPPC title.

The countries of the Pacific Region which are signatories to the Plant Protection Agreement are Australia, Fiji, New Zealand, Papua New Guinea, Solomon Islands and Western Samoa. Unfortunately, at this particular meeting, only Australia and Western Samoa were represented (by Mr L. Smee, Principal Plant Quarantine Officer, and Mr T.V. Bourke, FAO Crop Protection Adviser, respectively). SPC was invited to send an observer and was represented by the Plant Protection Officer.

The Twelfth Session of the Committee in fact marked the 25th anniversary of its existence. The present FAO Regional Plant Protection Officer and Executive Secretary of the Committee is Professor Huang Ke-xun, but the two previous holders of these posts, Mr Anthony Johnston (now Director of the Commonwealth Mycological Institute) and Dr D. Bap Reddy (now FAO Deputy Regional Representative for Asia and the Pacific), were also present. Dr Reddy had prepared a booklet, *Plant Protection in Asia and Pacific, an overview*, to mark the Committee's 25 years of service.

Fifteen countries were represented at the meeting, including, of course, a strong delegation from Thailand, the birthplace of the Committee and also host for its

silver anniversary. Dr Riksh Syamananda of Thailand was elected Chairman of the Twelfth Session.

The country statement of Australia made mention of assistance given to Fiji, Kiribati, Tonga, Vanuatu and Western Samoa in various aspects of plant quarantine and of an international training course in plant quarantine planned for 1981. Of particular interest to Pacific Island countries was the possibility of a correspondence course in quarantine matters being offered by the Riverina College of Advanced Education.

Western Samoa referred to the development of facilities for post-entry quarantine as well as the provision of laboratories and an insectary/greenhouse. Aid sources were supplying these and also scholarships, training facilities and resource personnel. Three Samoan graduates (a plant pathologist and two entomologists) were now working in the Department of Agriculture.

SPC was able to report on its Third (1980) Regional Technical Meeting on Plant Protection held in Papua New Guinea and particularly on the *ad hoc* Pacific working group of PPC/SEAPR which met in conjunction with it. Matters which particularly concerned Pacific Island countries were quarantine facilities, treatments and training and the quarantine aspects of germplasm, especially root crops.

The meeting in Thailand recognised the urgent need for strengthening plant protection and plant quarantine activities in land-locked and island countries and strongly recommended that FAO support, help and give priorities to these countries at least in providing basic facilities and training. This recommendation lends support to the early progress of the project "Strengthening plant quarantine and plant protection services in the Pacific" which UNDP will fund as a joint FAO/SPC activity. Also, noting the special plant protection problems in the Pacific, the Committee recommended that the *ad hoc* Working Group formed at the Eleventh Session continue to meet regularly and be attended by the PPC/SEAPR Executive Secretary. This will ensure continuing and valuable liaison between FAO and SPC in matters affecting plant protection in the region.

On germplasm the Committee, noting that certain pests and diseases have been, and continue to be, moved with germplasm from international agricultural

research centres, recommended that FAO, in consultation with IBPGR, take all measures to prevent such spread. This resolution, taken in conjunction with those of the IBPGR meeting in Japan, should result in appropriate action being taken.

SPC always has a special interest in the Committee's *Recommended measures for regulating the import and movement of plants* because they form a useful background and guidelines for advice to all the countries of the region, regardless of whether they are members of PPC/SEAPR. Very few changes were made to the recommendations at this session; this is probably not because the recommendations have nearly reached perfection but, regrettably, because few countries had given them much thought recently. However, some minor improvements were made and for the next meeting it is hoped that a revised treatment schedule will be attached to the recommendations and that special quarantine situation reports will be prepared for cardamom, cashew, cassava, cloves, forest trees and pepper (*Piper nigrum*). These were some of the crops about which the Committee thought new information was needed.

Coconut cadang-cadang in Guam

The following extracts are from the yearly progress report on coconut research (1979) of FAO's Industrial Crops Group:

A survey was recently conducted in Guam by Dr G. Boccardo, FAO Consultant in Plant Pathology, as part of his activities under the FAO/UNDP Coconut Research and Development Project in the Philippines.

The objective of the survey was to shed some light on the etiology of Tinangaja disease of coconut in Guam as it relates to cadang-cadang in the Philippines . . . The evidence provided by Dr Boccardo is that cadang-cadang is no longer confined to the Philippines as previously believed. Instead, cadang-cadang has been present in Guam since at least 1917, when it was first reported by Weston. The disease must have contributed to the destruction of the coconut industry, which is now practically non-existent in Guam.

Considering the World War II events that took place in this area and the unrestricted traffic of men and materials between Guam and the other

islands of the South Pacific, plus the fact that the cadang-cadang pathogen is not known to occur in other plant hosts, it is very likely that the pathogen and/or its vector(s) have also moved outside of Guam and that they are present in some other locations in the Pacific.

It seems therefore advisable to alert local plant protection authorities so that they are immediately aware of this possibility and they can take the necessary action to detect as soon as possible outbreaks of this very important coconut disease.

Ants again

A recent (June, 1980) SPC *Information Circular* by J.H. Stapley, Department of Agriculture and Lands, Solomon Islands, dealt with *Using the predatory ant, Oecophylla smaragdina*, to control insect pests of coconut and cocoa.

An article (originally from the French newspaper *Le Parisien*) later appeared in *Les Nouvelles Calédoniennes* of 10 December, 1980, describing how "Ants' nests come to the help of the Russian forest." It seems that Soviet scientists are studying the contribution of these insects to the development of young forests and have calculated that a colony of ants can eat 1 kg of parasites a day, thus protecting a quarter of a hectare of forest. The article goes on to mention similar uses of ants in France, Germany and Italy.

The ant in question is a pine forest ant, *Formica rufa*.

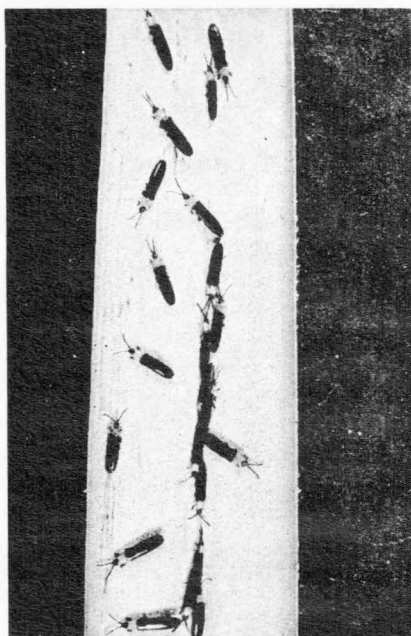
New problems

The next two items report the spread of two very important pests to Western Samoa and are based on information supplied in January, 1981, by Terry Bourke, the FAO Plant Protection Adviser there.

1. The coconut hispine, *Brontispa longissima*

This is a beetle which feeds on the inner surfaces of unopened palm leaves. The damage can be severe on young palms and when the leaves unfold they have the appearance of having been scorched by fire.

