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The Hunt Institute for Botanical Documentation, a research division of Carnegie Mellon University, specializes in the history of botany and all aspects of plant science and serves the international scientific community through research and documentation. To this end, the Institute acquires and maintains authoritative collections of books, plant images, manuscripts, portraits and data files, and provides publications and other modes of information service. The Institute meets the reference needs of botanists, biologists, historians, conservationists, librarians, bibliographers and the public at large, especially those concerned with any aspect of the North American flora.

Hunt Institute was dedicated in 1961 as the Rachel McMasters Miller Hunt Botanical Library, an international center for bibliographical research and service in the interests of botany and horticulture, as well as a center for the study of all aspects of the history of the plant sciences. By 1971 the Library's activities had so diversified that the name was changed to Hunt Institute for Botanical Documentation. Growth in collections and research projects led to the establishment of four programmatic departments: Archives, Art, Bibliography and the Library.

Pittsburgh

5/20/40

Volcano, Hawaii,
May 29, 1930

Dear Mr. Degener;

I had not forgotten your request for that kukui but because of too many reasons to write here, have not had a chance to go to the place in Kona where I heard my plant came from. It meant searching along a road. But I suddenly got inspired as to whom the woman was who knew of their presence over there. (I guess it is whom after all!) I rang her up and she told me she had a tree in her yard grown from nuts she got in Kona, and that I could have all the specimen material I wanted. She siad she had a tree from nuts from Kauai that was different from the common ones here. Anway, I finally got to her place. She was absent but I got some specimens from two trees, which I am sending you this same mail. There was a third tree in a gulch and not so accessible but it looked like the Kona tree with its indented leaves. I can get some from it if you wish it. I'll see her again some time.

I am in an awful rush to catch the mail, so if I do not get the nuts started, you'll get them later. Do the male and female flowers grow in a separate cluster? I read it up after I got home, so didn't look for different flowers. I was hurried then, too.

Haven't had a chance to make an expedition up the side of Mauna Loa from Humuula to get the exocarpus. That means a two day trip and getting horses.

The nuts are numbered 1 and 2 like the leaves. Excuse haste. Much aloha to you and your sister.

Isabel Jaggar

[Wife of Dr. Thomas Jaggar, volcanologist.]

We believe we mailed you years ago a sheet of Aleurites remyi (or A. moluccana var. remyi), Euphorbiaceae. This xerox may be appropriate for inclusion in sheet folder.
O. & D.

ROBERT FROST READS AT SOCIAL UNION

The 1942-43 Social Union series opened on October 17th when Robert Frost gave a lecture-reading in Bowker Auditorium. The student-faculty audience which filled the hall rose in a body when Mr. Frost walked onto the stage, and applauded until long after he had taken his seat. Afterward, after the lecture, Mr. Frost commented to friends about this reception by the students, and said, "It was moving to have them care so much." Then he smiled and added, "Perhaps it was a tribute to my gray hair."

Mr. Frost was introduced by Professor Rand, who spoke about the poet's former residence in Amherst, and about his interest in the State College. After the introduction Mr. Frost remarked that Professor Rand had negelected to mention one of the reasons for the interest. "I gave a son-in-law to this College," he said. The son-in-law is John P. Cone '32.

Mr. Frost read poems from his earlier books—Mending Wall, Birches, Brown's Descent, Stopping by Woods on a Snowy Evening—and mostly by request. His audience was raptly attentive.

With a group of friends after the reading, Mr. Frost talked at length about the College, particularly about the late president, Edward Morgan Lewis. Mr. Frost admired Lewis' ability as a baseball player ("Lefty" Lewis had been, at one time, a star pitcher for the Boston Nationals) and apparently he had been drawn to Lewis also because of their common love for poetry. Frost recalled that President Lewis had regarded the arts as much akin to competitive athletics.

Edward Lewis' father had come to this country from Wales when his son was a young boy, and had settled, along with other Welshmen, in a small Ohio town. Like his fellow countrymen he took part, each year, in the Eisteddfod, a sort of Welsh picnic, with contests in music, singing, and the composition of original poems.

Mr. Frost told of young Lewis' experience at one of these gatherings. After a visiting judge had heard a reading of several poems, submitted by as many competitors, he spoke to the audience about the poems, told of the good qualities of each. At last he named the poem he felt was best, and asked that the winning author rise. The man stood up. "It was my father," Lewis said.

PLANT FAMILY NAMED FOR OTTO DEGENER '22

Word has just been received of a unique botanical distinction recently conferred upon Otto Degener '22. Degener is now at the New York Botanical Garden, but for many years he has resided in the Hawaiian Islands where he has been busily engaged in the preparation of his *Flora Hawaiiensis*.

In 1940-41 he was appointed botanist to the Pacific cruise of the "Cheng Ho" sponsored by Mrs. Anne Archbold. "The botanical collections were made with the cooperation of the Arnold Arboretum and the New York Botanical Garden. Mr. Degener obtained about 2100 field numbers . . . The area covered centered on the largest island, Viti Levu, where numerous regions near the coast were visited. Mr. Degener also spent several weeks in the mountains of Tholo North Province, and additional work was done in the Savu Savu Bay region of Vanua Levu."

Degener informs us by letter that he became acquainted with a native Fijian chief who, learning that his visitor had no children, saw to it that one of his own numerous progeny became Degener's son by adoption after the appropriate rites of kava-drinking, and so on. So Degener now has a full grown "son" of pure Fijian blood.

The report on the Degener plant collection has just appeared in a monograph of 148 pages issued by the Arnold Arboretum of Harvard University. (Smith, A. J. and collaborators. Fijian Plant Studies. Sargentia: I, pp. 1-148. July 1942.) We discover that some dozen plants new to science bear the species name *Degeneri*.

Most remarkable, however, is a tree discovered on Fiji and allied to the magnolias, which fails to fit into any of the known plant families and has been named *Degeneria vitiensis* of the new family Degeneriaceae. The institution of a new family of angiosperms is a notable event and the Alumni should feel highly gratified that one of its members has been so signally honored.

R. E. T. '12

'33 Walter Kulash who received his Ph. D. at the College this year has been appointed instructor in zoology and entomology at the North Carolina State College, in Raleigh.

ALTHOUGH ROBERT FROST DENIES THAT HE USED TO THINK THAT THE "GREAT AMERICAN EPIC" WILL BE WRITTEN ABOUT PROFESSIONAL BASEBALL, HE DOES ENJOY THE GAME—AND LIKES TO PLAY. THE PICTURE SHOWS HIM SET TO SWING—AND WAS TAKEN LAST SUMMER AT THE BREAD LOAF SCHOOL OF ENGLISH IN VERMONT.

The Academy of Natural Sciences
of Philadelphia
Founded 1812

has received from

OTTO DEGENER

TWO HUNDRED AND TEN SPECIMENS OF

HAWAIIAN FERNS AND FLOWERING PLANTS

and gratefully acknowledges this
contribution to its collections

President

Philadelphia July 9, 1943

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c/o Department of Botany, University of Hawaii, Honolulu 14, Hawaii

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The HAWAIIAN BOTANICAL SOCIETY was founded in 1924 to "advance the science of Botany in all its applications, encourage research in Botany in all its phases," and "promote the welfare of its members and to develop the spirit of good fellowship and cooperation among them." "Any person interested in the plant life of the Hawaiian Islands is eligible for membership in this Society."

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The Hawaiian Botanical Society Newsletter is published monthly, except during the summer months of July, August, and September. It is distributed to all Society members and other interested individuals and institutions, with the purpose of informing them about botanical news and progress in Hawaii and the Pacific. News contributions and articles are welcomed. The deadline for submission of news items is the 20th of each month prior to publication.

Duplicated at the University of Hawaii and Bernice P. Bishop Museum.

Membership Dues are $2.00 per calendar year and include receipt of the Newsletter.

Two New Grasses Are Being Tested at the University

Hon. Star-Bull. 5/6/40

Close relatives of two well known families have arrived in the territory, and it is hoped that they will stay as permanent residents.

The family names may not mean much to laymen, but to the ranchers and dairymen of Hawaii, they mean a great deal, for the two new arrivals are not persons, but grasses.

The new grasses both have nobility of name, according to the University of Hawaii agricultural experiment station which has been responsible for introducing the best grasses of the world to the territory, but whether they will be useful for pastures in the territory is not yet known.

One of them, from the Bermuda family, has the common name of star grass and comes all the way from East Africa. Reports to the experiment station indicate that it can travel as much as 200 feet in one season! In palatability trials at the university, animals ate the star grass quite well and the growing recovery of the grass was excellent, according to J. C. Ripperton, agronomist with the experiment station.

"The other visitor belongs to the crabgrass family and is so new it hasn't a name of its own yet. However, if it lives up to its family name it should be very palatable," Mr. Ripperton says.

Degener Article In Botanical Journal

More than half of the September issue of the Journal of the New York Botanical Garden, copies of which have recently been received in Honolulu, is devoted to an article on The Last Cruise of the Cheng-Ho, written by Otto Degener, formerly of Hawaii.

Mr. Degener was a member of a botanical expedition to the South Seas sponsored by Mrs. Ann Archbold.

He left Honolulu aboard the yacht Cheng-Ho in the fall of 1940, returning here in July, 1941.

He spent most of his time in Fiji, where he collected 2,100 specimens of Fijian plants.

Science 127: 1335. 1958

Flora Hawaiiensis. Book 5, *The New Illustrated Flora of the Hawaiian Islands.* Otto Degener. The author, Waialua, Oahu, Hawaii, 1957. $5.

In this fifth part of a loose-leaf flora are 217 sheets and a temporary index, with page indications to show where each sheet fits into the complete work, publication of which began in 1946. As in previous sections, the size of the type is varied from page to page, to fit the material to the space allotted and give prominence to the fine line drawings of each species.

The "Flora" of the title refers only to tracheophytes, but the author gives family identifications and keys to genera and species, technical descriptions of individual varieties, and a wealth of delightful information as well as data on distribution. The current "book" includes, among others, *Monstera deliciosa,* the banana family, *Casuarina equisetifolia,* ramie, sandalwood, a Hawaiian sundew (possibly introduced by Pacific golden plovers), a long key to local members of the pea family, papaya, and frangipani. Many of the introduced species have developed racial differences, but the conflict between ancient and recent additions to the islands' plant life is evident throughout the descriptions.

LORUS J. MILNE
MARGERY MILNE

Department of Zoology, University of New Hampshire

Sent to Pac. Islands Monthly, 6NSJ, Rechinger.

1011

GHOST ARMY OF KAUAI BEATS UNSEEN DRUMS

Weird Experience on Banks of Wailua River Causes No Fear; Called Favorable Omen

(Editor's note: If you don't believe in ghosts be sure to read this article which will tell you the story of the "ghost army" of Kauai.)
PART V. HAWAIIAN PLANTING TRADITIONS

By JULIET RICE WICHMAN

According to ancient tradition and modern practice the best planting months were those three which fell in the period between July 21 and October 23. Modern gardeners, and even sugar and pineapple planters will agree on this point.

For annuals, and for perennials such as the delphinium, which must be grown as an annual here, seed is best started in these late summer and early fall months, and if one wishes for success beyond normal, one must plant on favorable moon days. Try planting seed on the day after the new moon in October, or two days after, or two days before the full moon of that month.

Taro which was planted in these months, taking as it does a year to mature, was ready for use at the beginning of the Makahiki festival.

There was another "fertility festival" celebrated as part of the Makahiki (which lasted through four months of the year). The knowledge of this came to me through such peculiar circumstances, and in such an unusual and coincidental way, that I hesitate to write of it except as an incident which one must judge wholly upon its merits as a "good story." It is too closely related to the Hawaiian traditions of which this series treats to be left out entirely.

Whether one be credulous or incredulous, one must admit that here in Hawaii strange things are reputed to happen. I do not ask you to believe; I only ask you to admit the strangeness of the circumstances which led me to stumble on the actuality of this particular festival in the particular location at which in ancient times, it actually took place. The verity of this festival is unquestionable. Only the train of events leading up to my knowledge of it is strange.

Famed Birth Stone

In the old days of Kauai, the country about the mouth, and along the banks of the Wailua river was particularly important. Here the kings of Kauai lived. Here was the famed "birth stone" where the high chiefesses came to give birth of "high chiefs." Even today this stone may be seen by those interested enough to make the pilgrimage. The stonewalls and paving of famous heiaus or temples overlooking the river, are still to be seen, as well as the remains of a once famous "city of refuge."

Along the hau-bordered river banks were taro patches, where now rice grows; grass houses and canoes on the beach. Here dwelt the princess whose journey after the hidden music of the nose-flute led her to Pihana-Kalani, the earthly paradise where all good things abound. Pihana-Kalani means earth fructified by heaven.

When, less than a year ago, we moved into the home we had built on the mauka bank of this famous old river, the name "Pihana-Kalani" was given us for our home, which was dedicated in a modern adaption of the old Hawaiian custom.

About four months later, our head cowboy came to us in a fever of excitement. That night, as he had been sitting by his window, after the family had gone to bed, he noticed the peculiar excitement of the dogs. They were listening to something. He listened too. Away in the distance, at the foot of the mountains he heard drums beating. Old Hawaiian drums—war drums.

Drums Beat Louder

The dogs became frantic as the sound drew nearer, and the cowboy, more interested, for he had heard from his father that "ghost armies" passed at night along old war trails—favorable omens of protection for those whose lands they passed over. There was no fear there, only interest. As the sound came nearer, the dogs ran down the little valley in back of his house, and follow the sound up the hill, running if and barking as though beside column of marching men.

The drums beat louder and h could hear the thud of marchin feet, as they passed close to wher he stood in the yard, and past him until the sound died away in the distance toward Wailua.

Now this man is exceedingly steady and reliable and not given to drinking. Although that was the first time we had heard of this "ghost army," I have twice since heard the drums beat and the passing footsteps, and watched the procession with no sensation of fear, but only intense interest.

Naturally this "marching army" was the center of interest that day. The cowboy's Portuguese brother-in-law admitted he had heard the drums, too, but had put his head under the covers, and the Japanese stable man, who had lived up there longer than any of the rest of us, said he had heard it before.

Taka Promises Tale

Later that day, my husband, the cowboy and I went down to a pasture we had in the river valley—older rice lands, older taro patches. At the far end of this meadow pasture rises a pinnacle of rock, roughly 60 feet high. It is a "male" rock, celebrated in legend. Its "female" complement is partially submerged in the river. This rock stands out distinctly from the cliff behind it, rising abruptly from the level river bottom land, somewhat like an abandoned stone smokestack.

There is a big stolid Japanese man, named Taka, who lives on the place, whose boat we use to get up the valley. To Taka we told our story, for it was all we were talking about that morning. He was interested, and went us one better.

(To Be Continued)

(Don't miss the concluding story to be published in next Saturday's issue of The Star-Bulletin. Hear what Taka has to say about the "ghost army." Hawaiian planting traditions has been one of the finest contributions made to the Home Garden Page, and is one of the best pieces of research work which has been done this year on old island lore. Mrs. Wichman will submit her sixth and final article next week for publication, to be followed by her book on this subject.)

Flowering Shrubs, Vines, Plants to Be Distributed

(Special Star-Bulletin Correspondence)

HILO, Hawaii, May 1.—The following list by L. W. Bryan, assistant forester, includes most of the flowering shrubs and vines suitable for planting in and around Hilo which are available to all entrants in the citywide yard and garden contest at the Hilo tree nursery.

The symbols used in the list are: L meaning large shrubs, S, small shrubs; R, red flowers; Y, yellow flowers; B, blue or purple flowers; F, attractive foliage or fruit.

The list is as follows: Shrubs: panax, L, F; plumbago, L, B; pluneria, L, R, P, W; poinsetta, L, R, P, Y; cape honeysuckle, L, R; acalypha, L, F; allamanda, S, Y, P, B; ardisia, S, F; Philippine violet, L, B, W; angel's trumpet, L, W, P, Y; cestrum, L, W; ink berry, L, F; hibiscus L, Y, R, P, W; croton, L, F; golden dewdrop, L, W, B, F; gardenia, L, W; galphimia, S, Y; graptophyllum, L, F; ixora, L, R, Y, P; Australian hibiscus, L, P; Singapore holly, S, P, F; mock orange, L, W; myrtle, L, W, P; oleander, L, W, R, P, Y; apes, S, F; azalea, L, W, R, P; summer lilac, L, W, Y, B; beauty berry, L, F; ti, L, F; dombeya, L, B; lovely flower, L, B, F; scarlet bush, L, R; ginger, S, L, R, W, Y, F; lobsters' claw, L, R, Y, F; honckenya, S, P; cactus, L, F; New Zealand flax, L, F; lasiandra, L, B; perewinkle, S, L, W, B; mussaenda, S, F; salvia, S, R; nandina, S, W; joy weed, S, F.

Vines: Aroides, F; beaumontia, W; begonia, P; bleeding heart, R; bougainvillea, P, R, F; cat's claw, Y; hug-me-tight, F; ivy, F; Mexican creeper, P, R, W; sandpaper, B; potato, B, F; quisqualis, P; thunbergia, Y, W; alamanda, Y, W; phaenera, P, Y; jasmine, trumpet, R; cissus, R; butterfly, W, B; maunalos, R, W, P; para, R; kuhio, R; moonflower, Y, R, B, P, W; passion, B, W, R; cup-of-gold, Y; cup-of-silver, W; Kalulani, W; amazon, Y; vanilla, F.

Fruit trees: Avocado, Brazilian plum, cashew nut, Ceylon gooseberry, Chinese blueberry, chocolate tree (cacao), Fiji roseapple, grapes, lemon, lime, macadamia nut, mango, pomegranate, rose apple, shaddock, tamarind, wi apple.

Letters From The People

THE OLEANDER

Editor The Advertiser: 8/12/41

A few days ago someone queried through your letter column, is oleander an unhealthful plant?

There's an old saw about leaving well enough alone, you know, and if one leaves the oleander alone once it has begun to grow, everything is wonderful and the gardener will be delighted by fragile pink flowers someday.

To the unknowing, and to children especially, the oleander, however, is a dangerous plant to have around. From its milky latex one may be poisoned seriously by the alkaloid(s) present. A story is told of children who used the lovely slim leaves as boats while bathing. The exudate from the leaves, though diluted probably many thousands of times by the bath water was strong enough to bring painful rash about the bodies of these children.

More dangerous, however, than the oleander (Nerium Oleander) is the Be-still tree (Thevetia nereifolia) of the same plant family. It contains a digitalis-like principle, which in quantity has been known, I believe, to be fatal.

It is suggested that friend gardener use hibiscus for a hedg and he can have much enjoyment in the flowers, and can, if wishes, do some amateur hybridizing. Or why not plant the mo orange (Murraya exotica). Both of these are safe for adult and child.

One should add, in discussing poisonous plants, that some people are less affected than others, just as some may resist poison ivy better than others.

August 8, 1941. STUDENT.

The part which the Chinese had in the industrial development of Hawaii is another story, as is the passion for educating their children, for which parents would make any sacrifice. The progress of Hawaiian-born Chinese in the adoption of occidental ideas, their entrance into the professions, and the commercial enterprise of the race as a whole, may be written later.

In 1876 many Chinese who arrived had been trained in the Berlin or Basle missions in China, and efforts were made to minister to them. The next year there were 45 of these in Kohala and in 1883 the Hawaiian board built a church for them there. Since that time Christian work among them has been carried on systematically.

Many Chinese-Hawaiians born or educated here have been prominent in the progressive movement in China, a number rising to eminent positions.

Those who know the Chinese best have faith in their ability as a race to establish eventually a good and stable government in China.

BOOKLET ON OLEANDERS

Editor The Advertiser: 8/13/41

In answer to a query by one of your readers regarding the poisonous qualities of the oleander, I may perhaps be permitted to state that Dr. Harry Arnold, Sr., has a booklet in press describing this shrub and many other poisonous plants growing in the Hawaiian Islands.

Cases are known where picnickers have used wands of oleand as spits to hold pieces of steak over their bonfire. As the meat cooking, the heat of the fire drove the oleander juice into it. picnickers died after eating the poisoned steak.

Waialua, Oahu, T.H., Aug. 17. OTTO DEGENER.

Diversified Agriculture In Hawaii

By FREDERICK G. KRAUSS

THE PIGEON PEA, ITS CULTURE AND UTILIZATION IN HAWAII

Valuable Practical Personal Experience On a Commercial Scale 2/31/41

In 1913 after "preaching and teaching" diversified agriculture in Hawaii for more than a decade, the writer established the New Era Homestead Farms and the Haiku Agricultural Sub-Station at Haiku on Maui. This, was in effect, "taking a large dose of his own medicine." These enterprises consisted of two 40-acre farm units. One of the first experimental crops to be planted on the new farm lands which had previously been classed as poor pasture areas, densely covered with a rank growth of guavas and inferior grasses, were a half dozen selections of pigeon peas developed at the Hawaii Experiment Station and the University Farm in Honolulu. Among these varieties was a strain which the writer had developed from the original Station No. 218. This variety thrived from the very beginning in its new environment and was multiplied as rapidly as possible, and maintained its 100 per cent purity for the ten year period during which New Era Homestead Farms and the Haiku Sub-Station Farms remained in existance.

Within a few years the New Era Homestead Farms kept in continuous culture between 25 and 30 acres of the New Era Strain D pigeon pea primarily for seed purposes to supply the heavy demand that the success of the crop had created, and many tons of seed were sold to ranchmen and pineapple plantations throughout the Territory. The pigeon pea pasture plantings and the green manuring crop areas increased by leaps and bounds until more than 10,000 acres were planted to this crop, by then considered wonder crop throughout the Territory.

In a few years after its commercial introduction, Mr. Harold W. Rice's pigeon pea pastures became the most extensive in the Territory, exceeding 2000 acres at one time. The Grove and Haleakala Ranches on East Maui began to vie with the Rice plantings until each had close to a thousand acres planted to the crop during different periods up to about 1930.

During the period of high feed prices towards the end of the World War and for several years following, Haiku and Grove

Pigeon peas interplanted with corn.

Pigeon peas grown for seed. Yield 1 ton per acre.

Ranches cropped 500 acres twice annually for hay to be milled for mixed stock feeds in which plantation cane molasses formed an important supplement and made these feeds fully 90 per cent Maui grown. During the height of the season pigeon pea harvest more than ten tons of hay was milled daily at the Haiku feed plant. Throughout this period the writer milled about five tons of pigeon pea hay and seed monthly (and in addition a large quantity of cull farm seeds of all descriptions including corn soy beans, etc.) at his small experimental farm milling plant. This product was mostly fed at New Era Homestead Farms' herd of 12 dairy cows, nine work mules and horses, 40 swine and 600 laying hens. Only a small surplus remained for sale to neighbors to help out in emergencies.

With few exceptions ranchmen and dairymen on all the Islands who planted the pigeon peas extensively and maintained their stands through good pasture management, especially as to systematic paddocking and rotation of their herds to prevent over or undergrazing reaped very satisfactory returns over a long period of years.

In a recent paper of this series (July 27 issue of the Sunday Advertiser), the writer reported upon his experiments in feeding a small dairy herd wholly on pigeon pea products in 1917. These exceptionally favorable results demonstrating the high feeding value of pigeon peas for dairy cows has, in part at least, been confirmed by Henke in his experiments at the University of Hawaii, as well as a number of commercial dairymen.

Among those who persisted in growing large areas of pigeon peas over a period long and perhaps most profitably, should be mentioned especially the Kapapala Ranch under the able management of B. M. Sumner. Sumner's results over a series of exceptionally dry years proved their 500 to 700 acres of pigeon peas, intercropped in large part with Kikuyu grass, their greatest asset in the maintenance of their ranch herd of 3000 head of Hereford cattle, with an annual marketing of about 700 head. During one of the severest drouth years on record, when other ranchers found difficulty in not only conditioning their cattle for mark but barely maintaining their stance, Kapapala Ranch cat brought top market prices on fa carcasses under the exacting Army requirements in Honolulu. A dozen other examples could be cited if space permitted. Outstanding additional cases are recorded in an Appendix covering practical experiences with pigeon peas of ranchmen and others in Bulletin No. 64, entitled The Pigeon Pea, Its Improvement, Culture, and Utilization, in Hawaii. Haw. Agri. Exp. Sta. (1932). However, we will here record one of the most outstanding cases that came under the immediate attention of the writer during his residence at New Era Homestead Farms. The year 1917 proved to be an exceptionally dry year on the slopes of Haleakala, which ordinarily is blessed with ample rainfall to maintain excellent grass pastures. Even at Haiku the total rainfall for 1917 was less than 50 inches, whereas the average was 75 inches. At the height of this general drouth cattle were dying in considerable numbers for want of feed throughout the mountain pasture region. The Haiku-Grove Ranches fortunately had a splendid hundred acre field of pigeon peas at its Haiku center. Ninety of the poorest cattle, barely able make the trip from the mount were turned into the pigeon pasture. **At the end of 90 da feeding the cattle were so fat they had to be moved with great care. The increased weight was estimated to be an average of 350 pounds per head!**

(To be continued)

An Agriculturist On Weeds

Hon. Advertiser By JARED G. SMITH 2/19/42

With Coast mails delayed as they are, we fellows who write for a living are thrown back on our own meager resources of memory or invention. The future is cloudy and the present is obscure,


JARED

The other day I wrote sketchily of some of the introductions made during my first seven years in Hawaii, expressing the fond hope that nothing proved detrimental or became a bad weed. The ink was hardly dry before a friend who owns a fish pond out beyond Moanalua said that, in his experience, the mangrove is the most damnable weed ever brought to these islands. The mangrove has mistaken his fish pond for a tidal mud-flat and is rapidly converting it into dry land.

He was huhu when I said it had never got into the cane and pineapple fields and I didn't think it ever would. On the credit side, Senator George P. Cooke of Molokai has told me that the mangroves along the muddy southern shores forms a haven for baby mullet and other piscatorial small-fry, improving the shore fisheries materially.

The mangrove is a tan-bark growth and was brought here for that purpose. The very hard wood has been used for charcoal, too, but I suppose neither of these uses will make up for its invasion of the fish ponds.

* * * *

When is a weed? The definition of "weed" is, "a perfectly good plant growing in the wrong place." Probably three-quarters of our worst weeds came as ornamentals, bought because they were advertised in seed catalogues. The lantana, I have been told, was planted in his home garden by one of the early Missionaries, its seeds distributed to friends as something new, rare and beautiful. Lantana is our A-1 soil-builder, which is the best anybody can say for the ubiquitous pest. I hope my mangroves don't get the notion to growing with their feet out of salt water.

* * * *

Other weeds were brought intentionally if misguidedly, the "klu", for example. The essential fragrance extracted from its flowers is the base of most of the French perfumeries. "Klu" was brought to Hawaii to start a new industry. Many weeds are escapees from greenhouses, turning square miles of ranch lands and forests into noxious growths. The guava was introduced for its fruit. It is a sure-fire indicator of good land but, oh how costly to clear. Dig out every root. Burn it to ashes. Then scatter the ashes for their fertilizer value. What do you get? A new crop of guavas.

* * * *

The wild raspberry was introduced from the West Indies. A prolific bearer but the berries have no flavor whatsoever. They are not even tart. The scratchy undergrowth makes some of our mountain forests impenetrable. Blackberries, too, have gone wild but they are edible. They are escapes from gardens, their seeds scattered by the birds. Why haven't strawberries gone wild? We could forgive them. The tomato goes back to weediness in some places. The poha covers square miles of the upper Kona woodlands, as wild pigs and turkeys well know.

Some weeds reform and turn useful, after all. With leather getting scarce and higher as war expands its field, perhaps my mangroves will be harvested for their tannin. Who knows?

Charter of Human Rights

INSTALMENT IV

This is the final instalment of the Charter of Human Rights, adopted by the Social Committee of the United Nations at Paris on Dec. 7, and which will be submitted to the General Assembly of the United Nations for approval. It constitutes a new code for international behavior, outlawing mass murder, and offering guarantees that go even beyond the Bill of Rights in the American Declaration of Independence. Such a Charter would forbid a dictatorship by anyone, a Caesar or a revolutionary combine. It is designed to protect the rights of the individual. If adopted generally it will make the world a better place than could have been dreamed of even a decade ago.

ARTICLE 25

Everyone has the right to rest and leisure, including reasonable limitation of working hours and periodic holidays with pay.

ARTICLE 26

1. Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care and necessary social services, and the right to security in the event, of unemployment, sickness, disability, widowhood, old age or other lack of livelihood in circumstances beyond his control.

2. Motherhood and childhood are entitled to special care and assistance. All children, whether born in or out of wedlock, shall enjoy the same social protection.

ARTICLE 27

1. Everyone has the right to education. Education shall be free, at least in the elementary and fundamental stages. Elementary education shall be compulsory. Technical and professional education shall be made generally available, and higher education shall be equally accessible to all on the basis of merit.

2. Education shall be directed to the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms. it shall promote understanding, tolerance and friendship among all nations, racial or religious groups, and shall further the activities of the United Nations for the maintenance of peace.

3. Parents have a prior right to choose the kind of education that shall be given to their children.

ARTICLE 28

1. Everyone has the right freely to participate in the cultural life of the community, to enjoy the arts and to share in scientific advancement and its benefits.

2. Everyone has the right to the protection of the moral and material interests resulting from any scientific, literary or artistic production of which he is the author.

ARTICLE 29

Everyone is entitled to a social and international order in which the rights and freedoms set forth in this declaration can be fully realized.

ARTICLE 30

1. Everyone has duties to the community in which alone the free and full development of his personality is possible.

2. In the exercise of his rights and freedoms, everyone shall be subject only to such limitations as are prescribed by law solely for the purpose of securing due recognition and respect for the rights and freedoms of others and of meeting the just requirements of morality, public order and the general welfare in a democratic society.

3. These rights and freedoms may in no case be exercised contrary to the purposes and principles of the United Nations.

ARTICLE 31

Nothing in this declaration may be interpreted as implying for any states, groups or persons any right to engage in any activity or to perform any act aimed at the destruction of any of the rights and freedoms prescribed herein.

FOUR YEARS IN NEW ZEALAND BUSH

By H. E. DOUGHERTY

OUT of the faraway north came a fleet of dugout canoes. The fleet crept across uncharted seas, ever moving, ever nosing southward. A star wig-wagged a welcome. A cluster of stars pointed. The Southern Cross directed the expedition. And then a sturdy race of people landed in New Zealand. They had come from a place called Hawaii. Thus Maori legends speak.

Out of the same north, from another far away land, came a white man to reconstruct these legends, to re-create the scenes of a thousand years ago—to make a record of Maori history for all time.

And the descendants of the chief who sailed in those dugout canoes met a descendant of those fearless men who centuries ago crossed the Atlantic, conquered a new world—and this descendant sailed southward on a steam palace to visit more wild places.

