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HAWAIIAN ENDEMIC FLOWERING PLANTS (CONT.)

by George C. Munro

During my forest work on Lanai I brought plants from other islands and successfully grew them there where conditions are very different from their native habitat. At present I am carrying on similar experiments on Tantalus, Oahu. I will take the plants to be discussed in the botanical order as given in Hillebrand's Flora of the Hawaiian Islands.

Cocculus the native huehue is a trailing creeper, growing on Lanai from the dry lands to the wet mountain tops. The leaves are bluish but sparse, flowers are very small. There are several endemic species.

There are a number of species of violets, growing from the semi-dry through the rain forest to the open bogs. Many of those in the rain forests are like small trees with woody stems and some grow several feet high. Some have wide leaves, in others they are long and narrow, the flowers of some species are small. There is a bog kind growing close to the ground with nice blue flowers. Brought to Lanai from Mt. Kukui on West Maui, where it grew under a rainfall of about 300 inches a year, to a level 200 feet lower and a rainfall of about 50 inches a year, it flowered profusely and young plants are growing from the self-sown seed. Dr. David Fleming sent seed to England and it is growing in Kew Gardens, London. When these and other plants from Mt. Kukui were brought to Lanai, a space was cleared where the maximum of fog-drip would fall on the plants and yet they would be open to the sunlight.

Abutilon menziesii is a shrub of the dry lands with very pretty, wide and sharp pointed leaves. The red flower is not large but very pretty. It is well worth attention. A coarser yet rather handsome shrub - a variety I think deserving of specific rank - is harder but not so delicately pretty.

The red and white forest hibiscus are more or less used; the white is partly responsible for the wondrous hybrids of which Honolulu is justly proud. Hibiscus brackenridgei could I think be more used, especially a variety with a thick straight stem like a small tree. The low shrubby form growing on the dry land looks quite dead in the dry season but with the first rains is resurrected and becomes a bright green mound studded with very delicately colored yellow flowers. At higher elevations on the open country it is green throughout the year. Both forms grew for several years in the garden at Keele, Lanai. The seed germinates readily and it also grows easily from cuttings.

There are four species of Kokio. They are close to the cottons, in fact Hillebrand included the only known species in his time in that genus. The Oahu species is gone so far as known. A few trees of the Molokai species still existed when I left Molokai in 1906, they have since died out. However, my brother James G. Munro gathered seed and got some plants to grow and a fine tree is now flourishing at Mr. George Cooke's place at Kaulawai, Molokai. In Miloli valley on Kauai there are about a dozen which are very spectacular when in flower. At Puuwaawaa, Hawaii

there are still some trees of the Hawaii representative; Professor Rock raised plants in Honolulu and there are probably some trees growing here.

Pelea, a genus named after the goddess of the volcano has a large number of species. Most have graceful or pretty leaves and some are quite handsome small trees. Some have a trailing habit. Pelea anisita, the mokehana berry, the representative plant of Kauai, whose capsules carry the strong aroma of anise, is one of these.

Native geraniums are shrubby plants with woody stems and woolly leaves with a silvery appearance.

Sesbania, Ohai is a small tree of the dry lands. It has a pretty red flower with varieties shading lighter. A beach form on Molokai is prostrate on the sand.

Erythrina, Wiliwili is often knarled and twisted tree. Leafless in the dry season, it is later a mass of red or orange flowers, then after the winter rains it has a heavy foliage of green leaves; when the leaves fall the dry seed-pods open and the bright red seeds lie in a row in each pod - another pretty phase when the pods are numerous. Looking at the twisted tree when bare, one can hardly realize that it has the other three pretty stages.

Canavalia, Awikiwiki of the Hawaiians is a trailing or climbing bean. There are three forms on Lanai: a silvery leaved variety with pink flowers trails over the rocks - where secure from stock - near the seacoast; another with flowers almost pure white with a very delicate pink shade was found nearly extinct on the grassy uplands. Seed was gathered and the variety is now not uncommon in protected places where seed was scattered. Another form with dark red flowers and green leaves climbs over the ohia trees in the forest bordering on the wet districts.

Stronglydon, Nukuiwi (beak of the bird iiwi) is another climbing bean with clusters of red flowers. It spreads itself over the trees and is very pretty. It was recommended by Hillebrand for garden culture. I saw a very fine one growing over small trees on a hillside in a valley at the head of the Hanalei gorge on Kauai, and another with very fine clusters of flowers near the top of the range adjoining Tantalus, Oahu. I have not yet been able to procure seeds.

Vigna, Anunu, a small bean. Two species of which are endemic are thin vines with small leaves and nice little flowers. They mat the grasses on lands resting from stock grazing.

