MID-PACIFIC MAGAZINE

October-December, 1935

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Notable Pan-Pacific Conferences 1920 to 1934 Inclusive

Hawaii, Crossroads of the Pacific, Natural Meeting Place

First Pan-Pacific Science Conference — August, 1920, Honolulu. Second, third, fourth in 1923-26-29, in Australia, Japan, and Java respectively under auspices of a science body organized at the first meeting in 1920. The fifth was held in Canada from June 1-14, 1933.

First Pan-Pacific Education Conference— August, 1921, Honolulu. Second in San Francisco, July, 1923, under auspices of the National Education Association, with a section arranged by the Pan-Pacific Union with delegates from China, Japan, etc. At that time was organized the World Federation of Education Associations, whose sectional meeting was held in Honolulu—July 25-30, 1932—Oren E. Long, General Secretary, Hawaii Committee.

First official Pan-Pacific Educational Conference, called by President Coolidge, Honolulu, April, 1927. The Pan-Pacific Union was asked to help in arranging the program and in interesting delegates from Pacific countries.

First Pan-Pacific Press Conference—Honolulu, October, 1921.

First Pan-Pacific Commercial Conference —Honolulu, November, 1922.

First Pan-Pacific Food Conservation Conference—Honolulu, August, 1924. The International Sugar Technologists Association was one result of this meeting; also the Pan-Pacific Research Institution, where weekly science dinner meetings have been held regularly since 1924, and many visiting scientists from Pacific lands have been housed. The work of the Junior Science Council, including high school and university students interested in radio, photography, agriculture, botany, zoology, etc., is another activity of the Research Institution.

First Pan-Pacific Fisheries Conference— Honolulu, July to November, 1925. Dr. Ishikawa, one of the delegates from Japan, brought eggs of the ayu fish and spats of oysters and clams which were planted in Hawaiian waters with considerable success.

First Pan-Pacific Women's Conference— Honolulu, August, 1928.

First Pan-Pacific Surgical Conference— Honolulu, August, 1929. A second meeting will be held in Honolulu August 20 to 29, 1936, under the auspices of a Pan-Pacific Surgical Association organized at the first meeting.

Second Pan-Pacific Women's Conference —Honolulu, August, 1930. At this conference the Pan-Pacific Women's Association was organized, first organization of women of Pacific countries. The third conference was held in Honolulu in August, 1934, under the auspices of the Pan-Pacific Women's Association, assisted by the Pan-Pacific Union. The fourth conference is scheduled for the summer of 1937, to be held in Japan or Canada.

Aims and Objects of the Pan-Pacific Union

THE PAN-PACIFIC UNION is a non-profit educational institution incorporated (1917) under the laws of the Territory of Hawaii. Not officially affiliated with any government, it enjoys the good will of all in advancement of mutual understanding between peoples of the great nations bordering upon the Pacific Ocean where dwell more than half the world's population.

Aims and objects of the Pan-Pacific Union are:

1. To bring together from time to time, in friendly conference, leaders in all lines of thought and action in the Pacific area, that they may become better acquainted; to assist in pointing them toward cooperative effort for the advancement of common interests.

2. To bring together ethical leaders from every Pacific land who will meet for the study of problems of fair dealing and ways to advance international justice in the Pacific area.

3. To bring together from time to time scientific and other leaders from Pacific lands who will present the great Pan-Pacific scientific problems, including those of race and population.

4. To follow out recommendations of scientific and other leaders for encouragement of scientific research of value to Pacific peoples; to

aid in establishment of research institutions where need seems to exist.

5. To secure and collate accurate information concerning the material resources of Pacific lands; to study the ideas and opinions that mould public opinion among the peoples of the several Pacific races, and to bring together men and women who can discuss these in a spirit of fairness that they may point out a true course of justice in dealing with them internationally.

6. To bring together in round-table discussion in every Pacific land those of all races resident therein who desire better understanding and cooperative effort among the peoples and races of the Pacific for their common advancement, material and spiritual.

7. To bring all peoples of the Pacific into closer friendly commercial contact and relationship. To aid and assist them better to understand one another and, through them, spread abroad a friendly spirit of interracial cooperation.

Membership in the Pan-Pacific Union

MEMBERSHIP in the Pan-Pacific Union is open to men and women, not only of Pacific countries, but to all who are interested in Pan-Pacific scientific research, information on current and historical development of the Pacific area, and in the promotion of mutual understanding and harmony among Pacific peoples in relation to the interests of peoples throughout the world.

CLASSES OF MEMBERSHIP: Membership comprises Resident Members (i.e., resident in the City and County of Honolulu), Non-resident Members (i.e., outside the City and County of Honolulu), and Sustaining Members (i.e., resident anywhere in the world or in the City and County of Honolulu).

MEMBERSHIP FEES: (There is no entrance fee.)

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NON-RESIDENT MEMBERS, annual, $3.50. Life membership, $100.00.

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NON-RESIDENT MEMBERS: Identification by official membership card which entitles the holder to the courtesies and facilities of Pan-Pacific Union headquarters in Honolulu and of all affiliated Pan-Pacific associations through Pacific countries.

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The Mid-Pacific Magazine

Including the Pan-Pacific Bulletin and the
Journal of the Pan-Pacific Research Institution

GEORGE MELLEN, Editor

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Hawaii, Crucible of Peace Psychology*

By FANNIE HURST

IT OCCURS TO ME, as I contemplate this group, that there are possibly no more live and pivotal issues in our complicated pattern of life today than the amalgamation of race chemistries, to which this society is dedicated.

Blood may be thicker than water, but its chemical possibilities as to blend, fusion, osmosis, do not end there.

It so happens that I have spent no small portion of the last several years travelling about the experimental countries—Russia, Germany, Italy—in an attempt better to comprehend the contemporaneous struggling of mankind to work out their human relations on a more successful basis. And now here I find in my own homeland, in the role of tourist, one of the most interesting experimental laboratories of them all. It is a strange experience for an American to glide away from the flank of his Mainland, where he is accustomed to hairline divisions between the States, to come upon a complex and concentrated social picture such as these [Hawaiian] islands represent.

Those of us who have been adult through the period of the World War may well indeed sometimes feel inclined to agree with Macbeth that life is a tale told by an idiot—full of sound and fury, signifying nothing, unless somehow, some way we can hasten toward a world less dominated by the sorry spectacle of man's inability to dwell peacefully with man.

It is along these lines the tourist who lingers long enough hereabouts, or who bothers to peep underneath the *leis*, [flower wreaths] is sure to be struck with the experimental aspect of these beautiful Arcadian laboratories known as the Pacific group.

Two titles have struck me during my brief visit here as being of rather peculiar significance. Two titles attached to widely diversified subjects. The first is the title of a Hawaiian song—Hawaiian Paradise. The second is the title of a book, which I have not yet read, but which is packed with significance—Hawaiian Paradox by Dr. David L. Crawford.

Both sociologically and horticulturally yours is a scene here of high-powered experimentation.

I do not know which interested me more the other day on the Island of Hawaii—an experiment being conducted over there in the growing of cotton on these Islands, or the story I heard on that same plantation of the social history of the family behind the idea. As a matter of fact, I do not know which happened to interest my kind of mind more. Not even the geological history of these Islands, written on their surface in the Gargantuan chirography of lava and stratification is more interesting than the human melting pot here in Hawaii, or the experimental amalgamation of so-called alien races.

It is an uncontroversial fact that the

*An address to members and guests, Pan-Pacific Union luncheon, Honolulu, July 22, 1935.

fundamental differences between human beings are racial—not biological. Therefore, it is equally obvious that man's greatest labor must be to amalgamate those national differences, without destroying them, into compatibility which will make it possible for men decently to inhabit the earth.

Your concentrated problems here in these Islands seem more significant than ever, in view of the contemporary hot lava flow over the face of the civilized world of race prejudice, race intolerance, program psychology, Abyssinian complexities, European restlessness, and Oriental unstability, that is abroad over the troubled face of the world today.

Indirectly, of course, you are succeeding in making of these Islands a crucible of peace psychology. That is not to say that mere amalgamation of race, and the creation of a cultural, intellectual and social interrelationship is going to solve many of our current problems connected with achievement and maintenance of world peace. A new and significant and ruthless dimension has entered into modern warfare. Today we all realize that, even with the groundwork of better national understanding, the major problem of world peace today is to eliminate the profit out of warfare. I feel very strongly, and without, let me assure you, any feministic propaganda to project upon you, that much of this must be accomplished by women.

Peace has become a woman's chore. Men have proved that they want war. Women have been taught to aid and abet. Now let me repeat that personally I would like to the see the word "feministic" sink into the oblivion from which it has come. Women have not in mind their right, privileges, votes, balance of power, etc., when they feel the need to take upon themselves the right to demand peace. "Male and female create I them" is biblically authentic, but biographically does not admit of argument. Women have become people—not females.

Race amalgamation of ideas, and the removal of the profit element from war, where it is achieved by men, are both of the vital and organic elements with which a peace-demanding humanity have got to reckon.

I might dedicate the entire period of this talk to this discussion, because it seems to me combined with what you are attempting to do here—one of the organic sources of our world unrest. But since that is impossible, I shall amble along to a discussion of the large and vital part which literature has played, and must continue to play in this Gargantuan, this immense chore, of trying to make our barbarian-ridden, prejudice-ridden, suspicion-ridden, fear-ridden world learn to live in comparative peace.

Like most true sayings, the one that it is difficult to hate a man after you know him is trite.

But the paradox of literature is that it is only in the most highly nationalistic type of writing that you can hope for the greatest degree of international understanding. I mean by that, writers like Dickens, Victor Hugo, Goethe, Tolstoy, Sinclair Lewis, Sherwood Anderson, Edgar Lee Masters, who wrote and write vividly and pictorially of their own national success, are the authors who convey to other countries a wider understanding of their own.

There is a great story in Hawaii that only Hawaii's own can tell.

One of the first questions I asked myself on arriving here was: why hasn't there been more expression from the new generation here?

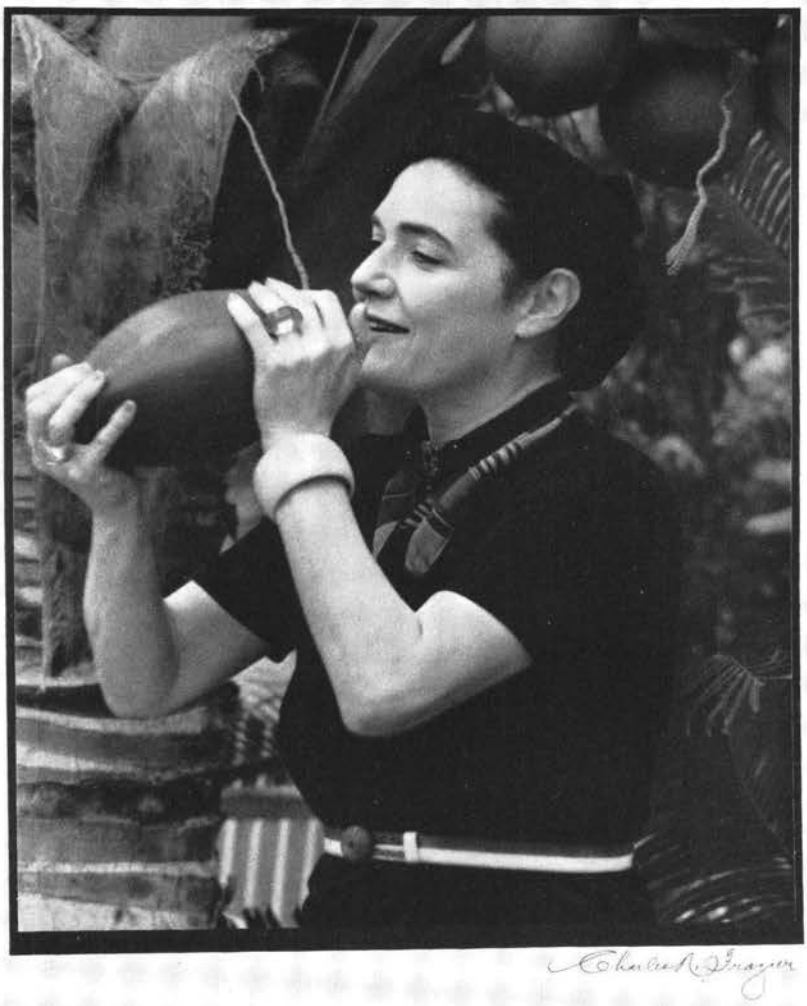
For there is a story in Hawaii that we from the outside can not tell.

In the first place, Hawaii hits the newcomer between the eyes, and that doesn't induce mental processes. It's like meeting a beautiful woman—one is so dazzled by her beauty that one doesn't begin to appreciate her personality.

And, further, to the outsider Hawaii is necessarily a playland. We come and go. In the two or three weeks allotted to most of us here we can't possibly obtain much insight into the real problems.

The expression must come from the inside. You have here a picture highly localized, and it remains to be interpreted by youngsters born and bred here.

From many angles, Hawaii is as interesting a location as I can think of for creative writing. First, you have an in-

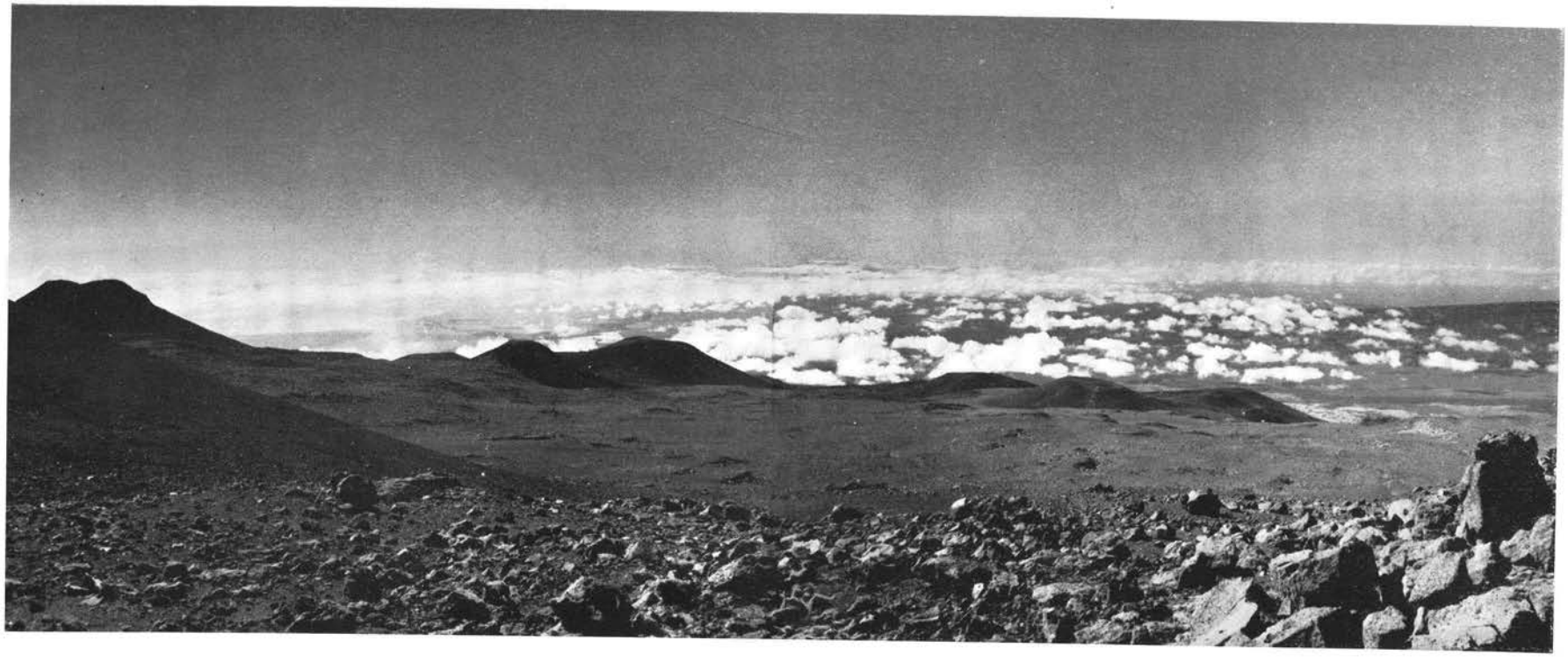


Another delightful discovery made by Fannie Hurst in Hawaii was the "drinking coconut," which, freshly picked, yields a generous draught of pure water delicately coconut-flavored and always cold regardless of the day's temperature. Charles R. Frazier, ardent amateur camera pictorialist, caught unconscious pose of happy anticipation as the famous American novelist saluted "Here's how!"

credible natural setting; and more than that, you have a sociological picture as complex and intriguing as anything America can boast. On this island of Oahu alone, you have a composite picture of the social and industrial problems of the entire United States.

I look about me with amazement. I see a certain insulation from the world unrest that is out of key with our era. It may be only a surface calm; perhaps there are subterranean tremblings, but they are not apparent. I see a paternalism that amazes the outsider. I do not fully understand it; I have not analyzed it. I see, too, a generation of young Americans of diverse racial backgrounds growing up in a transition period between the old and the new, adjusting themselves to the life-rhythm of our great common country, and preparing to take part in the solving of its problems.

All this offers limitless opportunity for interpretation in fiction. The amazing part of it that it hasn't been said. Some day one or more of this rising generation will become articulate, and you will have something new in American literature.



Up from the coast of Puna and Kau come billowing clouds at the call of the morning sun to drench the frigid windswept poll of Mauna Kea, highest mountain in the Pacific. View from near lake Waiau looking east and southeast.

Mauna (mountain) Kea (white) thrusts its snowy poll 13,825 feet into the blue Hawaiian sky back of Hilo town, where the expedition landed. Sugarcane fields make the smooth area between town and the forest belt, dark line at foot of the mountain. Foreground, Hilo Bay.

Mauna Kea, the White Mountain of Hawaii

By CHESTER K. WENTWORTH[1]
Leader, Hawaiian Academy of Science's Mauna Kea Expedition
(With illustrations from photographs by the Expedition)

THE UPLANDS of Hawaii remain to this day but little known. Above the 4,000-foot contour, an elevation which only the highest peaks of the other islands of the Hawaiian group attain, we find a largely uninhabited upland region on Hawaii into whose area all the other islands of the group could be stowed without squeezing. A large part of this area consists of the mountain masses of Mauna Loa, Mauna Kea, and Hualalai. These three domes, although topographically surveyed, and although they have been sporadically visited by scientific parties for more than a century, are still virgin territory to the scientist.

The native Hawaiians avoid these high regions. They showed great reluctance about accompanying early exploring parties from the visiting ships who wanted to see what was above the forests. Trails, which started *mauka* in such numbers from the populous seacoasts, soon ended when they reached the limits of native gardens, the haunts of pigs, and the area in which koa logs suitable for making canoes, and kauila trees for spears, flourished. Only the venturesome and hardy guild of feather gatherers, and a few adz quarriers, ventured far afield.

With the coming of white men all this changed. Their clothes and footgear were more favorable for making such journeys; and they were not hampered by supersititions. The first ascent of Mauna Loa was that made by Archibald Menzies, botanist with Vancouver, who set out around the south side from Kona on February 5, 1794, and attained the summit on February 16. The summit of Mauna Kea was not reached for nearly thirty years after that, the first recorded ascent having been that of Goodrich in August, 1823. James Macrae, botanist with H.M.S. *Blonde*, ascended Mauna Kea in 1825, remaining on top from June 15 to 17. After that the summit was visited by a number of scientists, including David Douglas, botanist, on January 10, 1834, and Dr. Pickering and Mr. Brackenridge from the U.S. Exploring Expedition, in 1841. This same expedition, under the command of Commodore Wilkes, with the aid of over 200 porters, camped in Mokuaweoweo crater on the summit of Mauna Loa from December 14, 1840, to January 23, 1841.

[1] With substantial assistance from E. H. Bryan, Jr.

Pvt. Ray Downing, U.S. Army, sending the first, ever, radio message from the extreme summit of Mauna Kea at 13,784 feet.

As a result of these various reconnaissance trips, the part of Hawaii above the 10,000-foot level became almost as well known by 1841 as it was down to ten or fifteen years ago. Although occasional parties, traveling on horseback, have ascended to the summits, there has in recent years been but little systematic addition to the published knowledge of these regions. Lack of practical occasion, the expense involved, and difficulty of traveling and camping above the timber line have discouraged detailed or systematic observations by individual naturalists. Many of these have made hurried trips to the summits in the hope of adding to impressions gained around the fringe of the high zone. But in nearly all cases they have, upon their return, found themselves asking more questions than they have been able to answer, and regretting that they had not had time and means to study the summit in more detail. In August, 1935, the Hawaiian Academy of Science, to celebrate ten years of existence, thought that it would try to assist a group of Hawaii's scientists in adding to their knowledge of high-level geology, meteorology, entomology, zoology, botany, and archaeology, by sponsoring an expedition to the summit of Mauna Kea.

This mountain was chosen, rather than Mauna Loa, because its summit is so much older, and its natural features so much more maturely developed than on Mauna Loa, where the surface is even now in process of building by volcanic outpourings. The presence of a periodically active volcano on Mauna Loa has also caused its upper slopes to be a little better known than those of Mauna Kea. As a result of its greater age and more diversified surface features, Mauna Kea offers a greater variety of geological, botanical and zoological problems, to say nothing of archaeological sites, while displaying a similar climatic contrast to the typical conditions of the surrounding lower slopes. Here is a mountain summit where water freezes every night in the year, overlooking palm-fringed beaches of coral sand where moonlight swimming is enjoyed in midwinter. Snow falls abundantly in winter at the summit and lies in banks on the north and west slopes into early July. In a region with the mild and uniform climate of Hawaii, such contrasts are startling and intriguing, and furnished impetus for the 1935 expedition.