Thus Alexander Marky, American author, explorer, motion picture director and producer came to meet the Maori chiefs on the isolated shore of Lake Taupo, New Zealand. Thus it came to pass that he reconstructed a village on a historic site—a village that was typical of Maori life more than 300 years ago. Thus is came to pass that he gathered into this village more than 500 Maori men, women and children—and there they enacted the drama of the ages for the camera.

Isolated Four Years

Eager to obtain detail, persistent in the long, long trek of research, Marky remained on and on with these interesting people until four years went their way.

He arrived in Honolulu last week with 120,000 feet of film. He is sailing today for Hollywood. The title of his picture, when released, will be "South Sea Magic."

But back to that bush country and those legends. The Maori chiefs told Marky that their ancestors came from the far north. Their tribes multiplied and they spread all over New Zealand.

"It was weird, uncanny, and sometimes spectral, as we sat in our camp chairs on that ancient landmark—with a towering promontory above us—with the silent lake in front of us—listening to the voices of long ago," said Marky.

"The chiefs would come to me in the nocturnal hours and whisper that the voices were all about us—the voices of their long departed ancestors.

"They understood. They heard mysterious conversations. They heard laughter and singing and the chants of warriors going to battle. They heard the splash of canoes swirling through the waters of the lakes. So intense was their belief, and so solemn was their conviction that they were communing with the past, that I often though I heard the same voices."

Maori War God

Marky worked out his story, in which two young Maoris have the leading roles. The period is 300 years ago. The plot basis is rivalry between two tribes. Ultimately a young chief impersonates the sun god, the war god, a mythical being presiding over the destinies of the Maoris. Through the use of clever maneuvering, he carries off the girl who has been dedicated as the bride to the war god.

As we watched the picture unwind and unfold its story—as the tribes swept across the lake in their wild and savage abandon, paddling their fleet of canoes in rhythmic measure—and as the warriors swarmed up the hill and attacked the rival tribe's fortress, there was a thrill to it that we had not seen in any other picture.

"Four years of heart-breaking work produced that," said Marky when the film had been finished.

"We chose our cast with careful regard to the spirit of the story theme. Old Moari chiefs and chieftainesses, young men and women, all typifying the fine dignity and poise of their people were selected.

"The heroine is a young Maori girl whose grace and charm are the embodiment of race. She is an ideal character. The hero is a stalwart young warrior and he possesses all the qualities of the character in my story."

Zoe Varney, well known American artist, went to New Zealand and assisted Marky in producing the picture. Alfred Hill, celebrated Australian composer, went to the camp, where he spent many weeks writing the musical score.

Now Marky and Mrs. Varney are on their way to Hollywood and New York with the result of their four years in the New Zealand bush. Coming over on the steamer, Marky began to edit and cut the film. Arriving at the Seaside hotel he continued this work. And when we previewed the film with him and other friends a few evenings ago, we recognized that an amazing feat had been accomplished.

Returning to the legends of the Maori migration to New Zealand from Hawaii, Marky said:

"I have come to this conclusion, after reading more than 70 books on the subject, and after talking with chiefs who repeat, word for word, the story as told to them by their fathers."

A Maori village as reconstructed by Alexander Marky, American motion picture producer. The girl is the heroine of Marky's story "South Sea Magic."—Photo by Howard Bridgman and copyrighted by Alexander Marky.

'18—Otto Degener, back at the New York Botanical Gardens after a stay of many years in Honolulu, entertained Mr. Carpenter's J2 class one April afternoon by showing the boys lantern slides of pictures taken during Otto's five months cruise to the Fifi Islands in Mrs. Archbold's Chinese junk in search of rare botanical specimens. The cannibalistic tendencies of the previous generation of Fijians proved particularly awesome to the fourth grade. Otto is an easy speaker and injects plenty of humor into his remarks. The boys had a wonderful afternoon.

Nada Kramer, 70 FIFTH AVENUE, NEW YORK, N. Y. Winter-Spring '43

21. **Degener (O.).** Flora Hawaiiensis, or the New Illustrated Flora of the Hawaiian Islands. With many plates, 8vo. boards. Honolulu, (1935). $3.50

22. **Degener (O.).** Ferns and Flowering Plants of Hawaii National Park. With Descriptions of Ancient Hawaiian Customs and an Introduction to the Geologic History of the Islands. With 95 plates and 45 text fig. 8vo. cloth. Honolulu, 1930. $3.00

1/7/43

1/7/43

THE HOME NEWS

Preparing Fiji Nectar in the Bronx

Those who attended the Members' Day meeting at the Botanical Gardens in Bronx Park yesterday, not only sipped tea, but also were served kava or yangona, a native beverage popular with the inhabitants of the Fiji and adjacent islands. The picture shows the drink being prepared by Otto Degener, of the Garden staff, who recently returned from the islands where he had gone as a botanist with the Archbold Expedition. With him is his protege, Leroy Keahuaia Peller. Kava is made by macerating the root of a native species of pepper and is drunk from cocoanut shell.

more," but he was not home when we called.

He was, we were informed, up town having his dinner at the restaurant.

His cell door was open. The bunk was neatly made. Fresh flowers stood in a vase on his book table. Recent pictures of Clark Gable and Shirley Temple were pinned to the wall.

Policing of Lanai is supervised by Maui county of which the Isle of Pines is a political subdivision and to which the pineapple company is the county's largest taxpayer.

Like every other resident of the city, the prisoner obviously took pride in the maintenance of his home.

This lad was serving time for petty theft. Because the generally well behaved community seldom has more than one jailbird at a time, it is not profitable to hire a cook for the jail.

So prisoners are permitted to have their meals "out" within certain prescribed hours.

We were told, although no one would swear to the truth of the statement, that there is always one prisoner in jail so there will be somebody around to trim the courthouse hedges.

—●—

It would be unfair, however, to devote all this attention to the jail without at least mentioning a few of the island's more important institutions, the hospital and school, for example.

Free medical care, including hospitalization and maternity care, is furnished persons whose earnings are less than $100 monthly. Dr. Gilbert Halpern is the physician on the island and is in charge of the completely equipped hospital. Despite his many duties which include issuance of marriage licenses and birth certificates, he somehow finds a few spare moments now and then for his hobby, building model trains that really run.

Alton Armstrong is principal of the school which has grades through high school. There are approximately 700 students. Many of the graduates are absorbed by industrial life of the community. Some matriculate to advanced learning in Honolulu and elsewhere.

There are two general stores, both privately operated; two barber shops, a sweet shop, a beer tavern, a barber shop and a liquor store and a movie, tailor shop, soda fountain and jewelry store in which mechanical ills of clocks, watches and radios may be attended to.

Lanai has 100 private automobiles and one taxi. It has a modern fire truck which, when emergencies arise, can be efficiently manned by a volunteer crew.

Plantation workers normally work an eight hour day. Minimum base pay is 25 cents an hour. Workers are furnished free houses, furniture, water and fuel for cooking. They pay their own light bills.

Bachelors may obtain board for from $12 to $15 a month.

In the center of the city is a park or civic square adorned with Norfolk pines and hedges. In this square there is a great stone bearing a bronze plaque, a memorial to some of Lanai's deceased residents.

When construction of the city was begun several ancient burial plots were disturbed.

It was impossible to obtain cooperation of Hawaiian workmen or others until some steps were taken to insulate the project against the kahuna which surely would result from this desecration.

It was finally agreed that the kahuna would be prevented and everybody would be happy if a monument were erected in memory of those whose graves were disturbed. This was done, and the workmen returned to their labors.

They built a community in which, many observers believe, industrial and civic development by private enterprise have reached a peak of achievement thus far recorded in Hawaii.

S.I. Advance 3/13/45

Talk on Hawaii Scheduled

Botanist Will Speak Sunday at Museum

To familiarize people with customs and plant life of Hawaii, Otto Degener, botanist, traveler and author, will speak on "Hawaiian Plants and Ancient Island Customs" at the Staten Island Institute of Arts and Sciences, St. George, Sunday at 3 P. M. Open to the public, the lecture is being sponsored by the Women's Auxiliary of the institute, whose members will be hostesses.

Mr. Degner, on the staff of the New York Botanical Garden, is author of the book, "Ferns and Flowering Plants of Hawaii National Park". This book is intended to meet the needs of visitors to Hawaii National Park, who have had little or no formal botanical training, yet who wish to know the most interesting facts about local ferns and flowering plants, particularly in relationship to ancient Hawaiian customs.

It includes not only the more common or noteworthy plants found within the confines of the Kilauea and Haleakala sections of the park, but also those that may attract the attention of the visitor motoring to or from their boundaries.

In 1922, Mr. Degener first went to Hawaii where he taught two years at the University of Hawaii, and was naturalist at Hawaii National Park, part of a year. There he became intrigued with the flora, and thereafter concentrated on writing a "New Illustrated Flora of the Hawaiian Islands", of which he has published four books to date.

Just before the war, he spent eight months studying botany in Fiji, and the latter part of May after Pearl Harbor, he returned from Hawaii to the New York Botanical Garden with a 20-year accumulation of Pacific Island herbarium specimens. All of these he has donated to the Botanic Garden where they are preserved permanently.

Among the collection there are many new to science, and Mr. Degener is the only living person with a plant family named for him, as a result of his Fiji Island collection.

Mr. Degener will accompany his lecture with slides of the Hawaiian Islands, which will be of timely interest to all members of families of servicemen and women stationed in Hawaii.

Dr. James P. Chapin, president of the institute, will present Mrs. John W. Dreyer, president of the Woman's Auxiliary, who will introduce the speaker. Members of the auxiliary who will serve on the hospitality committee for the afternoon are Mrs. Archibald Fulton, chairman, and Mrs. Casper Schwing, Mrs. George Smith and Mrs. John S. Ware. Mrs. William E. Gerke Jr. of Huguenot Park, also a member, will sing.

cipal volcanic period may have closed as soon on eastern and western Oahu and West Maui. I regard Nihau as an older mountain than Kauai. Kohala evidently is the oldest dome on Hawaii."

Evidence which has apparently favored the greater age of the Garden Island is summed up as follows:

The topographic map shows that Kauai has suffered somewhat greater erosional modifications than has Oahu, West Maui, Lanai, Molokai and the Kohala section of Hawaii.

The principal streams of Kauai are more numerous, more permanent and less variable in their flow and, with the exception of a few on eastern Mauna Kea, have the largest average volumes. Hence, it has been considered, a longer time has been needed for their development.

Flora Is Richest

Kauai has suffered extensive inroads from wave attack.

Botanical and zoological evidence seems also to favor the greater antiquity of the present Kauai landscape. Hillebrand, the pioneer in botanical work in Hawaii, believed that, "as the age of the various islands increases in progression from east to west, it may be inferred that the richness in endemic species will stand in the same ratio. Kauai is not only richest in species, but has them on the whole more differentiated."

Hitchcock adds: "The confirmation of our belief in the greater antiquity of Kauai over the other islands is derived from the study of plants . . . Taking the extremes, it may be stated that the flora of Mauna Loa is the poorest and most uniform and that of Kauai is the richest and most individualized in species."

Then, too, from studies of the distribution of landshells in Hawaii, Pilsbury has concluded that all the Hawaiian islands once were united into a single land mass: "Volcanic activity built up the older masses, subsidence followed, Kauai being the first island dismembered from the pan-Hawaiian area."

Campbell also believed that the number of highly specialized and exclusive species of flora on Kauai indicated an early separation of the island from the other members of the archipelago.

"From observations on other Hawaiian islands I consider the validity of the statement regarding the deeper weathering of the Kauai lavas doubtful," Hind says. "Much more evidence must be obtained from all parts of the group before it can be established. In Hawaii," he explains, "the depth to which rock alteration has proceeded is not necessarily a measure of the lavas, but rather of the amount of rainfall in a given area, and the ease with which the surrounding water solutions can penetrate the rocks."

Inquiry Incomplete

The evidence is also insufficient, he says, to prove whether greater destruction has been wrought by wave attack on Kauai than on Oahu or Nihau.

"There also seems to be no geological evidence favoring a former continent or series of continental islands," Hind states. "Biology alone has called it into being.

"In regard to the biological evidence," he continues, "the question may be raised whether the greater abundance and differentiation of the Kauai species has taken place because of the longer time available or because of an environment more favorable than on the other mountains.

"The least diversity of the flora and fauna naturally appears where volcanic activity has longest prevailed. The subject has not received sufficient investigation to accept the biological evidence as final.

"The fact that the migration of volcanic activity in the Hawaiian range has been in general from west to east is significant, but it does not establish the exact order of cessation of the last principal volcanic epoch at the various centers. The Kohala dome of Hawaii, for example, is associated with two active and two recently extinct domes; yet Kohala is older than eastern Maui and possibly also other domes lying to the west. The sealing of the principal eruptive areas therefore has not taken place in orderly fashion from west to east.

Nihau Is Older

"On the doublet islands, Oahu, Molokai and Maui," he explains, "the western member of each became extinct before the eastern, and has been partially buried by the lavas of the younger volcano. If this relationship holds for the Kauai-Nihau doublet, Nihau, which lies to the southwest of Kauai, is the older of the pair.

"The evidence seems to favor the greater age of the present Kauai surface," Hind concludes, "but, in all of the morphologic discussions, the highly important factor of the rates of weathering and erosion on the various domes and on different sections of the same dome has received practically no consideration. Furthermore, insufficient attention has been paid to the loss of mass of the cones resulting from engulfment."

PAA TO BEAUTIFY LONELY WAKE ISLE

(Continued from Page 1)

tives early learned to brew their drinks and to use the leaves in their cooking.

A windbreak probably will be made from the hardy and historically famous ironwood tree, while houses may be bordered with the colorful flowering duranta and the ornamental French cherry, which also produces edible fruit.

Shoots of milo were taken on the liner for shade, as were seeds of the monkeypod tree.

The pioneers took also the native hala and papaia trees, as well as rose apple trees.

With a touch of colorful Hawaii the vessel also carried seeds of royal poinciana, pink and white shower, pink shower, golden shower and Christmas berry.

Most of this foliage will be planted at Wake, nursed by soil transported from here, to break the beaten desolateness of the atoll.

At Midway the airport will be located on Sand island, already made beautiful by cable employes.

Wake island still is indicated in pilot charts as dangerous to navigation, and seamen have come to regard it as a cruel and ruthless enemy.

But the jagged and treacherous reef encloses the lagoon where airplanes will land and its foreboding barrenness soon will become an oasis in the sea.

This is the reclamation to accompany aviation's greatest endeavor.

Seldom has the advance of progress been accompanied by the advance of beauty.

BOOKS AND THINGS

N.Y. Herald Tribune 8/7/43

By LEWIS GANNETT

A HUNDRED years ago no New York City boy had ever heard of bananas; fifty years ago oranges were still a seasonal luxury and the avocado an exotic stranger; and so Dr. Wilson Popenoe is entitled to his dream of a day when we all gorge on mangos, lychees, cherimoyas and mangosteens.

A Pineapple-Banana Ice Cream Plant

Dr. Popenoe is one of several scientists who contribute diverse papers to a symposium, "New Crops for the New World" (Macmillan, $3.50), pasted together by Charles Morrow Wilson. Some of the scientists write in that peculiar celotex jargon which scientists often prefer to the easier rhythm of spoken English; Dr. Popenoe is like Dr. B. Y. Morison, the disillusioned director of the United States Department of Agriculture's new-foods crusade, in that he handles the language well. He is unlike Dr. Morison, however, in this: he lives in the tropics and eats fresh tropical fruits with fresh enthusiasm daily; Dr. Morison lives in Washington and is oppressed by the American resistance to eating anything unfamiliar unless it is clearly labeled medicine.

Still, it is always difficult to put taste into words. Dr. Popenoe quotes a Turkoman poet on the mango, Queen Victoria on the mangosteen and a German botanist on the superlativeness of the cherimoya. For the cherimoya, however, he has his own metaphor; he compares its taste to that of ice cream with the combined flavors of pineapple and banana, which leaves this reader preferring apples. The prosaic British on their West Indian islands, indeed, call cherimoya "custard apple."

Scientific Surprises

All these scientists gaze upon the future with genetic rapture. They know what science has done for sweet corn and oranges, and there is no limit to their hopes. They also know, some of them, what pesky pests Nature can turn up, and how stubborn may be the vagaries of taste. Papayas don't taste the same in Los Angeles as in Honolulu, and some of California's Iowans would not like them if they did. Dr. Morison sourly recalls the money spent to popularize a fruit called dasheen, which just wouldn't popularize, and the curious preference of most Americans for tasteless varieties of squash rather than for the succulent chayote—or, he might have added had he not been preaching an inter-American gospel, for zucchini.

The scientists are engaged in ceaseless experiment, and most of this uneven book consists of reports on such experiments. The Andes grow sweeter potatoes than our own, but Andean potatoes just won't grow here. Bamboo is almost as tough as steel in China or in Puerto Rico, as Atherton Lee observes, but in Puerto Rico a little insect makes dust of the commonest species. The depression taught the Dutch growers, forced to limit their crops, that 70 per cent of their rubber came from 50 per cent of their trees, and some of the trees now bearing in Central America outproduce the Dutch. Most of the mangos eaten in the tropics today are as uninspired as wild apples, but the best of them are as superior as McIntoshes to scrub apples.

War Changes

The war, and the Japanese occupation of the East Indies, has been responsible for some heady changes in the American tropics. Cinchona, the quinine tree, is an American native, but after 1900 virtually the entire world production came from the East. Today millions of new trees are producing in a dozen tropical American countries, and the experiment seems destined for permanence. Brazil is making good silk; and north Brazil yields twelve crops of worms a year, against Japan's record of four. Abandoned, disease-ridden sugar and banana lands are being reforested; and in Honduras a sixteen-year-old mahogany tree is 85 feet high and 14 inches through. Rotenone plants are growing profusely on stump land in Peru. With a little more time for the botanists to work on the 1,250 species of American palms, the soap shortage might be eliminated.

A curious fact emerges from Edgar Anderson's cheerful report on the unending evolution of Indian corn: despite all the books and articles written on the topic, the scientists don't yet agree on the origin of this most magnificent grass. Perhaps it didn't come from the Guatemalan teosinte after all; and how do you explain the fact that on the mountainous island of Madura, off the coast of Java, a kind of popcorn is the main food of the aboriginal population? At any rate, corn today is nothing like what corn was when the Indian Squanto taught the Pilgrims how to grow it—and it will be more different still after another generation of cross-breeding.

"New Crops for the New World" is an odd hodgepodge of optimism, doubt and severely factual reports on work in progress. It isn't always easy reading; but I suspect that of all the strange manifestations of hemispheric solidarity produced by war-time exigencies, those reported in this book will prove the most enduring.

Use of 2,4-Dichlorophenoxyacetic Acid as a Selective Herbicide in the Tropics

J. VAN OVERBEEK and ISMAEL VÉLEZ

Institute of Tropical Agriculture, Mayagüez, Puerto Rico

Science April 19, 1946

During the past year extensive trials were conducted on the use of 2,4-dichlorophenoxyacetic acid[1] as a selective herbicide for tropical crops in Puerto Rico. Its most beneficial use is in the sugar-cane culture, but in coffee plantations also it promises to be of considerable importance. While many of the major weeds associated with these crops are highly susceptible to 2,4-D, neither sugar cane nor the coffee plant have shown any adverse effects of sprays up to 0.3 per cent concentration.

It was found that weeds could be divided into four classes in regard to their sensitivity[2] to 2,4-D:

Class I consists of a group of highly sensitive plants, represented by Curve I of Fig. 1. *Commelina*, one of the most serious sugar-cane weeds in moist lands, is the main representative of this group. A single treatment with 0.05 per cent of 2,4-D at a cost which is often as low as 50 cents per acre[3] gave sufficient control. Several species of *Ipomea*, and *Stizolobium pruritum* (Wight) Piper (the *pica pica* feared by sugar cane workers on account of its stinging hairs), fall in the same sensitivity class, as does *Urera baccifera* (L.) Gaud., the giant nettle, which is a major pest in coffee plantations. Other weeds belonging to this class are: *Bidens cynapiifolia*, H. B. K., *Cissus sicyoides* L., *Cleome gynandra* L., *Clerodendrum fragans* Vent., *Momordica charantia* L.

Class II is a group of weeds characterized by Curve II and represented by several species of *Amaranthus* (pigweed). To this group also belong: *Achyranthes sessilis* (L.) Steud., *Kallstroemia caribaea* Rydgerg., *Poinsettia heterophylla* (L.) Kl. Garcke., *Ricinus communis* L., *Solanum torvum* L., *Synedrella nodiflora* (L.) Gaertn., *Teramnus uncinatus* (L.) Sw., and *Wedelia trilobata* (L.) Hitch.

Class III is a group of weeds characterized by Curve III, the major representative being *Cyperus rotundus* L. (nutgrass). Sufficient control was usually obtained with 0.15 per cent sprays. Other plants belonging to the same group are: *Chamaesyce* spp., *Crotolaria retusa* L., *Malachra capitata* L., *Portulaca oleracea* L., *Sida* spp., *Trianthema portulacastrum* L., and *Vernonia cinerea* (L.) Less.

Class IV comprises a group of plants which are relatively insensitive to 2,4-D sprays. Grasses are the most typical representatives of this group. However, the following nongramineous plants were also found to be resistant: *Aeschynomene* spp., *Aloe vulgaris* L., *Bradburya pubescens* (Benth) Kunth., *Bryophyllum pinnatum* (Lam.) Kurtz., *Chamaecrista* spp., *Dieffenbachia seguine* (Jacq.) Schott., *Emelista tora* (L.) Britton and Rose, *Indigofera suffructicosa* Mill., *Jussiaea angustifolia* Lam., *Meibomia supina* (Sw.) Britton, *Mimosa pudica* L., *Opuntia dillenii* (Kerr-Gawl) Haw., *Persicaria punctata* (Ell) Small, *Petiveria alliacea* L., *Urena lobata* L., *Xanthoxalis corniculata* (L.) Small.

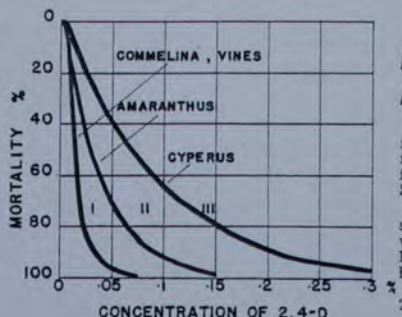

FIG. 1

The action of 2,4-D differs considerably from that of weed killers of the conventional type. The latter act rapidly, have a burning action on the foliage, but often do not damage the growing point sufficiently to prevent regeneration. On the other hand, 2,4-D penetrates inside the plant and without the typical leaf-burning destroys the growing regions in the course of a few weeks. In *Commelina* the growing point and the intercalary growth regions are destroyed. In *Cyperus* the well-protected growth region, located within the base of the leaf sheaths and 5 cm. or more below the surface of the soil, is decayed, while at the same time the leaves show no more serious outward sign of damage than yellowing.

[1] Converted into the more water-soluble ammonium salt by the addition of NH_4OH on an equimolecular basis.

[2] Applications were made to young weed plants, since it was found that mature plants are generally relatively insensitive.

[3] Cost of chemical only, applied at a rate of 50 gallons per acre. Depending upon the type of weed infestations, applications varied between 50 and 250 gallons per acre.

Has Hawaii Become Paradise for Weeds?

Dr. Otto Degener recently told some interesting botanical facts to members of the visiting garden tour from the Massachusetts Horticultural Society.

He is the author of Flora Hawaiiensis and Hawaiian collaborator in Hawaiian botany with the New York Botanical Gardens. He makes his home at Mokuleia.

"When Hawaii was bare lava, some 250 plants were brought here by winds, ocean and birds from Malaya, Australia and tropical America," he said.

"Isolated from the rest of the world for 25 million years or so, Hawaii at the time of Christ had a flora of 20,000 different kinds of flowering plants, 98 per cent of which grew nowhere else in the world.

"When the Polynesians settled here, they began the destruction of the botanical paradise, which has continued on until today.

"Our wildwoods today have become a paradise for weeds introduced from all corners of the earth: ghorse, lantana, prickly pear, pamakani, cocklebur, stinkweed marigold, golden crownbeard, guava, spiny amaranth, Spanish needle, euphorbias, American blackberry, castor bean, parrot feather, cassias, melastomes, apple of Sodom and troublesome grasses like bur, Hilo and fountain grass.

"However, there are still left in this botanical paradise such rarities as shrubbery violets two to four feet tall, lobelias, giant leaved aspe, colorful cousin of the begonia called Hillebrandis, glistening silversword, sandalwood, ferns of all kinds, fan palms and thickets of ground pine.

"Man in less than 200 years has wrecked a good fourth of the native Hawaiian vegetation that has taken the Creator 25 million years to evolve."

Be careful of needless destruction of plant life in Hawaii!

By E. H. BRYAN JR.

FLORA HAWAIIENSIS (Book Six). Published by Otto and Isa Degener. Persons interested in Hawaiian plants will want to add this valuable volume to their collection. For those who do not know this series, a word of explanation is in order.

Dr. Otto Degener turned out the first volume of this "New Illustrated Flora of the Hawaiian Islands" in 1933. Actually the first loose-leaf pages were printed in 1932. One side of a page presents a scientific description and notes about a kind of plant found in these islands; on the other is reproduced excellent drawings of the plant. The combination is desirable.

It requires some little training or experience for a person to identify a plant by its scientific description; but any one should be able to recognize it from its picture.

The idea was to present about 100 species in each volume; the Degeners have done better than that. The first five volumes present descriptions and full page illustrations of 577 species. Number 6 is a double volume with 187 species, among its 534 pages, bringing the total to date to 764 species. In each volume, pages have been devoted to notes on genera and higher plant classification, keys to plant groups, and a few special articles.

Publication dates for the first four volumes were 1933, 1935, 1938 and 1940. Then came a pause because of the war. On April 1, 1946, a tidal wave hit the Degener home at Mokuleia, Oahu, and much of the stock of Volumes 1 to 4 was destroyed. Undaunted, Degener had them reprinted by offset and issued in one volume of 1,192 pages for $6.50, a real bargain. Volume 5 appeared in 1957 ($5), and now book 6.

This project has been so highly thought of by scientists that since 1956 it has received grants from the National Science Foundation. In 1962, Dr. Degener was given the Linne medal by the Royal Swedish Academy of Science.

Although the six volumes together describe less than one-fifth of the species of ferns and flowering plants found in the Hawaiian islands, many of the different groups are so well represented that the books could be of great service in helping a person get acquainted with the native and common introduced plants of these islands.

PACIFIC BOOK REVIEW

Hon. Adv. 3/2/47

By E. H. BRYAN, JR.

Of all the various branches of zoology, the study of birds undoubtedly presents the greatest popular appeal.

Bird life of Hawaii is described in a generous number of books and articles, but that of most other Pacific Islands has been neglected.

At the time Captain Cook discovered the Hawaiian islands, specimens of some sixteen species of native birds were collected. These caused considerable interest among European ornithologists, because they were very different from birds found in other parts of the world, but only a few technical notes and descriptions resulted.

Various other expeditions and naturalists also collected or observed the unique Hawaiian bird life during the century which followed, but with similar lack of published results, of popular interest.

Revival Of Interest

Then two British ornithologists, who had been students of Professor Alfred Newton, of Cambridge University, almost simultaneously made collections of birds in Hawaii, and published the results in large volumes illustrated by large colored plates.

The first of these was Scott B. Wilson, who personally collected Hawaiian birds during 1887 and 1888, and again in 1896. The result was the beautifully illustrated **Aves Hawaiienses,** issued in sections from 1890 to 1899.

Meanwhile the Hon. Walter Rothschild sent his collector, Henry Palmer, to the islands in December, 1890. He was joined by a young man from New Zealand, George C. Munro, who has resided here since, and has published many notes on Hawaiian birds himself.

The title of Rothschild's equally elaborate book was **Avifauna of Laysan and the neighboring islands with a complete history to date of the birds of the Hawaiian possessions.** It was published in London in three parts which appeared in August and November, 1893, and December, 1900.

Fauna Hawaiiensis

In 1892, R. C. L. Perkins came to Hawaii to collect the land animals for various British scientific groups. The collections of insects, birds, and other animals were studied, chiefly in England, and the results were published in a series of large volumes called **Fauna Hawaiiensis.** The bird section appeared in 1903.

Meanwhile Dr. H. Schauinsland spent three months on Laysan in 1898 and also visited Molokai, and the results of his observations were printed in German in 1899 and 1900.

In 1901 there appeared a **Key to the birds of the Hawaiian group,** largest of a number of papers by William Alanson Bryan, published by B. P. Bishop Museum. Professor Bryan also devoted four chapters of his **Natural History of Hawaii** to the birds, both native and introduced.

H. W. Henshaw, who lived in Hilo and who later became a noted ornithologist on the mainland United States, published a number of papers on his observations on Hawaiian birds, chief of which was **a complete list of the birds of the Hawaiian possessions, with notes on their habits.** This appeared in the Hawaiian Annual for 1902-1904, and was also published separately.

Exotic Birds

By 1930, so many species of birds had been imported into the islands from elsewhere that E. L. Caum was prompted to prepare a record of the **Exotico birds of Hawaii,** which was published by B. P. Bishop Museum.

Meanwhile the sea and migratory birds and the few endemic species of land birds of the northwestern Hawaiian islands were recorded in reports and popular papers by a dozen writers: W. A. Bryan in 1900 and 1906; Homer R. Dill and W. A. Bryan, in 1912; Charles C. Nutting, in 1903; Olaf Hudson in 1911; H. W. Henshaw, in 1918; David Heenan, in 1922; Alexander Wetmore, regarding the Tanager Expedition, in 1925; and recently, T. M. Blackman, L. W. Walker, H. I. Fisher and Paul H. Baldwin, and others.

This reviewer has made a few small contributions, in **Hawaiian Nature Notes,** and a check-list of Hawaiian species which apeared in **The Elepaio,** and in a joint paper with J. C. Greenway, Jr. in 1944.

Recent Books

The first of a series of recent popular Hawaiian bird books was **Birds we see in Hawaii,** by Ruddy F. Tong. It was written mainly for children.

This was followed by **Familiar Hawaiian Birds,** by J. d'Arcy Northwood, with a dozen colored plates, 1940.

Thomas M. Blackman wrote on **Gliders of Midway** and **Birds of the Central Pacific Ocean,** in 1943 and 1944.

The latest work on the **Birds of Hawaii** is a volume by George C. Munro, with twenty plates, several of them in color.

These, together with a number of papers in journals by various writers, and the several volumes of The Elepaio, published monthly by the Hawaii Audubon Society, give one a fair knowledge of about 230 species of birds found in these islands. Of these 77 are found nowhere else in the world, 19 are sea birds of wider range, 8 are migrants, and 34 are occasional or chance arrivals. The rest have come to Hawaii through the agency of man.

Other Pacific Islands

There have been comparatively few extensive publications, especially of a popular nature, on the birds of other Pacific Islands.