Mezoneuron, Uhiuhi is a medium-sized tree with a pinkish purple flower. I gathered seed at Puuwaawa some years ago and some trees are still living on Lanai, grown from this seed.

Broussaisia, Kanawau or Puahanui is a small tree or often a shrub with long leaves and greenish blue clusters of hydrangea-like flowers. It is generally found in the rain forest.

Gunnera, the mountain Ape would make a very spectacular plant if it could be grown in Honolulu gardens. A remarkable sight can be seen in the West Maui mountains of a steep gulch side covered with the immense leaves up to three feet across of this plant. The flowers are in masses on a long, trailing or ascending spike.

Sicyos, Kupala of the cucumber family has a number of endemic species. They are annual vines and look very well for a short time, but rather spoil the appearance of the trees they grow over when the foliage dries at the end of the wet season.

Hillibrandia, Puamakanui (big-eyed flower), the only Hawaiian begonia, has not so far as I know been grown successfully in gardens. It could and may be grown at Kokee, Kauai, as it grows naturally in that vicinity. In 1891 I saw a beautiful sight there on a bank overlooking a water course; the flower stems were showing above the fern which covered the bank with the begonias growing beneath it.

Kadua is an endemic genus with a number of interesting species, mostly forest trailers, some of which have pretty flowers if not large.

Gardinia grows to a small tree on the dry lands. The flower is not large but has the gardinia aroma. Hillebrand recommended it for cultivation.

There are nine genera of Compositeplants - those with massed flower-heads - that are endemic and species of all are worthy of trial. These are:

1. Tetramalopium Several species of this genus grow on the dry lands and others in the rain forests. The flowers are small but pretty. One of the Lanai species has been plowed under. I unsuccessfully tried to propagate it in safer localities.

2. Lipochaeta The nene of the Hawaiians is more a denizen of the dry lands, extending to the semi-dry. There are a number of species and one at least has leaves in many forms. Two or more would be worth growing. L. lavarum and connatum have yellow flowers and flower heavily.

3. Campylothecca Called by the natives kokulau has species that should be adaptable. Some flower profusely. Some are used by the Hawaiians to brew a tea from the dried leaves.

4. The ahinahina or silversword and a green species are beautiful plants. Both species from Haleakala made a considerable growth on Lanai but died without flowering. The white silversword from West Maui is at present looking very healthy on the Lanai mountain. There are hopes that it will flower there.

5. Wilkesia A closely allied plant to the silversword has several species. One from West Maui and one from Kauai are now growing on Lanai. That of Kauai whose habitat is near the Kokee camping sites is a graceful plant. It grows over six feet high with a thin stem and a bunch of long narrow leaves on top. It sends up a flower spike about three feet long from the centre of the bunch of leaves which is quite showy when in flower. Unfortunately the flowering season has always been past when I had occasion to be in the locality, so I have not seen it at its best stage. It grows readily from seed, and plants can be seen in Miss Williams Nursery at Palolo. Its habitat is on the semi-dry lands and that of West Maui on the borders of the mountain-top bog.

6 & 7. Dubautia and Raillardia might be worth some trials. They are odd looking shrubs of the rain forests.

8. Hesperomannia is an extraordinary looking large leafed tree with a thistle-like flower. There are several species. They are remnants of an ancient flora, like Kokio and Hibiscadelphus and like them on the verge of extinction. There is a species on Kauai, another on Oahu and one with only one known tree on Lanai. I am still trying to grow it from seed or cuttings to save the species if possible.

9. Lagenophora is one of the open bog plants. The flowers are rather small.

(To be continued in the November issue)

The regular monthly meeting of the Hawaii Audubon Society on August 16, 1948 was addressed by Mrs. Walter W. Naumburg, a Director of the National Audubon Society and an Associate of the American Museum of Natural History. Mrs. Naumburg spoke about her researches and more recent work with children's museums:

CHILDREN'S MUSEUMS AND HOW THE HORNADAY FOUNDATION HELPS TO ESTABLISH THEM

"When Mr. Porter asked me to speak to you tonight, they may not have realized that I would have to tell you somethings about myself. So I hope you'll bear with me for just a few moments because I think we should get acquainted before I tell you about the Children's Museums and How the Hornaday Foundation Helps to Establish Them.

"Before World War II I worked exclusively on South American birds at the American Museum of Natural History in New York City. I assisted my dear old chief, Dr. Chapman, in publishing "THE BIRDS OF ECUADOR AND PERU" by identifying the specimens for him and then ended up by writing a book of my own called "THE BIRDS OF MATTO GROSSO," a plateau in Brazil with indigenous bird life. This volume was based on an important and large collection of birds which Theodore Roosevelt brought from the River of Doubt and which contained many specimens new to the American Museum of Natural History. As I could not be sure of my identifications, I prevailed upon my chief to let me take all the specimens I needed to the various museums of Europe where I knew I would be able to find some nearly related material.