A small group of members of the Academy laid the initial plans for a summit camp. When the enterprise had been endorsed by the Academy and had been assured of cooperation by the Bishop Museum, the University of Hawaii, the Sugar Planters' Experiment Station, and other scientific groups, application was made to the Hawaiian Department, United States Army, for assistance in the practical operations of pack train transport, camp maintenance, and management of the mess. This re-

This old mamani tree is host to parasitic Epiphytes which thrives in the drenching mists that sweep across the saddle above Humuula on the slopes of Mauna Kea. Sheep and cattle of this region do not know how to drink, but lap their water from the vegetation.

Members of the expedition in this group, photographed at Lake Waiau; left to right: Walter Naquin, assistant in geology and botany; Constance Hartt, botanist; Sgt. C. A. Poutre, U.S. Army, pigeon handler and photographer; C. K. Wentworth, geologist and leader; Marie Neal, botanist; Pvt. R. Downing, U.S. Army, radio operator; Pvt. Clarence Raine, U.S. Army, meteorologist; J. W. Coulter, geographer. The leader seems worried, or proud, over a thriving beard.

quest was granted by Major General Hugh A. Drum, Commanding the Hawaiian Department, and Lieutenant (now Captain) H. A. Meyer was assigned, with nine enlisted men, to take full charge of these matters.

No army mules were available on Hawaii, and accordingly the cordial cooperation of the Hawaii unit of the C.C.C. in furnishing a dozen mules and three packers was greatly appreciated. The Parker Ranch, through the courtesy of Alfred Carter, Trustee, and his son, Hartwell Carter, Manager, gave every assistance to the expedition, including the use of the sheep station houses at Humuula. Besides transportation facilities furnished by the army, the expedition was also greatly aided by almost daily carrying of goods in trucks of the Parker Ranch and C.C.C., traveling from Waimea to the camp of the latter organization at Pohakuloa, six miles from Humuula.

The chief difficulties met by the expedition were those of transportation. Much of the road above Waikii was very difficult for automobile travel because of the thick layers of powdery volcanic dust. An even greater difficulty was met in the uncertainty of transport by imperfectly trained mules. Several of the early pack trains came to naught because the mules went on a rampage and bucked off all the equipment with which they had set forth. There was much labor and confusion in gathering up the widely scattered articles of bedding, wearing apparel and culinary supplies and equipment.

Seventeen blankets and a tent were "lost" in this way, and in the course of operations there was much spirited radio discussion between the summit camp and the Humuula base camp as to the blanket tally. These seventeen missing blankets were not at the base camp; and no one who witnessed the nightly partition of blankets at the summit into what seemed before morning like very meagre allotments could believe that anything remotely like a blanket was overlooked at Lake Waiau. The distress of the bookkeeping department was relieved just as camp was breaking up by the revelation that one of the packers, after one of the mule rodeos, had placed the 17 blankets and the tent in a tree for safe-keeping, and had forgotten about the incident in the press of other matters.

Fortunately, some skeptics among the army men at base camp had withheld all instruments and delicate equipment from inclusion in the first pack-saddle bundles, and much loss and damage had been avoided thereby. A few pots and pans, and a stove or two, were

most amazingly tangled by the mules in their annoyance, but no serious loss was incurred.

The effect of the lowered atmospheric pressure at Lake Waiau on the boiling point of water was of both scientific and practical interest. At a pressure corresponding to less than 19 inches of mercury the boiling point of water was reduced to about 189 degrees Fahrenheit. At this temperature about one and a half hours were required to boil potatoes of moderate size, and coffee, hot off the stove, was not hot enough to allow the addition of any liberal amount of cream.

The addition of a pressure cooker to the equipment effected a very great convenience in speeding up the cooking operations and in providing means for baking, which had previously been lacking. With it cooking could be done as rapidly as at sea level and with much less water loss. At first the difficulty in cooking had been anticipated by planning the use of a large proportion of canned goods. Later, because of the difficulties of pack train transport, the mules injuring their feet on the rough rocks of the upper slopes, an effort was made to use lighter and more concentrated foods, which was possible because of abundant water supply from Lake Waiau and its marginal springs. The use of dried fruits and cereals, with provisions for pressure cooking to save both time and fuel, would clearly be best for any extensive camp operation at Lake Waiau.

Although the bracing air would have made it most agreeable, there were none of the roaring campfires which one associates with camping in many regions, because of the complete lack of fuel. The forest ends at or below the 10,000-foot level, and to transport wood three or four miles up to Lake Waiau at 13,007 feet would be both costly and laborious. Within a few minutes after sundown the air temperature dropped each night to a few degrees above freezing; and before morning ice was forming on quiet pools and the edges of the lake. Partly because of the cold and partly because of the fatigue of daily toil at the high altitudes, all members of the party were ready to take to their bed rolls or sleeping bags soon after sunset. Cooking was carried on very satisfactorily on two portable gasoline stoves, using about two quarts of gasoline per day to cook for an average of eight persons.

Most members of the party noted some physiological effects of lowered atmospheric pressure between Humuula and the 10,000-foot level, and all suffered an increased shortness of breath in the summit area. Some suffered either a slight nausea or considerable headache; but most of these effects tended to wear off after a day or more at the summit camp. All those remaining at the summit camp were able to carry on reasonably effective work, although over lesser areas and with more fatigue than would have been felt at sea level.

The high part of Mauna Kea is a great dome with steep slopes from the 8,000 to 11,000-foot levels, and flatter slopes above 11,000 feet. It is marked by scores of red or black cinder cones, each a few hundred feet high, and usually with a central bowl a few scores of feet deep. Surrounding the cinder cones in the region above 10,000 feet, which has an area of more than 50 square miles, are broad expanses of glacial moraine, or of ice-scoured lava flow ledges strewn with boulders perched by the ice. In its simplest as-

In the dim past Mauna Kea was capped by glaciers. Here the author points out glacial striae on hard rock surfaces.

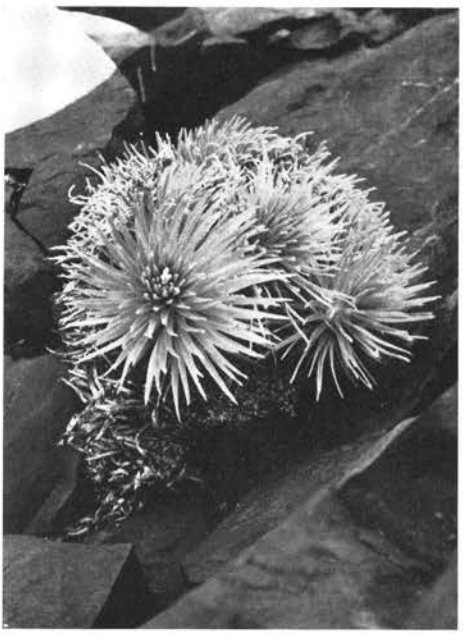
Sunset at Lake Waiau as viewed from the expedition camp.

pects, barring certain exceptions, we may say that Mauna Kea was first built as a lava dome to nearly its present height. It was then the site of numerous explosive eruptions which produced the numerous cinder cones. After that a change in climate that was world-wide brought about an increased precipitation of snow on the mountain top, and as it accumulated an ice cap, or calotte, was formed which spread outward and gave rise to several radial glacier tongues.

Although the former existence of glaciers on Mauna Kea had been recognized and announced by Daly in 1910, evidences of them seen by various geologists since then, and a particular study of them made by Dr. Herbert E. Gregory, Director of the Bishop Museum, several years ago, the 1935 expedition made possible a more nearly complete study. Through the observations of the various members of the party it was made clear that more than 25 square miles of the summit area was covered by glacial ice and that the ice reached a thickness of at least 300 to 400 feet in places. All were struck by the freshness and clarity of the glacial markings on rock which must have been exposed to the elements for at least 20 to 30 thousand years.

There were probably several periods of glaciation, as in North America, and the last of these gave way to the interglacial epoch now prevailing. At present, and for some thousands of years, the rocks of the summit area have been subject to marked frost action, and some of the ledges previously smoothed and striated by glacial action have been very notably split and quarried into characteristic frost-formed spalls.

The rock débris and soil cover due to glacial erosion as well as that due to modern frost action is notable for its light gray and cream colors, in contrast



The rare silversword (argyroxiphium) said to be extinct save in Hawaii near the summits of Mauna Kea, and Haleakala, Maui island's dead crater, 10,032 feet.

Expedition camp at Lake Waiau near the summit of Mauna Kea, where ice water is free but boiled potatoes come high—in terms of gasoline—as it took an hour and a half to boil small ones. Horseback party, Sunday callers from Kukaiau Ranch with John Mae as guide.

to the deep red and brown colors of Hawaiian soils and weathered rocks near sea level. The latter colors are due chiefly to chemical weathering in a warm, moist climate, a process typically called lateritization. On the contrary, at the high levels on Mauna Kea even today the temperatures are so low, with freezing every night in the year, that the rock - breaking and soil - forming processes are chiefly physical rather than chemical, and of a type found typically in Alaska, the northern Scandinavian countries, and Siberia. Here, as on the summit of Mauna Kea, the products of weathering are light in color. Apparently the red colors of the higher cinder cones are due to the original heat of the eruptions, and were developed immediately after the eruptions took place and only on the surfaces of the cones. The inner parts of most of the cones which were not exposed to the air are black, the natural color of unweathered basaltic rock or glass.

A report on the expedition will be presented at the fall meeting of the Hawaiian Academy of Science; and the more technical results of collecting and research will be forthcoming from various members of the expedition or specialists to whom the specimens have been submitted for study, in appropriate scientific publications.

Thanks to all the coöperation which was received from scientists, the Hawaiian Department of the Army, the Coast Guard Cutter *Itasca,* which carried the advance party and equipment from Honolulu to Hilo, the C.C.C., the Parker Ranch, and many individuals, this first expedition of the Hawaiian Academy of Science was a success, and sets a creditable precedent for future similar undertakings.

This pukiawe (Hawaiian heather) tree (Styphelia) on the timber-line frontier of Mauna Kea should be a lesson to humans who curl up in the face of an ill wind. You just conform, and stick to your job.

The Sensory Appeal of Sound in Hawaii

By MAURICE HILL

WITHOUT A DOUBT, the greatest sensory appeal in Hawaii is through the medium of sight. In the remaining senses of sound, smell, touch and taste, the selection of one for second place is difficult. It seems to me that the choice should lie between the sense of sound and smell, with the former having perhaps the margin of advantage. Therefore, in this article I give sound second place to sight in the sensory appeals of Hawaii. But what a charming, memorable second it is! And how closely associated with its particular surroundings. Nowhere else do these sounds, peculiar to the islands, have the same subtle meaning or create, and leave with the hearer, the same aural impressions.

Naturally, when thinking of the Hawaiian islands, one of the first thoughts coming to mind is of the native music, the chief sensory appeal of sound in Hawaii. If the listener has not previously been to the "Paradise of the Pacific," he judges it entirely from what he hears over the radio or at various entertainments. And, presumably, definitely likes or dislikes it. To many a critical ear the songs may seem trivial, repetitious and overly sentimental; while the ukuleles, guitars and banjos, the instruments used for the production of this music, may not be considered as being representative of the best in musical instruments. On the mainland of the United States, land of noise, jazz and whoopee, the quaint melodies of the islands are strangely out of place. They are too "slow," old-fashioned, and lacking in that syncopated rhythm so essential to the followers of the modern dance.

Be this as it may, take the American to Hawaii and let him hear the native songs throbbing in the quiet beauty of their tropical setting.

As he nears the shores of these ever green and colorful islands, the strains of the appealing Aloha Oe, played by the Royal Hawaiian band (an established institution of many years), drift across the opalescent water. Soon the voice of a Hawaiian singer is heard, bringing words of welcome and good will to the new arrivals. No doubt the newcomer has listened to the song numerous times . . . or thought he had; but he will soon find himself saying, "It was never like this before . . . so beautiful . . . so tender . . . so replete with meaning." He exerts his sense of hearing to its utmost that he may not miss a single tone or a single word of this song of songs written by Queen Liliuokalani, last of the royal line to reign in Hawaii.

Nearer, nearer the boat comes to the pier. A new song fills the air. And once again the high soprano voice soars, this time conveying the sentiments of love for country as expressed in the imperishable Song of the Islands by Charles E. King, former director of the Royal Hawaiian band.

The traveler listens, spellbound; and it suddenly dawns upon him that no other land offers such a welcome, such hospitality and friendship. Never has he been so captivated . . . so utterly won.

He comes ashore with the feeling that he is dreaming; but he is soon reassured by the bustle and noise on every side. Cargo is being unloaded; baggage is being hurried to waiting trucks and taxis; drivers shout loudly, advertising themselves for hire; while above this din, this constant commercial clamor, the dock resounds to the hum of many voices exchanging greetings and varied

bits of news. The very atmosphere is teeming with sunshine and sociability.

As the newcomer reaches the business section of Honolulu, he finds that here is not the noise and confusion of mainland cities. True, there is more or less blending of numerous sounds: the passing of trucks, automobiles, delivery wagons, buses, motorcycles and bicycles; while on the sidewalks there is sufficient chatter to give evidence of the shopper, business man or woman, or the tourist; but with it all there is a surprisingly small amount of actual noise. Here the discordant, shrill whistles of many factories are unknown; there is no thunder from elevated railways, nor whir and rush of the oncoming subway vehicle; neither is there the shrieking of trains to startle the nerves and disturb the ears.

Indeed, it is not uncommon to hear the soft staccato of horses' hoofs pattering on the city pavement, or the slower and less distinguishable hoofs of the donkey as it ambles along with, perhaps, an old man in a dilapidated wagon. Complaining squeaks from the cart, and a lusty bray from the donkey may assail the ear; but the visitor does not mind. Instead, he rather enjoys the novelty of it, and finds himself smiling, pleased with Honolulu's city life . . . a life slowed in tempo, but one perfectly attuned to its semitropical climate.

Presently, the stranger finds another sound diversion disclosing itself on the street. It is the murmur which arises from many tongues. The Hawaiian calls out to his friend in language made musical by the predominance of vowels; the Filipino's voice is perceived at once in a high, shrill shower of sound; the Japanese, so numerous in the islands, turn certain streets into a veritable Tokyo; while the multiple inflections of the Chinese voice arise from one end of Honolulu to the other. Numerous other tongues are infused into the city atmosphere but, through it all, the visitor hears the English language spoken on every avenue, and in practically every store. He is astonished to find that the majority of the non-English people represented in Hawaii speak two languages fluently . . . their own, and English.

More and more are the Orientals cultivating English. The children are sent to the public schools, and as a result often speak English better than their native Japanese or Chinese tongues. In fact, today, a great number of Hawaii-born Orientals are never taught Japanese or Chinese by their parents; while others refuse to learn, showing a decided preference for English. Consequently, the traveler to Hawaii cannot help but observe how Americanized these Orientals have already become; how ambitious they are, and how well they are keeping step with other races in the march of progress.

In spite of this progress in nearly every line, there is commonly heard a mode of speech which is termed Pidgin English. It is used by the lesser educated people of the islands, and it is excedingly quaint and amusing. This distorted version of English is introduced to the *malihini* (newcomer) almost as soon as he lands. He notes the word placements, abbreviated sentence constructions, interchanging and intermingling of words from the several current tongues in Hawaii, and the mispronunciation of words. These peculiarities combined with an abruptness of oral utterance appear to constitute the chief characteristics of Pidgin English as spoken in the Territory of Hawaii. Diverting as it is to the unaccustomed listener, Pidgin presents a real problem in the cultural advancement of the Territory.

One noticeable singularity of speech, which occurs rather generally among educated and uneducated Hawaiians alike, is that falling inflection at the end of a question. The effect is not particularly satisfying to the person used to a rising modulation. But one becomes accustomed to this odd trait of expression and, in time, if the visitor is not careful, he will be apt to acquire the habit unconsciously.

The tourist looking for new sensations in the realm of sound soon discovers the mynah bird. This large, clown-like bird, imported from India, and found in great numbers throughout Hawaii, is quite a mocking bird. Exceedingly versatile, it is able to imitate, not only a few, but many birds. Some of its tones are musical; others are harsh and of a quarrelsome quality.

Hawaii seems to find voice through the singers . . . take the American from the mainland of the United States, land of noise, jazz and whoopee . . . let him hear the native songs throbbing in the quiet beauty of their tropical setting . . . a blessing which the voyager will carry with him and cherish always.

A mynah argument provides opportunity to hear a most amazing bird vocabulary. What is really said is of course conjecturable; but there is little doubt but that these vociferous chatterings do have meaning and are laden with venom for their adversaries.

As Hawaii is a country where one may live, so to speak, out of doors the year round, the visitor is sure to hear the sounds from wholesome sports wherever he goes. From the tennis, basket ball, handball and volley ball courts come the laughter and enthusiastic exclamations of happy folk of all ages; on the golf course is heard the drive of the ball; from the football field arises the cheers of an excited multitude; while at the sandy, coral beaches, the dip of paddle from outrigger canoe, the splash of the swimmer, and the gleeful or dismayed shout of the surfboard rider as he successfully or unsuccessfully keeps his position on the board, continues without apparent interruption throughout the day. Where else is the sensory appeal of sound so well represented in sports as in Hawaii!

The tourist will be sure to visit the Royal Hawaiian Hotel on Waikiki beach during one of its splendid Hawaiian entertainments. These evening programs are often given in the garden, justly famed as the most beautiful hotel grounds in the world.

It is necessary at this point to digress for a moment from the sensory appeal of sound to that of sight in order to set the stage properly for the reader. Here is a striking instance of the perfect harmonization of the senses of sound and sight. To describe one without the other would be but to give a half of a complete whole.

The visitor seats himself, with many others, where chairs have been placed in a semicircle just outside the hotel entrance, and facing the garden. In the rear, the great hotel towers like a coral-pink castle in the night . . . a dream-castle come true. In the foreground lies a tropical setting of incomparable

loveliness. Spacious grounds, acres in extent, are transformed into a moonlit fairyland; winding walks are lighted through a maze of ferns, flowers, shrubs, trees, vines and coco palms. Fine expanses of velvet-green lawn cover the more open stretches; while here and there may be discerned trellises adorned with the sparkling red bougainvillea.

Immediately in front of the audience is a sort of natural court formed by tall coco palms. Here shrubs and ferns have been placed to give a touch of tropic luxuriance to the spot. To the right and left are curving walks leading to tree-fern vistas seen just ahead.

The light from the brilliant moon is seen to slip through the palm fronds, silvering the walks and diamond-pointing the stars sown accross the dark-blue heavenly ceiling. The malihini chokes, suffering real pain; a pain that comes only when the emotions are stirred to their depths by the poetry in nature.

And then, in the stillness, against this tapestry of the night, a group of Hawaiian musicians appear. And presently into the evening comes sound, soft and tremulous. Hawaii seeems to find voice and speak through the medium of the singers and their instruments. The listener realizes more clearly than ever before why the music of the islands must be heard in its native land to be fully effective and appreciated . . . to submit to that enchantment which forever holds the heart a captive.

Song after song is sung and played, while chants are given to the accompaniment of the gourd. With each song or *mele* (vocalized poem) Hawaii continues to speak to the sympathetic hearer, telling him of a gentle unsophisticated, and nature-loving people. The songs also tell of a royal race, and of the colorful days when the grass hut, feathered cape and helmet were seen in Hawaii's verdant valleys, and along its palm-fringed shores.

The concert is over. The last tones of the singers quaver . . . then fade; the thrum of the instruments is stilled, leaving a memory which will linger for years in the mind of the listener. But he leaves the concert with more than a memory: something new and strangely wonderful has been given him, and he takes it fondly to his heart, for this "something" is a bit of Hawaii which has become his very own.

As I have already mentioned, the principal sensory appeal of sound in the islands is found in its music. And I commence and end this article with words devoted to this phase of my subject material in order that they may leave the greatest impression with the reader; also, because music bids the traveler welcome to "Aloha Land," and music bids him farewell, following him out of the harbor on his homeward journey.

All too soon comes the time for departure from the languorous shores of song—all too soon the happy dream is ending. The days have passed so quickly that the tourist can scarcely believe that this is truly he who is now climbing the gangplank of an outgoing steamer.

There is the same bustle and noise that he noted upon arrival; there is the same lei-perfumed atmosphere, and he hears once more the same sweet songs.

The ship's loud whistle is heard warning all nonvoyagers ashore. A final blast . . . the great ship stirs . . . moves slowly away from the crowded dock. The air is filled with a thousand good-byes. And then, come the beautiful songs of the islands, climaxed by the beloved Aloha Oe. The traveler's eyes are dim with tears, but he does not care who sees them, for are not the eyes about him as equally moist! Once more he hears the high, clear voice of the soprano soloist, this time bidding all a fond farewell—a farewell, yes, and a blessing, too; one which the voyager will carry with him and cherish always.

As the boat drifts out to the sapphire sea, even the surf seems to be pounding a tattoo upon the distant coral reefs.

The outlines of Hawaii merge into the far horizon; but as the steamer plows on through day and night, the traveler, listening, may fancy that in the rhythmic surge of the sea he hears the heart of a noble people beating strong.

Race Biological Impressions in Hawaii

By DR. WILHELM W. KRAUSS*

JUST in our time the most contradictory theories on race crossing are spread. A few consider race crossing the source of all progress. But the most popular view on race crossing is that it brings about physically and psychically disharmonic individuals. The strangest opinions on racial crosses are propagated in the different countries of the world, partly by some scientists whose observations on race crossing have not been extended widely enough, but above all by irresponsible people who never have had any experience with gifted race-crossed groups.

According to those viewpoints the racial crosses (hybrids) are said to show disproportions of trunk, limbs and interior organs, bodily weakness, increased susceptibility to diseases, difficulties in birth, disharmonic proportions between teeth and jaws, disharmonic combinations of the parts of the face, etc. And still worse are the psychical disharmonies which are said to be typical for the hybrids; strange combinations of extremely different feelings and intellects, instability of character, moral inferiority and increased criminality. All these disharmonies are suppositional, because the hereditary masses (genotypes) of the two racially different parents are said "not to fit to each other when mated."