Because of the lack of knowledge concerning the birds, for more than a decade, beginning in 1921, the American Museum of Natural History maintained the Whitney Bird Expedition in the South Pacific, on board the schooner **France.**

A number of scientific papers have been published regarding the thousands of specimens which were collected on hundreds of islands from the Tuamotus to New Guinea. Most of these appeared in the American Museum **Novitates.**

The war produced a demand for a more popular book on Pacific birds. To meet this need, Ernst Mayr, curator of the American Museum's Whitney-Rothschild collection, wrote **Birds of the Southwest Pacific.** It is a field guide to the birds found in the area between Samoa and New Caledonia, and northward through Micronesia. It is illustrated by three colored plates and several drawings.

Degener Recounts Attack of 1941

1/1/46 Hon. Star-Bull.

An interesting reprint comes to The Star-Bulleitn of a talk by Otto Degener before the Torrey Botanical club of New York.

Mr. Degener, botanist for many years in Hawaii, is now connected with the New York Botanical Garden at Bronx park, New York.

He spoke before the Torrey Botanical club on Plant Life and Customs of the Hawaiian Islands. Later at the request of the club, he gave account of how he happened to be in continental United States. In this account, Mr. Degener included a vivid recital of the stirring events during the Japanese attack on Pearl Harbor, December 7, 1941.

Mr. Degener was living at his country home on Oahu and was out on the lawn feeding pigeons when the attack occurred. Being far away from Pearl Harbor, he did not know the attack was taking place though he saw a score of planes roaring high overhead.

Sometime after the attack, Mr. Degener learned that he was a "suspect." This was because of his German name and ancestry. He was, however, cleared by the government authorities and removed to New York City. He now lives at Locust Farm, Poughquag, N. Y.

Windbreaks Needed For Better Crop Production

Hon. Adv. 8/24/47

Many a farmer has discovered to his sorrow that he should have planted a windbreak before he planted a crop. "With strong prevailing winds, it's impossible to get a good yield from many crops without having a proper windbreak," says Colin G. Lennox, president of the territorial board of agriculture and forestry. "This is particularly true of orchard crops such as fruit and nuts, with the possible exception of the papaya. When trees are exposed to strong winds, they are likely to be misshapen and to set fruit only on the leeward side."

THREE OR FOUR rows of trees planted to the windward and properly chosen to give both high and low protection are necessary for orchards or for many truck crops, Mr. Lennox says.

Trees should be selected which do not have root suckers or surface roots which spread into the adjoining area and take plant food from the cultivated crops. Deep rooted trees are also desirable to avoid uprooting.

Even with trees which are not surface feeders, the best returns cannot be expected from ground within 25 to 30 feet of the trees, Mr. Lennox says. Hence it is advisable, if possible, to plan farm roadways along the area next to the trees.

TREES SHOULD be planted eight feet apart, in an alternate pattern so that trees in the various rows are not all directly in line.

For midland and upland areas, Mr. Lennox suggests planting the first two rows to the windward with trees which hold low foliage, thus providing a windbreak over the area close to the ground.

Suggested trees include brushbox (Tristania conferta), Monterey cypress (Cypressus macrocerpa), Portuguese cypress (Caprossus lusitanica) and Formosan koa (Acacia confusa).

These are fairly rapid growing and will give a good windbreak in a short time.

TREES FOR the next rows should be chosen for their high growth and high branching. Suggested varieties are the various eucalyptus trees, such as lemon gum (Eucalyptus citriodora), flooded gum (Eucalyptus saligna) and Norfolk Island pine (Araucaria excelsa).

The distance at which windbreaks must be planted depends upon the intensity of the wind and the crop which is to be grown, Mr. Lennox believes. Every 400 to 600 feet is often desirable.

FOR THE AREA along the seashore, he suggests that the two rows next to the ocean for low windbreaks be devoted to the seagrape (Coccoloba uvifera), the sea heliotrope (Tournefortia agenta), the hau (Hibiscus tiliaceus) or milo (Thespesia populnea).

For the next two rows, the true kamani (Calophyllum inophyllum) and lowland ironwood (Casuariana equisetifolia) might be used. The true kamani is better than the ironwood because the needles of the latter fall to the ground and cause an infertile area.

ALL THE TREES mentioned for beach windbreaks stand the effect of salty sprays and will grow in sand and soil.

Tree nurseries maintained on four islands by the territorial board of agriculture were established primarily as a source of plant material for the forest reserves, as well as for farmers planting wood lots and farm windbreaks.

Residents may obtain from the nurseries young trees suitable for windbreak use.

The 10 kerosene cans landed at Kahoolawe would each contain, so I am told, 50 tins of opium, of a weight of 25 pounds for each can, or 250 pounds in all. Then the six kerosene cans thrown from the boat at Makena would weigh 150 pounds, or a total of 600 pounds in all. How much more had been landed during the days the Labrador was cruising about Hawaiian waters no one knows. What became of the remainder of the opium dug up at Kahoolawe? Only two kerosene tins were handed to the board of health. I have heard a story concerning the balance of the drug, but it lacks definite proof.

The story shows that extensive and organized smuggling existed and that large profits were made by those engaged in the illicit traffic. I have been given the names of white men supposed to have been interested, but there is no proof. We read every once in a while of attempts to smuggle opium into the islands now, and of some seizures. A few years ago it was estimated that $2,000,000 worth of opium was smuggled into the United States annually. No doubt the traffic still exists and it is difficult to put a stop to it.

How long does it take pineapple to mature? My contention is, about a year, but others disagree, and suggested I write you.
MRS. N. H. G.

From info previously given me by our Jared Smith, the word is: From the time a pineapple shoot has been planted until that shoot bears its first fruit, the general average is 22 months. After this first batch is harvested, the original plant sends off other shoots and continues to bear fruit for several years. These ratoon crops develop and can be harvested within a year. The number of ratoon crops obtainable from the original shoot depends a great deal on fluctuating weather, proper adjustment of fertilizers, etc.

Another Superior Pith for Free-hand Sections

Mention of a pith other than elder (*Science*, 1946, 103, 112) prompts the writer to communicate further information in that respect.

Botanists or plant pathologists in tropical or equatorial regions will find an advantageous substitute to elder pith in cassava (*Manihot utilissima* Pohl). It is even the writer's view that the latter is decidedly superior to the former in several respects.

As in the case of *Tetrapanax papyriferum* Koch (above reference), cassava pith has no vascular bundles or hard tissues. Moreover, when used dry it cuts beautifully under the razor, leaving a sheeny surface very soft to the touch. It can be sectioned very thinly without disintegrating, as does that of elder, in like circumstances.

The reason for this can be found in comparing the texture of both piths. Dried cassava pith ready for use has, in cross-section, cells measuring 160–250 μ by 100–150 μ. The cells are larger in the center than outwards and gradually decrease in size in that direction. In longitudinal section the dimensions are contrariwise uniform and vary throughout from 25 to 60 μ. Thus, were it not that they are organized in a tissue, the cells would be lenticular in shape, whereas elder-pith cells are globular and of dimensions somewhat larger than the above.

Extraction of the pith is quite simple and offers no difficulty whatsoever. Cassava stalks should be chosen straight and when the plants are fully mature. They are cut in lengths of about 30–40 cm. A stick of the diameter of the pith is inserted at one end of the fragment. Pushing the stick forces the pith out at the other end in a contorted rod. When straightened out, the rods are left to dry and are then ready for use. The rods can be obtained of a diameter up to 1.5 cm., but they are more usually of 1–1.2 cm., which is quite sufficient for sectioning with a hand microtome.

For cutting small objects the pith can be carved, while in the hand microtome clamp, similarly to paraffin blocks.

The writer has had such satisfactory results with cassava pith that elder pith has been totally discarded.

R. L. STEYAERT

Bambesa, District Uele, Belgian Congo

Chemical studies of pineapple (Ananas sativus Lindl), I-II *(Jour. Amer. Chem. Soc., 67 (1945), No. 10, pp. 1646–1652)*.—The first two papers of this series are concerned, respectively, with the general composition of the volatile oil obtainable from fresh pineapples, including a comparison of the oils from the summer and from the winter crops, and with the identification, as the methyl ester of β-methylthiolpropionic acid, of a sulfur compound found in very small quantity in the oil fractions of higher boiling point.

I. *The volatile flavor and odor constituents of pineapple*, A. J. Haagen-Smit, J. G. Kirchner, A. N. Prater, and C. L. Deasy (pp. 1646–1650).—The summer fruit was found to have a volatile oil content of 190 mg. per kilogram of the trimmed fruit, the winter fruit 15.6 mg. per kilogram, the difference between summer and winter fruit oils consisting largely in the presence of much more ethyl acetate and ethanol (119.6 mg. and 60.5 mg. per kilogram, respectively) in the summer than in the winter oil. In addition to ethyl alcohol and ethyl acetate, the following compounds were found in the summer fruit: Acetaldehyde, ethyl isovalerate, methyl *n*-propyl ketone, ethyl *n*-caproate, ethyl acrylate (probably), acetic acid, an ethyl ester of a C_5 unsaturated acid, some methyl ester of the same acid, and an ethyl ester of a C_5 keto acid. The winter fruit contained, besides ethyl acetate, the following: Acetaldehyde, methyl isocaproate, methyl isovalerate, methyl N-valerate, a methyl ester of a C_5 hydroxy acid, and methyl caprylate. Both the winter and summer fruit contained a sulfur compound in the higher boiling fractions. Except for the ethyl acetate, the esters investigated in the winter oil were methyl esters. In the summer fruit, only one methyl ester was found.

II. *Isolation and identification of a sulfur-containing ester in pineapple*, A. J. Haagen-Smit, J. G. Kirchner, C. L. Deasy, and A. N. Prater (pp. 1651–1652).—A sulfur-containing ester, $CH_3SCH_2CH_2COOCH_3$, was isolated from the higher-boiling volatile material from pineapple fruit pulp. This compound was converted by oxidation to the sulfone, m. p. 93.6°–94° [C.], which was identified by synthesis.

Publications Acknowledged

The July Journal of the New York Botanical Garden, contains an article, the fourth of a series of talks, that were given by Otto Degener in the Botanical Garden's winter lectures. The illustrations are taken from his "Flora Hawaiiensis" and "Plants of Hawaii National Park." He writes of the Panama Berry, a spreading quick growing tree; the Semi-Baccate Saltbush, a plant adapted for living in deserts that has become naturalized in Hawaii; and Nettle-leaved Goosefoot, evil smelling quick-growing annual; the Portia-Tree or Milo of the Hawaiians which has a predilection for growing near the ocean and produces a dense shade; the Velvet-Leaf grown for ornament in Hawaii; the Datura that has been used from time immemorial in folk medicine and religious rites; Bruguiera, an element of the mangrove swamp; the coconut and its palms; Golden-Shower, a native of Asia; Maidenhair-Ferns numerous in the Islands; Air-Plant, whose flowers resemble miniature Chinese lanterns the Sandbur who has about two dozen relatives scattered throughout temperate and tropical regions. This publication is planning to issue a booklet of Degener's papers that have been printed in the Journal. The object is to provide our men serving in tropical countries with a convenient guide to the plants.

PACIFIC BOOK REVIEW

By E. H. BRYAN, JR.

Most of Southeastern Polynesia—number 2 of the areas into which a bibliographer would divide the Pacific Islands as defined last week—consists of French Oceania. Parts not governed by the French are four small islands, Pitcairn, Oeno, Henderson and Ducie, which are British; and Easter Island, which is governed by Chile.

The names of these groups, with their approximate area in square miles and their pre-war native and foreign population, are as follows:

Group	Area	Natives	Foreigners
Easter	50	350	10
Pitcairn, etc.	5	200	
Mangareva	10	1,550	20
Tuamotu	130	4,550	500
Marquesas	490	1,900	50
Austral	115	3,000	80
Society	740	21,000	10,100
Area "2"	1,540	32,550	10,765

In the list of books regarding the various parts of this area, which follows, those are listed which are recent, comprehensive, and obtainable. Most of them list numerous previous publications.

In areas "2" and "3," it might appear that a special boost were being given to Bishop Museum publications. It so happens that our Honolulu museum has published extensively on Polynesian subjects, and that many of its bulletins meet the three criteria listed above.

Easter And Pitcairn

Probably the best book about Easter Island, readily obtainable, is **Ethnology of Easter Island**, by Alfred Metraux (Bishop Museum Bulletin 160, 1940.) Dr. Metraux was leader of the Franco-Belgian expedition to Easter Island in 1934-35. He found more Easter Island specimens in the Bishop Museum than remained on Easter Island, so he came to Honolulu to finish his work. The book covers the geography, climate, plant and animal life, people and their history and culture, and gives an extensive bibliography.

Another expedition resulted in **The mystery of Easter Island**, by Mrs. Scoresby Routledge, published in London in 1919.

The geology was studied by L. J. Chubb (Bishop Museum Bul. 110,1933); and plants and animals by Dr. Carl Skottsberg, who published **Natural History of Juan Fernandez and Easter Island**, Uppsala, 1920.

Much has been written about the mutineers of the Bounty, who settled on Pitcairn Island, including the books by Nordhoff and Hall. **The heritage of the Bounty**, by H. L. Shapiro, was published in London in 1936. An old, but classic work, is **Pitcairn, the island, the people, and the pastor**, by T. B. Murray, London 1854.

Marquesas Islands

Bishop Museum has sponsored a whole series of expeditions to the Marquesas, beginning in 1920, and has published several reports.

Dr. Ralph Linton's **Material culture of the Marquesas**, (Bishop Museum Memoirs vol. 8 no. 5, 1923), his **Archaeology of the Marquesas** (Bulletin 23, 1925), and **The native culture of the Marquesas**, by Dr. E. S. C. Handy (Bul. 9, 1923) resulted from the Anthropological survey. Dr. Louis Sullivan also wrote on the native types.

Dr. and Mrs. F. B. H. Brown collected numerous plant specimens and published three thick bulletins on the flora (Bulletins 84, 89, and 130.)

The Entomological Survey produced numerous descriptions of insects. Two of the resulting publications are of more general interest: **Review of the fauna of the Marquesas Islands and discussion of its origin**, and **Marquesan Insects: Environment**, both by the late A.M. Adamson, published by Bishop Museum as Bulletins 159 and 139. They contain an account of the geography, topography, and plant and animal life of the islands, and an extensive bibliography.

L. J. Chubb discusses the **Geology of the Marquesas Islands** in Bishop Museum Bulletin 68, 1930.

Mangareva And Tuamotus

Ethnology of Mangareva, by Te Rangi Hiroa (Dr. Peter H. Buck) is a good starting place for anyone interested in this area, also called the Gambier Islands. It is bulletin 157 of Bishop Museum.

Dr. Kenneth P. Emory's **Archaeology of Mangareva and neighboring atolls** (Bul. 163) also describes the southernmost of the Tuamotus. His **Tuamotuan stone structures** (Bul. 118) describes the islands further north and their archaeology.

J. Frank Stimpson has published on **Tuamotuan religion** Bul. 103 and 111), and the legends (Bul. 148), and Dr. E. G. Burrows on the music Bul. 109), of the Tuamotus.

The late Gerrit P. Wilder wrote on **The flora of Makatea**, the only high island of the Tuamotus (Bul. 120).

In more popular language is **Road my body goes**, by Clifford Gessler, which describes native life on a Tuamotu atoll.

Society Islands

Tahiti has a high degree of romance in its reputation, which has made it the scene of many south sea stories.

If one wants to get the real history and tradition of this and other Society Islands, one should read **Ancient Tahiti**, by Teuira Henry (Bishop Museum Bulletin 48, 1928).

Dr. E. S. C. Handy has also written on the **History and traditions of the Society Islands**, (Bul. 79) and Dr. Emory on the archaeology (Bul. 116, 1933).

Professor Howell Williams has studied the geology of Tahiti, Moorea and Maiao (Bul. 105) and J. T. Stark and A. L. Howland the geology of Borabora (Bul. 169).

The physical characters of the Society Islanders are discussed by Dr. H. L. Shapiro in Bishop Museum Memoirs vol. 11, No. 4, 1930.

Lighter reading, such as **Tahiti**, by George Caleron, (London, 1921), **Isles of the seven seas**, by C. Ingram (London, 1936), and **My Tahiti**, by Robert D. Frisbie, might be suggested.

Austral Islands

In contrast to the much publicized Society Islands, there is comparatively little popular information about the nearby Austral Islands.

All of the half dozen islands have been studied by Bishop Museum scientists, but only **Ethnology of Tubuai**, by Robert T. Aitken, has been published, (Bishop Museum Bulletin 70).

The geology of the group is discussed by L. J. Chubb in the Quarterly Journal of the Geological Society of London (vol. 83, 1927).

In describing a group of weevils from the island of Rapa, Elwood C. Zimmerman gives a brief account of the geology, history, flora and animal life in Bul. 151, 1938.

The standard guide book on French Oceania is **Tahiti and French Oceania**, by Samuel Russell, published in Sydney, N. S. W. in 1935. Although older, **Eastern Pacific lands, Tahiti and the Marquesas Islands**, by F. W. Christian (London, 1910) is excellent.

The South Seas Today, by A. J. A. Douglas and P. H. Johnson, published in London in 1926, is also good.

MC Here On Search For Otto Degener

That ship is here again!

Harry A. Ayres, regional director here for the U. S. maritime commission, reported Friday that he has just been authorized to deliver the 99-foot junk-type Cheng Ho to Otto Degener—but the catch is that Mr. Degener cannot be located.

Mr. Ayres said that wealthy Mrs. Anne Archbold of Washington, D. C., who had the once-fabulous Cheng Ho built to special design in Hong Kong in 1939, has paid $1 to the maritime commission and has instructed it to redeliver the craft to Mr. Degener as her agent.

A search of the telephone directory and city directory and investigation through every other available source, the MC representative said, have failed to yield a clue as to the man's whereabouts. Meanwhile, the Cheng Ho—which several months ago was towed from Pearl Harbor to Pier 5—has been moved back to Pearl Harbor since the navy has relinquished its use of the Honolulu pier.

To complicate matters further, it was understood last August that the Cheng-Ho was to be given by Mrs. Archbold to the Sea Scouts of Honolulu.

Executive board members of the Honolulu council of Boy Scouts headed by President Wade Warren Thayer, and committeemen and skippers of 10 different sea troops, met at Pier 5-W last Aug. 8 and "decided to accept the gift of the Cheng Ho by Mrs. Ann Archbold, registered owner. . .

A story regarding the acceptance appeared in the Aug. 9 Advertiser.

Whether or not Mrs. Archbold still intends to turn the vessel over to the local group following its redelivery to her agent—provided he can be found—is not quite clear. Mr. Ayres said his knowledge of the vessel's disposition does not go beyond the redelivery point.

Pacific War Memorial

From The New York Times

One of the most ambitious programs for memorializing our war dead is to take the form of a broad scientific investigation of the Pacific Ocean area. This program, to be called The Pacific War Memorial, envisages the establishment of two dozen or more field stations on scattered islands of the Pacific. At these stations young scientists working under memorial fellowships will study every phase of life in the Pacific. This field of research is rich and largely untapped. Reports from the field stations will be sent to a central institute to be located in Honolulu. There the work will be evaluated and disseminated throughout the scientific world. The results of the studies, and particularly those branches that touch on public health, education and social development, will, without doubt, make a great contribution to the well-being of the natives of the Pacific.

In addition to the scientific research phase of the War Memorial there is a plan to initiate a program for setting aside large tracts of land on which may be preserved the many forms of Pacific plant and animal life now threatened with extinction. The need for such a conservation program is especially important now because of the accelerated deterioration of life on the islands caused by the war and the long, harsh occupation of many of the islands by the Japanese. These new island preserves will be known as War Memorial National Parks and Reserves.

After more than a year of study the program is moving out of the planning stage. The islands of Saipan and Koror have been selected as sites for the first two scientific field stations. The citizens of Honolulu are providing land on which will be erected a building to house the scientific institute as well as a Memorial building which will serve as the central depository of the records of those who fought in the Pacific. A public subscription is necessary to raise $15,000,000 needed to carry on the work of the Memorial. The worthiness of the project speaks for itself. Contributions may be sent to The Pacific War Memorial, 70 Pine Street, New York 5, N. Y.

will be bumping together every so often, and growing bigger by the simple process of joining together.

On the Mainland the development has been limited to very unusual clouds where the water droplets are "supercooled." The temperature is way below freezing, and the whole cloud is in an unstable state.

• • •

THE SLIGHTEST disturbance will start things off, and the freezing will continue, some turbulence will result, further condensation will occur on the freezing particles, and soon they will be heavy enough to fall. Then on the way to the surface they will melt, and there will be rain.

That condition, when it does occur, is ideal. But here in the tropics such clouds are rare. When they do occur, they are too high to be of use. So our local rain-maker, Mr. Leopold, had a more difficult problem to solve than that already handled by Dr. Langmuir.

The general approach has apparently been much the same, though of necessity more intense.

ACTUALLY, AS HAS been pointed out on the Mainland, any small very cold particles could be released from an airplane, so as to fall into a cloud. If conditions were right rain would be "made."

A commercially available, and physically suitable, substance is dry ice or frozen carbon-dioxide.

A commercially available, and physically suitable, substance is dry ice or frozen carbon-dioxide. In the solid state it is very cold. It has an "affinity" or liking for water, so that it could likely serve as the tiny condensation particle or nucleus.

It evaporates or turns into gas when released in the atmosphere at normal temperatures. In that evaporating it consumes large amounts of heat, which is another way of saying that it robs the air and everything around it of great amounts of heat, and is a most effective cooling agent.

• • •

EXPERIMENTERS on the Mainland who have followed the scientific reasoning of Dr. Langmuir, have thrown a few pounds of dry ice in little chunks a quarter of an inch in size, into the air a few thousand feet above supercooled clouds.

These "pellets" have fallen into the clouds, created great cooling and some turbulence, and set off a chain reaction i. the already supercooled cloud. The net result has been falling out of snow and ice particles which have melted into rain before reaching the surface.

While full details of Mr. Leopold's experiments are not available, it is apparent that he has worked with normal clouds, not supercooled. He has used smaller particles of the dry ice, which would bring about more rapid and intense cooling; and he has released them in the clouds rather than from above them.

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THIS MEANS that he has been able to secure the most efficient local chilling of the air. The result has been further condensation, not only on the droplets already in the cloud, but likely on the spicules of evaporating dry ice.

The air thus locally chilled in the cloud has been made more compact and heavy than that around it. It has therefore, started to sink, and some turbulence has been brought about, increasing the likelihood of drops bumping into each other and so growing to large enough size to "rain."

A further effect has come into play at this stage of the development. Whenever water "condenses out" of the air, the heat energy which held it in the gas state is released.

Thus there is a contrary heating effect which will raise the air wherever condensation occurs. In that we have increased droplet formation, and additional turbulence.

Both tend to give us more drops of a large enough size to reach the ground as "rain."

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MR. LEOPOLD has succeeded in creating rain under circumstances which Mainland scientists thought unfavorable. This has required more intense cooling than has been the Mainland practice.

Mr. Leopold has used more pounds of dry ice, though not an uneconomical amount by report. He has used it in a more finely crushed state which results in faster cooling. He has secured rain from clouds which had not hitherto been considered as "rainmakers."

Just how much it is going to cost per inch of rain in what parts of the Territory, and just how frequent are the clouds which even Mr. Leopold can use, are questions still to be answered.

A significant start has been made. There has been a scientific step forward—one of the greatest possible significance to the Territory of Hawaii.

Rare Colvilla Tree Bursts Into Bloom On U of H Campus

(See picture above)

The sausage tree on the University of Hawaii campus was completely eclipsed in novelty yesterday, when its neighbor, the spectacular Colvillea Racemosa, burst into bloom. The rare blossoms are orange-red; and one of Honolulu's most unusual flowering trees. During most of the year, the tree resembles a poinciana, but in blossom time (a period of three weeks) flowers 8 to 12 inches long hang from the end of each branch.

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DURING THE blossoming period, amateur and professional color photographers find the Colvillea an attractive photogenic subject.

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THE TREE WAS planted 27 years ago by Allan Bush, from seedlings sent by the Botanic Gardens of Peridenya in Ceylon. The Colvillea was discovered in Madagascar in 1824, when a single tree was cultivated by the natives. It was named for Sir Charles Colville, a governor of Mauritius.

Wide Interest Being Shown In Guava Powder

COLVILLEA RACEMOSA BLOOMS AT UH—Esther Belarmino of 2246 Date St., a senior at the University of Hawaii, is pictured here admiring the striking orange-red blossoms of the Colvillea Racemosa tree now in bloom on the university campus. It is one of Honolulu's most unusual flowering trees.—(Advertiser photo.)

Inquiries regarding the making of guava powder are coming to Dr. G. Donald Sherman of the University of Hawaii agricultural experiment station, from interested persons all over the world.

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DR. SHERMAN has discovered a method by which guavas may be dehydrated and made into a powder that will keep indefinitely when properly stored.

Guava jelly and a guava fruit drink can be made quickly and easily from this product. It may also be used for flavoring ice creams and bakery products.

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"I'VE RECEIVED letters about the powder from government agencies and business firms in Australia, India, and Africa," Dr. Sherman says, "also several from Puerto Rico and Cuba."

Some Hawaii business interests have considered producing the powder on a commercial scale, but thus far have been deterred by the high cost of collecting the guavas. They figure the cost would be $60 or $80 a ton.

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IN 1945 CUBA exported 6,000 tons of guava products. The guava is also a valuable product in British Guiana, where mature, selected varieties are said to yield 10,000 pounds an acre annually.

Hawaiian Plants

Plants of Hawaii National Park. By Otto Degener, Poughquag, N. Y. 1945. Published by the Author. 314 pages. Illustrated. $2.50.

Formerly botanist at the University of Hawaii and naturalist at Hawaii National Park, Otto Degener is well equipped to write this book, which is at once a guide to the plants of the Park, and illustrative of the plants and customs of the South Seas. The book is not presented in the usual botanical guide form but with an interestingly written text into which is woven much lore and information about the Islands. It will be of interest to anyone who has been to Hawaii, lives there, or is going there.

Sixty Years Ago—1899

Owing to a pest discovered by the Government Entomologist Prof. A. Koebele, called the Mediterranean fly, and which is doing much damage to the fruits in the Australian colonies and the South Sea islands, notice has been given by the Board of Agriculture and Forestry that importation of fruits from these places is now strictly forbidden.

by authorized and empowered to enter public or private premises, but not domiciles, at all reasonable times, to search for injurious insect or other pests or plant diseases, and to carry out the orders of the Board in relation thereto, and they shall not be held guilty of any misdemeanor by so doing, nor shall they be personally liable in damages except for acts beyond the scope of their authority or due to their own negligence.

Section 2. Whenever any injurious insect or other pest or plant disease is discovered on any premises, the officer, inspector or other duly appointed agent of the Board charged with the duty of making inspections of private or public premises as provided in Section 1 of this Regulation shall notify the owner of the same and prescribe a reasonably practicable method or methods of controlling or eradicating the said insect or other pest or plant disease, and the owner, upon receipt of such notification, shall perform the prescription of said officer, inspector or other duly authorized agent, relative to its control or eradication, or upon failure to so perform within a reasonable time after notification, the said officer, inspector or other duly authorized agent may and is hereby authorized and empowered to enter upon said premises and perform such prescription or cause the same to be performed.

Section 3. All officers, inspectors and other duly authorized agents of the Board are hereby authorized and empowered to seize and destroy any plant or part thereof, plant product, soil, or other material, or any container or packing material in which such articles have been contained or transported, which is or may be infested or infected with or likely to assist in the transmission or dissemination of any injurious insect, other pest or plant disease.

PENALTY

Any person violating any of the above regulations shall be guilty of a misdemeanor, and upon conviction thereof, shall be punished by fine of not to exceed Five Hundred Dollars ($500.00) as provided in Section 1031, Revised Laws of Hawaii, 1945.

Adopted this 29th day of July, 1947, by the Board of Commissioners of Agriculture and Forestry.

(S) COLIN G. LENNOX, President
Board of Commissioners of
Agriculture and Forestry.

Approved this 14th day of August, 1947.
(S) INGRAM M. STAINBACK
Governor of Hawaii
Approved As To Form
(S) Michiro Watanabe
Deputy Attorney General, Territory of Hawaii
(Adv. Aug. 19, 1947)

Parasite For Destroying Leaf Hopper Distributed

Star-Bull. 10/5/47.

The taro leaf hopper, which has infested Oahu taro fields since 1930, has been discovered on Hawaii and Kauai within the last month, William Look, board of agriculture and forestry entomologist on the Big Island, has reported that the greatest infestation on Hawaii is in the dry land taro beds at Puueo, near Hilo, where an examination revealed hundreds of leaf hoppers per leaf.

Following the discovery, he examined fields at nearby Waiakea and Piihonua and found a smaller infestation. There were no leaf hoppers, however, at Kaumana.

Shortly after Mr. Look's report, Stephen Au, entomologist on Kauai, reported that about an acre of taro was badly damaged in the Hanapepe Valley ares there. The board is making a search for the the insect in other parts of the islands.

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AS A RESULT of the discovery, shipment of taro planting materials from the Big Island or Kauai to other islands has been banned.

Because of the efficiency of a parasite which preys upon the leaf hopper, Colin G. Lennox, board president, and David T. Fullaway, chief entomologist, are not unduly alarmed. The parasite, reared in the board laboratories, is being sent to Hawaii and Kauai to start an immediate war against the leaf hopper.

"We are fortunate in having the parasite to aid us in this fight," Mr. Lennox comments. "In fact, if we had not had the parasite, the raising of taro on Oahu would have been a thing of the past long ago."

* * *

MR. LENNOX looks upon the spread of the pest from Oahu to other islands as "a good example of how quarantine measures are only a delaying action."

"They stave off the evil day when an insect shows up in a new locality. But, sooner or later, if there is travel between the two areas, we can be sure that a pest will find its way around."

The taro leaf hopper was first discovered in the islands in the Waianae area in 1930. It was presumably brought here on taro hulis, or planting materials, possibly from the Philippines but more likely from Samoa.

* * *

THE BOARD of agriculture undertook a vigorous campaign of eradication, destroying all taro in the Waianae region.

It was believed that the drastic action had been successful in getting rid of the pest, which, incidentally, attacks only taro, but after a short time it showed up again in taro which was then growing near the corner of Kalakaua and King Sts. where Kalakaua Homes now stand.

A short time later, it appeared in the extensive taro fields of Windward Oahu and spread rapidly. As there was plenty of host material there, it was impossible to undertake such a thorough eradication as had been attempted at Waianae. Spraying was tried, but failed to keep the insect under complete control.

* * *

IN 1938, Mr. Fullaway went to the Philippines in search of a parasite. He introduced the Cyrtorhinus, an egg sucking bug, which has thrived here in the islands and has kept the taro leaf hopper well under control. Introduction of the parasite meant the difference between life and death of the Oahu taro industry, Mr. Lennox believes.

