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About the Institute
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.

Visitors to the future county zoo may want to see a tiger leap at its prey or monkeys do some tricks. All they have to do is to trigger off some mechanical devices. Haw. Trib. H

"This will be one of the most innovative exhibits in the new zoo," said James Juvik, county zoo curator. 7/25/76

Dr. Hal Markowitz, director of the Oregon Zoological Research Center and associate director of the Oregon Zoon in Portland, will be designing the devices for the new zoo now under construction.

Juvik said construction of the $1.3-million, 40-acre zoo above the county race track in Panaewa is expected to be completed by the end of this year.

Other features will include a simulated Mauna Kea climb on which there will native Hawaiian birds, a Southeast Asian forest exhibit, and a South American rain forest exhibit. Animals indigenous to these forests will be on display.

Juvik, who has been coordinating the design and dvelopment of the new zoo for the past two years, said the Children's Zoo at Onekahakaha

attached to letter to Tom Kennedy July 28, 76

Tribune-Herald Photos.

SOUTH AMERICA—This will be a simulated South American rain forest at the new zoo, where tapirs, anteater, giant rodents, and Amazon deer, among others, will live.

The Honolulu Advertiser

99 Years Your Family Newspaper. Established July 2, 1856

Published daily by Advertiser Publishing Company, Ltd.
Advertiser Square, 605 Kapiolani Blvd. at South St., Honolulu 2, T. H.

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Wednesday, May 23, 1956

Why The Sabotage?

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A Naturalist Speaks Concerning Moving 'Cemeteries' of Oahu

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According to local newspaper accounts and your letter to me of May 16, 1956, a public hearing is to be held by the City Planning Commission May 24 regarding an application for a zoning variance for a sand screening, washing, and classifying plant on a certain parcel of land at Mokuleia.

I came to the Islands in 1922, selecting Mokuleia Beach as my residence about ten years later precisely because it is in a Rural Protective Zone. As Naturalist of Hawaii National Park I was obliged to know some Geology. After observing the various seasonal fluctuations and changes along Mokuleia Beach, both on land and in the water where I maintained fish traps, I consider myself something of an expert equal or superior to any one else regarding this region. My opposition to a variance in zoning is slanted from a naturalist's viewpoint mainly. The facts to which I beg to attract attention are the following:

1. Our white beaches, unlike the black sand beaches of Puna and Hanauma Bay, are in a sense magnificent cemeteries consisting of broken and fragmented skeletons of corals, **wana** or seaurchins, sea shells, fishes and calcareous **limu.**

2. Dr. Charles H. Edmondson of our University of Hawaii and Bishop Museum conducted careful studies of the growth of corals by placing fragments implanted in concrete blocks in the reef. Hence we know that coral increases in size by one quarter of an inch or less per year. As our reefs from year to year remain comparatively static and never grow much above the level of the ocean at low tide, we can estimate roughly how much new coral sand is produced yearly—not very much, and some of this is comminuted so finely that it ultimately dissolves and is lost.

* * * *

3. Prevailing trades wash and blow the yearly accumulation of coral sand from East to West along such shores as at Mokuleia, Oahu, to build up dunes extending as far as Kaena Point. Similar conditions prevail on Molokai culminating about Moomoomi and on Maui culminating in the sandhills in and about Wailuku.

4. Mokuleia sand, some formed by corals and other organisms living years ago probably even as far distant as Kahuku and beyond, drifts ever westward, maintaining our beach properties as far as sand is concerned in a regular fluctuating state of status quo. The sand does not drift in the opposite direction, except occasionally due to unusual adverse winds, before again resuming its westward travel.

5. The great bulk of sand reaching Kaena Point eventually continues westward to drop into great ocean depths to be lost to man forever. The Kaena Point area, logically, is the spot where sand should be harvested as its further use to maintain our residential beaches has ended.

* * * *

6. If the general area desired for a sand screening, washing, and classifying plant is despoiled of sand a lake or brackish lagoon results, a feature evidently desired by the applicant. It makes expensive refilling unnecessary.

a. What kind of retaining wall—depth, width and quality of concrete—would applicant construct to guarantee that sand from **makai** side of lake would not cave into lake, thus dangerously reducing width of sand barrier between lake and open ocean?

b. If the lake has no reasonably large dredged outlet or two through beach and shallow reef to the rather distant open ocean, the lake will stagnate and become a general nuisance to the entire community. It will be of brackish water and hence here sea lettuce, etc., will thrive which each year breaks from its mooring and drifts to shore in a stinking mass as residents of the Kahala shore of Oahu all too well know. Such a stagnant lake, likewise, will augment our mosquito problem.

c. If the lake has an outlet to the open ocean:

1. Residents and visitors cannot stroll along beach unless a bridge is built across channel. Would applicant build a serviceable bridge or would it be like the one near the torn down Haleiwa Hotel which has long been declared unsafe and is off limits for pedestrians?

2. Such an outlet will act as a trap for the sand which is East of the dredged channel and slowly traveling toward Kaena Point. As a result, the beaches between applicant's dredged channel and Kaena Point will gradually recede, jeopardizing our property, reducing its size, and bringing our homes, already built, closer to the advancing ocean and its waves. These, as all of us know, occasionally, with or without seismic disturbances, can be dangerous to life and limb.

3. Will the channel be kept clear and open by dredging and the sand liberated to drift westward toward our beaches or likewise be captured and sold?

7. The area involved in the petition is flooded by the ocean during storms and exceptionally high tides, and this is reasonably expected to occur a goodly number of times during the next ten years. If a huge water-filled **puka** results from the removal of sand, such storms or tides can within a day or two fill the **puka** with fresh beach sand. The area consequently will not furnish the interested company with the estimated 900,000 cubic yards (as mentioned in The Advertiser May 11, 1956) during the ten years' life of the variance but many times that amount. The area, by nature, will be like a bottomless pit trapping sand at every major storm to renew the applicant's golden harvest of sand at the expense of the beach residents. The promise that sand shall not be taken within a certain number of feet from the shore is thus of little importance as by an Act of God the waves will easily push fresh ocean sand over such barrier.

* * * *

8. From a non-naturalist standpoint, I oppose granting the variance because its granting would be a public nuisance, adding truck traffic, noise, ugliness, dust, stench, mosquitoes and real estate depreciation to an area carefully selected by the residents for quiet homes along a beach where sand already is not too abundant. This last fact is shown by the presence of outcrops of stone platforms of calcite here and there between stretches of sand.

9. Such a variance, incidentally, is the opening wedge for additional industrialization such as, for instance, a concrete mixing plant with sand, cement and gravel trucks rumbling back and forth between residential Mokuleia and neighboring stone quarries.

10. In conclusion, I respectfully oppose granting the zoning variance at Mokuleia and request that the City Planning Commission adhere to its wise stand of about November, 1954, when the late Mr. Petrie was member. At that time a plea for a variance was denied the relatively obscure **malihini** petitioner, the late Mr. Shiek. To grant a very similar plea now for a prominent **kamaaina** company to my mind would be a miscarriage of justice in a democratic land which no longer adheres to the outmoded belief that some individuals are the Lord's anointed and some companies Holy Cows and Divine.

May 21 DR. OTTO DEGENER

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May 21 DR. OTTO DEGENER

Hon. Adv. 3/9/55

DR. ROCK'S LIBRARY

or The Advertiser:

Today I received a clipping from your paper of Feb. 18 arding my library recently purchased by the University of shington, Seattle, Wash. In the letter by Professor Krauss urt the statement that the library was originally **loaned** to University of Hawaii. This statement is **not** correct. Be- e returning—1940 from Indochina to Honolulu—I wrote to then President of the U.H., David Crawford, that I am pping the library to Honolulu, and that the minute the books Saigon they were a **gift** (not loan) from me to the Ori- al Institute of the University of Hawaii.

On my arrival later in 1940 in Honolulu I found that the ks were on the floor in a little room of the building which n housed the Oriental Institute, that rats had been at- king them and cockroaches had eaten the bindings. I then nonstrated with President Crawford saying that I did not e the books to the university to be kept on the floor to be en by rats and cockroaches. He thereupon replied, "This the only way we can take care of them and if you don't it you can take them back again." I paid $670 U.S. freight n Dalat Indochina to Honolulu, via Saigon—Manila and ly via Bangkok—Manila. After the library was spurned in a rude manner by the president of the university, I ked up the books in many trucks and boxes and stored m with the Honolulu Construction and Draying Co. In 1944 loaned the books to the U. S. Army Map Service which oped them to Washington, D. C., but I paid insurance of 0 for the war was still on.

This is the true story and the reason why the library left waii.

Merano, Italy JOSEPH F. ROCK
March 1

EDITOR'S NOTE—The Rock library has come to rest at t. The Rockefeller Foundation recently contributed $8,000 ward its purchase price of $25,000 and it was acquired by e University of Washington.

99 YEARS AGO—APRIL 17
From The Advertiser Files

Cotton cannot properly be treated as a product of these is- nds although the plant has been growing here for many ars.

It is found wild on the five principal islands. It was intro- uced here in 1829. In 1835 an attempt was made to manufac- re cotton cloth at the Wailuku Seminary on Maui, and about nety yards were then made, but the imported article was much superior and cheaper, that its manufacture was given .

Also about that time a Charles R. Smith of Haiku, Maui, mmenced a cotton plantation, but for want of means to rry it on, was forced to give it up.

The climate and soil here are adapted to the cultivation of is plant, and with someone with capital and experience, the ost of growing cotton could be cut so that the finished produce ould make a profit on a sale.

Hon. Adv. 4/17/56

INVENTORY OF ROCK'S COLLECTIONS: The Editor is in the process of compiling the location of Rock's collections of plants, mammals, and birds, and of his botanical and ethnological manuscripts. Any information (amount, source, dates of collection or compilation, etc.) would be appreciated. This inventory will be published at a later date when all information has been received from the various institutions concerned.

The New York Botanical Garden

Annual Meeting of the Corporation
Thursday, May 11, 1978, two o'clock
The Snuff Mill

Donald J. Bruckmann, *Chairman*, presiding

Approval of the minutes of the last Annual Meeting

Financial report, Richard Lewisohn, *Treasurer*

Search and Nominating Committee report,
Henry deF. Baldwin, *Secretary*

Chairman's report, Mr. Bruckmann

Distinguished Service Award Presentations,
Dr. Howard S. Irwin, *President*

President's report, Dr. Irwin

Other business

Following the meeting, refreshments will be served on the Snuff Mill Terrace.

Educational consultant

Retired professor aids in Brazil

EVEN THOUGH he retired two years ago as chairman and professor emeritus of botany and plant pathology at Michigan State University for 31 years, *William B. Drew*, Class of 1930, isn't resting on his laurels. Following are excerpts of a letter he wrote to *The Alumnus*, bringing his classmates up to date on his whereabouts.

"I have just returned from four months in Brazil," he writes, "where I was a consultant to the Ministry of Education and Culture. The Brazilian government has had a joint project for four years with USAID, directed by Michigan State University, to upgrade graduate education in the agricultural sciences and veterinary medicine. The principal objective has been to strengthen six major graduate training centers which could develop the expertise necessary to produce their own doctoral and master's degree trainees, thus avoiding the expense of sending them abroad for this education.

"Although Michigan State was the prime contractor, more than 100 consultants worked on the project from 35 different universities or colleges in the U.S.

"My assignment was to serve as the senior member of a team of three persons—two Americans, one Brazilian—to evaluate the project at the six universities as it drew to a close at the end of June. After two years of retirement from MSU, it was a challenging assignment, especially since all the dialogue with administrators and faculty was in Portuguese, a language which I had studied assiduously prior to my departure from the U.S.!"

The project in Brazil wasn't his first since he retired in July 1976. He says: "After retirement I received a National Science Foundation (NSF) grant to conduct an ecological research project jointly sponsored by the NSF and the National Research Council of Thailand. Thus, I did the field research there with my last PhD student, a Thai, now assistant professor on the faculty of forestry of Kasetsart University in Bangkok.

"This was the last of several projects with which I have been deeply involved over the past decade in Southeast Asia. Among these projects was that of evaluating the ecological effects of herbicides used by the military forces on the forests of South Vietnam (1971-73). I was a member of an international committee of the National Academy of Sciences which was authorized by Congress to conduct this study. And, in 1974, I served as field team leader of 12 scientists from four midwestern universities charged with the comprehensive evaluation for the World Bank of the education, research and extension activities, and manpower needs in the agricultural sciences, home economics, and veterinary medicine in Thailand.

"Following my return from Thailand in 1976, I was very busy up to the time of my departure in March of this year for Brazil, in writing up the research results of the NSF project for publication."

In spite of all his travel in the last few years, Drew says he is now looking forward to doing even more traveling along with returning to his hobbies of ornithology, nature photography, and railroads. He and his wife, *Shirley Upton Drew '31*, are also planning to move to Tubac, Ariz., which is located about 30 miles south of Tucson, and 19 miles from the Mexican border.

Shirley Upton Drew '31 and William B. Drew '30

Although his wife sometimes travels with him on his consulting assignments, he said, she didn't make the trip to Brazil since she had broken her leg before the scheduled departure date. He also said his wife is actively involved with the Trails Committee of the local riding and horseback organization, trying to keep more land open for trails. Until they move to Arizona, they are living at 327 Northbridge Road, Santa Barbara, Calif., and invite former classmates now traveling in California to drop in for a visit.

Class reports

(Continued from page 12)

A Particular Point of View

Hawaii and Galapagos

By Hampton L. Carson

Professor of Genetics, University of Hawaii at Manoa

Hampton L. Carson

Observation of the adaptation of plants and wildlife in the Galapagos Islands gave Charles Darwin the basis for his theory of evolution.

Other scientists have said that the isolated Hawaiian Islands would have served him as well if he had visited here instead.

In this article, a Hawaii scientist compares present-day Hawaii with present-day Galapagos.

WITH THE LIGHT northeast wind blowing over my shoulder, I view the jumbled lava of the shore. The surf foams high against it in the brilliant sunshine and the shallower areas turn the deep ocean blue to turquoise.

Here and there, patches of white sand are visible; the breeze is tropical and soft. As I look up, I see the island volcano rising in an even shield. It slants to the shore in a long easy line, only an occasional cinder cone disturbing its symmetry.

Beyond the black cliffs, the land seems grayish and barren, greening up only on the slope under the pile of white clouds over the summit.

That evening, the dinner table is loaded with food. There is white rice, perhaps a little drier than is my taste; fish, fried bananas and a huge plate of whitish pineapple and bright orange papaya. The latter is superb. When I remark on this, my host tells me:

"Of course, because the trees grow right from the mineral-rich lava in the fresh tropical breeze. Our papayas are the best in the world."

A FLASH OF DISAGREEMENT stirs inside me at the last remark, but I hesitate to voice it. I am not on the Big Island of Hawaii but 5,000 miles southeast, less than one degree south of the equator. Here, at Isla Santa Cruz, Galapagos, I am a guest.

The capricious equatorial winds come now from one quarter and now another and then fail entirely. They are not enough to keep down the suffocating heat near the shore. As the sun sets behind the mountain, however, the cool air from the highlands settles over the little town, slowing down the mosquitoes.

As we sit in the lounge, sipping Ecuadorian coffee made from a fluid essence and hot water, I can hear the waves washing in below me in the little lagoon. The conversation, of course, soon turns to island biology because I am sitting with scientists at the Estacion Biologica Charles Darwin. My host is very knowledgeable about the islands and their life.

"YOU KNOW, OF COURSE, that there are dozens of plants and animals that are unique to these islands? They evolved here and are found only here. We are trying to save them, but, for some, it's a terrible struggle."

How many times in the last 10 years have I made or heard an identical statement about our work in Hawaii? But I decide not to tell him about the responsive chord which he has struck.

"Specifically, what are the problems?" I asked, although I thought I knew the answers.

"Well," he said, "first there are these herds of wild goats which have built up from animals which have escaped from captivity. They have reduced the plant life on some of the islands to a vestige of its former richness. In the wetter areas of the highlands, wild pigs, which are also descended from escapes, do the same thing. We are being overrun with these animals and introduced grasses and weed trees which they spread. The introduced guava, for example, forms dense thickets and does not fruit well."

I SWIRLED the remaining coffee in the bottom of my cup. I could have told him how much worse things are in Hawaii which never even had a large herbivorous animal until man brought cattle in. Some, at least, of the Galapagos plants have retained thorns and spines but the Hawaiian rarities are totally unprotected.

As the plants go, so goes the island ecosystem. We talk, for example, about the imminent extinction of the great land iguana of Galapagos, so dramatically featured in television films and travel posters. I learn that they are reduced to small countable numbers in a few remaining natural populations. They are very rarely reproducing. At first, it was the packs of wild dogs that seemed mostly to blame but a recent closer look suggests that something is wrong with the tricky territorial and mating behavior.

We went to look at some captive iguanas in their pens near the lab. Magnificent classic reptilian profiles are displayed for the visitor by the males, as they rest on small promontories in the pens.

Like many Galapagos birds and animals, they are not very suspicious of the human visitor but on the other hand they are not as utterly oblivious of possible danger as the abundant black marine iguanas of the shore, which occasionally come right into the lab dining room.

THE MALE LAND IGUANAS are pugnacious and would be battling each other continuously if they were not kept separately or in the company of two females, a situation which seems to lead to the maximum peaceable state.

Apparently the young males have difficulty establishing their territories, not only in captivity but also in nature. Copulations have not been observed in the pens, and the successful males in nature seem to command a sizable territory with a nice view.

To what extent environmental destruction contributes to mating failure is not known, but the successful meeting of the sexes is only part of the story. A fertilized female must then build a complicated nest and lay eggs. Even if she does this, the black rats, which are now abundant everywhere, are very likely to get the eggs. How precarious an existence these island animals have!

Unlike the land iguana, the famous Galapagos tortoise is not about to become extinct but its status as a wild animal to be seen naturally foraging on the islands is very uncertain. The culprits here are dogs, cats, rats and small Ecuadorean children; all interfere with its reproduction.

Encountering a wild tortoise while bushwacking in the islands is now an unusual event, even in the special tor-

— Two Island Paradises

toise reserves. Darwin's vivid descriptions of the tortoises in 1835 are no longer possible now and most visitors must look at them in pens and then imagine what it must have been like to meet one of these monsters heading for his water hole.

I have a naturalist acquaintance who has refused to look at the Galapagos tortoises in the Honolulu Zoo. He is waiting to see one in the wild. Now I must tell him to be prepared for a long day's hike into the reserve and hope to be lucky even then.

IT IS MISLEADING and to some degree sterile to compare two island archipelagos but a Hawaii Islander may wonder how his Islands fare when compared with Galapagos.

In overall charms and classic beauty, Galapagos must lose the match.

In Hawaii, the mountains are higher and steeper, the beaches are larger, and the forests more diverse and remarkable. Hawaii's water supply and waterfalls cannot be matched in Galapagos where the sparse rainfall must be hoarded for drinking because the groundwater is brackish.

Both have strange plants but perhaps Hawaii's tree violets, gigantic silverswords, tree-fern jungles and tree lobelias outscore the tree cacti and the forests of sunflower trees of Galapagos.

For birds, first prize goes to Galapagos. The Hawaiian honeycreepers were biologically surely as remarkable as Darwin's finches, if not more so. But, alas, they are now nearly gone. Not so Darwin's finches.

Around the little town of Puerto Ayora on Santa Cruz (the island known in Darwin's day as Indefatigable), they are everywhere. The ground finches are underfoot, so tame one fears that one will step on a bird. They come into the kitchen at breakfast and nibble at pancakes on the table. They go down into the garbage cans and on the docks are just about as urchinlike as English sparrows. While you wash clothes, they wait rather impatiently a few feet away so they can get to the tap for a few drops of brackish water.

THE DARWIN'S FINCHES seem as tame as they were described to be in Darwin's day, although this would be hard to measure. Not only they, but the yellow warblers, vermilion flycatchers and other small land birds all surprise the bird-watcher by moving towards him, often coming so close that you could reach out and touch them. They look at you intently, with bright eyes and cocked head.

No doubt natural selection in the form of cats or cars may result eventually in a more fearful behavior, but I would rate them as just about as vigorous and adaptable group of species as I ever saw anywhere. This contrasts strongly with the delicate Hawaiian honeycreepers to which both man and mosquito-borne malaria are anathema.

Of all the delightful Galapagos birds, it is the native mockingbird which gets my first prize. They are quite large, quiet birds with a moderate black mask which gives them a raptorial look. They are not kitchen beggars but if one rests on the trail while hiking, the reaction is immediate, as if a signal had gone out that something large and interesting is around.

Two or three will come and sit very close, like their relatives, the camp robbers of the north woods. Curiously, they are not begging for handouts. If you hold out food to them, they neither come forward nor back off and fly away. Rather, they hold their ground and become nervous. They are then likely to peck at something inedible like Spanish moss, in a display of displacement behavior.

It's like the uneasy fellow who plucks bark off your tree while you are asking him to estimate a difficult carpentry job. One's presence stimulates them to feed, on natural things, close to you, around your feet at your elbow. A piece of red ribbon was more interesting than food.

Water, dribbled on a lava rock from a canteen, seemed to be a surprise and was the only thing that seemed to generate a little fear. Nevertheless, it was tried in a gingerly fashion.

MOST PARTS OF HAWAII are rudely marked by man, not only by the concrete jungle of Honolulu but the hillsides above are covered with houses. The heights have observatories and towers. Formerly great forests are replaced by sugar cane, weed trees and range lands.

Essentially, Galapagos remains as wilderness especially where rainfall is low. Where once were wet forests on Santa Cruz, Isabela and San Cristobal there are now orchards and pastures; it doesn't take a large population to usurp the richer lands.

Whereas Hawaii's woes are the direct overrunning of the rich natural heritage by her million people, the 4,500 in Galapagos have had an effect which is indirect and overall far less.

Each person has his own idea of paradise. Individuals with modest ideas really discover it for themselves; others deny its existence altogether. That strange thing which the ecologist dreams of, a balanced ecosystem without human disturbance, did indeed exist on these oceanic islands before the days of the buccaneers and the discovery of Hawaii by the ancient Hawaiians. But when they were first seen by keen-eyed naturalists, as by Charles Darwin and R.C.L. Perkins, already much was changed.

Galapagos and Hawaii are today modified paradises when looked at with the cold calculating eye. But much treasure remains lurking in both places for the eye that will see it.

Both island groups have developed dedicated crews of optimists who are bound to try to save for posterity all the treasures they can. A lot is being and will be saved. Support for them is needed from all who also dream about paradise.

A Galapagos turtle.

In memoriam

William O. Taft '06, a former state representative and selectman, died recently in Clinton, Mass. After graduating from Mass. Agricultural College, he operated a fruit and dairy farm until 1947 when he retired. He served as representative from the 12th Worcester district from 1941-42 and as selectman from 1950-53. Among his many civic activities, he served as town assessor, moderator, and school committee member. He leaves a son, a daughter, and three grandchildren.

Frank J. Clegg '14 died Nov. 19, 1976 after suffering a broken hip in his home in Seekonk, Mass. Until his retirement, he owned and operated Four Town Farm in Seekonk. He was a member of the Union Congregational Church, the Farm Bureau, and the Boston Market Gardeners Association. He was a former member of the town school building committee, president of the Southern Massachusetts Growers Cooperative and member of the Mass. Board of Agriculture. He leaves a daughter, a son and five grandchildren.

John Doubleday Pellett '14 died at his home in Greenville, S.C. in February. He was a native of Worcester, Mass., and Carl M. Allen '14 writes: "He majored in landscape gardening and taught for two years before entering the construction business with his father. He continued in the construction business after moving to Greenville, later forming his own company and expanding in commercial and industrial work throughout the southeastern states." He leaves his wife, Marguerite Weaver Pellett, a graduate of Mt. Holyoke, two sons and 12 grandchildren.

Nathaniel K. Walker '14 died Dec. 10, 1976 in his hometown of Wakefield, Mass. Factory Hollow Sawmill in Amherst and later worked as manager of the Amherst Wood Working Company. He leaves two daughters and a sister.

Ellsworth H. Wheeler '26, professor emeritus of entomology at the university, died Feb. 28 in South Kingston, R.I. A native of Bolton, Mass., he received his master of science degree and his doctorate from Cornell University. He was an instructor and later head of the biology department at Hobart College in Geneva, N.Y., and worked as a research assistant for the New York State Agricultural Station before joining the university faculty as a professor of entomology in 1948. He was a member of the Entomological Society of America and Alpha Gamma Rho fraternity. Besides his wife, the former Catherine Bond, he leaves a son and 11 grandchildren.

Raymond D. Clarke '29 died Dec. 10, 1976 in Boston, Mass. A native of Brimfield, Mass., he was employed for many years by Westwood Textiles. He was a former selectman and a member of the Brimfield Congregational Church. He is survived by his wife Alice, two sons, a sister and two grandchildren.

Earl B. Rodriguez '49 died of a heart attack on Aug. 26, 1975. He retired from the Air Force in 1967 and was working as an electrician at the time of his death. He left his wife, *Dorothy Beers Rodriguez '50*, and three children.

James B. Trefethen '53G died Dec. 30, 1976. He was the director of publications for the Wildlife Management Institute and edited many publications on wildlife, including "Transactions of the North American Barousseau, he leaves his mother and a brother.

Virginia Fellows Antonio '73, a chiropractor and former elementary school teacher, died Jan. 21 in White River Junction, Vt. For 24 years, she was a chiropractor in Greenfield, Mass., after having graduated from Palmer College of Chiropractory in Davenport, Iowa, in 1952. She received an associate degree from

leaving the university in 1968, he worked as chief of ambulatory services at Baystate Medical Center, Springfield, and was one of the founders of Brightwood Riverside Health Center. He was also one of the first to propose establishing an emergency cardiac care ambulance system in Springfield. He leaves two sons and a daughter.

Eldon K. Churchill, who was employed by the maintenance department at the

Albert R. Jenks '11, horticulturist

Albert R. Jenks '11, well-known horticulturist and resident of Acton, Mass., died on Feb. 11.

His friend and classmate Allister MacDougall '11, writes: "He had a remarkably successful career. He was a former Acton Selectman, Acton Patriot of the Year (1965), an outstanding agriculturist, teacher, home builder, churchman, entrepreneur, businessman and philanthropist . . . His life reads like a storybook tale of courage, determination and leadership."

A native of Three Rivers, Mass., he entered Mass Aggie in 1907 where, in addition to his studies and greenhouse work, he worked in the office of the newly formed Extension Service and was the founder of Theta Gamma Phi, now a national fraternity. After graduation he was selected as the first horticultural agent with the Hampden County Improvement League and in 1916 established the first agricultural extension service of Middlesex County. In 1920 he established his own large fruit farm in Acton and Harvard. The following year he started a fruit and shade tree service and landscaping business that served Massachusetts and neighboring states.

During the '20s he served as Selectman in Acton and helped found the Nashoba County Poultry Association. His research into plant disease in Florida resulted in an appropriation of funds for the establishment of the Lake Okeechobee Agricultural Experiment Station.

During World War II, he pioneered in developing refrigerated storage for fruit growers in the Acton area, an operation that was the largest of its kind in New England. After the war he became involved in home building in the Indian Village, Robbins Park, and other home developments in the Acton area. In appreciation for his contributions to the town, he and his wife Mabel, who assisted him in many of his endeavors, were selected as Acton's first "Patriots of the Year" in 1965.

The Jenks established the Jenks Charitable Foundation of $100,000 to aid needy students at the Newton Theological Seminary and the Jenks Educational Fund, administered by the West Acton Baptist Church. Shortly before his death, he was selected as "Man of the Year" by the national fraternity he helped found, Theta Gamma Phi. His grandson, who is a student at the university, will accept this honor for his grandfather later in the year.

