

3d quarter 1970

activity is corrected early enough, the reef may recover. If it goes on long enough beyond the "point of no return", it becomes an irreversible reaction which could have been prevented and the reef will die even if the sedimentation is stopped.

THE ACTION PHASES OF LAND USE PLANNING

It is with the implementation of a well considered land use management plan that we finally achieve the goals of the national land use policy. Using the above principles and combining them with the following actions we can keep land use planning ahead of land development.

Inventory of Land Resources

Dasmann states the rationale for resources inventory so well that very little can be added:

A first requirement for planning of any kind, or any purpose, on any scale, is a knowledge of existing conditions. Without this, planning can only be an exercise in theory, separate from any reality, without hope for implementation. Ideally such knowledge should come from recent, ecologically based detailed maps and reports on land forms, vegetation, land use, the successional status of existing biotic communities, and accounts of species of native and introduced animals and plants showing their distribution and status.*

The Trust Territory is fortunate to have a very good source of information already available and ready to use; that is the up-to-date aerial photos taken for use by the Land Cadaster Program. These photos can provide information on soil types, land use patterns, land form data, and other useful information.

One of the most important objectives of the inventory must be to identify the irreplaceable elements of the basic land resource. In this category and included are those elements of the landscape and biota that are rare or localized in distribution and are in danger of being irretrievably lost if they are not protected. This includes the many endemic varieties of plants and animals like the Fruit Bat, Micronesian Pigeon, and the Dugong. It also includes many areas of scenic beauty or historical and archaeological significance. If any of these areas should be destroyed, they would be just as irretrievably lost as the extinction of a species.

Land Use Allocation

Intense land use pressure requires that a system be devised for allocating the limited land resources among the various competing uses. This system should achieve a good match between the use visualized and the capability of the land to support that use.

This merely means that urban lands should be zoned for urban uses, agricultural lands for agricultural uses, and other appropriate lands put into a conservation zone where land uses are carefully considered so as to protect those features worthy of conservation management.

Enforcement

Once policies and decisions have been made, they must be enforced. The basic land resources of Micronesia are too scarce to allow for exceptions and variations of the rules. For example, land identified as agricultural must be developed as such and not allowed to be encroached upon by non-agricultural uses that manage to avoid the rules. The program, no matter how well conceived, is only as good as its enforcement.

Monitor and Adjust

As the program develops and matures, the results should be constantly under surveillance in order to compare them against the desired goals. If careful review shows that the goals are not being achieved or that detrimental effects are resulting, then positive adjustments must be made.

CONCLUSIONS

Development of Micronesia is proceeding at such a rapid rate that before long Micronesia's precious 680 square miles of land will no longer be the paradise we know today. Development is out-pacing Land Use Planning. There have been some utilities planning, transportation planning, communications planning, etc., but what good will this type of planning be if the land is eroded away, the reefs killed, and the scenery spoiled? Land resources information and land use capability information must be developed and must be used in planning the economic development of Micronesia.

The time has come for vigorous land planning efforts. A start has been made through the efforts of the Land Cadaster Program, the creation of the Environmental Protection Board, and the establishment of the Trust Territory Planning Office. Sound and timely action by these agencies is important to the future of Micronesia. They deserve the active and courageous support of the Micronesian people.

* Quoted from "Conservation Planning on a National Scale," by Raymond Dasmann. Presented to the Eleventh Pacific Science Congress, Tokyo, 1966.



FORESTRY'S ROLE IN MICRONESIA

Mahogany planted in 1957 on Ongelungel's land in Melekeok, Babelthup; photo taken in 1966.

by David T. Fullaway

Forestry is "the art and science of growing, treating, and utilizing trees for man's benefit." Many people, however, are not aware of the extent of those benefits.

One has only to think of the coconut palm, the banana palm, citrus, the breadfruit, mango or avacado tree to recognize that trees are a significant source of food in Micronesia. Many of these same trees relieve the burning glare of the tropical sun, offering cooling shade. Some trees are a source of local medicines, and nearly all of

them add greatly to the beauty of the landscape.