When the pest was first discovered, the board of agriculture imposed a quarantine on the shipment of taro hulis, or planting material, from Oahu to the other islands, and the quarantine has remained in effect ever since.

Tubers with the leaves removed may be taken from island to island after inspection to determine that they carry no leaf hoppers. There is some movement of taro tubers from Oahu to the other islands when the poi supply is scarce.

* * *

HOWEVER, IT is believed that someone must have carried infested taro, possibly in his baggage, to Hawaii and Kauai despite the quarantine and thus have introduced the insect to the new areas.

It is impossible to set up and enforce a quarantine against the movement of planting material to different areas on the same island, Mr. Lennox says, but he hopes that taro growers will be cautious and not carry material from the infested districts to other parts of the Big Island and Kauai.

"The leaf hopper undoubtedly will spread to other parts of the islands eventually," he says, "but if the public cooperates by not carrying infested material, the spread will be delayed."

Lowly Oil Of Citronella Now Plays Hero Role

Star-Bull. 7/13/47

It would appear that at long last the rather unpleasant-smelling preparation known as oil of citronella is really coming into its own.

In addition to being universally used as a mosquito repellent—and what household hasn't a little bottle of it?—it has suddenly come to the forefront as an enemy of the fruit fly.

This is the mango season, when the fly hovers about ready to lay its eggs in and otherwise despoil the succulent fruit, and already citronella oil is being used by Honolulans who have mango trees in their yards to help cut down the swarms of insects.

The process is a simple one. A gallon container, half filled with water, and with a few drops of oil of citronella sprinkled on top, is hung in a mango tree.

Almost immediately fruit flies start hovering about. Then they start running wildly around the inside of the container, apparently intoxicated by the oil fumes. Then they drop into the water with its oil film and die.

One Honolulan who has several trees of choice mangoes is trying out this new fruit fly repellent and says it is working wonders. The cans he has set out—new water and oil should be provided every three days—already have trapped thousands of the flies, he says.

And he adds that citronella appears to be doing more to eradicate the fruit fly than it has ever done to keep mosquitoes away.

Trade And Travel

Cheng Ho Leaves Soon on Trading Mission to Tahiti

She was built in Hong Kong. She cruised the South Seas for many months on a voyage dedicated to science. She went through World War II in navy service. Now the once-palatial junk-type yacht Cheng Ho is about to enter still another phase of her career.

The tri-color flag of France is to be hoisted above her decks, and she is expected to leave some time during the next week for Tahiti. It will be her first voyage under operation by the recently-organized Cheng Ho Trading & Exploring Co., Ltd.

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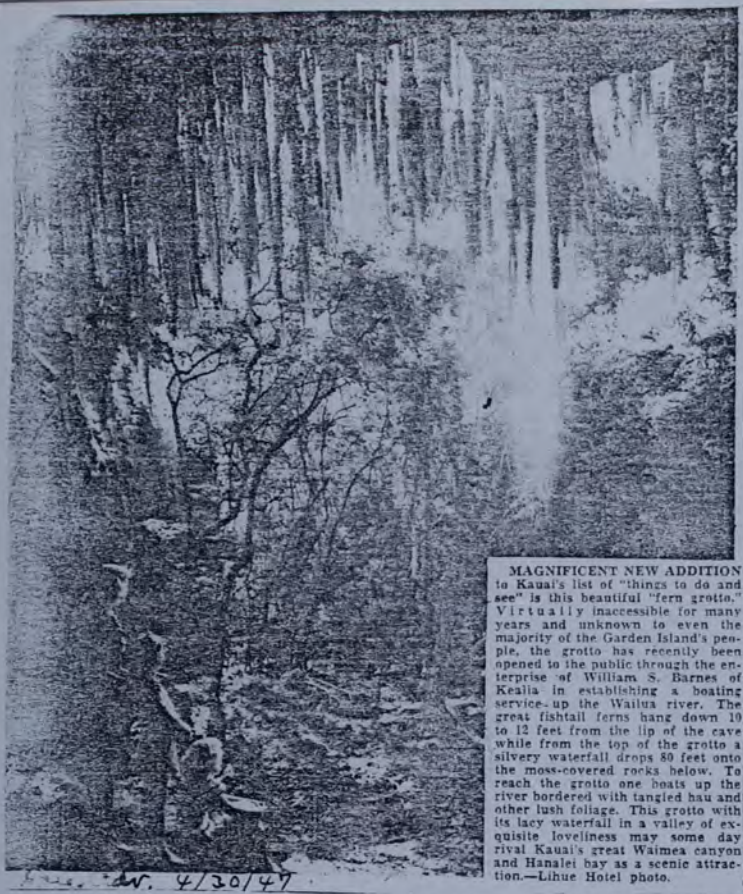
OTTO DEGENER, who sailed as guest botanist aboard the Cheng Ho in Fijiian waters before the war, announced yesterday that he has resigned his position as secretary-treasurer in the new company "now that it is launched" and has sold his shares of stock to his former partner, Capt. Eric deBisschop. The latter at one time was French consul in Honolulu.

Although he is no longer connected with the trading part of the company, Mr. Degener said, he retains his right to engage in one exploratory expedition a year aboard the Cheng Ho to the South Seas and his option to purchase the vessel for $15,000 in July, 1952.

Maui Planting Napier Grass

Maui ranchers and dairymen now have 1443 acres planted in Napier grass compared to less than 300 acres in 1943, according to Frank T. Murphy, farm agent for the University of Hawaii Agricultural Extension Service. Napier is a tall, cane-like grass that produces a large tonnage of cut forage that is well liked by cattle.

A hybrid type of Napier that resists leaf spot disease is the most popular variety. This was developed by the University's Agricultural Experiment Station and has become popular on Maui as a result of a series of field tests made by ranchers and dairymen under Mr. Murphy's supervision.



MAGNIFICENT NEW ADDITION to Kauai's list of "things to do and see" is this beautiful "fern grotto." Virtually inaccessible for many years and unknown to even the majority of the Garden Island's people, the grotto has recently been opened to the public through the enterprise of William S. Barnes of Kealia in establishing a boating service up the Wailua river. The great fishtail ferns hang down 10 to 12 feet from the lip of the cave while from the top of the grotto a silvery waterfall drops 80 feet onto the moss-covered rocks below. To reach the grotto one boats up the river bordered with tangled hau and other lush foliage. This grotto with its lacy waterfall in a valley of exquisite loveliness may some day rival Kauai's great Waimea canyon and Hanalei bay as a scenic attraction.—Lihue Hotel photo.

Literary Award Is Offered By Library Friends

An annual literary award of $250 to be given to the Island writer who publishes the most distinguished book, was announced Thursday by the executive board of Friends of the Library. The award, according to J. L. Van Nostrand, president of the Friends, is an attempt to encourage better poetry and prose production by writers who live in the Territory.

The award, to be known as the Friends of the Library Literary Award, will be presented in January of each year to the writer whose published book is selected by an award jury, composed of nine members, as being the best contribution to good writing during the previous twelve months.

Island writers need not confine themselves to Island subjects in order to be eligible for the award. There is no restriction on the type of writing, the field being broad enough to include poetry, prose, fiction, non fiction, and essays.

The Friends executive board, in making announcement of the award, expressed the hope that additional awards might be available in the future for shorter works and for limited subject matter, through contributions or bequests to the organization.

It was also pointed out that visiting authors would not be eligible for the award as the board is anxious to make it solely an encouragement for island writers.

Further details and announcement of the selection jury will be made later in the year according to Mr. Van Nostrand.

The Friends of the Library, recently reactivated after the war years, is planning an extensive program including a drive for membership in order to acquaint island residents with the many facilities of the Library of Hawaii and to provide additional services for the people of the Territory.

4/14/47 A LESSON IN HAWAIIAN

Editor The Advertiser:

Mr. Armitage's column, "How's Your Hawaiian?" which appeared in Sunday's paper was a little misleading, on the word **ehu.**

The **'ehu** or **kehu** (in the Maori dialect) referred to one of "reddish brown" complexion and hair-color. There were two distinct classes of 'ehu, based on facial features and hair color.

(1) **Ehu-kumu-uli:** with Polynesian features, having brown eyes, and soft wavy hair of light brown or auburn; light to creamy complexion, and very soft skin. Reddish complexion and hair. Favored by chiefs and high priests.

(2) **Ehu-lolena, or ehu-koekoe:** with Europoid features, complexion and hair light brown. Eyes dreamy and listless. Frigid. Beautiful in form and shape.

Then there is the **Kea** or **Kea-kea,** which I think Mr. Armitage had reference to.

(1) The kea or white complexioned were direct descendants of Wakea, according to the late Prof. Frederick Beckley. They have grey or deep blue eyes, soft brown hair, and Europoid features.

(2) The kea-kea were also white complexioned with Europoid features, light hair, light blue or hazel eyes. Their complexions had a ruddy glow.

Still another type, classified according to skin and hair color, was the **ili-kou.** This type was dark complexioned with black hair, thick lipped and usually heavy-set.

Although observers like the Rev. William Ellis referred to the ehu as blondes, they were more of a reddish-brown coloration, which is what the word means.

The kea or kea-kea (ke-kea) were descendants of Papa and Wakea, progenitors of the Hawaiian race, according to one of the several creation myths of the people. They were non-residents of Hawaii, and came from Kahiki.

There are representatives of these types still seen in Honolulu today. Each has distinct skin and hair colorations and bodily forms.

With regard to the use of the term, **calabash relation,** I should like to make the following observations:

The term is repulsive to Hawaiians of good breeding because it ridicules a custom which is the very essence of aloha, and that is to share with others.

The term "aialo" was generally used with reference to those who regularly eat with chiefs, while the term "ohana makamaka" is applied to those who are frequent guests at table, or mat. Guests never ate from the same poi bowl, but they had their own kept in honored places in the households of their hosts, taken out and filled with poi whenever they arrived. Aialo means "to eat in the presence of someone"; ohana makamaka means "face-to-face-friend or relative." A house guest today may be referred to as an ohana makamaka.

April 7

CHARLES W. KENN

TROPICAL PLANTS THE WORLD AROUND. I, II. By Otto Degener. Paper, ea. 25c.

These two papers were published as consecutive numbers in the *Journal of the New York Botanical Garden,* and constitute a unit, in a series devoted to plants of the regions in which the armed services were at that time operating. At the same time they contain materials which will be used by Dr. Degener in a forthcoming book, *Plants of the Tropics, Illustrated.* The two booklets at hand consist simply of descriptions of some common tropical plants, illustrated with beautifully executed line drawings. The descriptions, however, are not of the ordinary, dry and colorless variety found in most textbooks, but are readable accounts of the plants themselves, where they grow, and how they are used by the native peoples.

—*Hugh M. Raup.*

vent possible clogging, since it will be touched by human hands only once a year.

The instrument makers have informed Mr. Carson that they have developed an ink that is 80 per cent glycerine which is still in good condition at the end of 18 months use on such machines.

The ink actually absorbs so much moisture from the air that at the end of a year's test there was more ink in the reservoir than when the test started.

It is expected that records may be kept so precisely that the rainfall of each storm passing over the peak can be distinguished. When the tank which gathers the rain becomes filled an automatic syphon will drain it. All metals used in construction of the instrument and its housing will be non-corrosive, eliminating the danger of failure through rust.

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THE SHACK will be fabricated in Honolulu and the whole installation set up here and tested before the materials are transported to Kauai. The building is to be six by eight feet, with a roof seven feet above the ground. It is made of aluminum for easy packing in to the site.

If the usual methods are followed for reaching the top of Mt. Waialeale it will take ten pack mules and six men to get the installation there and set up in a period of seven or eight working days, Mr. Carson estimates.

Four hours from the peak is a huge swamp that can be traversed only on foot and every ounce of material will have to be transported by manpower over this swamp and to the top.

Three or four men will have to make a camp at the peak and stay there throughout the installation period.

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RAINFALL records have been kept on an annual basis on Waialeale for 28 years. The first gauge was one made on a two to one ratio that necessitated frequent trips to the top to read it. In 1915 a ten to one gauge was set up and in 1924 a 900 inch gauge, which wore out from handling and was replaced with a stouter one of the same capacity.

The old gauge will be retained in its site as a double check, both against possible instrument failure and for total readings.

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THE GAUGE is set up within 100 yards of a lake sacred to the Hawaiians, where a stone god still remains. The area of the peak is about two acres, almost barren, very muddy and supporting only a scrubby growth of vegetation, as little sunshine is available to make it prosper.

Mr. Carson will explore the possibility of using a heliocopter to fly part or all of the materials to the peak. He visualizes letting down parts from such an aerial freighter to succeed the present backbreaking task of men and mules fighting through the torturous trail to the top.

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THE MT. WAIALEALE gauge recorded 456.67 inches at its last reading on July 24, 1947. The name in Hawaiian means "rippling water." Mr. Carson intends to get the ripples down on paper, so that if Mr. Cherra Punji in the Himalayas of India, who once made fantastic claims of rainfall, ever tried to make a competition of it he can pin down Waialeale's claim to the

Mt. Waialeale Still Record Wettest Spot

Mt. Waialeale on Kauai still maintains its premier spot as the world's wettest place, having chalked up a record of 456.67 inches of rain for the year from July 24, 1946, to July 24, 1947, according to a U.S. geological survey party just returned from the torturous trek to the 5,075-foot peak at the head of Waimea Canyon.

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ANNUAL rainfall records have been kept by the survey for 36 years, starting in 1911, the all time high being set in 1942 when the gauge showed 618.75 inches of rain had fallen.

A figure of 624 inches recorded in 1927 had a few questionable elements in it and is not regarded with the certainty given the 1942 total.

The average of all rainfalls on the highly humid mountain has been at the rate of 467.17 inches a year, putting the 1946-47 season a bit below the average. In 1945 there were 420.55 inches on record, in 1940, 452.53 inches and in 1930, 474.19.

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THE ANNUAL trip to the gauges was made this year by a party headed by Hubert W. Beardin, engineering aide of the survey. He was accompanied by Dr. G. A. Macdonald and Dan Davis of the survey's ground water division, George Arneman and Hale Cheatham of Kauai and Eddy Taniguchi, guide.

The party left Waimea last Wednesday and returned Friday night after three days of rugged riding and hiking. The first stop is made at Cowboy Flats where a night is spent, followed by a two-hour ride to Keanakua where the horses are left and then the final four-hour hike to the peak is made.

CHERRA PUNJI in the foothills of India's Himalaya mountains once held the record for annual rainfall, 1,000 inches being claimed as having fallen in 1861.

However, it is almost bone dry for two months of the year and the Mt. Waialeale figures are based on 12 months precipitation.

No authentic figures have been received from India for 19 years.

Vacations In T. H. Forest Reserves Are Offered

"Mid week specials" are being offered by the territorial board of agriculture and forestry for family groups wishing to spend a vacation in the forest reserves.

In addition to the dormitory style accommodations, the board has recently put small cabins into condition at Kokee on Kauai and Pohakuloa on Hawaii and has instituted "cut rates" for mid week occupancy.

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THE CABINS are in demand over weekends, as are the dormitories, says Colin G. Lennox, president of the territorial board of agriculture and forestry.

He hopes that families will make greater use of the cabins during the time Monday through Friday, when the rental charge is $25 for the period. During week ends the charge is $2 per person per night.

"The cabins offer a type of vacation not otherwise available in Hawaii," says Mr. Lennox. "They will give a family with several children an opportunity to have a change of climate and learn something of the out of doors in our forest areas at a reasonable cost."

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THE CABINS are old CCC and army cabins which have been put in condition for use of vacationeers. Beds, blanket, sheets, and other equipment are provided. There is indoor plumbing, and kitchen facilities are available.

There are four cabins at Pohakuloa on the Big Island, each cabin accommodating five persons. These have been available for several months and their popularity is increasing.

At Kokee, on Kauai, there is one cabin with a capacity of seven persons. It was opened the first of July.

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THERE ARE no cabins of this sort at the other board of agriculture vacation house, Halepohaku, which is at the 9,000 foot elevation. Accommodations there are less pretentious, being designed to care for groups hiking or riding up the mountain.

The dormitory accommodations at Kokee are available for the two weeks July 22 to August 2, the board has annqunced. Although they were originally booked full for the summer, the Kauai YMCA has been forced to cancel its reservation for the period.

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THE CAMP can care for two separate group of 30 persons each. They must take their own bedding, but cots and mattresses are available. The charge is 25 cents a night.

Mr. Lennox looks upon the three vacation camps, and especially the family cabins, as a beginning of what may become a much more ambitious undertaking.

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"THEY WILL give us an opportunity to see how well they are liked and how much demand there is for such vacation spots," he says. "If there is a demand, other places in the forest reserve areas can be converted into vacation sites."

The three camps are being operated at a slight loss, as the board feels it has an obligation to make the public lands available to the public to enjoy.

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ON HIS RECENT trip to the Mainland, Mr. Lennox found a growing sentiment for the development of vacation sites for the moderate and low income groups.

"Many states feel that it is a duty to provide group camp recreation facilities," he says. "In some places, this is considered as much a state obligation as the care of public health.

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"HAWAII HAS elevations where the much desired change of climate can be obtained; yet most of these elevations are comparatively little developed. The camps we have to offer will give somewhat of an indication of the need for further development."

John D. Archbold to Wed Anne Lucie Seronde

Special to the Herald Tribune

NEW HAVEN, Conn., Oct. 1.—Miss Anne Lucie Seronde, daughter of Professor Joseph Seronde, of Yale's department of Romance languages and literature, and the late Dorothea Derbyshire Schelling Seronde, will be married to Mr. John D. Archbold, son of Mrs. Anne Archbold, of Washington, in November.

Miss Seronde is a granddaughter of the late Felix Schelling, Shakespearean scholar and professor of literatures at the University of Pennsylvania, and a niece of the late Ernest Schelling, pianist and composer. She was graduated from Westover and attended Bennington College and the Yale School of Fine Arts.

Mr. Archbold is a grandson of the late John D. Archbold, one of the founders of the Standard Oil Company, and a nephew of Mrs. Michael M. van Beuren, of Newport, R. I. His sisters are Mrs. Robert Foote, also of Newport; Mrs. Nicol Smith, of Burlingame, Calif., and his brother is Mr. Armar Archbold, of Upperville, Va.

Mr. Archbold, Choate School and Princeton, '34, is a member of the Union League, Knickerbocker and New York Yacht Clubs. He served as a lieutenant, U. S. N. R., overseas. His first wife, Mrs. Elizabeth Brown Archbold, died in 1939.

In the irrigated lands 20 to 30 separate irrigation periods are given the cane before maturity.

Land Expensive

Land for the production of sugar cane is expensive. Some has been appraised at from $2,000 to $3,000 per acre, due to the irrigation system, improved private roads and many other facilities that make up modern agricultural land.

Because of the huge size of the Hawaiian cane, planters have problems that detract somewhat from the record yields. Cane harvesting in the Islands resembles a logging operation. The harvesting machines that have worked so well on the mainland cane, of about nine months growth, have met their equal in the Hawaiian fields and failed at the job.

As labor has long been one of the greatest shortages in Hawaii, the plantations found it imperative during the war years to harvest by machines. The most immediate solution was the use of a huge grab on a crawler crane. This machine had been used in years previous as a cane loader. Now it was to serve as a harvester as well, with some aid from another machine with a large rake mounted on the front of a tractor. They proved so successful during the pressing war years, when every pound of sugar was so desperately needed, that Hawaii produced sugar nearly up to its peak years with 40 per cent less personnel than had been employed in 1940.

These improvised harvesters had obvious disadvantages of uprooting some of the cane stalks which prevents ratooning (or regrowth from the same stalks) and in addition valuable top soil, rocks and other matter were picked up by this equipment. Today the Agricultural Engineering Research Department of the HSPA is well into the design of one harvester and aiding in developing others for Hawaiian cane. These will shear off the stalks at ground level.

Cleaning Plants

When this cane, harvested by improvised mechanical means, reached the mills it was so full of dirt and mud that elaborate cleaning plants had to be established in the mills. These plants have cost up to a half-million dollars and increased the operating cost of handling the cane.

Hawaiian sugar cane is also heavy, therefore the matter of transporting the cane from the field to the mill is of prime economic concern. Plantation narrow gauge railroads were almost universally used for this purpose but their operation is not economical. Motor trucks replaced a number of rail lines and today new types of mammoth cane haulers are being field tested with the possibility that these giants, one with a gross weight of 50 tons, may prove a practical solution. These are used only where cane is handled over private plantation roads and not on public highways.

Hawaii, as one of the separate land areas of the world has made her choice. As an independent kingdom she could produce sugar as cheaply as any other tropical area, through the importation of coolie labor and exploitation of this labor in a manner still practiced in some areas of the world. However, Hawaii chose to join the United States and accord its laborers all the benefits of American citizenship.

At the present time, no agricultural workers on a year-round basis in any part of the United States are so well paid as those on Hawaiian sugar plantations. With a minimum of 70½ cents per hour for a 48 hour week, and year-round employment offered the Hawaiian sugar worker is the most favored agricultural worker in the world.

Part of States

As an integral part of the United States, Hawaii buys in the high priced American markets all of the articles and materials which have to be imported. Other sugar producing areas in tropical regions enjoy cheaper market conditions. Hawaii ships her sugar to market in American bottoms and pays the high freight rates necessary to support a line of ships built out of high cost materials, by high priced labor, and manned by high paid seamen.

It is obvious that being a part of the United States imposes upon Hawaii many obligations which make the cost of producing and marketing her sugar far higher than those in tropical areas which are exempted from such obligations. For this reason Hawaii has had to look to the most scientific agriculture and skilled industrial research practices to compete with sugar markets of the world.

Best Types Listed

Hon. Adv. 3/23/47

Hawaii Trees Source Of Lumber, Survey Shows

A check list of tested trees for watershed and timber use in the various climatic zones and soil types in the Territory has been prepared by the territorial board of agriculture and forestry.

The list is printed in the biennial report of the board, which has recently been released. Copies of the list are available for distribution at the board.

"Military use of timber cut from local forest areas was quite active during the early part of the war but had stopped before the present biennium," says the report of William Crosby, territorial forester.

Timber Source

"Much of the island forest area can, however, be made a continuing source of timber. Greater attention is being paid to quality of timber in selecting trees for planting in reserves where watershed protection is not of the highest importance.

"There are also many hundreds of acres within the cultivated areas of the territory which have been abandoned because they are not suitable for handling with machinery.

"These should be planted to wood lots, both as a matter of soil protection and as a local source of farm timber and woods for ornamental or other use."

The table classifies introduced trees for use in areas of varied rainfalls and elevations and of varied soil types. It also lists them into four classes as to use of their timber.

The selection is based upon experimental trials conducted on representative climatic and soil conditions found in the territory during the last 30 years.

There are a number of timber trees suitable for planting outside watersheds which will produce high quality hardwood, veneer woods, or woods with other special qualities of economic importance.

The cederela australis and cedrela mexicana, or Australian red cedar and cigar box cedar, give timbers which can be used for furniture and pattern making.

As the name implies, the wood is also used for the making of cigar boxes. Both have been found to do well in the islands at elevations up to 3,000 feet with a rainfall between 40 and 150 inches a year, but there has been more experience in the islands with the Australian variety.

Port Orford cedar and camphor are used in making chests and will grow in various island locations.

Cryptomaria japonica, popularly known as sugi, has done well in high elevations in the islands. Its wood is suitable for rough construction lumber, fence posts, utility poles, and the like.

Eucalyptus Plentiful

The various eucalyptus trees give a good rough timber There are several species in the islands — including eucalyptus deanei, or silky gum; eucalyptus saligna, or flooded gum, and eucalyptus pilularis, or blackbutt—which stand out from the other species in growth under Hawaiian conditions and quality of timber.

The grevilla robusta, or silk oak, is a good cabinet wood, growing in a wide range of climatic locations.

Juniper gives a wood which is used for posts as well as for cedar chests. It does best in areas of moderate rainfall. It is extremely durable in contact with the soil.

The monkeypod, or samanea saman, is a well established tree whose wood is in demand.

Sandalwood Available

Indian sandalwood, or santalum album, grows at low dry elevations and is being planted again in the islands. While sandalwood will never approach the prominence in island economy which it had for a short time early in the 19th century, it may stage a small scale comeback.

Redwood, the sequoia sempervirens which is well known in California, does well at high elevations where moisture is ample.

Teak and mahogany grow well at low elevations and provide timbers which are in demand for heavy planking as well as for finer uses.

Brushbox is suitable for rough construction and for posts, and is in favor because of its resistance to termites and ground fungi. It has a wide range of conditions where it grows well and is one of the most promising of all trees for universal use.

TROPICAL PLANTS THE WORLD AROUND. I, II. By Otto Degener. Degener. Paper, ea. 25c.

These two papers were published as consecutive numbers in the *Journal of the New York Botanical Garden*, and constitute a unit in a series devoted to plants of the regions in which the armed services **were at that time operating. At the same time they contain materials which will be used by Dr. Degener in a forthcoming book,** ***Plants of the Tropics, Illustrated.*** **The two booklets at hand consist simply of descriptions of some common tropical plants, illustrated with beautifully executed line drawings. The descriptions, however, are not of the ordinary, dry and colorless variety found in most textbooks, but are readable accounts of the plants themselves, where they grow, and how they are used by the native peoples.**

—*Hugh M. Raup.*

Hundred Years Ago—1859

Another colony of honey bees, making the fifth, swarmed in Dr. Hillebrand's garden and was successfully hived by him. There are now nine hives in his possession. We should like to see more bee keeping increase.

PACIFIC BOOK REVIEW

By E. H. BRYAN, JR.

Although Hawaii is a paradise for big-game fishermen and possesses more than 650 different species of fishes, the number of publications on the subject has not been extensive.

The greater part of the bibliography consists of technical descriptions or check lists of fishes, with all too little about their habits, lore and economic importance.

The available publications about Hawaiian fish and fishing can be divided into about four parts: (1) fishing methods of the old Hawaiians, (2) contributions by early explorers or as a result of their collections, (3) studies by scientists for the U. S. Fish Commission, and a few more recent scientific publications, and (4) recent or popular books and articles.

Fishing In Old Hawaii

One of the most extensive accounts of native Hawaiian fishing was written by Mrs. Emma Metcalf Beckley in 1883, and variously reprinted.

L. D. Keilipio and M. K. Nakuina wrote about **Hawaiian fish stories and superstitions** in the Hawaiian Annual for 1901, supplementing the account of Hawaiian deep sea fishing by Henry Waterhouse in the Annual for 1899.

C. A. McDonald had an article entitled **The Hawaiian fisherman** in the Mid-Pacific Magazine for August, 1914.

In their excellent account of **Hawaiian household customs,** Laura S. Green and Martha W. Beckwith treat briefly the subject of fishing.

J. F. G. Stokes has detailed accounts of fish poisoning and fish traps in Bishop Museum Occasional Papers and the Mid-Pacific Magazine for October, 1912.

In Chapter 9 of Ancient Hawaiian Civilization, Thomas Manupau tells of aku and ahi fishing.

Various aspects of these subjects are summarized by this reviewer in **Hawaiian Nature Notes** and **Ancient Hawaiian Life.**

Early Fish Collections

The earliest account of Hawaiian fishes, of any extent, is that of E. T. Bennett in the Zoological Journal for 1828-1829. He describes 11 species from Hawaii from among a collection made by John Fremply, who accompanied Lord Byron.

J. E. Gray described three species of fish from "the Sandwich Islands in the British Museum" in 1831.

In 1841 Eycoux and Souleyet included seven Hawaiian species in their account of the fishes collected by the Corvette "La Bonite," 1836-1837.

Other early authorities who contributed to the knowledge of the Hawaiian fishes were: Andrew Garrett, Albert Gunther, W. C. Kendall and others working up the material collected by the "Albatross," Franz Steindachner, T. H. Streets, Leon Vaillant and H. E. Sauvage, and Rudolf von Willemoes-Suhn, the last working on the Challenger Expedition material.

U. S. Fish Commission

Soon after Hawaii became a Territory, about the turn of the century, an extensive survey was made of the fishes and fisheries resources of the Islands by the U. S. Fish Commission.

Several reports were published from 1901 to 1905. The most extensive work on Hawaiian fishes and other marine animals appeared in three large volumes, entitled **Aquatic Resources of the Hawaiian Islands,** and illustrated by hundreds of figures and plates, a number of them in colors. The part on the shore fishes was by David Starr Jordan, of Stanford University, and Barton W. Evermann, who became director of the California Academy of Sciences. Professor C. H. Gilbert wrote on the deep-sea fishes.

John N. Cobb made an extensive study of the commercial fisheries Besides his official reports, he wrote a number of popular articles about Hawaiian fish ponds, fishing rights, and "wonderful fisheries" in the Overland Monthly and the Mid-Pacific Magazine (April, 1918).

Bishop Museum Collections

The bulk of the scientific research on Hawaiian fishes, done since this early government survey has been on specimens collected by B. P. Bishop Museum expeditions. Chief of these in Hawaiian waters was the Tanager Expedition of 1923.

For many years, the late John W. Thompson made regular visits to Honolulu's fish markets, where the fishermen saved for him all of the rare or unusual catches. These he used in making his famous colored casts, which are such a feature of the Museum's collections.

Most of the scientific papers about the Museum's fish collection, as well as those in the Academy of Natural Sciences, Philadelphia, have been by Henry W. Fowler. His largest work was **Fishes of Oceania,** published as Bishop Museum Memoirs vol. 10, 1928, with supplements in 1931 and 1934.

Pan-Pacific Check Lists

In 1925, Dr. Jordan and Dr. Evermann prepared a check list of the Hawaiian fishes, which was published as the initial number of the Journal of the Pan-Pacific Research Institution. It was similar to a list of the fishes of Hawaii prepared by Dr. Jordan and his son, Eric Knight Jordan, and published in Carnegie Museum Memoirs, December, 1922. It was the first of numerous lists of Pacific fishes.

Four chapters in **Natural History of Hawaii,** by William Alanson Bryan, are devoted to the fishes, one having to do with introduced fresh-water species.

There are accounts of the top-minnow and other fishes introduced to eat mosquito wrigglers by Alvin Seale (Hawaiian Forester and Agriculturist, Nov., 1905), and D. L. Van Dine (Hawaii Agricultural Experiment Station Press Bulletin 20, 1907).

Hawaiian Fish Problems

In the Mid-Pacific Magazine for April, 1923, the late Lorrin A. Thurston made a strong plea for fish protection.

In the June, 1925 issue of that magazine, Fish and Game warden H. L. Kelly wrote at length on **Some aspects of Hawaii's fish problems.** This was condensed and reprinted in the Hawaiian Forester and Agriculturist, 1930, and the Hawaiian Annual for 1931.

Considerable progress is being made, under the energetic leadership of Director E. Vernon Brock of the Division of Fish and Game of the Territorial Board of Agriculture and Forestry, toward solving or studying fisheries problems.

Several papers have been published regarding the famous Aquarium at Waikiki. A little has been written about game fishing, but much remains to be said.