In August, 1980, specimens submitted from Leauva'a, Upolu Island, Western Samoa, were identified as *Brontispa longissima*. The beetles were causing heavy damage to 5-6-year-old palms



Brontispa longissima
From *Agricultural Research in French Polynesia*, R. Millaud. Economic Development Section South Pacific Commission, Technical Information Paper No. 5.

there. It is uncertain how the insect entered Western Samoa, but presumably it came from American Samoa, possibly in or on infested coconut material. From the damage caused it seemed likely that it had actually been present since the middle of 1979.

Surveys carried out during August and September, 1980, showed the insect to be established in discrete pockets over an area of approximately 20,000 acres between Leauva'a and Leulumoega and inland to the Aleisa road. Since then it has continued its spread westward and at the same time the individual pockets have increased in size. Measures were taken to prevent its spread out of the infested area by restricting movement of coconut material which could transport the insect.

An eradication campaign based on aerial application of insecticide to large palms and hand application to small palms was considered and would have cost at least WS\$1.5 million. Because of the cost, doubt whether the insect could be successfully eradicated, disruption which would have been caused to people and animals within the area requiring treatment, possible side-effects on other insect pests of coconuts and toward other crops which would also be sprayed, and the possibility of *Brontispa* being re-

introduced, it was decided not to attempt eradication but to proceed with a control programme.

This programme will be based on:

- (a) the importation of *Brontispa* parasites.
- (b) The hand treatment of young, infested palms and those immediately surrounding them with insecticide so as to reduce the number of infested palms as well as the number of *Brontispa*. (This treatment would continue until parasite release could be started).
- (c) The imposition of quarantine restrictions to delay the introduction of *Brontispa* to Savai'i Island.

In the first instance the eulophid, larval/pupal parasite *Tetrastichus brontispae* will be introduced from both Solomon Islands and New Caledonia. Other parasites (e.g., *Haeckeliambia brontispae*) could be introduced at a latter stage. Cultures of *T. brontispae* are to be supplied by Solomon Islands Ministry of Agriculture and Lands and by ORSTOM. The introductions will be processed through a new quarantine insectary and then bred up in a new insectary/greenhouse building for field release.

2. The Giant African Snail, *Achatina fulica*

In 1980 adult snails were discovered at three sites in Western Samoa, all on Upolu Island, in and around Apia. The first discovery was at the Apia Wharf in October when two snails were found adjacent to second-hand cars previously imported from American Samoa. The second was at the well-known Aggie Grey's Hotel, where eight snails were collected from a restricted area of flower gardens and flower boxes.

The third and most important discovery was at the Vaitele Industrial Zone in early November. An area of approximately 2½ acres is involved. The snails are thought to have been brought in or on containers of empty bottles which were returned from American Samoa.

No further snails have been sighted at either the Wharf or Hotel sites, and both areas have been baited with metaldehyde cement block baits and garden metaldehyde baits. Baiting and regular inspection continues at both these sites.

The infested area at the Vaitele Industrial Zone was quarantined and a programme of hand collection of snails,



Giant African snails (Achatina fulica) and cannibal snails (Euglandina rosea), left, from South Pacific Bulletin 24, 4, 1974.

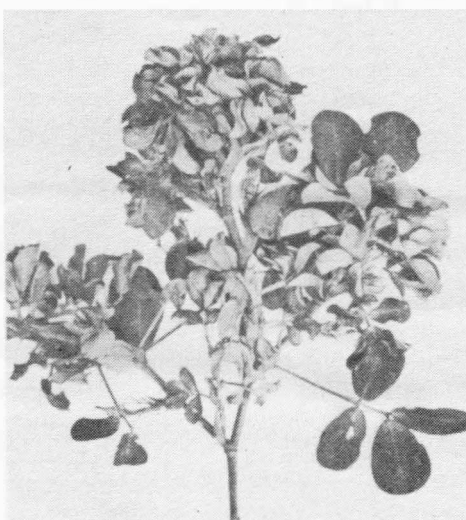
collection and destruction or disposal of all refuse, cutting or weedicide spraying of all long grass and other vegetation, baiting (metaldehyde-cement block baits) and regular spraying of the infested ground area with a methiocarb/water mixture, instituted. The area outside the known infested area was also baited and regularly inspected for dead or live snails. Movement of goods and vehicles out of the infested area was strictly controlled, with all items being closely inspected to ensure that they were free of *Achatina* eggs and snails.

Further instances of snails being carried in or on vehicles arriving in Western Samoa from American Samoa have also been detected and appropriate action has been taken to guard against this.

3. Peanut rust

Peanut rust (caused by the fungus *Puccinia arachidis*) made its appearance in Fiji and Tonga during 1980 and is already causing much concern to growers. No completely rust-resistant varieties are known, the disease can cause quite heavy losses and control is difficult.

The rust was found in Papua New Guinea in 1972, and Eric McKenzie of DSIR, New Zealand found it widespread in Solomon Islands during his recent SPC-sponsored plant disease collecting trip there.



Rosette virus — young plant dwarfed by the disease.

From Précis des maladies et des insectes nuisibles rencontrés sur les plantes cultivées au Congo, au Rwanda et au Burundi. Institut National pour l'Etude Agronomique du Congo.

Two other peanut diseases to be kept out of the region (reproduced with the original acknowledgements from the SPC publication Exotic plant pests and diseases by B.A. O'Connor)

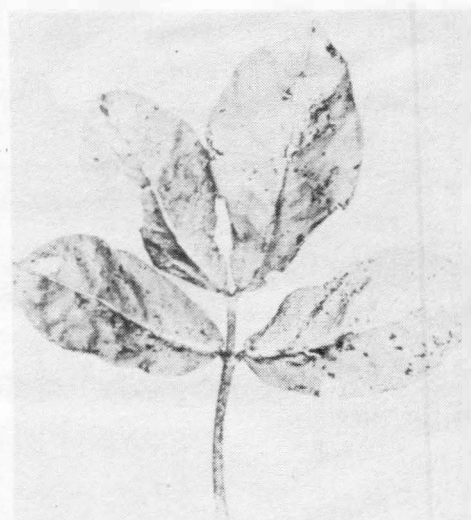
Although the rust is wind-borne and may have blown into the region, seed-borne spread is also possible, so all recommended plant quarantine measures should be taken to prevent its further spread. The Plant Protection Committee

for the South East Asia and Pacific Region recommends that only small quantities of seed should be brought in; they should be treated with a thiram seed dressing and grown initially in post-entry quarantine. Apart from rust there are several other fungus and some important virus diseases to be kept out of the region.

Reports of the distribution and incidence of peanut rust in the region would be welcome so that we can monitor its progress.

4. The insect *Thrips palmi*

The insect *Thrips palmi* has been reported as present in New Caledonia by Messrs P. de Boissezon and L.O. Brun. This thrips, which is thought to be of considerable economic importance in India, feeds on many different plants; in



Sphaceloma arachidis — scab lesions on leaves and petioles.