Trees also provide wood for lumber, posts, poles, and piling — raw materials for carpenters and construction workers. Micronesia's growing handicraft industry depends upon trees to furnish its many wood carvers with the raw material from which they fashion their story boards, love sticks, masks and other handicrafts.

Yet today, Micronesia finds itself in the position of having to import over a million dollars worth of lumber each year to assure an adequate supply of

these raw materials. This represents a serious drain on the economy of the islands.

Ponape, Kusaie, and Palau can supply most of their own lumber needs; and Truk and Yap can furnish about half of their needs, using mangrove and certain species of trees that grow on the mountains.

An active tree planting program on government lands, and an extension program to establish plantations of wood-producing trees on private lands is an important aspect of forestry's role in Micronesia.

Perhaps the function of trees about which the average person knows the least is the very important part they play in the development and control of a good water supply.

Everyone recognizes the importance of water. If there were no water, people could not survive on the earth. Where there is water, and it is contaminated or of poor quality, the health of human beings is endangered. Good water in large quantities is absolutely essential to population growth and economic development.

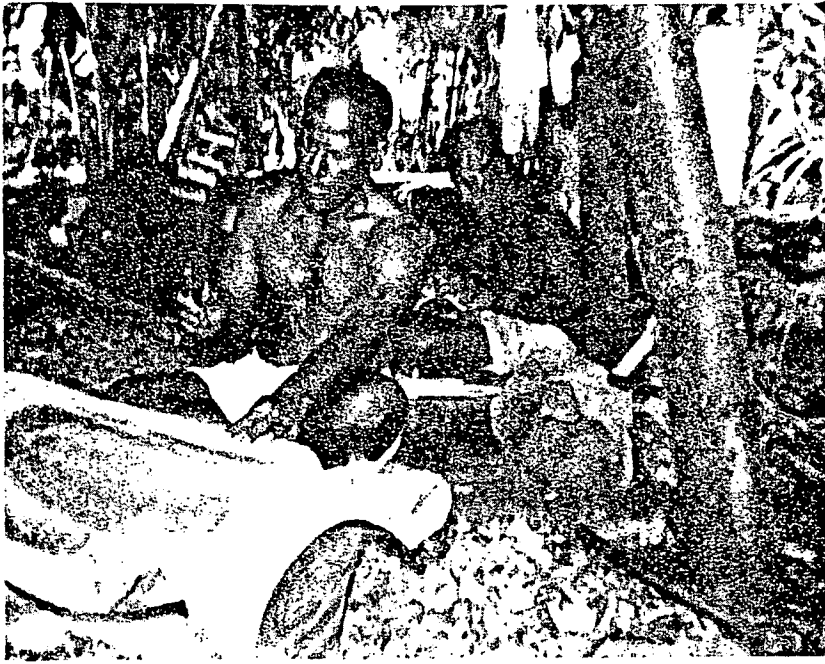
A steady supply of quality water will be assured if there is a good watershed — an area on which rain falls and from which the water then flows to a single collection point — well covered with grasses, shrubs, and trees. The tree roots bind the soil together and permits water to slowly penetrate the soil. Without trees, the rainwater will flow rapidly across the surface of the ground into ocean-bound streams or directly into the sea, resulting in the waste of untold millions of gallons of water. With the rushing water goes valuable top soil into the ocean, muddying the water and seriously damaging fishing potential in the immediate area.

Planting and growing trees to protect the land from such erosion is one of the most important aspects of forestry's role in Micronesia. In carrying out this function, forestry puts into practice principles of conservation, which is the wise use of natural resources for man's use both now and in the future. Natural resources fall into two main categories: renewable resources, including water, trees, and animals; and non-renewable resources, such as soil and minerals.