Most of these judgments are based on conditions where crossing has taken place between very unfavorable selections of the parent races or where the hybrids have been exposed to conditions exercising a bad influence on their bodily and psychical development. Often, however, such ideas are merely conclusions drawn from breeding experiments with plants and animals, applied to man. But as the human races differ from each other much less than many sorts of plants or races of animals with which crossing is carried out, it is principally wrong to apply the results of such experiments to man without any thorough examination of the human populations concerned. As support for this conception I want to mention, besides my own observations, also the statement of the outstanding American professor of genetics, W. E. Castle (Harvard), who writes:[1] "The widest possible human crosses are comparable with the crossing of geographical varieties of a wild species of animal, or with the crossing of distinct breeds of domesticated animals. . . . Offspring produced by crossing such races do not lack in vigor, size, or reproductive capacity." I should like to add that the differences between the psychical averages of the human races seem to me to be yet much *less* than those between the different breeds of the same domestic animals.

Some of the bad judgments of race crossing are due also to overhasty conclusions drawn from research work in remote parts of the world, where crossing of whites has taken place with the most primitive races of mankind (*e.g.*, with Hottentots in the South African desert) and where therefore the results obtained cannot be regarded as valid also for the crossings between higher gifted races. Furthermore, the psychical development of these hybrids living far from all centers of education cannot be compared with that of civilized and urbanized populations of "pure" race.

In order to avoid all these sources of error, I chose Hawaii as a field of my investigations because here crossing has taken place to a large extent between higher gifted races (whites, Polynesians and East Asiatics) without too one-sided selection of the parent gener-

* The author, a scientist from the State Institute of Race Biology, Uppsala, Sweden, and a fellow of the Swedish Academy of Sciences, has been doing race biological research work in Hawaii for eight months and hopes to stay here until next year. He is domiciled at the Pan-Pacific Research Institution.

[1] Castle, W. E., Genetics and Eugenics, 4th Edition, p. 335. Cambridge, Mass., 1930.

ations and without any social pressure on the hybrids.

As my studies are still going on, I can, of course, not yet present definite data. So I am able to lay before the reader only some of my general impressions hitherto received partly from the material I gathered by scientific investigations and partly by daily observations of the different racial and social groups of Hawaii.

Above all, I found again and again that the result of race crossing depends merely on the individual—bodily and psychical—hereditary dispositions of the parents. If these are normal, then the children are usually normal. If the parents are defective, then it is probable that at least some percentage of the children will be defective, too, and if the parents are overnormally gifted, at least some of the children show over-average talents. But nobody is bodily or psychically defective or superior, solely because he is a racial hybrid. And no defects have been observed which would seem to be due to difficulties of the conjugation of the parental chromosomes,* nor to a lacking serological harmony between the blood groups of the parents.

Especially absurd seems to me the opinion of certain physicians in Europe, according to whom race crossing produces in the progeny a higher percentage of intersexual individuals than mating within the "pure" races. If this were true, then Hawaii would show a frightful number of these unhappy beings: but really no indication of such an increase of intersexuals is found in the hybrid population of the islands.

As compared with the "pure" races, no reduction of the biological fertility of the crosses, either in the first or in the later generations, has been observed. The number of children in the hybrid families varies considerably from high numbers to very small ones or to childlessness. Where in race-crossed families the birth rate is very low, it is in most cases due only to voluntary birth control introduced to Hawaii by the white Americans.

Let me now mention a few of my special observations.

Among my studies I have *e.g.* a white-Japanese hybrid family. The father is a very tall German of Nordic-Alpine type, the mother a very small Japanese of the narrow-faced Chosiu type. All the seven children I examined show perfectly normal proportions of trunk and limbs, a very handsome body build, and at least normal physical vigor. Some of them are even very strong. As far as their faces are concerned, some of them have inherited more of the characteristics of the European father, others more of those of the Japanese mother, but the faces of all of them show combinations of characteristics, which also on a person with European taste make an aesthetically agreeable impression.

We meet among the hybrids of the different mixed groups of Hawaii a considerable variability of the kinds and degrees of pulchritude. Not infrequently the crosses correspond to high European or American aesthetical claims. But one finds in the hybrid population also new, hitherto unknown types of beauty.

In many crosses I have noted really wonderful teeth, and they did not show a trace of dental disharmonies, neither too small teeth in too big jaws nor the contrary. As far as I could learn from white dentists working in Hawaii, no higher percentage of such dental anomalies is known among the hybrids than among the pure races.

Well-experienced white physicians of Hawaii began to smile when I asked them whether they had found difficulties in birth or greater frequencies of [illegible] among the hybrids than among the populations of "pure" race. Nothing pointing in this direction has been observed by these physicians.

Nor seems criminality among the hybrids to be more frequent than among those circles of the "pure" races, who live in the same social circumstances as the crosses do. I should like to say that honesty in Honolulu seems to be fairly great. Sometimes I observed with amazement that families used to go away from their houses for whole days without locking them. Though there

* The bearers of the hereditary dispositions of the germ cells.

are plenty of poor people, among them thousands of hybrids, in town, nothing was stolen. In no European big city would people dare to leave their homes open in this way!

Among the many race-crossed groups of the population with which I have been in touch I have by no means been able to find a greater percentage of bodily or mentally disharmonic individuals of the kinds heretofore mentioned than in any European people of "pure" race.

But I have observed and admired here and there highly harmonic race-crossed individuals with an unusually eminent sense for music and dance. May I mention as an example that I have been several times invited to parties in an upper class family, where both host and hostess as well as all the guests were crosses either between whites and Hawaiians, or between Hawaiians and East Asiatics, or between all the three racial groups. According to certain race fanaticists those parties should have been, mildly expressed, gatherings of very queer individuals. But I feel convinced in stating the contrary. Only very seldom in Europe have I seen so wonderfully harmonious evenings as at these parties. Everyone had a well-developed sense for tunes, rhythm, and fine tact of which we Europeans could well have become envious. These parties reminded me of those musical soirées which once made old Vienna famous all over the world.

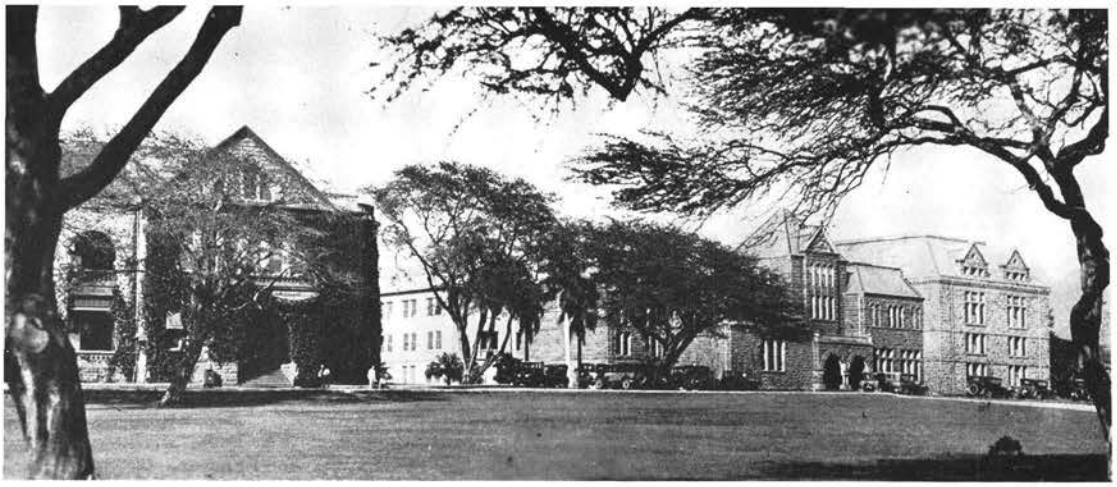
And I noted the same good taste for music and decorative art in all the national festivals of Hawaii, as on Lei Day and Kamehameha Day, where the Hawaiians and part-Hawaiians played the main rôles in the artistic arrangement.

However, not only in art but also in practical life I found usually that the race-crossed population of Hawaii possesses a moral behavior just as good as that of the same social groups of "pure" race in Europe or America. A considerable number of hybrids are notable merchants, lawyers, educators, and other personalities leading in social activities. Especially I appreciated the good harmony in personal touch among the hybrids and between them and the parent races as well as between the "pure" races themselves. Certainly also in Hawaii economic or other cultural rivalries occur between groups of different racial descent, but they do not bear the character of racial hatred.

While in Europe and in many other parts of the world interracial understanding seems to be extremely difficult, Hawaii shows that it *is* possible, even for very different races, to collaborate with each other in friendly forms when only *one* thing is found—good will.

Mankind has to learn something from Hawaii.

Characteristic group of Honolulu school children mingling happily in a queue awaiting entrance to the annual Home Products Show or industrial fair; race prejudice has no place in the thoughts of these youngsters who speak many languages at home but English among themselves, play the same games, read the same newspapers, books and periodicals, take pride in American citizenship.



Hawaii's Bernice P. Bishop Museum

By ESTHER C. ANDERSON
Editor of Bernice P. Bishop Publications

(With illustrations from Bishop Museum photographs)

VISITORS to Hawaii as well as *kamaainas* (old residents) find the Bernice P. Bishop Museum, Honolulu, a place where they may readily come into contact with numerous details of the old life of Hawaii and with the historical background of the native people. A thoughtful trip through the exhibition halls, which are open to the public daily from 10 a.m. to 4 p.m., and on Sunday afternoons from 2 to 5, or through parts of the halls, brings vividly to mind the relationships of Hawaii with other parts of the Pacific, and the interesting variations which belong specifically to each of the many scattered archipelagoes which together form the region known as Polynesia—the island world extending from Hawaii on the north, Easter Island on the east, New Zealand on the south, to Samoa, Tonga, and Fiji on the west, and including the islands of Micronesia and Melanesia where Polynesian influences are marked.

Within this Polynesian region Bernice P. Bishop Museum has for some years been conducting systematic exploration to obtain basic knowledge of the old cultures and indigenous floras and faunas. The collections on exhibition to the public are based on the work of these expeditions and represent authoritatively the high lights of their findings. Detailed results of some twenty expeditions are published in the Bulletins, Occasional Papers, and Memoirs of the Museum.

The original Museum—the present entrance hall, Kahili Room, Hawaiian Vestibule, and Art Gallery—was constructed in 1889 to house and exhibit the invaluable store of tapas, mats, ornaments, featherwork, and historical relics belonging to the Kamehameha family and bequeathed to the Princess Bernice Pauahi Bishop (1831-1884), last of the Kamehameha family of the chiefs of Hawaii. In her memory the Museum was founded, in 1889, by her husband, Charles Reed Bishop (1822-1915).

Soon the Museum collections were enlarged by gifts from the estate of Queen Emma, from the American Board of Commissioners for Foreign Missions, and by the transfer of materials from the Government Museum and the purchase of private collections of Hawaiian artifacts, plants, and shells.

To provide additional space for exhibition of this material Polynesian Hall was constructed in 1894. In 1896 the buildings and their contents were deeded to a Board of Trustees charged with responsibilities for the "equipment and development" of a "scientific institution for collecting, storing, and exhibiting specimens of Polynesian and Kindred Antiquities, Ethnology, and Natural History." The increase in size and variety of collections and the need of space for library, laboratories, and offices led to the construction of Hawaiian Hall in 1898, Paki Hall in 1911, and Konia Hall in 1925. The Museum is the official depository for historical and scientific materials that come into posses-

Hawaiian kapa maker and her assistant, dressed in the kapa skirt, sole garment worn by women before introduction of foreign dress. The woman is beating, with a hard-wood implement, the mulberry bark pulp into a thin, tough fabric which, though often as filmy as a cambric handkerchief, had remarkable strength. Decoration was by vegetable dyes, sometimes in beautiful designs. In the Bishop Museum many fine specimens are preserved. (Set piece in Bishop Museum, figures cast from life.)

sion of the Hawaiian Territorial Government. In carrying out a scientific program expressive of the well-defined responsibilities charged by the founder, Bernice P. Bishop Museum is affiliated with Yale University and the University of Hawaii, and maintains coöperative relations with many institutions in the United States, New Zealand, Australia, and Japan.

Through the National Research Council, Bernice P. Bishop Museum has taken an active part in the organization of five Pacific Science Congresses. The first was held in Honolulu in 1920, with the general purpose of defining the various "spheres of initiative" in the Pacific and assigning them logically, through a coöperative "gentlemen's agreement," to the various outstanding institutions of the nations most intimately concerned with the problems of Pacific Science. The second Pacific Science Congress (held in Australia in 1923), the third (held in Japan in 1926), the fourth (held in Java in 1929), and the fifth (held in Vancouver in 1933), have served as clearing houses for scientific discussion and the making of further coöperative plans. The restriction of the scope of institutional activities has made possible the clear definition of work to be done, much helpful coöperation between institutions, and the gradual development of intensive studies not likely to be duplicated through ignorance of work in process of being done.

The special problem of Bernice P. Bishop Museum has been to make a general survey of Polynesia in order to record as complete a picture as possible of the native life, the fauna, and the flora characteristic of Polynesian islands in the days before the intrusions of European and recent Asiatic trade and culture. This has involved sending many organized expeditions—some using exploring ships and others depending on local means of transport—to all the islands of Polynesia except New Zealand, where other scientific institutions have agreed to take the initiative. In addition, a number of individuals

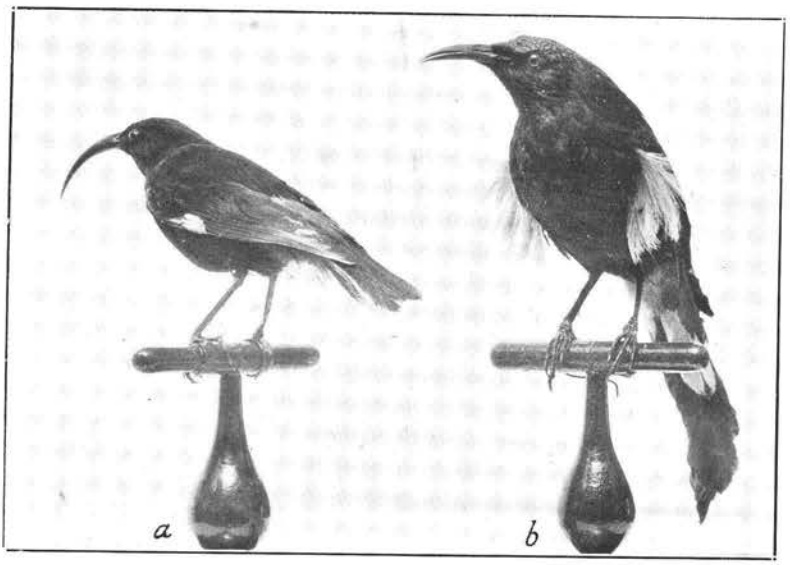
Before introduction of sartorial fashions by the foreigner early in the 19th century the malo (loin cloth) sufficed for men and the pa-u (skirt from waist to knee) for women. The Hawaiian man in this picture wears a malo of plain kapa (paperlike cloth made from the inner bark of the native mulberry). He stands before a grass hut and carries koa wood calabashes (umeke) in nets of olona fiber. (Set piece in Bishop Museum, excepting the figure, a life pose.)

have gone out from the Museum to make field studies in the islands, some as Bishop Museum Fellows in Yale University, others giving their voluntary services to the task under way.

In the course of years a strong scientific staff has been built up and many specialized "research museum" techniques have been developed, among these last being the organization of study collections, making them available for study and exchange in many parts of the world, and the development of a library of Pacific botany, zoology, and ethnology which is one of the most complete, within its scope, in the world.

Side by side with this large general survey of Polynesia, an essential part of the Museum's program has been to learn more about Hawaii, to illustrate and put on record as much as possible of the material brought to light, both for the use of the Hawaiian people themselves and for the use of students everywhere. A list of some of the Museum publications which deal with Hawaiian subjects will best illustrate the work which is in progress: Hawaiian Antiquities by David Malo; Fauna Hawaiiensis, edited by David Sharp; Dictionary of the Hawaiian Language by Lorrin Andrews; Proceedings of the Hawaiian Academy of Science from 1926 to date; In Honolulu Gardens by Marie C. Neal; Journal of Lucia Ruggles Holman; Hawaiian Art by Huc M. Luquiens; Reef and Shore Fauna of Hawaii by Charles H. Edmondson; Index to the Hawaiian Annual, 1875-1932 by Margaret Titcomb and Anita Ames; Polychaeta from Hawaii by Maximilian Holly; Outline of Hawaiian Physical Therapeutics by E. S. C. Handy, Mary K. Pukui, and Katherine Livermore; Hawaiian Helicinidae by Marie C. Neal; Some Hawaiian Oribatoidea (Acarina) by Arthur P. Jacot; Astelia and Pipturus of Hawaii by Carl Skottsberg; Archaeology of Kahoolawe and Archaeology of Oahu by J. Gilbert McAllister; Hawaiian Species of Peperomia by Truman G. Yuncker*; Pearl and Hermes Reef by P. S.

*Dr. Yuncker, Department of Botany, De Pauw University, lived at the Pan-Pacific Research Institution, Manoa Valley, Honolulu, for a year while pursuing his studies in Hawaii.



In old Hawaii the alii (royalty) wore gorgeous capes, cloaks and helmets made of tiny bird feathers for show, in addition to the kapa malo for men and skirt for women. Native birds, some now extinct, supplied feathers of crimson, black, yellow, pure white and, rarely, green. Two favorite donors are shown here from stuffed specimens in the Bishop Museum: (a) mamo and (b) oo, for yellow feathers. Last mamo reported seen in 1870. Sometimes several generations of workers were required to finish one royal cloak, millions of feathers sewn upon a fine net base of olona fiber. The splendid cloak of Kamehameha I, entirely of brilliant yellow mamo feathers, is preserved in the Bishop Museum.

Galtsoff; A Manual of Hawaiian Mosses by Edwin B. Bartram; Larval Hemiramphidae from the Hawaiian Islands by Oto Schindler; Kepelino's Traditions of Hawaii edited by Martha Warren Beckwith—and other studies, including short Occasional Papers and such Memoirs as the series by W. T. Brigham on Hawaiian crafts and material culture, the three-volume Fornander Collection of Hawaiian Antiquities and Folklore; W. A. Bryan's Key to the Birds of Hawaii; A. S. Hitchcock's Grasses of Hawaii, and Louis R. Sullivan's Observations on Hawaiian Somatology.

The program for Hawaiian studies is carrying at the present time, among other outlined Hawaiian projects, the translation of a large body of source material for folklore printed in old Hawaiian newspapers, studies of native agriculture and medicinal plants, field work in botany and zoology, and the publication of material as it is made available each year.

With the possible exception of New Zealand, where information is more readily accessible, the record of culture in Hawaii is more complete and more reliable than for any other part of Polynesia. Much remains to be done, however, before a picture that shows the features of Hawaiian culture in appropriate relief and relation can be drawn. In this connection, as well as for the educational service they render, the societies concerned with ethnology and history at Lihue, Wailuku, and Kailua deserve high praise. From time to time the Museum assists in developing their study collections, joining in their efforts to retain within the Territory old artifacts, recorded bits of myth, legend, and history.

As an aid in developing interest in Hawaiian native culture, members of the Museum staff respond when they can to calls for special articles, for addresses before clubs and societies, and have taken the leading part in lecture courses at Kamehameha Schools and the Honolulu Academy of Arts. Material in the Museum library is also made available to those interested in Hawaiiana.

Ancient Hawaiian Sports and Pastimes

By CHARLES W. KENN
Formerly Director Hawaiian Activities
Recreation Commission
City and County of Honolulu

The little ulu-maika rolls all over the field.
—Old Hawaiian Proverb.

WE ARE in the midst of the *Makahiki* or annual thanksgiving period according to ancient Hawaiian traditions. The three months beginning with October 15 and ending January 15 were celebrated with *hookupu*, offerings to the king with sports, dancing, and general merrymaking. All labor ceased, and recreation and entertainment held sway.

The period was sacred to *Lono*, god of the husbandman; a combination Labor Day and Thanksgiving Day extended over the entire winter season. After the Hookupu—usually products of the soil—the priests would say, "The land is free, gird yourselves for play You may enjoy yourselves in sport."[1] The land had been purified and blessed that the next season's crop might be plentiful. The sweet potato was planted, that with the three months' period it could mature and the people rejoice with *uala awaawa*, or a potent beverage fermented from it.

An image of Lono was carried from village to village, starting from a small village, ending at a large one. In time, a number of people would join the procession and partake of the offerings as they went along.

The *kahua*, or playground, was cleared for sport and the spectators formed a circle around the participants. The playing field was designated by "three standards from which hung flaps of cloth of various colors, the skins of two wild geese, a few small birds, and some feathers." Beneath each of these standards sat a judge. Prof. Fred Beckley, authority on things Hawaiian, calls the three standards *hoailono mokomoko* (sports standards). The playing area was usually marked by short spears stuck into the ground to mark the boundaries. These spears were called *akua paani*, according to Prof. John Wise, former Hawaiian language instructor at the University of Hawaii.