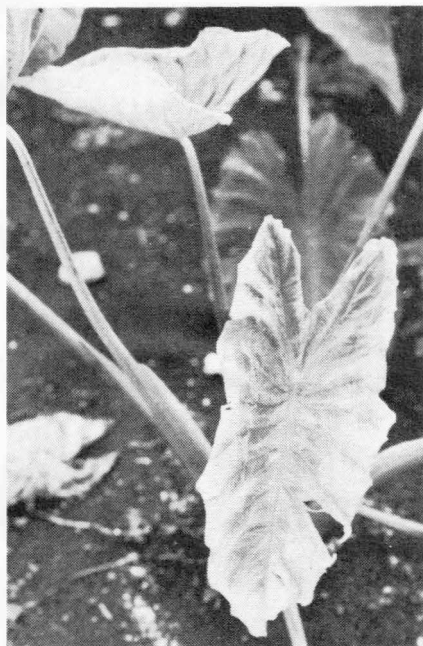
Photograph by Instituto Biologico, Secretaria da Agricultura, Sao Paulo, Brazil.

New Caledonia it has mainly attacked cucurbits.

5. Small bacilliform virus particles

In plant quarantine in Brisbane, Australia, small bacilliform virus particles

have recently been detected in two ornamental *Cyrtosperma* plants imported from Honiara, Solomon Islands. (D.R. Jones, Dorothy E. Shaw and D.H. Gowanlock, *Australian Plant Pathology* 9, 3: 5-6). Similar virus particles are known to cause a disease of taro (see SPC *Advisory Leaflet* 8). A lethal disease, *Alomae*, caused by a combination of two types of bacilliform virus particles, is present in Papua New Guinea and in Solomon Islands.



Severe chlorosis and leaf deformation of taro caused by infection with small bacilliform virus.

From SPC *Advisory Leaflet* 8, "*Alomae and Bobone diseases of taro.*"

The detection of symptomless virus infection in *Cyrtosperma* and the growing popularity of ornamental aroids have important plant quarantine implications. Because of virus and other problems, movement of propagating material between countries should, in any case, be limited to small quantities for scientific purposes under the supervision of specialist officers of the agricultural services.

New blood

Mike Bigger is on secondment from the UK Centre for Overseas Pest Research for a two-year study of *Amblyopelta cocophaga* and other insects affecting the establishment of plantations of the tree

Eucalyptus deglupta in Solomon Islands. *Amblyopelta* is perhaps better known to most of us as the nutfall bug which causes young coconuts to fall off prematurely.

Mike is preparing a series of illustrated leaflets on forest pests, five of which have already been published; they deal with *Oxymagis horni* and *Dihammus* sp. on *E. deglupta*, Buprestid beetles on *Terminalia brassili*, *Badamia exclamatoris* on *Terminalia calamansanai* and *Hyblaea puer*a on teak.

Welcome returns

The United States Department of Agriculture (USDA) Plant Protection and Quarantine Service (PPQ) intends to set up a regional office for Asia, Australia and New Zealand which will be serviced from Guam. USDA's main objective in setting up this and other regional offices is:

Pest exclusion by strengthening our quarantine efforts away from our shores rather than depending totally on the interception at ports of entry, detecting as fast as possible those pests that get through these defences, and taking necessary actions to eradicate the pest before establishment and spread. The trend, in short, is to shift from regulation enforcement to compliance.

The move will allow PPQ to deal with causes rather than effects. By strengthening emphasis on the international sector, we can keep pests outside U.S. borders, ship pest-free merchandise, inspect high-risk shipments, facilitate traffic flow and monitor foreign pest conditions.

But the service will also "provide liaison with governmental and non-governmental organisations in co-operating countries on quarantine activities and in the exchange of technical and scientific information and experts."

We look forward to co-operation with the Guam office, especially, as Marshall Kirby is likely to be on the staff. Marshall worked as a nematologist in Fiji while attached to the Peace Corps and was able really to put nematology on the map in this part of the world. Very many publications and much useful practical advice stemmed from his work in the region and we will be pleased to see him back again.

We are equally pleased to hear that Peter Maddison, a veteran of the SPC/FAO Rhinoceros Beetle Project and the UNDP/FAO/SPEC Survey of Agricultural

Pests and Diseases, is now on the staff of the Entomology Division, DSIR, New Zealand. We can look forward to using his knowledge of insects in the Pacific for a long time to come.

Careful how you spray

Doug Clarkson, plant pathologist in Papua New Guinea, has been trying out fungicides for the control of Taro Leaf Blight. He reports that fentin hydroxide caused a rapid and severe phytotoxic reaction. Captafol is another fungicide that has been reported to be phytotoxic to taro.

It looks as if we had better follow the advice of Grahame Jackson in SPC *Advisory Leaflet* No. 3 and use copper fungicide when chemical control of this disease is indicated!

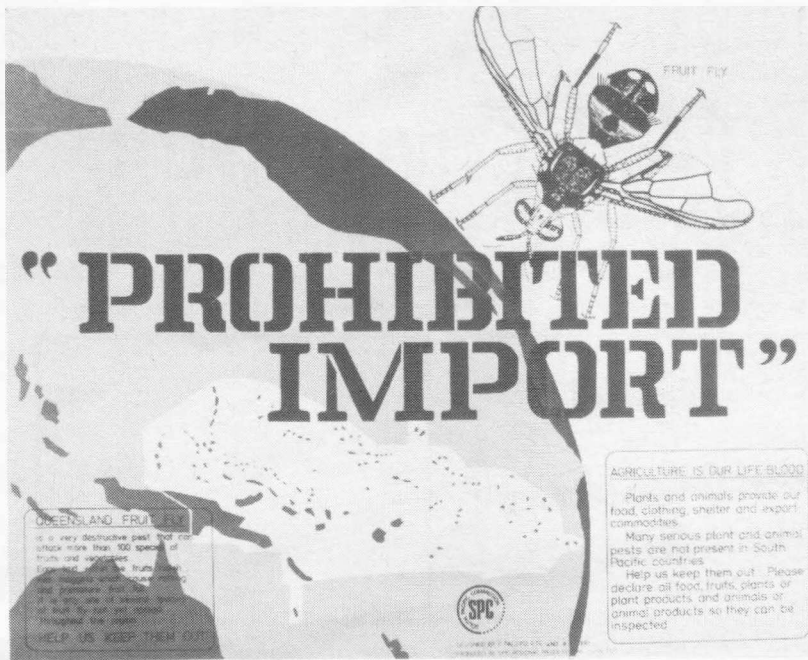
Visitors

SPC sponsored a visit by Dr M. Lenz (Division of Entomology, CSIRO, Australia) to Western Samoa in order to have his advice about the control of a termite species in tree plantations there. The termite was originally thought to be *Neotermes rainbowi*, a species known to be a pest of coconut palms and cocoa trees on some Pacific islands. In fact the insect turned out to be *Neotermes samoanus*, an endemic rather than an introduced species.

The termite is widespread on Upolu and Savai'i but restricted to native forest and to older plantations of exotic trees. It probably only attacks trees with pre-existing fungus rots and must therefore be regarded as a secondary pest. In the native forest, loss due to fungal rots and termites has to be accepted. It remains to be seen how serious losses will be in exotic plantations, and Dr Lenz stresses the need for careful monitoring and for good management practices to minimise the damage. He made a series of recommendations to this end.

While in Samoa Dr Lenz also made some recommendations about the dry-wood termite, *Cryptotermes domesticus*, which is the "greatest potential problem to utilising indigenous timbers."