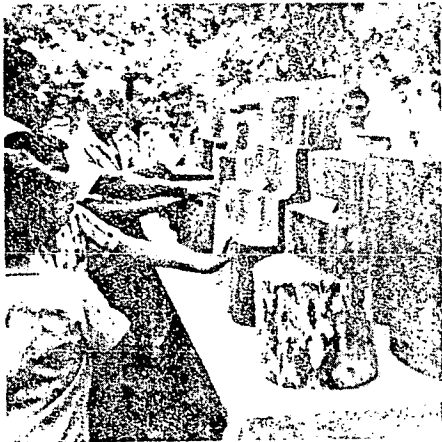
Looking at the history of forestry in Micronesia, we see that before the advent of the first white man, Micronesians were dependent on the land for their livelihood. They practiced an intense form of subsistence agriculture, using trees, soil, and water to produce their food, goods and services.



Shown in the photos are Trust Territory foresters in action. They are (l to r): Trust Territory Chief of Forestry David Fullaway, Palau's James N. Ramarii, Salis Peter, and Herson Anson, both Ponape's foresters. There are twenty persons working in forestry today in Palau and sixteen in Ponape. Plans are underway to institute forestry programs within the next two years for Yap, Truk, and Kusaie.



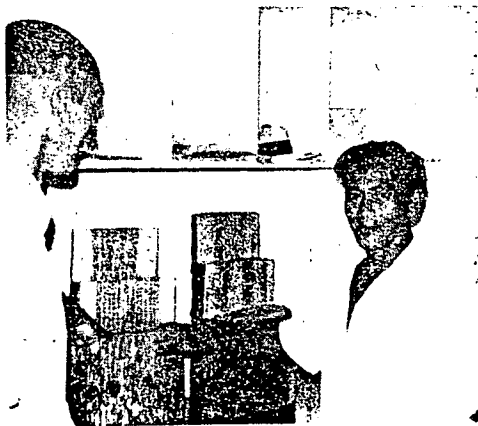
Wooden handicraft for sale brings much money into Micronesia.



Wood samples shown at a Ponape's agricultural fair.



Making lumbers by using a chain saw is economically sound, and costs less than imported lumbers.



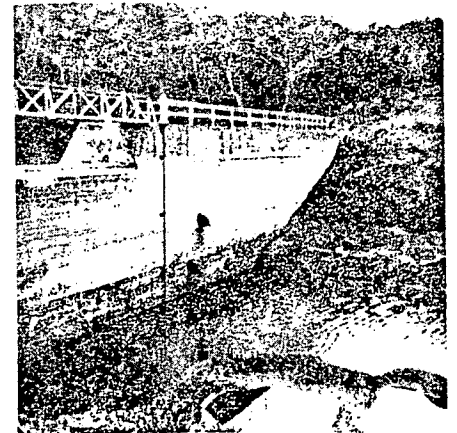
Educating the people of the islands the importance of forestry is a vital role of the forestry program in Micronesia.

In the waves of foreign domination that followed over the next four centuries, some foreign powers exploited the natural resources of Micronesia; others brought about a change from dependency on the land to dependency on imported goods. Their presence resulted in a change of attitude on the part of the Micronesian people toward conservation.

Today, the people of Micronesia are exploiting their own natural resources. Forests are disappearing, the tillable soils are being eroded away, valuable supplies of water are being wasted in needless run off. At the same time, the way of life of the average Micronesian has changed. He no longer produces all of his own food and goods. Instead he is rapidly becoming a consumer of foreign goods. And so we find a Micronesia which once could supply the needs of a population far greater than that of today, unable to meet the wants and needs of its people.

But Micronesia today is aiming toward economic self-sufficiency and total self-government. In realizing the goal of economic independence, forestry does and will continue to will play a significant role. An active forestry program, coupled with hard work on the part of the people, will be in the forefront of Micronesia's recovery from years of exploitation.

Palau's Irai dam during a draught—water is forests' main product.



Recognition of the importance of forestry's role in Micronesia came in 1966 when forestry was incorporated into the Trust Territory's agriculture effort. Today there are active forestry programs in Palau and in Ponape. Plans are well underway to institute similar programs within the next two years for Yap, Truk and Kusaie. Young men from these districts are currently at Bulolo Forestry School in New Guinea, enrolled in courses in forestry.