One youth would issue a challenge to another in whatever sport the occasion called for. *Mokomoko*, or boxing with the bare fists, was a favorite pastime among the men. Lt. King, who accompanied Captain Cook on his third voyage in 1779, tells of a boxing exhibition of which he was a witness:

> When the sports were ready to begin, the signal was given by the judges, and immediately two combatants appeared. They came forward slowly, lifting their feet very high behind, and drawing their hands along the soles. As they approached they frequently eyed each other from head to foot, in a contemptuous manner, casting several arch looks at the spectators, straining their muscles, and using a variety of affected gestures. Being advanced within reach of each other, they stood with both arms held out straight before their faces at which part their blows were aimed. They struck, in what appeared to our eyes an awkward manner, with a full swing of the arm; made no attempt at parry, but eluded their adversary's attack by an inclination of the body, or by retreating. The battle was quickly decided; for if either of them was knocked down, or even fell by accident, he was considered as vanquished, and the victor expressed his triumph by a variety of gestures, which usually excited, as was intended, a loud laugh among the spectators. . . . When the combat proved longer than usual, or appeared too unequal, one of the chiefs generally stepped in, and ended it by putting a stick between the combatants.[2]

During the course of the sport, names were called back and forth from one opponent to the other—names by no means complimentary. Even the spectators were free in calling names. Those on the sidelines bet heavily on the outcome of the sport, the loser, as

[1] Ancient Hawaiian Civilization, Edited by Helen Pratt, p. 61. Lecture on Hawaiian Feasts and Holidays by E. S. C. Handy.

[2] Cook's Third Voyage (1777-1780), Vol. III, p. 23.

Native Hawaiians of today posed in the ancient form of wrestling. (Star-Bulletin photo.)

Lt. King observed, "gnashing his teeth and pulling his hair." The combatants depended largely upon their *aumakua,* or guardian angels, for victory. While engaged in a struggle, it was not uncommon to see the *kahuna* (priest) of one of the combatants run to his side, especially if he appeared to be weakening, and try to encourage him by chanting his *mele koihonua* or *mele inoa* (geneological records), reminding him that to lose meant an insult to his ancestors. Whenever a contest was won, the victory was conceded to the aumakua of the victor, as his guardian angel possessed more *mana* (supernatural power) than that of his antagonist. In the legend of *Laieikawai, Aiwohikupua* fells *Ihuanu* with one blow, killing him instantly.[3]

[3] Romance of Laieikawai-Haleole. Reprint from 33rd annual report of American Bureau of Ethnology, p. 102.

Hakoko (wrestling) was another pastime of the Hawaiian men. This sport was indulged in by the youth in their training for battle. The *Lua,* a bone-breaking form of wrestling, was a most dangerous pastime, and never used except when life was at stake, and only as a last resort. This form of wrestling, which prescribed a thorough knowledge of anatomy, physiology, telepathy, and hypnotism, was not taught to every one, but only to those who were slow to anger. It has been stated that the lua was more severe than the Japanese *jiu-jitsu,* as the latter went only to the point of breaking one's bones, whereas the former went beyond that point. There are many legends and stories woven around this form of recreation.

Native Hawaiians demonstrate the ancient form of fencing in which a man's skill was his armor. (Star-Bulletin photo)

Kulakula'i (breast slapping) was a form of wrestling in which the antagonists pushed each other about, striking their open palms upon the breast of the opponent. Whenever any one was felled, his opponent was declared the winner.

Uma (hand wrestling) was an interesting form of wrestling with the wrists, popular even in more recent times. In this sport, the two contestants kneeled facing each other, clasping right hands, and placing elbows on the flat mat or ground. At the signal, each tried to down the other's wrist so that the back of his palm touched the ground, when he was vanquished. If, in the course of the contest, one person lifted or moved his elbow from the ground, he was declared the loser. *Lohelohe* was the deity of this sport.

Pa-uma (pushing wrist to opponent's breast) was played in the same way, except that the breast, not the mat, was the objective.

Kakalaau (fencing) was enjoyed by the youth. This sport demanded alertness and skill. It consisted in protecting one's self and hitting the opponent with one end of a stick, six feet long. It was very similar to the Japanese form of fencing, which I'm sure everyone has seen at any Japanese festival or celebration.

In the Japanese variation, the contestants are well padded and protected with head and face masks; in the Hawaiian type of fencing there was no protection afforded the contestants with the exception of their skill with the stick.

The sports above mentioned were included in the general term *mokomoko*, which some Hawaiian authorities define as "a tournament of games." Andrews[4] defines the term as "to fight, to box, to fence, to hold boxing matches as pastimes; a boxer, a man skilled in fighting." They were rather vigorous sports. *Kuimihelua* or *Kuilua* represented the mokomoko as patron god.

Holua (sledding) is famous in legendary lore. Pele the fire-goddess was an expert sled rider. This form of sledding was done on a long hill and on a narrow sled, with runners twelve feet long, and only two and a half inches apart at one end and six inches at the other. The slide was usually sprinkled with *kukui* (candle nut) oil, and covered with *la'i* (leaves of the *ki* plant). The victory went to the one who was able to slide the longest distance. Emory states that "coasting on these sleds was a pastime confined to the chiefs and chiefesses."[5] There are remains of a once famous slide at Keauhou, Kona, Hawaii.

Ooihe (spear throwing) was an interesting sport. It was indulged in chiefly by the *koa* (warriors) as a part of their training and maneuvers. If the reader of this article is acquainted with the spirit in which the young Samurai of feudal Japan took the sword, he will know something of the spirit in which the young Hawaiian spearman took the spear. Each spear bore a name, and was possessed of a mana, or supernatural power. It was this power that guided the shaft in its flight. Spear drills were necessary, and every movement had to be in perfect coördination. In the contest, each aimed his spear at an object, or each threw his spear for distance. Kamehameha I was known as a great spearman.

[4] Hawaiian Dictionary.
[5] Ancient Hawaiian Civilization, p. 146. Lecture on Sports, Games, and Amusements by Kenneth P. Emory.

The native Hawaiian today shows, as a rule, little deterioration of the splendid physique for which the race is noted. Here is a modern Hawaiian taking stance in the ancient game of maika. (Star-Bulletin photo.)

The Hawaiian have a proverb which goes as follows:

O ka ihe i ka make
O ka oo i ke ola.

The spear is symbolic of death
The spade is symbolic of life.

When Kamehameha had defeated King Kalanikupule of Oahu, and gathered his men at *Puuowaina* (Punchbowl Hill) he proclaimed the great law which has placed him on the same footing with Solon, the lawgiver of ancient times. Kamehameha had already given to the people one great set of laws called *Mamalahoe ke kanawai* (Law of The Splintered Paddle). His second great command is known as *Mamalahoa Kanawai* (Law of Friendship).

Look not upon your fellow men as mere dogs, but help them first. Go home, forget war, as this is time for peace, turn your spears into spades that ye may till the soil and reap the harvest.[6]

Here the great Hawaiian leader was teaching his men the art of peace. He had consolidated the islands to prevent further bloodshed, and the spear was the instrument through which he had done it, together with modern ammunition which he had obtained from foreign advisors. *Hawaii Pono-i,* national anthem of the Hawaiian monarchy, pays a direct tribute to the spear in the line *"na kaua i pale me ka ihe"* (the spear by which Kamehameha has protected you and me).

Kamehameha had turned the spear into a symbol of life.

Ulu-maika (bowling) was an interesting game among the ancient Hawaiians. It had various names. On Hawaii and Maui the game was known as *ulumaika;* on Oahu and Kauai, the people called it *Olohu.* There were several different ways of playing the game, the most common being to roll the stones for distance along a specially prepared course. Another favorite variation was to roll the stones between pairs of stakes placed along the course abreast of each other with about four inches between. Brigham mentions a third way which was "rather a trial of the *ulu* than of the players, as they were rolled against each other and the toughest won the game for its owner."[7] According to evidences of cracked stones found by Emory on the island of Lanai, it would seem that the stones were deliberately broken on the course, and a half taken as a trophy by the winner. Several stones were found to be chipped around the edges. Prof. Beckley states that in most cases the chips were caused by actually rolling the stone against another, but that was done to divert the ulu of an opponent off on a tangent to prevent its rolling in a straight line between the stakes.

Dr. Peter Buck has observed that in Samoa the people bowl with halves of the *ulu* (breadfruit) but such could not have been possible in Hawaii, as here the breadfruit was used only as food, and highly prized. People who planted the trees were rewarded. To take the fruit to play with was considered a crime deserving of severe punishment. According to Mrs. Becky Kanuha of Kohala, the stance taken in the game was as follows:

The player faces half right with the feet together, the ulu gripped in the right hand with the fourth and middle fingers underneath and the thumb on top and thrown underhand.

[6] Communication with Fred W. Beckley.

[7] Ancient Hawaiian stone implements—Brigham. Bishop Museum Memoirs, Vol. I.

The ordinary stance places the player standing and facing the course. He holds the ulu in whichever hand he uses best. One foot is forward slightly. The thumb is on top along the periphery, the index and middle fingers are underneath and along the periphery. The body is inclined forward slightly as the player casts his stone along the course. The people on the side lines urge the stones on by exclaiming *nee! nee!* (move on! move on!) whilst others use the exclamation *wela! wela!* (get hot! get hot!)

Mr. J. D'Arcy Northwood describes an ulu-maika course which he had found on Molokai.

On Molokai, I examined, with Mr. Munro, a course, possibly the only one now existing on the Island. This is situated a little less than a half mile north of Puu Luahine in the Kalamaula district at an elevation of 950 ft. It is on pasture land of short manienie grass, with a few weeds and small scattered *kiawe* trees. As the road reaches the top of a slight rise the course can be seen as a shallow trench, 35 ft. wide, starting at the right side of the road and slightly diverging from it, in an E.S.E. direction and quite straight. There are three large half-buried boulders at the beginning of the course. For 350 yards the course is well marked, with a very slight down grade; beyond, the grade increases more rapidly, with only traces of a slight depression, curving slightly to left, for another 150 yards. It is built across a slight slope, with considerable excavation for the first 200 yards and less after that. As there is no perceptible pile of earth near the course it was probably carried out in baskets and scattered evenly in the neighborhood.

For the first 200 yards traces of a shoulder on each side, 7 ft. from the bottom, can be seen. This is so regular that it can hardly be due to erosion—it may have been a later excavation in order to reduce the grade slightly.

The depth of the course below the surrounding country may have been devised in order to escape the effect of the wind in such an open country; the cup-like sides would also tend to direct an ulu which had been thrown a little off the line back to the bottom of the trench.

Mr. Eben Low of Honolulu has informed the writer that recently an ulu-maika stone has been found in Kalihi valley, a suburb of Honolulu. It is 12 inches diameter, 4 inches thick at the periphery, weighs 30 pounds.

Amo amo iluna ka lau oka nalu (surfing) was at one time, and still is, a dangerous sport. Swimming was considered a necessary art among the Hawaiians, and in Hawaii everybody was able to swim. This, however, cannot be said of the present-day Hawaiians. The following observation made in 1779 is of direct interest here.

Swimming is not only a necessary art in which both their men and women are more expert than any other people we had hitherto seen, but a favorite diversion among them. One particular mode, in which they sometimes amused themselves with this exercise, in Karakatooa (Kealakekua) bay appeared to us most perilous and extraordinary, and well deserving a distinct relation.

The surf, which breaks on the coast around the bay, extends to the distance of about 150 yards from the shore, within which space, the surges of the sea, accumulating from the shallowness of the water, are dashed against the beach with prodigious violence. Whenever, from strong weather, or any extraordinary swell at sea, the impetuosity of the surf is increased to its utmost height, they choose that time for this amusement, which is performed in the following manner:

Twenty or thirty of the natives, taking each a long narrow board, rounded at the ends, set out together from the shore. The first wave they meet, they plunge under, and suffering it to roll over them, rise again beyond it, and make the best of their way, by swimming out into the sea. The second wave is encountered in the same manner with the first; the great difficulty consisting in seizing the proper moment of diving under it, which, if missed, the person is caught by the surf, and driven back again with great violence; and all his dexterity is then required to prevent himself from being dashed against the rocks. As soon as they have gained, by these repeated efforts, the smooth water beyond the surf, they lay themselves at full length on their boards, and prepare for their return.

As the surf consists of a number of waves, of which every third is remarked to be always much larger than the others, their first object is to place themselves on the summit of the largest surf, by which they are driven along with amazing rapidity toward the shore. If by mistake they should place themselves on one of the smaller waves, which breaks before they reach land, or should not be able to keep their plank in a proper direction on top of the swell, they are left exposed to the fury of the next, and, to avoid it, are obliged again to dive, and to regain the place from which they set out.

Those who succeed in their object of reaching the shore have still a greater danger to encounter. The coast being guarded by a chain of rocks with here and there a small opening between them, they are obliged to steer their board through one of these, or, in case of failure, to quit it, before they reach the rocks, and, plunging under the wave, make their way back again. This is reckoned very disgraceful and is also attended with the loss of the board, which I have often seen, with great terror, dashed to pieces, at the very moment the native quit it.

The Hawaiians, when speaking of a beginner in anything, would often speak as follows: *Hawawa ka Heenalu Ha'i ka papa,* meaning literally, the in-

experienced surf rider breaks his board; figuratively, a new hand is bound to blunder.

An accident, of which I was a near spectator, shows at how early a period they are so far familiarized with the water, as both to lose all fear of it, and to set its dangers at defiance. A canoe being overset, in which was a woman with her children, one of them an infant, who, I am convinced, was not more than four years old, seemed highly delighted with what happened, swimming about at its ease, and playing a hundred tricks, till the canoe was put to rights again.[8]

There is no need to go into the skill of the Hawaiian youth in water sports. Duke Kahanamoku, the greatest swimmer of all time, started to swim when very young. For ten years he was undefeated champion of the world. Likewise, his skill with the surf board has gained for him and for Hawaii everlasting fame. It is only natural that Hawaii, the land in which swimming is indulged in the year round, should produce the champions that she has. However, it was Alexander Hume Ford, founder of the Pan-Pacific Union, who was responsible for the revival of the ancient sport of kings, surfing.

There were other games which did not require so much energy, but probably more mental skill and wit. They were for the most part quiet games, and would be comparable to our parlor games of today.

Puhenehene was greatly enjoyed by the chiefs and chiefesses. It consisted of hiding a stone under several pieces of *kapa* (bark cloth) spread between the players. One player would hide the stone, and the other would try to locate it in one attempt. This required great skill, and a "poker face." Lady Brassey, who visited the islands in 1876, describes the game as follows:

. . . and the *talu* (meaning *puhenehene*) which consists in hiding a small stone under one of five pieces of cloth, placed in front of the players. One hides the stone, and the others have to guess where it is; and it generally happens that, however dexterously the hider may put his arm beneath the cloth, and dodge about from one piece to another, a clever player will be able to tell, by the movements in his upper arm, when his fingers relax their hold of the stone.[9]

[8] Cook's Third Voyage (1777-1780), Vol. II.

Surfing, popular today as in ancient times, is no sport for a timid tyro. Onrushing waves furnish the motive power.

Heavy bets were laid in this game as in all others, a man often losing his entire *waiwai* (wealth) in the course of the game. Even life itself was the stake in many instances, the loser consenting to become the slave, if a man, or the mistress, if a woman, of the opponent. This betting aided in instilling *esprit de corps* within the group, making for loyalty.

Konane (checkers) was another game of the quiet type, wherein much gambling took place. This resembled the Japanese game of *Go*. It was this game that Umi was playing with his half-sister when his mother called to him and told him of his true parentage. Campbell, writing of having seen Kamehameha I playing this game, re-

[9] Voyage of Yacht Sunbeam Around The World, Chapter XVI.

Hawaiian fisherman shows the form of paddle used with outrigger canoe. It is designed for shallow water of the coral reefs.

Nani Makakoa, pure Hawaiian, noted professional hula dancer, is star performer at many teas, garden parties and dinners in Honolulu private homes. (Photo by amateur pictorialist Kenneth Barr.)

marked that "the old king would sit for hours at a time, without even so much as smiling." Again, it was this game that was played between Aiwohikupua and Hinaikamalama, the beauty of Hana, in which the prince from Kauai lost everything, including his boats and himself. The manner of playing konane was quite intricate, even more so than our chess of today. A *papamu* (board) had a large number of squares on which black and white pebbles were placed. The object of the game apparently was to place a player in a position where he was unable to move any of his pebbles.

Kilu (forfeits) represented another type of quiet game, usually played at night, and between the sexes. It has been stated that only royalty was permitted to play this game. Men sat at

one end of the course, women at the opposite end, a wooden peg in front of each as a goal. The *kilu,* half a coconut shell, was spun across the mat, and if it struck a peg, it scored. The forfeit was announced by a tally keeper. A score of ten usually won the game. This was a favorite diversion among the sexes, due to the highly desirable forfeit, which usually consisted of a kiss.

The *hula* (dance) which today has degenerated, provided another form of recreation and entertainment. There were several different kinds of dances, varying with the type of *mele* (lyric) and instruments that accompanied them. Explorers and visitors to early Hawaii, other than missionaries, have spoken highly of the hula, Captain Cook stating that "The hula is probably a religious dance."

The *oli* (chant) accompaniment recounted the history of a great and pleasure-loving people. The bards of old Hawaii perpetuated the memories of heroes, gods, and goddesses in their compositions. The mele told of a people's love for the wild, for the sea, and for their fellow man. Through them the hula was vitalized and given meanings, perhaps esoteric, but nevertheless beautiful and imagistic. The brazen demonstrations of the *hulahula* that we see today have no more connection with ancient Hawaii than Negro spirituals have with the Dark Continent. The *ami,* or amatory gyration of the hips, is more similar to the Samoan *hue,* than to anything Hawaiian, and was introduced into Hawaii by John Bush in 1887 from Samoa.

There were many other forms of diversion for the young and old. The children played at various games. *Kukuluaeo* (walking on stilts), *lupe* (kite-flying), *kukini* (running), *peepeeakua* (hide-and-seek), *kimo,* (picking *hala* nuts from a heap without touching the others), *hei* (string games), *iamo* (jumping from high places into ponds), *luu* (diving), and juggling were enjoyed.

Story telling was as interesting a diversion as any of the others. *Kamapuaa* (pig god) was a favorite with the people, and whenever his exploits were recounted, silence had to be maintained by the audience, out of respect for the deity. Whenever anyone wished to be excused during the period of story telling, he would dismiss himself with

E Kamapuaa e! E oluolu oe e kala mai i'au,
E hele ana au e hoopau pilikia.

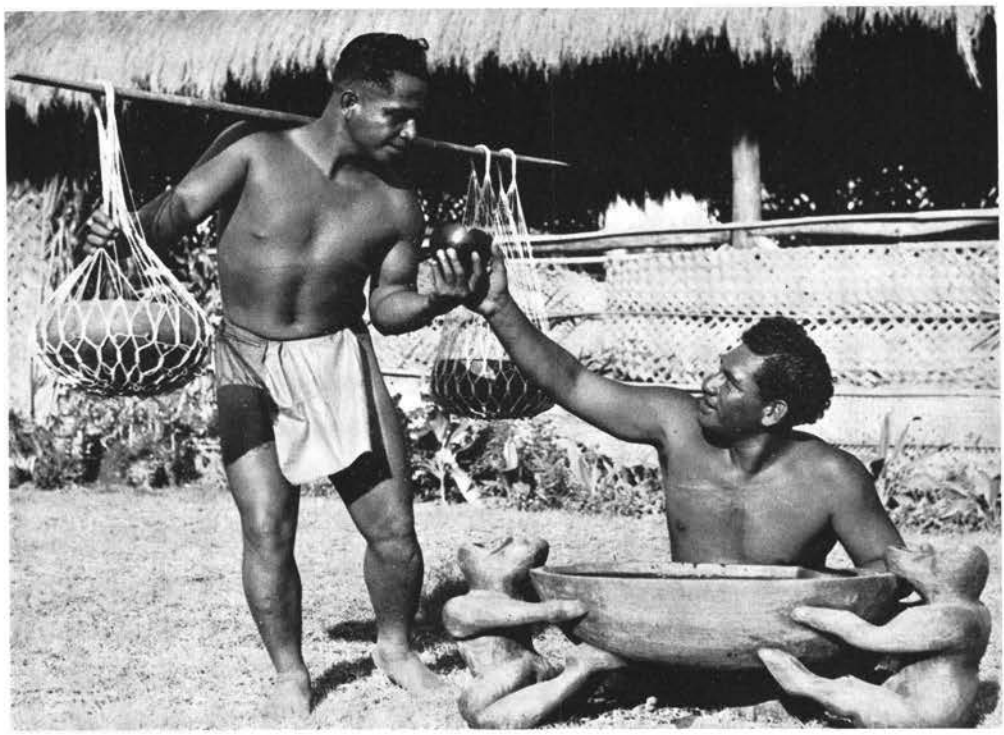
O, Kamapuaa, please excuse me,
I go to relieve myself.

To break a story while it was being told without asking permission from the subject of the story was to commit a breach of etiquette.

Legends and stories of the Hawaiians almost always deal with sports and dances; in fact, they are based upon those pastimes. The great Odyssey *Laieikawai* is a classic which hinges upon the sports and the entertainment of the ancient people. Pele and Hiiaka, called the greatest Hawaiian epic, has been dramatized under the title of Pele and Lohiau. It tells of the journey of a youthful pair from Kauai to Hawaii and of the jealousy of a sister.

With the close of the Makahiki season the King, representing Lono, boards a canoe, goes offshore a bit, and then makes a landing, while a group of spearmen rush at him with their weapons. It was left to him to protect

The pahu (shark-skin drum) boomed time for the ancient hula and is coming back as interest in the dance revives.



Awa, or kava (Piper methysticum) was the unfermented, non-alcoholic, tonic drink of old Hawaii. Modern Hawaiians pose for a "stirrup cup." (Star-Bulletin photo.)

himself. This act officially closed the celebration.