In sum, writes MacDougall, "The Jenks both worked very industriously, creatively, and productively over the long span of their years and apparently loved every minute of it."

He is survived by a son, two daughters, a sister, eight grandchildren and seven great-grandchildren.

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Stanley E. Polchlopek '43 of Bethel, Conn., died June 29.

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David M. Rollins '63 of Hingham, Mass., died Jan. 19 at the Dana Cancer Center in Boston. After graduating from UMass with a degree in German literature, he did graduate work in political science at UMass then served in the U.S. Army from 1966-67. He leaves his wife, *Marylou Hummer Rollins '66*, two daughters, aged 5 and 10 months, a brother, a sister, and his mother. Donations in his memory may be made to the Sidney Farber Cancer Institute, c/o Carlton Hendricks, 44 Binney St., Boston, Mass.

Donald K. Stoddard '63, a teacher at Easthampton (Mass.) High School for 14 ears and the operator of the Stoddard al Estate Agency in Easthampton, died ently in Cooley Dickinson Hospital after long illness. He leaves his wife, a son, daughters, and a sister. Contributions be made to the Cooley Dickinson ital, Northampton.

W. "Billy" Nichols '66 of Chatham, d Aug. 2 at the Providence, s Hospital after an eight-year cer. He served in the Army 962 before entering UMass. he moved to Chatham n. In 1976 he men's Supply, a tting firm in rmer president of perative. he *Cape Cod* vith the people

From the '20s . . . .

James W. Doherty '23, an attorney in Laconia, N.H., from 1938 until his retirement in 1974, died June 6 at Lakes Region General Hospital, Laconia, after a long illness. He was 78. An Army veteran of World War I, he was a member of Mt. Lebanon Lodge, Union Chapter Pythagorian Council, and Pilgrim Commandery. Also, he was a member of Bektash Temple, Winnipesaukee Shrine Club, Mt. Washington Chapter OES, and N.H. Consistory, 32nd degree Mason. He was a member of the Laconia Lodge of Elks, member and past president of the Belknap County Bar Assn., and a member of the New Hampshire Assn. He was an honorary chief of the Gilford Fire Dept., and formerly an active member of the Laconia Fire Dept. He was also an honorary member of the N.H. Conservation Offices Relief Assn. He leaves his wife, three sons, two daughters, six grandchildren, one great-grandchild, and a sister. Donations may be made to the Shrine Hospital, care of the Winnipesaukee Shrine Club.

Francis "Joe" Cormier '26 died Aug. 13 at his home in Oxnard, Calif., at the age of 78. He earned his master's degree in landscape architecture in 1928 from Harvard University, where he won the Charles Elliot fellowship for study in Europe. He went on to a distinguished career in landscape architecture, in association with Robert Cram in Boston, the Long Island Parks Commission, the New York City Dept. of Parks—where he helped develop Flushing Meadows Park on the site of the New York World's Fair

Jennie May Wiggin '27, aged 74, died July 10 in St. Petersburg, Fla. Before retiring, she was a registered nurse with the Conn. State Farm for Women and lived in Niantic, Conn. She graduated from the Memorial Hospital Training School for Nurses in Worcester in 1932. She leaves several cousins.

Cornelia B. Church '28, of Amherst, Mass., died Sept. 19 at a Sunderland nursing home. A native of New Paltz, N.Y., she was a 1924 graduate of Amherst High School and attended Framingham Normal School before attending UMass. After getting her UMass degree, she attended Becker Business College, Worcester, then the University of Wisconsin Library School, where she received her degree in library science in 1941. She worked as a reference librarian in the Worcester Public Library and, in 1943, became head of the division of business science and technology. In 1949 she was appointed to head the library's adult services program. In 1956, she became regional librarian of the Greenfield Regional Library Center, operated by the state. After she retired in 1972, she worked at the Greenfield library cross-indexing old copies of the *Greenfield Recorder*. She was a member of the North Amherst Congregational Church, honorary member of the Western Mass. Library Club, life member of Mass. Library Assn. and of the New England Library Assn., and a continuing member of the American Library Assn. She leaves a sister and several cousins.

Russell R. Whitten '29 died July 15, 1977 in Columbus, Ohio, at the age of 71. ing 38 years with rd Plant

The Alumnus
UNIVERSITY OF MASSACHUSETTS AMHERST

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Faculty and staff

Laurence R. Grose, UMass professor of forestry from 1920 to 1930 died Feb. 2, 1978 at Cooley Dickinson Hospital in Northampton. He was 94. Until his retirement in 1968, he ran nursery schools in Amherst with his wife for 33 years, and taught English and arts and crafts at the Fenn School in Concord for 12 years. He received his bachelor's degree from Brown University and masters' degrees from Brown and Harvard. He leaves two sons, a daughter, nine grandchildren, and three great-grandchildren.

Petersen also owned and operated Petersen's Truck Farm in Concord, where he lived. He served as road commissioner,

A. Sandow '23, noted scientist

Alexander Sandow '23

Alexander Sandow '23, research professor of biology at New York University, died Apr. 17 in St. Vincent's Hospital in New York City after a brief illness. A scientist and researcher of wide renown, he received an honorary doctor of sciences degree from the university in 1973 and the annual Distinguished Debate Union Alumnus award in 1977.

After graduating from the master's program in bacteriology at Columbia University in 1927, and the doctoral program in physics from New York University in 1931, he taught at New York University throughout his career, becoming a full professor in 1954.

In 1959 he helped found the Institute for Muscle Disease, the research facility for the Muscular Dystrophy Associations of America, and served as head of the organization's physiology division until the organization's demise in 1974.

He was a renowned lecturer and publisher, and belonged to numerous scientific societies including the American Assn. for the Advancement of Science, the American Assn. of Scientific Workers, the American Physiological Society, the American Society of Zoologists, the N.Y. Academy of Sciences, where he was elected a fellow in 1945, the Harvey Society, the American Society of General Physiologists, of which he was a charter member, and Sigma Xi.

He leaves his wife and two children.

age 82, died Apr. 23 following a long illness. He was the Class of 1916 treasurer, treasurer of the 1916 Class Gift Fund, treasurer of Intercom, a newsletter for the Class of '16, and a member of the 50th reunion committee for his class. In addition, he initiated 1916 monthly class meetings, which continued uninterrupted for over 40 years; on the last Tuesday of each month classmates would gather for dinner at Warmuth's then proceed to the Acme Novelty Co. of Boston, which Gioiosa founded. As a student, he was a member of the College Senate, the *Collegian* Board, the 1916 *Index* Committee, and a member of Adelphia and Phi Kappa Phi. He leaves his wife.

Robert L. Boyd '18 died Mar. 21 at Elliot Hospital, Manchester, N.H., at the age of 85. Since 1974, he had lived at the Masonic Home in Manchester. A professor at Plymouth State College for more than 30 years, Boyd was honored in 1968 when the science and art building at Plymouth State was dedicated in his name. The Plymouth annual town report was also dedicated to him upon his retirement. He was a 50-year member of the Burns Lodge of Masons in Littletown, N.H., an Army veteran of World War I, and past commander of the Haley Post 66, American Legion in Plymouth. He leaves two sisters and several nieces and nephews.

Bena Erhard Suzan '19 of Mattapoisett, Mass., died Feb. 1 at Tobey Hospital, Wareham, following a long illness. A communicant of St. Anthony Church and member of the New Bedford Garden Club, she was also leader and member of the board of directors of the Plymouth County 4-H Council and a lecturer and judge of fair exhibits. She leaves two sons, a sister, a brother, and five grandchildren.

Edmund Taylor '19 of Floral City, Fla., died in March three weeks after he fell and broke his hip. He leaves one sister, a nephew, and a niece.

G. Robert Derick '20 died Feb. 11 at the DeKalb General Hospital, Decatur, Ga. He was 79 and retired from his career as a landscape architect in North Carolina and Georgia. He leaves his wife, a daughter, and a grandson.

Melvin C. Jack '25 of Cape Elizabeth, Me., died Apr. 21 at South Portland Nursing Home after a long illness. He was 78. A teacher in Quincy, Mass., for many years, he was head of the business education dept. at North Quincy High School for 32 years. In addition, he was an accounting instructor in the adult education division at Northeastern University and taught photography at the Boston YMCA.

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Alan D. Stackpole '28 of Redding, Conn., retired general manager of industrial relations for the Union Carbide Corp., died Apr. 10 in Danbury, Conn. He was a former chairman of both the Board of Education and the Planning Commission in Redding, as well as former president of the Redding Land Trust and a member of the Redding School Building Committee. He was a member of Christ Church parish in Redding and had served there as a vestryman and parish clerk for many years. He leaves his wife, one son, two daughters, two sisters, and seven grandchildren.

Earle C. Prouty '29 of Guilderland, N.Y., died Mar. 20.

Melvin J. LaFrance '33, for many years the owner of LaFrance trucking and landscaping business in Northampton, died Apr. 25 after suffering a heart attack. He was a member of the Masonic Temple, the Melha Temple, the World War II Assn., the Elks, the Fraternal Order of Eagles, and he was a past president of the old-timers club of the Melha Temple. He leaves a son, two daughters, two sisters, and a grandchild.

Darrell A. Dance '34, a retired foreign service information officer for the U.S. Information Agency, died Sept. 12, 1978 in Largo, Fla. A graduate of Rutgers and the University of Michigan graduate schools, he worked with the Mass. Health Dept. before joining the federal government. He began his career in government service in motion picture units in 1941 with the U.S. Public Health Service, transferring to the State Department as a technical

Botanist Ernest E. Stanford '15

Ernest E. "Cap" Stanford '15, long-time botanist and teacher, died Dec. 7, 1977. He had received an honorary doctor of science degree from UMass in 1950.

He was professor of pharmacognosy (the study of crude natural drugs) at Western Reserve University, Cleveland, Ohio, from 1919-26, taking a year's leave of absence to earn his PhD from Harvard University in 1924. In 1926 he accepted a position as professor of botany at the College of the Pacific in Stockton, Calif. He remained a full-time teacher until he reached the mandatory retirement age of 70 in 1958. When he retired he was awarded the "Order of Pacific," the highest honorary title the college bestows on its faculty. He had chaired the department at Pacific and had taught biology and bacteriology in addition to botany.

At the age of 71, he accepted the job of heading the science dept. at Pikeville College, a small Presbyterian college in Pikeville, Ky. According to a biography written by his daughter, the college science dept. was so poorly equipped that Stanford started his new job by buying and paying for several microscopes; he was also instrumental in getting accreditation for the college. Intending to stay at Pikeville for just a year, he stayed four years until he retired again at age 75. Following

Ernest E. "Cap" Stanford '15

retirement, he continued with his boyhood hobbies of collecting rocks and stamps, and photography, especially slides of scenery and botanical specimens.

Listed in *Who's Who in America*, Stanford wrote a number of stories which appeared in such magazines as *Boys' Life*, *American Boy*, and *Nature Magazine*. He also wrote several books including *The Mascot Goes Across*, his first, published in 1929, and several books on economic botany, a field in which he pioneered.

Howard N. Steff '39 of Marion, Mass., died Apr. 2 after a long illness. A veteran of World War II, he served in the South Pacific theater as a captain with the American division for four-and-a-half years. He was employed by Seagrave Corp. for 26 years and American LaFrance Co. for four years before retiring as New England

Granby (Conn.) High School, Kosciusko Junior High School in Enfield, Conn., Holyoke (Mass.) Community College, and at the Community for People in Boston. He leaves a son, four daughters, three brothers, and four sisters.

Robert J. Sanderson '74 was the

In memoriam

James A. Price '15 died at his home in Ottsville, Pa., on Sept. 15. He is survived by his wife.

Ralph E. Tower '15 of Phoenix, Ariz., died on Sept. 24 in Sun City.

Albert W. Meserve '20 of New Milford, Conn., died Sept. 28 after a brief illness. A nationally known arborist and founder of the Albert W. Meserve Tree Expert Co., he began his company in 1940 after working as a district manager for the Bartlett Tree Co. of Danbury for about 12 years. He retired in 1971. He received the "Book of Golden Deeds" award from the Exchange Club of Danbury in 1968 for community service which included activities in the Rotary Club, Boy Scouts, American Legion, and the Red Cross. He was a member of the Pyramid Temple Shrine and other Masonic orders and, in 1976, received a 50-year membership citation from the Pyramid Temple. He was past president of the Danbury Community Chest, past commander of American Legion post No. 60, past president of the Danbury Veterans Assn., past chairman of the Danbury chapter of the American Red Cross, and past president of the Mauwehu Council Boy Scouts of America. He was the developer of Camp Mauwehu, a 360-acre camp on Lake Candlewood, and a recipient of the Silver Beaver award. He was also a member of the Danbury Recreation Commission and chaired the Danbury Park Board for eight years during which time he helped develop and expand Danbury's Rogers Park and playground facilities. He was a past president of the Conn. Tree Protective Assn., the National Arborists Assn., and the International Shade Tree Conference, now known as the International Society of Arboriculture. He also was an active member of the American Society of Consulting Arborists, and in demand as a college lecturer and speaker. After his retirement he spent much of his time on his New Milford farm, where he raised purebred polled Hereford cattle. Listed in a number of "Who's Who" publications, he was also president of the Scott Fanton Museum and Historical Society for several years. A direct descendant of Peregrine White, who was born on the Mayflower, and a descendant of Benjamin Wadsworth, early president of Harvard University, and the poet Henry Longfellow, he leaves a brother and several nieces and nephews.

Henry B. Trull '28 died Oct. 12 in Emerson Hospital, Concord, Mass. He was owner and operator of the Trull Farm in Lowell and Tewksbury, where he lived, and was the builder and owner of the Trull Brook Golf Course in Tewksbury. He was a member of the First United Baptist Church and was for many years chairman of its executive board. He was a volunteer worker for the Merrimack Valley United Fund, a member of the Lowell Rotary Club, and board member of the Lowell Salvation Army. In addition, he was a former president of the Battle Home of Lowell, a member of the board of directors of the Faith Home of Lowell, and of the Lowell Cemetery. He was also an incorporator of Central Savings Bank of Lowell. He leaves his wife, three daughters, one son, a brother, and several grandchildren.

Marjorie Monk Burbank '31 of Paxton, Mass., died Oct. 16. She leaves her husband, *O. Frank Burbank '30*, a daughter, *Judith Burbank Russell '56*, a son, and three grandchildren.

Forrest E. Crawford '33 of Baton Rouge, La., died July 24.

Robert M. Beaulieu '50 died Oct. 19 while vacationing in Egypt. He had been the city editor of the *Fitchburg-Leominster Sentinel* and *Enterprise* since 1968 and on the paper's staff since 1959. He served in the Army Air Corps in World War II and in England from 1943 to 1946. He leaves his wife and three daughters.

Jean Ann Lindsay McGarr '51 of Westport, Mass., died Oct. 18 after a long illness. She was awarded a master's degree in education from Framingham State College in 1971 and was a retired teacher in Brockton, Walpole, Sharon, Wrentham, Westport, and, most recently, at New Bedford Vocational High School. A member of Westport Point United Methodist Church, she served on the church administrative committee, chaired the quilt committee and summer fair, and sang in the church choir. She was also a former member of the Mass. Vocational Assn., and Mass. Teachers Assn., and was active in UMass alumni phonothon work. She leaves her husband, *Thomas J. McGarr '49*, three sons, her father, three sisters, and a granddaughter. Donations in her memory may be made to the Westport Point United Methodist Church.

Dorothy Fortin Cole '51 died Oct. 19 of injuries suffered in a pedestrian-train accident near her home in Lanham, Md. The valedictorian of her Adams Memorial High School class and the recipient of the

Class reports

Wilhelm Hillebrand

1821 - 1886

By OTTO DEGENER

WILLIAM HILLEBRAND, M. D.
Talented Physician and Botanist
(After Willis T. Pope)

ONE HUNDRED YEARS ago, a man in search of health, came to the kingdom of Hawaii, then known to the outer world as the Sandwich Islands. The man, Dr. Wilhelm Hillebrand, not only regained his health but served his adopted country. He gave the people of Hawaii wise advice, both as their physician in the sick room, and as a member of the Privy Council in the court of Kamehameha V. He radically influenced the racial makeup of the Islands. He beautified and enriched Hawaii nei by importing the choicest shade and flowering trees, valuable introductions from the farthest corners of the earth. He diligently collected and expertly studied the plants native to the Hawaiian Islands. His botanical researches culminated with the publication of a Flora that has been the valued handbook of two generations of

lands. He was connected with the insane asylum, and was a member of the board of health. He was likewise in partnership with J. Mott-Smith, their drugstore standing at Hotel and Fort Sts., Honolulu.

With the natives dwindling in numbers due to the advent of diseases and customs novel to them, Dr. Hillebrand spent considerable time in repopulating the Islands from outside sources. In April, 1865 as commissioner of the bureau of immigration, accompanied by his family, he traveled to China, India and Malaya to arrange for the importation of laborers. At the same time he was also to investigate means for control of "mai pake" or leprosy, then incurable and of relatively recent introduction into the Hawaiian Islands. In 1877 he arranged for the emigration of workers from Madeira, where he was then living, and the Azores, to Hawaii. This pioneer group of 180 Portuguese reached Honolulu Sept. 30, 1878.

Long associated with the Royal Hawaiian Agricultural society and its corresponding secretary, Dr. Hillebrand arranged for the introduction of desirable seeds — as of the monkeypod and royal palm — for growing in Honolulu, at that time rather bleak and dusty.

When he was about to set out in his search for immigrants in 1865, the society and the Planters' association jointly appropriated $500, a worthy sum those days, for the introduction of worthwhile plants and animals. In the Hawaiian Gazette for July 28, 1866, is the report that Dr. William Hillebrand had forwarded 10 Wardian cases from Singapore, nine from Calcutta, one from Ceylon, eight from Java and two from China containing plants and chiefly birds. From this and subsequent records we learn that Dr. Hillebrand's importations, not every one wise, included camphor, cinnamon, jak fruit, litchi, mandarin orange, Chinese plum, Java plum, several kinds of eugenias and banyans, and a considerable number of other useful or ornamental plants. He likewise imported carrion crows, goldfinches, Japanese finches, linnets, mynah birds, Chinese quail, rice birds, Indian sparrows, golden, silver and Mongolian pheasants, and a pair of deer each from China and Java.

* * *

The introduced seeds and growing plants were distributed throughout Honolulu, their progeny by this time gracing gardens and streets throughout the Islands. Many trees, now veritable giants, planted by Dr. Hillebrand himself, are still standing about Queen's hospital, on the grounds of the old plant nursery at King and Keeaumoku Sts., and especially about the spacious grounds of the doctor's former home on Vineyard and Nuuanu Sts.

The Hillebrand homestead, passing through several successive ownerships since the doctor's departure from the Islands, was saved from "progress" and real estate subdivision by the generosity and wisdom of Mary Foster and Harold Lyon. Now known as Foster Park, it attracts local residents and tourists alike with its magnificent trees and lovely flowers.

Though Dr. Hillebrand resided in the Hawaiian Islands only the 20 years, from 1851 to 1871, he maintained his interest in their flora until his death 15 years later. He visited all the larger islands of the group, often with his son William, botanizing wherever possible. He employed Hawaiians as guides, and attracted to himself congenial companions like young John Lydgate and Horace Mann, the latter the son of the famous educator. He carefully preserved and studied these plants as well as those which correspondents on various islands sent him.

Asa Gray, a professional botanist at Harvard, had described some new plants collected in the Hawaiian Islands chiefly by the U. S. exploring expedition under Commander Wilkes. In the winter of 1871-72 Dr. Hillebrand lived in Cambridge, Mass., to begin with Prof. Gray's assistance the manuscript of his monumental "Flora of the Hawaiian Islands: A Description of their Phanerogams and Vascular Cryptogams." Thereafter Dr. Hillebrand traveled extensively in Germany and Switzerland, in Madeira and Teneriffe. He returned finally to Heidelberg, where he had spent such pleasant student years, to end his days.

Though already painfully ill for two years, he managed to complete writing much of his manuscript, submitting part of it to "Carl Winter, University-Bookseller." Dr. Hillebrand, after having the satisfaction of correcting the first few pages of proof, died July 13, 1886, his remains being interred in the cemetery near Heidelberg and overlooking the Rhine.

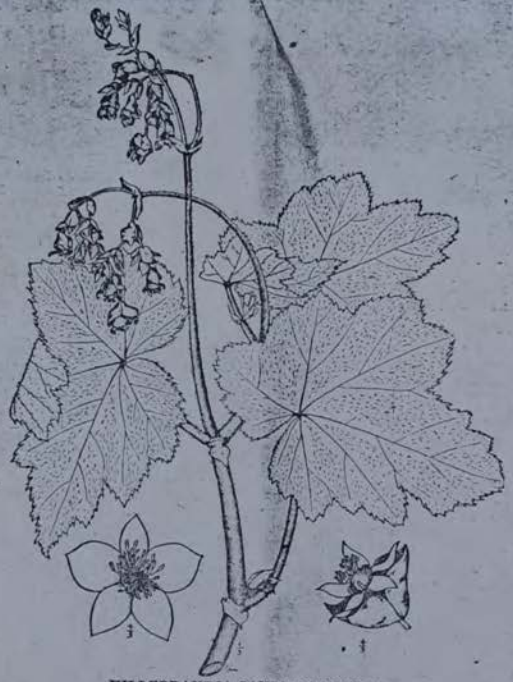
Fortunately, his son Dr. William F. Hillebrand, chemist then connected with the bureau of standards in Washington, D. C., with the help of Prof. E. Askernasy of Heidelberg, carefully and expertly edited the work, publishing it

Dr. Hillebrand was born in Nieheim, estphalia, a province of Prussia at the ne and now in the British occupation ne, on Nov. 13, 1821. He was the son Judge Franz Joseph Hillebrand and uise Pauline (Koenig) Hillebrand. s sisters, Pauline and Wilhelmina, th died young. His brothers were inrich, Franz and Herman. The lat- brother-in-law of the Rev. Sereno Bishop, was a prosperous dairyman ar Honolulu until his death. Com- ting his early education at Nieheim, lhelm studied in Goettingen, Heidel- g and Berlin.

After receiving his degree in Berlin, lebrand practiced medicine in Pader- rn, near his birthplace, a few years til illness, presumably pulmonary erculosis, forced him to cease. arching for a more healthful climate, sailed to Australia, then to the ilippines. In Manila he resumed the ctice of his profession until declin- health induced him again to travel, s time to San Francisco. Not satisfied, sailed for the Hawaiian Islands, ar- ing just 100 years ago. The following ar, Nov. 16, 1852, he married Anna st, stepdaughter of Dr. Wesley New- mb, prominent local physician and ateur conchologist.

Dr. Wilhelm, or William, Hillebrand, ording to the description of Dr. Wil- T. Pope in Thrum's Annual for 1919, middle age was "a quiet, sober, prac- al man of medium height and weight, plexion fair, eyes gray and as pos- ing an abundance of rather dark r. He was fond of his family and took ticular interest in the education of children, two sons, William Francis Henry Thomas . . . The doctor was y fond of music and enjoyed playing the piano, but his favorite recreation that of working among his horti- ural specimens in his home garden."

oon a favorite family physician in nolulu, Dr. Hillebrand included the al family among his patients. He was ysician of Queen's hospital for most e time from its founding by Queen until his departure from the Is-



HILLEBRANDIA SANDWICENSIS Oliver

HILLEBRANDIA

Lovely Native Begonia named in Honor of Dr. William Hillebrand

(After Otto Degener)

posthumously in 1888.

* * *

Curiously enough, though Dr. Hillebrand's Flora of almost 800 pages is written in English, it was evidently printed in Heidelberg, the Prussian government contributing 1,000 marks toward defraying expenses. How large an edition was printed I do not know.

Though the book, long thought out of print, has been a rare collectors' item and invaluable aid to botanists interested in Hawaiian plants, I discovered unbound copies in Germany some 20 years ago, importing several dozen for local use. This German supply was probably lost during the second world war.

A few of Dr. Hillebrand's historical herbarium specimens exist, mostly in fragmentary form in the Bishop Museum and in other institutions in America and Europe. The main collection, following a verbal wish expressed a few hours before his death, had been bequeathed to the botanical museum at Berlin-Dahlem. This collection of inestimable scientific value was almost totally destroyed, excepting for the ferns, toward the latter days of the Second World War by our air force.

Dr. Hillebrand's Flora was an excellent book for its time, superior in many ways to Floras written by contemporary professional botanists. But botany and other sciences are not static. They have progressed by leaps and bounds since 1888. Also, new roads and trails have been opened up in the Islands, enabling present botanists to penetrate regions closed in Hillebrand's time and harboring plants hitherto unknown.

Not only that, thousands of exotic plants have reached our shores, both purposely and accidentally by man since 1888. A modern Flora Hawaiiensis must include all these. To be correct it must be built upon the firm foundation established by our greatest pioneer botanist, Dr. Hillebrand.

Dr. William Hillebrand, versatile citizen of the kingdom of Hawaii, was one of the titans of his time. Hawaii nei gained immeasurably by his 20 years' residence.

Archive # 72 Rec. 8/11/8?

Hawaii Tribune-Herald, Sunday, March 22, 1981—7

PLANT CLINIC IS TUESDAY—Wayne T. Nishijima, plant pathologist at the Cooperative Extension Service and the Beaumont Agricultural Research Center, inspects a crop of Dracaena marginata as grower Shinobu Oshima looks on. Nishijima will be available for diagnosis of plant disease problems at the Plant Clinic sponsored by the Cooperative Extension Service on Tuesday from 1-4 p.m. at the Agricultural Complex, 875 Komohana St. The clinic is open to commercial growers and homeowners.

Dr.H.c. Oscar Klement, 1897-1980

Otto & Isa Degener

Oscar Klement was born April 19, 1897 in Germany. He entered business, finally becoming Director of the Mannesmannhandels Company of Hannover. In spite of his duties, he chose Lichenology as an avocation and became an expert in this discipline.

When we lived on Lanai for about six months in 1963-64 for the purpose of collecting mainly Ferns and Flowering Plants, we could not forego gathering enticing lichens from fenceposts and elsewhere. Learning of Dr. Klement's reputation, we mailed our entire collection of lichens to Him for study.

Stimulated by the Lanai specimens and studying "Literatur" of 53 titles, Dr. Klement published "Zur Kenntnis der Flechtenflora und -vegetation des Hawaii-Archipels" in Nova Hedwigia 11:243-283 plus 7 plates in 1966. Greatly impressed, we prevailed on him to prepare a "Key to Hawaiian Lichens." We translated his German manuscript into English, publishing the eight page result as coauthors in "Degeners' Flora Hawaiiana ® Leaflet No. 1" on Dec. 30, 1968. Remaining copies are being distributed now in incomplete Book 7 of our "Flora Hawaiiensis ®". Having a snapshot taken Sept. 1965 of him, to surprise him, we reproduced it there.

In Oct. 1972 we had the pleasure of visiting our friend and his wife Marie for a few days' botanizing in Kreuztahl-Leutkirch, Allgäu, Germany. A few years later, Mr. & Mrs. Klement entered the retirement home Alpenblick in Lindenberg. Dr. Klement died February 16, 1980. His wife, a son and several grandchildren survive.

LEGAL NOTICE

ADVERTISEMENT FOR BIDS

SEALED BIDS will be received up to and publicly opened and read aloud at 2:00 P.M. MAR. 11, 1981 by the Director of Finance at the Office of the Director of Finance, 200 South High Street, Wailuku, Maui, Hawaii, for:

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...ons to Bidders, Form of Bid, Form ..., Specifications, and Forms of ...nce and Payment Bond, and ...ts may be examined at:

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LEGAL

...enjamin Rollins Jr., 52, ...ampion Maui rodeo rider

WAILUKU — Benjamin Franklin ...enjy" Rollins Jr., 52, a long-time ...ampion rodeo rider on Maui, died Mon... ...y of injuries received in a fall from a ...se in January 1978.