DSIR staff at Mt Albert Research Centre, Auckland, New Zealand, were fortunate in November to hear Dr M.A. Bateman of CSIRO, Australia, talk about his experiences with fruit-fly eradication in New South Wales and on Easter Island. A team led by Dr Bateman was successful in eradicating a 1971 outbreak of the



An SPC poster featuring the Queensland fruit fly.

Queensland fruit fly, *Dacus tryoni*, on Easter Island, using a combined treatment of malathion, protein hydrolysate and male attractant. A reinfestation two years later was similarly eradicated.

Dr Bateman was en route to Niue, accompanied by P. Dale of the New Zealand Ministry of Agriculture and Fisheries, to have a preliminary look at the feasibility of eradicating fruit flies from that island. Fruit flies can cause serious

damage to fruit and vegetables and are one of the problems which hinder inter-island trade in these commodities.

A reminder

A "Society for Plant Protection in the Caribbean" has recently been established and we hear that it plans to begin a newsletter. We wish both the Society and the Newsletter every success, and perhaps some of the plant protection problems of

island countries in that part of the world will be similar to ours. No doubt one common problem will be persuading people to send in items for the newsletter! Which reminds me that:

News of regional plant protection interest is needed for our next issue. We want to hear about:—

- Changes or additions to plant protection staff.
- Changes or additions to legislation (e.g., plant quarantine or pesticide legislation).
- News of new research programmes, recent important research findings, etc.
- News of aid programmes in plant protection.
- Recent publications on any aspect of plant pathology, entomology, nematology, weed control, vertebrate pests, etc.
- New records of, or important outbreaks of, pests, diseases and weeds.
- New biological control agents introduced for testing.
- New local recommendations for pest, disease and weed control.
- News of training courses held or to be held.
- News of meetings, seminars, etc.
- News of local staff in training overseas and of visiting scientists.

Such information should be sent to the SPC Plant Protection Officer, Box 2119, Suva, Fiji. □

CHANGE OF ADDRESS

In March this year, the South Pacific Commission Publications Bureau moved to:

4th Floor, CUSA House
173-175 Elizabeth Street, Sydney 2000

Our new postal address is: South Pacific Commission Publications Bureau
P.O. Box A245, Sydney South
N.S.W., Australia 2000

Our new telephone numbers are: (02) 264 1162; 264 1318

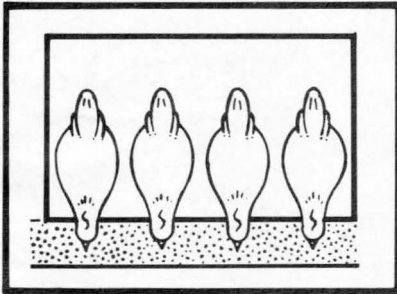
Our cable address remains the same: Southpacom Sydney



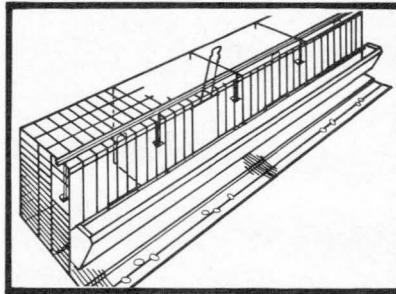
HARRISON POULTRY SYSTEMS

IMPROVE YOUR PRODUCTIVITY WITH HARRISON INTERNATIONAL EQUIPMENT

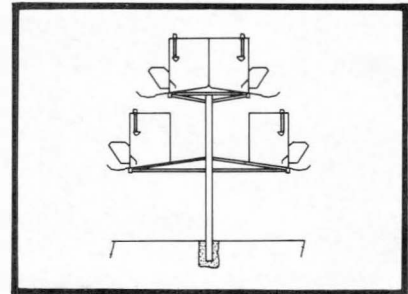
REVERSE CAGES



HARRISON ADVANTAGES

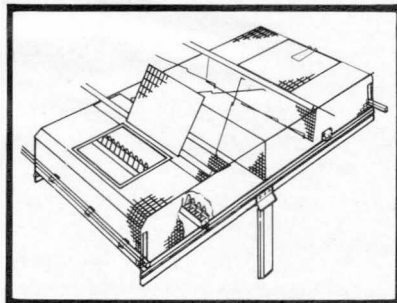


TWO TIER FOR MAXIMUM EFFICIENCY

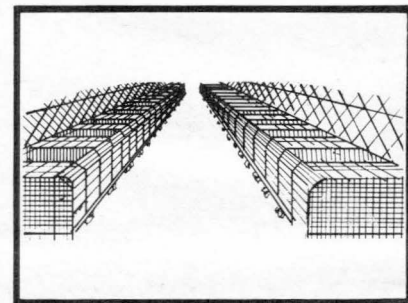
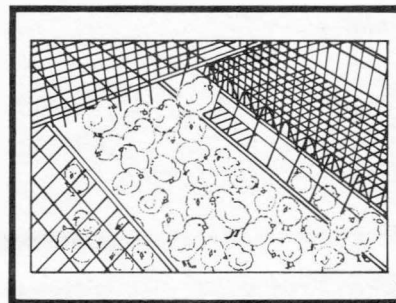


The efficient most hygienic — kind to the birds — egg laying system — low cost

REARING CAGES

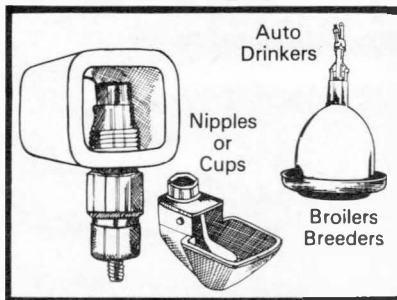


DAY-OLD TO —————> TWENTY WEEKS

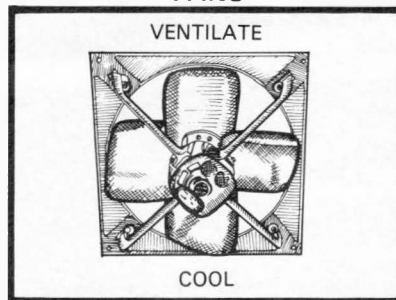


Raise your chickens hygienically — with less stress and loss — in Harrison Rearing Cages

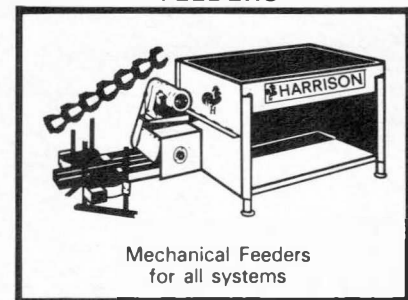
DRINKERS



FANS



FEEDERS



Harrison International provides a full range of modern equipment for commercial poultry production — send for brochures and prices. Automatic Incubation Systems for Poultry — Turkey and Duck eggs. Egg Graders and Egg Handling Systems. De-Beakers — Feed Systems



HARRISON INTERNATIONAL PTY. LTD.

9 MALTA STREET, VILLAWOOD, N.S.W., AUSTRALIA, 2163.

TELEX: 24315.