Although these sports were a part of the annual celebration of Makahiki, yet they were indulged in at various other times during the year. They were used primarily, especially *mokomoko* (the more vigorous forms), to build strength and to instill skill and wit into the participants. The Rev. Nathaniel B. Emerson has stated with reference to the ancient sports:

> Many of the Hawaiian games, as is well known, were noble sports, worthy of perpetuation, well fitted to develop and invigorate the frame and to impart and maintain a virile courage and endurance that should be cultivated in every race.[10]

The Hon. Samuel Wilder King, Hawaii's Delegate to Congress, in a recent communication writes: "The revival of ancient Hawaiian sports is a splendid idea. It is part of the general revival of interest in our ancient culture that has taken place the past ten years and to which I have tried to contribute my part. So much that was fine was lost during the period of rapid industrial development. Now we should delve back into the past to rescue such part of our Hawaiian heritage as can be adapted to modern conditions. The result will be a richer life for our people, and the creation of a distinctive community drawing both from old Hawaii and modern America."

[10] Causes for the Decline of The Ancient Hawaiian Sports. N. B. Emerson. Paradise of The Pacific, February, 1930. Vol. 43, No. 2.

Bibliography

Beckwith, Martha M. (Translator), Laicikawai. American Bureau of Ethnology, 33rd Annual Report.

Blake, Thomas. Surfing. Paradise of The Pacific Press, 1935.

Bolton, H. C. Some Hawaiian Pastimes. Journal of American Folklore Society, 1890.

Brassey, Lady. Voyage of Yacht Sunbeam Around World, Chapter XVI. A. L. Burt Co., 1879.

Bryan, E. H. Hawaiian Nature Notes, Chapter XVI. Honolulu Star-Bulletin.

Cook, Capt. James, and King, Lt. Cook's Third Voyage, Volume III.

Emerson, Joseph S. Hawaiian String Games. Vassar College Publication, 1924.

Emerson, Nathaniel B. (Translator), Pele and Hiiaka.

Emerson, N. B. Causes for Decline of Ancient Hawaiian Sports. Paradise of The Pacific, Vol. 43, No. 2, February, 1930.

Emerson, N. B. Unwritten Literature of Hawaii. Bureau of American Ethnology, Bull. 38.

Handy, E. S. C. Polynesian Religion. Bishop Museum, 1924.

Kenn, C. W. Na Paani Kahiko O Hawaii Nei. Paradise of The Pacific, May, 1935.

Kenn, C. W. Keep Hawaii Hawaiian. Paradise of The Pacific, June-July, 1935.

King, Samuel W. Ancient Hawaiian Sports and Amusements. Hawaii Educational Review, September, 1924.

London, Jack. Psychology of Surfboard. Mid-Pacific Magazine, Vol. 9, 1915.

London, Jack. Learning to Ride the Surfboard. Mid-Pacific Magazine, Vol. 10, 1915.

Malo, David. Hawaiian Antiquities. Bishop Museum pub., 1903.

Northwood, J. D'Arcy. Unpublished paper on the game of maika.

Pratt, Helen (Editor). Ancient Hawaiian Civilization. Kamehameha Schools, 1933.

Roberts, Helen. Hawaiian Music. Bishop Museum, 1926.

Racial Patterns in Hawaii

By RAY JEROME BAKER

(With illustrations from photographs by the author)

THERE is probably no other word in the English language that has aroused as much discussion and controversy over its meaning as the word race. Linnaeus, famous Swedish naturalist, faced with the necessity of finding a place for mankind in the zoological scale, decided, in the course of his classification work, that man formed a single species of four varieties.

Linnaeus was restricted by the limited facilities for travel and observation of his time. There are, he said, the Red Americans, or American Indians; the White Europeans, the Yellow Asiatics, and the Black Africans. Exploration in the Pacific was then in its infancy and people living in Polynesia were completely unknown to the great naturalist. There was only one criterion for determining in which group a given people belonged, namely, the color of their skin. Comparative anatomy was an undeveloped science; no one suggested the vast differences to be found in people having the same skin color, and this simple manner of determining the races of mankind fulfilled the needs of the systematists for some time.

The German anatomist and naturalist, Blumenbach, was the first to enter upon a comprehensive and exhaustive study of the races of man. Like Linnaeus, he bases his classifications upon skin color, but added some original observations on the variations in the size and shape of the skull and face. These beginnings later developed into the science of craniology. Blumenbach increased the list of human varieties to five, and the new names were Caucasian, Mongolian, Ethiopian, American, and Malayan. These terms were satisfying until more detailed study was given to race problems; then, as knowledge accumulated, it was found that other characters were more stable, reliable and useful than skin color for classification purposes.

An orgy of specialization followed. To determine the race membership of a given individual, minute and complex body measurements had to be made, measurements involving cephalic index, nostrility, hair shape, and many other details. The more exacting the measurements became, the more the individuals varied from the supposed type and the more difficult it became to determine just what constituted a "race."

From the foregoing it may appear that, for the purpose of this discussion, it will be more practical to use the old, naive notion of classification based upon skin color. The Hawaiians, then, are Malayan; the Americans and Europeans are Caucasian; the Oriental people are Mongolian. Other stocks, except in negligible numbers, do not enter the Hawaiian picture.

Polynesia was probably the last habitable portion of the globe occupied by man. Why this is so will be made clear from a brief review of the geography of the Pacific Basin. The Pacific Ocean occupies nearly one half of the earth's surface. There is no reason to believe that any considerable portion of this area now covered with water was once dry land. From early geological times it has been a stable, homogeneous, geographical unit. From the dawn of human history and before, its vast expanse furnished an effective barrier to human migration and intercourse. In the North Pacific the great Japan current which sweeps up past the Japan archipelago and eastward across the Pacific could carry Oriental ships with it, but except by the barest accident none ventured far enough away to reach the American shores. An equa-

torial belt of calms prevented navigation from north to south. Australia was inhabited by an unmaritime people. It was not easy for primitive people, with limited facilities for navigation, to reach isolated islands in the Pacific.

The New World was sparsely peopled by American Indians, descendants of immigrants from Asia who crossed the Behring Straits. New Zealand was uninhabited until Polynesian sailors of courage and daring reached it from the north. Off the Asiatic continent a vigorous Caucasoid people, the Ainu, occupied the islands of Japan throughout neolithic times. They were finally driven northward to the less desirable areas by a Mongolian push from the mainland of Asia; probably with the aid of a seafaring people from the south. In southeastern Asia, a people faced with war, famine or population pressure and with slavery or death the choice, started migrations to the south and east. To reach a common distributing point in the Pacific may have taken thousands of years. Neither written history nor tradition tells how and when this migration occurred. Only by the most careful examination of the evidence are the facts revealed. For the islands of Polynesia a comparative study of the languages, the customs and the cultures tells the major portion of the tale; biology and geology fill the gaps. From a point below the equator, parties with open canoes, inadequate food, primitive navigation facilities, but with daring and courage seldom paralleled, migrated to Hawaii.

Many of the islands of Polynesia had rich volcanic soil. Through untold ages the processes of land-building had been going on. Vulcanism heaved up from the ocean's depth volcanic islands; wind, sea and rain erosion decomposed the raw lavas into rich, brown soil. Marine organisms, mainly corals, played their part, building fringing and barrier reefs around the volcanic islands. From remote shores, wind, ocean currents and migratory birds carried plant seeds; the beginnings of a rich if not a varied island flora.

When the ancestors of the Hawaiian people migrated from southeastern Asia, it is improbable that any large group departed at one time. The more likely situation is that small, detached groups, when forced to make decisions, chose migration to the alternative of death or slavery. Two routes out into the Pacific lay open; the evidence indicates that both were used. The northern one led through the Carolines, Marshall and Gilbert Islands and the southern one departed in the direction of New Guinea, Fiji and thence out into the Pacific.

It must not be assumed that these journeys were deliberately set out upon with a definite objective in the mind of the leader, for such could hardly have been the case. They were rather movements of people endeavoring to escape from pressure in the rear. Small detached elements may have loitered on the way and been absorbed into tribes with whom they came in contact. Others kept on their way, or at least their descendants did, until, with relative racial integrity, their destination was reached. No doubt there were cultural exchanges along the way. New ideas in fishing methods, boat or canoe designs, basketry, food preparation, social control and tribal discipline are all matters which probably underwent extensive modification. No imagination is necessary to envision profound changes taking place in the ethical and religious concepts and the *mores* of the group.

There are no records, either written or traditional, of these earlier migratory efforts. Definite accounts of what happened are missing and the story with all its thrilling ramifications is lost in the dim recesses of a vague and indefinite past. But there is an abundance of legendary history of the later voyages. The first described in the folklore occurred in the fifth century and a later one extended through the twelfth century. These migrations were not isolated journeys, but series of voyages which extended over periods of a century or more. The earlier people seemed to have been fisher folks as well as agriculturists. They introduced many food and otherwise useful plants. They built rude temples or sacred enclosures and paved their trails with flat stones. Some of this primitive stonework has been preserved and fragments may be seen

today. They were masters of the art of canoe-building and were accustomed to drag huge logs from the mountains for this purpose. Outriggers attached to the canoes gave them stability in rough seas.

The later people to arrive in Hawaii were of the warrior type. Many of the *Alii* or ruling class were over six feet tall and well proportioned. While the earlier people were subdued, they did not all flee to the obscure parts of the island. Many probably married the late arrivals and a blend of the stocks resulted. It is believed, however, that the ruling caste of later-day Hawaii was descended quite directly from the leaders of the second period of migration.

Space permits no more than a very brief and casual examination of the culture of the Hawaiians. Only a few important characteristics may be pointed out. These people made the best of their very limited resources. Lacking metals, they could never have achieved machine society through unassisted self-development. There were no materials at hand for making tools capable of holding an edge. Sharks' teeth, shell, bone and stone were the hardest and toughest materials for tool-making available. Hard wood was used for fashioning daggers and spears. Bows and arrows of poor quality were used in sport. A number of obsidian quarries furnished material, eagerly sought after and transported long distances, for adz-making. Knives of shell were used for cutting fibers and meat and for scraping, but they were fragile and their use limited. Beautiful bowls were fashioned from hard wood. They were used chiefly for food receptacles.

Sweet potatoes, yams and taro were the chief source of starch in the Hawaiian diet. Protein came from the fish of the sea. Coconuts, sugar cane, breadfruit, bananas, fern roots, seaweed and kukui nuts furnished sugar, vitamins and variety to the fare. Poisonous plants were few but well known and certain herbs and plants were used for medicine.

The Hawaiians had a well-developed social structure. A special caste, constituting the priesthood, presided over the temples, the images and ceremonies. A

Just another American kid of 100 per cent Chinese ancestry plus enthusiasm for baseball, marbles, ice cream, George Washington and Yankee humor.

rigid system of *tabu* was enforced. The commoners did the work, but production, always for consumption, was ample, except in time of famine, for all. The political organization consisted of a primitive form of feudalism. Certain of the occupations, such as fishing and canoe-building, were highly specialized and men were specifically trained for them.

Such, briefly stated, was the set-up when the *haole* (white men) arrived upon the scene. With their arrival came profound changes in social, economic and political conditions. Explorers made brief visits, but they were of sufficient length to impress the Hawaiians with the superiority of their tools and implements of war. Firearms, knives, even nails and small pieces of metal became priceless possessions to the Hawaiians. No doubt gunpowder played a decisive part in placing the group of islands under one king or chieftain. The traders who came later stimulated commercial enterprises. Theretofore production had been for use alone; from now on the incentive of profit became dominant. A delicately balanced economy became

topsy-turvy, chaotic, disorganized. A foreign demand for sandalwood resulted in the devastation of native forests and the importation of foreign goods—strange luxuries not needed nor made adequate use of. Diseases theretofore unknown were introduced. Such a relatively simple ailment as an epidemic of measles swept through the indigenous population with tragic and fatal results comparable to the destruction of flies by autumn frost. A system of land tenure, based upon primitive conditions and previously entirely satisfying, failed to function. Revised land laws, under foreign supervision, replaced a crumbling order. Ethical concepts and religious beliefs went through a metamorphosis and new social customs and standards emerged. An emotional wave of religious enthusiasm in New England produced repercussions in the form of arriving missionaries on the Hawaiian shores. Trade, commerce, industry and agriculture became firmly established, and in these occupations the Caucasian or the Caucasian-Hawaiian assumed a position of leadership, of dominance.

The valleys of China, long enriched by the overflow of their rivers, were early populated. Social organization made its appearance first, and then shortly after the early stone age blended into the neolithic, political institutions appeared. From the barren and less productive regions of central Asia, Mongoloid people began to spill over into the more hospitable climate and more fertile soil of eastern and southern China. They became one of the most stable and industrious of peoples. They developed a rich, voluminous literature and an ample, satisfying philosophy. Harsh rulers tyrannized over them: plague and famine disciplined them. When the sugar industry in Hawaii began to show promise, it is but natural that this region of dense population should have been looked to as a fruitful area for recruiting labor for the cane fields of Hawaii.

The confines of this article do not permit the tracing of Chinese emigration to Hawaii nor of the later development of many individual members of this early wave into small traders and finally substantial business men. Small in numbers at first, it grew larger in volume as the years went by, until a climax was reached. The important concern lies in the fact that the Chinese were mostly men, and did not, therefore, represent a stable biological group. In their desire to take advantage of the economic opportunities offered in Hawaii, these Chinese men, in considerable numbers, overcame the barriers of language, custom and tradition, and married Hawaiian wives. This blend, not only of Chinese and Hawaiian blood, but of Oriental and Polynesian cultures, has had far-reaching influence in forming racial patterns in Hawaii.

With increasing numbers of Chinese in the Islands, a feeling that these people were becoming the dominant racial group became common, and there developed opposition to further importation of them. From time to time Portuguese men, mainly sailors, had settled in Hawaii and created favorable impressions by their thrift and industrious habits. It was felt that Caucasion immigration should be encouraged. Many believed that the Portuguese would blend well into the mosaic of races and tend to create a better-balanced and more stable racial pattern. This sentiment took concrete form in 1878 when a ship bearing eighty men, forty women and sixty children came to Hawaii. In the years that followed many others came. By 1886 more than ten thousand Portuguese had arrived upon these shores. Most of them came from Madeira and the Azores.

Being Caucasian, European and similar to other Caucasians already in Hawaii, the cultural contribution of the Portuguese was not large. Good houses were built for them in the plantation camps, community ovens where baking could be carried on in the traditional manner became common, and great interest was shown in plants and gardening. As the first arrivals were largely families, they represented a relatively balanced social group and practically none of the early Portuguese married outside of their own people. Out marriages, however, later became common among those born in Hawaii and unions of Portuguese with part-Hawaiians are

To the Hawaiians is due a debt of gratitude for harmonious race relationships; an experiment in human biology without parallel in the world today. Above, a sample from the Mid-Pacifican laboratory: Top, left to right: (1) Chinese born in Hawaii; (2) Hawaiian ½, Japanese ¼, English ¼; (3) Filipino; (4) Japanese born in Hawaii. Next row: (1) Hawaiian ½, Irish ¼, American ¼; (2) Portuguese born in Hawaii; (3) Hawaiian ½, Korean ½; (4) Portuguese born in Hawaii. Lower: (1) Hawaiian ½, Chinese ½; (2) Hawaiian; (3) Filipino; (4) Hawaiian ¾, Irish ¼.

now frequent. The language differed from any in use in Hawaii, and it is not improbable that it left its mark and influence upon present-day pidgin English. The Portuguese early showed an inclination to leave the plantations and become small farmers or tradesmen. Some have entered banking and trust organizations and met with marked success.

The plantation agricultural system was well developed before any considerable numbers of Japanese came to Hawaii. There were casual Japanese visitors to Hawaii as early as 1832, but long gaps ensued between the visits of those who followed. A small party of contract laborers arrived in 1886, but news of what they considered unsatisfactory working conditions spread in Japan and practically no further immigration from Japan took place until about the time of annexation of the Hawaiian Islands to the United States. During the years 1898-1900 over thirty thousand Japanese laborers arrived in Hawaii. During the Russo-Japanese war immigration decreased, only to be renewed again at its close. Until the Gentlemen's Agreement came into effect in 1907, large numbers of laborers poured into Hawaii. As Japanese women came with these laborers or came later as picture brides, normal social relationships and family life prevailed within this group. By 1934 there were nearly a hundred and forty thousand Japanese in Hawaii, of which some seventeen thousand were American-born and of voting age.

The industry of the Japanese, their ability to absorb and make use of new ideas, their desire to better the lot of their children, and their family solidarity are racial characteristics that are well known. Their contribution to Hawaiian culture has not been a meager one. Few there are in Hawaii who have not made use of the Japanese kimono, Japanese slippers and umbrellas. Works of art, be they prints, pottery or bric-a-brac, are found in almost every Western home. In recent years there has been a tragedy going on in family circles, for the older people want to preserve intact the *mores* of the homeland, while the younger generation prefer the culture of Hawaii.

The largest racial group at present employed on the plantations of Hawaii is Filipino. The first ones arrived in 1907. Later arrivals increased in numbers annually until about 1930, when the curve began to fall. Since they are the latest arrivals and occupy the lowest economic position, they are the least stable of all groups in Hawaii. The inferior economic status effectively prevents many out marriages from taking place and there are fewer Filipino women than men in the Territory. This means that there are few children, family life is not extensive. Filipino men who wish to marry will more than likely be obliged to seek brides in the Philippines. Like other racial groups before him, the Filipino has shown a tendency to leave the plantations and seek work elsewhere. From the sugar plantations they have gone in considerable numbers to the pineapple fields, and in the city of Honolulu there are many who have become gardeners, yard men, waiters and employees of the hotels. The time lapse since their arrival is yet too short for them, should they prove adapted, to enter retail trade and business.

In this brief résumé there have been noted only the more important of the racial groups in Hawaii. Other groups, though less important and smaller in numbers, have contributed materially to the complexity of the pattern as a whole. Chief among these minor groups, which will be mentioned by name only, are the German, Scotch, Scandinavian, Russian, Porto Rican, Spanish and Korean.

We are not born with racial prejudices and antipathies. Children do not harbor ill-feeling against toys because the colors are black or white. To the unconditioned youngster who has acquired none of the racial prejudices and feelings from its environment, differences in facial type and skin color mean nothing more than differences in color of its toys or clothing. Children are as indifferent to differences of hair texture, be it kinky or straight, as to the differences between a shaggy dog and a smooth-haired cat. Innate racial antipathies are nonexistent. The individual either acquires such prejudices from his environment or he never has them at all. If experimental psychology has demonstrated anything, it has brought to light the fact that race as such does not give rise to race problems. Those bitter animosities, hatreds and prejudices which stir the passions and prevent harmonious race relationships have come out of the environment. And just as these feelings of ill will arise out of social and psychological origins, so it is possible for man and society constructively to handle racial maladjustments.

The set-up in Hawaii has been particularly favorable to the happy solution of racial problems. There was something of the childlike simplicity of attitude in the early Hawaiians toward the races of diverse stocks that came to their shores. Regardless of the source from which they came, the same open-handed hospitality was extended to all. Not only was there a spirit of good will manifested, but the Hawaiians in marriage mingled freely their blood with that of the strangers who came. They gave freely of their culture and unhesitatingly took on the culture of others. To the Hawaiians is due a debt of gratitude for demonstrating that harmonious race relationships may be established between peoples of widely different backgrounds. They pioneered the way, and out of this pioneering has developed an experiment in human biology that is, in interest and significance, without parallel in the world today.

Farrington Hall, University of Hawaii campus lecture hall and theater named for the late Wallace R. Farrington, Governor of Hawaii (1921-29) and leader in legislative measures 35 years ago which led to establishment of the University. (Warren photo.)

Educating for World Citizenship
The University of Hawaii

By ALBERT HORLINGS

WITH the center of international gravitation shifting to the Pacific, a new importance attaches itself to the University of Hawaii. Universities have always arisen in response to new wants, and they have become important as they saw and attempted to solve the problems of their world and their time.

When Salerno in Italy, the first European university, spread its reputation as a school of medicine as far as France and Spain in the 9th century it conquered what to us are unimaginable distances. It was able to do so because, even in the dark ages, bold souls were doubting the complete efficacy of prayer as an ameliorator of pain. A clever blacksmith with pincers was becoming more to be trusted in the emergency of a toothache than was sanctity. The world of Salerno broadened to wherever in Europe men held more than a casual interest in anatomy and the physiological processes.

The University of Paris, started in the first decade of the 12th century, and Oxford, whose age is counted from 1133 when one Robert Pullen began delivering lectures on the Bible, rose in response to needs. They prospered and grew in reputation as the importance of their environs increased and as they were able to grapple with the fundamental problems of the world about them.

Harvard, Yale and other eastern colleges long held an unchallenged place in American education because they educated young people, first in theology and then in more earthly subjects, and because they concerned themselves with the life and problems about them—life and problems which, if not those of all the United States, were those nevertheless which controlled the balance in our national destiny. The center of gravity of America's economic life shifted west, and there grew up a new institution, vital, democratic, and realistic as the frontier, the tax-supported state university.

As the west became important such state universities as Michigan, Wiscon-

Dr. David L. Crawford, president, University of Hawaii, whose keen interest in Oriental affairs furthered establishment of the Oriental Institute.

sin, Minnesota, and California took their places with the leaders. Chicago and Stanford, as privately endowed schools, grew in reputation in the Midwest and Far West. These institutions came into the limelight because they combated ignorance, misunderstanding, misinformation, and indifference, and because they struggled valiantly to push back the frontiers of knowledge. They seized opportunities to solve problems that location and time had laid at their doorsteps.

The theatre of world interest is now in the Pacific. As always with the multiplication of human intercourse, new problems have arisen. Two great civilizations are being pulled together by cables, electrical impulses leaping through the ether, fast liners and faster airplanes. The barrier that separates them is no longer of space and matter. Today it is more than anything psychological.

In the center of this lively arena is the University of Hawaii, the only university in the Polynesian islands, the hub of a Pacific rim which holds half the population of the world. Youthful, vigorous, liberal, this institution has had problems and opportunities that are peculiarly its own: agriculture in the tropics, race miscegenation, and the bringing into focus of each other the East and the West that meet in the harbor of its beautiful island of Oahu.