Rollins, who was a cowboy with Haleakala Ranch, had been training for a rodeo on Jan. 28, 1978, when he fell, striking his head. He remained in a coma until his death Monday at the Kula Hospital.

He was a member of the Maui Roping Club, the Hawaii Rodeo Association and the Maui Horse Owners Association.

Born in Paia, he had a home in Makawao.

Wake services will be from 7 to 9 p.m. today at Hawaii Mortuary Maui. Rosary will be said at 7:30 p.m.

Services will continue from 9 to 10 a.m. tomorrow at St. Joseph's Church, with mass at 10 a.m. Burial will be at the church cemetery.

He is survived by his wife, Cora S.; a son, Carl A.; daughters, Mrs. Keith (Avis) Chong-Kee and Iris M. Rollins of Makawao; a brother, Daniel; sisters, Mrs. Joseph (Ludvina) Abrew of Kahului, Flora Rollins of Honolulu and Mrs. David (Olivia) Pacheco of Kokomo; a grandson, Rusty Chong-Kee; nieces and nephews.

BACLIG — Canuto S. Baclig, 56, of Naalehu, Hawaii, died Sunday. He was born in the Philippines and was a macadamia nut laborer. Friends may call after 4 p.m. Friday for an all-night wake at family residence, 112 Nahale St., Naalehu. Rosary 7:30 p.m. Friday at residence. Mass 2 p.m. Saturday at Naalehu Catholic Church. Burial to be in the Philippines. No flowers. Arrangements by Memorial Mortuary. Survived by sons, Anjelito, William, Jaime and Alexander Baclig of the Philippines and Rollie Jara of Naalehu; daughter, Evelyn Baclig of Naalehu; brother, Felipe of Naalehu; sisters, Maria Tapuro of the Philippines and Feliza Jara of Naalehu.

BECKMAN — Christine Louise Beckman, also known as Christine Silva Beckman, 91, of 2993 Kalihi St., died Saturday. She was born in Hana. Private services held. Survived by daughters, Mrs. Lloyd (Elsie) Maybury of California, Mrs. Wayne (Rose) Vaughn of Washington, Mrs. Sonny (Addie) Neves of California and Mrs. Clarence (Gladys) Welch; son, Walter "Bill" Silva; grandchildren; great-grandchildren; great-great-grandchildren.

CAMPOS — Sixto Campos-79, of Koloa, Kauai, died ...

requested. Survived by husband, Herbert K.T.; daughters, Cynthia L.H. and Colette L.S.; son, Clinton H.Y.

DENNIS — Hannibal N. Dennis, 75, of Hilmar, Calif., died Sunday in Turlock, Calif. He was born in Hawaii and was the owner and manager of a retail fish market. Friends may call 8 to 9:45 a.m. Friday at Memorial Mortuary in Hilo. Mass 10 a.m. Friday at St. Joseph's Catholic Church. Burial at Homelani Memorial Park. Survived by wife, Edith; sons, Neil and John of California; daughters, Mrs. Dado (Edith) Visperas and Judith Dennis, both of California; brother, Charles; sister, Sister Mary Jane; several grandchildren;

FRANK — Peter Keawehawaii Frank Jr., 68, of 2943-A Park St. died yesterday. He was born in Honolulu. Friends may call after 9:30 a.m. Saturday at the Maemae Cemetery on Wyllie Street. Graveside services 10 a.m. No flowers. Casual attire requested. Survived by brother, Louis; nieces and nephews.

GOYA — Niwa Goya, 80, of 522 Kunawai Lane, died Saturday. He was born in Okinawa, Japan, and was a retired mason. Services 6 p.m. Friday at Hosoi Garden Mortuary. Burial at City Memorial Park Cemetery. No flowers. Casual attire requested. Survived by wife, Kame Goya; sons, Koojin of Nevada and Roy K. of California; daughters, Mrs. John S. (Elaine S.) Miyasato and Mrs. Richard Y. (Patsy M.) Takehara, both of California; nine grandchildren; five great-grandchildren; nieces and nephews.

GUSMAN — John Gusman, 55, of Kynnersly Road, Kapaau, North Kohala, died Saturday. He was born in Union Mill, North Kohala, and was a retired laborer. Mass 10 a.m. today at Hawi Catholic Church. Burial at Hawi Catholic Cemetery. Arrangements by Dodo Mortuary. Survived by sisters, Mrs. Felecita Garcia, Miss Petra Gusman and Mrs. Mary Aleja Lum Lung of Honolulu and Miss Isabellae Gusman of Kohala; brother, George of California.

HANDY — Edward Smith Craighill Handy, 88, of Virginia, died Dec. 26. He was a retired ethnologist and anthropologist, who was an authority on Pacific island people. For many years he was associated with the Bishop Museum and was a frequent visitor to Hawaii. Among other works, he was the author of "Native Culture in the Marquesas" and "Polynesia Religion." Services held. No immediate survivors.

HIYAMA — Kikuyo Hiyama, 75, of Hanamaulu, Kauai, died Sunday. She was ...

the church. ... Paul Jr.; ... Melinda an... and Franci... Winifred K...

KAWAM... Kawamoto... day. He w... and was ... PS&D. Fun... Mortuary... brothers, T...

KOBAY... of 921 Alia... was born i... of Union S... Saturday ... Cremation ... sons, Mas... daughter, ... ra; brothe... six grandc...

LEE — ... Pupupuhi... She was ... call 11 a.... Memorial ... a.m. Cas... son, Ern... Lee" Au...

LINCO... Kehena, ... died Sun... and was ... Friends ... Father D... p.m. Ma... Catholic ... Cemetery ... Honolulu ... George ... Charles ... Chun an... hane of ... Aiona o... Jonolino... Salvado... great-gr...

LINCO... 89, of K... Island, ... North K...

STANFORD — George Stanford, 64, of Silver Spring, Md., died Jan. 28. He was born in Pierre, S.D., and lived in Hawaii from 1960 to 1965. He was a former principal agronomist with the Hawaiian Sugar Planters Association, acting director of the Hawaii Agricultural Experiment Station and acting dean of the University of Hawaii College of Tropical Agriculture. Services held. Survived by wife, Helen M.; daughters, Barbara Banks of Honolulu and Janet Clark of Washington, D.C.; sons, Philip of Florida, Ronald of Maryland and James of Washington, D.C.; five grandchildren.

Pukui Nominated for Nobel Prize

by Adelaide Suits

Editor's Note:

The accomplishments of the native Hawaiian scholar, Dr. Mary Kawena Pukui, are legion. She is respected, revered and beloved by the Hawaiian people.

We are pleased to reprint a tribute nominating her for the Nobel Prize in Literature written by Adelaide Suits. We certainly concur with the Suits proposal and urge all who support this nomination to write Mrs. Suits at 931 Hockey Lane, Ann Arbor, Michigan 48103.

The transcendent images of a culture as they are realized in the works of its finest literary artists have long been a worthy focus of the Nobel Prize for literature. The wide range of cultures represented in past awards signifies the breadth of the Nobel Committee's search for artists and a belief in the global value of recorded literature — a belief that literature can carry a message of inspiration to cross all lines of race and creed.

It is with this in mind that I wish to propose the native Hawaiian writer and scholar, Dr. Mary Kawena Pukui, as a candidate for the Nobel Award in Literature. Dr. Pukui, in a long and productive career reaching across seven decades, has drawn on the well-springs of an oral tradition belonging to her aboriginal ancestors to create a literature of rare significance and beauty. Themes of love and reconciliation, integrity of the family and the unity and dignity of all life convey through the modern idiom of Dr. Pukui's written work the values of an ancient people that are relevant to the human condition now and in every time and place.

Among her own people she is regarded with reverent love.

This year, at the age of eighty-five, Dr. Pukui is looking forward to the publication of still another major work. It is an event that will bring the published writings of this remarkable and uniquely gifted woman close to sixty in number. The contribution she has made to Hawaiian life and literature can hardly be measured. Literary images of her creation are known throughout the society; they have come to form a spearhead for the cultural renaissance which is sweeping across all lines of age, race and creed in Hawaii and directing the development of a new identity for island people. It has brought her the title of "Living Treasure of the State of Hawaii," an honorary doctorate from the University of Hawaii and numerous awards from colleagues, Hawaiian officialdom and the local populace. Among her own people she is regarded with reverent love.

Dr. Pukui's birth foreshadowed her place in the literary history of her island homeland. She was born Mary Kawena Wiggin at Haniumalu, Hawaii on April 20, 1895, the daughter of Pa'ahana Kanaka'ole, a pure-blooded Hawaiian woman, and Henry Nathaniel Wiggin, an American from Massachusetts. On her marriage in 1913 to Nathaniel Kaloi'i Puku'i, she acquired the Hawaiian surname she uses today.

The early nurture and training of Dr. Pukui was designed by her parents to invest her with the values of a dual cultural heritage. In infancy, Mary Wiggin was chosen through the Hawaiian system of adoption to the the **punahele** (favored child) of Nali'i Po'ai Moku, her maternal grandmother. For the first seven years of her life she lived as her grandmother's only companion in a traditional Hawaiian village. During that time she received a thorough grounding in the myths of deities and personal images. Dr. Pukui mirrors the many levels of man and nature, myth and reality, time and space and in rhythmic beliefs and aesthetic experiences of the Hawaiian people. The chanting of poetry gives Hawaiians a medium for expressing the infinitely varied quality of life and in turn, the subtle colorings of complex symbolism become a part of the chanter's identity. Chants are valued possessions of a family and are passed, as heirlooms, from one generation to another. They are used to celebrate important occasions in the family's communal life where the bonds of shared aesthetic experiences will work to hold the family's identity in a single frame.

The numerous songs and chants in Hawaiian and English composed by Dr. Pukui fit into the strengthen the social fabric and thereby maintain this tradition. Some are written to celebrate a birth, marriage or special event; they are given as gifts to the honored family or friend. Others are written for the opening ceremony of the Hawaiian state legislature, the dedication of a park, or for one of the Hawaiian civic organizations. Pukui song compositions are played in concerts and on the air where they form a part of the popular culture of the people of Hawaii.

The prevasive aspect of Dr. Pukui's poetic imagery is seen in the popular song competition, "Pua Lililehua." Ostensibly it concerns a **mo'o** (dragon) that lived beside a stream in the Palolo valley. Lililehua, a legendary lady named after a famous wind and rain of that valley, was courted by the **mo'o**, but the lady's human sweetheart also lived by the Palolo stream and of course the **mo'o** was jealous. Thinly veiled in the mists of the poem's artistic symbolism was the true subject of the story, the secret love of a Hawaiian artist for a women he felt far above him. The sagebrush flower, Lililehua, of the poem became a reality when the beloved woman at last deciphers the meaning of the song an when she returns his affection, the entire populace is able to join in their happiness. It illustrates the irresistable quality of a powerful creative vision.

Since ancient times Hawaiians have expressed their aesthetic life in a combination of dance and poetry known as **hula**. Dr. Pukui has contributed many dance poems for both children and adults to this particular genre. In **"Ke Ao Nani"** she has created a classic of children's **hula** literature. It translate as "this beautiful world" and with a few simple words she has formed with it a representation of the four corners of the sacred creation. Arms and voices lift up to the birds in the sky, down to the flowers of the earth, over to the trees on the mountains and out to the fish in the sea. Images of our beautiful world rise and live in the mind's eye. In the same way Dr. Pukui's poetry celebrates the ordinary in a child's immediate environment; in **"Kama'a Hou"** (the new shoes), "Moa (the chicken), and **"Ku'u Lupe"** (my kite), simple objects are lifted from their mundane surroundings through the excitement of vivid rhythmic imagery and placed in the exceptional atmosphere of the artistic experience.

In a related area Dr. Pukui has collected and recreated in translation many of the chants from the "unwritten literature" of Hawaii. In 1973 she published a special group of chants under the title **The Echo of our Song** with Alfons Korn as co-author. It included a first publication of a number of poems from Dr. Pukui's family collection. The title, taken from the traditional call at the end of a chant — "let the echo of our song be heard" — tells of a persistent theme in Dr. Pukui's life, the desire to share the unique poetic visions of Hawaii's people. We hear in them the poignant cry of the leprosy victim, Ka'ehu, as he is separated from his family and friends; the song of the surfrider, Naihe, who overcomes treachery through the power of a love chant and returns safely to shore; the birth chant of Kau-i-ke-ao-uli, who was stillborn and then prayed into life by the high priest, Ka-malo-'ihi. Dr. Pukui's translations bring contemporary meaning to the poems by dramatizing the relevance of Hawaii's past and giving it a new life. She transplants them to bloom anew in the soil of her own time.

Another area of Dr. Pukui's many-faceted career is her work as translator, researcher and teacher for the Bishop Museum. Her name was noted as early as 1936 in the report of the resident Bishop Museum director, Peter Buck, for her research on Hawaiian food plants and medicine. She was recognized for her assistance in the editing and translation of S. Kamakau's *History of Hawaii* and for a manucript on traditional beliefs and customs of Hawaii that included a complete Hawaiian text. Later, as a research associate on the Bishop Museum staff, she focused on preservation of records of the Hawaiian past. Her translations alone, from Hawaiian language sources related to the material culture of canoes, fishing and food, arts and crafts, fill books of transcriptions that cover over nine feet of shelf at the museum library. They serve as rich resource material for the growing number of students of Hawaiian culture.

The results is a work of imagination and timeless significance.

The year 1936 was also the time that Dr. Pukui began research for what has become a classic in Hawaiian social literature, *The Polynesian Family System in Ka-'u, Hawai'i* (published with co-author E.S.C. Handy in 1958). The picture of traditional culture it presents was taken from the authors' studies at Punaluu, the village of Dr. Pukui's birth. The circumstances of the study may be unique in the annals of social science research and are interesting enough to

villagers and pave the way for willing cooperation in the study. Dr. Pukui asked her mother, Pa'ahana Wiggin, to adopt the "foreign" Dr. Handy and his wife so they might become her brother and sister. The close family relationship provided the ideal situation for an ethnographic study. In the style of modern anthropological writing and long before the advent of the interpretive approach to information on culture, Dr. Pukui gives us the world of the Hawaiians through the eyes of wise elders; ideas are conveyed indirectly through stories, chants, proverbs and personal experience. The result is a work of imagination and timeless significance.

Another unusual project in Dr. Pukui's efforts to preserve the heritage of the past was a series of interviews she made of older members of the Hawaiian population. In 1951 she traveled across the island chain to seek out and record conversations with Hawaiian elders still living in remote communities. The conversations, recorded on tape and placed in the Bishop Museum library, help to keep alive the rich memories of *kupuna*, the revered old people of Hawaii, by providing direct experience of their temperment and language.

Dr. Pukui has addressed the problems of psychological imbalance among modern Hawaiian in *Nana i ke Kumu*, subtitled "Look to the Source". Volume one of the two volume work was published in 1974 with the collaboration of E.W. Haertig and Catherine Lee, the second in 1980 with the collaboration of John McDermott and Catherine Lee. The first volume is described in the preface as a "source book of Hawaiian cultural practices, concepts and beliefs which illustrate the dinity contained in the cultural roots of every Hawaiian child." Within the spectrum of spritiual and physical forces impinging on the modern Hawaiian, Dr. Pukui defines the ancient images of psychic power which can be the source of either his sickness or health. She speaks the unity of all life: "Oneness with the living aspect of native phenomena, with spirits and gods and other persons as souls, is not extra-sensory to the Hawaiian but apart of the natural consciousness." And because the Hawaiian lives also in a world of western images and concepts, she accompanies the indigenous beliefs and modes of treatment with theories and practice of western psychoanalytical thinking. Thus a further mode has been presented for greater understanding of the differing cultural frameworks in Hawaiian society.

The importance of language for the cultural growth of Hawaii's people inspired

Ex-businessman envisions garden at Onomea cove

By Gene Tao
Tribune-Herald staff writer

Dan J. Lutkenhouse works from dawn to dusk, chopping away weeds and guava branches at the Onomea Bay cove.

He is not a yardman or a summer recruit working on a government land reclamation project. He is a 60-year-old millionaire-turned naturalist.

His dream: a botonical garden someday on the 20-acre picturesque Onomea cove.

Only about four years ago, Lutkenhouse owned a $15-million trucking business in the San Francisco Bay Area, with 150 trucks and 250 employees. Despite business success, he calls his Pyramid Van Line a "non-profit" operation.

"It was a big non-profit operation," he says. "I say non-profit because government regulations strangled us—we had to deal with 150 government agencies."

So, one day, when he and his wife, Pauline, were vacationing in Kona, they met Kohala real estate executive Richard Penhallow. About one year later, they purchased the cove from Penhallow.

And, another year later, they found their dream house at the mouth of Honolii Stream, a couple of miles north of downtown Hilo. Now the Big Island is their home.

"Because we love and appreciate nature," Lutkenhouse says, "this beautiful piece of land should be preserved."

Mrs. Lutkenhouse believes it was fate that brought them to the Big Island.

"We were building a brand new home in Millbrae (a few miles south of San Francisco)," she says. "It was as if somebody had a hand in it in directing us to the Big Island.

"It may sound corny to you: we've found such contentment here. People here may not appreaiate what they have."

To both of them, the Big Island is the "most beautiful place in the world."

"I think we should do everything within our own power to preserve it," says Lutkenhouse. "If we don't protect it, our children are not going to have it."

Agreeing with her husband, Mrs. Lutkenhouse says, "We want to help the community; we are very much interested in adding to the beauty of the Big Island, and we are very glad to give our time, if it's a constructive cause."

For the past two years, the Lutkenhouses have been working hard at Onomea, purchased an abandoned church building on the Papaikou-Pepeekeo Scenic Drive for preservation, and renovated their Honolii Street home into a serene haven. They have invested almost $500,000 at the garden site.

They have named their future botonical garden the Hilo Hawaiian Garden on which they will have a tree nursery called Onomea Bay Tropical Tree Farm.

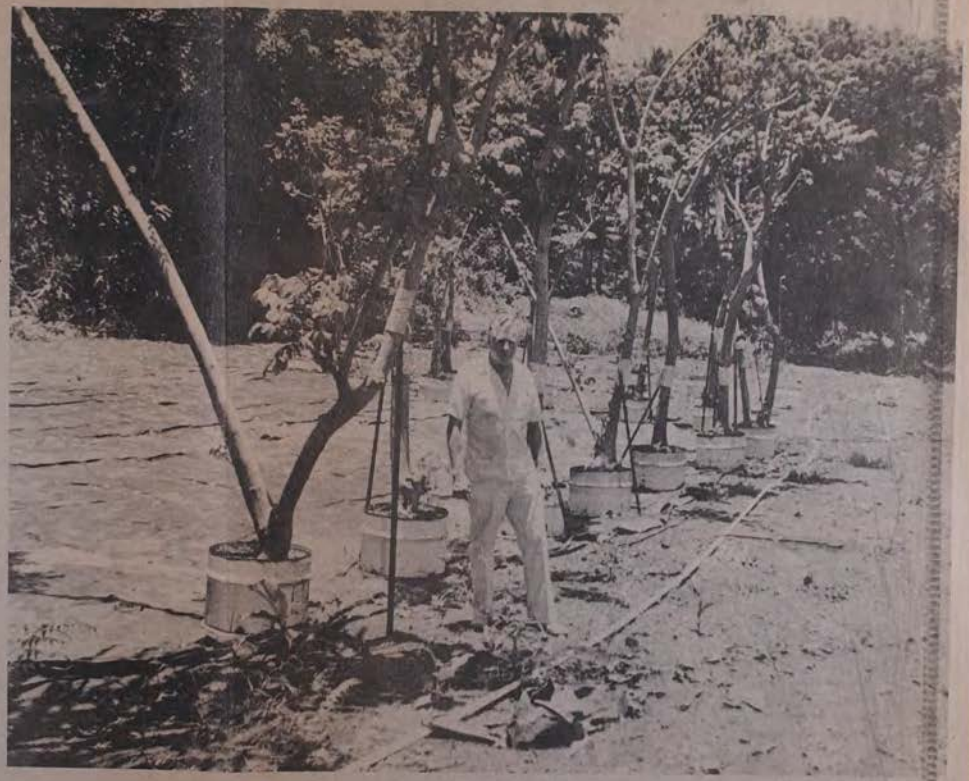
"I'm not expecting personal monetary renumeration," Lutkenhouse says, "because the botonical garden is a non-profit foundation dedicated not only to preservation of nature but also to children who will receive scholarships for studying tropical plants."

Besides a tree farm, the Lutkenhouses also have plans to establish a small research center for horticulture and tissue culture in the garden. Plants in the tree farm will be used to enhance the landscape of the garden.

"Some of the trees will be sold only to landscape architects," he says. "It will nobbe just another commercial nursery. It will be a place to preserve endangered species; I'm very much interested in locating endangered species.

"When it is completed, it will be a perpetual nature retreat, where people can leisurely wander around to enjoy the natural beauty."

The Lutkenhouses hope to open the tropical garden to the public within a year, "if we can get proper help."



Tribune-Herald photo by Larry Kaiser

LANDSCAPING COMPONENTS — Dan Lutkenhouse stands among some yellow African tulip trees he plans to use in landscaping the valley (above) and a variety of palm trees to be used for the same purpose.

One botanist's good life in the field:

Though he was born in East Orange, N.J., at the turn of the century, Otto Degener's adventurous life as a botanist is a throwback to the old school of field research usually associated with such people as Charles Darwin during his voyage on the "Beagle."

Degener likes to joke about his family coat of arms (a sheep, because his family specialized in wool manufacture) by saying that the symbol "is hardly as flattering an animal as a rampant lion." Nonetheless, considering Degener's lion's share of experiences, he has no reason to feel crestfallen.

Degener has accumulated many honors in his 81 years. He received the Distinguished Service Award of the New York Botanical Garden, the Willdenow Medal of the Berlin Botanical Garden and Botanical Museum, the Linne Medal from Stolkholm. He has been singled out for honor with a resolution in the state Senate of Hawaii, where he has resided most of the time since 1922. And he has published nine definitive books and more than 400 articles on the flora of Hawaii and the South Seas, including the multi-volume (and still growing) *Flora Hawaiiensis* series, which represents the most comprehensive work to date on the plant life of the islands.

But perhaps Degener's most lasting achievement came about in a very quiet way during what seemed like just another day in the routine of collecting botanical specimens in the field.

The date was Feb. 24, 1942, and Degener and two associates were combing the mountainous, tropical landscape of the Nauwanga forest in the Fiji Islands for specimens. The diary of one of the other researchers records a day just like any other day: "Go hiking – Mr. Degener, Timothe, and I. Reach the top of a neighboring mountain. . . .Mr. Degener is indeed happy, contented, and patient in his botanical accomplishments! Romance is evidently permeating my mind. Occasional day dreaming is common! A great hindrance to success!"

The new plant family, perhaps 100 million years old, was named for its founder — an honor that has been bestowed on only one other living man.

Degener recalls that sometime during the day they happened across an unfamiliar tree "with rather ugly flowers.

"Being as usual greedy for the specimens to scatter far and wide among worthy institutions to stimulate study," he explains, "I collected ample material."

Degener handled this particular collection, which he numbered 14,537, as he did all his specimens: he pressed and dried all the plant material and sent it off for study to Dr. A.C. Smith at the Arnold Arboretum of Harvard University.

Soon, however, Smith was sending Degener excited letters about collection number 14,537. It not only represented a specimen never before recorded, but it also failed to fit into any known plant family. This was an undiscovered family of primitive plants. Related to the magnolia, the plant, which Director of the Missouri Botanical Garden Peter Raven was later to call "a living fossil," was a member of a family that was perhaps 100 million years old.

Later that year, the new plant family was named *Degeneriaceae* after its founder – an honor that has been bestowed on only one other living man.

Otto Degener

Degener was a talented botanist even from the start, when he was just a green undergrad at Massachusetts Agricultural College in 1919. The summer after his freshman year, he eagerly collected specimens in the Colorado Rockies and submitted the resulting collection to the botany department. The project won him the Hill Prize of $15 ("quite an honor and a nice sum for that time," he recalls) for the best student herbarium.

That was just the start of something big. Since 1919, Degener says he has been "swamping" the Herbarium at Clark Hall with upward of 20,000 specimens, collected mostly in Hawaii, where he went following his graduation.

Degener received his master's degree from the University of Hawaii, where he later taught, and then became a naturalist for the Hawaii National Park. While working there, he published his first book, *Plants of the Hawaii National Park*.

Shortly thereafter, Degener began his major work, *Flora Hawaiiensis*, which has become a lifelong project similar in scope to Sisyphus rolling his boulder forever up the mountain. Why? At last count there were seven volumes of the work, all printed in looseleaf form, a page per plant with description and illustration, so that every time a new plant is discovered, it can be inserted into the proper place.

Flora was designed this way because of the complete state of flux in which Hawaiian plant life exists. New varieties appear daily. When he mentioned this to writer Pat McGorum from Virginia, she asked why. Is it through evolution?

"By airplane!" Degener trumpeted. "By ship. By yacht. . . .Perhaps you have brought us a new entry. A seed stuck to your shoe in a bit of mud, or trapped in your clothing, or even blown into your hair by the wind back in Virginia. That's all it takes."

Even while working on the back-breaking *Flora*, Degener packed as many fertile experiences into his life as there are seeds in a dandelion head.

While on the eight-month-long Fiji trip, for example, Degener became friends with a native Fijian chief, who, learning that Degener had no children (he was still a bachelor), arranged to have one of his own numerous children adopted by the botanist during a kava-drinking rite. So, Degener's field trip to the Fijis resulted not only in his name being adopted by a family of plants, but also by a family of Fijians.

Degener, however, was not to stay a bachelor forever, thanks to a happy coincidence dictated by the unlikely mating of chance and science.

While "botanizing" on the Canton Atoll shortly after World War II, Degener came across a species of grass that puzzled him. He shipped a specimen to a grass specialist he

discovery, activism, teamwork, and fame

knew only by name — Dr. I. Hansen — at the Berlin Botanical Garden. Dr. Hansen responded at length via letter and described the grass as a new species. In appreciation, Degener mailed "CARE" packages of food, which was then in short supply in Berlin, to the good doctor.

While visiting Berlin in 1952, Degener learned that Dr. Hansen was recuperating from peritonitis in a Berlin hospital. Degener, speaking in the third person, recalls the ensuing incident himself in a letter to the UMass *Alumnus*: "Directed to Hansen's room, he knocked and was aghast when a lady blushing suddenly stood before him in the doorway dressed in a night gown ornamented with a design of fourleaf clovers and emblazoned in large letters with the German "Property of the City of Berlin." Bachelor Degener had never realized that Dr. I. Hansen was a young lady!

"In short," Degener finishes his story, sounding as though he is writing the screenplay for a Cary Grant comedy, "Dr. Isa Hansen became Mrs. Degener in 1953 and the couple has lived happily ever after in the Hawaiian Islands as a botanical team."

And team they have. Isa Degener has plowed into the never-ending *Flora*, has helped revise several other of Degener's works, and together they have had many species of plants named for them.

Now they are both members in absentia of the New York Botanical Garden, where they send as many plant specimens as possible. They have also sent the University of Massachusetts, says Degener, "one of the best duplicate sets."

In the manner of a successful plant species, the Degeners have dispersed their flora far and wide, thus ensuring their survival in case of accident, war, or act of God. "We no longer keep all our eggs in one basket," says Degener, recalling the bombing of the Berlin Botanical Garden during World War II. "We scatter them."

Degener's writing is by no means confined to botanical study. He is an avid "letters to the editor" writer who speaks out on subjects near and dear to his heart. The environment, for instance. "Man is wrecking within 200 years a flora that has taken 20 million years to perfect," he wrote while denouncing the introduction of passion flowers, goats, mouflon sheep, and black-tailed deer to Hawaii by outsiders.