Recent Popular Books

Brief mention should be made of three recent books, already reviewed, which round out the fish library.

Spencer W. Tinker, director of the Waikiki Aquarium, has written a well-illustrated handbook of the fishes found among the islands of the Central Pacific Ocean, **Hawaiian fishes,** 1944.

Edward Y. Hosaka's **Sport fishing in Hawaii** describes over 70 kinds of Island fishes as well as giving explicit directions on how to catch them and what to do with them then.

The revised edition of **Reef and shore fauna of Hawaii** by Professor Charles H. Edmondson, devotes the last 37 pages to a concise summary of Hawaiian fishes.

If you're plagued by giant African snails, don't give up hope.

Gonaxis quandrilateris may be the answer.

That's a large name for a small, carnivorous snail that feeds on the African pests.

The snails were brought to Hawaii in 1957 in hopes that they would help wipe out the African snails.

• • •

THURSDAY, there were signs that the newcomers are doing their job.

Daniel Melandez, collecting snails for the Department of Agriculture in the Kahana Bay area, found an inch-long carnivorous snail feeding on a four-inch African snail.

According to Alan Thistle, head of the division of entymology and marketing, this is an indication that the carnivorous snails have controlled younger African snails in the area and are now starting to attack the larger ones.

• • •

"UNTIL NOW, they have been eating the younger forms of African snails, from the eggs on up to those with shells about half an inch long," Thistle said.

Thistle said that the species is well established in three or four Windward Oahu areas. When the 1957 imports take hold in one spot, entymologists collect some of them and start colonies in other areas.

• • •

"THE BIG AFRICAN snails will be around for awhile, until they die, of some other reason or until the carnivorous snails start feeding on them steadily," Thistle said. But Thursday's find seems to be a start in that direction.

COLLEGIATE ALUMNI BULLETIN

'18—Otto Degener, botanist extraordinary, has a town house in Honolulu (now rented) and a country house at Mokuleia Beach, Waialua, Oahu, Territory of Hawaii, where he is now living. He is "correcting galley" for his forthcoming book about the Fiji Islands, where he botanized in 1940-41. The picture shows Otto with some of his Fiji friends.

Degener, '18, near his country house in Hawaii.

Fiji

Hundred Years Ago—1860

Samples of apples which Mrs. Sherman Peck has shown us give hope that apples may be raised in quantity in the Islands. These apples, of a reddish tinge and about 10 inches in circumference, were raised by Mr. Miner at Makawao, East Maui.

offshore and protected them from the heavy waves of the ocean.

Much later the sea receded to present level, leaving the coral stranded and the plain emerged. Rain and gullies scored the slopes of the cone. Hillwash piled against the lower slopes and partly filled the crater. Waves beat against the seaward face of Diamond Head and Black Point and carried sand to the east and west and built up beautiful sandy beaches—the beaches of Kahala and Waikiki. Diamond Head still juts out from the main mass of Oahu and bears the brunt of the cutting waves of the sea, sheltering on ther side the pleasure haunts of the beaches.

Pele has played the whole gamut of volcanic emotion along the Diamond Head-Kaimuki crack. Pele's song is ended, but throughout the ages the melody has lingered, modified by breath of wind, by splash of rain, by the beat of "surf and sand and sun."

And whenever I see Diamond Head, while leaning over the rail of an incoming boat, or while basking in the sun-warm sands of Waikiki Beach, I think of it always and ever as the lingering melody of Pele's song.

(Next Saturday—"Story of Pearl Harbor Lochs," or how Mother Nature did her share toward making a naval base for the United States.)

Visitors who are fond of tropic trees and flowers—and this includes most visitors—should not fail to see the rare flowering tree on the lower side of School Street just west of Nuuanu Street. This tall, slender tree with the fragile branches is bare except for golden blossoms. It is a species of begonia, known botanically as "Hillebrandtostemma vernicosum" (this is given on other authority than our own) and is said to be the only one of its kind in Honolulu. It was planted many years ago by a pioneer Honolulu physician, Dr. Hillebrand. The blossoms are now somewhat past their prime, but it is still well worth seeing, if only because it will probably refuse to bloom again for another seven years.

LIFE ON MARS

2/26/44

Editor The Advertiser:

I believe few people failed to read the front page article in Wednesday's Advertiser that "Science Has Evidence Life Exists On Mars!"

Kuiper's suggestion that the form of life on Mars is "probably lichen" is preposterous. A lichen, of which many kinds occur in the Islands, is not a single plant at all. It is a very curious cooperative affair best described as a kind of terrestrial **limu** ("seaweed" or alga) growing in very close partnership with a kind of **pepeau "mushroom" or fungus**). In sectioning a lichen and placing it under the stage of the microscope, one can see how the alga is surrounded and protected by strands of the fungus. It is even possible in the laboratory to dissect out the alga from the fungus, and to grow both plants separately generation after generation in separate receptacles. To form a lichen again, one need merely mix the two kinds of plants together under proper conditions.

If life occurs on Mars it either must be of autochthonous origin—formed right there by a lucky combination of otherwise lifeless chemicals that happen to have gotten together—or must have reached there from some other planet, like the Earth.

If a form of life originated directly on Mars, it is one chance in many, many millions that evolution could have duplicated such a complicated living partnership as a lichen, particularly in a Martian environment very unlike that existing on Earth. Such evolution would not involve a single step but a double one, namely developing a distinct **limu** and a distinct **pepeau** separately, and getting the two plants together to live cooperatively or, as scientists would say, symbiotically.

It is possible for a microscopic bit of living matter, like a resistant spore or germ from a planet like our Earth, to be driven to Mars by rays of light through interstellar space. It is impossible, however, that a complicated and relatively large fragment of lichen could reach there to increase and cover the Martian landscape. To be sure there is perhaps one chance in almost infinity for a microscopic spore of **limu** and one of **pepeau** both separately to reach Mars on rays of light, to germinate within touch of one another at about the same time and to form a lichen.

If life occurs on Mars, as Dr. Kuiper and other capable astronomers surmise, I dare say it is nothing like anything we have ever seen with the naked eye—it is certainly no lichen.

Honolulu, Feb. 22 MARTIAN LICHEN

The New York Botanical Garden

BRONX PARK

74

September, October and November Lectures, 1934

Saturday Afternoons at 3:30 P. M.

Delivered in the Lecture Hall of the Museum Building; illustrated by lantern slides and otherwise; free to the public. Doors closed at 3:30; late-comers admitted at 3:45; lectures close promptly at 4:30.

Sept. 8. "Rambles in Hawaiian Mountains," Mr. Otto Degener, New York Botanical Garden.

Sept. 15. "Autumn Wild Flowers," Dr. John Hendley Barnhart, Bibliographer and Administrative Assistant.

Sept. 22. "A Tour of the National Parks," Dr. Harold N. Moldenke, Assistant Curator.

Sept. 29. "Dahlias," Dr. Marshall A. Howe, Assistant Director.

Oct. 6. "Where Our Food Plants Come From," Dr. Elmer D. Merrill, Director.

Oct. 13. "Autumn Coloration," Dr. A. B. Stout, Director of the Laboratories.

Oct. 20. "Bacteria in Relation to Diseases of Plants and Animals," Dr. F. D. Chester, New York Botanical Garden.

(OVER)

The New York Botanical Garden

BRONX PARK, NEW YORK 58

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Jan. 15 FOOD PLANTS AND ORNAMENTALS Their Origin and Improvement
A. B. STOUT, Curator of Education and Laboratories

Jan. 22 INSECT-EATERS—Close-up Color Photos of Carnivorous Plants
RUTHERFORD PLATT

Jan. 29 GARDENS OF ANTIQUITY
H. W. RICKETT, Bibliographer

Feb. 5 BERMUDA'S FLOWERS AND SCENERY—In Natural Color
F. J. SEAVER, Head Curator

Feb. 12 WHAT PLANTS MEAN TO THE WORLD
WILLIAM J. ROBBINS, Director

Feb. 19 WILD FLOWER TRAILS — A Motion Picture in Color, with Lapse-Time Photos of Plant Growth
WALTER E. THWING

Feb. 26 HAWAIIAN PLANTS AND ANCIENT ISLAND CUSTOMS
OTTO DEGENER, Collaborator in Hawaiian Botany

Mar. 4 FIRST STEPS FOR THE VEGETABLE GARDENER
T. H. EVERETT, Horticulturist

Mar. 11 SHRUBS FOR ATTRACTING BIRDS TO THE GARDEN
CARL W. BUCHHEISTER, National Audubon Society

* * * *

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Limu Figured In Strategy

Hon. Adv. 2/29/48

Early Hawaiians Knew About Chemical Warfare

By CHARLES E. HOGUE

Hawaiians were versed in the art of chemical warfare long before lethal gases and atomic bombs were dreamed of by modern scientists, so those familiar with Island lore aver. The tale of an ancient Hawaiian chief's defensive strategy is revived by the report of Dr. Edwin (Ted) Burrows, former Advertiser staff member and now professor of anthropology at the University of Connecticut, that natives of the Carolines know when it is safe to eat certain types of fish and when it is not.

Mr. Hogue

Dr. Burrows, author of a recent book on "Hawaiian Americans," heard with interest that illness had resulted from the importation here of fish from some of the Pacific Islands. He had just spent six months in the Carolines. "Why don't they ask the Islanders whether it is safe to take a certain type of fish?" he asked. "They know, and will specify exactly when each type can be eaten."

* * *

HAWAIIAN fishermen on Molokai and Maui have a similar knowledge relating to fish caught in the waters off Kaunakakai and near Hana. Deputy Sheriff F. Lang Akana, former secretary of the Hawaiian Homes commission, relates that mullet and weke off Kaunakakai, Molokai, are inedible at certain seasons because of a type of limu (seaweed) they eat.

Mrs. Pukui, of the Bishop Museum staff, tells of an area near Hana, Maui, where a poisonous limu, known descriptively as Limu Make o Hana, is tively as Limu Make o Hana, is pigs, she reports, and probably would be to humans.

She, like Mr. Akana, has reports of another limu that fish can eat without apparent evil results to themselves but which renders them unfit for human consumption at certain seasons. Neither of these informants has been able to learn the name of this particular seaweed. Neither was Mr. Burrows able to supply the name of the limu that affects fish in the Carolines similarly.

* * *

DISCUSSION OF seasonal fish poisoning led Advertiser staff writer Harry Stroup to recall the story of what may have been the first resort to chemical warfare, in the Pacific area at least. Greek fire was probably used earlier. Whether the yarn is legend or history is not clear. Anyway, it is worth re-telling.

An invading chief landed on Molokai, so goes the tale, with an army of some 2,000 men.

The defending chief sized up the enemy and saw that his own forces were outnumbered. So he went down to the beach at Kaunakakai and bade the strangers welcome. He had a luau waiting for them.

* * *

GRATIFIED AT this easy conquest, and unknowing the peculiar properties of the limu in that vicinity, the conqueror and his troops sat down to eat. And that was the end of his conquest.

Whether the invaders died, or were so sick they were glad to depart in peace, the scant record does not reveal. It seems sufficient to relate that they were the victims of primitive science.

Many Races Combine To Make Up Isles Population

Hon. Adv. 2/28/48

People of Hawaii integrated into the most democratic "melting pot" in the world have established a unique racial combination.

Long famed for its racial diversification, the "crossroads of the Pacific" has more than tripled its population in the last half century.

When Hawaii became a territory of the United States in 1900, the census was 154,000. The last count, officially announced last summer, totalled 525,477.

Despite the tremendous growth, the racial make-up of the people of Hawaii has changed little in that time.

Representative of the American way of life, the people of Hawaii gleaned from all the races of the world, live, work and play side by side in harmony found so refreshing by the visitor. From the travel viewpoint, these many racial backgrounds in the islands furnish a varied entertainment program for Hawaii's visitor-guests.

* * *

THE DESCENDANTS of the first groups that came to the islands have adopted American standards of living, taken to American standards of education and, in general, are working together in the development of a typical American community. But there are still the original pioneers who cling to their ancestral customs. Thus these old-time customs combined with the modern American have formed a pattern for living that has made Hawaii one of the most colorful in the world.

The latest figure of 525,477 is based on a census of civilians and does not include service personnel stationed in the Islands.

* * *

POPULATION BY Islands is as follows: Oahu, 360,274 (Honolulu alone, 268,913); Hawaii, 73,500; Maui, 35,904; Kauai, 35,194 and Molokai, 415.

A breakdown of the territorial population by races is as follows:

Race	Number
Caucasian	172,067
Japanese	171,983
Hawaiian and Part-Hawaiian	77,843
Filipino	54,327
Chinese	30,279
Puerto Rican	9,548
Korean	7,216
All Others	1,314

GARBLED HISTORY

Editor The Advertiser: 3/26/48

I unfortunately did not hear the entire, very interesting program over KGU at 8:30 p.m., on March 20 regarding the history of the Hawaiian Islands. I did, however, note with some displeasure that the High Priest Hewahewa was represented as upholding the idolatrous religion of the ancient Hawaiians. This is decidedly incorrect and unjust.

In 1819 under Queen Kaahumanu's incessant ridicule of the pagan gods, and under the influence of rum, Liholiho at a state banquet violated the sacred interdict which forbade the sexes feasting together, by seating himself at the table of the female chiefs and partaking of their food with them. The multitude was electrified and the joyful shout arose. "The **kapu** is broken! The **kapu** is broken!" The historian Jarves related that orders were issued to demolish the **heiaus** and destroy the idols—"temples, images, sacred property, and the relics of ages were consumed in the flames." The high priest Hewahewa, who deserves equal recognition with Kaahumanu for the highest type of moral courage, resigned his office and furthered disbelief in the old religion. Queen Kaahumanu gave it its death knell when she marched to the volcano Kilauea and there defied the Goddess Pele whose home it was. In March 1820 the missionaries stepped on Hawaiian soil, to hear the astounding news that the heathenism they had come to abolish was no more.

For the sake of the many students of History in the Hawaiian Islands, I hope you will give this letter some attention.

Mokuleia, March 20. O. D. ADMIRER OF HEWAHEWA

officers and men were sent home on H. M. S. Swift, which was at Canton.

Broughton and the remainder of the men went on the schooner to try to finish his work of surveying the coast. He got as far as the Kurile islands and found it impossible to proceed with so small a vessel, so he returned to Canton and after getting supplies started for home and reached England in February, 1799.

OTTO DEGENER

Hawaiiensis will present ... work, profusely illustrated descriptions of all the native and foreign Ferns and Flowering Plants grown in the Hawaiian Islands.

"It will give the common English, Hawaiian, and the one correct scientific name of each plant, as well as the synonyms by which it is known in other publications.

"It will state whether the plant is endemic, indigenous or introduced; it will give the exact range of the plant in these islands and its general range elsewhere; and it will give its present and former uses, and such other information as may be of interest or importance.

"It will include keys for the determination of families, genera and species.

"In addition, it will contain a general description of the islands, maps, accounts of the origin of the Hawaiian flora, an historical sketch of Hawaiian botany, a glossary of botanical terms, an index, etc."

This gigantic promise has already been fulfilled to the extent of Books I and II.

The plant descriptions are commonly accompanied by full page drawings in black and white, and Opuntia megacantha, the white fruited prickly pear or panini, appears in color.

Book II closes with a useful "temporary index."

Mr. Degener has recently returned to Hawaii after two years' work with the New York Botanical Garden, with which he is connected as collaborator in Hawaiian botany and will carry forward here the immense and laborious lifetime task to which he has set his hand.

Otto Degener's Immense Work Now Two Books

FLORA HAWAIIENSIS or NEW ILLUSTRATED FLORA OF THE HAWAIIAN ISLANDS. By Otto Degener, B.S., M.S.

Otto Degener, formerly botanist at the University of Hawaii (1925-27) and naturalist at Hawaii National ... (1929), at present collaborator ... Hawaiian Botany, New York Botanical Garden, has now brought to ... ds of approximately 300 pages each, his monumental study of the ferns and flowering plants of Hawaii.

The book is one of the sort under... by those who early envisioned ... articulated life programs ... their days. Mr. Degener's task has already been the occupation of several years and the publication, by its loose leaf binding is so planned that as new portions issue they may be inserted in their correct places.

The book says of itself:

Article about Degener removed & put in orig. file 11/XII/50 (Hon. Adv. 2/1/48)

How Priory Sisters Came to Hawaii Told In Account Written Years Ago

By H. B. RESTARICK

President, Hawaiian Historical Society

In this article Bishop Restarick quotes from an account written a number of years ago by Sister Albertina of St. Andrew's Priory, still living in Honolulu and beloved by her former pupils in all parts of the territory. Bishop Restarick contributes an article on Hawaiian affairs each Saturday to The Star-Bulletin.

St. Andrew's Priory was 63 years old last Thursday and as usual a service was held round the coral cross and the girls had a holiday and picnic.

When Queen Emma was in England in 1865, she visited Ascot Priory, the mother house of the Society of the Holy Trinity, from which three sisters had gone to Hawaii already and had begun the school of St. Cross at Lahaina.

The queen pleaded with the mother superior for more sisters. In response to this appeal, in April, 1867, the mother, accompanied by three sisters, arrived in Honolulu and within a few weeks St. Andrew's priory was founded.

The two sisters who were best known to this generation were Sisters Beatrice, who died in 1921 at the age of 92, and Sister Albertina, who still lives on the premises of the Priory. A number of years ago Sisters Albertina wrote for me some early experiences in Hawaii which will be of general interest. Her story is as follows:

The reverend mother, with a party of seven, left England on January 15, 1867, to open a school for girls in Honolulu. After 10 weeks' journey, which included crossing the Isthmus of Panama and the voyage of 17 days from San Francisco, we were off Honolulu harbor and were met by the tug having on board Kalakaua and other aliis, also Bishop Staley and the clergy.

At that time there were few carriages in Honolulu. Bishop Staley had an old carriage lent him by the king (Kamehameha V) in which he took the reverend mother and Sister Catherine to his house in Nuuanu valley, mauka of the mausoleum. The rest of the party were driven there by other friends.

Attend Services

While staying there we attended the services at the pro-cathedral (this stood on the cathedral grounds) but we had to walk. We found the road very rough, and worse still from the Nuuanu valley road we had to cross over taro patches to what is now Emma St., which then had just begun to be made.

In the cathedral close we met Queen Emma and many Hawaiians. The queen at once recognized Sister Beatrice, having seen her in England when she was there in 1865.

The service we first attended was in the Hawaiian language.

The costumes of the congregation were quite remarkable, and they varied greatly, holokus of silk and velvet were very common, some of the material probably came from early traders who visited Hawaii. The verger was in a foreign suit just like a haole.

For many years I attended the Hawaiian services and have seen many peculiar scenes there. If you can understand the royal etiquette and loyal devotion of the people to their alii, you may be able to appreciate the following incident. A little girl, a cousin of Queen Emma, wished at every service to sit by my side, where she would soon fall asleep and then from a sign of the queen, one of the Hawaiian women would cross the aisle on her knees and take the child from me.

When the priory was built it was far away from what was then the town, for most of the dwelling houses, as well as the stores, were in what is now the business portion. Even on Fort St. there were private houses and gardens. Beretania and King Sts., toward Waikiki, were only what we called the plains, and there were no houses beyond the Queen's hospital.

After a week's visit with Bishop Staley, we removed to Rooke house, it having been offered to us as a residence while the priory was building. (This house was on the makai-waikiki corner of Nuuanu and Beretania.) We drove there in the afternoon and the Chinese man who had promised to be there had not arrived, so I was told to light the fire, and all I could see as a stove was a long hole with adobe walls.

Work Is Crude

Not having been accustomed to wood fires, I was at a loss how to begin, but in the garden I saw an old white man, who, when I told him my pilikia, came to my help and we had a fire by the time the cook appeared.

You can still see some of the adobe walls of the house, they are a remnant of the past. (This was true when she wrote, as many of us remember.)

While we were at the Rooke house we saw much of the Hawaiians and numbers of them called on us and expressed their delight at our coming to establish a school for their girls. Sister Beatrice went to Lahaina for a few weeks to relieve Sister Bertha, who came to Honolulu. She found the work at St. Cross interesting but all was very crude. The buildings were dilapidated, the dining room was partially roofed and had no floor.

(St. Cross school occupied the old marine hospital buildings, which Bishop Staley had purchased.)

There were few textbooks and those they had came from England, but so few were they that the older girls were obliged to write out the whole book for the younger ones to start with. But they soon learned English with Sister Mary Clara to drill them. They lived on bread, meat, poi, potatoes, a little milk, but no butter.

After the reverend mother had planned the buildings for the priory, she, with Queen Emma, and a large party of aliis, including Kalakaua and Kapiolani, sailed on the old steamer Kilauea, the only inter-island steamer then. We were the guests of Governor Nahoalehua for a week, during which time Kapiolani gave me lessons in Hawaiian.

When we returned to Honolulu the reverend mother continued her supervision of the priory. It was built to accommodate a school and the whole arrangement was considered, at that time, superior to any school in the islands. In the center was a cross of coral blocks and around it, forming a square, were the dormitories, the refectory, chapel and school room.

The last was well fitted with desks and seats, but the household furniture was very limited—no chairs, only long benches to sit on, or the floor. Lanterns were the only lights in the dormitories and a few lamps for the other rooms. Iron spoons and steel forks ornamented the tables.

Poi Is Eaten

As to food, we had plenty for ourselves and the girls, but no butter or many other things we had been accustomed to. The girls had poi every day—they would not have been satisfied without it. Bread they looked upon as they now do cake, but they soon got accustomed to its daily use.

The school buildings and grounds were dedicated on Ascension Day. Bishop Staley, the clergy, Queen Emma, many Hawaiians and foreigners assembled in the pro-cathedral. After a short service a procession was formed which proceeded to the adjoining priory grounds.

The bishop and choir entered all the rooms, dedicating each in turn according to its use. The bishop then stood on the steps of the cross and addressed the people.

(Every year since 1867, when a bishop has been in residence, a service has been held from the cross. The bishop's house stands where the original priory was and, when the priory was built, in 1910, the cross was moved in front of the new building.)

The service being ended, refreshments were served, including ice cream. The school began with 11 boarders and a few day pupils. The boarders, then as now, were expected to do some housework every day, such as sweeping the rooms, making their own beds, laying the tables and passing the dishes of food.

They were always willing to go to their lessons, but we found some difficulty with the housework. This did not come from laziness, but from the hereditary fear that they might degrade themselves by waiting on, or working for, any one of lower rank than they were.

To act as kahu (servant) for another was too humiliating to contemplate. They were willing to wait on their alii and one could distinguish by their bearing who were of chiefly descent among the girls, and there were a number of these. If I could not get the work done I would show them that I was not ashamed to do it though I was white. They have now outgrown that idea.

We have seen the houses grow on Punchbowl as well as the kiawe trees which Kalakaua planted. The low land round Punchbowl was then a wilderness of cactus and the children used to run and play on the slopes. We did not allow Hawaiian to be spoken for we wished to teach the girls English.

For the poorer Hawaiians, Sister Beatrice opened a school where she taught in English. It was free to all who wished to attend, and she continued it for 20 years, as long as it was needed.

(The charges for board and tuition at the priory were then $100 a year and remained so until some time after the transfer to the American Episcopal church in 1902.)

We have seen great changes. Slippery paths through taro patches have given way to streets, grass houses to wooden ones, adobe buildings to stone and concrete, the Hawaiian language has given way to English. The old has passed away, but the priory continues its work and those who have been its pupils are to be found all over the islands as wives, mothers, teachers and in other occupations which are now open to girls who prepare themselves.

Hon. Adv. 4/14/48

Seventy Years Ago—1878

Grapes.—Mr. H. Cornwell has sent us a specimen bunch of grapes from his young vineyard of 700 vines, just coming into bearing at Waikapu, Maui. The bunch is not large, but the berries are perfect, of uniform size, and real beauties. The vines are of the Isabella variety.

Hon. Adv. 12/30/49

The inventor of the ukulele is M. Nunes who has been making them almost continuously for the trade since the invention in 1879.

Hon. Adv. 12/4/49

SLAUGHTER OF THE COCO PALMS

Editor The Advertiser:

I was interested in your editorial of Nov. 26, stating that coconut "Trees Are More Important" than coconut hats. The enclosed letter, written by Elizabeth Hennings at Vaitauba, Fiji, in the June number of Pacific Islands Monthly, is instructive. It shows that residents of other regions where coconut trees grow are similarly worried about the defoliation of these beautiful palms with resultant stunting and often death:

"The Tongan who wrote to you and described the harm done to coconut palms by the indiscriminate cutting of fronds for village purposes is perfectly right. This can be a serious matter.

"To maintain full bearing, a palm-tree requires 24 healthy leaves. Therefore, when the fronds are removed, the palm has to produce more leaves before bearing more fruit. Without the support of its leaves, the growing bunch of nuts will gradually lose hold, until it is torn off by its own weight.

"You may see examples of this kind of vandalism in Fiji just as in Tonga—especially around the native villages, where handy trees, continually denuded of their foliage, remain stunted and unprofitable, and gradually die off in the end."

OTTO DEGENER

Hawaii Has No Songs Of Its Very Own

By GWENFREAD ALLEN

There are no true Hawaiian songs, uninfluenced by the culture of other parts of the world.

It seems almost impossible that this can be correct, but the development of Hawaiian music has come within the lifetime of many persons now living. There are few Hawaiian songs which date back more than half a century.

The Hawaiian is generally considered to be naturally musical. And yet letters of the early missionaries occasionally referred to the lack of musical interest among the natives of the islands and to their off-tune singing of hymns!

HAD CHANTS BUT NO TRUE SONGS

The reason was that the Hawaiian of old gave scant attention to tune. His music was in the poetry of his verses and in the rhythm of their utterance. The old Hawaiians had chants, but no songs.

Hawaiian music was slow in developing. The missionaries taught hymns which were translated into Hawaiian, and gradually original hymns were written in Hawaiian, their music strongly influenced by that of church music of the day.

After the middle of the last century, there were some Hawaiian tunes, but Hawaiian music did not really come into its own until the reign of King Kalakaua. This monarch was the composer of a number of popular songs, as were his brother, Prince Leleihoku, and his sister, Queen Liliuokalani, and were the inspiration of numerous other songs.

Many of the other songs heard today were written by the early graduates of Kamehameha schools, Charles E. King among them. Some of these songs were original with the composers; others were tunes which dated from some years before but had never been set down on paper.

But Kamehameha students of those early days did not enjoy the Hawaiian songs as do Kamehameha students of today.

"We were not encouraged to sing Hawaiian songs," says John H. Wise, who was a student at Kamehameha in 1887. "There were only a few Hawaiian songs which we knew. 'Ua Like no a Like' is one of the older songs, and so are 'Mahina Malamalama,' 'Lei Pikaki' and 'Lei Poni Moi.'

INFLUENCE OF JAZZ FELT

"There have been many changes in Hawaiian music since those days. The influence of jazz has brought a new tempo into the music.

"Then the songs are sung differently. The frequent use of a falsetto voice is new. The older Hawaiians preferred deep voices.

"One of the biggest changes has been in the wording of the songs. Some of the older Hawaiian songs had the words of old chants, and most of the other songs followed the chants in spirit.

"These were more sentimental than the present day songs, and they were couched in figurative speech. Many of the older phrases are like Hime 'to understand, their meaning not being so obvious as is the meaning of Hawaiian songs today."

The influence of the dreamy melodies of Kalakaua's time has continued in Hawaiian music until the last few years, when a new type of Hawaiian songs has become popular, some of them with little resemblance to either the Hawaiian songs of the 19th century or the chants of an earlier period.

WINDBREAK IS OF IMPORTANCE IN TERRITORY

Many Trees and Plants Are Valuable In Protecting Less Hardy Plants

By KILMER O. MOE

Plants serve human needs in a great variety of ways. One of these is to offer shelter from the prevailing winds. In a situation like that of Hawaii where the trade winds blow over long periods of time this is of vital importance to the success of home and school garden projects as well as [illegible] landscaping [illegible] which [illegible] this shelter.

Mr. Moe

"Plants for windbreaks are selected for their hardiness. They are placed at the very forefront on the line of exposure where they are buffeted about by the winds which they help to temper for the plants of more tender growth. It is a lesson in plant adaptability to see the hardy trees bend and sway as they give and take in the strong winds, breezes which would otherwise uproot and otherwise damage the plants less hardy but useful in other ways.

In this issue we are presenting a list of plants which serve this purpose. Many will be duplicates of those used for hedges listed last week. This only enhances their value in human service and brings out the fact that hardiness is a quality much needed in the work they have to do.

Mass Formation Best

Those who have devoted considerable time to the study of windbreak planting tell us that a mass formation is better than columns of trees of a single height. Low, hardy vines and shrubs that hug the ground to be followed by plants of taller growth presents a front that causes the wind to take an upward course and this tends to leave a wide area of shelter.

These lists are especially useful to those who have home building and garden problems to solve. The practical gardener and home builder may find them very useful in meeting his difficulties.

1. First among the windbreak trees stands the ironwood, Casuarina of several species. There are beach varieties and others that do better in the uplands. Ironwoods are usually planted in double rows to make a more efficient shelter. They seem to thrive best in windy situations. A more efficient service in shutting out or deflecting the wind would result from a combination with hardy plants of low growth as ironwoods tend to be of open growth at the base of the trees. Propagated from seed.

2. Next in importance are the eucalypti of which a large number of species have been introduced into the territory from Australia. These hardy trees stand the exposure very well and make good windbreaks. They are propagated from seed.

Bamboo Grows Slowly

3. Bamboo planted in rows and in clumps are popular for wind shelters in all countries surrounding the Pacific wherever the climate is sufficiently warm to promote the growth of this giant grass. While of rather slow growth in Hawaii, many fine clumps have been established. It is propagated by means of division and by underground stem cuttings.

4. The hau, while low in stature, has such dense foliage and such strong intertwining branches that it has been used very effectively as a wind shelter in many places. It is especially good if raised up on strong trellises. Hau is propagated by cuttings.

5. The hibiscus, though primarily a hedge plant, is often allowed to grow tall for purpose of a wind shelter. It may even be planted for this purpose. This is one of the hardiest of island plants.

6. Likewise the panax makes a good protection against prevailing winds. Tall, erect and closely planted it stands the wind pressure fairly well especially if buttressed with hardy foliage growing at its foot.

7. The oleander is often planted on the windward side of the lot. Its dense foliage provides a suitable shelter. Propagated by cuttings.

8. The be-still tree is related to the oleander and serves a similar purpose. Both of these plants have poisonous sap.

9—The sangrado (Brassia actinophylla) is a hardy tree with heavy, glossy foliage. It has a good spread of branches and often many trunks. It is favorite plant for inside use but when given a suitable place outside it grows large enough to afford a good shelter. It is propagated by seed.

Trees for Beach

10—Beach locations require plants that thrive in sea breezes. Among these the best for wind shelter are coconut trees, hau, milo trees and the native kamani. The false kamani (Terminalia catappa) is a striking beach tree with leaves that turn red. It also affords good shelter.