There are 20 persons working in forestry today in Palau, and 16 in Ponape. Six of them have completed three years of forestry schooling in New Guinea. They are: James Ramarii, Marcello Brel, Gerdence Meyer, and Ebais Sadang of Palau; Herson Anson and Salis Peter of Ponape. Currently attending the New Guinea Forestry school are Mathias Kugumagar of Yap, Glastine Cornelius of Kusaie, and Baciano Namelo of Truk. And recently graduated from the Forestry School at the University of Washington was Ishmael Lebehn of Ponape.

Among the current forestry activities in Micronesia are:

- Nursery development and tree distribution to provide tree seedlings for food, timber, erosion control, windbreaks, and beautification. These trees are given out free of charge to Micronesians.

- The planting of stands of trees on government land for study of planting, growing, treating, harvesting, wood utilization techniques, and for watershed development. And the planting of trees on private land of trees for food, timber, and erosion control.

- The establishment of watersheds in Micronesia; to develop and maintain them primarily for the production and control of water.

- The teaching and promotion of forestry, conservation, and preservation in the schools and villages throughout Micronesia.

- The development and introduction of laws into district legislatures and the Congress of Micronesia to develop and protect forests in Micronesia.

- Encouragement and support of sawmills, furniture and craftwood plants. Use of local materials for posts, poles, and charcoal.

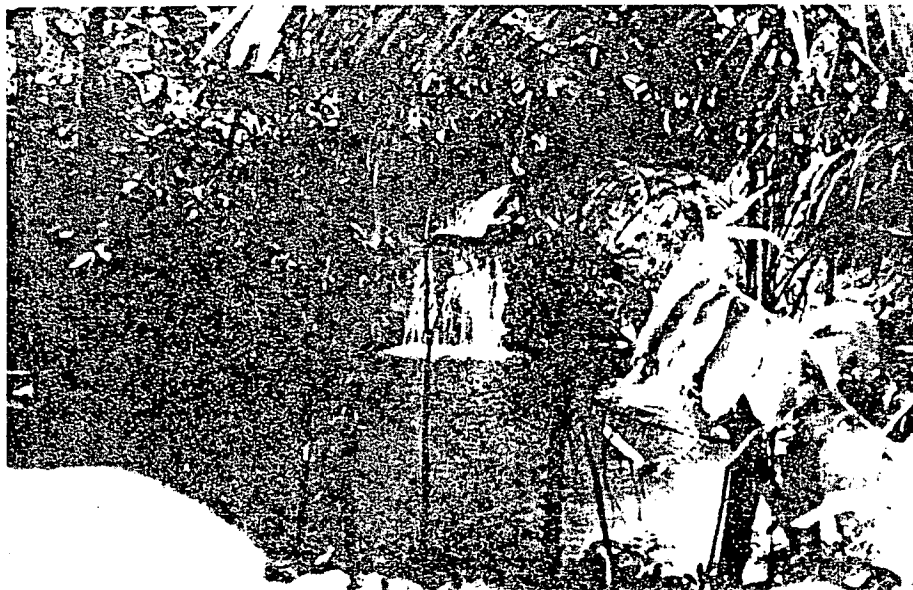
- In Ponape, the Cattle distribution of breeding cattle.

What all this adds up to is a program of basic development and protection of Micronesia's natural resources. The people of Micronesia, after centuries of exploitation of these resources, first at the hands of foreign governments, and now at their own hands, must recognize the importance of forestry's program of resources development and protection to their own personal well-being. They must accept the fact that it is vital to their economic and political advancement.



Trees are a significant source of food in Micronesia. Shown in the photo is an agriculture worker spraying water to young breadfruit trees on Ponape.

Forests play an important role in production of quality water. If there were no water, people could not survive on the earth.