At the tender age of almost 82, Degener and his wife still get into the bush for some collecting, despite new difficulties that come with modern living. "Gifts of plants from the Hawaiian Islands [to UMass] have lessened during the past few years," he writes to the *Alumnus*, "due to more time spent in working up the specimens and the prevalence of the illicit growing of *Cannabis* in the wilderness. In fact, the Degeners have been shot at during their botanizing, probably in the belief they were revenue agents in mufti."

Despite such hazards, Degener's work continues unabated. Perhaps, the words of the Senate resolution adopted in 1979 best sum up his life. "Dr. Degener's many works . . .comprise an unparalleled collection of information on plant life in Hawaii, and stand as a remarkable resource in itself to students, teachers, scientists, and laymen alike, both locally and worldwide." (CK)

This article appears in the current (April/May) issue of the University of Massachusetts *Alumnus*.

Degeneria vitiensis
This plate appeared in I.W. Bailey and A.C. Smith, *Journal of the Arnold Arboretum*, vol. XXIII (1942).

University people

Frank Ozereko, art, has been awarded a Crafts Fellowship from the Artists Foundation of Massachusetts for $3,500 for 1981.

Leonel Gongora and **John Grillo**, art, will be invited participants at the Fourth International Biennial Exhibition in Medellin, Colombia. Grillo will display a circus theme, an environment with 18 large paintings. Gongora will have a Tango environment with performance of the dance Tango and a painting installation. Gongora and Grillo were recently given excellence awards in drawing and sculpture at the Wistariahurst Museum Spring Art Show in Holyoke, Ma.

At the annual meeting of the Classical Association of New England, April 3, Bowdoin College, Brunswick, Maine, **Elizabeth Keitel**, classics, presented a paper entitled "*Species* and Theatricality in the *Annals* of Tacitus," and **Marios Philippides**, classics, presented a paper entitled "Longus' *Prooemium*."

Klaus Kroner, industrial engineering, was listed as a contributor to the wind and solar energy portions of a newly published Reader's Digest book, entitled "Back to Basics." The publication chronicles the traditional American skills which are enjoying a rebirth in contemporary home design. Kroner's home installations of wind and solar systems are pictured and cited as examples of retrofit. He is a long-time practicing advocate of alternative energy and his considerable work in the field of alternative energy systems and data gathering spans nearly a decade.

"Once Upon a Choice," a film by **Liane Brandon** which was featured in the December 1980 issue of *Contact*, has been named a finalist in the American Film Festival (New York). Brandon is on the faculty of the School of Education.

A drawing by **James Hendricks**, art, was selected for exhibition in the Art Gallery of Southeastern Massachusetts University National Drawing Exhibition for the month of March 1981. Three large paintings were selected from his recent Boston Exhibition for inclusion in the Fourth International Biennial Exhibition at Medellin, Colombia, South America, which will be held May 15 through July 4, 1981.

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#72
Dec. 15/XII/81

SundayToday features, entertainment, food section **C**

Prepared by the staff of the Honolulu Star-Bulletin October 11, 1981

Search for the Perfect Blue

By Lois Taylor
Star-Bulletin Writer

THE orchid everyone is searching for is the orchid without any orchid in it.

"The purple orchid is no longer popular," said Masatoshi Miyamoto, commercial orchid grower, hybridizer and for six years a trustee of the American Orchid Society, the Phi Beta Kappa of orchid growers.

"The trend is to the deep, bright shades—red without a tinge of blue, the clear greens. The only color we have not really been able to produce is a clear, deep blue without any purple in it."

Miyamoto's hybrid orchids, famous for their yellows and oranges, will be among the thousands to be exhibited Thursday through next Sunday at the Honolulu Orchid Society's 42nd Annual Plant and Flower Show. The oldest and largest continuing orchid show in the United States, it will be held at Blaisdell Center exhibition hall. Show hours are from 6 until 10 p.m. Thursday, from 9 a.m until 10 p.m. Friday and Saturday and from 9 a.m. until 4 p.m. Sunday. Admission is $1.50, with children accompanied by adults free.

Miyamoto founded M. Miyamoto Orchids in 1946. The nursery is now located in the Waianae Valley, managed by Miyamoto's son Calvin, where almost one acre of land is under shade-screen cloth, sheltering more than 100,000 growing plants.

On a recent morning, architect Gilman Hu, who is president-elect of the Honolulu Orchid Society and show chairman, drove the reporter and the photographer to Waianae to visit the Miyamotos—Masatoshi and his wife, Helen, and their son and daughter-in-law, Calvin and Dianne.

On the drive out, Hu talked about orchid addiction. "The worst thing you can do to a friend is to give him an orchid. I first started buying from Miya (as all serious orchid growers call Masatoshi Miyamoto) when my wife and I wanted to send a plant to somebody for an anniversary or birthday.

Above right, Masatoshi Miyamoto and dendrobiums, above, Calvin Miyamoto with o

"You have to grow many, many orchids before you get a great one. They are like children in the same family, with the same genes and the same environment, but each very different."

He pointed at a red clay pot about the size of a one-pint measuring cup in which a small green plant was growing. "That's an epidendrum I just brought in from Santa Barbara," he said. Asked what the blossom would look like, he answered, "Your guess is as good as mine—spidery, not that colorful, but different."

"What you look for is a flower that opens well, has good shape and color. People always want something different. Otherwise they say, 'Oh, well, I've got that already.' Good shape, according to Hu, means that a circle could be drawn around the flower and all five petals would fit perfectly within.

Many orchids fail. A plant may

Book presents interesting history

Wirth '23 recalls park career

A UMASS graduate with a long, illustrious career in public park administration has written a history of the park movement in the United States entitled *Parks, Politics and the People*. The book is largely autobiographical and is immensely readable—of interest to the casual reader, but especially enlightening for anyone interested in conservation and the efforts undertaken to protect the nation's environmental and historic heritage. The book also offers a first-hand account of the inner workings of government at the national level and includes rather spicy accounts of tiffs, outright quarrels, and one-upsmanship carried on, as well as detailing some of the political maneuvering of various politicians and career bureaucrats.

Conrad L. Wirth '23 is the author of the book, published last year by the University of Oklahoma Press. And Connie, as he is generally known, did not forget his alma mater, either in the book or after it was published. Not only does the book contain an account of his days at Mass. Agricultural College where he earned a degree in landscape gardening, studying under Prof. Frank A. Waugh and Waugh's assistant, Prof. A.K. Harrison, but, after the book was published, he sent an autographed copy to the university "in remembrance of all the university did for me and my son, *Peter C. Wirth '55*."

Wirth, who now lives in Kensington, Md., briefly discussed his professors' belief that man-made landscape developments, to be successful, "must meet the needs of the people and that the natural elements were a part of these needs. They proceeded on the principle that man's advanced culture and social development required certain modern conveniences, but that these utilities should not be ugly or destructive of the needed natural environment," Wirth writes. Generally speaking, Wirth says, Waugh's preference for the term "landscape gardening" rather than "landscape architecture" as more descriptive of the type of landscaping best suited for park and home improvements has proven correct and "time has adjusted the meaning of the term landscape architecture to agree with the spirit of Professor Waugh's concept."

Anecdotal Writing

As he does throughout the book, Wirth enlivens the account of his college days with several personal and humorous incidents. He tells about losing his first month's room-and-board in a poker game on the way to Amherst from his home in Minneapolis, and later recalls his sporting activities in which, although he never made the varsity teams, in trying to do so he managed to lose two front teeth while tackling someone from the rear, had his Adam's apple stepped on "good and hard," and broke his collarbone and right leg.

After his college days, Wirth worked for a few years in private industry, and had a brief partnership with another MAC graduate, *Harold Neale '09*, in a landscape architect and town planning firm. He entered government service in May 1928 and worked as a federal government civil servant until he retired in 1964. During his 36 years with the government he worked first as a landscape architect with the National Capital Park and Planning Commission for three years, then transferred to the National Park Service as assistant director in charge of the branch of land planning. When the Civilian Conservation Corps (CCC) was activated in 1933, Wirth was designated as a sort of roving inspector for CCC camps in national parks, on other lands belonging to the Dept. of the Interior, and in state parks. Later he was appointed representative of then Secretary of the Interior Harold Ickes on CCC Director Robert Fechner's Advisory Committee.

The book contains an interesting history of the CCC; the projects accomplished, and the people who made it work. It also contains many amusing tales of Wirth's CCC years, making the facts and figures that are related anything but dry and uninteresting. In one instance Wirth tells about a Christmas party given by men at a CCC camp in Santa Fe, men of mostly Hispanic descent. Having heard eggnog was an appropriate beverage for Christmas parties, the men served eggnog all right—made out of goat's milk and tequila. Wirth comments wryly: "The spirit was right, but I've tasted better eggnog."

Section of Photos

In the center of the book, right after the section about the CCC and other programs of the Depression and early years of World War II, there are 16 pages of beautiful color pictures taken at various national parks. Many of the photographs are from Wirth's own collection; others are from the National Geographic Society and the National Park Service. Especially outstanding are: a scene at the Glacier Bay National Monument, the largest single unit of the national park system covering more than 2,800,000 acres of Alaska wilderness; a picture of the dunes of glistening white gypsum at White Sands National Monument, New Mexico; and a picture of the Sunset Crater (so named because of its glowing red-gold color) National Monument in Arizona. Besides the color photographs, the book contains many interesting black and white photos of landscapes, park activities, and people, including several of Presidents Franklin D. Roosevelt and Lyndon B. Johnson. In a presidential vein, the book also concludes with a thoughtful letter to Wirth from Jacqueline Kennedy telling Wirth that Wirth's work had given President Jack Kennedy "some of his happiest hours."

The second half of the book contains a description of Wirth's assignment at the end of the war in Vienna, Austria, assisting the military in dealing with land matters and conservation of natural resources. He recalls what it was like to deal with the military: "The command of the military government was changed every month amongst the four allies—the United States, England, France, and Russia. Every time the command changed, the chairmen of the divisions were likewise changed (Wirth was in the executive division which was coordinating the work of several other divisions responsible for the military government). Consequently, toward the end of the month, each of the various divisions going out of office had a farewell party, and, the first few days of the following month, the divisions taking over would have their incoming receptions. As a member of the executive division, I was invited to eight or ten parties a month."

Mission 66 Project

After describing his return to his job with the National Park Service, Wirth spends the rest of the book detailing Mission 66, the 10-year project which restored the park system after its many years of neglect during the war and post-war years, and describing his 12 years as director of the National Park Service, from 1952-64. Mission 66, of course, was a great success and, Wirth says with justifiable pride, "I believe that Mission 66 had an effect on the entire country almost as great as the CCC program had in the thirties. Conservation as a whole took a big step forward in both the CCC and Mission 66 periods."

National Geographic Society photo

Conrad L. Wirth '23 now lives in Kensington, Md.

Toward the end of the book, in a paragraph that sums up many of his ideas about the U.S. park system, and about being a civil servant in the federal government, Wirth writes: "The national park system exists for the benefit of all the people, and it must be so managed that its natural and historic values will be available, let us say, in the year 2066, when Joe Doaks and Agnes Hobbleskirt will be born. Such is the responsibility of the service, or, if you prefer, the bureaucrats. I am sure that the people who objected to restricting the motorboats on Yellowstone Lake and those unscrupulous businessmen with their trailer and political partners (an incident he described earlier) blamed the bureaucrats for stopping them. I was a bureaucrat and am proud of it, and furthermore I am sick and tired of hearing everyone who runs for political office blame the bureaucrats for doing what is required of them even when some individuals don't like it."

Remaining Active

Since his retirement Wirth has remained active in conservation causes and is currently a consultant to Laurance S. Rockefeller's American Conservation Association. He is a member of the board of the National Geographic Society and belongs to a host of conservation organizations, including the Sierra Club. After retiring as director of the National Park Service in 1964, he received a presidential appointment to the National Capital Park and Planning Commission, where he served as vice chairman. In the course of his long involvement in environmental affairs, he has received many awards including the Rockefeller Public Service Award from Princeton University's Woodrow Wilson School; the Distinguished Service Award of the Dept. of the Interior, the Conservation Award of the American Forestry Association; two Pugsley Gold Medals from the American Scenic and Historic Preservation Society; the Everly Gold Medal of the American Institute of Park Executives; the Theodore Roosevelt Medal; the American Society of Landscape Architects Medal; and three honorary doctorates.

—Kay Scanlon

Class reports

(Continued from preceding page)

joint military service committee that planned, coordinated, and supervised military participation in President Reagan's inauguration. Donahue joined the Coast Guard in 1963 and received a master's degree in 1970 from Old Dominion University.

Elmer Mand (SBA) has been promoted to assistant vice president-director of mortgage investments at National Life of Vermont. He joined National Life in 1979 as assistant director of mortgage investments; prior to that he was employed for over 10 years by Mass. Mutual Life Insurance Co., Springfield, Mass., in various real estate investment positions. He lives in Montpelier with his wife Martha and two children, Jessica, 8, and Eric, 6.

John F. Winske (EGR), of East Amherst, N.Y., has been named manager of the Du Pont Yerkes plant in Tonawanda, N.Y. Winske joined Du Pont in 1963 and most recently served as product superintendent at the Town of Tonawanda plant. He writes that he and his wife, the former *Jean Shea '64(A&S)*, hope to get back to the university this year to see old friends.

1964

Dennis I. Ackerman (A&S) is executive director of the Taunton (Mass.) Redevelopment Authority, which he joined in 1974. Ackerman, who received a master's degree in public administration in urban development from the University of New York at Albany, previously worked for the state Dept. of Commerce and Development Division of Planning, the New Bedford City Planning Dept., and the Pawtucket, R.I., Redevelopment Agency.

Willard M. Buddenhagen (SBA) has been appointed eastern regional manager for the higher education group sales force, Addison-Wesley Publishing Co., in Reading, Mass. He joined Addison-Wesley in 1964 as a sales representative and has served as district manager for college sales in the Northeast and regional sales supervisor for the higher education division. He lives with his wife and two children in Manchester, Mass.

Elmer Mand '63

Robert A. Hague '64

Kenneth E. Bordner '65G, '66G

Robert E. Hickman '65

Wesley J. Ewell (FNR), of New Bedford, Mass., has been named housing development manager for Dimeo Construction Co. of Providence, R.I. He has been planning and business development manager there since 1978, prior to which he was Dartmouth town planner for six years.

Robert A. Hague (SBA), of Monson, Mass., has been named associate director of underwriting in the new business division at Massachusetts Mutual Life Insurance Co. The member of several professional associations, he is also on the board of the Valley Human Services and is a member of the insurance and personnel committees of the Town of Monson. He has completed graduate level courses in education at Westfield State College.

1965

Kenneth E. Bordner 'G(A&S), 66G(HSc) has been promoted to full

(Continued on next page)

Werner Rothmaler

* 20. 8. 1908

† 13. 4. 1962

Elisabeth Rothmaler

mit Ursula, Susanne,

Valentin und Philipp

Die Urne wird auf dem neuen Friedhof in Weimar beigesetzt.

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(Degener & Degener, & Douglas R. Smith, September 20, 1980)

Tropical agriculture dean named

University of Hawaii President Fujio Matsuda has announced he is recommending Noel Kefford, interim dean of the College of Tropical Agriculture, to become that college's regular dean.

The appointment, subject to approval by the Board of Regents at its February meeting, was recommended to Matsuda by UH-Manoa Chancellor Marvin Anderson after a nationwide search.

Kefford, a botanist whose specialty is plant development and differentiation, became interim dean after William R. Furtick left the position after a disagreement with then-Manoa Chancellor Durward Long.

If Kefford's appointment is approved, he will continue as director of the Hawaii Istitute of Tropical Agriculture and Human Resources, a position he has held since 1980. The institute performs functions previously carried out separately by the Cooperative Extension Service and the Hawaii Agricultural Experiment Station.

Sylvania, and Rushia.

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family I couldn't survive," she
ast-food franchises, weekly
laundry service, and car-
ribes her husband as "one in a
ares business experiences and
when both are traveling over-

perishable merchandise with the precise planning of a mobilization exercise.

For the future, she says, overseas travel attracts her, as does the possibility of supervising and/or training her own staff. Too, she'd like to write a book that's been taking shape in her mind, a fictional account of her own experiences, "suburban Jewish housewife makes good." Until she publishes a book of advice for other women wanting to make career changes, however, she advises: Think of your working past and other experiences—coping with emergencies, managing conflicting demands, and giving your children consistent care. These abilities, she says, can be translated into satisfying, challenging, and, often, lucrative jobs. "Don't forget," she says, "just a few years ago I was absolutely terrified of driving outside of Peabody."

ailable

Director's chair

Boston rocker

Grad publishes wetlands' book

THE UMASS PRESS has published a book by *Dennis W. Magee '68, '70G* entitled *Freshwater Wetlands: A Guide to Common Indicator Plants of the Northeast*. Magee, who received a BS in wildlife ecology and a master's degree in forest ecology and botany, now works as an environmental consultant for Normandeau Associates, Inc., of Bedford, N.H., and lives in Groton, Mass. He was a teaching fellow in zoology at UMass from 1968-71 and did special studies in plant ecology and taxonomy at the university in 1970-71. He has also worked for Interdisciplinary Environmental Planners on the design and implementation of impact migration measures in terrestrial, freshwater, and marine ecosystems, and as chief ecologist for Jason M. Cortell and Associates.

Magee's book discusses what constitutes a wetland area and attempts to help clarify issues of legislation and environmental policy associated with wetlands. The UMass Press calls the guide "an invaluable book for those concerned with how a correct definition of wetland areas affects decisions about land use, development, and/or conservation." Illustrated with drawings prepared especially for the book by the U.S. Fish and Wildlife Service, as well as drawings by artist Abigail Rorer, of Petersham, Mass., the work treats 182 species that represent the majority of genera commonly encountered in freshwater wetlands throughout the Northeast. Following a brief introduction which discusses the functional values of wetlands and describes the various types of wetlands, the manual is organized into two major sections, the first consisting of keys that are based on life form and arrangement of plant parts, the second consisting of a description of each species. Such factors as range, habitat, general characteristics, stem, leaves, inflorescence, fruit, and similar species are covered in the descriptions.

The book is available from UMass Press, P.O. Box 429, Amherst, Mass. 01004. Cloth $20, paper $8.95.

HM 12/25/80

Mr. King: Of course we need ... O.D.

PAGES FROM HISTORY—Seymour H. Sohmer holds a specimen of Gouldia hillebrandii, of the coffee family, collected by David Nelson on Capt. James Cook's Third Expedition. On the table is a fern, Microlepia setosa, also collected by Nelson in Hawaii. —Star-Bulletin Photo by John Titchen.

For some years, van Royen has been conducting extensive research on the alpine flora of New Guinèa, with alpine defined as plants living at an elevation above 10,000 feet.

When he began his research, New Guinea was believed to have about 500 species of alpine plants, but he has found about 1,200 species.

Honolulu Star-Bulletin

Thursday, December 25, 1980 Honolulu

Volcano Views

Haw. Trib.-Herald 7/12/81

Virginia Dicks

Degeneria story begins in Fiji

VOLCANO — Have a story to tell that started on Feb. 24, 1942 in the Nauwanga forest in the Fiji Islands when Dr. Otto Degener, of Volcano, and his two assistants came across an unfamiliar tree with a rather ugly flower. As was his habit, Degener collected specimens to send to worthy institutions for study. One of the pressed and dried specimens went to Dr. A. C. Smith of Arnold Arboretum of Harvard University. Shortly thereafter Smith began sending Degener excited letters. It appeared that the specimen represented a species never before recorded. Even more astonishing, it failed to fit into any known plant family. Later that same year, 1942, the tree was named Degeneria vitiensis of the newly established plant family Degeneriaceae. This honor of having a plant family carry his name is shared by only one other living man.

Once again specimens of this plant have been gathered and shipped from Fiji (the only place it grows) but this time the plants went to the U. S. Department of Agriculture and National Cancer Institute near Washington, D. C. Michael Weiner, under contract to the government, collects plants to use in cancer research, and was featured in a story written by David Perlman in the San Francisco Chronicle on May 21. Weiner first shipped just a three-pound batch of Degeneria in 1975, which when screened showed an extract of the bark had some activity against leukemia. Two years ago Weiner collected 40 more pounds of the "King's bark" (as it is called in Fiji) and it was tested with even more promising results, as reported by Dr. Matthew Suffness of the NCI.

Then in May 300 pounds of Degeneria arrived and will be used to isolate the thousands of active chemicals contained in the tree's bark or wood and the chemicals will be studied carefully to learn their structures and properties.

No place in the Perlman article does it mention Dr. Degener's discovery, but with the plant bearing his name, it must be most gratifying to know his discovery of almost 40 years ago is becoming famous, not just to botanists because it is the 'missing link' between the pine tree and the flowering plants, but may well be of practical interest in cancer research.

Degener, who is living in Volcano, is in his 80s but is still active and a big part of the botanical world, and with his wife and helpmate, Dr. Isa Degener, continues collecting specimens and is still shipping them all over the world to botanical organizations.

Bull. New York Bot. Gard. 25(299):301. Nov. 1924

Club at Rumson, N. J.; and Short Hills Garden Club, at Short Hill, N. J. He lectured on "Dahlias and Their Culture" before the Massachusetts Horticultural Society on September 13 and 14.

Aided by a grant from our Exploration Fund, Professor M. A. Chrysler of Rutgers College, spent part of August in western Cuba, prosecuting studies upon the Cycads of that region. He obtained for us plants of two native species of *Zamia* and of *Microcycas calocoma;* our esteemed correspondent, Dr. Juan T. Roig, Botanist of the Cuban Agricultural Experiment Station, gave him valued assistance. Returning north, Professor Chrysler obtained for us plants of two other species of *Zamia* in Florida.

Mr. Otto Degener, who is spending the year at the Botanical Garden, studying his collections of Hawaiian plants, addressed the Torrey Botanical Club on October 29 on "Plant Collecting in Hawaii." After graduation from the Massachusetts Agricultural College with the degree of B.S. in 1922, Mr. Degener made plant collections in the Canadian Rockies and on Mt. Rainier in Washington and then proceeded to Honolulu for a year's graduate work in botany and zoology at the University of Hawaii, from which he received the degree of M.S. in 1923. During that period he made collections on the islands of Oahu, Hawaii, Maui, and Kauai. During the past year he has been a graduate assistant in botany in the Massachusetts Agricultural College.

The following visiting botanists enrolled in the library during the summer: Miss Mabel A. Rice, Wheaton College, Mass.; Prof. N. M. Grier and class, Cold Spring Harbor, N. Y.; Professors H. M. Fitzpatrick, H. H. Whetzel, L. W. Sharp, and L. F. Randolph, Ithaca, N. Y.; Prof. Frank D. Kern, State College, Pa.; Messrs. John C. Wister and John M. Fogg, Jr., Philadelphia, Pa.; Dr. J. N. Rose, Prof. E. O. Wooton, Dr. W. T. Swingle, and Miss Anna E. Jenkins, Washington, D.C.; Prof. A. E. Waller, Columbus, Ohio; Prof. Bruce Fink, Oxford, Ohio; Dr. Earl E. Sherff, Chicago, Ill.; Mr. Willard N. Clute, Joliet, Ill.; Prof. John T. Buchholz, Fayetteville, Ark.; Prof. H. S. Reed, Riverside, Cal.; Mr. Chas. S. Parker, Seattle, Wash.; Prof. Harold L. Lyon, Honolulu, T. H.; Mr. Lawrence Ogilvie, Bermuda; Prof. P. A. Bourne and Mr. T. B. McClelland, Mayagüez, P.

N.Y. Bot. Garden Newsletter 13(3): June-July 1979

and friends of the Garden were on hand to preview the new spring collections. Amid

This preview was one of a number of programs that are being offered exclusively for Supporting Members, Sponsors, Patrons

valued gift to the Garden. For membership information, contact Mrs. George Cusack, Membership Secretary, at (212) 220- 8725.

Distinguished Service Awards

The New York Botanical Garden presented its Distinguished Service Awards this year to Drs. Otto and Isa Degener and Mr. Frank J. Anderson.

The Degeners, co-authors of *Flora Hawaiiensis or New Illustrated Flora of the Hawaiian Islands,* were cited by the Board of Managers for their continuing contributions, through botany, to botanical science in general and to The New York Botanical Garden in particular. As our Collaborators in Hawaiian Botany they have greatly enriched our Herbarium holdings with their field collections. For decades they have compiled documentation — and worked to preserve — Hawaii's magnificent but severely stressed wildlife resources.

Mr. Anderson, a former editor of this newsletter, is now Honorary Curator of Rare Books and Manuscripts. He was instrumental in the Garden's acquisition of one of its prize possessions, the earliest known medieval manuscript of the *Circa instans,* the fountainhead of modern pharmacology and botany, which he is translating. One of his most recent publications is *An Illustrated History of the Herbals,* Columbia University Press, 1977. The citation noted that despite his official retirement from the Garden, the vast contributions he is making have by no means diminished and it spoke of the "personal and professional enrichment he has brought to all our lives."

Calendar Dates

On September 2 & 3 (alas, summer by then will be almost gone), a final, giant salute to the passing season: "Family Weekend" sends summer out with a bang — magic and puppet shows for kids . . . loads of crafts and craft demonstrations. And, of course, a huge, two-day plant sale! Admission is free.

An evening to long remember — Thursday, Aug. 16, another of the free concerts under the stars, with Zubin Mehta conducting the *New York Philharmonic.* Make it a date, for Mahler — Symphony No. 5 — at 8:30.

Summertime Study

The Fourth Annual Summer Botany Institute provides a good chance to pick up some extra college credit. The first session starts Monday, July 2, and the second Monday, Aug. 13. Classroom doors open at 9:30 a.m. School's out at 1 p.m. For details: (212) 220-8743.

Waterfront

Degener Plans Suit to Regain Cheng Ho From Tahiti French

By PETE GILMAN
Star-Bulletin Waterfront Reporter

Dr. Otto Degener, the disputed owner of the famed Chinese junk Cheng Ho, has returned to Hawaii with plans to bring a damage suit against the French Government in Tahiti.

The botanist returned from Europe recently with his wife and they have settled down in Dr. Degener's Mokuleia Beach home.

Degener said he wants to get his Cheng Ho back. It is in Papeete, Tahiti, where it has been held for the last few years under a multitude of legal abstractions including debts, liens and disputed ownership.

The vessel, built in Hong Kong, was brought here from Tahiti in 1941 by Mrs. Anne Archbold, its owner. She turned it over to the Navy during the war. It was used later as a scientific exploration vessel and then as a copra carrier with the Cheng Ho Trading Company.

WROTE FOR VISAS

"I wrote for visas to enter New Caledonia and Tahiti," Degener said. He explained the Governor of New Caledonia granted him permission to enter. But the Governor of Tahiti, whose office had registered the Cheng Ho "fraudulently under the French flag as owned by a former French consul in Honolulu," denied him permission to set foot in Tahiti, Degener claims.

Degener said he "smarted under this injustice" and left Hawaii for Washington to complain to Delegate Joseph R. Farrington and the State Department. As a result, he says, the Governor of Tahiti withdrew his objection and granted him permission to enter Tahiti.

Later while in Europe, Degener learned from the French Government in Tahiti that he could repossess the Cheng Ho if:

1—He pay $15,000 for her in her present dilapidated condition.

2—The vessel remain under French flag.

3—He turn over 51 per cent of the shares and rights to a "certain Frenchman."

Degener claims all these stipulations are false. He claims further that "although the Governor of Tahiti has been forced to grant me a visa, he is making it impossible for me to accept the Cheng Ho in accordance with a contract registered at the Bureau of Conveyances in Honolulu."