11—One of the best of trees for shelter is the silver oak (Grevillea robusta). When given the space to develop it grows into a large tree, but when planted close it makes a close-knit hedge that serves very well for wind shelter. There are a large number of silver oaks in Honolulu.

12—Among the hardy trees that do well in windy situations we may list the Christmas berry, bauhinia, koa haole and Pride of Barbados. They serve to break the wind as well as to furnish color.

13—The mango with its fine spread of crown provides good shelter for large sized areas. It makes a dense shade and tends to crowd out all other vegetation beneath it, but it helps trees and shrubs some distance away.

14—Among the vines that afford shelter when given a strong support disease had progressed so that the may be mentioned the cat's claw vine, wood rose, passion vine and maunaloa.

This list might be extended to include many more plants. The underlying principle to be observed in the selection of windbreak material is to avoid all plants that do not stand exposure to the ravages of the elements. Plants for this purpose must be good fighters.

Feature Poi In Newest Shiny Bags

Dabbling with Madam Pele's poi is the latest sacrilege committed by marketing specialists and county agents of the University of Hawaii college of agriculture. They're putting poi up in shiny transparent bags instead of the cloth bags that poi has been sold in from the beginning of time.

"Even malihinis are buying poi in these new packages," says Ralph Elliott, who heads the college's agricultural economics division. "In these transparent bags, a housewife can tell at a glance whether the poi is clean and smooth. She knows the container is brand new. Furthermore, the package is easy to empty when she prepares poi for the table."

* * *

POI MILLERS on all the islands except Molokai are now using the new packages. They've already ordered about 100 000 bags.

"We expect in a few months the cloth bag will be a thing of the past in the retail trade," Mr. Elliott says.

* * *

AFTER KENICHI Murata, assistant economist, had persuaded one poi miller on Oahu to try out several new packaging materials, others saw the bags and were eager to try them. Although Mr. Murata has found several satisfactory materials, new materials are still coming on the market. The extension service wants to test them all before making any final report.

The new package has helped market a big taro crop, according to Mr. Elliott. He explains further that marketing economists realize that they can't work effectively with one isolated group in any industry.

* * *

"THE MODERN approach is to work straight through from farmer to consumer," he says. He thinks the next step may be to get taro growers and poi millers into an organization to tell the public different ways to use taro products.

"Too many malihinis don't know that poi is a good food for the whole family — from baby to grandfather," this economist says.

Mr. Elliott is sure Madame Pele will be pleased to have all residents of Hawaii eating good wholesome poi—not just her original subjects.

AND/OR

An article in *Science* advises replacing the awkward "and/or" with a new word "andor." Whether any dictionary has approved I dont know.

OTTO DEGENER

Two Views of Hawaii

N.Y. Times 1/11/48

IN A HAWAIIAN VALLEY. By Kathleen Dickenson Mellen. Illustrated by Madge Tennent. 126 pp. New York: Hastings House. $3.50.

By FOSTER HAILEY

THE principal contacts that the casual visitor to Hawaii has with Hawaiians, are with the beach boys at the Outrigger Club, the Royal Hawaiian, the Halekulani or one of the other Waikiki hotels; or with the hula dancers at Queens Surf. He watches with interest the women who come down to the beach each day to collect seaweed of the reefs, or follows the brown-skinned boys spearfishing among the coral formations behind their home-made goggles. This phase of Hawaiian life is quaint and amusing, but it has about as much relation to the Hawaii of the Hawaiians as Broadway has to Main Street.

It is not of Honolulu and Waikiki Beach but of the real Hawaii of which Mrs. Mellen writes in her charming little book of fictional essays, the Hawaii the tourist seldom sees but which could be much more rewarding than anything else he is likely to do in the islands. Reading "In a Hawaiian Valley" would be a good start. From twenty years of close association with the Hawaiins Mrs. Mellen has distilled an essence that is as distinctly Hawaiian as the smell of an unfolding pikaki bud or a ginger blossom, as satisfying as a Hawaiian luau. Under her gentle pen, Old Mahoe, Mr. Kanakanui, Makaleha and the other inhabitants of Mali-Honua (the Valley of Refuge) come alive. The reader feels that he knows them and, more important, understands them.

HERE are a people on whom we Westerns have imposed our cultures and our gods, whom we have almost overwhelmed with our machines and our mores and our wars, whom we have patronized and disparaged. After reading Mrs. Mellen's little book the question will worry many readers as to how wise that conquest has been, whether it might not have been better had it been the other way around. For there is in the Hawaiian a zest for living, a scale of values, a gentleness of spirit that could be adopted with profit by many so-called superior races. This heresy Mrs. Mellen injects skillfully and painlessly in her slight stories. But one lays down the book with a very distinct and chastening taste of it on the lips.

"In a Hawaiian Valley" is a difficult book to describe. Its flavor could only be given by long quotations. Like the hula dancers, Mrs. Mellen tells her story through a series of small gestures. It could not have been done otherwise. The typical Hawaiian (if there be such) is as difficult to pin down as a drop of quicksilver.

"Old Mahoe."

"Malia." Drawings by Madge Tennent for "In a Hawaiian Valley."

HAWAIIAN AMERICANS. By Edwin G. Burrows. 228 pp. New Haven, Conn.: Yale University Press. $3.

HOW have the mixed peoples of Hawaii, with their widely divergent cultural heritages, been molded into a comparatively homogeneous American community? The answer given here by Dr. Burrows, a former Honolulu newspaper man turned anthropologist, is, briefly, this: the white man, largely by his technological superiority, early established dominance over the Polynesian natives of Hawaii. The Chinese, Japanese and other immigrants who came later found white prestige firmly entrenched in the business and social fabric of the islands. Opposition to white dominance, except for occasional abortive Polynesian resistance, was confined chiefly to such mild forms of protest as verbal grumbling and revived interest in ancestral religions, dances and sports. As time passed, the Hawaiian-born children of Oriental immigrants whole-heartedly accepted the idea of white prestige, over the objections of their parents.

The stress to which the nonwhites were subjected by white dominance in Hawaii "was mild compared with places where relationships among different peoples have been less friendly," the author points out. He suggests that Hawaii's experience provides a lesson for "rulers of alien peoples" throughout the world: keep the stress of contact as mild as possible by encouraging cooperation and avoiding abrupt changes and "invidious devices like segregation." To prove his point he cites the contrast between the riots and strikes of Pacific Coast Japanese, who had been interned following the outbreak of war with Japan, and the distinguished war record of Hawaiian Japanese, who were afforded opportunities to serve their adopted country.

Dr. Burrows' study is a brief, readable and scholarly object lesson in the complex field of acculturation. His personal observations are amply supplemented by testimony from sociologists, historians, and other anthropologists, as well as by members of the different cultural groups concerned.

N. B. BECK.

Otto Degener's Fiji

Botanists as well as those who didn't know a casuarina from a cassowary will enjoy and find profitable Otto Degener's latest book, "Naturalist's South Pacific Expedition: Fiji," published by himself, printed by the Paradise of the Pacific. Degener, whose volumes on Hawaiian flora have attracted wide attention, has written an account of his eight months sojourn as a member of the "Second Cheng Ho" expedition, headed by Mrs. Anne Archbold, in 1940.

The volume is an account of botanizing, of social studies, of cannibalism, firewalking, religion, native treatments for leprosy, Fiji drums, tattooing and pet doodlebugs. Degener deals with filariasis, wasteful lumbering, the making of mats, miscegenation and the burial alive of Fijian chiefs of olden days. He discourses on the copra industry, witchcraft, native chewing gum and jungle intoxicants. He mixes a technical discussion of a newly discovered fern with a biting commentary on the status of native population under English rule.

A recurrent theme is his recurrent description of the Fijian as "only a partially emancipated peon hedged in by strict laws not applicable to white residents" and he contrasts the status of Fiji islanders unfavorably with the emancipated Hawaiian race. Some of the "more disturbing passages," he said, in a foreword, were deleted at the suggestion of friends.

A high light of the volume is an account of a stinking and poisonous plant called the "ndainga" with which Fijians once used to beat their wives, when the wives had been unfaithful. The book is a valuable contribution to the literature of the Pacific, although Pacific Islands Monthly will not accord it a favorable review because of the strong anti-colonial slant.

this and many of such while trainers along our shores have gone thirsty, although all the time having been within reach of drinking water—that is, if they knew where to look. In dry weather these coastal springs often become very brackish. According to Restarick, the sites of villages on the Kona coast were determined by these springs, combined with landing places for canoes.

Cook and the members of his expedition were astonished at the large population of the country near the bay. The ships were sometimes surrounded by hundreds of canoes. Although the land on the coast was dry and barren, the mauka lands were capable of intensive cultivation and could support a large population.

Most of the inhabitants lived near the sea, where they could fish, going mauka to raise their crops, and further inland to get supplies of wood for their house posts, canoes and utensils. It was through seeing such large numbers of people in these coastal villages that caused Cook to overestimate the population of the islands. George Gilbert, master's mate on the Discovery, describing the land as seen from the ship, wrote in his journal:

"There is a town on each side of the bay, at least eight times as big as we had seen before in the South Sea. The country here is one entire plantation as far as the eye could see from the ship, which is divided into squares by stones thrown together or hedges of sugar cane."

LAND DIVIDED BY LOW STONE WALLS

Restarick reported that when he first went to Kealakekua in 1902, the low walls which separated the patches of ground could still be plainly seen, and that: "These walls were called iwi, that is bones, which a man born there told me were like the ribs of an animal. The enclosed patches were, and are, called iwi aina, i. e., bone lands. Guava and coffee hide many of these walls now."

The bay region was long the residence of powerful chiefs, and in Cook's time the chief of the district lived at Kaawaloa. At this village there was a tabu spring from which the chief alone could get water. There was also a water hole where the common people obtained their supply.

At the heiau near the landing at Napoopoo, many important things occurred. It was there that Cook, by permission of the king, Kalaniopuu, set up his instruments for taking astronomical observations. As the heiau was tabu, the observers were free from molestation and their apparatus was safe.

There also was held the strange ceremony which was not understood by any of the witnesses who recorded their impressions. Capt. James King, author of the last volume relating to Cook's third voyage, said that as Cook walked in procession the name Orono (Lono) was frequently repeated, but what it meant they did not know; however, they imagined it to be the name of a chief. If Cook had known that the Hawaiians were treating him as the returned god Lono, it is doubtless that he would have soon put an end to the weird ritual.

COOK SEAMAN BURIED AT HEIAU IN KONA

In this same heiau, known as Hikiau, occurred the burial of a seaman named William Whatman. He was interred there at the request of Kalaniopuu, and Cook, himself read the burial service. In attendance was the high priest, Kea, who cast two pigs and some salt into the grave before it was closed. During the next three nights prayers were chanted by Hawaiian priests at the graveside.

In after years it was in this heiau that Opukahaia (Obookiah) received training as a priest. Opukahaia, while still a youth, was later taken to New England by a passing ship, and the interest that he aroused there resulted in the sending of missionaries to Hawaii. Outside the heiau may now be seen a monument to the memory of Opukahaia, who died in the United States.

It was at the village of Kaawaloa that the unfortunate affray occurred which resulted in the death of Capt. Cook. The spot where he fell at the water's edge is now marked by a memorial tablet. This was erected by the Cook commission and dedicated in 1928 during the elaborate sesquicentennial celebration of the discovery of the Hawaiian islands.

On the hill about half a mile mauka from where Cook died is a small heiau, and it was there that the body of the great navigator was dissected, prior to deification of his bones. After some delay, the skull and certain parts of Cook's body were given into the custody of Capt. Clerke.

Identification was established by a scar on one hand. The remains of the discoverer were placed in a coffin and consigned to the waters of Kealakekua bay at services held February 21, 1778. The day after the funeral, the two ships sailed for the north.

A Cook monument at Kaawaloa was erected in 1878 on land deeded to the British government by Princess Likelike. The monument is in the care of the British admiralty which pays a stipend to the resident custodian. British cruisers on station in the Pacific make periodic visits to Kealakekua bay to insure that proper care is taken of the monument and surrounding grounds.

(To Be Concluded August 4)

Sixty Years Ago—1878

The Legislature refused to pass an Act admitting Dr. Hillebrand's book (on the flora etc. of the Islands) duty free. Sentimental considerations weigh very lightly with the House, but to show that there is nothing stingy or mean about the members, it is worthy of note that, within an hour after the ejection of that bill, they had raised on subscription the amount of $315 toward a fountain commemorative of Dr. Hillebrand. The Minister of the Interior originated and drew up the subscription paper. It is proposed to have this fountain placed in some public spot in the city. No better place could be suggested, probably, than the triangle formed by King, Merchant and Richards streets. This barren, desolate, dreary waste ought to have a neat fence about it, a few trees, flowers and grass planted there; then with a beautiful fountain and seats scattered here and there it would be a place of grateful rest for the body and pleasure to the eye. It is time more attention was paid to beautifying the city.

Hon. Adv. 11-1-45

In Gardens of Hawaii

By E. H. BRYAN, JR.

The long-awaited book by Marie C. Neal, entitled "In Gardens of Hawaii," is about to be issued by Bernice P. Bishop Museum. This volume will be of tremendous value to all interested in plants, for it is a veritable encyclopaedia concerning the many exotic plants of Hawaii.

Bryan

In 1928 Miss Neal produced "In Honolulu Gardens," a description of many cultivated and lowland plants, with legends about them assembled by Berta Metzger. This book was instantly popular and greatly in demand, and has been out of print for several years.

The new book discusses over 2,000 kinds of plants—five times as many as the former volume; it is Territory-wide, and has many new features.

It identifies practically all of the plants of the lowlands except certain grasses and orchids, most of which have been brought to Hawaii from other lands, and in addition it makes mention of many of the forest plants which might come to the attention of other than the professional botanist.

Keys are given by which the student of plants may distinguish the different genera and species. The common and Hawaiian, as well as the scientific names, are given. The descriptions and notes are concise and interesting.

The book is illustrated by excellent reproductions of nearly 600 photographs and line drawings, and it is attractively printed and substantially bound. It contains 805 pages.

A minimum of technical language has been used, and yet the text is thoroughly scientific. Miss Neal has tried so hard to make it inclusive and up-to-date that additions have been made concerning newly identified plants right up to the time of publication.

Of special interest is a tabulation of the approximate flowering time of a number of plants growing in Honolulu. This indicates by months when there are likely to be few or many blossoms.

In addition to a full index, the contents are further made available by a color key to flowers and fruits. If, for instance, you wish to identify a vine with purple flowers growing in clusters, you look under the appropriate heading and find the pages listed on which such plants are described.

"In Honolulu Gardens" was very useful; "In Gardens of Hawaii" should be vastly more useful—a must for anyone interested in the plants of these islands.

more two sorts are usually lower than for the red kidney.

The bayo beans which are usually quoted at the highest price for dry shell beans, and are of highest quality, do not usually, at least in the writer's experience, produce as large yields as the three varieties already mentioned. Its two main drawbacks are its later maturity and susceptibility to red spider, a pest somewhat prevalent in Hawaii as it is also in California. The sensitiveness of its blossoms to hot weather is also said to be a disadvantage in some districts of the small white navy bean and large white so called lady washington bean. We would choose the latter as for general planting in Hawaii because of its apparent greater adaptability. Its larger seeds are also greatly in its favor in the writer's opinion. However, canners consider this variety greatly inferior to the small white navy bean.

The white tapary bean, while inferior to the above, though somewhat similar in appearance could possibly be grown more economically and quite satisfactorily in an emergency especially if planted on poor land in a dry season as it is one of the most drouth-resistant beans known. Certain forms are said to grow wild in Arizona and Mexico and was formerly the mainstay of the Tarahumara Indians of Chihuahua.

We haven't previously mentioned the cramberry bean, also known as speckled or red cramberry, London Horticultural Pole etc. This variety produces very well in good, rich, moderately moist soil and may be planted with corn to advantage to support its vines. Like all pole beans it requires longer to mature than the bush types previously described.

The black-eye bean, a type of cow pea which has been favorably mentioned in a previous paper, will be discussed more fully in a succeeding paper. Likewise the limas and some other varieties of beans which may well be given consideration in Hawaii's future diversified agriculture.

Collegiate Alumni Bulletin, 11/1/49

'18—Otto Degener of Oahu, Honolulu has presented the school with an autographed copy of his newest book "Naturalist's South Pacific Expedition; Fiji." It is an intensely interesting account, profusely illustrated, of the author's eight months' trip as botanist on the Cheng-Ho eight years ago. "With aloha from Otto Degener," reads the fly leaf. The book, by the way, was printed in Honolulu, and came wrapped in a paper of July, 1945, ultimatum to the Japs.

STATEHOOD FOR HAWAII

—By MABLE LANE MOE

(Editor's Note: Mabel Lane Moe (Mrs. Kilmer O. Moe) gave this interesting and suggestive talk on "Statehood" under the auspices of the University of Hawaii extension department. The subject is of special interest at this time and The Star-Bulletin is therefore printing it is full. This is the first installment.)

I believe that there are more people thinking seriously about statehood for Hawaii at the present time than there have ever been before.

The recent discrimination against the islands in the sugar quota was to some extent due to the fact that these islands are looked upon by many in Washington as a possession having the same status as the Philippine islands and other island possessions.

It is rather difficult for people way off in Washington to learn that one dot on the map is an incorporated territory, another is an unincorporated territory, and still another is a possession. So they solved the problem by classing them all under the same heading. This has been the usual method for the last 34 years. One of the most important duties of the Hawaiian delegate has always been the heading off of legislation that was discriminatory against the territory.

These and other recent developments have brought home to the people here the fact that they do not enjoy the rights and privileges which are enjoyed by the citizens of the various states. Americans have never been satisfied under a system of territorial form of government. The inhabitants of former territories have early demanded admittance into the union. Most of them were granted statehood when the population reached about 60,000.

Federal Control

Hawaii had a sufficient population in 1900 to become a state. But at that time about 90 per cent of the populations were Hawaiians who had had little background in self government. Statehood at that time would have meant practically a return to the monarchy.

The problem then was to give the islands as much autonomy as possible and at the same time to allow federal control in case things should go wrong. At the present time the situation is quite different. Hawaiians and part-Hawaiians now constitute about 30 per cent of the vote; the haoles about 35 per cent; and the other 35 per cent are American citizens, descendants of other racial groups. These last were all born and educated in an American territory. After 35 years of Americanization, Hawaii is in most respects an ordinary American community so far as the electorate is concerned.

Judd Veto Recalled

Before a territory can become a state a certain definite procedure must be followed. First the territorial legislature must petition congress to pass an enabling act. In 1931 the local legislators framed such a petition. It passed both houses of the legislature as a joint resolution. There were only two dissenting votes. The resolution was vetoed by Governor Lawrence M. Judd. His reasons were that the people of the islands were not, at that time ready for statehood.

The next step is to get congress to pass the enabling act. This act directs the territorial legislature to elect a constitutional convention for the purpose of framing a state constitution, and it lays down certain restrictions. Such a bill was drafted by Delegate Victor K. Houston in 1931. Congress at that time looked favorably upon statehood and had the petition not been vetoed at that time by the governor, the enabling act would probably have been passed.

Submitted to Vote

After the enabling act is passed a local constitutional convention is called to frame a constitution which is later submitted to popular vote. If it is ratified it is sent to congress. The statehood is then introduced. It is similar to an ordinary bill except that it is not repealable. After it is signed by the president, the secretary of state issues a proclamation announcing the admission of the new state into the union.

The question is often asked, "What is the difference whether we are a state or a territory?" There is a good deal of difference. In the first place a state has autonomy and a territory has not. The organic act can be repealed at any time, thus disenfranchising all citizens of the territory. Political rights are a privilege granted by congress and so can be withdrawn at any time. In a state political rights of the citizens are guaranteed because the state constitution cannot be repealed by congress.

Two Senators

Another change would be in the executive and judicial branches of the government. The governor, secretary and circuit court judges are now appointed by the president and confirmed by the senate of the United States. In a state the governor and lieutenant governor are elected by popular vote. The judges and administrative officials may be either elected or appointed. This matter is defined in the state constitution.

The delegate to congress from a territory sits in the house of representatives but has no vote. He may exert some influence through personal popularity as did Prince Kuhio, but Hawaii has no actual representative in congress. As a state Hawaii would be represented by two senators and one representative. These congressmen would not only have a vote but would help to determine the national and foreign policies of the nation. Furthermore, the citizens of Hawaii would enjoy the right of voting for president.

(In the second installment, Mabel Lane Moe (Mrs. Kilmer O. Moe), will tell of the advantages to be gained in the event of Hawaii becoming a state.)

The Rainbow Shower Shows Many Variations

How Star-Bull 3/9/

By N. F. AMBROSE

This article on the rainbow shower is one of a series of articles on Trees You Should Know. Mr. Ambrose will answer questions if addressed to him at his home, Waiakoa, Maui.

In telling of our shower trees, we should not neglect the one that is often seen in Hawaii with no two just alike as of the same shade of color. This tree with its great variety of shades is much admired and sought after on all the islands.

Mr. Ambrose

It is a local product of nature or man. We know how to produce it but we never know just what we shall produce or what we have produced until the flowers appear.

The beautiful tree is produced as a cross between the golden shower and the pink and white shower. When pollen is carried from one to the other of these trees and the resulting seed planted, we get many little trees that vary greatly even when small.

We can distinguish the crosses from those coming true to the parents. We find some of the trees with leaves of the golden shower and these will produce flowers true to the golden shower, while others have leaves of the pink and white and will come true to that parent.

Like Neither Parent

What interests us most, however, are the little trees whose leaves are like neither parents, for they are the hybrids or crosses. The leaves vary all the way from one parent to the other, and in the blossoms we find as great variation, but of this we can not judge 'till after the trees grow for a few years and blossoms appear. Then we find flowers that are intermediate both in size and color but which parent they may resemble most we can not even guess. Some have a preponderance of red, some of yellow and some pink or nearly white. In fact, one may expect any possible variation or combination of the two varieties.

The first year the writer saw the rainbow shower in Hawaii he lived near a mile-long avenue of them below Lahainaluna and admired them so greatly that without knowing their origin or that they were true hybrids, spent several hours searching vainly for seed. Not finding any seed, search was made for their origin and then we knew why no seed was found. While these trees produce no seed, we can propagate choice varieties when they appear only by grafting or budding. The golden shower seems to be a more desirable stock for grafting than the pink and white.

The beauty of the best of these trees can scarcely be surpassed by any of our flowering trees. One of the most beautiful specimens in Honolulu may be sen at 1060 Lunalilo St. The prettiest one on Maui may be seen at the sharp curve in the road below the home of Judge D. H. Case. The one in Honolulu has pinkish orange flowers, while the one on Maui has more of the red, especially when the buds appear and with the opening flowers.

We can only call your attention to this beautiful series of showers and you must see them to really appreciate their beauty. The blossoming season is long, reaching from early March till September.

Search out the most gorgeous one and have them propagated by grafting. You will surely be repaid in beauty equalled by few trees and surpassed by none. More of the choicest of these trees should be propagated under the supervision of the park board or the women's clubs. Why should not one of our Boy Scout troups make this a project. We are sure it should win a merit badge.

Do you know these fruit? They all have qualities which should make them better known in the islands in the opinion of Dr. W. T. Pope of the Hawaii agricultural experiment station. Left, from top to bottom mountain apples, Brazilian cherries and Surinam cherries. Right, above, Dancy mandarin; below, macadamia nuts.

thing like 30 days being required in the early parts of 1848.

There were really two divisions. The first was between the king and the chiefs, and the second was between the king and the government, the second following immediately after the first.

In effect, however, the division might be called one, in which all the lands in the kingdom were classified under the following headings:

Crown or the king's lands; government lands to be administered for the benefit of the government; chief's lands which comprised the lands allotted to the chiefs, and the lands occupied and cultivated by the common people.

This great division is known as the Mahele of 1848.

South Pacific Expedition Told

In 1940-41 the junk-yacht Cheng Ho explored the Fiji and neighboring islands. The guest-botanist on expedition was Otto Degener, who was commissioned by the New York Botanical Garden and Harvard university to explore these islands for new plants. Mr. Degener, who is well known locally as author of five books about Hawaiian plants, remained in Fiji eight months to complete his researches. His specimens are widely distributed, many of them being deposited in the Bishop Museum.

"Naturalist's South Pacific Expedition," a non-technical account of Mr. Degener's explorations, is the result of his experiences among the little-known natives of Fiji. He describes their customs, many of which are like those of the Hawaiians of 100 years ago. He likewise describes blackbirding and the nefarious traffic in human beings for labor, cannibalism, races of mankind in the Pacific, and the successes and failures of missionary work in Hawaii and elsewhere.

* * *

This book illustrated with photographs, is being printed by Paradise of the Pacific, Inc. It will be bound in a stiff board cover ornamented with an authentic Fijian tapa design. Mr. Degener, who recently purchased the Cheng Ho, has gained international fame by his researches, being the only scientist living with a plant family named in his honor. He was formerly botanist at the University of Hawaii, and naturalist at Hawaii National Park.

ADVENTURES IN THE HISTORY OF HAWAII

H. S. B. No. 19—Emma, Hawaii's Beloved Queen 8/10/35

By D. BILLAM-WALKER

Beloved of the Hawaiian people, a devout Christian, reserved and sweet of character, kindly of heart and noble of soul, Queen Emma has left to Hawaii a legacy of good works and noble institutions, besides an influence for good which has grown with the years. The story of Queen Emma's life is both an object lesson and a challenge to the women of Hawaii—not only to those of the present, but also to those of the future.

But as is so often the way—that the good suffer the most—Emma lived a tragic life. Her life was tinged in youth with double sorrow—she lost her husband and child at almost one stroke—yet Emma bravely pursued her way—albeit chiefly a lonely way. Her sorrows—and there were others besides loss of child and husband—instead of embittering her, seem only to have served the more to bring out her sweetness of disposition and natural piety and goodness.

Emma was born in Honolulu, January 2, 1836, the daughter of Fanny Kekela Young and a high chief bearing the name of Naea. Emma was a granddaughter of Kaahumanu, younger brother of Kamehameha 1. Her mother, Fanny, was a daughter of the Englishman, John Young, who served as companion and adviser to Kamehameha the Great.

While still an infant, Emma was adopted by Dr. T. C. B. Rooke, an English physician who had married Kamaikui, a sister of Emma's mother. Emma Rooke, for she took the name of her foster father, received the best of home training and Dr. Rooke was devoted to her. She was educated first in the Young Chiefs' school under Mr. and Mrs. A. S. Cooke and afterwards by an English governess in the family of Dr. Rooke.

Was Pro-British

It is important to note that the earliest western associations [illegible] principally English. This is a fact which colored the whole of her adult life and is a fact of small importance in Hawaii's history. Her only western blood was that acquired through John Young, her English grandfather, and Emma knew it.

Her foster father was an Englishman; her governess was an Englishwoman. Emma was brought up in English ways. It might be said that Emma was as much an Englishwoman as she was an Hawaiian. Hence very early in life her sympathies were with the British rather than the American residents of Hawaii.

And as time went on, Emma became more and more pro-British. Emma's attitude undoubtedly played no small part in intensifying the pro-British sentiment of the Hawaiians (100 per cent American [illegible] which continues on

doubts. Sir Valentine Chirol, who says he has all his life been an optimist and must remain so till the end, writes: "There hangs over the future a heavy cloud of materialism which shows itself in a selfish craze for amusement and enjoyment to kill the passing hour. . . . But if one takes a broad survey of history, the human spirit has through the ages an upward tending, though weak, and, with all its weakness, that tendency will, I firmly believe, persist."

Older people are sometimes called mid-Victorian as a term of reproach, but that period, when amusements did not occupy so much attention as now, certainly produced a galaxy of great men and women in the United States and England. They were statesmen, scientists, historians, philosophers, poets and novelists, men and women of character and renown whose names will live. If this age with its rush and tear of business and pleasure will produce as great it will do well.

There is a danger in destructive theories which would cut us loose from the moorings which have held our civilization and without which we should drift into the unknown and uncharted sea of individual and national life. With all our passion for amusements, we must hold fast to the principles which have made us great. Religion has been the inspiration for all real progress, and upon a sane religion we must build for the future. Amusements are necessary for a normal life, but to let them engross it will not be productive of strong character.

TRAGIC PROBLEM OF THE HALF-CASTE

New Guinea Administration Takes One Blundering Ste

PIM 10-1-49

From Our Own Correspondent

PT. MORESBY, Oct. 3.

HALF-CASTES were advanced a step closer to European status when it was quietly announced recently that they would be allowed to travel on buses provided for Europeans, provided they are reasonably dressed.

Moresby residents complained indignantly when they found that half-castes were occupying seats while white women had to stand.

Some women said they feared that natives would have less respect for them once they saw them mingling with half-castes.

People are wondering how long it will be before half-castes are crowding the picture theatre, the dance halls and the hotels. Many residents realise that half-castes will have to be accepted into the European community eventually, just as they have been in Australia; but residents say that this should be done only when the natives have been raised to a much higher standard. At present any effort to merge half-castes into the European community will result only in a serious drop in European prestige.

If Colonel Murray thinks this is unimportant, he should try to imagine his own reaction if one of his houseboys greeted him with cordial familiarity.

EDITORIAL NOTE.—There is far more than that to the social problem of the half-caste in the Pacific Islands. There are thousands of people of mixed blood in the score or more of Territories in the Pacific Ocean; and the great majority of them are worthy folk, entitled on their personal qualities to take equal status of citizenship with Europeans.

Of course, there are two classes of half-castes. There are the products of formal unions between Europeans and natives—found mostly in Polynesia and Micronesia—and these people brought up usually in European fashion, take their places in the community beside Europeans, as a matter of custom and of right. There are very many people of mixed blood who now occupy influential positions in all the Territories from the New Hebrides eastward to Tahiti.

The other class—the often unhappy result of casual and irregular unions—is met with mostly in Melanesia. More often than not, the white father is either unknown, or is a low-class man who takes no responsibility for his offspring. These children often are left entirely to the care of the native mother and, except for missionary help are brought up as natives, and have only native status and native outlook. They present an outstanding example of the influence of environment over heredity. There are a number in Papua and New Guinea; and the European residents quite properly object to close associ with them, except in particular c As our correspondent says, the grantin of European status to native-trained half-castes would only weaken the influence of the Europeans with the natives. The tendency must be resisted —quite enough harm has been done already by the intrusion of Socialist principles and impractical Brown Brother concepts into tropical administration.

There is nothing at all disgraceful in the fact that one has mixed blood. Some of the most desirable people in and around the Pacific are the products of what has been called miscegenation. There are few children more attractive, as a type, than the product of European-Polynesian unions—unless they are the products of Chinese-Polynesian unions, who usually are notable for intelligence, industry and good looks. Although the children of European-Melanesian unions are usually less desirable, anyone who knows the Western Pacific will have known half-castes who, in all the qualities of good citizenship, are equal to the European, and are better than many.