"I started off with two Army trunks and plenty of formidable gold seals on my credentials which, however, proved rather worthless as time went on. Over and over again I was held up by the Custom officials at various borders who, not speaking English, were quite sure I was a milliner bringing forbidden plumage into the country. Eventually, after my return to the Museum, the "BIRDS OF MATTO GROSSO" was published as a bulletin of the American Museum and I was made a Research Associate.

"I continued to work at the Museum on various collections and on a collection of my own which was sent to me from Northeast and Southeast Brazil. I needed material to fill up the gaps in the Museum collections from these places.

"Then the war came and with it the feeling that I must do something else than to describe species and sub-species. For four years I ran a canteen for the Navy and Marines at Battery Park on the waterfront of Manhattan Island. When I returned to the Museum, Dr. Chapman had died and Dr. Murphy, who had become Administrative Head of the Bird Department, urged me to return. I am still on the Staff of the American Museum of Natural History, but instead of doing research work, I have devoted some time to the Nature Camp in Greenwich, Connecticut, of the Audubon Society, having been made a member of its National Board.

"Some twelve years ago, a Neighbor in New Canaan, Connecticut, asked me to meet John Ripley Forbes. 'He's just a kid of twenty,' she said, 'but his interest as a Boy Scout is entirely with Nature Study and he's doing some interesting things for children.' And so we met in a little tumbledown house in Stamford, Connecticut, where John was surrounded by the under-privileged kids of the neighborhood and was delighting them with his stories, specimens and moving pictures.

"Dr. Hornaday, the Great Naturalist, had known the boy and had helped him in every way and when we met, Dr. Hornaday had died and it was through his help, before his death, that a small museum was established to which the boys and girls flocked eagerly.

"The outcome of the first effort was the Children's Museum established in three rooms. Forbes, then twenty years old, received \$20.00 per week and the Stamford Museum Association helped sponsor his dream. By 1937 his exhibits were already drawing record crowds.

"Then Forbes, hearing about a 74-room house, left by a philanthropist to Kansas City, rushed there and said he was reporting for work to the astonished community. Through his enthusiasm he raised \$25,000 personally and begged and borrowed many specimens. In four months time, he was reaching a thousand children a week in Kansas City. Then came the war and Forbes enlisted in the Medical Section of the Air Corps. He corresponded with me regularly and we wrote and spoke often on his visits to New York about our plan which was to bring exhibits and visual education into slum districts and rural areas. We then formed a committee with Dr. Guthe of the Albany State Museum as President. I was Vice-President with headquarters at my home and I attended to all correspondence. Today the Foundation is sponsoring thirteen projects in nine different States with numerous others on the waiting list.

"When we sponsor a project, we send our representatives to the community to assist in bringing about the organization of a Children's Museum. We also assist in obtaining a certain amount of material for them.

"In the early days I went to the attic of the American Museum of Natural History and was allowed to send any old specimen I could lay my hands on, even a moth-eaten polar bear. It was all sent to Nashville, Tennessee, in a truck and expressage was paid at the other end. However, we encouraged the community itself to obtain its own local material whenever possible. especially live material collected in the region. We make a great point of getting the children to care for, and in that way watch and learn all about, their pets. They come to the museum after school hours to feed their pets and thoroughly clean the cages. Gone is all the fear of a big museum, the forbidding glass cases, and very soon our exhibits were drawing record crowds.

"Sometimes a Park Department desires to establish a museum. Then we usually advise, as in the case of Durham, North Carolina, that while the Park Department sponsors the project, it should work towards an organization in the community among those interested in this type of project. In that way, the community becomes responsible for the development of the museum.

"Usually, when a community takes the initiative, they are able to provide a building. If they are a wealthy community, they contribute funds for the salary of a worker, or if they have a suitable person available, they might even provide a curator. Occasionally, I interview a young scientist looking for a job and send him to some suitable post.

"In Nashville, Tennessee, the Park Department contributed toward the support of the museum because of the extensive use of the City Parks. This sort of thing helps to curb vandalism in which Park Administrators are, of course, interested. In Durham, a small building in the park is used during the summer as a children's museum and the Park Department sends bus loads of children from various parts of the city each day during the summer to take part in the program. Of course, a good Park program is essential - an outdoor fireplace and picnic tables are not enough. What is needed is an educational recreation program such as the Children's Museums offer, nature trails, day and over-night camps. In Atlanta, Georgia, there are 200 Campfire Girls and Girl Scouts using the Children's Forest and the Children's Nature Museum. We are even developing Nature Trails for blind children and handicapped youngsters. The handicapped children are simply delighted and it brings happiness to the afflicted.