In the first two of these fields the University of Hawaii has labored long and fruitfully, as the reputations of its Graduate School of Tropical Agriculture and its sociology and anthropology departments will testify. In the job of making the East understandable to the West the Oriental studies division and the political science department have been particularly concerned.

The University has won recognition in both its graduate and its undergraduate departments. The Ph.D. degree is awarded only in the Graduate School of Tropical Agriculture, but many students do a part of their work here toward the doctorate in social sciences, notably in sociology. The master's degree is of recognized standing and may be earned in the usual studies, although the University encourages graduate research in those fields that may most profitably be pursued here. This year a different plan of graduate study is being perfected. Lines between departments will be somewhat broken down and the students will be required to take courses that concern themselves more directly with their principal interests and the theses. But this is not the most important of the recent and rapid developments in the University of Hawaii.

President David L. Crawford revealed early in June that an Oriental Institute would be made part of the University, announcing at the same time that Professor Gregg M. Sinclair would head the new division. The announcement brought congratulations of scholars, Orientalists and educational institutions from all over the world.

The Institute was not conceived in June. Both President Crawford and Professor Sinclair have long been interested in the Orient. Oriental studies had been offered in the University of Hawaii for fifteen years. According to a 1930 survey, the University was third in the number of courses offered in Oriental studies. The School of Pacific and Oriental Affairs, of which Profes-

The Library, University of Hawaii, has long been building up its Far Eastern collection by purchases and through gifts.

sor Sinclair was director for one year, meets annually in the Summer Session and has of course enhanced the reputation of the University in this field. According to recent news from Brussels, the University of Hawaii won the 1935 FIDAC peace award for its work in arousing intelligent interest in the Far East.

The Oriental Institute eventually will concern itself mainly with advanced research in Oriental studies. It is planned, as soon as funds are available, to establish graduate scholarships and research assistantships, and to send the most promising advanced students, after they earn their M.A. degree here, to study on fellowships in Japan, China, and India.

Graduate courses in Chinese and Japanese language, literature, and history now offered in the University will come under the Oriental Institute. Credit will also be given in the Institute for the many courses in political science, geography, sociology and anthropology which bear upon the work of the Institute. These courses will be both in the graduate and undergraduate divisions.

Professorships will be added to the Oriental Institute as money is made available. Competent instructors of Chinese and Japanese blood are already on the faculty roster, teaching the language which was either theirs or that of their fathers. The University has in the past brought men from Chinese and Japanese universities to the campus as exchange professors and visiting professors. In 1921, for instance, just after the University had had its title changed from the College of Hawaii, Tien Mu Wang was professor of Chinese language and history and Dr. Tasuku Harada, former president of Doshisha university, was professor of Japanese language and history. Dr. Harada, respected alike in his home country and in the United States and Great Britain where he received his degrees, was with the University until his retirement a few years ago. He now lives in Japan.

The policy of having Chinese and Japanese professors here has continued. During the past year two well-known scholars came to the University from the Orient. Dr. Masamichi Royama of Tokyo Imperial University was here during the first semester of 1934-1935, and Dr. Y. C. Yang, president of Soochow University, taught in the School of Pacific and Oriental Affairs during the 1935 Summer Session. During the current semester Dr. Wing-Tsit Chan of Lingnan University is teaching Chinese philosophy and history while Hawaii's Professor Shao Chang Lee is on exchange to Lingnan. It is hoped to multiply these instances.

The University library has long been building up its Far Eastern collection, both by purchases and through gifts. Japanese and Chinese texts have been donated, sometimes in collections of great value. Professor Sinclair will concentrate his efforts on making the library here indispensable to thorough research on the Orient. In time, it is planned, the Oriental Institute will take this material into its own library.

Professor Sinclair was himself a resident of Nippon for nearly six years. It

was while in Kyoto that he became interested in Japanese literature. Once he made a walking tour of the famous Tokaido, from Kyoto to Tokyo, with Professor Denzel Carr, who is also now in the Honolulu university. Later, in Hikone, Mr. Sinclair was the only American in a city of 25,000. His home was beside the inner moat of the house where formerly had lived Ii Naonosuke, lord of Hikone, who had signed the treaty with Perry in 1854 which opened Japan to the influence of western culture.

Professor Sinclair is co-translator of An Adopted Husband and Tokyo Stories. He is the editor of Ten Stories by Henry James, and with Helen Gay Pratt and Dr. Royama he prepared a study unit on Japan which is being used in local high schools and in Teachers College of Columbia University. He has also traveled extensively in China. In February he leaves for a round-the-world trip, stopping in Japan, China, and India to gather material for the Institute. A man of zest and drive, with a passionate interest in Far Eastern culture, and with friends in all parts of the world who are infected by his enthusiasm, Mr. Sinclair was a fortunate choice for the headship of this new division.

Dreams and plans surround the new Institute. The need for it no one disputes. Mr. Sinclair says in this regard:

> Japan, China, India have reached the front pages of daily newspapers in our time and will remain there; this the informed man appreciates. But the scholars have known for a much longer time that the West should know of the important civilizations of the East, that a discovery of the history, philosophy, art, religion, literature—in the writings of the masters of Japan, China, India—may have as wonderful an effect on our civilization and thought as did the discovery of the Greek masterpieces after the fall of Constantinople; and that resulted in a complete reshaping of our standards of value religiously in the Reformation, and philosophically and artistically in the Renaissance.

He points to Will Durant's phrase: "Europe and America are the spoiled child and grandchild of Asia and have never quite realized the wealth of their pre-classical inheritance" as one evidence of a new recognition of the need for scholarly study of the Orient. That the need is not fulfilled is argued by Horace I. Poleman of the University of Pennsylvania, writing in the Saturday Review of Literature for July 27, who says:

> Not a single institution in this country is equipped to offer comprehensive instruction in the cultures of the East. . . . If the universities of Japan did not offer learning in the form of the English classics, for example, we should condemn them for their crass stupidity. By the same token is the culture of Japan so inferior to ours that we can afford entirely to neglect it?

The prospectus for the Institute has already been sent out and a program of courses is in the mails. The hearty response from all over the world to the first announcement that an Oriental Institute would be founded at the University of Hawaii makes President Crawford and Director Sinclair confident for the future. Funds are needed to permit the Institute adequately to fill the great need that exists for such a school. With the growing interest of prominent individuals and organizations on both continents in developing better relations in the Pacific, observers believe that concrete support will be given to the movement.

So does the University of Hawaii grapple with a problem that time and place have made peculiarly its own.

Of the other problems which the University has had laid at its door, agriculture in the tropics was the earliest. In the first report to the Territorial legislature of the Board of Regents of the College of Hawaii in February, 1909, we find the statement that "it is the province of this College to foster and propagate teaching and investigations that shall pertain to the agriculture of the tropics." The College, starting with five students and two instructors, grew slowly until 1920, when it was transformed into the University of Hawaii. To the Applied Science division was added a College of Arts and Sciences. There were 158 students then; the number in 1917 had been 44.

Just at the time of the reorganization, a survey of education in Hawaii was being made by a federal commission. Extensive recommendations included those for more generous financial support of the university in order that it might assume a real leadership in education in the Territory. Number 24 in

the commission's list of recommendations abandoned suddenly the technical and the particular to recommend that "the University of Hawaii set for its ultimate goal the high purpose of becoming the recognized university of the Pan-Pacific States." The then president, Dr. Arthur L. Dean, now a member of the board of regents, said in his report that "the University has in view the establishment of close relations with the countries of the Pacific area, and becoming a place where students from many countries may live and work together."

Enrolment during the next few years and up to the present has increased apace. In 1927 registration in the two colleges and in the extension division was 824. Now, with the addition of the Teachers college in 1931 and a self-supporting summer session, enrolment is more than 3,100. In the regular session, the racial composition of the student body, in the order of numerical importance, is Japanese, Caucasian, Chinese, Hawaiian and part-Hawaiian, Korean, Filipino, and a sprinkling of others.

What most fascinates visitors to the modern campus in Manoa Valley are the extremely good relations between students of different races. On undergraduate publications, in the Theatre Guild, in student government, in athletics, in organizations and in the classroom, members of various racial groups are thrown together and work in coöperation. One reason for this is that many students count their forebears in two, three or more racial groups. To them, obviously, racial antagonisms are repugnant.

Another reason is the feeling of racial well-being in all Hawaii, what is commonly classified by the indefinite but (to the resident) meaningful term—the spirit of *aloha*. It rests so deeply upon the atmosphere of the campus that even large numbers of mainlanders transported to the campus with all their racial *mores* intact eventually give way to it. To the faculty members the racial diversity of the classroom is one of the intriguing features of their work. If it were not so, they would not be here.

Research has been emphasized ever since the institution was reorganized as the University of Hawaii. During the last several years, especially, this policy has borne fruit. In coöperation with such organizations as the Hawaiian Sugar Planters' Association, the Pineapple Producers Coöperative Association, the Institute of Pacific Relations, the Pan-Pacific Union, and the Bishop Museum it has delved into almost every field of agriculture, pure science, and the humanities. The reputation of the university in this field has spread most, perhaps, because of its work in race relations, race psychology, race mixtures, race metabolism studies in the effect of environment upon physical characteristics, tropical agriculture, and oriental studies. In history and botany it has the Hawaiian field alone, and the Polynesian area it shares only with a few universities of Australia and New Zealand. It offers the only collegiate course in Literature of the Pacific. In such studies as leprosy and anemia it has made its contribution. Its Graduate School of Tropical Agriculture is the only one in the United States; the only other institution of its kind in the Anglo-Saxon world is the British university at Trinidad.

The Theatre Guild is among the most picturesque of the international activities of University students. Each year four major plays are presented. One is an American or English play with Caucasian actors, one is a Japanese play with American-Japanese actors, one play is of Chinese origin with actors of Chinese extraction, and one is a Hawaiian pageant, played by Hawaiians. The translations of the Oriental plays have sometimes been made on the University campus and presented as world premieres in English. World premieres to the credit of the Theatre Guild also include Christopher Morley's Where the Blue Begins, which the author helped to direct and which Bernard Shaw attended on its opening night in the university's Farrington Hall. *Ke Kuapuu Alii* (The Royal Hunchback), the first full-length Hawaiian play ever presented, was given by the Theatre Guild last spring on the 120-foot stage of the new outdoor theater.

Physically the University is growing gradually. A new agricultural building has just been completed as the ninth

major structure on the 300-acre campus. A $120,000 addition to the library is under construction. It is planned that an auditorium seating 3,000 persons will be started within the next six months. Plans for a social science building are under way. The amphitheater, with a landscaped stage and room for 3,000 persons, was completed last spring. A new football field has just been put into use. All buildings of the main group are of reinforced concrete, gleaming white in the sun against the green of matted grass and mountain slope. The motif of the architecture is simplicity—the straight line, the flat roof, and the pillar. Physical assets not on the campus include an experiment station and grounds, an observatory, and a marine biology laboratory at Waikiki.

More people of the United Seates mainland are familiar with the Summer Session of the University than with any of its other divisions. This self-supporting unit of the institution has been operating since 1927, when it opened with an enrollment of 236. Attendance is now between 1,000 and 1,100 annually. The campus, located in a cool mountain valley about 20 minutes by bus from both downtown Honolulu and Waikiki beach, proves an attraction to persons who wish to combine a scenic trip with study. Twenty-four states, Alaska, the Philippines, China, Japan, Germany, and Ireland were represented in the visiting student body during the 1935 session. Outstanding scholars, including university presidents and many department heads, come to the Summer Session each year as visiting professors. These men are the attractions in the Summer Session series of free evening lectures, scheduled twice a week throughout the season. Many famous persons who come to or pass through Honolulu also speak in the University during the Summer Session, as through the regular year.

The University operates in many fields that are primarily of local concern. Its extension classes, non-credit classes, and visual education services were combined this year in an Adult Education Division. This division will hold a Territorial conference on adult education this winter. This conference, preceded by a survey, will indicate whether there is need for the University to fill in where adult education is now being neglected. Courses are given on the four major islands, many lectures and speeches are broadcast over Honolulu's two excellent radio stations, and a full-credit course by radio is being offered for the first time this fall.

Educational work in another field is carried on by the Agricultural Extension Service. Activities of this department include market surveys, weekly market reports, direct help to farmers and growers in every branch of Hawaiian agriculture, home demonstration and education work, educational and recreational work with youth, and many others.

Terming the University of Hawaii the most exciting institution for the general undergraduate student and the most cosmopolitan of American colleges, Edwin R. Embree, president of the Rosenwald Fund, said in a recent appraisal of American universities that "this youngest of our state universities offers sound instruction in the conventional subjects and a stirring education in world citizenship obtainable nowhere else."

Carl Sandburg, poet and biographer of Lincoln, wrote recently:

> Perhaps there are five or six universities on the mainland of the United States that will compare with the University of Hawaii in the broad range of attention to highly specialized modern technology on the one hand, and at the other extreme, a fine elusive cultural quality arising out of international and interracial influences. . . . The responsibilities of the University are peculiar and multiplex, and the University is aware of them, has an intelligence and conscience about them which is rather rare, and in my observation, not often paralleled.

Both these men have had opportunities to study the University comparatively and critically, and they got to the core of the matter. The University of Hawaii is interesting from a human and scholarly point of view, its standards and ideals are high, in subjects relating to the Pacific area it presents unusual advantages to the student, and certain departments and divisions have opportunities for reputation and service surpassed nowhere else in America. The University is grappling with problems with which time and its world have endowed it.

Central Court, Honolulu Academy of Arts, outdoor auditorium in which from the stage, left, lectures, music and classical drama of all nations are presented at intervals throughout the year.

The Honolulu Academy of Arts

By MARVEL ALLISON
Educational Assistant

(With illustrations from photographs by Baker)

FOR an understanding of the part that the Honolulu Academy of Arts plays in the life of our city, one must be familiar with the building, the collections, and the way in which this rich material is used.

The Academy was built nine years ago, a gift to Hawaii from Mrs. C. M. Cooke and her family. Mrs. Cooke was keenly interested in every branch of the museum's activity and before her death a year ago paid daily visits, always enthusiastic, helpful and tolerant of each new idea. At the present time ten staff members coöperate with Mr. Edgar C. Schenck, the acting director, in keeping alive this spirit.

The building itself is unusual. It is planned around a main court and three smaller ones, and radiating from these are the exhibition rooms which overlook charming gardens. Public concerts and lectures are held in the main court or in the smaller Children's Court. The galleries to the right of the large court are devoted to Occidental art. While many of these contain more or less permanent collections, such as the Ancient Art, English, Flemish, Renaissance and French, in four of the rooms exhibits are changed periodically, either every two weeks or once a month, as is the case with most traveling shows. And in all of the galleries fresh flowers are placed daily, so that as much as possible the Academy presents ever-changing arrangements for the thousands of monthly visitors.

The Oriental galleries are to the left of the main court, as is the Primitive Art Room, and at the rear of the building, clustered around the Children's Court, are the lecture rooms, the children's workroom and the educational offices. Here, too, a ceramic kiln has been installed where modeled pieces as well as pottery may be fired, and clay work done in the schools of the city is received and fired at a minimum cost.

The library contains many volumes on the history of art, textiles, handicrafts and subjects related to art, such as books on gardens, porcelains, pottery, old silver, bookmaking and weaving. All of these are available for study in the library. In addition, there are numerous periodicals which are interesting to art students, teachers and scholars.

In the beginning the main collection

consisted, to a large extent, of Oriental objects, gifts of Mrs. Cooke from her private collection. Since that time, however, through various purchases and gifts, a balanced collection representing both the Orient and the Occident is being acquired.

In the Ancient Art Room there are many outstanding pieces of Egyptian, Assyrian, Greek and Roman sculpture and craft work.

Although small, the Primitive Art collection is representative. There are several fine pieces of Melanesian and Hawaiian wood carving, Hawaiian lauhala mats, a feather cloak and rare tapas, and pottery vessels from pre-Incan Peru. The field has great possibilities since more and more the schools of Hawaii tend to emphasize the study of cultural backgrounds of the Polynesian race.

For the Renaissance gallery two 14th century stained glass panels, excellent examples of Christian art in the Middle Ages, have just been acquired. A Chinese stoneware bowl of the Yuan period, recently purchased from the Eumorfopoulos collection, enriches the Oriental material.

The Academy possesses a splendid collection of prints, both old and contemporary. During the year the etchings of Durer, Lucas Van Leyden and Rembrandt are hung in the Print Room, as well as the more modern ones by Manet, Picasso, D. Y. Cameron, John Sloan and Thomas Handforth. In the Modern Art Room may be seen original oils by Renoir, Manet, Gauguin and Rivera, as well as those by our local artists. The Academy collection of textiles is a valuable one and includes a group of rare Mediterranean pieces. These are not allowed to go out but are used extensively by classes who come to study costume design or to find inspiration for the making of new motifs.

To bring Honolulu children of all races into contact with these beautiful things, thus enriching their understanding and giving them a deeper appreciation of their own cultural backgrounds, is one of the aims of the Educational Department. The public schools of Hawaii are coöperating eagerly in making this possible.

The educational work falls into three main divisions: first, lectures on art by members of the staff to groups of children brought to the Academy by their teachers; second, loan material not in the main collection, such as framed and mounted pictures, lantern slides, phonograph records, classroom books and various objects, such as a Dutch costume, an Indian blanket or basket, or a Swedish textile; third, conferences with the teachers themselves.

All lectures are intended as aids to the subjects already included in the curriculum which has been planned by the Department of Public Instruction. They are designed to help the teacher to enrich her own course of study by the use of slides and objects from the Academy collections. For example, in their classrooms the children become familiar with the part played by the ancient peoples of Egypt, Greece, Rome. The Age of Chivalry becomes very real to them through stories of King Arthur and Robin Hood. This, by the way, is one of the most popular lectures. Later, the Europe of the Renaissance is studied with its effect upon the building of America. For these lectures the children gather in the Ancient Art Room, in the Early American Room or in the quiet richness of the Italian Gallery and here among the actual objects created in the period they are studying they become familiar with the great artistic heritage of the Occident. Special rooms are arranged for subjects such as Swedish or Dutch life, Transportation and The Colorful Arts of Old Russia. Mrs. Norman C. Schenck, Educational Director, is lecturer in this field.

In the same way the children study the arts of the Orient, the decorative arts of the Oriental peasant home, the religious painting and sculpture of Buddhism and the splendid porcelains and lacquers of the palaces. All these take on new meaning in the Academy environment. The children learn to see beauty in the simple objects which they use in everyday living and they learn to appreciate their own cultural backgrounds. Miss Alyce Hoogs, who has just returned to Honolulu after a year spent in travel in the Orient and Europe, has resumed her duties as Instructor in Oriental Art.

Miss Margaret W. Hockley is the

Chinese Court, Honolulu Academy of Arts, one of several beautiful courts, each designed and landscaped in the character of the country represented.

instructor in the Arts of Primitive Peoples, particularly those of the Pacific Island groups. She is able to make the life and arts of old Hawaii before the *haoles* came a very real and living culture to the children who come to her lectures. The art of tapa-making is far more interesting when illustrated with the actual materials used and the small model of an ancient Hawaiian village is a constant source of joy to the children who come to learn of old Hawaii.

It might be interesting to list some of the most popular subjects: Chinese and Japanese Art and Life, Early America, Transportation, Book Arts, English and French Renaissance, Ming Painting, the Art of the Pacific Peoples, the Norsemen, the American Indians and Marco Polo, and dozens of other lectures interest the average group of children.

In the Loan Department framed pictures may be borrowed for the whole school year, from September to June. As early as August teachers come to the Academy and select these room decorations. Mounted pictures, phonograph records and objects to illustrate specific classroom lectures are loaned for a period of two weeks. This arrangement enables many teachers to use the same material during the school year.

The instructors are always eager to confer with teachers and help them with their problems. Appointments for these discussions or for lectures are made through the Educational Office.

Last year 39,276 school children attended lectures and special programs at the Academy and 5,422 objects and pictures went out on loan. Almost every school in Honolulu was represented by children of all ages who daily came to the Academy to see and to hear.

In the department of Creative Arts Mrs. Elizabeth Thesmar Watson is working toward freedom of expression. The children's workroom is a busy place after school and on Saturday mornings.

For the fall term the schedule of these art classes for children has been planned to make it possible for children from schools both near or at some distance from the Academy to find a class at the time they are able to come. The proposed program is most interesting. A special effort is always made to offer variety in subject matter and media, so that talented children who have been coming to the classes for several years will have the opportunity of progression and varied experience. During the school season the groups are smaller than in the summer and the children have the benefit of individual attention.

This fall a special group has been organized for children of six years of age or just under. It meets on Wednesdays from 1:45 to 2:45 p.m. These children will have the opportunity to experiment with finger paint, a medium which is causing so much comment and

interest at present. Other media used are tempera paint, colored chalks, colored papers and clay. While these children sometimes flood colors, paint from objects or with a classmate as model, their work is mainly creative. Sometimes there are stories in class or a flower or bird show in the Academy offers special inspiration, but ideas are never lacking. A little informal design is done and the children are taken upstairs to see special exhibits. The aim with these groups is to encourage expression which is large, full and colorful. The group criticisms, in which the children take active part, are not from the standpoint of realism, proportion and perspective, but rhythm, color, spirit, imagination and interest.

The children in the intermediate group, from ten to thirteen years of age, spend at least half the time improving their vision and their facility in drawing and color through working from objects in the Academy collections, sometimes purely for the pleasure of interpreting beauty, sometimes in concrete research to be used in a creative project. In either case this part of the work builds a background of knowledge and experience to be drawn on by the child when he needs it. Special emphasis is placed on drawing and painting with watercolors and clay work and block printing are popular.

The high school students are experimenting with a "workshop group" this fall, with each pupil independently pursuing the subject in which he is most interested. Mrs. Watson supervises the work and gives help when it is needed. So far the greatest interest has been shown in painting in oils, though dress design and incised-line wood carving are also represented.