Trees are frequently used to relieve the burning glare of the tropical sun, offering cooling shade.



by William A. Brewer

THE ASSAULT OF OUR DEEPS AND LAGOONS

The first deep breath of air from the SCUBA regulator was cool and dry—a refreshing change from the almost stagnant muggy air I had been breathing at the surface. I checked my underwater compass with the position of the boat in relation to two prominent shoreline coconut palms. Good reference points:

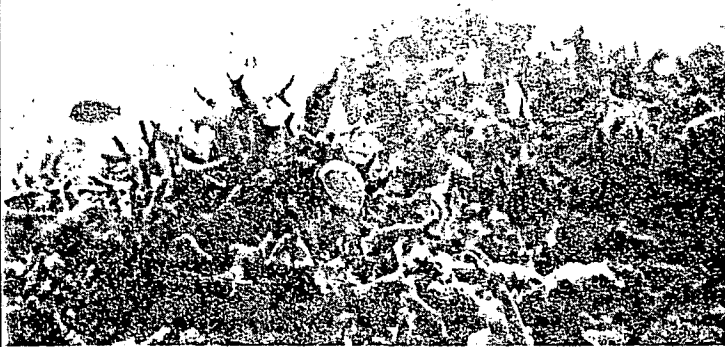
About 285 north-east magnetic . . . Distance maybe 300 yards . . . water depth about 40 feet sloping to estimated 8 feet on inner reef flat . . . maybe an 80 minute bottom time, no, better figure on 65. Plenty of time if I maintain about 5 yards per minute. Over the side.

Why do I always get so excited the first few minutes underwater? Maybe nervousness? My heart is pounding so hard I can feel it in my ears. Better inflate the vest to give me a little bouyancy before I reach the bottom.

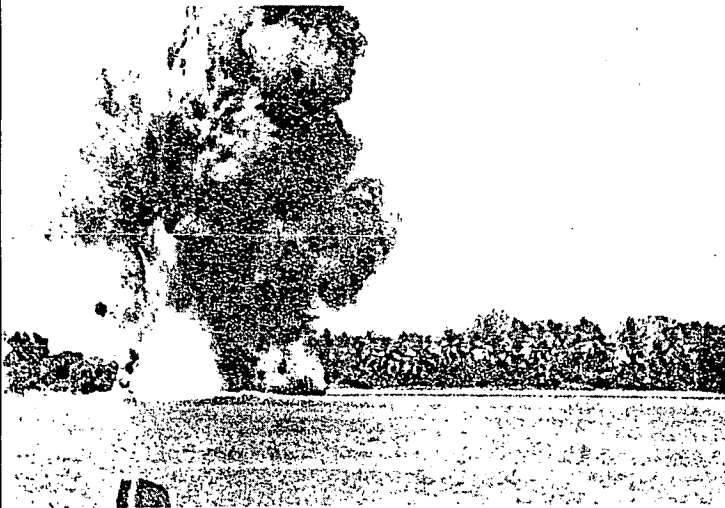
Come on ear, equalize! Why can't you cooperate like my right ear? After over a thousand logged working dives in "brass monkey" waters of California and a couple hundred working dives in Micronesia you'd think it would learn. Nope. Oh well, up to 20 feet and try again. OK. Now let's get going.

Notes from my underwater log book of March 28, 1975:

0920 Hours: 300 yards off Mechitiw, Moen Island. 50+ visibility. Coral: Acropora, Milliopora, Porites dominant. Two dynamited craters at T+5 minutes. Vis. 50+ ft. upstream. 6-10 ft. downstream of craters. Holothurians everywhere, ugly. One lizardfish, Synodus? Diameter of crater 50 estimated feet; shattered corals extend 20-40 feet from crater rim. Two Pomacentrids, nothing else. Coral bleached, polyps not observed. 90% dead, remainder dying. $\pi r^2 = 3.14 \times (50)^2 =$ about 7500 sq. feet totally destroyed. Shattered area, incl. crater, $(90)^2 = 8100 \times 3.14 =$ about 25,000 sq. feet. Shattered cowries; helmet snail broken in half. Former patch reef indicated on topo. map gone: dead. A person that could dynamite a coral reef could also probably dynamite a classroom full of children without a second thought! Don't they realize how unique their islands and lagoons are? 0938 Hours: a third dynamited crater . . . T+18 minutes . . .



BEFORE *A magnificent living reef teeming with diverse, colorful and economically valuable fish and other marine life.*



DURING *The work of the fish dynamiter.*

AFTER *The diver inspecting the shattered remains of the once living reef. No fish, no shellfish, nothing . . .*