PHONES: (02) 728 6144 (4 lines)

FARM MANAGEMENT TRAINING FOR AGRICULTURAL EXTENSION OFFICERS

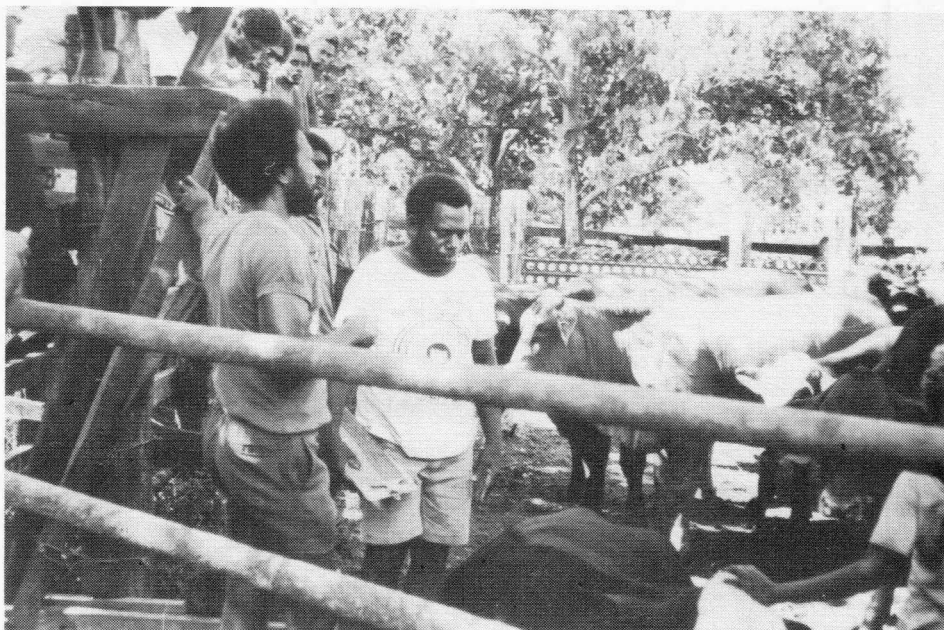
A sub-regional training course on farm management and economics was organised by SPC in Honiara during the last two weeks of October, 1980. The course, which had been incorporated in the Commission's work programme at the request of the Solomon Islands Government, was aimed at teaching extension officers farm management skills that do not form a part of their normal training. The course was fully subscribed with 23 participants in all, 13 from Solomon Islands and one each from American Samoa, the Cook Islands, the Federated States of Micronesia, Guam, the Marshall Islands, Niue, Tonga, Tuvalu, Vanuatu and Western Samoa.

While agricultural extension officers are able to receive excellent training in extension work at several institutions in the region, one aspect which is not normally considered part of their diploma training is what is known as the "whole farm" approach. In this, extension work and economics merge and the extension officer is taught to look at the farm from an economist's point of view, applying his knowledge to advise the farmer on the alternatives he has available to him, their profitability, financing requirements and so on.

By doing this, the extension officer's work becomes considerably more valuable to the farmer, as he is able to view the farm as an on-going commercial concern rather than being restricted to a purely technical view.

To accomplish this training the course revolved around three main exercises. Firstly, the trainees had to produce an On-Farm Report following a field trip. For that they visited Mr Jezriel Guralua's farm at Ferosodua in Central Guadalcanal. This was a large farm engaged in cattle breeding with about 23 acres of young coconut trees not yet in production.

The purpose of the On-Farm Report was to produce a clear description of the farm and its activities as they stood at the date of reporting. Later on in the course, after the trainees had received instruction in such matters as partial budgeting, gross margin budgeting and developmental budgeting, they returned to Jezriel's farm to construct a Development Plan for it.



Course participants assess the condition, age, etc., of Jezriel Guralua's cattle and question Jezriel about his sales of stock over the previous 12 months.



Jezriel talks to some of the participants in the area where he intends to plant cocoa.



In this they examined the farmer's future plans, which included the planting of cocoa under coconuts, for their viability, and explored all other possibilities to discover his most profitable options. Part of this exercise involved an examination of the future cash-flow alternatives and the financing requirements for various courses of action.

As well as the fieldwork at Jezriel's farm the trainees conducted a current budget exercise on the 30-acre farm of Mr Wilson Sanga — on which Wilson is fattening 19 steers under coconuts, having recently changed from breeding. They also examined Wilson's future plans, which include the building of a considerably larger copra drier than the one he has at present.

At the completion of the fieldwork studies, copies of the reports compiled were sent to the farmers through their local extension officers with the intention that these should assist them with their current and future planning. It was very clear from the enthusiasm of the trainees on the course and their reaction to the new concepts they learnt that agricultural extension officers throughout the region would benefit from this sort of training. SPC intends running another course in late 1981 but is also hoping to establish a set of courses in the near future.

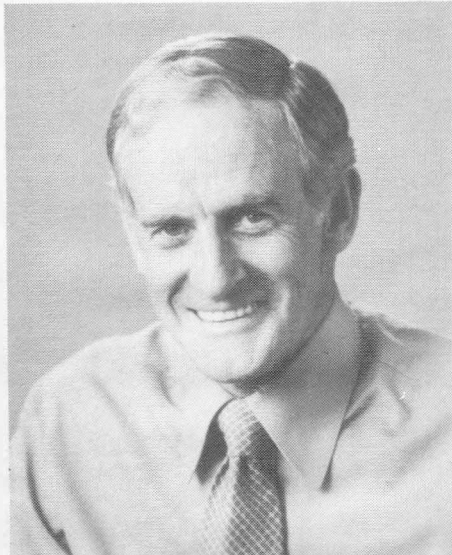
The course was directed by Mr P.E. Baynes, SPC Assistant Economist, assisted by Mr S.I. Vakaloloma from the Ministry of Agriculture and Lands, Fiji, and Mr E.M. Fleming of the University of the South Pacific School of Agriculture. □

Wilson Sanga faces a barrage of questions from the trainees, who are acquiring the information needed to draw up statements of his financial position.



SPC appointments

DIRECTOR OF PROGRAMMES — SOUTH PACIFIC COMMISSION



William T. Brown

Having completed his first three-year term as Director of Programmes, Mr William Thomas Brown, M.B.E., recently accepted re-appointment for another three-year term as Director of Programmes for the South Pacific Commission following a decision by the Twentieth South Pacific Conference held in Papua New Guinea in October last year to offer him the post for a further term.

He is an Australian citizen, aged 51, married with two sons, and prior to joining the Commission, occupied the position of Head, Administration and Services of the Australian Film and Television School, Sydney, Australia.

He holds a Bachelor of Commerce degree from the University of Queensland and is a Fellow of the Australian Institute of Management. He was awarded the M.B.E. for Public Service in the 1968 New Year's Honours list.

Following six months at the Australian School of Pacific Administration, Mr

Brown proceeded to Papua New Guinea in 1949, where he remained in Government services for 26 years.

During his period of service with the Papua New Guinea Government, Mr Brown was responsible for the co-ordination and direction of Government activities in Bougainville relating to the Bougainville Copper Project. In 1971, when the mining construction phase drew to a close, he assumed responsibility for the overall administration of the Bougainville District. He concurrently served as Chief Commissioner when the Arawa Municipal Commission was established.