Degener said he is consequently canceling his plans to go to Tahiti and instead "is bringing suit against the French Government."

MARRIED BOTANIST

Degener said while studying botany in Berlin, he met and married another botanist, the former Dr. I. Hansen, of the Botanical Garden and Museum of Berlin.

For their honeymoon, they visited the walled-city of Dubrovnik, in Communist Yugoslavia.

Degener said the city has a wonderful charm and beauty but the harsh domination of communism can be felt throughout. He said it was similar, climatically, to Canton Island.

Farmers are letting the beauty of the land go to rot, Degener said, because under communism the land is no longer their own and they won't take special care of government land.

Kipahulu Valley Plan

Hunt
NY 7/20/81?

A FIVE-YEAR PLAN for lands in isolated Kipahulu Valley, Maui, owned by the Nature Conservancy, should be completed in another month, according to Kelvin H. Taketa, the Conservancy's field representative. Hon. Star-Bull,

The plan is being worked out with the help of the Kipahulu Project Advisory Committee, formed in April and including members of the Hana and Kipahulu communities.

The upper part of Kipahulu, an essentially pristine rain forest, was given in 1969 to Haleakala National Park by the Conservancy and the State of Hawaii, both of which owned about one-half of the upper valley lands. 7/20/81?

The lower valley, from the 2,000-foot elevation to the ocean, is owned by several groups, including the National Park Service, the state, the Conservancy and various individuals.

The lower valley has been the subject of disputes over an attempt to transfer title of additional land to the national park and over land titles. Since withdrawal of a condemnation suit in May 1980, efforts have been under way to work out a plan in cooperation with the local community.

A plan for Kipahulu Valley on Maui is nearing completion.

A "Resources Base Inventory of Kipahulu Valley Below 2,000 Feet," which proposes some restoration of Hawaiian agriculture, is being used as a guideline for the plan that is being formulated, Taketa said.

THE INVENTORY was sponsored by the Conservancy and written by several persons for the Cooperative National Park Resources Studies Unit, with the unit's director, Clifford W. Smith, as editor.

Lower Kipahulu Valley was cultivated with Hawaiian food crops in the old days, was in a sugar plantation from 1880 to 1923, was the scene of an unsuccessful attempt to grow pineapples, and in recent years has been in pasture.

The inventory proposes that parts of the valley should go back to agriculture, much like the old days. Bananas, macadamia nuts, breadfruit, avocadoes, anthuriums, dryland taro, yams, and watercress are some of the crops proposed.

There may be problems with some of the crops, the inventory says, but some of them may be feasible.

Beatrice K. Krauss, in a study of the ethnobotanical resources, surveyed the lower valley, noted terraces for dry and wet taro, and quoted reports of breadfruit and sweet potato cultivation in the old days.

The study report recommends that herbicides or insecticides which are not biodegradable should not be used, that crops which could escape and naturalize in the upper valley should not be grown, and that sewage and garbage disposal for residences should be controlled.

It suggests that woodlands above 1,500 feet may be part of a buffer zone to prevent the spread of exotics up the valley.

TO PROTECT the natural resources of the valley above 2,000 feet, it recommends control of cattle, mongoose, feral pigs, strawberry guava and Java plum.

The study lists five species in the valley as very rare: an endemic gobiid fish that has been proposed for listing as an endangered species; Newell's shearwater, an endangered bird; a rare and endemic damselfly that had not been collected in more than 25 years; and a very rare snail, Perdicella carinella.

In working out a plan for Kipahulu, the Conservancy has been talking with a group known as Pohaku, men with Hawaiian blood who are interested in farming, especially with old Hawaiian crops. Most are young, but a few older ones are serving as teachers.

They have already restored several old lo'i (terraces) and have planted them to dry-culture taro and sweet potatoes.

Taketa said that Sam Kalalau III, the Pohaku president, is helping with the planning effort.


Krauss


Degener

Clidemia

THE ALLEGATION that Harold L. Lyon, the late veteran sugar botanist, introduced the plant pest Clidemia Hirta to Hawaii is false, according to Constance E. Hartt, who edited a recent book about Lyon.

The allegation was made by the veteran Island botanist Otto Degener.

Hartt says she has been informed by the Lyon Arboretum that it has no evidence that Lyon brought in the plant and that Clidemia is not included in Lyon's list of introductions.

She quotes a 1953 bulletin of the Board of Commissioners of Agriculture and Forestry that says:

"This shrub was found in November 1952 infesting approximately one square mile of land in the Wahiawa watershed. This was the first record of the plant in Hawaii. It is not known how the plant was introduced here. It has not been reported elsewhere in the territory.

"Clidemia is a native of tropical America."

In the years since 1952 Clidemia, also known as Koster's curse, has spread widely over Oahu's mountains, has gained a foothold on other islands, and has caused searches, not very successful as yet, for biological agents to control it.

Degener

DEGENER, INCIDENTALLY, has received a copy of a story that appeared in the *San Francisco Chronicle* of May 21 that told how a Fijian tree named for him has been collected for cancer research.

The collection was made by a San Franciscan, Michael Weiner, who spends part of each year collecting exotic plants used as folk medicine and sending them to the U.S. Department of Agriculture and the National Cancer Institute.

One of the trees in Weiner's most recent shipment is known by the Fijians as king's bark and has the scientific name of Degeneria vitiensis.

Degener, on a scientific expedition in 1942, collected it and found later that it represented a species never before recorded and that it failed to fit into any known plant family.

Later in 1942 the tree was given its scientific name and placed in the newly established family Degeneriaceae. Degener is one of only two living men to have a family of flowering plants named for him.

Degener hopes the scientists will find the plant has medicinal values. The plant, endemic to Fiji, has been grown in Lyon Arboretum from Fijian seed, he says.

The tree has been called a "living fossil" by Peter Raven, director of the Missouri Botanical Garden.

Clidemia was being cultivated in tins in Sugar Planters' Experiment Station nursery, now the Waiawa Botanical Garden, Oahu. I happened to be hiking along Pupukea-Kahuku Trail on Pupukea side when Dr. Lyon & employees were setting out from a truck the plants from these tins into the forest. I protested to Lyon because of my observation of the species in Fiji. He paid no attention beyond remarking the Chinese dove would help scatter it the way exotic it had scattered the Lantana. I was not yet married & I left Fiji in 1941, so the time was evidently between 1941 & 1952. O.D.

Hunt

Drs. Isa and Otto Degener

A few weeks ago the Hawaii State Senate passed a resolution commending Dr. Otto Degener for his many contributions and unceasing efforts to preserve Hawaii's nearly 900 species of threatened and endangered native plants. For 50 of his 80 years, Otto Degener's has been a voice of the wilderness of unrestrained development overspreading and engulfing Hawaii's unique island ecosystem, its uniqueness the result of the isolated evolution of a great diversity of plants over many thousands of years. He has fearlessly and energetically worked to educate and influence government officials, developers, journalists, conservationists, and the general public, not to a dreamy-eyed return to an imagined sylvan or pastoral ideal, but to their own little-realized self-interest in saving a portion of the Islands' various native habitats from the bulldozer, feral mammals, introduced game animals, and alien weeds. Long before the term "endangered species" entered the popular lexicon, Otto Degener was sounding the trumpet, calling attention to the high number of Hawaiian plant species destined to imminent extinction. Today the proportion of threatened and endangered native plants species on U. S. territory is nowhere higher than in Hawaii.

Degener in 1919

Working side by side with Otto has been Dr. Isa Irmgard Degener, his wife and a botanist in her own right. While Otto spent his early years just after World War I in the Bronx, a student of Nathaniel Lord Britton assigned to identify plants collected by ~~Per Axel Rydberg~~ in the Rockies and by Dr. Britton's ~~associates in the West Indies~~, and later a student of Elmer Merrill, the Garden's third director, studying more than 50,000 specimens of Hawaiian plants sent for safekeeping, Isa grew up in her native Germany, graduating magna cum laude from Berlin University just after World War II. She served for a time as botanical assistant to Dr. Sleumer, presently our Krukoff curator. After Otto and Isa married in 1953, the Degeners took up their studies on site in Hawaii, supported by a long series of NSF grants. With the possible exception of Dr. B. A. Krukoff, who was presented the Garden's Distinguished Service Award in 1970, no one living has had a longer professional association with the Garden than Otto Degener. The Degeners' Flora Hawaiiensis is a monument to their dedication to the sagacity in the complex floristic botany of the Islands. The family Degeneraciae and genus Degeneria, named for their discoverers, are tributes to their energy as botanical explorers and their discerning eye in sampling the diversity of plants in the Pacific Islands.

Bermuda

him in 1921 in Hawaii

handly at my age

Given the Degeners' unswerving messianic zeal for their work and the depth of their commitment, it seems appropriate to

quote the biblical reference illuminating the fly sheet in one of the volumes of Flora Hawaiiensis:

> And I brought you into a plentiful country,
> To eat the fruit thereof and the goodness thereof;
> But when ye entered, ye defiled my land,
> And made mine heritage an abomination.

It is in the spirit of acknowledging their tireless efforts in conservation and their tangible successes in awakening consciences and consciousness near and far that the Garden is very pleased indeed to present this Distinguished Service Award to Drs. Isa and Otto Degener.

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Working side by side with Otto has been Dr. Isa Irmgard Degener, his wife and a botanist in her own right. Otto spent his early years after World War I in the Bronx, a student for an advanced degree from Columbia University under Nathanial Lord Britton of plants he had collected in the Rockies in 1919 and in Bermuda in 1921. Then at the onset of World War II, during the Directorship of Elmer Drew Merrill, he evacuated by mail from his home in Hawaii to the Garden his herbarium of 50,000 specimens. Isa grew up in her native Germany, graduating magna cum laude from Berlin University just after World War II. She served for a time as botanical assistant to Dr. Sleumer, presently our Krukoff curator. After Otto and Isa married in 1953, the Degeners took up their studies on site in Hawaii, supported in part by several NSF grants sponsored by the Garden. No one living has had a longer professional association with the Garden than Otto Degener. Dr. B.A. Krukoff, who was presented the Garden's Distinguished Service Award in 1970, is the second. Degeners' Flora Hawaiiensis is a monument to their dedication to the sagacity in the complex floristic botany of the Islands. The family Degeneriaceae and genus Degeneria, named for their discoverers, are tributes to their energy as botanical explorers and their discerning eye in sampling the diversity of plants in the Pacific Islands.

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(Errors corrected in second paragraph.)

row from 1 to 4 p.m.

Honolulu Adv. 4/10/81

obituaries

FERN — John Keeaumoku Fern, 70, of Orangevale, Calif., and formerly of Honolulu, died March 29. He was past president of the San Francisco and Sacramento Rose Societies and was formerly employed at the Pearl Harbor Shipyard. Graveside Masonic services 10 a.m. Wednesday at Oahu Cemetery. Inurnment. Casual attire. Survived by wife, Eunice of California; daughter, Mrs. John (Eunice) Charles of California; brother, Elwood; sisters, Mrs. Letia Vannatta, Mrs. Daisy Mahikoa of Honolulu and Mrs. Beryl Figereira of Arizona; grandchildren, Jay and Sara Charles of California; aunt, Mrs. Miriam McKeen of Hilo; numerous nieces and nephews.

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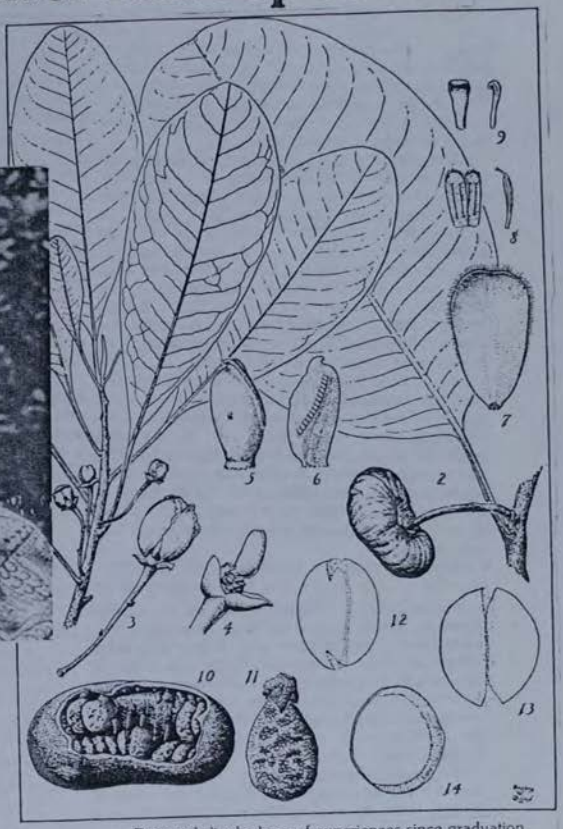
The Alumnus
UNIVERSITY OF MASSACHUSETTS AMHERST
Volume XII, Number 3 April-May 1981

'Botanical pioneer'

A Degener retrospective



Botanist Otto Degener '22 (inset) with a drawing (right) of the tree named after him, the Degeneria vitiensis, the only known member of the primitive Degeneria Family. —Drawing reprinted from "Degeneriaceae, A New Family of Flowering Plants from Fiji" by I.W. Bailey and A.C. Smith

BORN IN East Orange, N.J., at the turn of the century, MAC graduate ('22) *Otto Degener*'s adventurous life as a botanist is a throwback to the old school of field research usually associated with such people as Charles Darwin during his voyage on the "Beagle." Degener, one of only two living men to have a family of flowering plants named after him, likes to joke about his family coat of arms (a sheep, because his family specialized in wool manufacture) by saying that the symbol "is hardly as flattering an animal as a rampant lion." Nonetheless, considering Degener's lion's share of experiences since graduation from MAC nearly 60 years ago, he has no reason to feel crestfallen.

Degener has accumulated many honors in his 82 years. He has received the Distinguished Service Award of the New York Botanical Garden; the Willdenow Medal of the Berlin Botanical Garden and Botanical Museum; and the Linné medal from Stockholm, among others. A resident of Hawaii for most of the time since graduation, in 1979 he was honored by the Hawaii state senate which passed a resolution in his honor saying, in part, that everyone

The eucalypt conflagration, we wish to emphasize again, might be likened to an explosion. The air at normal temperature for the day expands tremendously in volume the instant it is heated, the cloud of burning gas, if the wind is in that direction even crossing the ocean to set offshore islets aflame. Whole towns go up in smoke, the burned houses seldom showing upright pipes and metal door and window frames as with us. Because of the intense heat, the houses are usually burned flat to the ground, all metal having melted including knives, forks and spoons to run down the path or roadway in a little silvery stream. The unfortunate householder later rolls up the congealed alloy to at least salvage a little cash by its sale to a junk dealer. Is this to happen to homes in towns makai of abandoned sugarcane fields in Hawaii?

If advocates of eucalypt forests ignore the high intellectural and scientific values of terrain not overgrown with unusually flammable and poisonous trees; if they ignore the welfare of a shaky tourist industry having potential clients by 'plane bypass progressively more unnatural Hawaii Nei; and if they risk playing with fire that may wipe out entire coastal villages, we urge the state to legislate that we and or our heirs be reimbursed justly for a holocaust very likely destroying our prized possessions, and perhaps our very lives. This hastily written urgent appeal may be based on statements not 100 percent correct; but sufficiently true, and in the public domain via the Hawaii Tribune-Herald, to be worth consideration.

(Drs. Otto and Isa Degener are residents of Volcano.

Owners of wooden houses

"who cares about the natural beauty and special qualities of these islands...owes a bottom-line debt of gratitude to Dr. Degener for his lifetime perseverance in relating humankind to the natural environment upon which we ultimately depend for survival..." And, in 1952, Degener received an honorary doctor of science degree from the University of Massachusetts. The citation read in his honor called him a "botanical pioneer" and said, in part, "Among our galaxy of great naturalists your place and fame are secure." Later in 1952 Degener was named as the outstanding botanist/naturalist of the Pacific Island at the International Flower Show in New York City.

Definitive and Comprehensive

Either alone or with his wife and helpmate Isa, Degener has published nine definitive books and more than 400 articles on the flora of Hawaii and the South Seas, including the multivolume (and still growing) *Flora Hawaiiensis* series, which represents the most comprehensive work ever published on the plant life of the islands. Other works include *Plants of Hawaii National Parks: Illustrative of Plants and Customs of the South Seas* and *Naturalist's South Pacific Expedition: Fiji*. Both of the latter books contain much lore on customs and history as well as plants. In one chapter of the last book, a chapter on cannibal feasts, Degener informs nervous readers that the Fijians seldom eat white meat as it often contains the disagreeable flavors of tobacco and alcohol. The preferred cut, he says, is the upper arm of a Melanesian belle.

The discovery that is perhaps Degener's most famous accomplishment came about in a very quiet way during what seemed like just another day in the routine of collecting botanical specimens in the field. The date was Feb. 24, 1942, and Degener and two assistants were combing the mountainous, tropical landscape of the Nauwanga forest in the Fiji Islands for specimens. Degener recalls that sometime during the day they happened across an unfamiliar tree "with rather ugly flowers. Being as usual greedy for the specimens to scatter far and wide among worthy institutions to stimulate study, I collected ample material." Degener, who numbers all of his specimens, numbered this one No. 14,537. Then he pressed and dried all the plant material and sent it off for study to Dr. A.C. Smith at the Arnold Arboretum of Harvard University. Shortly thereafter, Smith began sending Degener excited letters about No. 14,537: It appeared that it represented a species never before recorded. Even more astonishing, it failed to fit into any known plant family; it was a member of a previously unrecorded family of primitive flowering plants. Related to the magnolia, the tree was a member of a family that was perhaps 100 million years old. Director of the Missouri Botanical Garden Peter Raven later called the tree a "living fossil."

Plant Family Named For Him

Later the same year, 1942, the tree was named *Degeneria vitiensis* of the newly established plant family *Degeneriaceae*. About that honor, an honor bestowed on only one other living man, and the day he discovered the tree, Degener wrote: "February 24 is truly far more important to me than the anniversary of my birthday or the date of my death. February 24 is my very private, personal, memorable 'Memorial Day.' " Besides having a plant family named after him, many plant species have also been named for Degener and his wife.

Commenting on the tree that was Degener's most famous discovery, Raven says, it is "very, very primitive. The walls of the flower which contains the ovules are open and they don't fuse together until after pollination." The tree, which has brownish blossoms and seeds, is found only in its native Fiji Islands. (One plant is currently being cultivated at the Missouri Botanical Garden.) It grows to a height of about 30 to 40 feet and, all by itself, constitutes a family—in contrast to the orchid family, say, in which there are about 30,000 different species. Fellow alumnus and botanist *Oswald Tippo '32*, a UMass professor and former chancellor, calls the Degener discovery "extremely important" and says it is included in almost every botany book on the market today.

Background at MAC

Degener was a talented botanist even from the start, when he was just a green undergrad at MAC studying under famous MAC professor and botanist *Ray E. Torrey '12*. The summer after his freshman year, Degener eagerly collected specimens in the Colorado Rockies "even gathering forget-me-nots and silenes at the summit of Pike's Peak July 19." He submitted the resulting collection to the botany department and won himself the Hill Prize of $15 ("quite an honor and a nice sum at the time," he recalls) for the best student herbarium. As a sophomore, he was chosen to serve as permanent laboratory assistant to Torrey and later served as a graduate assistant.

That was just the start of something big. Since 1919, Degener says he has "swamped" the herbarium at Clark Hall with upward of 20,000 specimens, collected mostly in Hawaii, where he went following his stint as a graduate assistant at MAC. He has also sent specimens from his sojourns in Bermuda, Canada, Canton Atoll, Fiji, Guatemala, Ireland, Mexico, Nassau, New Zealand, Russia, Scandinavia, Taiwan, and Yugoslavia, plus a sampling of flowering plants gathered during a trip around the world.

After making his permanent headquarters in Hawaii, Degener received his master's degree from the University of Hawaii, where he later taught, and then became a naturalist for the Hawaii National Park. While working there, he published his first book, *Plants of the Hawaii National Park*. Shortly thereafter, Degener began his major work, *Flora Hawaiiensis*, which has become a lifelong project similar in scope to Sisyphus rolling his boulder forever up the mountain. At last count Degener had completed seven volumes of the work, all printed in looseleaf form, a page devoted to each plant with an illustration on the overleaf. The looseleaf format is ideal since it allows descriptions of newly discovered plants to be inserted into the proper places.

Massive Work

It was virtually essential for *Flora* to be printed in expandable form because of the complete state of flux of Hawaiian plant life. Some plants face rapid extinction from the inroads of domestic animals and the conversion of lands to agricultural purposes. On the other hand, new species appear daily. How can this be? Is it by evolution? "By airplane," Degener told one writer. "By ship. By yacht....Perhaps you have brought us a new entry. A seed stuck to your shoe in a bit of mud, or trapped in your clothing, or even blown into your hair by the wind....That's all it takes."

With all of the time he spent working on the constantly expanding *Flora*, Degener managed to pack a variety of other experiences into his life, too. While on the eight-month-long trip to Fiji during which he discovered "his" plant, he became friends with a native chief. Upon learning that Degener was unmarried and had no children, the chief arranged to have one of his own

numerous children adopted by the botanist after the appropriate kava-drinking rites. So, Degener's trip to the Fijis resulted not only in his name being adopted by a family of plants, but also by a family of Fijians.

Surprising Visit

Degener was not to stay a bachelor forever, however, thanks to a happy coincidence dictated by an unlikely mating of chance and science. While working on the Canton Atoll shortly after World War II, Degener came across a species of grass that puzzled him. He shipped a specimen to a grass specialist he knew by name only—Dr. I. Hansen—at the Berlin Botanical Garden. Dr. Hansen responded at length via letter and described the grass as a new species. In appreciation, Degener mailed the good doctor "care" packages of food, in short supply in Berlin after the war.

Then, while visiting Berlin in 1952, Degener learned that Dr. Hansen was in a hospital recuperating from an illness. Speaking in the third person, Degener recalls his trip to the hospital to visit his colleague: "Directed to Hansen's room, he knocked and was aghast when a lady blushing suddenly stood before him in the doorway dressed in a nightgown ornamented with a design of four-leaf clovers and emblazoned in large letters (in German) 'Property of the City of Berlin.'" Bachelor Degener had never realized that Dr. I. Hansen was a woman! "In short, Degener finishes his story, sounding as though he is writing the screenplay for a Cary Grant comedy, "Dr. Isa Hansen became Mrs. Degener in 1953 and the couple has lived happily ever after in the Hawaiian Islands as a botanical team."

And team they have. Isa Degener has been a partner in the never-ending *Flora* and has helped to revise several other of Degener's works. Together they have had many species of plants named for them. In fact, Degener repeatedly insists that his wife is his partner and must be given equal credit for their many accomplishments since their marriage. "Remember," he said, "the husband's career is greatly influenced by his wife's backing and often leadership. We have been a team since our marriage in 1953." Both of the Degeners are members in absentia of the New York Botanical Garden, where they send as many plants as possible. UMass, Degener says, has "one of the best duplicate sets."

In the manner of a successful plant species, the Degeners have dispersed their flora far and wide, thus ensuring their survival in case of accident, war, or act of //

(Continued on next page)

God. "We no longer keep all our eggs in one basket," says Degener, recalling the bombing of the Berlin Botanical Garden during World War II. "We scatter them." That way, even if one is lost or destroyed, a duplicate will survive.

Other Interests

Degener's writing is by no means confined to botanical study. He is an avid writer of "letters to the editor" and often speaks out on subjects near and dear to his heart. The environment, for example. "Man is wrecking within 200 years a flora that has taken 20 million years to perfect," he once wrote while denouncing the introduction to Hawaii of passion flowers, goats, mouflon sheep, and black-tailed deer. He also has a dry sense of humor that comes through in much of his writing. In a letter to the *Honolulu Star Bulletin* in 1978 describing his hospitalization to have a pacemaker implanted in his heart, he said: "Even though the Tin Man in the Wizard of Oz craved a heart...and finally got one, I craved a heart that would be less sensitive to the environment about me. With this in mind, I visited the Hilo Hospital to have two famed wizards of medicine control the unbridled prancing and racing of mine with a pacemaker."

Degener's operation was successful enough so that now, at an age when most of his peers are long since retired, he and his wife still get into the bush for some collecting, despite new difficulties that come with modern living. "Gifts of plants from the Hawaiian Island (to UMass) have lessened during the past few years," he told *The Alumnus*, "due to more time spent in working up the specimens and the prevalence of the illicit growing of *Cannabis* in the wilderness. In fact, the Degeners have been shot at during their botanizing, probably in the belief they were revenue agents in mufti."

Despite such hazards, Degener's work continues. Perhaps the words of the Senate resolution commending his work best sum up a life that does not lend itself to easy abridgment: "Dr. Degener's many works...comprise an unparalleled collection of information on plant life in Hawaii, and stand as a remarkable resource ··· to students, teachers, scientists, and laymen alike, both locally and worldwide....He has been an inspiration to countless others...a botanist, taxonomist, conservationist, author and advocate...who has influenced and inspired many people in Hawaii and throughout the world..."

—Charles Koltz and Kay Scanlan

... Fiji Islands Aid in Cancer Research

42 San Francisco Chronicle Thurs., May 21, 1981

By David Perlman
Science Editor

A freighter from Fiji berthed in Oakland the other day, and in its mixed cargo were 300 pounds of twigs, bark and branches from one of the world's rarest plants, destined for American cancer researchers.

A San Francisco man who calls himself a specialist in "nutritional ethnomedicine" was forwarding the shipment to scientists at the U.S. Department of Agriculture and the National Cancer Institute near Washington, D.C.

Michael Weiner, who studied botany, nutrition and anthropology to get his graduate degree at Berkeley, spends part of every year collecting exotic plants that are used as folk medicines by primitive people in far-off places.

Under contract to the government, Weiner recently returned from the Fiji Islands after gathering and shipping home bulky samples of three different plants.

The most important was the 300-pound batch from a broad-leafed tropical tree the Fijians call Masi ratu, or "King's bark." The tree grows only in Fiji, and its entire family consists of a single species, whose scientific name is Degeneria vitiensis.

Five years ago Weiner collected his first three-pound batch of ...g's bark. He shipped it off to ...ashington for testing by scientists ...nder contract to the institute, as part of the NCI's $5 million-a-year "natural products" screening program. The program hunts for possible anti-cancer properties in microbes, animals and plants.

Weiner is an enthusiastic and very patient plant collector. Under his federal contract he has shipped nearly 100 varieties of trees, shrubs and flowers from tropical islands. But only the rare Fijian species has yet shown enough promise to warrant detailed animal testing against tumors.

"It's really a kind of random process," Weiner said as he inspected his huge sackful of branches from Fiji. "The islanders there don't seem to use any natural plants against cancer. They may have done it once upon a time, long ago, but now when Fijians get cancer they go to Western doctors for treatment.

By Vincent Maggiora

MICHAEL WEINER AND KING'S BARK
He collects plants for use in cancer research

"Their native herbal doctors treat many other diseases successfully with plants and plant extracts, however, and the islands that haven't been too badly stripped of their native culture still yield many useful folk remedies."

Weiner began his study of native medicines more than a dozen years ago when he was a graduate student living on the island of Tonga for three months and met the island's King Tupou IV.