The solution of the problem lies in the training of the individual half-caste baby. In Polynesia and Micronesia, where marriage between European and native is common, the child is given a European background: and, even if it grows up in a native community, its way of life is not so far removed from that of the poorer Europeans. The consequence is that it usually is socially acceptable and economically valuable.

When the half-caste child is left to grow up, without direction, in a primitive Melanesian native community, it seldom is different, in mentality and social usefulness, from the natives. If it should be different in mentality, and made sensitive to the stigma of its birth and status, it can become socially dangerous and undesirable.

If the New Guinea Administration has any true understanding of the tragic problem of the half-caste, it will start much further back than is indicated by its new, flat-footed rule that half-castes shall have omnibus equality with Europeans. It will sternly discourage all except legitimate unions between whites and natives; and, if there should be unwanted illegitimate babies, then it will see that they are taken early into proper care and training, and given a chance to develop European status.

BARKING UP THE WRONG TREE

Editor The Advertiser:

We read in Bob Krauss' column this morning that someone had received a salad bowl from Blair's Hawaiian Woods Shop for stating that the correct name of the "monkeypod" is **Pithecolobium** or **Samanea saman.**

Our Manoa lettuce is wilting and our Waianae tomatoes are turning pale thinking they are to lie in a bowl of Blair's **Pithecolobium.** According to the "International Code of Botanical Nomenclature," published in the Netherlands in 1956, we read on page 242 that **Pithecellobium** is the correct spelling. There is no mention whatsoever of **Pithecolobium.**

Well, anyway, the correct botanical name for the tree is **Samanea saman,** a name established for good scientific reasons by E. D. Merrill, and upheld by the outstanding horticulturist L. H. Bailey. The correct common name, according to "Standardized Plant Names," published in 1942, is given on page 576 as "Raintree Saman."

There is no more valid excuse for calling our tree today a monkeypod than there is to calling our largest city today Honoruru, just because "monkeypod" and "Honoruru" were once fashionable. Our tree, we now know, is not closely related to the trees of the genus or group **Pithecellobium,** to which the quamachil (locally called **opiuma**) belongs. **Pithecellobium** is derived from the Greek for "monkey" and "earring," according to G. C. Wittstein on page 697 in his botanical etymology published in German in 1852, namely over 100 years ago.

To us the names **samanea** and **saman** somehow sound as though they have something to do with the word "simian," pertaining to a monkey. That is wrong. Any resemblance between the names is purely coincidental. **Samanea Saman** seems to have been derived from the aboriginal Indian name of **saman** or **zaman** for the tree.

Aug. 4

DRS. DEGENER, Authors, "New Illustrated Flora of the Hawaiian Islands"
Waialua, Oahu.

Wm H. Hathaway - about 1950

Leo Whitney, Agronomist

Portrait of Fiji And of a Personality

NATURALIST'S SOUTH PACIFIC EXPEDITION, FIJI. Otto Degener. 303 pages, illustrations, maps, index. Published by the author, P.O. Box 187, Waialua, Oahu, T.H. 1949. $5. Also available from the New York Botanical Garden, Bronx Park, New York 58, N.Y.

Otto Degener has a niche in botanical history for giving his name to the Degeneriaceae, the genus *Degeneria*, and numerous little "degeneri's" as specific names. He now has another niche: as the author of this volume, which recounts his explorations while with the Anne Archbold expedition on the motorized junk *Cheng-Ho*.* Here is a book to take its place beside the classics of the 19th century traveling naturalists, thoroughly modern, yet in an established style and tradition that has a parallel in such compositions as Prokofiev's "Classical Symphony."

The author has a rare trait of choosing his native friends with discernment, and of gaining their affection with their confidence—a task difficult in a land where the race problem is no better (or worse) than in our own lynch-conscious southern towns. As a result, this delightful account of his wanderings about the islands, filled with the human side of his experiences yet presented with the impartiality of a scientist (even to a minutely detailed description of yangona drinking, with clocked notations, some at one-half minute intervals during the ceremony), all give us an exciting picture of the islands of today.

The book is written with a complete lack of that "diplomacy" that often colors the words of professional lecturers and travelers and others seeking to climb success's ladder, and the narrative is backed by supporting chapters on the history of Fiji and its customs. When today has gone, the volume will serve the ethnologists of the future for its basic data of this age.

"Portrait of Otto Degener" might well be the subtitle of this unusual book, which is all the more pleasing since the picture appears unplanned and unconsciously drawn. A hundred little anecdotes, some uncomplimentary to himself, and the absence of such stories as many authors use to prime their pompousness, all have their cumulative effect. As one closes the book, one knows not only Fiji, but also Otto Degener the man—so sage and kindly that one wishes more of his kind would tread the earth.

FRANK E. EGLER,
Aton Forest, Norfolk, Conn.

*Parts of the book appeared originally in the Journal of the New York Botanical Garden for September and October 1943.

Reprinted from the
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faded out of the Pioneer picture. On June 29, 1895, Paul Isenberg and Horner incorporated as The Pioneer Mill Co., Ltd., with a capital stock of $600,000, each holding 3,000 shares.

From then on, the company ceased to be a two-men venture but rapidly expanded. In 1897, just prior to annexation, the capital stock was increased to $750,000. In 1898 it was raised to $1,250,000. In 1899 it went up to $1,350,000. In the same year a stock dividend of $650,000 was paid, increasing the capital stock to $2,000,000. In 1900 the capital stock was increased to $2,250,000 and in 1901 to $2,750,000. In 1912 another stock dividend of $1,250,000 was paid, increasing the capital stock to $4,000,000. In 1916 another stock dividend of $1,000,000 brought the capital stock up to $5,000,000, held by 1,500 individual owners from every walk of life in the territory.

In 1931 Pioneer Mill purchased Olowalu Co. for $400,000, including 1,200 acres of additional cane land and 1,500 acres of wasteland. Last year it completed the development of an underground water system that supplies nine million gallons of water daily to this section of the plantation.

Today Pioneer Mill Co. ranks among the leaders of Hawaii sugar production. It owns 3,500 acres of cane land, together with 8,000 acres of forest and wasteland, and leases nearly 5,000 acres more. Its equipment is modern in every respect, old machinery having been replaced as newer types have been invented. It was one of the first plantations to adopt the use of electricity for power and as early as 1906 was almost independent of other fuel. The present 9-roller mill was erected in 1899. It has a daily capacity of 2,160 tons of cane.

Its cane fields have a sea frontage of 10 miles with an average depth of a mile and a half. The entire area is irrigated, 45% by wells and 55% by mountain water. An investment of $1,000,000 has been spent in gravity irrigation supplies, and $2,100,000 in underground water development. The Honokahau tunnel alone has a flow of 105 cubic feet per second and is capable of carrying 70,000,000 gallons of water a day.

The elevation of the plantation ranges from sea level to 1,500 feet, with the bulk of the crop grown on lands between 10 and 700 feet in altitude. Although rich producing land, much of the area under cultivation is so rocky that hand picks must be used rather than tractor drawn implements.

Pioneer's 1933-34 crop totaled 49,405 tons; its 1932 crop 53,247.

J. T. Moore is present manager.

(Next Week Pepeekeo)

Donations to U. S. National Museum

3 78

a modification of "Whig Rose" pattern with "Pine-Tree" border woven by a Mrs. Cramer in 1811 at Uniontown, Stark County, midway between Akron and Canton, Ohio (146381, loan).

CRAVEN, E. EDITH. (See under J. H. Craven.)

CRAVEN, J. H., Philadelphia, Pa.: (With E. Edith Craven) Medals and plaques commemorating the centennial celebration of American Independence, Philadelphia, 1876; also peach-stone carvings of Chinese origin and Chinese paintings (146040).

CREIGHTON, Dr. W. S., New York City: 22 ants (6 species, including 12 cotypes) and 4 additional species represented by specimens from the type series (146313, exchange).

CRIMLEY, Mrs. ELLEN, Mount Vernon, N. Y.: 1 French music box (146078).

CROPLEY, R. E. (See under Mrs. Edith K. Roosevelt and F. J. Owen.)

CROWLEY, C. A., Chicago, Ill.: Insignia of the 13th Engineers, A. E. F. (145411).

CURTIS, D. P., Sperryville, Va.: (Through T. L. Jackson) 3 millstone picks and an iron dog for holding the log on the carriage of an old up-and-down sawmill (148162).

DACHNOWSKI, Dr. A. P., Washington, D. C.: 266 plants mainly from Western United States (146272).

DAMMERS, Comdr. C. M., Riverside, Calif.: 175 reared moths, representing 14 species (148094).

DANFORTH, Dr. S. T., Mayaguez, Puerto Rico: 141 bones of mammals (144070); 3 mollusks from Saba, Montserrat, and Guadeloupe (146703). (See also under University of Puerto Rico).

DANIEL, Rev. Brother, Medellin, Colombia: 20 plants from Colombia (144410); 111 miscellaneous insects, comprising almost as many species, from Colombia (145398); 67 plants from Colombia (146081, 147487, exchange).

DANIEL, Dr. F. A., Atlanta, Ga.: 6 samples of fluorescent hyalite on Stone Mountain granite from DeKalb County, Ga. (145503).

DANIEL BOONE BICENTENNIAL COMMISSION: (Through the Treasury Department, Bureau of the Mint) Daniel Boone commemorative half-dollar struck at the San Francisco mint in 1937 (145913).

DANISH NATIONAL MUSEUM, Copenhagen, Denmark: Stone, bronze, and iron-age material from Denmark (78 specimens) (145060, exchange).

DARBY, Dr. H. H., New York City: 1 shrimp (147139).

DARLING, CYRUS, Westboro, Mass.: 1 dobsonfly (144476).

DARLING-MCNAB, A. K., Philadelphia, Pa.: 1 silver spoon used by Mrs. Israel Washburn (Martha Benjamin, 1792–1861) of Livermore, Maine (146007).

DARLINGTON, H., Casper, Wyo.: 1 sample of bismuthite from Salida, Colo. (145794).

DA ROCHA, Prof. DIAS, Ceara, Brazil: 12 insects (Lepidoptera) (146579).

DAVIS, Prof. E. M., Winter Park, Fla.: 43 mollusks from Florida (147474).

DAVIS, Mrs. G. H., Kansas City, Mo.: 12 clay concretions (septaria) illustrating their formation, from Johnson County, Kans. (145187).

DAVIS, N. B., Kensington, Md.: Distinguished Service Cross and Citation awarded to the donor while a member of Company I, 28th Infantry, August 14, 1918 (147254).

DAYTON, W. A. (See under U. S. Department of Agriculture, Forest Service.)

DEERE & Co., Moline, Ill.: (Through the John Deere Plow Co., Baltimore, Md.) 2 copies of bronze medal commemorating the centennial anniversary of the construction of the first steel plow by John Deere in 1837 (146314).

DEGENER, OTTO, Waialua, Hawaii: 143 plants from the Hawaiian Islands (146105, 147526); 140 plants, 1 echinoderm, 17 fishes, 1 isopod, 1 shrimp, 2 crabs, 1 stomatopod (148549).

DEIGNAN, H. G., Washington, D. C.: 1,031 bird skins, 103 bird skeletons, 4 eggs, 1,285 fishes, 86 crustaceans, 5 leeches, approximately 50 earthworms, 100 mollusks, 81 mammals, 95 reptiles and amphibians, 260 insects and 9 mosses, collected by the donor in Siam (144279).

DE LAUBENFELS, Dr. M. W., Pasadena, Calif.: 48 lots of sponges, including 9 lots of types, from Panama, collected in 1933 (144980).

DEMAREE, Dr. DELZIE, Monticello, Ark.: 288 plants from Arkansas, Oklahoma, and Ohio (146435, 146458, 146465, 146577, exchange).

DENNIS, W. B., Castleton, Va.: 2 stone implements from a farm 3 miles west of Castleton Post Office, Rappahannock County, Va. (144381).

DENTON, Dr. J. F., Athens, Ga.: 46 mollusks from the vicinity of Athens (147965).

DE OLIVEIRA, Dr. EUZEBIO, Rio de Janeiro, Brazil: 1 slice of the Cratheus meteorite, Ceara, Brazil (42.5 grams) (147359).

Forests Depleted Century Ago

Sandalwood Has Failed To Make Comeback Here

Although it is more than 100 years since the ruthless cutting of sandalwood trees in Hawaii's forests, the trees have never staged a comeback, says William Crosby, forester of the territorial board of agriculture and forestry. "The story of sandalwood is one which should serve as a warning against ruthless destruction of trees," Crosby says. "Within a few years, great areas of sandalwood were cut in a greedy race for profits. The results was destruction of a great resource of Hawaii."

A few native sandalwoods remain scattered in the Koolaus. Some are to be seen along the army road in the Kawailoa section. Crosby estimates that these trees are more than 100 years old and were spared in the great search for sandalwood because of their remoteness.

* * *

EFFORTS HAVE been made to reproduce sandalwood in nurseries, but the seeds will not germinate. Natural reproduction Crosby believes, has been prevented by depredations of cattle and by staghorn fern and other plants which have crowded out young shoots.

However, Indian sandalwood, a close relative of the native sandalwood, is being planted in island forests at the rate of about 500 trees a year.

* * *

SEVERAL SPECIMEN trees are also growing in various parts of the lowlands. One of the largest, planted at Punahou school about 20 years ago, is eight or 10 inches in diameter.

A smaller one is growing in the grounds of the board of agriculture and forestry.

GIVE $4,000,000 FOR CHILDREN'S SOCIETY

Continued from Page 1, Column 6.

mind that we are dealing with children whose lives are spent in suffering and sorrow, whose horizon is the gutter. A little sunshine will warm the hearts of these waifs and strays.

"It is hoped that a clinic will be possible in conjunction with the magnificent hospital now in course of erection next door. The children, if that can be accomplished, will be given an opportunity for self-improvement, a chance to see the trees and shrubs, the green grass and the blue sky in the noble park across the way. There will be educational films, kindergarten, a lecture hall wading and swimming pools. Altogether the intention is to strike at the root of many social evils, the Seeds for which are sown in the stunted childlife of our metropolis.

"While the value of the proposed gift is well in excess of $3,000,000 it is confidently believed that this is only a beginning. With a mission such as the society has now undertaken how can it help but feel that more money will be offered even than these new and far-flung activities can absorb? Let every mother judge and lend a helping hand. Colonel Coulter insists that he had hitched his auto-wagon to a star. May it be the Star of Bethlehem."

Tunnel Under Avenue Planned.

In the tentative plans of the building, the architect, Julius Franke, has included a tunnel under Fifth Avenue that will enable the children to reach the park without crossing the thoroughfare. Permission of the city will be asked for this feature of the building, which would open through the embankment directly before the botanical gardens there. An entrance also is to be constructed at the rear so that buses carrying children to the building can drive into the basement and there unload.

Included also in the building are three separate chapels, so that the society may follow its policy of permitting child inmates to receive instruction in the religion of their parents. There will be a place of worship for Catholic children, a separate place for Protestants, and a third for Jewish children. Ample playground facilities also are to be included, although the plan includes also much use of Central Park.

The plot of ground that is to be the site for the new home was acquired by Mr. Heckscher in 1914, and is said to be worth more than $1,000,000. Only one building now stands on the property. In the block to the north is the new Fifth Avenue hospital, now under construction, and the Mount Sinai Hospital is only a few blocks away at 100th Street.

When it sold its old home in Fourth Avenue, the Children's Society bought three other lots adjoining the Children's Court at 137 East Twenty-second Street with the idea that it might build on that small plot. Under revised plans this plot will be used for a smaller building that will provide offices and hospital and quarters for children who are to appear in the court.

18,169 Complaints in Year.

The society last year, in the forty-fifth of its existence, acted in 18,169 complaints, involving more than 54,000 children. About 551 lost children were restored to their parents. About 8,861 children under 16 were cared for pending adjustment of court cases.

Adrian Iselin is the acting President of the society and the Vice Presidents are Vernon M. Davis, P. G. Gerry, John G. Agar, Dallas B. Pratt, Morgan J. O'Brien, George G. Haven, Mortimer L. Schiff, George F. Baker and Charles A. Peabody. The Board of Directors comprises about fifteen other prominent citizens.

The only comment made by Mr. and Mrs. Heckscher, aside from the formal announcement, was that "they regret they cannot give more."

Mr. Heckscher was born in Hamburg, Germany, in 1848, but came to this country at the age of 20 to work in the Pennsylvania coal fields. His rise there was rapid and he soon acquired control of collieries. At the age of 42 he lost his entire fortune in a legal fight over title to New Jersey zinc mines and started life over again with a loan of $50,000. He soon became a millionaire again. He is now a Director in many mining companies and banks and, as head of the Anahma Realty Corporation, is one of the largest holders of real estate in the city. His home now is at 820 Park Avenue. Mr. and Mrs. Heckscher have two children, Maurice Heckscher, a famous polo player, and Mrs. Oliver Brett of London.

Heckscher's niece Caroline deSaulles, a Jewish Belle & long full-time active Officer of Children's Society, is cousin, by marriage to Rudolf Degener, of Otto D.

HAWAII AND BROOKLYN

Hawaiian music and Hawaiian life have been features this winter on the educational and entertainment program of the Brooklyn Institute of Arts and Sciences.

The Star-Bulletin has received from the Institute folders describing an illustrated Hawaiian feature, "Hawaii Today," given on the evening of January 16. This was the fourth in a series of five international music, lecture and dance travelogues. The Hawaiian program was put on by Otto Degener, of the Bronx Botanical Garden, and was in two parts. It featured, in addition to the illustrated talk on Hawaii, Hawaiian songs and dances. Many of the familiar melodies, including old time chants and later compositions, were given to a large and interested audience.

From the announcement in the folder attached by the Brooklyn Institute of Arts and Sciences, this Hawaiian program seems to have been put on with sympathy, understanding, and good taste.

STORIES IN PLANTS

Hawaiian Botanist's Book

THE pineapple and the bread-fruit are found all over the islands of Hawaii. But they are not indigenous. Therefore, how did they get there? They seem to have been there before Europeans settled in, at the beginning of last century.

That is only one of scores of intriguing problems discussed in "Plants of Hawaii National Park", by Otto Degener, of Honolulu; who is famous throughout the South Seas as a botanist. He has spent a good deal of time in Fiji and Samoa.

In spite of its unimaginative name and unattractive cover, this book is written by a man who really can make nature study as fascinating and interesting as is should be; and the compilation, while no doubt of value to the scientist, is readable from cover to cover by the non-scientist.

The section on coconut palms, for example, does full justice to the world's most interesting tree. The author describes not only the innumerable uses of the coconut palm, but also its origin. He rejects the theory that it came from Africa and Madagascar, via the Orient—following, it would seem, the track of the supposed Polynesian migrations.

There is also the fascinating story of the taro (or kalo, or dalo) that root which is a staple foodstuff throughout Oceania, and which appears to have originated in the East Indies, and been distributed all over the Pacific Islands by the wandering Polynesians. Incidentally, Mr. Degener, in his study of Hawaiian plants, finds plenty of evidence that the Polynesians reached Hawaii via Tahiti.

Do you know why the taro is so free from injury by insects and herbivorous animals? If not, put your tongue against the cut stem of an old-type taro that has not yet been boiled. The new-style taro, introduced from Japan in recent years, has not got that natural protection, and can be eaten raw.

Mr. Degener, in this copiously illustrated book of 300 pages, deals also with birds, insects, native customs—with everything, in fact, that makes the Islands interesting to the visitor from the temperate zones. But, written so carefully and authoritatively, it is of interest also to the salted dweller in the Islands: the old-timer, no matter how long he has been in Oceania, can always learn something new about plants, insects, birds and native customs.

The index of plant and bird names should be most valuable, because so much of what is found in Hawaii is found also in other Pacific Islands.

The book was printed and published in United States, and copies are not available in Sterling areas. Copies may be obtained, for 2½ dollars, from the author, Mr. Otto Degener, Walalua, Oahu, Hawaii.

LITERATURE AN

Otto Degener's Book on Cheng Ho Voyage is Picturesque, Scientific

"NATURALIST'S SOUTH PACIFIC EXPEDITION: FIJI." By Otto Degener, B.S., M.S. Published by Paradise of the Pacific, Ltd., Honolulu. 284 pages with appendix and index.

This book is an admirable combination of a South Seas travelogue and a scientific treatise.

For this the author is well suited. He was for two years a botanist with the University of Hawaii (1925-1927) served as naturalist in the Hawaii National Park in 1929, was a collaborator in Hawaiian botany for the New York botannical garden in 1935 and had joined, before World War II, the unique cruise to many parts of the fabled South Seas.

Mr. Degener was a member of the second "Cheng Ho" expedition directed and financed by Mrs. Anne Archbold.

* * *

Mrs. Archbold, combining a love of the sea with an appreciation of the value of scientific expeditions, not only financed but largely helped to organize and direct the leisurely cruise of the Chinese sailing Junk Cheng Ho through archipelagos and to islands long associated with South Sea "romance."

OTTO DEGENER: Naturalist, botanist and writer.

INVITED BY TELEGRAM

The beginning of this interesting trip for Mr. Degener was the arrival of a telegram at his beach home on northwest Oahu.

The telegram was signed "Anne Archbold" and said that Mr. Degener had been recommended as a collector of Melanesian specimens on the proposed voyage of the Cheng Ho.

* * *

Six weeks later, in November, 1940, Mr. Degener's Filipino assistant, Emilio Ordonez, and himself and all botannical equipment were aboard the Cheng Ho in Suva harbor.

ABOUT THE CHENG HO

The Cheng Ho, a junk-yacht, was built in Hongkong by Chinese workmen under the direction of an American naval architect, was partly copied, with all modern conveniences added, from a famous junk used during the 15th century.

She is about 100 feet long, with a 24 foot beam.

The owner of the Cheng Ho and sponsor of the collecting expedition is the daughter of the late John D. Archbold, one of America's business magnates. She is the aunt of Richard Archbold, who recently explored the wilds of New Guinea by plane.

But Mrs. Archbold herself was not on this voyage. She had completed a previous Cheng Ho expedition and returned to her home in Washington, D. C.

Later Mrs. Archbold came to Suva from Washington and Mr. Degener's book is an interesting and vivid account of their explorations after her arrival. Still later Mr. Degener and his Filipino associate, Ordonez, left the vessel in Savu Savu bay, island of Vanua Levu.

MET IN HAWAII

Mrs. Archbold and Degener met again in Hawaii in July, 1941, and he reported that he had collected about 2,100 numbers of Fijian plants.

During World War II, Mr. Degener purchased the Cheng Ho from Mrs. Archbold and formed the "Cheng Ho Trading and Exploring Co., Ltd." He has in mind one exploratory trip with a scientific companion for each year in the Cheng Ho.

The book has therefore a strong historical flavor in addition to its value for scientific description.

The book is on sale at Honolulu book stores and shops and has already found a brisk demand.

Calliandra confusa, photographed at Foster Garden.—Star-Bulletin Photo.

This is the eleventh in a series of articles on plant material useful in Hawaii, with authoritative information furnished through the courtesy of Paul Weissich, director of Foster Garden. Persons seeking to purchase plants mentioned are asked to call their local nurserymen, not Foster Garden.

SEEDS SENT from South America to Foster Garden by Dr. Joseph Rock during a recent trip served to introduce a flourishing new shrub, Calliandra confusa, to the Islands.

An ever-bloomer which sports numerous pink-red "powder-puff" flowers similar to the Lehua haole shrub, it quickly developed from seed into a shrub 6 feet tall.

Calliandra confusa thrives in full sun or part shade, likes moderate moisture and will tolerate considerable wind. Experimental plantings at Waikiki and Dowsett Highlands have grown equally well.

This shrub, for which there is as yet no common name, prunes readily into a number of shapes, thus lending itself to use for tubbing or even espaliering against a low wall.

It combines well with fine-textured ground covers such as Mondo grass and is compatible with the other Calliandras. Good uses of the shrub would be for plantings among large, dark lava boulders or as a low, ever-blooming hedge.

Calliandra confusa forms seed readily in Honolulu.

The seeds should be planted in a light garden loam mixed with a little chopped hapu fiber or peat moss. Germination and growth are rapid. (It is a member of the bean family.)

A number of Calliandra confusa plants were sold to members at the Friends of Foster Garden plant sale. Foster Garden also has several other promising new Calliandras which will be discussed in later articles.

Otto Degener's Fiji

Botanists as well as those who didn't know a cassowary from a cassowary will enjoy and find profitable Otto Degener's latest book, "Naturalist's South Pacific Expedition: Fiji," published by himself, printed by the Paradise of the Pacific. Degener, whose volumes on Hawaiian flora have attracted wide attention, has written an account of his eight months sojourn, as a member of the "Second Cheng Ho" expedition, headed by Mrs. Anne Archbold, in 1940.

The volume is an account of botanizing, of social studies, of cannibalism, firewalking, religion, native treatments for leprosy, Fiji drums, tattooing and pet doodlebugs. Degener deals with filariasis, wasteful lumbering, the making of mats, miscegenation and the burial alive of Fijian chiefs of olden days. He discourses on the copra industry, witchcraft, native chewing gum and jungle intoxicants. He mixes a technical discussion of a newly discovered fern with a biting commentary on the status of native population under English rule.

A recurrent theme is his recurrent description of the Fijian as "only a partially emancipated peon hedged in by strict laws not applicable to white residents" and he contrasts the status of Fiji islanders unfavorably with the emancipated Hawaiian race. Some of the "more disturbing passages," he said, in a foreword, were deleted at the suggestion of friends.

A high light of the volume is an account of a stinking and poisonous plant called the "ndainga" with which Fijians once used to beat their wives, when the wives had been unfaithful. The book is a valuable contribution to the literature of the Pacific, although Pacific Islands Monthly will not accord it a favorable review because of the strong anti-colonial slant.

as a remedy for toothache. The mbasanga (Pteris tripartita), another

miles from Chile. The Tahiti Nui broke up and sank following a severe storm.

The raft never was really isolated at sea. Amateur radio operators contacted the raft daily and news was relayed to the press the world over.

Four "ham" radio operators on Oahu kept Hawaii informed —James E. Keefer and Henry Miller of Pacific Heights, Lawrence Trombley of Wailupe and William B. Prechtl of Ewa.

• • •

MR. PRECHTL listened in on de Bisschop's position reports nightly and charted his course for Coast Guard use in case the raft and its radio became disabled. The chart, as reproduced by The Advertiser artist Jerry Chong, appears above.

Rough weather buffeted the raft the first month out of Tahiti. There were 50-mile-an-hour winds and 18-foot waves at times. But the Tahiti Nui proved strong, and flowed steadily ahead on the current, averaging a mile to a mile-and-a-half an hour.

Dec. 16—Tahiti Nui was 600 miles south of Tahiti, but it had covered 900 miles getting there. Each day the raft had radioed air and ocean temperatures, barometric pressure, wind direction and force, meteorological reading and messages for loved ones back home.

• • •

JAN. 10—The raft began to make headway eastward. The men reported they were living mainly on shark meat.

Feb. 17 — Tahiti Nui was 1,700 miles from Tahiti and 3,000 miles from Santiago, Chile.

Life on the bamboo logs became hard and very busy. The men went to bed and rose with the sun. One man stayed constantly on watch, a life-line around his waist to keep him from being washed overboard.

Every member of the crew was a skilled photographer recording the events of each day in black and white and color stills and movies.

Skipper de Bisschop decided the course to follow, how much sail to carry and how the raft's center boards should be arranged. In his spare time he wrote his diary which will be enlarged into a book.

• • •

MICHEL BRUN called the home office in Papeete three times a day by radio. He used Morse code. But twice a week he used the radiophone. Sometimes at night he "chatted" with amateur radio operators in a dozen countries.

Francis Cowan spent his time making electronic soundings of the ocean's floor, gathering weather information and conducting other scientific studies. His information was for the French Meteorological Office in Paris to be used in future maps of that Pacific area.

Alain Brun, brother of Michel, was the master sailor. He tended to the thousand and one jobs that demanded a seaman's attention during a voyage.

• • •

FINALLY, there was Juan or who labored three times a day over a kerosene stove. Freshly caught fish were the main diet. On stormy days the Bugueno, a small Chilean sailcrew ate meals in tablet form. Drinking water came from barrels lashed to the deck. Rain water caught from an occasional passing squall was used for washing.

Feb. 24—Tahiti Nui was 1,900 miles from Tahiti and 2,800 miles from Chile. Skipper de Bisschop talked to his wife in Honolulu by radio. "Love and kisses and aloha," he said.

March 7—A Chilean "ham" operator told the world he feared the de Bisschop raft was lost because he had not heard from it for a week.

HOWEVER, Mr. Prechtl of Ewa had been in contact with the Tahiti Nui nightly. The raft had been driven off course and did a pretzel-like maneuver over 600 miles of ocean. (See map.) It was just one of the many back tracking courses that the raft took because of adverse weather conditions.

March 19—The bamboo raft regained course and for seven days logged good mileage to bring it within 350 miles southwest of Easter Island.

April 4—After several days of aimless drifting, raft again on course—2,283 miles from Chile.

April 10—Becalmed. But next day logged 65 miles eastward.

April 23—1,839 miles from Chile. Just survived five days of glassy seas and breathless skies.

May 1 — 1,521 miles from Chile.

May 11 — Storm at sea. Raft forced back 25 miles.

May 17 — 980 miles from Chile.

A SEVERE storm hit the raft that night and 24 hours later the Tahiti Nui had been driven back 80 miles because of 70-mile-an-hour wind and mountainous seas.

The storm lasted three days. Rumors that the raft had broken up raced around the world. A Chilean frigate steamed out of Valparaiso after distress signals were received by "ham" operators in Chile, France and Switzerland. The U.S. Air Rescue Service also was on standby notice.

On May 20 skipper de Bisschop radioed that the storm had ripped loose 22 bamboo logs, but that the raft otherwise was still sea worthy. He planned to asked the Chilean frigate to tow him to the Juan Fernandez Islands off the Chilean coast where he would make repairs and continue his journey.

• • •

THE RAFT was taken in tow but it sank May 28 before reaching the Juan Fernandez Islands. It was a heart-breaking end to a dream for Eric de Bisschop who had drifted 4,200 miles in six months — seven-eighths of the way from Tahiti to Chile.

The Tahiti Nui's crew managed to save about half of their equipment, including the pig, before they were taken aboard the frigate.

Back in Honolulu Mrs. de Bisschop gave thanks for their safety and said she was "mighty proud of them." She couldn't say if her husband would build another raft in Chile and attempt to drift back to Tahiti as he had originally planned.

"He told me this was to be his last great adventure," she said. "Last one on earth, that is."

United Press TELEPHOTO

NEAR THE END—The five raft-riders prepare to abandon their craft in the middle of fierce storm off the coast of Chile where rescue ship picked them up.