In 1973 Mr Brown was appointed Adviser to the Minister of the State and was responsible for the co-ordination and reorganisation of the various arms of the Ministry of Police, Recreation and Culture to improve operating efficiency and responsiveness — a post he held until his return to Australia in 1975. □

DIRECTOR OF ADMINISTRATION — SOUTH PACIFIC COMMISSION



Tamarii Pierre

Mr Tamarii Pierre, who was nominated as Director of Administration by the Twentieth South Pacific Conference, took up his new responsibilities on 21 January, 1981. He replaces Mr D.W.J. Stewart, who is now in Australia.

Mr Pierre is a Cook Islander, aged 30, and is married.

Since March, 1980, he has served as Senior Administration Officer for the Commission. Before joining the Commission he was concurrently Secretary of the Premier's Department, Secretary to the Cabinet, Clerk of the Executive Council, Co-ordinator of Fisheries negotiations and adviser to the Premier in the Cook Islands Government.

Between 1975 and 1978 he worked in the South Pacific Bureau for Economic Co-operation, Suva, Fiji, as Assistant

Research Officer. Prior to joining SPEC, he held the post of Director of External Affairs in the Cook Islands Government, and in that capacity has served as Vice-Chairman (1974) and Chairman (1975) of the SPC Planning and Evaluation Committee.

He was a member of the Cook Islands delegation to the 1972, 1973 and 1974 South Pacific Conferences. He also served as Chairman of the SPEC Committee in 1974/75 which is responsible for the oversight of SPEC's activities.

During his period of service with the Government of the Cook Islands, SPEC and SPC, he has travelled widely both within and outside the region, and represented all three entities at meetings dealing with a variety of topics.

□ □ □

Pacific Reading

Title: Papua New Guinea Handbook and Travel Guide
General Editor: Stuart Inder
Publisher: Pacific Publications, Sydney, 1980
Price: \$12.50

Papua New Guinea, the largest South Pacific country and nation, with a land area of 461,694 sq.km. and over 3.3 million people, does not issue an Official Year Book. The *Papua New Guinea Handbook and Travel Guide*, published commercially, is therefore an essential volume of general information and reference for foreign business people, officials and tourists. It is, moreover, of considerable value to Papua New Guineans in all walks of life, especially politicians, public servants, teachers and students.

There have been nine editions between 1954 and 1978, all of them useful and, considering the small staff and limited resources available to their editors, surprisingly comprehensive. The current tenth edition consists of 14 sections: Geography, History, People, Government, Land Use and Tenure, Finance and Taxation, Commerce, Trade and Banking, Industry, Labour

and Investment, Transport and Communications, Social Services, Religion and the Churches, Miscellaneous, Provincial Directory, and PNG for Tourists. These are followed by an Advertisers' Index, a General Index, and a folding Map.

The sections Finance and Taxation, and Land Use and Tenure, in particular, are larger than the corresponding sections of the ninth edition — reflecting thrusts in the direction of governmental activities.

Of necessity, a publication of this kind contains some outdated information because there are frequent changes in ministerial portfolios and almost as frequent changes among the top positions in the public bureaucracies.

As this *Handbook* is published at intervals of two years, the publisher ought to consider offering it in a plastic loose-leaf binder, with updated information, e.g., on taxation, tariffs, exchange regulations, names of Ministers, issued in the year between editions. It would be well worth, say, \$2 or \$3 for updating pages.

Stuart Inder, the general editor, and James Sinclair, his research editor, have produced a volume worthy of their predecessors, the legendary R.W. Robson and Judy Tudor. There are very few errors, the main one being the colonial term "Chimbu" instead of the official "Simbu" for the Highlands people and their province. (The folding map has it right.)

Regrettably, the folding map is still as confusing as ever: several of the provincial boundaries are not discernible and the use of red for boundaries and roads alike makes things worse. An inset showing the Highlands provinces in greater detail would help to correct some of these shortcomings.

Harry H. Jackman.



SPC/TATE ENGLISH LANGUAGE COURSE PUBLICATIONS

From July 1st, 1980, ALL SPC/TATE ENGLISH LANGUAGE COURSE PUBLICATIONS will be distributed by

SOUTH PACIFIC DISTRIBUTORS

a division of Bridge Printery (Sales) Pty. Ltd.

ALL ORDERS AND REQUESTS FOR QUOTATIONS should be directed to

SOUTH PACIFIC DISTRIBUTORS

29-35 DUNNING AVENUE, ROSEBERY
N.S.W. AUSTRALIA 2018
Telephone: (02) 663 1331

The distributors (who are also responsible for printing SPC publications) have, until now, undertaken only part of the distribution activity. The increasing demand for these materials together with wider areas of distribution has prompted the Commission to expand this arrangement.

The South Pacific Commission, through its Publications Bureau, will still continue to PUBLISH these materials and assist wherever possible with advice and information on their usage.

Ah, how I love to splash in my bath!

During their first year at the New Caledonia School of Nursing, students are sent out to the rural areas for health education field work. Our three-week assignment was to promote personal hygiene among schoolchildren. The first week was devoted to getting to know the local people and their environment, the second to classroom work with the schoolchildren, the third to discussions with the parents and evaluation of the project.

During the first week we met people in the area and listened to what they had to say. The doctor, nurses and village health workers all gave us a very warm welcome and seemed really enthusiastic about the objectives of our work, since skin problems, ear trouble and parasitic infections are very common in the area.

by
Yvonne Hnada and Catherine Vallette

The Mayor, the gendarmes¹, the priest and mission workers, the shopkeepers and village chiefs were also extremely friendly and hospitable, but we found it necessary to define our role very clearly, for many people seemed to think we were nurses come to give medical care, and some took us for travelling saleswomen.

At the school we received a wonderful welcome from the teachers, who in fact helped us with great dedication and energy throughout our stay. The children did not at first appear to "go with" the surroundings: very few were really clean or neatly dressed; most were unkempt with infected sores and runny noses, whereas the school buildings and grounds were well kept and full of flowers, had running water and an adequate number of

¹Constables.



(Left and right) Children involved in the health education campaign.

toilets, wash basins, soap, etc. As we got to know the Yate² area better we realised, however, that much of the dirtiness that first struck us in the children was due to the red earth that clings to everything and everyone.

After visiting the school we called on the dignitaries of the three neighbouring Melanesian villages and were introduced to the Chiefs, with whom we exchanged the traditional courtesies and gifts. As we told them who we were and what we were hoping to do, we had a chance to notice that running water and electricity were laid on.