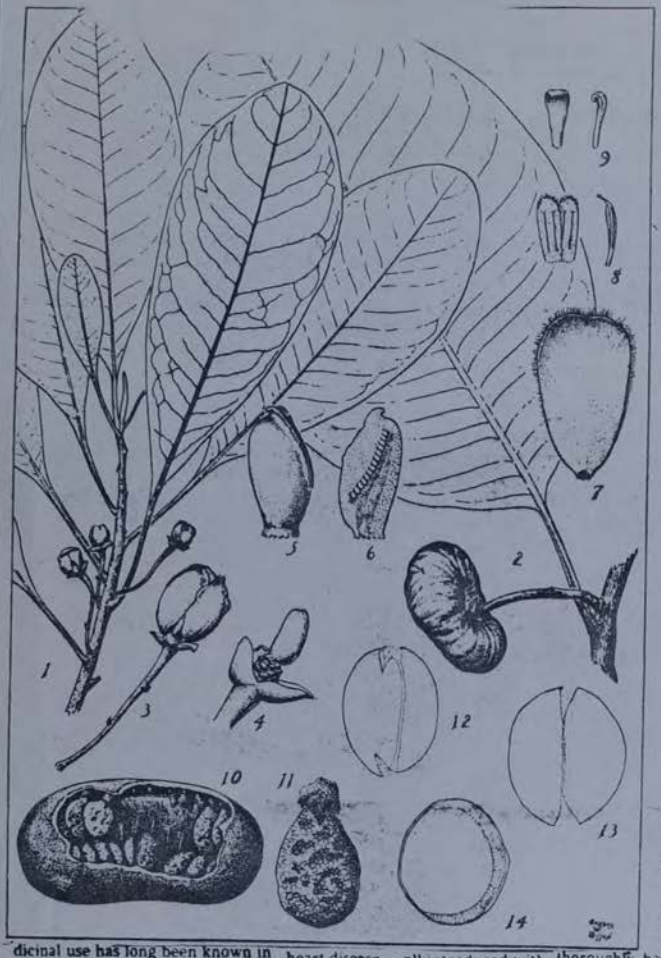
"He was Oxford-educated and a great surfer," Weiner recalled. "He weighed 300 pounds, and we spent three hours drinking sherry and talking about folk healers. He led me to some of the best in the kingdom."

On Fiji, Weiner found, the villagers were equally helpful — provided he was careful to observe the local greeting ritual. This meant bringing a gift of kava root and waiting patiently for the village headman to accept it. If he did, Weiner says, the kava was pounded into a powder, mixed with water, and ceremonially drunk.

Accepting the gift then obligated the villagers to obey their visitor's wishes — and in Weiner's case it meant helping him collect samples of medicinal plants.

Kava itself is known as an extremely effective sedative, and Weiner recalled that when the Fiji villagers mixed it with water from obviously polluted streams he feared an immediate attack of dysentery. But he never got it, no matter how bad the water, and after 12 years he has concluded that an infusion of kava may well be a most effective bar against the intestinal disease.

Another Fiji plant, whose me-



Degeneria vitiensis
This plate appeared in I.W. Bailey and A.C. Smith, *Journal of the Arnold Arboretum*, vol. XXIII (1942).

dicinal use has long been known in India, is called Gotu kola in the islands. It is related to pennyworts and hydrangeas and is mixed with other plants for virtually every other Fiji folk remedy. It is used against headaches and infections and to speed healing of wounds. And as a sedative, Weiner said, its active chemicals are as good as the meprobamate tranquilizers of Western medicine.

The Fijians also use plant extracts for fertility control — both to prevent births after conception and to help childless mothers conceive, Weiner said.

The folk healers of Fiji place great faith in their herbal medicines, Weiner said, but they will not use them against what they call "white men's diseases." These include gonorrhea, diabetes and heart disease — all introduced with Western ways, Western foods and Western stresses, and all calling for Western medical treatment.

As for the unique Degeneria tree, the Fijians know of no medicinal use for it. But Weiner surmised that just because of its uniqueness it might have chemical properties that would make it worth testing by the cancer institute's screening program for plants, animals and microorganisms.

Each year the institute screens about 5000 strains of antibiotic-producing microbes, and since 1957 it has tested nearly 170,000 of them. So far its scientists have found about 5000 of the microorganisms that can produce antibiotics with anti-cancer activity in animals. Fourteen are being tested more thoroughly because of their hopeful properties, and five are actually being used in chemotherapy for some human tumors.

The animal test program has examined material from 3000 different land and marine species, and scientists have found limited evidence of anti-tumor activity in about 560. But none has produced any substance with enough promise to warrant further study, according to Dr. Matthew Suffness of the NCI.

In the plant program, where Weiner operates through a contract with the Agriculture Department, the cancer scientists have looked at 35,000 different species since 1957. Five are being developed toward human trials, seven are being tested in humans, and two — drugs called vincristine and vinblastine

which were isolated from varieties of the periwinkle plant — are in wide medical use today.

Weiner's first three-pound batch of Degeneria was screened in 1975 and an extract of the bark appeared to have shown some activity against leukemia in mice, according to Suffness.

The tumor-free mice were injected with millions of leukemia cells, and in the normal course of events they would have been expected to die within 10 days. But according to Suffness, the extract from Weiner's Fiji plant seemed to extend the lifespan of the leukemic mice by 30 percent or more — an indication of potentially "interesting" activity.

Two years ago Weiner collected 40 more pounds of the "King's bark" material and it was tested with even more promising results, Suffness said. Now the 300 pounds of Degeneria will be used to isolate the thousands of active chemicals contained in the tree's bark or wood, and the chemicals will be studied carefully to learn their structure and properties.

my husband ogled big-busted women. When we'd go to a party, he'd wander off and I'd always find him next to a woman who was well-endowed.

Finally I went to a plastic surgeon to ask about silicone implants and was told it would cost $2,000 (this was in 1970.) I asked my husband for the money. He

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Hawaii Tribune-Herald, Tuesday, September 29, 1981—13

Enclosed ecosystem could be breakthrough

PASADENA, Calif. (UPI) — Self-sufficient ecosystems, using shrimp, algae and microorganisms capable of generating their own food, oxygen and water within a closed glass jar have been established at Jet Propulsion Laboratory, a scientists said Saturday.

The discovery of such a long-lived micro-ecosystem could represent a breakthrough in the science of ecology leading to life support systems for future space colonies, JPL ecologist Joe Hanson said.

The ecosystems have sustained themselves for more than 15 months, he said, but more time and work is necessary.

"I think we have now shown that at least for limited periods of time that stable and balanced ecosystems smaller than planet earth are possible," Hanson told UPI.

"It's not big enough, nor complex enough, but it is a small step in the right direction."

The animals and plants in the ecosystems are the largest ever to have lived as much as a year in a closed environment, Hanson said, adding that information on how the closed ecosystems work could perhaps be applied to developing larger more complex systems to support human colonies in space.

The type of shrimp used is called Halocaridinea which is a bit smaller than half an inch, he said. "It may be that this particular species of shrimp is the only animal in the universe that can do this.'

But Hanson said no science has been performed on the ecosystems yet, nor have they been chemically monitored.

"But in all probability the systems we have now have achieved a balance metabolis," he said. "In other words the plants are producing food and oxygen at the same rate the animals are producing carbon dioxide for the plants.

"Two other researchers, Dr. Clair Fulsome of University of Hawaii, and Dr. Bassett MacGuire at University of Texas, have done this with microorganisms, but not with macroorganisms," he said.

"The first hurdle was to find a micro-ecosystem that would live under totally closed conditions," he said. "Now that we have, the next hurdle is to develop techniques to monitor and understand the chemical and biological cycles and changes that are going on inside — and to do it without violating the integrity of the enclosure."

The ecosystems live in one-liter glass flasks that were hermetically sealed by melting the necks of the flasks closed.

Only light, provided by flourescent lamps and heat may enter the glass.

Living in three cups of synthetic sea water inside each flask are up to 16 small red shrimp, assorted algae and many varities of bacteria, viruses and microscopic animals.

The algae produce the oxygen and foods for the shrimp and other animal life, and the animals' wastes provide carbon dioxide and fertilizer consumed by the algae.

The cycle, the basis for life on earth, is driven by artificial sunlight 12 hours a day.

Hanson said he placed the same amounts of water and similar mixtures of algae in each flask, and all the flasks were subjected to the same lighting conditions. But a year later, different types of algae dominate each flask.

In some of the flasks, the shrimp have died, and in other the shrimp thrive, he said. But even in those closed systems where the shrimp have died, the algae are apparently healthy.

GIDS

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VAN DE
RAFFLESIA-GROEIPLAATS
TE BATANG PALOEPOEH (PADANGSCHE BOVENLANDEN) SUMATRA.

GUIDE

FOR THE VISITORS
TO THE
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NEAR BATANG PALUPUH (PADANG HIGHLANDS)
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Written by Vincent Marteka '58

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Rec. 15/XII/81

Guide to mushrooms for all seasons, tables

WHEN HE was a small boy, *Vincent Marteka '58* used to go mushroom-hunting with his father. After growing up, majoring in geology in college, and establishing a career as a science writer, his interest in many aspects of the natural sciences led him to re-discover his half-forgotten interest in mushrooms. The interest became a passion and the passion turned into a mission: He wanted to write a simple, easy-to-understand guide to finding, collecting, and, of course, preparing mushrooms to eat.

And he has. Published last year, Marteka's *Mushrooms: Wild and Edible (A Seasonal Guide to the Most Easily Recognized Mushrooms)* is a delightful book full of information about mushrooms for the beginning collector as well as for the expert. It is also a well-organized, well-written book interesting to even those who have no taste for edible fungi (poor souls) and no desire to wander about the woods or meadows looking for the same.

Pharoahs; such gastronomical gems were not to be wasted on the common people.

And what does this "food of the gods" taste like? Marteka describes one type, the king bolete, thusly: "Praise has been accorded this famous mushroom for centuries. In eastern Europe, special trains transport urbanites into the hinterlands each fall to search for this edible bolete. In southern France, the French and the Italians were on the verge of a miniwar when the French discovered that many Italians had gone over the border to collect the bolete in France's woods. In the United States, gourmets, unaware that this famous mushroom grows in their own woodlands, flock to specialty food shops to buy dried boletes at $30 a pound....When you taste the king bolete, you quickly learn why the adulation...is warranted.....Few tastes are as elegant as a king bolete that has been briefly sauteed in butter only a few hours

work for the U.S. Geological Survey in Washington, D.C., for two years. After that he spent two years as a science writer—then several more years as news editor—for Science Service, a national science wire service which counted *The Baltimore Sun* and *The New York Times* among its subscribers. He left that position to write a book on bionics that was published in the middle-1960s. After the book was published ("It sold moderately well, about 17,000 copies," he says), he did free-lance writing for a time. He then decided to move to New England where he went to work in Hartford, Conn., for Xerox Education Publications, which publishes magazines and newspapers for children from kindergarten through junior high school, including *The Weekly Reader*, for which Marteka was science editor for a time. For the past 15 years, still with Xerox, he has been the editor of *Current Science*, a biweekly newsmagazine for science students in junior high

Red crab mystery deepens

By JAN TenBRUGGENCATE
Advertiser Kauai Bureau

LIHUE — For at least the second time in this decade, millions of tiny crablike creatures washed up on Hawaiian beaches. 3/20/79

After studying the crustaceans, each of which is smaller across than a dime, scientists have concluded they are relatives of the Samoan crab. But no one is sure which relative.

No one seems to know why the creatures end up dead on the beaches, or whether it's a good sign or a bad sign.

Nobody knows what can be done about it, if anything at all needs to be done.

Earlier this summer — in late June and early July — people began noticing them on Kauai's beaches. Tiny reddish creatures with miniature tails similar to those of lobsters. They formed a band perhaps a foot wide at the high water mark. They appeared on beaches on every side of the island.

People took them to the Kauai marine adviser's office, an arm of the Sea Grant Marine Advisory Service. Adviser Jeremy Harris and assistant Jacqui Thomas sent specimens to Honolulu.

They ended up in the hands of William J. Cooke, a graduate student in zoology working on his doctorate with studies on soft corals. Cooke has also for several years worked under contract from the Research Corporation of the University of Hawaii to the Naval Ocean Systems Center at Kaneohe, where his job is to identify invertebrates, an area that includes crablike creatures.

Cooke was able to identify the mystery creature as a member of the family *Portunus*. The family includes such common Hawaii "swimming crabs" as the haole crab and the Samoan crab.

But the mystery crab is not like any crab whose immature stages have been researched, Cooke said.

It is a megalops, a stage in the crab's growth between the planktonic free-floating stage and the bottom-dwelling true crabs.

It is in the megalops stage that the crab moves into shallower waters and prepares to stake out its undersea terrain. Once it finds its spot, the megalops will molt and become a juvenile crab that looks like the adult form. Generally, before this stage, the crabs don't look anything like their adult forms, Cooke said.

The mystery megalops never got to stake out much terrain, except for the shoreline they covered as dying flotsam.

And it's not the first time the mass strandings have occurred.

Such an event was reported on the north shore of Oahu in 1977 by noted botanist Dr. Otto Degener, Cooke said. Degener at that time presented Cooke with specimens of the creatures he found. They are identical to the ones found this summer on Kauai, he said.

There was another stranding in the 1930s. Cooke studied preserved specimens of that stranding at the Bishop Museum and they were the same, he said.

Is it something to be worried about?

It's impossible to tell, Cooke said.

In the meantime, he said it is important that regular beachgoers who notice odd things at the shore, such as a sudden increase in crustacean deaths, report them to officials like those of the Sea Grant Marine Advisory Service.

Part of the key to finding out why the deaths are occurring is to have accurate records of past activities, he said.

DR. ROCK'S LIBRARY

Hon. Adv. 3/9/55

Editor, The Advertiser:

Today I received a clipping from your paper of Feb. 18 regarding my library recently purchased by the University of Washington, Seattle, Wash. In the letter by Professor Krauss occurs the statement that the library was originally loaned to the University of Hawaii. This statement is not correct. Before returning—1940 from Indochina to Honolulu—I wrote to the then President of the U.H., David Crawford, that I am shipping the library to Honolulu, and that the minute the books left Saigon they were a gift (not loan) from me to the Oriental Institute of the University of Hawaii.

On my arrival later in 1940 in Honolulu I found that the books were on the floor in a little room of the building which then housed the Oriental Institute, that rats had been attacking them and cockroaches had eaten the bindings. I then remonstrated with President Crawford saying that I did not give the books to the university to be kept on the floor to be eaten by rats and cockroaches. He thereupon replied, "This is the only way we can take care of them and if you don't like it you can take them back again." I paid $670 U.S. freight from Dalat Indochina to Honolulu, via Saigon—Manila and partly via Bangkok—Manila. After the library was spurned in such a rude manner by the president of the university, I packed up the books in many trucks and boxes and stored them with the Honolulu Construction and Draying Co. In 1944 I loaned the books to the U. S. Army Map Service which shipped them to Washington, D. C., but I paid insurance of $500 for the war was still on.

This is the true story and the reason why the library left Hawaii.

Merano, Italy
March 1

JOSEPH F. ROCK

EDITOR'S NOTE—The Rock library has come to rest at last. The Rockefeller Foundation recently contributed $8,000 toward its purchase price of $25,000 and it was acquired by the University of Washington.

99 YEARS AGO—APRIL 17
From The Advertiser Files

Cotton cannot properly be treated as a product of these Islands although the plant has been growing here for many years.

It is found wild on the five principal islands. It was introduced here in 1829. In 1835 an attempt was made to manufacture cotton cloth at the Wailuku Seminary on Maui, and about ninety yards were then made, but the imported article was so much superior and cheaper, that its manufacture was given up.

Also about that time a Charles R. Smith of Haiku, Maui, commenced a cotton plantation, but for want of means to carry it on, was forced to give it up.

The climate and soil here are adapted to the cultivation of this plant, and with experience with machinery and experience, the cost of growing cotton could be cut so that the finished produce would make a profit on a sale.

Hon. Adv. 4/17/56

Aquaculture bill gets OK

Aquaculture got a boost yesterday when the U.S. Senate passed a bill to authorize $70 million over the next three years for studies into the industry's development. Lone, Calif.

The proposed National Aquaculture Act, introduced by Sen. Daniel Inouye and co-sponsored by Sen. Spark Matsunaga, directs the departments of agriculture, commerce and interior to put together a national aquaculture development plan.

The plan would identify aquatic species which could be cultivated and sold commercially. 5/5/80

The bill also calls for studies on financial aid for the aquaculture industry and on government regulations which might discourage its growth.

Inouye said that although the bill does not establish new incentive programs for the industry's development, it would require that studies be done to document the need for such programs.

The bill authorizes the appropriation of $17 million in fiscal year 1981, $24 million in 1982 and $29 million in 1983.

It now goes to the House for further action.

Helsinki, Hiroshima, Ithaca

High cancer rate among Hawaiians is blamed on diet

(Honolulu Advertiser, 11/19/81)

By Pat Hunter
Advertiser Medical Writer

Why do Hawaiians have a higher risk of cancer than other ethnic groups in the U.S.?

According to Michael Weiner, holder of a doctor's degree in ethnobotany and ethnomedicine, diet is the answer.

Earlier this week, a report released by the National Cancer Institute said Hawaiians and part-Hawaiians were more likely to contract cancer than members of any other ethnic group.

Hawaiians are alienated from their original culture and, instead of eating the protective foods they once did, they're eating westernized junk, Weiner said.

Author of "Earth Medicine, Earth Foods: Plants for Survival," Weiner has been collecting plants used in folk medicines from remote Pacific islands for more than 13 years, shipping them back to the U.S. Department of Agriculture and the National Cancer Institute for study as possible clues to new medicines for the treatment of cancer and other disorders.

In the process, having received his doctorate in part for studies in nutrition, he has observed the changes in eating habits among native peoples, as Western ways begin to take over. He says that Western diseases such as diabetes, gonorrhea, heart disease and cancer all have cropped up in the wake of these changes.

To support his claim, he cites a recent article in the Journal of the NCI, done by a team of researchers at Oxford over the past five years, that says nutrition is the most important factor in cancer causation.

"After studying diets around the world, they maintain that it is not just some elements that are in the diet that cause cancer, but the important protective foods that are left out — those that are high in vitamin A, vitamin C and fiber.

"Here we have statisticians (I call them coffin measurers) who tell us that certain peoples have higher incidences of cancer than others, but leave them on the high seas without canoe, paddle or rudder and don't tell them what to do about it. The evidence is conclusive enough to suggest that going back to the old diet may be protective and preventive.

Michael Weiner
Important foods omitted

"Think about it — how many people now are eating fiber and vitamin-rich foods such as breadfruit, papayas, guavas, carrots, mangoes, fish liver oils, bananas, taro and its tops, coconuts, etc., on a regular basis?

"People are eating junk food at the expense of protective foods."

Weiner said preserved meats with their nitrates and nitrites — foods that are easily available and cheaper than fresh foods — probably have a lot to do with cancer causation. "Especially among children. Because their stomachs are more acidic, nitrites turn to nitrosamines (cancer-causing compounds) much more easily."

He said his new book, "Way of the Skeptical Nutritionist," shows definitively how Pacific island and Asian food choices and preparation methods are closely linked to the prevention of disease.

Weiner was passing through Honolulu this week after his latest trip to Fiji gathering new data for a book on folk medicines and their uses there. In May of this year, he brought back with him a new supply of a tree, *Degeneria vitiensis* (named for Hawaii's well-known botanist, Otto Degener) — also called "king's bark." The tree grows only in the mountains of Fiji.

Researchers at the National Cancer Institute have found promise in the plant and are testing its thousands of active chemicals, which will be studied to learn their structure and properties.

"I've been working, getting to know Fijian folk healers 'through the back door' for a dozen years. Prime Minister Ratu Mara asked me to write a book about it and the American ambassador boosted the idea. I was able to get a grant from the Asia Foundation to go ahead."

Weiner earned his bachelor's degree from Queen's College in New York and came to Hawaii on a National Science Foundation scholarship in 1968 to work for his master's degree in ethnobotany, which he received in 1970.

Then he received his master's in medical anthropology from the University of Hawaii in 1972 and went on to study for his PhD., which he received in 1978, in an amalgam of disciplines: botany, ethnomedicine and nutrition at the University of California at Berkeley.

While still a student, he spent three months in Tonga and, through the help of the Tongan king, was able to meet and work with folk healers there.

"A great many of the medications in use today have their origins in plant extracts," he said. "Vincristine and vinblastine, two of the most effective drugs for leukemia, are derived from the tropical periwinkle plant. Birth control preparations come from the Mexican yam, digitalis from the foxglove and reserpine from Indian snake root."

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Rec. 4/1/82

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Orchid Rebirth Marked By New Jersey Grower

Bill Smith got a midnight call several months ago from Chicago. The caller said someone there had heard of Smith, and that he might want to deal.

The caller said he had "scored" through an "African connection" and could let Smith have some of the goods on an upcoming trip to the Jersey shore. The price sounded good to Smith, and the deal went down.

Such is the drama of dealing in the often secret and exotic world of the orchid. The intrigue is especially appropriate for A. William Smith, of Warren Grove, N.J., who discovered his profession in a storybook fashion.

A CHILD genius, he attended Swarthmore College in Pennsylvania, and graduated from Glassboro State College before he moved into a log cabin deep in the Pinelands of New Jersey nearly 20 years ago.

He tried his hand at artwork and other crafts and started growing vegetables for his family. Then he met an old man near the woods who told him about flowers—and left him spellbound with an essay on orchids.

Smith, 41, built a greenhouse that was expanded into two much larger greenhouses on the border of the Pinelands core region, the most remote and protected region of the vast forest of sandy pines and streams.

Smith had "found himself," and now orchid lovers from as far away as Hawaii and Japan know his name. Still, the owner of Rainforest Orchids said he feels a long way from the suburbs of Philadelphia, where he grew up.

Some of Smith's Offshoots Date to the 1800s

Military budget excessive, says Pauling to ACLU

Dr. Linus C. Pauling, Nobel laureate, chemist and a crusader for peace, last night challenged members of the American Civil Liberties Union of Hawaii to urge Congress to reduce defense spending.

Addressing 450 persons at the ACLU's annual dinner at the Hilton Hawaiian Village, Pauling said, "We just waste so much of our resources on militarism. It's an insult to the common sense of the American people that the military budget should be increased at the present time.

"The best thing we can do is to apply pressure on government to decrease the military budget. It's pure insanity to have $100 billion deficit and at the same time increase the military budget by many millions of dollars."

Pauling, 80, received the Nobel prize in chemistry in 1954 and the Nobel Peace Prize in 1962, largely for his work to stop the testing of nuclear weapons.

Pauling said he was right when he commented years ago that "the communism-capitalism dispute is pretty small potatoes" compared to the global dangers posed by nuclear weapons.

"Nevertheless, I think we have a chance," he said. "I'm an optimist by nature. I think we have a chance of muddling through, if people of the world will begin to cooperate with each other."

He had been asked to talk about himself and seemed pleased by what he called a rare opportunity to share his own story.

Chuckling as he read press clippings from an old scrapbook, he recounted his run-ins with senators and the government and university bureaucracies because he talked about the threat of nuclear war and worked for world peace.

In the 1950s he circulated a petition, signed by 2,000 American scientists, calling for an end to nuclear testing, and was subsequently branded a communist and called before the Senate internal security subcommittee.

Summing up the years, Pauling said, "I don't think anyone of you should be sorry for me. I've had a good life."

Also at last night's dinner, Corky Trinidad, editorial cartoonist for the Honolulu Star-Bulletin for 13 years, was presented the Allan F. Saunders Award for outstanding service to civil liberties in Hawaii.

Saunders said: "The cartoonist, especially the political cartoonist, is very much like the ACLU itself. The ACLU focuses on the constitutional rights of individuals. A cartoonist with insight and courage and skill alerts our mind and pricks our conscience to the primary issue of human dignity vs. social injustice. Corky is a very good political cartoonist."

Advertiser photo by Rey Ilo

Corky Trinidad, right, stands next to Allan Saunders in receiving the ACLU award named after Saunders. Linda Hills, ACLU executive director, and Dr. Linus Pauling Sr. present the award.

William M. Bush

[Botanized with Topping
& C. D.; in early days mostly
on Oahu]

Dear Otto and Ina,

Sharla, Katie, Alan and I have been deeply moved by the many expressions of sympathy from our many friends.

In the hospital it meant so much to Mary and Tom, during the long period of her critical illness, to have the children and her brother Walter with us.

So you go our thanks for having us in your thoughts at this time.

Sincerely

Will

Sutton, S. B.
Joseph Rock "Prince"
of China's western provinces.
Harvard Mag. (Discovery Suppl.)
v. 84: 48 A-H, 1982

...onolulu, November 22, 1981 The Sunday Star-Bulletin & Advertiser

Woman prof at UH wins prestigious genetics award

Dr. Patricia Jacobs of the John A. Burns School of Medicine at the University of Hawaii has received the William Allan Memorial Award from the American Society of Human Genetics, the most prestigious award in the field of genetics.

Jacobs, a professor of anatomy and reproductive biology, is the first woman and the second University of Hawaii faculty member to receive the award since it was established in 1963.

The award, for "outstanding work in human genetics," recognizes Jacobs' accomplishments during 25 years of research. It is presented once a year for continued productive work and direct impact on human genetics rather than for a single contribution in the field.

Jacobs was the first person to show that some people have extra chromosomes and that such additional chromosomes are the cause of a number of diseases. Her interests have always been devoted to the study of chromosomes in populations.

She was the first person to demonstrate that an additional sex chromosome could be associated with anti-social behavior, particularly in individuals reared in an adverse environment.

An earlier recipient is Dr. Newton Morton, husband of Jacobs. The director of the UH Population Genetics Research Laboratory, he received the award in 1963 for work performed at the University of Wisconsin.

Jacobs was born in London and received a doctor of science degree from St. Andrews University in Scotland.

Dr. Patricia Jacobs
Cited for "outstanding work"

H. Johnson was at "MAC
(later Univ. Mass.) in my day
as a special student under
Ray E. Torrey. He was the
pioneer waterlily
grower & dealer in Calif.
The couple joined us
10± years ago touring Japan.
O. D.

They older than I, I assume he has died.

Johnson, Harry, Box ~~69~~, ~~Hazel Paramount~~ 478, Calif.
2735 Olive Hill Rd., Fallbrook, Calif., 92028

P.H.N.P. Jan. 1931

~~H. Haw. Book II 9/18/35~~

~~H. Haw. Book III~~ March 10, 39 ~~IV~~ June 25, '40 (93,028)

~~Hengyne shaffi~~ 11/11/43

~~Ching Ho Jansen~~, 1 & 2, Dec, 1943

~~Trop. Plants~~ 3 July 1945, ~~I Aug 1945~~

~~Reimer, vos. II~~

Fiji book, April 1949, Paradise Kalalau, 1951, 2/1/57, 4/4/57, 8/7/57, 12/27/57, Books 4/7/58, 4/7/60, P.F. Syst. 3/3/61, 3/15/63, Book 6, David Douglas Centennial

Star Bulletin 7/20/81

Kipahulu Valley Plan

A FIVE-YEAR PLAN for lands in isolated Kipahulu Valley, Maui, owned by the Nature Conservancy, should be completed in another month, according to Kelvin H. Taketa, the Conservancy's field representative.

The plan is being worked out with the help of the Kipahulu Project Advisory Committee, formed in April and including members of the Hana and Kipahulu communities.

The upper part of Kipahulu, an essentially pristine rain forest, was given in 1969 to Haleakala National Park by the Conservancy and the State of Hawaii, both of which owned about one-half of the upper valley lands.

The lower valley, from the 2,000-foot elevation to the ocean, is owned by several groups, including the National Park Service, the state, the Conservancy and various individuals.

The lower valley has been the subject of disputes over an attempt to transfer title of additional land to the national park and over land titles. Since withdrawal of a condemnation suit in May 1980, efforts have been under way to work out a plan in cooperation with the local community.

A plan for Kipahulu Valley on Maui is nearing completion.

A "Resources Base Inventory of Kipahulu Valley Below 2,000 Feet," which proposes some restoration of Hawaiian agriculture, is being used as a guideline for the plan that is being formulated, Taketa said.