"Children's Museums have demonstrated their worth and permanence wherever tried. Their beginnings are usually modest and when the leaders of the community catch on, they go ahead fast. Fort Worth, Texas, started two crowded schoolrooms. Today a modern museum building has been authorized.

"Sometimes I am asked 'why a children's museum?' It helps the fight against the general maladjustments and delinquency in the child and this seems very vital work when juvenile delinquency in our part of the world has reached a new high.

"The Children Museum program opens wide all gateways to Nature.' This is our motto. With interest in nature already present, it is so easy to guide a child's action. We want very much to organize in cooperation with National Conservation Organizations and scientific institutions a program for children which will bring about an appreciation of wild life and the world in which they live.

"After visiting your Children's Museum in the Ala Moana Park, it seems that you have in this beautiful city a worthwhile beginning. If now all your organizations - the Recreation Department, the Park Board, the Audubon Society and other such associations, the Zoo - could get together and interest the community as a whole your project might develop further.

"In Atlanta, Georgia, we have a collection of moving pictures and a library to which any other museum can write and borrow whatever material is desired. One particular picture, showing children going to a museum after school and carrying things found along the way, so impressed a very rich man who saw it in New York that he gave us \$5,000. This was Mr. Lawrence Rockefeller. The expenses of the Foundation consist only of travel funds and a salary for Mr. Forbes. None of the other workers are reimbursed - their services are furnished gratis. We have a bi-monthly publication called New Horizons."

The meeting was opened to questions from the members, and in answer Mrs. Maumberg told how such a museum project is first set up. Usually a meeting is called at the high school and those interested in natural science come to the meeting. Then we find out what talent there is in the community. There is no single pattern of organization, each differing according to its interests. The whole enterprise is a very youthful one; though it has been going on for 12 years, it is just beginning to see success. It is the community itself that brings about the success.

How do you interest the children? The schools help a little, since most have some nature study classes and the teacher tells the pupils of the museum. Then we get somebody from the museum to go to the school - it is important that the person has the sort of personality that appeals to children. Once they get interested they never leave us. Our emphasis is on underprivileged localities.

Is there any age limit? No, the children come to us from about six years. As they grow older they take more initiative. We often start with specimens that are completely inadequate, but the children can actually handle almost everything and that makes a great difference to them. We have a nature camp in Greenwich, Conn. which has grown, so we have had to build dormitories. We now have a two weeks course for teachers there in the summer.

Do you use the older children to lead the younger? Oh, yes, they help. Everybody works together.

Later Mrs. Naumberg told of a recent visit to the San Gabriel River Bird Sanctuary which has been sponsored by the Audubon Society in California. What

with cows on one side and engineers building a dam on the other, there was at first some difficulty in obtaining a site, but the parties got together and a sanctuary was set up that has very good possibilities. No one is allowed in who might molest the wild life. There are guides for the younger ones. Trees and shrubs are gradually being marked. To set up such a sanctuary you have to rent property, or beg or borrow it. Mr. John Baker, the National President, travels about and is a genius at obtaining support for such programs. Sanctuaries should be in very isolated areas.

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FIELD NOTE:

Bird Walk: To Kipapa On August 8, 1948

We were delighted to have so many new people with us on our trip to Kipapa on Sunday, August 8th; some being birdlovers from the mainland on their first visit to the Islands; others being residents of Honolulu whom we hope enjoyed the day so much that they will join us again. We were also glad to welcome back one or two of our members who have not been with us for some time.

The day was beautiful, but hot - so hot that the birds as well as the twenty-five birdlovers were glad to stay under cover of the trees as much as possible. However, some of the group reported seeing a few amakihi and apapane. Elepaio and Japanese hill robin were heard all along the trail and were frequently seen.

While three of us stopped along the trail to cool off a bit and to have a mid-morning sandwich, I got my first really close-up view of hill robin in the field. No doubt we had stopped near a nest, for a pair kept a very careful eye on us all the while we were there.

When all had gathered together again at the cars, we agreed that we had had a wonderful time and that Kipapa is one of our most beautiful trails.

Blanche A. Pedley

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OCTOBER ACTIVITIES:

BIRD WALK: October 10th, to Kalena. Meet at the Library of Hawaii at 8:30 A.M.

MEETING: The regular meeting will be held on Monday, October 18, at the Library of Hawaii, at 7:30 P.M.

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