The last summer session at the Academy was a busy one for the Educational Department. In addition to the regular classes in Creative Art, the activities were extended to include four new courses: Music Appreciation with Mrs. G. J. Watumull, the History of Costume with Mrs. Norman C. Schenck, and the City Planning of Honolulu—Past and Present, with Miss Margaret W. Hockley. These groups met in the mornings between 8:30 and 12 o'clock and were arranged so that the children from the Creative Art classes might attend the Music Appreciation.

An interesting experiment was the opening of a Children's Room, a plan which has been adopted by some museums on the mainland with considerable success. Small chairs, low tables and a shelf of children's books were arranged to make them feel that the cool, spacious room was theirs. Exhibits and pictures of special interest were planned each week, such as Transportation in Many Lands, American Indian Life and Art, Mexican Art and Crafts. Games and contests pertaining to art were provided and gallery tours were made with the instructors. One of the most successful activities was the construction of jig-saw puzzles, using reproductions of important paintings. The child not only put the puzzles together, but also learned the title of the picture and the artist's name. This gave a play element to the learning as well as training the child in observation.

All of the children using the room were under eleven years of age. The total attendance during the six weeks' period was 675, an average of 22 children each day.

This summer's experiment is considered to be a successful beginning of a type of activity which has possibilities for greater development in the future.

So in all of the museum's educational activities the purpose is to give to the child guidance in his leisure hours, providing for him a richer background of appreciation of the Academy collections and thus develop in him a sensitiveness to Beauty in its many forms.

The fundamental purpose and ideal of the Honolulu Academy of Arts was beautifully stated in its first bulletin:

"That our children of many nationalities and races . . . may wake to the ideals embodied in the arts of their neighbors. . . .

"That Hawaiians, Americans, Chinese, Japanese, Koreans, Filipinos, North Europeans and South Europeans . . . through the channel of art . . . may perceive a foundation on which a new culture . . . may be built in these islands.

"That it may contribute to such understanding and mutual respect the Honolulu Academy of Arts will open its doors to this community."

Court of The Indolent

By HOWARD V. SUTHERLAND

WANDERING into one of the many courts where termite-ridden shanties afford shelter to Honolulu's lowly, and which, to the visitor with an elastic imagination, suggest queer happenings and mysteries beyond unraveling, I noted almost in its center an empty weather-beaten crate, upturned to make a seat for the not too fastidious. A modest stencil marking, the poor relation of the ostentatious hotel sticker, informed me that it had adventured all the way from South Bend, Indiana.

One edge of this humble seat, when an aspiring nail had been removed, sufficed for my comfort; the other side was already occupied by a Chinese. His black and baggy pantaloons were covered to the knees by an equally black and baggy smock; the broad-brimmed black straw hat, very flat of crown, cast a shadow about his lean, long face.

Before taking my ease I nudged him gently, but, for all the effect my prodding had upon his person, he might have been an exhibit in a waxworks. His eyes, I then saw, were those of one lost in revery; his lips were moving. A philosopher, undoubtedly, or one in communion with his ancestors and unwilling for the present to converse with a mere being of flesh and blood.

From his furrowed chin leaked a few long, grey hairs, straggly proofs that their possessor had reached the age of discretion and resignation; otherwise, it would have been but natural to surmise he complained to himself about the excessive sultriness. A few paces away a nondescript dog, the dejected offspring of canine intermarriage, gnawed at a flea-bitten hindquarters. Its nature was not friendly and trustful; when I whistled it slunk farther away and began to gnaw again.

For five minutes I perspired in silence. Surely, I said to myself, by now my neighbor has heard the celestial gossip and is willing to consider

"His eyes were those of one lost in reverie . . . one in communion with his ancestors." — Camera study by John Word Caldwell, A.R.P.S., A.P.S.

mundane affairs. When I looked at him closely, however, his appearance gave me small encouragement. Except for the movement of his lips he was as one chloroformed.

"Pretty hot?" I began, knowing that East and West alike are interested in the weather. "Pretty hot, what?"

There was a seductive note of interrogation in my voice; it should have made a traffic policeman forgetful of his duty. All I wanted was polite agreement leading up to unguarded confidences; but my advances were unheeded, the Chinaman did not move. I removed my coat with greater ceremony than so simple a proceeding called for; but not once did the old man turn in my direction. The Great

Wall of China might have separated us. Barring the spirits of his ancestors there was no one in the court but himself; to them he still muttered his *alohas*, his eyes still beheld their spectral pigtails. I was only another fly on the packing case, which, to him, may have been a Peacock Throne.

Such indifference, and the tranquillity, had their effect upon myself. I gradually telescoped my inches; my backbone curved; my head surrendered its Nordic poise. I sat so still that the dog, having dislodged the more active of its tormentors, made a slow pilgrimage to the packing case, sniffed it enquiringly, found traces of other offerings and a few moments later, without even a bark of apology for its lack of manners, went about its business.

A Japanese now entered the court. Not far from the packing case he squatted upon his heels. Despite the fact that an unclean odor arose from the caked mud beneath him, it did not affect him unpleasantly; neither was he conscious of what patriotic Hawaiians might call climatic unusualities. He did not even perspire. He, too, became self-absorbed; for him the Chinaman did not exist, neither did I. It was not, however, with things unseen that he was concerned; he must have had ancestors, but it was not of them he was thinking. The concrete alone interested him, and what is more concrete or less intangible than one's pedal extremities?

No sooner was he fairly comfortable than his passion evidenced itself, and I, too, became deeply interested. On one foot, the right, he wore a red sock and a cracked brown and once-white shoe; the other, the one that held our attention, was sockless. From instep to ankle it was bandaged with the tatters of a rag; the bandage was tied with a shoestring and the foot crammed into an extra-large sandal. Fortunately, the bandage and that which it hid was not the object of his present solicitude. The toes were his delight, his pride; his joy in them surpassed that of Mother Dionne for her quintuplets.

Ordinarily, these humble members of the body are not objects of interest sufficient to compel concentrated observation. There are other things around, above and beneath us; things nobler, rarer, more seductive. The toes protruding from this sandal, however, were exceptional. They fascinated me. I tried to look away, but continually my gaze returned to them; that left foot became the Ark for my wandering eyes. Judging by the five in evidence, this little brown man and, let us say, Greta Garbo or Mae West, would disagree about the necessity of their occasional care. Their color and condition might have been excusable in times of great and prolonged drought; but only Christian charity and the conclusion that, being uninjured, they were to him freedom's symbols, to be bathed in sunshine rather than soap and water, might excuse their appearance. I could not read his thoughts; I only know that he wriggled those toes for many minutes, stretched them apart as might a pianist his fingers, patted them lovingly, and then seemed to forget them. With as little change of expression as a bronze Buddha, he rolled and lit a cigarette, stared into the cloudless sky, and became as apathetic to his surroundings as was the Chinaman.

Hunched upon the packing case I waited expectantly. In such a court, if one had patience, what might not happen? Silence and quietude so magnetic would surely draw others, if only to seek forgetfulness of self. My neighbor, the Chinaman, might change his position; even that would now seem strange. Nay, it would be phenomenal. Relying upon the power of hynotism I stared at him unblinkingly. I removed my spectacles and stared at him all the harder; but there was no magic in my eyes, or he was too submerged in abstraction to be influenced. His claw-like fingers lay inert upon his blouse; he still gazed into and beyond the blue; his lips still moved. I gave him up; it would take Gabriel's trumpet to arouse him.

The Japanese, inscrutable and motionless as ever, his arms supported by his knees, still squatted upon his heels; apparently he had taken root in the reddish-black earth. The cigarette between his lips was dead; it hung dejectedly from a corner of his mouth. His one great interest no longer vitalized him, and he would squat there, apparently, forever. And then, just as I

was about to strive for the passionless calm of my two neighbors, the unexpected happened!

The door of one of the grey houses opened, and a girl of six or seven years, dressed in a kimono of gayest colors, came forth into the sunshine. For a moment, with a backward glance into the hallway, as if expectant of a shrill reprimand, she stood listening; she then removed her sandals and descended the wooden steps. For her it was no drab court in which she found herself; there was no old, old Chinaman, no intrusive Japanese or watchful American; there was no packing case. By the rapt expression on her oval, ivory face one could tell she was in the land of make-believe, the uncharted and enchanted land that fades away with childhood and can never be rediscovered.

Holding on high a paper fan, and opening and closing it occasionally, she performed a slow, measured dance or rather progressive saraband around the three of us. Her steps and the movements of her little arms, although they seemed the very opposite of intricate and were repeated with regularity, could have been caught only by a camera. They must have been memorized, for never once was there a pause or break in their perfect rhythm. She became intangibility made manifest. With the lightness of a brilliant butterfly or a wind-blown petal, she rotated once, and only once, around us and reentered her home. It was all over in a few minutes, but while it lasted the performance was breathless. When she was gone the court suddenly became what in reality it was—a shabby *cul-de-sac*, sinister and cobwebby. My petrified companions, unconscious of what had transpired, belonged there. From the closed doors of the silent houses bent crones and palsied old men might issue, but never again a dancing child. I wondered if, due to the heat, I had fallen asleep and dreamed. Feeling entrapped, I left the crate and, to satisfy my doubts, approached the house in question. On the topmost step lay a tiny sandal; the child had overlooked it.

A passage of weather-stained cement connected the court of the indolent with the sidewalks of Honolulu. The ways of children being the same the world over, the walls of this passage, as high as small hands could reach, were covered with chalk markings.

Donning my coat and approaching the entrance, I heard intermittent sounds of music and soon stood beside a blind Hawaiian, seated on a camp-stool and fingering a steel-stringed guitar. Leaning against the wall, I studied him. He was a fleshy man and his seat looked rickety; his brown features were strongly marked and very regular, and I thought of a sightless Orpheus whose dusky Eurydice awaited him in the least forbidding of the houses I had left behind. A lei of violent-hued bougainvillea decorated his broken straw hat; his pale green shirt was dotted with pink flowers and open at the throat; he wore no shoes. The yellowish surface of the guitar bore innumerable stains; it served as a table when Fortune deposited thereon an overripe banana, a rice cake or piece of succulent squid. Snatches of ancient meles, or songs less befitting the surroundings, accompanied the restlessness of his fingers; but it was evidently not the hour for prolonged effort, instrumental or vocal. A thin dribble of Oriental and Polynesian humanity flowed in front of him and his good ear inclined expectantly, first in one direction and then in the other. These people, no better off than himself, were his source of income and, taking everything into consideration, he probably fared as well as Masefield's beggar in the Strand. Their pity for one another, next to their patience, is the outstanding virtue of the very poor. Dropping a coin in his cup and giving him a fraternal touch known to his kind from Beersheba to Dan, I passed on, becoming once more a mere drop in the human stream, one of the purposeless thousands shuffling along King Street.

The City Built Upon a Cistern

Nature made to the City of Honolulu a rich and rare gift of pure water rated among the best in the world.

By FREDERICK OHRT
Manager and Chief Engineer, Honolulu Board of Water Supply

(With illustrations from photographs by C. K. Wentworth, Geologic Engineer, Honolulu Board of Water Supply.)

WATER is the most valuable mineral resource in Hawaii. In spite of an abundant rainfall over most parts of these tropical islands, the rocks are so porous that perennial streams are few in number and there are no streams or lakes of sufficient size to serve as source of public supply for a large city.

There are many small streams in the rainier windward districts and limited supplies are obtained from springs and seeps, as well as from pits dug to the fresh-water zone above sea level near various parts of the coast. These are the sources of water for most of the outlying districts today, as they were in the days before the coming of the white man.

As in all regions, the ultimate source of potable water for Honolulu is in the rainfall which occurs on the mountain slopes back of the city. Trade wind belts of the earth are normally desert belts, like Arabia and the Sahara, but where high islands rise in mid ocean, the windward sides and summits commonly receive much rain. The average rainfall for the island of Oahu is 68 inches, and on the mountains back of Honolulu about 118 inches. Under ordinary circumstances this would be more than adequate for municipal and agricultural needs. But Hawaiian rocks are volcanic rocks and are perhaps more porous and permeable than most volcanic rocks and the underground structures rank among the most permeable in the world.

This means that even in the belts of highest rainfall perennial streams, lakes or basins capable of serving as natural storage reservoirs are of negligible consequence. The water everywhere sinks rapidly into the porous rocks and the permanent water table is usually but a few feet above sea level, even under the high mountainous districts. Development of water from shallow, dug domestic wells, like those of various parts of the eastern United States, is quite impossible.

It is one of the dramatic surprises in the history of Hawaii that the city of Honolulu should have grown up on a spot selected because of its sheltered harbor but without knowledge of the unusual water supply which underlies it. Then, when other water supplies were already somewhat overtaxed and water was urgently needed, the drilling of the first artesian well shortly before 1880 revealed that Honolulu was located squarely on top of a remarkable source of underground water, the Honolulu Artesian Basin, a system not duplicated in comparable magnitude or perfection anywhere else in Hawaii.

What a piece of luck, that the city destined to be the hub of the Pacific and already for a hundred years the watering place for ships of trade, travel

Panorama of Nuuanu Valley, at the mouth of which Honolulu business district is situated, looking from Pacific Heights Ridge. Gap, top right, is the famous Nuuanu Pali (cliff). Peak, left of gap, is Lanihuli (touching heaven); floor of the valley is a fashionable residential district; clear ground, left distance at foot of low cliff, is Oahu Country Club and golf course. At the head of this valley is a water reserve with a large surface-water reservoir.

and exploration, should have been planted by chance on the only spot in Hawaii having a natural, perfectly pure water supply for a great city!

The Honolulu Artesian Basin is a part of the normal basal fresh-water supply found slightly above sea level in the rocks of any island of porous rock situated in a place of abundant rainfall. It is unusual in the tightness and continuity of the caprock, which restrains the seaward migration of the basal water and causes it to build up pressure to an abnormal amount under the tight layers of the caprock. The caprock, in addition to restraining the fresh water under it at several hundred feet below sea level, also serves the very valuable function of sealing off this great underground reservoir from contamination by seepage from the surface immediately above it. The larger part of the present city lies on the caprock area, and the water of the artesian basin is derived almost wholly from rainfall in the rugged, mountainous area back of the city, most of which is under the rigid supervision of Forest Reserve and Board of Water Supply officials.

It is only because of this very unusual condition that a city water supply of such purity can be derived from an underground reservoir immediately under the city and that in turn replenished by rainfall in an area no more than three to six miles from the sea shore. With the growth of the city and its increasing demands, and with the expansion of settlement into higher districts more directly tributary to the artesian basin, neither the quantity nor the quality of the supply can be left wholly to chance. The supply system has been improved in a great many respects in the past decades by the boring of new wells, and the building of new pumping stations and the laying of more adequate piping systems. At the same time a comprehensive program of study, chemical, hydrologic, and geologic, is being carried on, in order to understand more accurately the nature of the Honolulu Water Supply system, its limitations and its peculiarities.

Geologic studies have outlined certain aspects of the underground water-yielding and transmitting structure. Tests of the character of the rock and of the height of the water table are being made in various places by use of the diamond core drill which cuts a continuous sample of the rock penetrated. Fluctuations of water level are measured continuously in various parts of the artesian basin and many additional measurements are made weekly on the elevation of the water table in drilled holes inland from the basin.

As a result of continuous efforts towards conservation the artesian water level has been built up higher than its trend prior to 1926, but there is need for continuous study and conservation. The Honolulu district is one of a very few, frequently mentioned by Dr. O. E. Meinzer, chief of the ground-water work of the U. S. Geological Survey, in which artesian heads have been practically restored by conservation while continuously in use and in

View from Nuuanu-Pauoa Ridge, immediately back of Honolulu city, looking through Aihualama Gulch, and across Manoa Valley to famous Diamond Head in the distance.

which records of level have been kept for many years.

Because of the long and deep underground course pursued by the rainwater before it reaches the intake of artesian wells, and its protection from new bacterial contamination, the Honolulu supply derived from the artesian basin is remarkably pure and low in bacterial content. Moreover, because of the head of 25 to 30 feet above sea level, which leads to the establishment of a fresh water lens to 1000 or 1200 feet below sea level through operation of the principle of hydrostatic balance of 41 units of fresh water against 40 units of salt water known as the Ghyben-Herzberg theory, the salt water is rather effectively excluded from the intake of the wells and the water is very low in salt content.

Before proceeding with a very brief outline of Honolulu's water supply history, the remarkably fine quality of the water, especially for a tropical country, should be noted by quoting from a report of Quality of Water Division of the U. S. Geological Survey:

> This water contains a moderate quantity of dissolved mineral matter consisting largely of sodium bicarbonate. It resembles many waters that come from deposits of volcanic materials. The quantity of silica is about double that found in ordinary rock waters and the chloride is a little higher than is usual for such waters. On the basis of dissolved mineral matter, this water would be classed as excellent for practically all uses.

And from the report on analysis read before a convention of the American College of Surgery and published in *Medical Journal and Record* February 4, 1925:

> For palatability, healthful mineral content and purity (bacteria *nil*) this water is among the best drinking waters in the world.

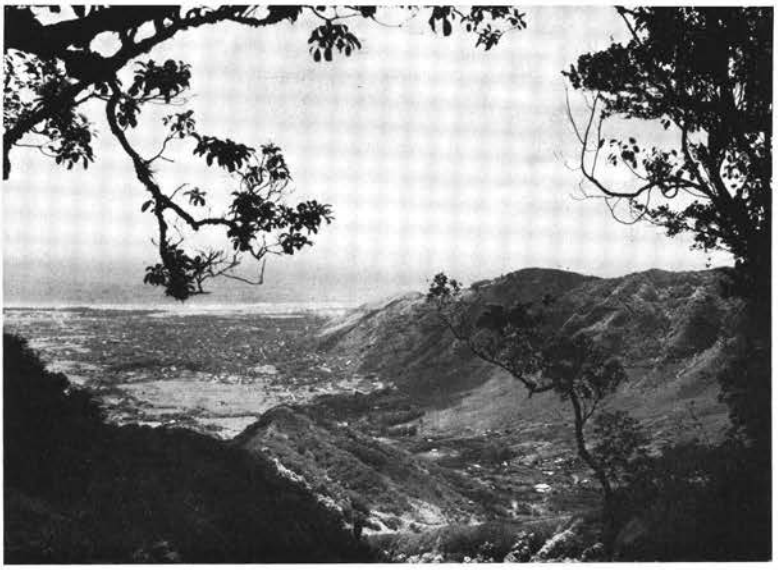
In 1800 the water for a few fishermen's huts on the site of the present city of Honolulu was brought from small streams in the hills back of the city. The first shallow wells dug along the coast to the fresh groundwater were dug in 1822. Within a few years there was considerable demand for fresh water for ships. These ships, mostly engaged in whaling, obtained their supplies by sending small boats up Nuuanu Stream to where the water was fresh and pure. This method was slow.

In 1838 an effort was made to remedy the difficulty by having 14 reels of 1½" lead pipe shipped from Boston with the intention of piping water to the harbor from some inland source. In 1845 ten of these reels remained unused and the venture was apparently not wholly successful. That was 90 years ago.

Meanwhile, plans were being made to bring water in from Nuuanu Valley to the harbor through iron pipes. This work was completed in 1851. In addition to supplying the harbor needs, numerous residents connected to the main for greater purity and convenience of domestic supply.

By 1854, this system had become inadequate. William Webster, an engineer, proposed constructing a new and larger reservoir, 80' x 100' x 10' deep, lined with brick. Water was to be piped to this reservoir from three different springs, including the Kapena Spring. These plans were not put into operation until 1860-61.

For the following 10 or 15 years, this



View seaward from Waiakeakua Gulch, head of Manoa Valley, another fashionable residential district; middle distance, University of Hawaii, Punahou College and Punahou residential district.

system functioned admirably. Extensions were made to the distributing system, but nothing was done to augment the supply; it was sufficient. By 1878, it became evident that the city had outgrown the old system as built by Webster. Many schemes were advanced to meet the situation. All were unsatisfactory. In the midst of this dilemma, a new and heretofore unknown supply was brought to light—two good, flowing, artesian wells sunk by private citizens.

Others in Honolulu were quick to grasp the potential value of this new supply. The first city well was bored shortly after 1880, at Pawaa on the Waikiki road, and pipe was laid from it to supply the residents of Waikiki. Other wells, too, were drilled to supply the vast tracts of arid wastes on leeward Oahu—and the great sugar industry began.

For the city water works, however, the development of gravity supply still continued the major consideration. The absolute purity of the artesian water was undisputed, and plans for pumping to higher levels received consideration.

At this time, about 1881, inadequacy of supply again began to be felt. Major A. S. Bender submitted plans for the construction of a large earth or masonry dam. But his plans were not then carried out.

In 1886, a devastating fire visited Chinatown. An efficient fire department and an adequate water supply saved Honolulu's business section. There was not, however, adequate protection during periods of drought.

For the next few years, with the exception, perhaps, of two small cisterns or reservoirs built in Nuuanu Valley, primarily to supply power to a small city electric lighting plant, nothing was done to augment the city's water supply.