THE INVENTORY was sponsored by the Conservancy and written by several persons for the Cooperative National Park Resources Studies Unit, with the unit's director, Clifford W. Smith, as editor.

Lower Kipahulu Valley was cultivated with Hawaiian food crops in the old days, was in a sugar plantation from 1880 to 1923, was the scene of an unsuccessful attempt to grow pineapples, and in recent years has been in pasture.

The inventory proposes that parts of the valley should go back to agriculture, much like the old days. Bananas, macadamia nuts, breadfruit, avocadoes, anthuriums, dryland taro, yams, and watercress are some of the crops proposed.

There may be problems with some of the crops, the inventory says, but some of them may be feasible.

Beatrice K. Krauss, in a study of the ethnobotanical resources, surveyed the lower valley, noted terraces for dry and wet taro, and quoted reports of breadfruit and sweet potato cultivation in the old days.

The study report recommends that herbicides or insecticides which are not biodegradable should not be used, that crops which could escape and naturalize in the upper valley should not be grown, and that sewage and garbage disposal for residences should be controlled.

It suggests that woodlands above 1,500 feet may be part of a buffer zone to prevent the spread of exotics up the valley.

TO PROTECT the natural resources of the valley above 2,000 feet, it recommends control of cattle, mongoose, feral pigs, strawberry guavs and Java plum.

The study lists five species in the valley as very rare: an endemic gobiid fish that has been proposed for listing as an endangered species; Newell's shearwater, an endangered bird; a rare and endemic damselfly that had not been collected in more than 25 years; and a very rare snail, Perdicella carinella.

In working out a plan for Kipahulu, the Conservancy has been talking with a group known as Pohaku, men with Hawaiian blood who are interested in farming, especially with old Hawaiian crops. Most are young, but a few older ones are serving as teachers.

They have already restored several old lo'i (terraces) and have planted them to dry-culture taro and sweet potatoes.

Taketa said that Sam Kalalau III, the Pohaku president, is helping with the planning effort.

Krauss

Degener

Clidemia

THE ALLEGATION that Harold L. Lyon, the late veteran sugar botanist, introduced the plant pest Clidemia Hirta to Hawaii is false, according to Constance E. Hartt, who edited a recent book about Lyon.

The allegation was made by the veteran Island botanist Otto Degener.

Hartt says she has been informed by the Lyon Arboretum that it has no evidence that Lyon brought in the plant and that Clidemia is not included in Lyon's list of introductions.

She quotes a 1953 bulletin of the Board of Commissioners of Agriculture and Forestry that says:

"This shrub was found in November 1952 infesting approximately one square mile of land in the Wahiawa watershed. This was the first record of the plant in Hawaii. It is not known how the plant was introduced here. It has not been reported elsewhere in the territory.

"Clidemia is a native of tropical America."

In the years since 1952 Clidemia, also known as Koster's curse, has spread widely over Oahu's mountains, has gained a foothold on other islands, and has caused searches, not very successful as yet, for biological agents to control it.

Degener

DEGENER, INCIDENTALLY, has received a copy of a story that appeared in the *San Francisco Chronicle* of May 21 that told how a Fijian tree named for him has been collected for cancer research.

The collection was made by a San Franciscan, Michael Weiner, who spends part of each year collecting exotic plants used as folk medicine and sending them to the U.S. Department of Agriculture and the National Cancer Institute.

One of the trees in Weiner's most recent shipment is known by the Fijians as king's bark and has the scientific name of Degeneria vitiensis.

Degener, on a scientific expedition in 1942, collected it and found later that it represented a species never before recorded and that it failed to fit into any known plant family.

Later in 1942 the tree was given its scientific name and placed in the newly established family Degeneriaceae. Degener is one of only two living men to have a family of flowering plants named for him.

Degener hopes the scientists will find the plant has medicinal values. The plant, endemic to Fiji, has been grown in Lyon Arboretum from Fijian seed, he says.

The tree has been called a "living fossil" by Peter Raven, director of the Missouri Botanical Garden.

Chinese gardens expected to have influence on West

The Chinese landscape garden is on the brink of being "discovered" by the West and could affect garden design much the same way the Japanese garden did just over a century ago, a California landscape architect said here yesterday.

To date, "the world hasn't taken to the Chinese garden," and China's reputation as a "mysterious and far away country" isn't the only reason, Arthur Sylvester said.

Chinese reliance on stark individual rocks or piles of rock for "false mountains" puts off Westerners used to masses of flowering shrubs. "The rocks scare the Westerners," Sylvester said, and "they do not look around long enough to see the subtle effects" of the gardens.

But with the opening of China to the West again, Sylvester told an SRO lecture audience at the Honolulu Academy of Art, "someone is going to discover them and their influence will be felt."

Sylvester cited the 1980 opening of the Metropolitan Museum of Art's replica of a single courtyard from the famed Garden of the Master of the Fishing Nets in the Chinese garden capital, Xuxhou, as an example of the new interest.

And next month, he said, Architectural Digest will publish an article on another Chinese garden.

In contrast to royal parks of France laid like a carpet of geometric patterns on flat land, or the "complete picture" of "super neat" nature presented by a Japanese garden, the Chinese offer a series of rustic and windblown scenes like those on an Oriental scroll painting, often reached by maze-like paths or zig-zag bridges and emphasizing man-made decoration ranging from wall windows to entire ornate buildings.

Water in Chinese gardens is important, but usually flat and calm rather than falling or fountaining, to offer feminine contrast and mirror for the masculine rock masses, he said.

Sylvester's talk, sponsored free of charge by the Academy of Art and the Garden Club of Honolulu, was illustrated with slides from two recent visits to China.

"Discovery" is a special supplement limited to donors and subscribers.

DISCOVERY

Joseph Rock, "foreign prince" of China's western provinces

by S. B. Sutton

Among the items in the rare-book collection in the Harvard-Yenching Library, on Divinity Avenue in Cambridge, are twenty or so polished mahogany boxes approximately the size of card-catalogue files. Each box contains six or seven manuscripts written in a charming pictographic language,

One of Rock's Nakhi manuscripts, now at the Harvard-Yenching Library.

Rock in Choni costume.

12-18-81

Hello + thank you for the card! It was so nice to be remembered. So, you think it's cold at 60°F? Perhaps you should taste a bit of New England weather. So far in southern Vermont where I live, this week we have had 23" of snow and 12" more are predicted. Commuting 40 miles to work has not been easy or enjoyable. For sure, however, we will have a very white Christmas.

A very happy new year to you both.

Sincerely, Kay S

The Alumnus
UNIVERSITY OF MASSACHUSETTS AMHERST
Volume XII, Number 3 April-May 1981

'Botanical pioneer'

A Degener retrospective

Botanist Otto Degener '22 (inset) with a drawing (right) of the tree named after him, the Degeneria vitiensis, the only known member of the primitive Degeneria Family. —Drawing reprinted from "Degeneriaceae, A New Family of Flowering Plants from Fiji" by I.W. Bailey and A.C. Smith

BORN IN East Orange, N.J., at the turn of the century, MAC graduate ('22) *Otto Degener*'s adventurous life as a botanist is a throwback to the old school of field research usually associated with such people as Charles Darwin during his voyage on the "Beagle." Degener, one of only two living men to have a family of flowering plants named after him, likes to joke about his family coat of arms (a sheep, because his family specialized in wool manufacture) by saying that the symbol "is hardly as flattering an animal as a rampant lion." Nonetheless, considering Degener's lion's share of experiences since graduation from MAC nearly 60 years ago, he has no reason to feel crestfallen.

Degener has accumulated many honors in his 82 years. He has received the Distinguished Service Award of the New York Botanical Garden; the Willdenow Medal of the Berlin Botanical Garden and Botanical Museum; and the Linné medal from Stockholm, among others. A resident of Hawaii for most of the time since graduation, in 1979 he was honored by the Hawaii state senate which passed a resolution in his honor saying, in part, that everyone

"who cares about the natural beauty and special qualities of these islands...owes a bottom-line debt of gratitude to Dr. Degener for his lifetime perseverance in relating humankind to the natural environment upon which we ultimately depend for survival...." And, in 1952, Degener received an honorary doctor of science degree from the University of Massachusetts. The citation read in his honor called him a "botanical pioneer" and said, in part, "Among our galaxy of great naturalists your place and fame are secure." Later in 1952 Degener was named as the outstanding botanist/naturalist of the Pacific Island at the International Flower Show in New York City.

Definitive and Comprehensive

Either alone or with his wife and helpmate Isa, Degener has published nine definitive books and more than 400 articles on the flora of Hawaii and the South Seas, including the multivolume (and still growing) *Flora Hawaiiensis* series, which represents the most comprehensive work ever published on the plant life of the islands. Other works include *Plants of Hawaii National Parks: Illustrative of Plants and Customs of the South Seas* and *Naturalist's South Pacific Expedition: Fiji*. Both of the latter books contain much lore on customs and history as well as plants. In one chapter of the last book, a chapter on cannibal feasts, Degener informs nervous readers that the Fijians seldom eat white meat as it often contains the disagreeable flavors of tobacco and alcohol. The preferred cut, he says, is the upper arm of a Melanesian belle.

The discovery that is perhaps Degener's most famous accomplishment came about in a very quiet way during what seemed like just another day in the routine of collecting botanical specimens in the field. The date was Feb. 24, 1942, and Degener and two assistants were combing the mountainous, tropical landscape of the Nauwanga forest in the Fiji Islands for specimens. Degener recalls that sometime during the day they happened across an unfamiliar tree "with rather ugly flowers. Being as usual greedy for the specimens to scatter far and wide among worthy institutions to stimulate study, I collected ample material." Degener, who numbers all of his specimens, numbered this one No. 14,537. Then he pressed and dried all the plant material and sent it off for study to Dr. A.C. Smith at the Arnold Arboretum of Harvard University. Shortly thereafter, Smith began sending Degener excited letters about No. 14,537: It appeared that it represented a species never before recorded. Even more astonishing, it failed to fit into any known plant family; it was a member of a previously unrecorded family of primitive flowering plants. Related to the magnolia, the tree was a member of a family that was perhaps 100 million years old. Director of the Missouri Botanical Garden Peter Raven later called the tree a "living fossil."

Plant Family Named For Him

Later the same year, 1942, the tree was named *Degeneria vitiensis* of the newly established plant family *Degeneriaceae*. About that honor, an honor bestowed on only one other living man, and the day he discovered the tree, Degener wrote: "February 24 is truly far more important to me than the anniversary of my birthday or the date of my death. February 24 is my very private, personal, memorable 'Memorial Day.' " Besides having a plant family named after him, many plant species have also been named for Degener and his wife.

Commenting on the tree that was Degener's most famous discovery, Raven says, it is "very, very primitive. The walls of the flower which contains the ovules are open and they don't fuse together until after pollination." The tree, which has brownish blossoms and seeds, is found only in its native Fiji Islands. (One plant is currently being cultivated at the Missouri Botanical Garden.) It grows to a height of about 30 to 40 feet and, all by itself, constitutes a family—in contrast to the orchid family, say, in which there are about 30,000 different species. Fellow alumnus and botanist *Oswald Tippo '32*, a UMass professor and former chancellor, calls the Degener discovery "extremely important" and says it is included in almost every botany book on the market today.

Background at MAC

Degener was a talented botanist even from the start, when he was just a green undergrad at MAC studying under famous MAC professor and botanist *Ray E. Torrey '12*. The summer after his freshman year, Degener eagerly collected specimens in the Colorado Rockies "even gathering forget-me-nots and silenes at the summit of Pike's Peak July 19." He submitted the resulting collection to the botany department and won himself the Hill Prize of $15 ("quite an honor and a nice sum at the time," he recalls) for the best student herbarium. As a sophomore, he was chosen to serve as permanent laboratory assistant to Torrey and later served as a graduate assistant.

That was just the start of something big. Since 1919, Degener says he has "swamped" the herbarium at Clark Hall with upward of 20,000 specimens, collected mostly in Hawaii, where he went following his stint as a graduate assistant at MAC. He has also sent specimens from his sojourns in Bermuda, Canada, Canton Atoll, Fiji, Guatemala, Ireland, Mexico, Nassau, New Zealand, Russia, Scandinavia, Taiwan, and Yugoslavia, plus a sampling of flowering plants gathered during a trip around the world.

After making his permanent headquarters in Hawaii, Degener received his master's degree from the University of Hawaii, where he later taught, and then became a naturalist for the Hawaii National Park. While working there, he published his first book, *Plants of the Hawaii National Park*. Shortly thereafter, Degener began his major work, *Flora Hawaiiensis*, which has become a lifelong project similar in scope to Sisyphus rolling his boulder forever up the mountain. At last count Degener had completed seven volumes of the work, all printed in looseleaf form, a page devoted to each plant with an illustration on the overleaf. The looseleaf format is ideal since it allows descriptions of newly discovered plants to be inserted into the proper places.

Massive Work

It was virtually essential for *Flora* to be printed in expandable form because of the complete state of flux of Hawaiian plant life. Some plants face rapid extinction from the inroads of domestic animals and the conversion of lands to agricultural purposes. On the other hand, new species appear daily. How can this be? Is it by evolution? "By airplane," Degener told one writer. "By ship. By yacht....Perhaps you have brought us a new entry. A seed stuck to your shoe in a bit of mud, or trapped in your clothing, or even blown into your hair by the wind... That's all it takes."

With all of the time he spent working on the constantly expanding *Flora*, Degener managed to pack a variety of other experiences into his life, too. While on the eight-month-long trip to Fiji during which he discovered "his" plant, he became friends with a native chief. Upon learning that Degener was unmarried and had no children, the chief arranged to have one of his own

numerous children adopted by the botanist after the appropriate kava-drinking rites. So, Degener's trip to the Fijis resulted not only in his name being adopted by a family of plants, but also by a family of Fijians.

Surprising Visit

Degener was not to stay a bachelor forever, however, thanks to a happy coincidence dictated by an unlikely mating of chance and science. While working on the Canton Atoll shortly after World War II, Degener came across a species of grass that puzzled him. He shipped a specimen to a grass specialist he knew by name only—Dr. I. Hansen—at the Berlin Botanical Garden. Dr. Hansen responded at length via letter and described the grass as a new species. In appreciation, Degener mailed the good doctor "care" packages of food, in short supply in Berlin after the war.

Then, while visiting Berlin in 1952, Degener learned that Dr. Hansen was in a hospital recuperating from an illness. Speaking in the third person, Degener recalls his trip to the hospital to visit his colleague: "Directed to Hansen's room, he knocked and was aghast when a lady blushing suddenly stood before him in the doorway dressed in a nightgown ornamented with a design of four-leaf clovers and emblazoned in large letters (in German) 'Property of the City of Berlin.'" Bachelor Degener had never realized that Dr. I. Hansen was a woman! "In short, Degener finishes his story, sounding as though he is writing the screenplay for a Cary Grant comedy, "Dr. Isa Hansen became Mrs. Degener in 1953 and the couple has lived happily ever after in the Hawaiian Islands as a botanical team."

And team they have. Isa Degener has been a partner in the never-ending *Flora* and has helped to revise several other of Degener's works. Together they have had many species of plants named for them. In fact, Degener repeatedly insists that his wife is his partner and must be given equal credit for their many accomplishments since their marriage. "Remember," he said, "the husband's career is greatly influenced by his wife's backing and often leadership. We have been a team since our marriage in 1953." Both of the Degeners are members in absentia of the New York Botanical Garden, where they send as many plants as possible. UMass, Degener says, has "one of the best duplicate sets."

In the manner of a successful plant species, the Degeners have dispersed their flora far and wide, thus ensuring their survival in case of accident, war, or act of //

(Continued on next page)

God. "We no longer keep all our eggs in one basket," says Degener, recalling the bombing of the Berlin Botanical Garden during World War II. "We scatter them." That way, even if one is lost or destroyed, a duplicate will survive.

Other Interests

Degener's writing is by no means confined to botanical study. He is an avid writer of "letters to the editor" and often speaks out on subjects near and dear to his heart. The environment, for example. "Man is wrecking within 200 years a flora that has taken 20 million years to perfect," he once wrote while denouncing the introduction to Hawaii of passion flowers, goats, moufion sheep, and black-tailed deer. He also has a dry sense of humor that comes through in much of his writing. In a letter to the *Honolulu Star Bulletin* in 1978 describing his hospitalization to have a pacemaker implanted in his heart, he said: "Even though the Tin Man in the Wizard of Oz craved a heart...and finally got one, I craved a heart that would be less sensitive to the environment about me. With this in mind, I visited the Hilo Hospital to have two famed wizards of medicine control the unbridled prancing and racing of mine with a pacemaker."

Degener's operation was successful enough so that now, at an age when most of his peers are long since retired, he and his wife still get into the bush for some collecting, despite new difficulties that come with modern living. "Gifts of plants from the Hawaiian Island (to UMass) have lessened during the past few years," he told *The Alumnus*, "due to more time spent in working up the specimens and the prevalence of the illicit growing of *Cannabis* in the wilderness. In fact, the Degeners have been shot at during their botanizing, probably in the belief they were revenue agents in mufti."

Despite such hazards, Degener's work continues. Perhaps the words of the Senate resolution commending his work best sum up a life that does not lend itself to easy abridgment: "Dr. Degener's many works...comprise an unparalleled collection of information on plant life in Hawaii, and stand as a remarkable resource ··· to students, teachers, scientists, and laymen alike, both locally and worldwide....He has been an inspiration to countless others...a botanist, taxonomist, conservationist, author and advocate...who has influenced and inspired many people in Hawaii and throughout the world..."

—Charles Koltz and Kay Scanlan

Professor Karl Schmidt
Kunstgewerbeschule
Zürich . Ausstellungstrasse 60
Switzerland

he is professor of arts & crafts and getting very famous for his fabulously exact designs of botanical art.

MESTRE EM BOTÂNICA DOA ENCICLOPÉDIA À UFPR

O Prof. João Angely, dono de um vasto currículo, onde incluem vários cursos, além de extensa lista de condecorações e feitos notáveis. É também uma das maiores autoridades mundiais no ramo da pesquisa Botânica e suas publicações bem o direm: escreveu a "Flora de São Paulo", em 6 volumes; a "Flora de Minas Gerais", em 8; a "Flora da Bahia", em 4. Também publicou 32 livros, um dicionário, possui 95 trabalhos editados, assim fundou cinco diferentes séries de revistas Botânicas e em 1950 criou o Instituto Paranaense de Botânica. O Prof. Angely, acaba de doar à Universidade Federal do Paraná, sua mais recente e mais completa obra: a enciclopédia "FLORA DESCRITIVA DO PARANÁ", com 10 volumes, 3.483 páginas, 180 capítulos - ou para se ter uma melhor idéia, são 17 quilos de informações. A obra única do gênero no País, com tal índice de informações foi entregue ao vice-reitor, prof. Alsedo Leprovest, na presença do prof. titular do setor de Ciências Biológicas, Azor Cruz, amigo pessoal do autor. O trabalho demorou 8 anos para ser concluído, sendo cadastrado 6.395 diferentes espécies e consultadas 4.900 obras. A enciclopédia é excessivamente complexa e de custo industrial muito elevado, para ser reproduzida em escala comercial, sendo o primeiro exemplar deste importante trabalho doado à Biblioteca da UFPr, onde será usadda para pesquisas. Atualmente, o prof. Angely trabalha no Centro de Pesquisas Básicas, em São Paulo.

O mestre prevê para a próxima edição da "FLORA DESCRITIVA DO PARANÁ" usar um processo "multilit" para reprodução das páginas, uma vez que provavelmente, a obra não venha ser editada em larga escala.

Professor João Angely.

Curitiba, quinta-feira, 14 de janeiro de 1982

US$ 100,00 dolares - 5 vol - 1933 p.
Phytogeographical bibliography
3-1982 Flora Neotropica

Atividades Médicas e Científicas

Mário Ferreira Migliano

A maior bibliografia de História Natural

Em cerimônia realizada no último dia 27, o prof. João Angely, procedeu a entrega, na Biblioteca Municipal Mário de Andrade, do exemplar n.o 1 da maior bibliografia especializada em História Natural, a "The South America Botanical Bibliography".

Trata-se de uma obra em 5 volumes, com 1.833 folhas, contendo todos os trabalhos publicados em botânica na área de taxonomia dos vegetais superior, a partir de 1753, data do primeiro livro de botânica escrito por Linnaeus, fundador da botânica científica.

A cerimônia contou com a presença do titular da Secretaria da Cultura Dep. Cunha Bueno, patrono da obra, que em seguida fez a entrega à diretora da Biblioteca dra. Janeta Charatz.

O prof. João Angely, dono de um vasto currículo, onde inclue vários cursos, inclusive o de medicina, além de extensa lista de condecorações e feitos notáveis, fundou bibliotecas, Museus, Institutos de Botânica e Jardins Botânicos é também uma das maiores autoridades mundiais no ramo da pesquisa botânica. Escreveu 32 livros, um dicionário, possui 95 trabalhos editados e fundou 5 diferentes revistas de botânica. É também o autor da Flora de São Paulo em 6 vols.

A bibliografia entregue é a única no gênero no país escrita em inglês e português contém 4.733 títulos analisados e comentados e assinala mais de 1.100 revistas científicas e 4 índices de referências. O trabalho todo levou 5 anos de pesquisas e assinala 23.724 espécies descritas na flora brasileira. O trabalho excessivamente complexo exigiu a elaboração de um card-index de mais de 40.000 fichas. Atualmente o prof. João Angely trabalha no Centro de Pesquisas Básicas em SP.

Wilhelmina Freeman Greene

1Y. 4/-4/81 # 72 Rec. 19/6/81

MRS. RAYMOND W. GREENE

250 CHASE AVE. - WINTER PARK, FLORIDA 32789

April 27, 1981

Dear Otto and Isa,

Soo Long sent me the August 29th newspaper article about your being a Botanical Splitter. Her husband died just before Christmas, so she was late in sending it. Otto, I can't see that you have changed much except for a few wrinkles. Isa, you look wonderful! Otto, I'm so glad you have found someone who likes to do the same thing you do. Your books together are great.

I am pretty sure I sent you my Christmas card showing the animals I photographed in Africa. I had a very exciting time there and managed to keep up with five young men in their 30's and 40's. Sima Eliovson in Jo'burg certainly made my trip interesting -- we spoke of you when we were together. After my friend, Mickie Finfrock, left I spent three more weeks at a hotel within bussing distance of Kirstenbosch and went up there three or four times a week trying to sketch! Oh Boys! I am no good at it. I put way too much into it -- made two or three sketches and quite a few drawings and lots of photographs, and am hoping to finish them in July when I am at Chautauqua for a couple of weeks. After that I go to Scandanavia for a tour there. I had hoped to stay in Denmark for three weeks, but the people that we know there have moved and my letter was returned. Should you by any chance know of anyone who has a pension or a guest home there I would appreciate your letting me know. Denmark is such a friendly place I hate not to stay a little longer there.

We had a very interesting two day meeting on the conservation of Florida trees, etc., and Henninger is having a Flowering Tree conference here May 14 and 15 where Dr. Ayers, the Flowering Tree man from California, especially interested in Erythrina, will speak. I have invited them to visit us and hope they can. We added on two bedrooms, two baths and a small kitchen to the studio, and Ray, Jr. has taken his Dad's room.

I talked with Virginia Nelson today. She has had a couple of heart attacks and doesn't go out very much. She keeps two or three German police dogs which have kept burglars away twice. We have been lucky so far, but two of our tenants have had things stolen.

I have been having a busy time getting the Arctotis venusta and A. hybrids around to our Garden Clubber's. One of the wholesale nurserymen raised 600 plants, and Disney World about 200 from the seed I brought back from Africa. The mixed ones are beautiful, but they do not keep well in the house. However, they do make a nice low hedge.

I shall always remember the grand time we had driving all over Hawaii.

Best wishes to you both.

Affectionately,

Billie

Biological Stress On Plants

By Oliver V. Holtzmann, Star-Bulletin Garden Columnist

Do you have problems raising healthy plants? Do you feel your thumb isn't quite as green as you'd like it to be? Do your plants suddenly appear sickly?

When your plants seem to be in trouble, you may find yourself trying to recall what the immediate cause could have been without realizing that your plant may have been declining for some time.

As the plant's keeper, you may be more concerned with finding out what has to be done to restore the plant to normal than with what may have caused the problem. But sometimes causes for abnormal appearances in plants may be acute and chronic in nature.

If problems are to be remedied, there must first be some understanding of the sequence of cultural and environmental events that lead to certain conditions in order to avoid these in the future. Knowing the proper growth requirements for each type of plant will green up your thumb much to your future gardening pleasure.

IT IS NOT always easy to distinguish between normal, healthy plants and abnormal, diseased ones, but some changes in the plant's appearance are usually visible to the careful, knowledgeable observer. These changes or abnormalities are called symptoms.

Aside from variations and changes due to genetic factors or normal aging, plant abnormalities may be due to living (infectious) agents, such as bacteria, fungi, nematodes and virus, usually referred to as diseases.

They may also be caused by non-living (non-infectious) agents, such as extremes in light, moisture, temperature and mineral nutrition. These abnormalities are referred to as disorders.

Unfavorable soil and atmospheric gas relations or improper use of agricultural chemicals are other disorder-causing culprits, all of which are involved in the plant's environment or related to the way it is looked after (its culture).

Each of these agents acts independently in producing the biological stresses that lead to the symptoms we observe. Unfortunately, it is often very difficult to be able to associate a particular symptom with one specific type of causal agent or another. Perhaps it would be helpful to explain more fully the differences in plant abnormalities caused by injury, disorder and disease.

Browning on the tips of leaves is a symptom of biological stress.

"INJURY" IS the harm or damage a plant receives as a result of some kind of mechanical, chemical or physical process acting on it. Living agents, like chewing insects, grazing animals and man in his plant management, bring about plant injury as well. The association between a plant and its injury-causing agent is usually of short duration.

When a plant is considered to be suffering from a "disorder," it means that there has been a disturbance or impairment of the plant's natural physiological functions in response to some kind of cause. In the case of nutrition, too much or too little feeding may produce a disturbed reaction in the plant. A disorder, if detected early enough, may often be reversed by correcting the situation or removing the causal agent.

The term "disease" refers to a process or a combination of symptoms associated with abnormal physiological activity of a plant caused by the continued irritation of a causal agent, usually of a living nature. Some people, though, also consider non-living factors, like specific nutritional deficiencies, to be agents of disease.

SYMPTOMS ARE categorized into primary or secondary types. Primary symptoms are those that appear at or near the spot where the causal agent is in contact with the plant. When a fungus infects a leaf, for example, a dead area will appear sometime later in that spot.

Secondary symptoms appear in a part of the plant away from where the causal agent is attacking. The wilting of leaves when soil moisture is extremely low is an illustration of a secondary type of symptom.

A plant also will wilt when the below-ground portion of the stem is girdled or if the feeder roots are severely infected with a root-rotting fungus even when there is adequate soil moisture. In the former case, wilting occurs only when the situation is aggravated by low soil moisture.

Biological stress may be further accentuated by elevated air temperatures, radiant heat and excessive transpiration caused by wind. Stunting, yellowing and other secondary symptoms may be caused by several different living or non-living agents.

THIS MAKES diagnosis of plant problems, where secondary symptoms are involved, difficult and at times impossible, especially when desirable information is lacking.

Unless information about the plant and how it has been looked after, along with a sufficient and suitable sample, is submitted for examination, the plant diagnostician may not be able to determine what is causing the problem.

Next week I will be discussing the kinds of information and types of plant samples needed to diagnose sick plants.

For more information on growing plants, contact your nearest county extension agent. On Oahu the number is 235-4190; on Hawaii, 935-9155; on Kauai, 245-4471; and on Maui, 244-3242.