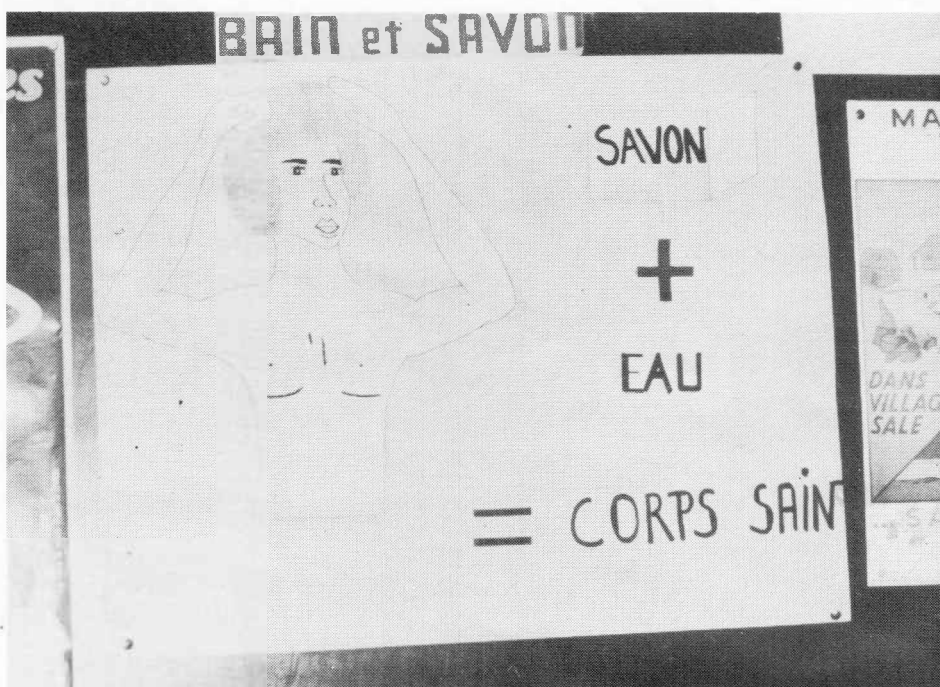
We also spent some time in the Grade 4 class observing the children and their teacher. After school hours we worked with her on how best to integrate the topic of personal hygiene into the normal programme. We mapped out the lessons for the following week so that reading, writing and arithmetic practice, as well as composition and vocabulary exercises, would all more or less revolve around this topic. In addition we were to give specific health education instruction in the time-slots provided for general knowledge teaching and free discussion.

During the second week we worked in the school, for the most part with children of about 10 years of age. Health education involves three stages: informing, motivating and promoting the acquisition of good habits.

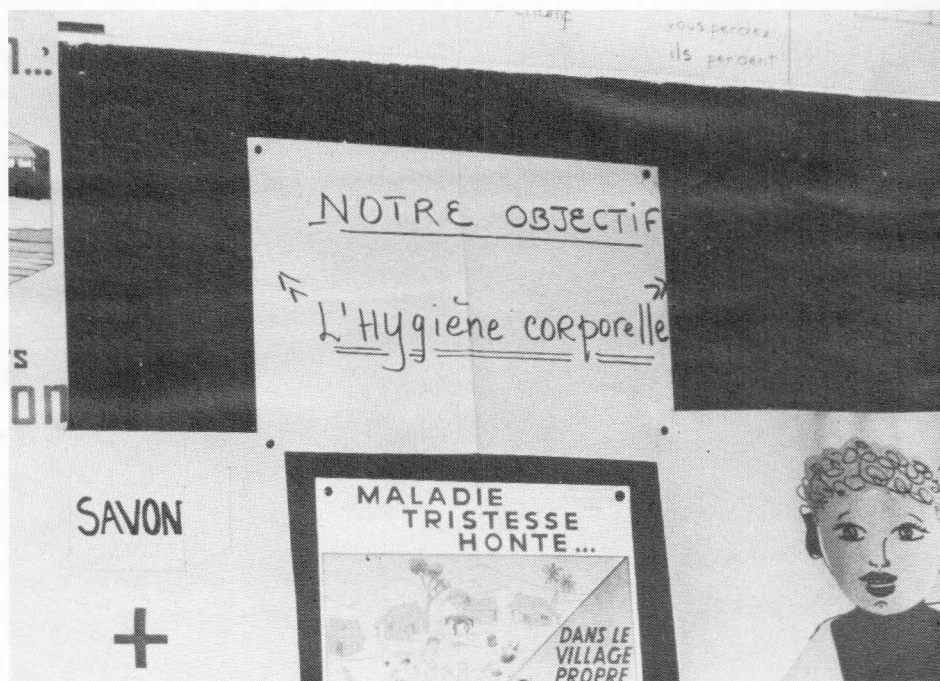
Information was given by introducing the children to the various aspects of personal hygiene. We used two photographs, one showing a European-style bathroom and the other a Melanesian-type shower-cum-tub arrangement. We pointed out that, in both settings, the essential concept was: "Water + soap = healthy body." During the writing lesson the teacher tested how much the children had actually absorbed of what we had told them. They were asked to write a sentence summing up our talk and copy it several times as writing practice.

To *motivate* the children, i.e., to stimulate their interest and understanding, we asked them to think and tell us why it was important to be clean. Three sets of reasons emerged from their answers: (1) so as not to be ill; (2) to feel well, to keep fit, to enjoy life; (3) out of respect for oneself and for others.

With a magnifying glass we showed the children what their skin is made of



This poster illustrates the basic theme of the campaign: soap + water = a clean healthy body.



This poster explains the objective of the campaign: personal hygiene. It also illustrates another important idea: in the village, sickness causes sadness and shame.

and, after the visible, introduced them to the invisible world. This subject seemed to fascinate the children, who drew us into a discussion on skin infections, germs, parasites, lice and especially scabies. We thoroughly described this disease, explaining what caused it, how to

treat and, better still, prevent it, once again stressing the fact that water + soap = healthy bodies.

²Yate is a district in the southern part of the island of New Caledonia where the project was implemented.

To test the knowledge acquired, the pupils were asked to draw a cartoon strip and write a short paragraph describing the disease and how to treat it. The children also wrote an essay on: "Why cleanliness is important." In the vocabulary lesson, they were told to form sentences using words like showering, cleanliness, hygiene, etc. Together they also composed a song called "Ah, how I love to splash in my bath," which became very popular and was sung by all the children every night on the way home in the school bus.

The acquisition of good personal hygiene habits started off with a "How to be clean" discussion around a human shape posted on the wall. The children named the parts of the body and, as demonstrations and explanations proceeded, stuck jigsaw pieces corresponding to the nose, eyes, mouth, ears, hands, etc, on to the poster.

Classroom demonstrations were held of how to wash hands, ears and face. Volunteers washed in front of their classmates, who were then asked whether the clean-up had been thorough enough and helped to find what might have been forgotten: removing the dirt from under the nails, for instance. The children did their own testing and chose the following sentence for copying into their exercise book: "To have a clean healthy body we need soap, water and a face-cloth to rub with."

Coloured cardboard was used to make little men, writing down the different parts of their bodies and numbering each part according to the logical washing sequence. The "little men" were then covered with adhesive plastic and a piece of string was put through a hole in the top so that they could be hung up at

home as a permanent, attractive reminder of the body care necessary every day. This last point was constantly emphasised in our lessons, and the third health education stage reinforced through a distribution of soap and face-cloths.