Valuable Book on the Plants of Hawaii

THE second edition of "New Illustrated Flora of the Hawaiian Islands," by Otto Degener, is a remarkable compilation. It contains no less than 1,200 pages, specially bound, and each page carries a full description and in nearly every case an illustration of a plant that grows in Hawaii. We get here the common English name, the Hawaiian name, and one correct scientific name of each plant. There is an extensive index, a general description of Hawaii, an historical sketch of Hawaiian botany, a glossary of botanical terms—and all sorts of other information which makes the book indispensable to anyone interested in tropical plants.

Mr. Degener says: "This is a war emergency edition printed on inferior paper. The first edition was far superior —but it was completely destroyed by the tidal wave in Hawaii." The book is sold for 6 dollars. An advertisement about it appears in this issue.

On the 'Plumeria' Matter

Editor the Star-Bulletin: Chuck Frankel in the May 26 Star-Bulletin states that "the sponsors of the Plumeria Ball are spelling the name of the flower incorrectly." This is not true.

The correct vernacular name for our "graveyard flower," according to "Standardized Plant Names" of 1942, is "frangipani." The scientific name, on the other hand, is **Plumeria** derived from **Plumerius**. Plumerius is the correct Latinized version for Plumier, the family name of the distinguished French botanist Charles Plumier (1646-1706), who traveled in America.

Because of the seeming inconsistency in orthography between the Latin and the French, various writers have spelled the genus, to which the frangipani belongs, **Plumiera** but in error.

Mr. Frankel should have consulted modern botanical works such as "In Gardens of Hawaii," "Flora Hawaiiensis" or "Hortus Second," available in larger local libraries, before joining the "Spelling Bee." Aloha.

DR. OTTO DEGENER

Mr. Webster still says "plumiera." Only rarely do we argue with him.

—Ed.

public interest in the work of the meeting. As is customary in such enterprises, there is a considerable variation in the quality of the papers.

There appears to be such a strong determination on the part of UNESCO to avoid the evils of this world that some of its aims may occupy its energies for many years. Because of exchange controls and other impediments, the scholars of many countries find it impossible to acquire the books and journals they need; there are embargoes on the acquisition of works of art; scholars, particularly archeologists and anthropologists, find that they cannot visit parts of the world that they must see in order to carry on their work. One of the purposes of UNESCO, and a seemingly practicable one, is to moderate this heritage of World War II. It has set itself the further aim, however, once the scholars of the world are set free from the burdens that now oppress them, of assisting in the production of studies that will conform to ideals of accuracy and truth. To assist in carrying out this purpose UNESCO proposes to establish a World Library Center in Paris, the facilities of which will be available to scholars everywhere.

Thus, as Mr. David Hardman points out in his introduction to the present volume, we may look for an improvement in textbooks in history, geography, and civics. Instead of six versions of a military campaign we will have "one authentic, documented account." This idea was further developed at the Mexico City meeting of UNESCO in 1947, where it was pointed out that many of the troubles of the world were due to the promulgation of bad philosophy. It was therefore proposed by an American delegate that the philosophers should resolve that henceforth only true philosophy should be written. This idea has a respectable ancestry, beginning with Plato's observations on the dangers inherent in permitting poets to propagate myths, and including the progressive Wisconsin statute passed in 1923 which forbade the use in that state's schools of any textbook which falsified the facts with respect to the War of Independence or the War of 1812, or defamed the nation's founders, or misrepresented the ideals and causes for which they struggled, or which contained propaganda favorable to any foreign government.

Many of the speakers represented in the present volume were not members of UNESCO, and were thus free to expound their ideas without reference to UNESCO's program. M. Malraux, a de Gaullist, put forward a theory of art which aroused the utmost scorn of M. Aragon, who has identified himself with the Marxist point of view. Mr. Ayer, a leading nominalist, explained why all past and present realist and idealist philosophy is in error, and Mr. Herbert Read, also a nominalist, showed why all past aesthetic interpretation must be discarded. For the most part the scientists contented themselves with brief, excellent accounts of progress in our knowledge of such fields as the submarine underworld, the physiology of the nervous system, cave paintings, and genetics. The volume also contains a moving plea by the Greek representative on behalf of the claims of ancient Greek rationalism to a place in the deliberations of UNESCO.

HUNTINGTON CAIRNS
National Gallery of Art
Washington, D. C.

BOTANICAL EXPLORATIONS IN THE FIJIS

Naturalist's South Pacific Expedition: Fiji. Otto Degener. [8] + 303 pp. Illus. $5.00. Otto Degener. Waialua, Oahu, Hawaii.

OTTO DEGENER presents a curious mélange of his experiences in collecting plants in the Fiji Islands in 1940–41, with accounts of the past and present customs of the natives of these islands and their present condition under colonial British rule. His botanical collecting in the Fijis was under the auspices of the New York Botanical Garden and of the Arnold Arboretum and appears to have been eminently successful. (One is intrigued by the somewhat obscure arrangements whereby it seems that he is to inherit the junk-yacht *Cheng Ho* from its former owner, Mrs. Anne Archbold, the sponsor of the Cheng Ho Expeditions.)

The account of botanical collecting gives a thoroughly interesting picture of the work of an exploring and collecting botanist in the tropics, which is sometimes a little overtechnical or lacking in explanations for the nonbotanical reader. There are glimpses of shell collecting and of other zoological interests, but these are unfortunately brief. There were two collecting stations on Vanua Levu, and several on Viti Leu, including the slopes of Mount Evans. The results included the discovery of a remarkable new family of plants, the Degeneraceae, about which Mr. Degener is, perhaps pardonably, somewhat naively vain.

The anthropological information about the Fijians of the last century is a well-written review of the source material. Various accounts of present-day Fijian customs, like the drinking of *yangona*, the women's "sitting dance," and the methods of house construction are at firsthand. The information about medicinal and food plants is valuable.

The accounts of race prejudice, "white supremacy," and other failures of the British colonial rule seem to be painfully firsthand. Nevertheless, the status of the Fijians in the all-Fijian communities seems to be not without dignity and independence, and the amount of racial intermixture remarkably small. One may wonder what may be the impact of the Fijians' distinguished war service on the three-way race problem presented in the relations of whites, Hindus, and native Fijians in their island isolation.

KARL P. SCHMIDT
Chicago Natural History Museum

At Marine Corps Air station at Ewa, 11 fighters, 32 scout bombers and six utility planes were parked neatly. Japanese fighter-bombers came in 20 feet off the ground, raked them with incendiary and armor-piercing bullets. In 20 minutes they had destroyed or badly damaged nine fighters, 18 scout planes and the six utility planes.

• • •

AT HICKAM, the Army's planes were lined up, many wing tip to wing tip. The Japanese destroyed 18 planes, hangars and workshops.

At Wheeler and Bellows fields the planes were parked in lines. Dive-bombers methodically worked them over.

Airmen wrenched machine-guns loose from damaged planes, mounted them on crates, on GI cans, and even hauled them to hangar roofs and fired back. An Army chaplain at Hickam was preparing his altar for outdoor Sunday mass when the Japanese roared in. He grabbed a machine-gun and planted it on the altar and fired back.

The Japanese neglected the air field at Haleiwa on the north coast. From this field two flights of P-40 fighters took off.

Army 2nd Lt. George S. Welch claimed four Japanese bombers. 2nd Lt. Kenneth M. Taylor claimed two.

"The air was full of Japanese planes," said Welch. "I picked out the nearest one and fired. But nothing seemed to happen. Then I got a good head on him and the next thing I knew he was going down in flames.

"I went back, loaded up and took off again. I went over to Barber's Point and shot three more bombers. When I came back I had three bullet holes in my ship. One in the prop, one in the motor, and another just back of the pilot's seat."

• • •

THE ARMED FORCES claimed 41 Japanese planes. The Japanese said they lost 29 — nine fighters, 15 dive-bombers and five torpedo planes. They also lost five midget submarines and an I-class sub. But the main striking force escaped westward unscathed. They never saw an American plane or ship.

Probably never before was a civilian population pushed into total war so abruptly. One moment there was peace — a lazy, lovely Sunday morning. Next moment, war — black smoke, orange flame, exploding bombs, erupting shells.

There was confusion, naturally, and fear. But never panic. At first, almost everyone thought it was make-believe. There had been so many maneuvers.

"I thought it was just another one," people said. "Even when I saw the red 'meatball' on the planes, I still thought it was maneuvers. 'Gee,' I thought, 'it sure is realistic.' "

• • •

THE BOMBS apparently dropped entirely inside military areas. But anti-aircraft shells fell and exploded from Pacific Heights to Kahala. Onto houses, onto stores, in streets, under automobiles. Most people thought the exploding shells were bombs. And so the police blotter that morning recorded these entries:

"8:05 a.m. Thomas Fujimoto, 610 E Road, Damon Tract, reported a bomb through his house while he was having breakfast.

"8:10 a.m. James Harris, 2522 Kalihi Rd., reported a bomb fell near his home.

"8:12 a.m. John Keolanuio, Moanalua Gardens, reported a bomb fell in his yard."

Tadao Fuchikami, an RCA messenger boy, reported for work at 7:30 a.m. He was handed a message to deliver to Pearl Harbor. The message from Washington read in part:

"An attack on Pearl Harbor. . .is imminent. . ."

• • •

TADAO STARTED for Pearl Harbor just as Japanese torpedo bombers zipped low over Ford island and lined up for their first attack.

He was wearing a blue RCA uniform with a red circle over the pocket.

"I nearly got shot once," he said. "They thought I was an enemy paratrooper."

James Kawainui was driving to work down Miller St. He turned into Beretania St. and an anti-aircraft shell exploded almost under the gas tank.

"It shook hell out of me and there was this two-foot hole right over my head," said Mr. Kawainui.

Toy Tamanaha, a flyweight boxer, was walking from Fort St. headed for a sweet shop in Kukui St. Down came a shell. "I just got inside when something hit me," said Mr. Tamanaha.

"'Gee, I'm a goner,'" I said.

Toy lost both his legs.

• • •

THE BLOOD BANK of Hawaii had 253 pints of blood stored in a refrigerator of the Hawaiian Electric Co. Dr. F. J. Pinkerton loaded the blood in his car, delivered some at the Queen's hospital, some at Tripler, and the rest to Pearl Harbor.

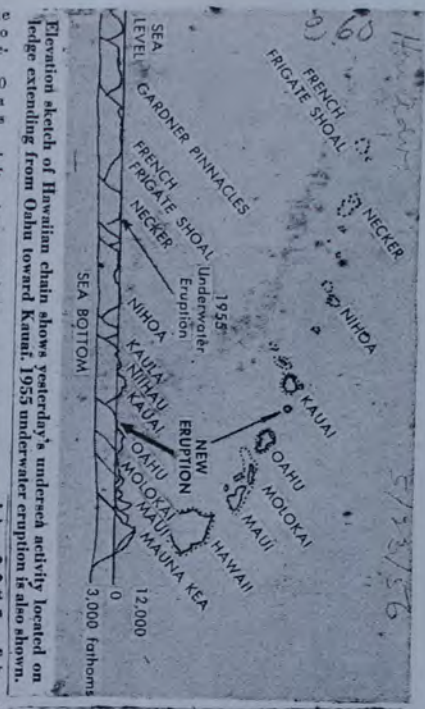
Dr. Pinkerton broadcast an appeal for donors to go to the Queen's hospital and give blood.

Watching them when they came in was Dr. John W. Devereux. "It was superb," he said. "All nationalities. The rich, the poor, bankers, yardboys, old people, young people. Just humanity itself by the hundreds coming to the hospital to do what they could."

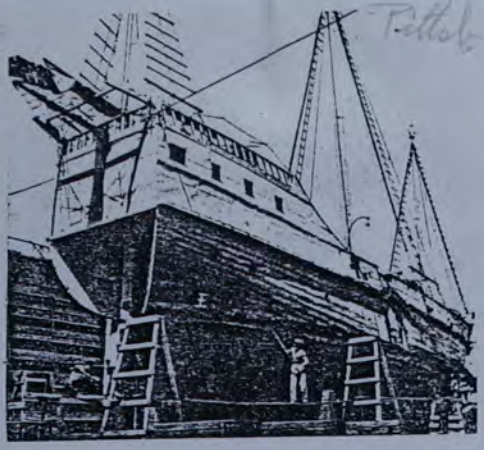
And as the shock wore off, there came anger.

"I'll never forget a little old lady I saw standing by the radio station," said Wehley Edwards, then KGMB station manager.

"She was looking up at the planes and shaking her fist and cursing, the most frustrated, fluent curses you ever heard."



Elevation sketch of Hawaiian chain shows yesterday's undersea activity located on ledge extending from Oahu toward Kauai. 1955 underwater eruption is also shown.



The Cheng Ho Sails Again

An adventurous skipper and a colorful vessel get together

Parade of the Pacific. Jan. 1948.

By DORIS FLOURNOY

FOUR ANXIOUS women peered oceanward from Diamond Head road that day last November when the fabulous Chinese junk Cheng Ho put out from Honolulu, bound for French Oceania. Aboard the picturesque vessel were the hus-

bands of the four women who watched from the shore, waving their handkerchiefs until the craft faded from sight. Now, these four wives are watching the Pacific with the same anxiety as they await the Cheng Ho's return.

r Photo

Cheng Ho! A once-luxurious craft with a colorful past rivaled only by that of her adventurous skipper, Eric de Bisschop, whose scientific expeditions and sailing exploits have gained for him world-wide recognition! It was logical that such a vessel and such a captain should get together.

It all happened when de Bisschop and the men who are now his crew acquired the Chinese junk and formed the Cheng Ho Trading Com-

Under a die-hard skipper, Capt. Eric de Bisschop, (sixth from the left) sails the one-time luxury junk, Cheng Ho, with a hardy crew of men all of whom have an interest in the newly formed Cheng Ho Trading Company.

Star-Bulletin Photo

pany. The vessel was reconditioned and outfitted in Honolulu before setting forth with a cargo of food to trade in the South Pacific.

Originally constructed in Hong Kong in 1939, the Cheng Ho was built for Mrs. Anne Archbold, a wealthy patron of science, who had the craft designed for scientific expeditions, but luxurious. Built of teakwood, the stern of the junk is covered with ornate Chinese carvings while the bow sports an eye on either side, "so it can see where it is going." It was originally furnished with jade ornaments, Chinese carvings, statues, idols and plush oriental rugs.

With three sets of bamboo-type sails and two powerful diesel engines, the Cheng Ho has a cruising range of 15,000 miles.

The proud junk first set sail late in 1939 on a two year scientific expedition which was interrupted by that terrifying crime of the high seas—mutiny. Mismanagement of food was blamed for the crew's discontent which reached mutinous proportions on a run between the Philippines and the Fiji Islands. Though control of the boat was not wrested from those in authority, it was necessary to call out the police when the vessel put in at Suva, the Fiji Island capital, and a number of crew members left the boat at that port.

After that incident Mrs. Archbold decided to dispose of the craft, and so sold it to the Navy for $1, but with the proviso that it be sent to Annapolis as a museum-piece. However, the war came at that time and the Navy stripped the junk of its lavish furnishings, nailed metal sheeting over its intricate carvings and used it part-time as a weather station, but more often as a clubhouse for the men at Pearl Harbor.

After V-J Day, the navy and maritime commission returned the Cheng Ho to Mrs. Archbold, but she had no use for it, so through a series of complicated transactions the boat was obtained by the Cheng Ho Trading Company of which Eric de Bisschop is a major stockholder.

THE ADVENTURES of Capt. de Bisschop read like a story-book. Some fifteen years ago he was sailing another Chinese junk, the Foupoo, off the coast of Formosa in a very rough sea with three seasick sailors aboard. The storm proved more than the Captain could cope with alone and the Fou-poo hit a reef. It was damaged rather badly but the four men made the shore. As soon as the sea subsided, they prepared to rescue what they could of the valuable cargo of Chinese goods, but before they could get organized a band of ruthless pirates swept down from the hills like birds of prey and ransacked the craft. Capt. de Bisschop and his men were forced to remain in hiding for several days to avoid being killed by the interlopers.

After escaping from the pirates, de Bisschop made his way back to China and built another junk which he called the Fou-poo II. He and Joseph Tatibouet, a French navigator and scientist, set forth on a three-year scientific cruise of the Pacific for the French Geographical Society. They made soundings in the ocean bed, studied currents, fish migration and other scientific phenomena.

The second Fou-poo also came to an unhappy end. On a trip from the Marshall Islands to Hawaii, the food supply spoiled and the two scientists subsisted on candle tallow for several days. They were half-starved when taken ashore at Molokai.

Further bad luck befell the two men when a Kona storm wrecked the Fou-poo II later the same day. Most

of their scientific notes and photographs were lost. In spite of the missing records however, enough data were saved to win for de Bisschop the French Geographical Society award for 1936.

Shortly after recovering from the effects of the near-starvation, de Bisschop and Tatibouet came to Oahu and set up a tent in Ala Moana park where they lived while constructing a double-hulled canoe. When it was finished they named it Kaimiloa, loaded it with provisions and set out for France in March, 1937. It was de Bisschop's aim to prove a theory he had developed concerning the "Migration of the Polynesians, which is the title of a book he is now writing.

Fijian women and girls prepare for a sitting dance on the "ra-ra" or village square.

Paradise of the Pacific. Feb. 1947.

FIJI: People and Plant Life of British Crown Colony Were Studied and Photographed by Otto Degener

PHOTOGRAPHS BY NOEL KRAUSS, DEGENER AND COLLEAGUES

Above: Belles of rural Viti Levu. They are wearing ankle-length skirts of cotton fabric. Below: Fijian women carrying loads of firewood. Women of Fiji do most of this kind of work.

Above: A young Fijian man with a fine head of bushy hair much admired by the girls. Below: Aloisio Tambualewa, who adopted Degener as his father, proudly wears leis from Hawaii. He is seated before a Fijian lauhala mat.

In four months, the wind and current carried the motorless craft more than 5,000 miles to Java. The Kaimiloa then headed for South Africa, rounded the Cape of Good Hope and eventually made port in Cannes, France amid riotous cheering of the crowd which awaited their arrival.

France had planned a real reception—a 21-gun salute was given, three airplanes flew overhead, and the mayor invited the seamen to sign in the city's golden book, while telegraphers busily flashed the news of their ar-

rival to the rest of the world.

When next skipper de Bisschop put to sea, he was accompanied by his wife, an American, whom he married in 1938. The boat, named Kaimiloa Wakea, was 38 feet in length and had an outrigger on either side, but it, like de Bisschop's earlier junks, was ill-fated.

While sailing the craft off the coast of Africa near the Canary Islands one night when the sea was particularly crowded with Spanish fishing boats, the captain went below to tell his wife to come up and see the lights. A sudden splintering crash made them jump for their lives. They had been rammed by a sardine boat and soon found themselves splashing to keep afloat in the ocean. They were miraculously rescued by the crew of the fishing boat.

From 1941 to 1943, the skipper was French consul at Honolulu. Since the war prevented him from sailing the seven seas in junks or canoes, de Bisschop was forced to take a vacation from his adventurous voyages for the duration. But as soon as the white-haired captain heard that the Cheng Ho was available, a twinkle came into his eye and soon the ship and the Captain were together, sailing to Tahiti and romantic adventure.

Hawaiian Digest

Hawaiian Digest
CHENG HO ADVENTURE

I herewith enclose a photo of the elaborately decorated stern of the Cheng Ho as a post-script to your recent article about that yessel. It

Feb. 1944.

was snapped in Fijian waters just before the war. I was Mrs. Archbold's guest-botanist at the time, commissioned jointly by the New York Botanical Garden and Harvard to collect new and rare plant specimens.

I purchased the Cheng Ho from Mrs. Archbold in 1946 and six months later founded the Cheng Ho Trading & Exploring Company, Ltd., with Capt. de-Bisschop and associates. Since I am not interested in trade, but in botanical exploration, I shall make only one trip a year on the Cheng Ho accompanied by a friend scientist eager to join me in research.

I am at present seeing my book on my Cheng Ho adventure in Fiji through the press. When that is pau, I shall be ready to continue exploratory work. Perhaps one of the scientific readers of Hawaiian Digest will share the luxurious aft cabin with me at that time.

—Otto Degener
Mokuleia, Oahu

Paradise of the Pacific. May 1949.

A botanist visits Fiji

"Naturalist's South Pacific Expedition: Fiji." By Otto Degener, B.S., M.B.S. Printed by Paradise of the Pacific, Ltd., Honolulu. 310 pp., 166 illustrations. $5.00

Paradise of the Pacific, Ltd. is now printing in book form a narrative of Otto Degener's explorations in the Fiji islands as guest-botanist of Mrs. Anne Archbold on her Chinese junk-yacht, Cheng Ho.

Mr. Degener, botanist at the University of Hawaii in 1925-27 and since 1935 staff member of the New York Botanical Garden stationed in Honolulu, spent eight months among the Fijians, living in their grass huts.

Adopted as "white father" by the son of a petty chief, he gained the aloha of the natives, and recorded their most intimate lore.

One of the relatives of his "Fiji son" had partaken of cannibal feasts in his youth. Listening to his tales, Degener became something of an expert on mbokola, or "long pig," and devotes an entire chapter to the fine points of such repasts.

For the information of nervous haole readers, he relates that the Fijians seldom ate white meat as it had too often the disagreeable flavor of tobacco and alcohol. The preferred cut for a feast was the upper arm of Melanesian belle.

"Naturalist's South Pacific Expedition" is a readable, non-technical book well illustrated with photographs.

Besides cannibalism, it deals with blackbirding, missionary successes and foibles of the past in Hawaii and elsewhere, and the present customs of the Fijians which are much like those of the early-day Hawaiians.

Mr. Degener, the author of "Plants of Hawaii National Park" and the monumental "New Illustrated Flora of the Hawaiian Islands," has been signally honored for his long years of research in the Pacific. He is the only man alive with a plant family named in his honor.

With the Fiji book finished, Mr. Degener and Miss Amy Greenwell are completing their maunscript for Book Five of the "Flora Hawaiiensis," or "New Illustrated Flora of the Hawaiian Islands." Paradise of the Pacific, Ltd., will be the printers of this work, as it was of previous books in the series.

A PRIVATE school near Savu Savu, Vanua Levu, is shown above. The school is run by an English soap boiler, who retired to teaching in his old age. It is restricted to part-Fijian students. Below: Young girls dressed for a ceremonial dance wear dresses of *masi*, the Fijian tapa. Their leis are also made of *masi*. The men and women in three photographs at right are East Indians. Originally brought to Fiji as cane field laborers, East Indians now are forsaking the plantations to become tradesmen and domestics. Producing large families, there are now about one hundred thousand East Indians, representing one half the population of the islands. The young men in the center photograph are second generation East Indians and have given up the caste system and other customs of their parents.

Hawaiian motif Paradise of the Pacific

A TOUCH of the South Seas was evident at the Thirty-fourth International Flower Show held at Grand Central Palace, New York City, recently. There Mrs. Howard S. Perry decorated a niche with tropical foliage, tapa and kawa bowls. It was "an interpretive composition honoring an outstanding botanist or naturalist who was a native of the Pacific Islands or did his main work there." The man selected for the year was Otto Degener, resident of Oahu since 1922, and author of several books about Hawaiian plants and native customs and, last year, of his Naturalist's South Pacific Expedition: Fiji. This last work describes his eight months' exploring for plants in the Fiji Islands as guest botanist on Mrs. Anne Archbold's fabulous junk-yacht Cheng Ho. It was during this trip that Mr. Degener discovered a tree belonging to a new plant family that now bears his name.

Hawaiian arrangement at New York show. Photo Boutrelle.

Aug. 1950

A Fijian preparing copra on the plantation which Degener rented for one pound or three dollars and seventy-five cents per week, including servants and food.

A youngster takes his first lesson on the guitar. Fijians are fond of music and like to sing. Drums and other percussion instruments are used for dances.

Beyond the Hawaiian Horizon: Fiji

It was, for me, a memorable day in 1941 when Ordonez, my Filipino assistant from Hawaii, and I followed Timoe, our faithful Fijian guide, into the Nauwanga forest. We found a tree with rather ugly flowers and being, as usual, greedy for specimens, I collected ample material.

There were numerous flowers but considerable search disclosed only a single fruit. This collection was pressed and dried and in due time mailed to Dr. A. C. Smith, of the Arnold Arboretum, Harvard University.

Later, when I returned to my Mokuleia Beach home in Hawaii, I received some astoundingly gratifying letters from Smith. My name had become associated with an entirely new plant family, an honor almost unheard of. Only one other valid plant family commemorates a living botanist at this time.

The story was told officially in a magazine article in 1942 by Dr. Smith and I. W. Bailey. Smith had collected specimens of a fruiting tree on the Fijian island of Vanua Levu. "Efforts to place the plant in a family failed. Neither fruit nor foliage suggested any plant previously known from the Pacific. Although wood from the trunk was available, no definite suggestion of a family could be made by those who examined the specimen . . . It has been ascertained that the plant is conspecific with a tree collected in flowering condition in the interior of Viti Levu by Mr. Otto Degener in 1941." The article then referred to the plant family as *Degeneriaceae*.

Although Smith originally discovered trees belonging to the *Degeneriaceae*, he could not name them for himself. This would violate good taste and a long-established custom. The second discoverer of *Degeneria* was B. E. V. Parham, government botanist in Suva, who shipped specimens of this family to Smith for determination. This specimen was collected at Viti Levu four years after Smith's find and two years before mine.

The only other living botanist whose name has been given to a valid plant family is Herbert L. Mason who, in 1925, collected a peculiar brown seaweed southwest of Lower California. It is so different from any other seaweed known that it constitutes a family all its own and has been named *Masonophycus paradoxa*, after its discoverer.

Mr. Degener's trip in Fiji was made aboard the exotic teak and camphor wood junk-yacht, Cheng Ho, as guest botanist of Mrs. Anne Archbold, of Washington, D. C. and Nassau. In a previous trip with the Cheng Ho, Mrs. Archbold, big game hunter and patron of science, explored "The Garden Islands of the Great East" (Scribner's) with Dr. and Mrs. David Fairchild. The war interrupted further exploratory work and the Cheng Ho was taken over by the Navy. Upon her release, February 3, 1947, she was purchased from her original owner by Mr. Degener, who plans to use her for further research in spite of her severe war wounds.

feet in height and lives many years.

Milo in Lowlands

The milo tree is indigenous to Hawaii and most of the tropical islands of the Pacific. It is not a forest tree, but among the Hawaiians it was planted about homes. Formerly at Waikiki milo trees surrounded the home of Kamehameha I.

Today we find fewer milo trees by far than in the early days, but still they are found on every one of the inhabited islands. These trees do not thrive at great elevations, but are nearly always found in the lowlands near the beaches. Many are found in a wild state in the neighborhood of Koko Head, where they probably were planted by the Hawaiians. In Honolulu, you may find a few in Thomas square and a few along North King St.

Trees are usually rather small, but specimens two feet in diameter and 40 feet high may be found. The wood, which possesses a very beautiful grain and takes a beautiful polish, was used by the early Hawaiians to make calabashes for poi. Many of these old calabashes may now be found in collections and as souvenirs. Today the wood is used for cabinet work when it can be obtained, but it is scarce. Some of the most beautiful cabinet work we have seen was made of milo.

Flowers Change Color

During most of the year, the tree bears blossoms that are bell shaped. The flowers are a pale yellow, except for the purple at the base. Like the hau, the milo flowers change color in the sunlight and by evening the yellow has changed to pink or purple. The leaves are either round at the large end and pointed at the other or else heart shaped. All are quite glossy.

The bark of the trees is quite thick and seamed or corrugated. The twigs are quite scaley instead of being smooth.

The seed is borne in woody seed cases that are deeply seamed between the seeds. The seed is less than one half inch long and is quite pubescent. The seed cases hang on the trees quite long and finally open to drop the seed. Propagation is by seed.

These milo trees are desirable shade trees and should be planted more widely than at present. The tree when once established is extremely drought resistant and will grow well not only in very dry places but in very poor soil. Whether sandy, dry and rocky or the regular red soil, the milo thrives and blossoms. However, it will not produce seed except in dry areas.

HONOLULU ADVERTISER, FRIDAY, FEBRUARY 18, 1949.

FIREWALKING DEMONSTRATION SATURDAY—Due to an unusually heavy demand the Tahitian Civic club has announced that Chief Tu-nui Arii-peu will present another firewalking ritual and demonstration at 4:30 Saturday afternoon in the University of Hawaii Amphitheater. Chief Arii-peu will invite all who dare to follow him across the hot boulders in a 15-foot pre-heated pit. Walter Napoleon Jr., club spokesman, said a special low price admission has been set for this performance, the chief's last before going to the neighbor islands.

Otto Degener's New Book

"Naturalist's South Pacific Expedition: Fiji" is the latest work by Waialua naturalist Otto Degener. Reviewing the book for the Journal of the New York Botanical Garden, Frank E. Egler, Atoj Forest, Norfolk, Conn, says:

"Otto Degener has a niche in botanical history for giving his name to the Degeneriaceae, the genus Degeneria, and numerous little 'degeneri's' as specific names. He now has another niche: as the author of this volume, which recounts his explorations while with the Anne Archbold expedition on the motorized junk Cheng-Ho. Here is a book to take its place beside the classics of the 19th century traveling naturalists, thoroughly modern, yet in an established style and tradition that has a parallel in such compositions as Prokofiev's 'Classical Symphony.'

"The author has a rare trait of choosing his native friends with discernment, and of gaining their affection with their confidence—a task difficult in a land where the race problem is no better (or worse) than in our own lynch-conscious southern towns. As a result, this delightful account of his wanderings about the islands, filled with the human side of his experiences yet presented with the impartiality of a scientist (even to a minutely detailed description of yangona drinking with clocked notations, some at one-half minute intervals during the ceremony), all give us an exciting picture of the islands of today.

"The book is written with a complete lack of the 'diplomacy' that often colors the words of professional lectures and travelers and others seeking to climb success's ladder, and the narrative is backed by supporting chapters on the history of Fiji and its customs. When today has gone, the volume will serve the ethnologists of the future for its basic data of this age.

"'Portrait of Otto Degener' might well be the subtitle of this unusual book, which is all the more pleasing since the picture appears unplanned and unconsciously drawn. A hundred little anecdotes, some uncomplimentary to himself, and the absence of such stories as many authors use to prime their pompousness, all have their cumulative effect. As one closes the book, one knows not only Fiji, but also Otto Degener the man — so sage and kindly that one wishes more of his kind would tread the earth."

Portrait of Fiji
And of a Personality

NATURALIST'S SOUTH PACIFIC EXPEDITION. FIJI. Otto Degener. 303 pages, illustrations, maps, index. Published by the author, P.O. Box 187, Waialua, Oahu, T.H. 1949. $5. Also available from the New York Botanical Garden, Bronx Park, New York 58, N.Y.

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FRANK E. EGLER,
Aton Forest, Norfolk, Conn.

*Parts of the book appeared originally in the Journal of the New York Botanical Garden for September and October 1943.

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