(Dr. Oliver V. Holtzmann is chairman, Department of Plant Pathology, College of Tropical Agriculture and Human Resources, University of Hawaii.)

Studying Plant Diseases

By Oliver V. Holtzmann, Star-Bulletin Garden Contributor

A plant pathologist is a trained scientist who specializes in studying diseases of plants, especially the diagnosis and treatment of problems. In cases where the more common diseases are caused by infectious agents, diagnosis is relatively easy because symptoms are generally well described and well-known.

But when problems stem from non-infectious sources, like injuries caused by something acting on the plant or disorders that disturb the plant's normal functioning, the job of diagnosis is more difficult.

If sick plants could tell the pathologist how they came to be in such a sorry state, remedies might come about a lot faster. Unfortunately, plants do not have verbal abilities, so the pathologist must rely on the plant's keeper for information.

The problem here is that few home gardeners are skilled in understanding exactly what kind of information is needed for diagnosing plant problems.

STATISTICS SHOW that more than 75 percent of the plant specimens brought to the University of Hawaii's Plant Disease Clinic, were found to have disease symptoms caused by non-infectious agents. In some of these cases, it was impossible to tell what the causal agent was because of the condition of the sample submitted or because there was a lack of necessary information.

One of the most common problems encountered in house and garden plants is the abnormal loss of lower or older leaves, resulting in a "leggy" plant almost devoid of lower foliage. The leaves appear to age prematurely, then drop off.

I know some of you are saying, "How come he chose my plant to tell about?" The barren condition just described is frequently accompanied by a slight to severe burning of the leaf tips and margins of the older, remaining leaves, which sometimes look scalded. This type of disorder is the result of the plant being placed under chronic stress due to inadequate watering.

The reasons why a plant seems to be undergoing chronic periods of drought are many. For a specific type of plant, consideration must be given to where the plant is placed, how it is growing, the size of the pot in relation to the size of the plant, the amount of space left at the top of the pot to receive water, the degree to which the plant is pot-bound, the frequency of watering, the nearness to radiant surfaces, the amount of wind it is exposed to, the hours of direct sunlight it receives, the type of soil mix and its water retention properties, the presence of root-rotting fungi and soil insects.

IN SOME CASES, it is difficult or impossible to diagnose a problem because there is not enough information known about the plant and its culture. The same holds true when an insufficient or inappropriate portion of the plant is submitted.

Pathologists also prefer to have a representative sample of a normal plant to compare with the diseased one. Occasionally, the plant material is too deteriorated to determine the primary causal agent.

Postmortems on diseased plant tissues in such cases are frequently fruitless since diseased tissues are quickly invaded by saprophytic organisms. These live on dead or decaying organic matter, and often mask the presence of the actual villain.

For a correct diagnosis, it is necessary to have the name of the plant and, if possible, the scientific name (Latin binomial). Many other facts are needed as well: 1) the number of plants involved and the percentage of those affected; 2) what parts of the plant are affected; 3) the general symptoms, and when and where they were first noticed; 4) whether the disease situation is progressive or relatively stable; 5) what the effect on the whole plant seems to be; 6) if outside, what is the distribution of the disease; 7) what type of soil the plant is growing in; 8) what the weather conditions have been over the previous two weeks; 9) what agricultural chemicals have been applied (fertilizers, pesticides, etc.); 10) what the water application schedule has been; 11) is there any evidence of insect activity; 12) type and location of [illegible]

NOW IT SHOULD be easy to understand that just taking a leaf and putting it into an envelope, along with a note asking, "What is wrong with my plant?" may be analogous to taking a lock of hair from your head, and sending it to your doctor with the question, "What's wrong with me?"

Many times, a grower is reluctant to give certain kinds of information because they feel it would implicate them as the primary cause of the plant's decline. They would prefer to believe that the plant's condition is the result of factors outside their immediate control — "an act of God." Rest assured, we are only interested in helping you grow healthy plants.

The topic of my next article will be on predisposition of plants to disease. For more information on the care and treatment of plants contact your nearest county extension agent. On Oahu, the number is 235-4190; on Hawaii, 955-9155; on Kauai, 245-4471; and on Maui, 244-3242.

(Dr. Oliver V. Holtzmann is chairman, Department of Plant Pathology, College of Tropical Agriculture and Human Resources, University of Hawaii.)

Eating tumbleweed not nutty to these researchers

By Andrea Knox
Knight-Ridder Newspapers

MAXTAWNY, Pa. — Charles "Skip" Kauffman held one hand below the fluffy scarlet head of an amaranth plant, stroking it with his other hand.

At each stroke, a shower of tiny scarlet petals and even tinier white seeds fell into the lower hand.

After winnowing away the petals with a gentle puff, he proffered a palm full of grains only slightly larger than poppy seeds.

"Here," he said. "Try some."

For Kauffman and other amaranth enthusiasts, it is important to introduce Americans to the slightly nutty flavor of the little-known grain.

Most Americans know the amaranth plant only through its legendary form in the Old West — the tumbleweed. Poets know the amaranth as an imaginary flower that never fades or dies.

Kauffman and his cohorts hope Americans will come to know the amaranth as a staple of their diets.

Although the amaranth is still in the early stages of commercial development, agronomists working with it at a research farm here and at a number of universities believe it has the potential to make a major and beneficial change in the world's diet and agriculture.

Amaranth, they say, contains an essential protein not found in grains such as wheat, rice and corn, which form the basis of most diets. The combination of amaranth with those grains in a flour or cereal, they maintain, could provide a complete protein without the addition of milk or other expensive animal proteins.

Its adherents add that amaranth also grows well under semi-arid conditions and might be a logical crop in such areas as the high plains of Texas, where corn is now grown but requires expensive irrigation.

The third useful property of amaranth, its advocates say, is that it is not subject to the pests and diseases that afflict America's current staple grains: wheat, rye, barley, oats and corn. When grown in rotation with those crops, it could help break the reproductive cycles of the organisms that reduce the yields of those crops.

For these reasons, and because researchers already have shown an interest in the plant, amaranth was identified in a recent study funded by the National Science Foundation as one of the two most promising new commercial food crops for the United States. The other was pigeon peas, which are widely grown in India and the West Indies and eaten green or dried.

But amaranth has one serious drawback; like Eliza Doolittle, it does not behave properly in cultivated society. For that reason, it cannot be grown on a scale large enough for it to make a significant contribution to the world's food supply.

In its current half-tamed state, amaranth grows to irregular heights and takes erratic periods of time to reach maturity, making mechanical harvesting impossible. And each plant produces only a relatively small amount of grain — 5 to 40 percent of the dry weight of the plant, compared with 50 percent for wheat and other domesticated crops.

But like Eliza Doolittle, who bloomed into My Fair Lady under the firm cultivation of professor Henry Higgins, amaranth has found a mentor determined to shape it into a more acceptable package.

He is Robert Rodale, chairman of the board of Rodale Press Inc., publisher of Prevention, Organic Gardening and other magazines.

At his company's research farm here in eastern Pennsylvania, 12 miles west of Allentown, Rodale has spent eight years and $1 million to bring the first stages of refinement to the amaranth.

"Amaranth is the closest thing to being something I'm obsessed with," he said.

"At some future time, maybe 100 years from now when the dust settles, I think people will remember this period of Rodale Press because of amaranth rather than for anything else."

On the 30-acre research farm, about five acres of gaily colored, shoulder-high amaranth plumes rise above the surrounding fields of close-cropped grass and low-growing vegetable plants.

The best of the plants — those with the largest grain yields or shortest growing seasons, for example — are chosen as the progenitors of the next year's crop.

In some cases, the seed is saved to be planted the coming spring. This process, known as selective breeding, has been done here every summer since 1973.

In other cases, the plants are crossbred, with pollen from one plant transferred by hand to the flowers of another, in an effort to obtain new plants with the best characteristics of each parent.

Crossbreeding has been conducted at the Rodale research farms for the last three summers. The work so far has produced some varieties that are uniform enough to be planted and harvested without the extreme difficulties of just a few years ago.

But a great deal of work lies ahead before amaranth can take its place in the nation's fields beside wheat and corn.

The things that constitute good behavior for crops include maturing at the same time, drying down at the same time and growing to the same height — all important characteristics for the machine-harvesting that is necessary in large fields.

In the Rodale plots, an experienced eye can see the ways in which amaranth falls short of those goals.

The heights are ragged, ranging from about four feet to about six feet. Some plants are still in full flower, while others are beginning to die down. Some of those with the largest heads — a desirable characteristic because it means larger grain yields — have been unable to bear the weight and have fallen over.

When Pauling was in Honolulu many years ago, he was a friend of the late University of Hawaii chemist Drs. Earl + Honora Bridger. They gave a dinner for him at their University home which I was glad to attend. C.D.

barbara hastings

Advertiser Science Writer

Dr. Linus C. Pauling Sr. (right) is in Honolulu to address the American Civil Liberties Union of Hawaii annual dinner Saturday. Among his topics will be his experiences during the early 1950s, when he was suspected of being a subversive and communist. The dinner will be in the Coral Ballroom of the Hilton Hawaiian Village, beginning with no-host cocktails at 5:30 p.m. Tickets are available through the ACLU, 538-7336. Corky Trinidad, Star-Bulletin political cartoonist, will be honored at the dinner for outstanding service to civil liberties.

Advertiser photo by Monte Costa

A Nobel chemist's goal of 40 years: formula for peace

If he hadn't been worried about keeping the respect of the woman he loved, Linus Carl Pauling Sr. might have remained behind his chemistry books, quietly winning prizes in his field.

"But I had to live up to what I hoped was her conception of me as an ethical person," he explained yesterday. So Pauling launched a controversial, sometimes painful 40-year war against war.

The woman, Ava Helen Pauling, his wife of 58 years, died less than two months ago. Together, over most of their marriage, they worked tirelessly for civil rights, human rights, and against the spread of nuclear weapons.

The 80-year-old Pauling, two-time winner of the Nobel Prize — once for chemistry, once for peace — hasn't finished yet. "I don't think civil liberties will ever be secure," he said. He has come to Honolulu to address the American Civil Liberties Union (ACLU), at least in part about the 1950s "communist scare," with government violations of his rights and privileges — undercover investigations and the refusal to grant him a passport

veloped a deep interest in social, political and economic matters," he reminisced.

Pauling seems to have a steel-trap memory of his life, and it was with a merry twinkle that he related pieces of it yesterday at Honolulu International Airport. He was clearly enjoying himself. "I haven't had a chance to talk about those old days in a while," he said.

Those "old days" were not necessarily "good old days," for Pauling, although he says he didn't suffer as much as some others. It may have been the first Nobel Prize he won — for chemistry in 1954 — that spared him some suffering. Up until then, he was a prominent scientist who was getting pegged as a subversive.

"A leading role in the communist 'peace' movement in the U.S.," claimed the U.S. House of Representatives Committee on Un-American Activities, "is played by Linus Carl Pauling." That was in 1951.

During the time he was allegedly working to advance communism and the Soviet Union, his work on chemical bonding, which soon won him the Nobel chemistry prize, was being denounced in Russia as, among other things, "anti-Marxist."

that allowed him to travel only to France and England. It wasn't until two weeks after the announcement of the 1954 Nobel Prize that Pauling's passport was granted, and he never had trouble with it again.

But he did have other troubles. His efforts to stop nuclear proliferation brought him under scrutiny again by Congress, this time in the late 1950s and early 1960s by the Senate internal security subcommittee. He told that subcommittee "I was looking forward eagerly to educating the members of the committee."

A 60-page report on Pauling was drafted during that time, which he says is riddled with falsehoods. But he believes he has the honor of being the only individual in U.S. history to be the subject of such a lengthy congressional report.

Proof that Pauling is still worried about civil rights comes out of his pocket. He pulls a few folded newspaper pages out to talk about a lobbyist fired by a company for criticizing U.S. Interior Secretary James Watt.

Pauling said he believes there's been a great step backward in the last year or two

says the Soviet Union would cut back militarily if we did — "I think they'd be glad" — because he thinks the USSR builds up its force out of fear.

The United States began cultivating that fear, he said, about 30 years ago. The United States calculated at the time that if we forced the Soviets to keep spending more and more money on defense, its beleaguered masses would rebel and overthrow communism, Pauling said.

"That may have made some sense 30 years ago," he said, when the U.S. standard of living was very high, and we could better afford to keep ahead in the arms race. But he said it's clear now that the United States suffers too.

Pauling said he has "only one real worry — the possibility of the destruction of the world through war."

A great war between the United States and the USSR "would probably lead to the destruction of the world . . . No matter how that war is started," he said.

One of Pauling's earliest brushes with negative public opinion came during World War II.

been inducted into the U.S. Army and would be leaving in a few days.

At that time, no one of Japanese ancestry was allowed to live in California — most who had were in internment camps. The young man was permitted in the state only because he was on his way into the military.

"The first night, our garage was painted," he said — red, with the Japanese rising sun on it, and there was a note: "Americans die but the Paulings love Japs."

There were terrible threats, too, that prompted the ACLU to demand that the local sheriff protect the Pauling home.

But his real activism came after World War II, and his issue then, as now, was peace.

"There are few social, political and economic questions in the modern world that do not involve science," he said. "Scientists have an obligation to help educate their fellow citizens."

People shouldn't rely on the opinions of a single scientist, he added, but "the impact of the opinion of scientists as a whole can be more reliable than that of politicians."

He believes scientists should not only

Remote sensing projects grow i we learn how to manage our ou

By Helen M. Swartz

PROF. *William MacConnell '43* and his project staff spend a great deal of their time looking down on things. That is not to say that the occupants of the 'shop' in Holdsworth Hall are a disdainful bunch. Quite the contrary: The work they are doing in the field of remote sensing for federal, state, and local agencies keeps them deeply absorbed in the kind of quiet, painstaking analysis that demands skill and patience, and both draws on and extends their academic training. Occasionally they trade quips over neat piles of aerial photographs but, in the main, they work heads down, minutely scrutinizing extensive areas of the nation's surface.

What are they looking at? Mineral lands in North Dakota, perhaps, or prime agricultural land in Massachusetts, or wetlands in upstate New York. Every study MacConnell and his team undertake has immediate and multiple applications in the real world. The minutely annotated photographs ar "color-coded charts they produce and work with provide vital information to various government agencies, resource managers, and other specialists regarding the state of the country's land, what it was like in the past, and what it is likely to become in the future.

Simple Explanation

For visitors to Room 201, MacConnell offers a merciful explanation of the techniques of remote sensing, an activity that has preoccupied him for his entire 30-year teaching career at UMass. The raw materials are small-scale photographs, some black and white, others made from color infrared film, taken from high flying aircraft. (U-2 type aircraft now fly these kinds of photo-reconnaissance missions.) As the plane approaches a specific area, a cartographic camera, pointing directly down to achieve life-like angles, takes one photo; a second photo is taken after the plane has passed over the area. The results form what is called a "stereo pair." UMass is pre-eminent among the institutions nationwide which provide expert interpretation of the data generated.

Besides using "the marvelous piece of equipment in everybody's head," as MacConnell puts it, other apparatus needed to interpret the information in the photographs is fairly simple. The equipment needed includes basic cartographic tools plus a device called a stereoscope, which accommodates one stereo pair at a time and offers various degrees of magnification. What is seen in the stereoscope exists only in the mind's eye: a perfect three-dimensional model of the landscape, with brush and trees showing up in terms of color, shape, spread, and height. Two new zoom stereoscopes provide up to 20 power magnification, an important bonus when the researchers want to focus on, say, a specific cliff-face on a high-quality modern photograph.

Because of the size of the scale the researchers use—1:80,000, or, often, with today's modern equipment, 1:120,000—the photographs used must be taken on extremely clear days (only three or four a month in Massachusetts), preferably in the spring and fall for wetlands studies particularly, when the snow and the leaves are both off and, most preferably, after the spring thaw but before budding begins. Other kinds of studies, including those of wetlands with floating vegetation, may require that the leaves be on at the time of the aerial survey. Thus, MacConnell points out, broad-ranging studies may present a problem in terms of season of preference.

Horizontal and vertical measurements are fairly easy to take on aerial photos, with accuracy ranging in particular instances from fair to excellent. The trained eye can look at a forested area, for instance, and separate hardwoods from softwoods, identify the species (not always a simple task, especially when you are trying to differentiate between scrub oak and pine), assign them to height classes at intervals of 20 feet, and measure the percentage of crown closure (the amount of forest canopy covering the ground below). Different kinds of wetlands obligingly give themselves away by the distinctive color of their characteristic vegetation, and the more water there is, the easier is interpretation, except in the case of deep marsh which, in winter, looks deceptively like open water. Tilled land looks much smoother than abandoned fields from the air and productive orchards can be identified from the youth of their trees and the general orderliness of their layout. An abandoned orchard, on the other hand, contains straggly, aged trees, some of which are missing, and the characteristic signs of invading brush. Urban land uses, with their many different densities, are often hard to define exactly, and individual buildings or small areas may pose considerable conundrums.

Team members first learn to interpret fairly large-scale photographs. Then, several weeks after embarking on a project, when they have become fairly familiar with an area through the stereoscope, they visit the site for what is known as "ground truthing." The visit gives them the opportunity to talk with agency officials and to check on problem areas. Several months after the initial visit, they return to the site to check on further problems. In this way, MacConnell explains, the team gains confidence in its interpretative abilities. By way of annotation, they sketch in ink the extent of a specific area on a plastic overlay or jacket on one of the two photos in each pair and label it with the appropriate letters of an extremely detailed regional or national landuse code, as suitable. For example, TSM may stand for tidal salt marsh; UI for heavy industrial land; URF for very light density, forested residential land. Most marked photographs are then given to the contracting agency to make maps with.

The main study which has occupied MacConnell and his team since 1968 is the compilation of a major segment of the National Wetlands Inventory for the U.S. Dept. of the Interior's Fish and Wildlife Service, in a updating of the agency's 1939 pioneering effort. The ever-increasing vulnerability of wetlands to development and other unfavorable impacts, despite the passage of some protective legislation, lends particular urgency to this study which should be finished next fall.

The first state MacConnell's team surveyed was, not surprisingly, Massachusetts, followed by Rhode Island, most of Maine and Pennsylvania, a considerable part of Maryland, especially in the Chesapeake Bay area, and Minnesota, which contains some of the most complicated wetlands in the country—peat overlaid with spruce and fir, a very difficult combination for surveyors. At the moment, work is progressing on a comprehensive inventory of all the wetlands in upstate New York that would be affected if the St. Lawrence Seaway were to remain ice-free all year round. Another on-going project, which will form the basis of a graduate thesis, is the town-by-town description of the wetlands of the Saco river basin of New Hampshire and Maine, a very important recreational area, especially for canoeists. The team is making its own maps of this area.

In North Dakota, in addition to work for the wetland inventory, MacConnell's team is also conducting a special survey for the Bureau of Land Management of what that agency terms "mineral lands," where geologists have found coal deposits and other resources. This latter project arouses the enthusiasm of the participants not only for the rugged attractions of the terrain as a field trip destination, but also because it offers a chance to look at many different things at once. Instead of using standard interpretation of vegetation to determine land uses, the project employs "ecotyping," i.e. the identification from aerial photographs of habitat suitable for various kinds of wildlife. So-called raptor sites—where eagles and hawks can nest, roost, or hunt—are the focus of attention, along with antelope areas and places that could support the prairie dog. Researchers are also looking at woodlands and hundreds of types of wetlands, and are distinguishing native prairie from ploughed land.

William MacConnell '43 and photo-interpreter Nancy Weil ex

Assisting on the North Dakota project is *Peter Auditory '81* whose task is to interpret various wetland, prairie, and badland sites for use in a future environmental impact statement for the Bureau of Land Management. An "across the board," generalist, as he describes himself, Auditory

Dawn Othello uses a zoom transfer scope to translate information from marked photographs to an accurate base map.

n importance as tdoor resources

STEVE LONG PHOTOS

mine photographs of North Dakota's prairie pothole region.

is a marine ecologist especially grateful for the opportunity to broaden his studies in aerial photogrammetry, a "great skill to have in resource management."

The team's interpretative work in North Dakota will probably give the Bureau of Land Management some lead time to assess what will be lost and where if the government decides to allow the extraction of some of the area's mineral resources. If strip mining is decided upon, MacConnell points out, attempts can be made to restore the landscape. Oil shale presents a bigger problem, however. Once the rock has been blasted apart to remove the oil, the fragments left occupy a space twice the size of the original volume. Theoretically, such an area could be farmed or planted with trees, but the practical difficulties of reclamation are enormous. And imagine trying to move a wetland. (This feat was recently accomplished in West Germany, where a wetland was moved to make way for an airport.) Of course, not everything can be moved or obliterated: reservoirs, graveyards, and wildlife sanctuaries are already classified by the bureau as unusable areas. Rather surprisingly, archeological sites do not enjoy comparable protection, despite the fact that it is an area where man's impact on the landscape is so remarkably persistent that, for example, one can still trace Custer and his 15 men from campsite to campsite to their fateful last stand, according to MacConnell.

Coastal Study

Another important project, for which MacConnell is co-principal investigator, involves use of the latest and most sophisticated techniques in remote sensing. PhD student *Dennis Swartwout '75* is working with LANDSAT satellite imagery on behalf of the National Marine Fisheries Service in a study of coastal wetlands from Cape Hatteras to Nova Scotia. The agency itself is responsible for arranging for ground truthing, some of which will be conducted by Univ. of Delaware researchers using light planes. To provide further verification of the reliability of the new method in detecting change, information is also being lifted from the National Wetland Inventory, in which the accuracy of established techniques for identifying wetlands is assumed to be in the range of 90-95 percent. For this extensive study, Swartwout works with only 15 "scenes," each of which is on a scale of approximately 1:1 million. Although certain landscape features can be seen clearly by the naked eye on such "scenes," they do not constitute true pictures but, rather, an array of "reflectence levels." Interpretation calls for the computer manipulation of digitalized information using a code in which zero stands for black and 255 for white.

Closer to home, and using the tried and true methods of remote sensing, are two studies likely to have an important impact on resources in Western Massachusetts. The first is a survey for the Soil Conservation Commission of the Connecticut Valley in Franklin, Hampshire, and Hampden counties. Its aim is to provide up-to-date information for the formulation of preservation policies for some of the state's best agricultural land. Team member Dawn Othello, assisted by *Michelle Wilson '81*, is supplementing earlier work in soil mapping by grouping soil types to identify the prime agricultural land. Othello is also conducting a land-use update, drawing on MacConnell's comprehensive studies of Massachusetts resources in 1951 and 1971, and revising them to 1980. Superimposed fractions on the resulting maps show the prime land lost in the past nine years. In a similar study, this time for the U.S. Forest Service in cooperation with the Mass. Dept. of Environmental Management, graduate student John O'Keefe is mapping prime forest land to provide the federal government with current information on the location and extent of this valuable resource.

Every one of the team's many projects draws upon MacConnell's long experience in the field of remote sensing. Unlike most of his peers at UMass, who may develop several or many research interests in the course of their careers, MacConnell has concentrated on this one main activity for three decades. He was one of the first in the nation to offer a course in photogrammetry, "light writing measurement," he interprets literally, or the art and process of mapping/surveying with the help of photographs. That was in 1951.

Modern Changes

Also in 1951, MacConnell embarked on the ambitious project of mapping the vegetation and land uses of the entire state of Massachusetts from the perspective of wildlife habitat. Twenty years later, in 1971, he repeated the entire process. The results and comparisons in this time-lapse study are fascinating and point to the reasons why remote sensing is not, or should not be, a fly-by-night interest. The most obvious difference between the two studies is the change that took place in the landscape. During the 20-year period, MacConnell explains, the general population increased by 10 percent, and urban lands grew in step with the population. Substantial amounts of agricultural land were lost to urbanization of various kinds because it was much cheaper to build on than the predominating rocky, forested uplands. (One has only to look at the towns of Amherst and Hadley to see how many houses have sprung up on former meadows, fields, and orchards.) The state, however, did not see a steady decrease of open land because, during the same 20-year period, farm abandonment was increasing. "When that happens, the forest is ready to pounce, with 50 pounds of tree seeds annually waiting to drift across every acre," MacConnell says. Such abandoned acreage is wonderful for most kinds of wildlife because browsing animals are able to reach lower vegetation. Deer and rabbits abound. Before long, forest has taken over.

In 1951, by MacConnell's calculations, 63 percent of the state was forestland. From 1951 to 1971, while considerable acreage was lost to urbanization this loss was offset by the reversion of abandoned farmland to forest, and so the total remained about the same. This discovery is somewhat surprising in light of the demographic information that Massachusetts is one of the four most densely populated states in the nation.

MacConnell is at pains to emphasize that remote sensing is by no means a new art. Various attempts were made in the field before the Wright brothers even got an aircraft off the ground. In fact, the first aerial photograph ever taken was from a balloon over Boston in 1850. (This technique soon found an application in warfare when Ulysses Grant had an aerial survey made of the Battle of Richmond. Photographs taken from balloons drifting over the scene were used, with a grid overlay, to pinpoint enemy locations and activities.) Aerial photography of 30 years ago was relatively large scale at 1:20,000. Compared to its modern counterpart, however, its resolution was relatively poor.

The best wetland film in the world, according to MacConnell, is infrared or IR color, also known as camouflage detection color (from its developmental origins in Harvard Forest, Petersham, Mass. in World War II). Another name for the same kind of film is "false color" since it slides colors over on the visible spectrum, changing most landscape greens to reds on the photographs. This high-altitude (60,000 feet) photography at the scale of 1:120,000 is currently being used for the ecotyping studies in North Dakota. A typical photograph from this series is remarkably intricate, a mass of interlocking irregular shapes interspersed with the regular, tiny strips that represent agricultural land. On this film, small, lumpy areas of dull green represent native prairie while brilliant reds reflect luxuriant growth.

The latest techniques in remote sensing involve working with satellite imagery, an offshoot of military technology passing into the civilian sector now that the pertinent apparatus and methods are in the international domain. MacConnell gives credence to the widely-held belief that the Russians rely more readily on U.S. predictions of their harvest than on ground truthing, which too often involves tours of model plots unscathed by drought or frost. Attempts at compiling international resource inventories may also yield unexpected results. A UMass graduate student had the task recently of trying to calculate the number of cords of wood in the Soviet Union. Trained as he was to observe detail, he discovered some previously undetected missile sites—an unwelcome distraction from a forest inventory.

Doctoral student Dennis Swartwout '75 with two of the LANDSAT satellite "scenes" he is using in his study of coastal wetlands. Long Island Sound is clearly visible in the lower left-hand corners of the "scenes."

The very latest application of remote sensing was a device aboard the space shuttle Columbia on its November flight. Based on remote sensing techniques, what the device "saw" on the ground below was translated by a computer to serve as a navigational aid. Coupled with radar equipment, which can, under certain circumstances, penetrate the earth's surface, the device doubles as a highly sophisticated prospecting system. Remote sensing, with its ability to turn up beautiful images of faults in the earth's crust, is already intensively used by geologists, MacConnell says. The supplemental information from space now available may well reveal the existence of hitherto unknown mineral lands. Such a discovery could lead to future projects for the team, in ecotyping, for instance, another good example of how remote sensing continues to grow and to service an increasingly complex world.

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The generally serious, heads-down atmosphere in Holdsworth 201, which is disturbed periodically by ripples of infectious humor, has an out-of-doors counterpart. For the past 20 years MacConnell has coached the UMass men's ski team and, for the past 13 years, the team has won the league title. For the past seven years, MacConnell has coached the women's ski team and, for the past seven years, the women have won the league title. To earn season passes at Berkshire East, where they train, each year MacConnell leads his skiers on brush-cutting parties to clear the area's ski trails: one man's own modest assault on the vegetative cover of the state of Massachusetts.