Our last week began with the children writing a letter to their pen-friend class (pupils of the same grade in a Noumea³ school). The letter was the result of group work and discussion, and the children took evident pleasure in sharing their newly-acquired body hygiene knowledge with others, by means of the song and by talking about their classroom activities at home. We organised evening meetings in two different places for the parents. One was extremely successful, with a large attendance and constructive discussion; the other was rather a flop because of personality conflicts.

Evaluation of our work was actually a continuous process involving the pupils, who each day summed up and assessed the previous day's work before proceeding to a new lesson with additional facts and concepts.

- Evaluation of knowledge: The letter written by the class as a whole to the parents, and the song composed, showed that the most important ideas had "sunk in."
- Evaluation of interest: The teacher's considered opinion was that our work had made a strong impression on the children, who talked a lot about what we had been doing together, both among themselves and with other people whom they also taught their very own song (of which a cassette-recording was even made). They kept bringing up the subject of body

hygiene in class with their teacher and rated one another for cleanliness (hands, nose, face).

- Evaluation of habits: The children arrived at school in the morning much cleaner than before. The difference was very obvious: faces shone, legs and elbows had been scrubbed, noses were wiped (with one or two exceptions!), clothing looked neater and freshly changed, which proved that our efforts had had some impact on the parents also. At the end of the school day the children were "grubby" again, but came back clean the following morning.

We were given a farewell party on our final day and entertained with a pretty song called "The child and the flower." As we said our goodbyes we all joined in singing one last time "Ah, how I love to splash in my bath!". Throughout our stay we took photographs to show the work done by the pupils and render the general atmosphere of this Grade 4 class which, we trust, will have benefited from our visit.

In conclusion, we feel that we succeeded in what we set out to do, perhaps even beyond our initial expectations. We were most effectively assisted by the class teacher, and our confident hope that something positive will remain as a result of our visit rests largely on her assurance that she will see to it that the children continue to put into practice what we did our best to drum into them:

- "Soap + Water = Clean Body = Good Health = Better Life."

³Noumea is the capital of New Caledonia.

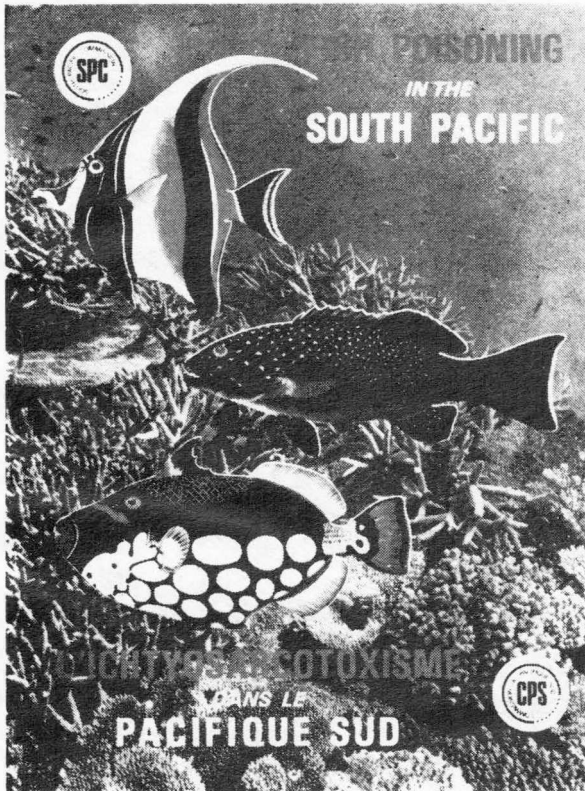
"Ah, how I love to splash in my bath!"

A song composed by the CE₂ class pupils at Yate Primary School

- | | |
|--|---|
| <p>I. <i>Ah, how I love to splash in my bath,
Blowing bubbles with soap and playing submarine,
Ah, how I love to splash in my bath,
Singing at the top of my voice so the neighbours can hear.</i></p> <p>II. <i>Ah, how I do enjoy a good thorough wash,
First my face and my neck, then my ears and my nose,
Scrubbing hands, body, and between my toes,
And brushing my teeth – don't I smell good!</i></p> | <p>III. <i>Ah, how I love to be tidy and clean,
It makes me want to sing and dance for joy,
At school or play everything is more fun,
When my nose is blown and my hair is done.</i></p> <p>IV. <i>How nice we look when we are in good health
Without lice, or boils, or ugly sores,
Without scabies and ringworm we feel real good,
We are strong and happy and have lots of friends. □</i></p> |
|--|---|

Who needs this book?

YOU need this book!



You need **Fish Poisoning in the South Pacific** now.

It can save lives, protect public health, aid the economy.

Nearly 10 per cent of the people in some South Pacific territories suffer permanent effects from ichthyosarcotoxism—that's fish poisoning.

Just the threat of poisoning limits fish consumption, helps cause diet deficiencies.

Fish poisoning harms the economy, too. Causes absenteeism.

Prevents the building of canning factories for lagoon fish.

But little is known about it.

Fish Poisoning in the South Pacific sums up present knowledge of ichthyosarcotoxism. Text, in English and French on facing pages, describes:

- symptoms, diagnosis and clinical effects
- species of toxic fish and their distribution
- origin and nature of toxic compounds
- fish identification
- treatment of victims.

Forty-four full-colour plates, captioned with local names where known, identify toxic fish in your area. The author is Dr R. Bagnis, Head of the Medical Oceanography Section, l'Institut de Recherches Medicales Louis Malardé, French Polynesia.

For your personal, communal and economic welfare—you need this book!

FILL IN THE ORDER FORM BELOW AND SEND IT TO US TODAY.

ORDER FORM

The Manager,
South Pacific Commission Publications Bureau,
P.O. Box A245, Sydney South,
N.S.W. Australia 2000.

Dear Sir,

Please forward me copy/copies of **Fish Poisoning in the South Pacific**.

I enclose a cheque for*

(PLEASE PRINT NAME AND ADDRESS CLEARLY)

Name.....

Address.....

* Cost per copy: \$A3.50 or \$US5.25. Post free.



*When you travel, travel in style. With UTA French Airlines.
To Tahiti, the United States or Europe.*

UTA
French Airlines
You'll like our style.

For reservations: Sydney: 33 Bligh Street, Telephone: 233 3277. Melbourne: 440 Collins Street, Telephone: 67 7432.
Brisbane: 331 Queen Street, Telephone: 221 5655. Adelaide: 17 City Cross, Telephone: 212 4466. Perth: Shop P4, 77 St. George's Terrace, Telephone: 325 7421.

SSB.UTA/53

We're all working together for the future of the Pacific.

The Burns Philp group is proud to be involved with the future growth and development of the Pacific region.

Burns Philp have 30 operating centres located throughout Papua New Guinea, Vanuatu, Fiji, Tonga, Niue, Western Samoa, American Samoa and Norfolk Island employing over 7,500 people

involved in a diverse range of industries:

- *Distribution – merchandise, automotive, office equipment*
- *Manufacturing and Processing – soap, coconut oil, biscuits, packaging, furniture, timber, modular housing*
- *Shipping and Transport*
- *Travel • Plantations.*

As the Pacific region's future prosperity depends on new business opportunities, we will continue to contribute through our experience and knowledge of the Pacific region.

Proud to be part of the South Pacific.

**Burns
Philp**