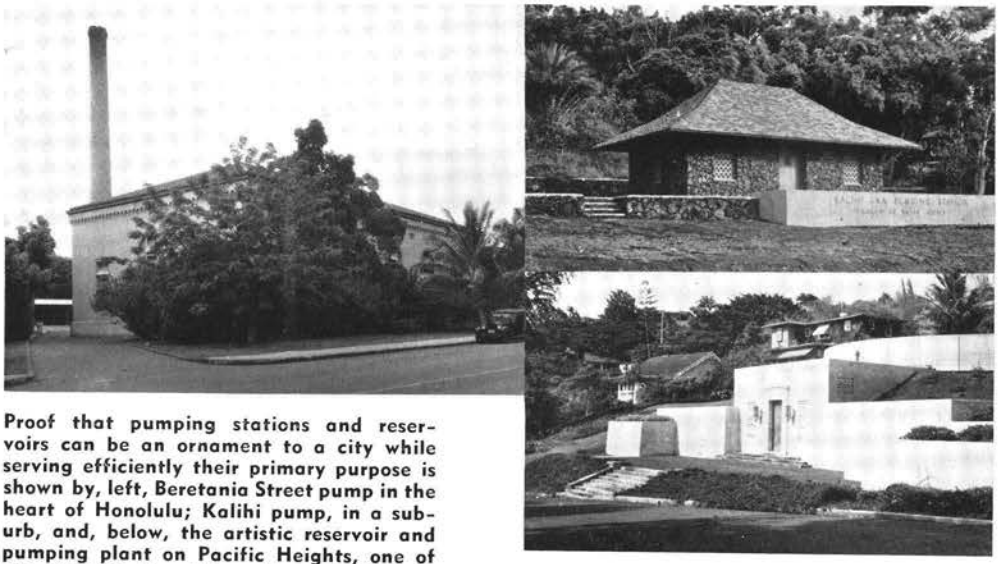
During the winter 1888-1889, Honolulu was visited by a severe drought. Practically no rain fell. A water famine threatened. A fire engine was attached to the artesian well at Thomas Square and the water pumped to Makiki reservoir. This was an important experiment pointing the way, as we now know, to the ultimate development of Honolulu's water system. The experiment was entirely satisfactory.

An appropriation of $3,000 was made for pumping purposes. But rain fell; the appropriation was not used and Honolulu sank back into its normal consumption of water.

Stimulated by the drought, construction of three of our present reservoirs was undertaken and carried to completion in Nuuanu Valley. They had a combined storage capacity of 39 million gallons. At this time also, 1888-1890, the distributing system came in for some attention. A complete system of new mains was laid out and installed.

In 1891, Honolulu was again visited by a severe drought. A fire engine was again attached to the Thomas Square well and pumping continued for 47 days. In 1893, there was another drought and again a fire engine was called upon to pump water from the Thomas Square well.

In 1894, another drought followed. But in the interim a steam pump had been installed at the Makiki well. This equipment proved so efficient during



Proof that pumping stations and reservoirs can be an ornament to a city while serving efficiently their primary purpose is shown by, left, Beretania Street pump in the heart of Honolulu; Kalihi pump, in a suburb, and, below, the artistic reservoir and pumping plant on Pacific Heights, one of the city's fashionable residential districts.

the drought that pumping was accepted as the best means of combating a possible water famine in the future.

In 1895 the Beretania Pumping Plant was installed with a capacity of 3 million gallons daily. By 1900 the Kalihi Pumping Plant, delivering 5 million gallons daily, was in operation. And soon afterwards, the Kaimuki Pumping Station, capacity 3 million gallons daily, came into service.

To check the abnormal and excessive per capita consumption of water, a bill was introduced into the Legislature of 1909 providing for the installation of meters and it became law.

In 1910, the Beretania High-Lift Pump was installed, thus augmenting the City's available pumping facilities a further 3 million gallons daily.

Honolulu's consumption of water had now reached the tremendous figure of 350 to 400 gallons per capita per day. Its drain upon the artesian resources was becoming serious. Since the first well was drilled, the artesian head had dropped from elevation 42.0 feet to an elevation of about 30.0 feet above mean sea level. Honolulu was drawing upon its artesian resources faster than the supply was being replenished. A bill was presented to the Legislature giving the government greater control over the artesian wells, but failed to become law!

In 1913 another drought was experienced. All pumps were worked to capacity and irrigation was restricted to a few hours a day. Yet, in this year, the 1909 law providing for the installation of meters was repealed!

Thus far, the Honolulu Water Works had been the property of, and administered by, the Territory. In 1914, by Legislative Act, the Honolulu Water Works was transferred from the Territory to the City and County of Honolulu.

The City of Honolulu was growing very rapidly and inadequacy of water supply continued to be the major concern of the Water Department. In spite of fluctuations dependent upon dry or wet years, it became increasingly evident that the artesian head was steadily lowering. Waste was discussed.

To augment the supply of pure water, tunneling began to be urged. The campaign against waste continued. Tunneling for the Water Works was begun by W. A. Wall in 1920. It rapidly gained impetus and, for the next four years, continued with unabated effort. Careful measurement later proved, in the opinion of the engineering staff, that much of the supposed new supply was only surface diversion.

During these years, Honolulu had been slowly reaching a crisis in regard to its water supply. The artesian supply was being overdrawn as evidenced by its steadily falling head, and no mountain water had been developed on a sufficiently comprehensive scale to meet the needs of a rapidly growing city. The distributing system and pumping facilities also had become inadequate. It was clearly a case of the city having wholly outgrown its old system.

In 1925 the Territorial legislature created a special commission of five members to be appointed by the Governor and to be known as the Honolulu Sewer and Water Commission. This

act was instituted to meet the public health needs of Honolulu by authorizing the construction of needed sewer and water improvements by special commission with funds provided by a bond issue.

By further legislative action in 1929 the Board of Water Supply was created to take over the water supply function of the earlier commission.

One significant result was reduction of fire insurance premiums by all underwriters operating in Honolulu. That meant adequate water supply. Another obvious result was the brightening of Honolulu's beautiful residential grounds and gardens as irrigation restrictions were lifted. Honolulu has now not only one of the "best drinking waters in the world" but plenty of it for all purposes.

Sugar Tax Helps Hawaiian Farmers

By CHAUNCEY B. WIGHTMAN
Chairman, Hawaiian Agricultural Advisory Committee

Important research and development work made possible by financial assistance through the Jones-Costigan Act.

THE JONES-COSTIGAN Sugar Act amended the Agricultural Adjustment Act by adding sugar beets and sugarcane to the list of basic commodities, and provided for the reduction in acreage or reduction in the production of sugar for market by means of quotas to be fixed each year by the Secretary of Agriculture, according to the procedure established in the Act, and to be allocated to mainland sugar beet and sugarcane producers; to Puerto Rico; the Philippine Islands; the Virgin Islands; American Samoa; the Canal Zone; Cuba; and the island of Guam. Furthermore, the Secretary was authorized, in order to effectuate the declared policy of the Agricultural Adjustment Act, to make rental or benefit payments to those producers who entered into agreements with the Secretary for the reduction in acreage or reduction in production for market, or both, of this agricultural commodity.

To obtain revenue to meet the extraordinary expenses incurred by reason of the national economic emergency and to make effective the declared policy of the Act, provision was made for the establishment of a processing tax on the various basic agricultural commodities. Following the terms of the Act, the rate of tax on sugarcane and sugar beets has been established and is applied at an amount equal to one half of one cent per pound of 96° raw sugar value.

In other words, the processing tax on sugar produced for market is $10.00 per ton of 96° raw sugar. Generally speaking, this tax is collected when the raw sugar is processed or refined.

The total marketing quota fixed by the Secretary for the Territory of Hawaii for the year 1935 is in round numbers, 956,000 tons 96° value raw sugar. When this is marketed and processed it is estimated there will be collected $9,560,000 in processing taxes.

The producers of sugarcane in the Territory of Hawaii have agreed to the terms and conditions of a Hawaiian Sugarcane Production Adjustment Contract which was offered by the Secretary of Agriculture for the purpose of restricting the production of sugarcane to the yearly quota fixed by the Secretary for the Territory of Hawaii. This contract is now in force. As a consideration for the carrying out of the terms and conditions of this contract by the producers of sugarcane, the Secretary agrees to make benefit payments to the producers of sugarcane in an amount equal to not less than ninety per cent of the processing taxes collected from Hawaiian sugar less three fourths of one per cent which is deducted to cover administration expenses. These payments are made quarterly after presentation of proof of compliance with the terms of the contract.

For the year 1935 the total payments to be made to the producers of sugarcane in the Territory of Hawaii who have reduced their acreage and produc-

tion of sugar for market, and complied with the terms of the contract, should amount to approximately $8,500,000.

Recognizing the economic value of diversified crops, the Agricultural Adjustment Administration has adopted a policy of making available for the benefit of agriculture in the Territory of Hawaii a portion of the processing taxes collected from Hawaiain sugars. This is done under Section 15(f) of the Agricultural Adjustment Act as amended, which reads as follows:

Section 15 (f). The President, in his discretion, is authorized by proclamation to decree that all or part of the taxes collected from the processing of sugar beets or sugarcane in Puerto Rico, the Territory of Hawaii, the Philippine Islands, the Virgin Islands, American Samoa, the Canal Zone, and/or the island of Guam (if the provisions of this title are made applicable thereto), and/or upon the processing in continental United States of sugar produced in, or coming from, said areas, shall not be covered into the general fund of the Treasury of the United States but shall be held as a separate fund, in the name of the respective area to which related, to be used and expended for the benefit of agriculture and/or paid as rental or benefit payments in connection with the reduction in the acreage, or reduction in the production for market, or both, of sugar beets and/or sugarcane, and/or used and expended for expansion of markets and for removal of surplus agricultural products in such areas, respectively, as the Secretary of Agriculture, with the approval of the President, shall direct.

As provided for under this section of the Agricultural Adjustment Act, the Secretary of Agriculture, with the approval of the President, is authorized to use funds from the processing taxes on Hawaiian sugar for the general benefit of agriculture in the Territory of Hawaii.

To assist in formulating a well-balanced program for the benefit of agriculture and the development of diversified agricultural industries in the Territory, the Secretary of Agriculture has appointed, as a Hawaiian Agricultural Advisory Committee, Dr. David L. Crawford, President of the University of Hawaii; The Honorable Joseph B. Poindexter, Governor of the Territory of Hawaii; Mr. John E. Russell, Vice-President and Manager, Theo. H. Davies & Co., Ltd.; Mr. Chauncey B. Wightman, Representative of the Secretary of Agriculture and Chairman of the committee. Mr. Horace Johnson is acting as Executive Secretary.

This committee, familiar with local conditions, has been actively engaged in studying and selecting various projects which will solve some of the local problems, and assist in developing general agriculture in the Territory. Special consideration is being given to the development of small crops and the growing of more subsistence foods.

On June 7, 1935, the President by proclamation directed that the sum of $500,000 should be held in the name of the Territory of Hawaii to be used and expended for the benefit of agriculture, and additional amounts may be made available as provided for under Section 15 (f) of the Agricultural Adjustment Act.

Up to the present time the following projects have been recommended by the Hawaiian Agricultural Advisory Committee, and have been approved by the Secretary. (Appropriation for each project is estimated cost for one year.)

Soil Survey: $30,000.00

General survey and classification of the soils in the Territory and to include pertinent information which will be of great value in the development of agriculture in general. Approved March 21, 1935. About 35% complete. Under the direction of the Bureau of Soils, U.S. Department of Agriculture.

Fruit Fly Control: $80,000.00

Control of the Mediterranean fly and melon fly by means of parasites and natural enemies. The destruction of these pests by means of poisons, fumigation, etc. The study and development of resistant varieties of host fruits. Work under way. Under the direction of the Bureau of Entomology and Plant Quarantine, U.S. Department of Agriculture.

Taro Investigation: $50,000.00

Control and elimination of diseases of taro plants. Experiments and development of better methods of fertilization and cultivation, and the introduction of improved varieties of plants. Studies and experimental work leading to increased use of taro and poi. Investigations of preparing taro and its products for market and developing marketing facilities. Work under way. Under the direction of the Hawaii Agricultural Experiment Station of the U.S. Department of Agriculture.

Liver Fluke Eradication: $40,000.00

Study of liver fluke and developing means of controlling this pest. Investigations of various treatments for animals affected by liver fluke. (Will be a great aid to dairies, especially in wet districts.) Work will soon be started. Under the direction of the Hawaii Agricultural Experiment Station of the U.S. Department of Agriculture.

Rat Abatement Campaign: $110,000

To eliminate and control the damage done to fruit and nut orchards, small crop and vegetable products, by poison and trapping and other means of control. Work now being organized. Under the direction of the Hawaii Agricultural Experiment Station of the U.S. Department of Agriculture with the cooperation of the Territorial Board of Health.

Development of Truck Farming, and Improvement of Marketing Facilities for Farm Products: $60,000.00

To assist the small farmers in raising and marketing their products by means of expert supervision, instruction and advice, whereby costs of production may be decreased and the marketing returns increased. Plans completed. Work will soon be under way. Under the direction of the Hawaii Agricultural Experiment Station of the U.S. Department of Agriculture with the cooperation of the Agricultural Extension Service of the University of Hawaii.

Development of Live Stock Feed: $70,000.00

To carry on field experiments to determine the variety of grasses and forage crops best suited to the various soil and climatic conditions of the Territory. Conduct feeding experiments and laboratory determinations of nutrient components. Will be of great value to all ranches and dairies. Work will soon be under way. Under the direction of the Hawaii Agricultural Experiment Station of the U.S. Department of Agriculture with the cooperation of the Agricultural Extension Service of the University of Hawaii.

Development of Tropical Fruits and Nuts: $50,000.00

The introduction of new and better varieties of tropical fruits and nuts and the development of those best suited to local conditions. To study and control various blights, pests and diseases which attack fruit and nut trees, and to assist in solving problems which confront fruit and nut growers. Work will soon be under way. Under the direction of the Hawaii Agricultural Experiment Station of the U.S. Department of Agriculture.

Development of the Poultry Industry: $30,000.00

Development of control methods of various poultry diseases. Experiments and development of green feed and other crops for poultry feed. Study and development of better types of pens and poultry houses to meet local conditions. Maintain a survey of marketing conditions and to develop a more orderly method of marketing poultry products. Plans being made to put this program into effect. Under the direction of the Hawaii Agricultural Experiment Station of the U.S. Department of Agriculture with the cooperation of the Agricultural Extension Service of the University of Hawaii.

In all these projects, the plan of work and the estimated cost is based upon a one-year program. No doubt, as they are developed, there will be brought to light new lines of attack and other angles to consider. The second year's program will be modified to meet these conditions.

Besides these projects which have been approved by the Secretary of Agriculture, the Hawaiian Agricultural Advisory Committee has recommended for approval by the Secretary:

A project for the control of insect pests, plant, and animal diseases, $50,000.00; and,

A project for an adjustment program for the coffee industry, $68,000.00.

The projects approved together with those recommended involve an estimated yearly cost of $626,000.00.

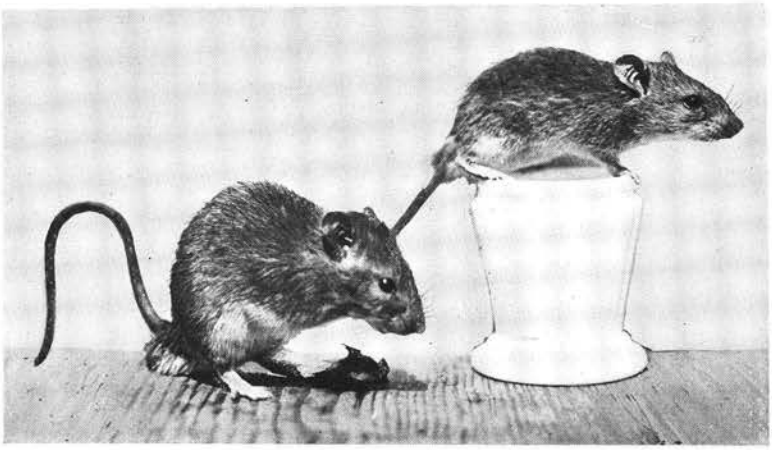
There are other projects being considered which with those already recommended will present a well-balanced program for the development of diversified agriculture which will promote economic security for the entire Territory.

Thus the Jones-Costigan Sugar Act as applied to the Territory results in very material benefits.

The sugar industry, by its coöperation with the administration in effectuating the declared policy of the Agricultural Adjustment Act, whereby production of commodities is restricted to meet consumption demands, and thus assist the producer in obtaining an equitable price for his product, will receive benefit payments amounting to approximately 90% of the processing taxes collected from Hawaiian sugars.

Furthermore, the small farmer, the ranches and dairies, the fruit and nut growers, the poultry producers, and the growers of subsistence foods are now receiving assistance to the amount of over one half a million dollars.

Surely under these conditions the whole Territory benefits, directly and indirectly, from the practical administration of the Jones-Costigan Sugar Act.



Hawaiian rat (Rattus hawaiiensis) male and female found on Popoia Islet off Kailua, Island of Oahu.

The Hawaiian Rat

By ARTHUR SVIHLA, Ph.D.
Assistant Professor of Zoology and Curator, Charles R. Conner Museum
Pullman State College of Washington

ONE OF THE GREAT unsolved mysteries of the Pacific is that concerning the original home and wanderings of the Polynesian peoples. That they are all interrelated is not questioned for there is ample evidence in the similarity of their speech, physical characters, food and customs. However, after many years of isolation on the various groups of islands to which they have migrated, they have come to differ from each other in details, thus exhibiting certain peculiarities but at the same time indicating a common origin. As a result of correlating the similarities of the present Polynesians with those of peoples elsewhere, it is now generally conceded that the Polynesian race originated somewhere in the Malayan region.

In their wanderings these people finally reached the Hawaiian Islands and became the original natives. Here they found no land mammals but along with their goods and chattels they brought the pig and dog. Little did they realize that with them also came two stowaways which were later to become pests and nuisances. These were the ubiquitous house mouse infamous the world over and a rat which is now known as the Hawaiian rat. This rat is just as native as the Hawaiians themselves for together they came to the islands, stayed and multiplied. Their relationship is similar to that of parasite and host in which the rat derives all the benefit.

A prominent scientist has shown that it is possible to trace the evolution of certain birds not only by their similar characters but also by means of their parasites. These parasites, which live on the birds from generation to generation, have not kept in step with the evolution of their hosts but have remained static so that now it is possible to trace relationships of the birds back to a common origin through the presence of the parasites. A somewhat similar state of affairs exists between the Polynesian peoples and these rats which they have inadvertently carried with them in their wanderings. The native Hawaiian rat belongs to a group of rats which is widely distributed throughout the Pacific islands. The members of this group are in general similar but differ in minor respects in just the same way as the Polynesian peoples differ from each other as a result of isolation on the various island groups to which they have migrated. These changes have come about gradually for even now the Hawaiian rat differs but slightly from a member of the same group which occurs in the Malayan region. Thus it is possible that the original home of the Polynesian peoples and that of this rat is the same.

Just as the original natives unintentionally brought the rat with them, so the white man when he first came to the Hawaiian Islands introduced several species of rats which have lived in close contact with him for centuries. These rats are the house or Norway rat, the black rat and the tree or roof rat. These,

together with the native Hawaiian rat and the house mouse, complete the list of rats and mice in the islands today.

When scientists first arrived in the islands and began to take an interest in the fauna, they thought that the native rat had become exterminated as a result of the introduction of the white man's rats, for then the native rat was known only as a vague tradition in old Hawaiian legends. Hunting the *iole*, as it was called, figured as a pastime in these legends and rat-killing contests were held in which the competitors used small bows and arrows.

In 1931 Mr. F. G. Stokes became interested in the fate of the native rat after he had found a number of rodent bones in the vicinity of a native temple on Kahoolawe. These bones turned out to be those of the supposedly extinct rat. Further search revealed the fact that they were still thriving on Popoia Islet in Kailua Bay, Oahu. It was thought that they had been driven to this and similar out-of-the-way places through competition with the white man's rats. This was in 1915 and then as in even comparatively recent times this rat was considered on the verge of extinction. In fact, Stokes intended to breed them in captivity and release them on various islets so that they could increase in numbers. In 1931 Dr. J. F. Illingworth called attention to the fact that they were evidently widely distributed on the Islands of Oahu and Maui. Work done by the Territorial Board of Health on the control of rodents on these two islands now shows that far from approaching extinction this rat is only exceeded in numbers by the house mouse.

The supposed scarcity of Hawaiian rats was due in part at least to the fact that for a long time they were considered immature tree or roof rats. This confusion may be understood since the Hawaiian rat is the smallest rat in the islands and approaches the tree rat in coloration. However, with specimens of each rodent before one, the distinctions are very apparent. The tree rat is larger, has a larger hind foot and ear, longer, stockier tail, greyer color and a marked yellowish area on the breast. The house rat is a stocky, dark-colored animal with a tail shorter than its body. The black rat, as its name implies, is readily distinguished by its black color. The house mouse is too familiar to need description and is not likely to be confused with the Hawaiian rat, which is intermediate in size between this mouse and the other species of rats occurring here.

At present Hawaiian rats are known to occur only on Oahu, including Popoia Islet where they were first rediscovered, Hawaii and Maui. Skeletal remains are known from Kahoolawe and Kauai. So far no specimens have been taken from Molokai, Lanai, Niihau or any of the smaller western islands of the Hawaiian group. There seems no reason why they should not occur on these various islands but so far no one has actually collected them there.

The native rat is rarely found in houses but is primarily a field rat living in gullies and gulches overgrown with thick tangles of lantana, cactus or guava where there is abundant food and cover. They make their nests in rock piles or walls or in burrows in the ground. These burrows are for the most part shallow and simple in construction when compared with those of other burrowing rodents. The nests are usually in the lower parts of the runways and are made of grass loosely massed together.

One of the natural enemies of the Hawaiian rat is the mongoose, which has been introduced on several of the islands to control rodents in the cane fields. Although its activities have been criticized, especially by poultry men, yet there is no doubt that it has helped to keep the rats in check. The fact that the mongoose is largely diurnal in habits whereas rats are nocturnal considerably lessens its value as a ratcatcher. However, it has been found that rats and insects are its chief articles of food.

There is a prevalent idea that the mongoose and rat have crossed. This has absolutely no scientific basis especially so since these two animals belong to widely different orders of mammals, the mongoose being a carnivore while the rat is a rodent. Nor is there any basis for the statement that since its introduction the mongoose has chased the rats into trees and so cannot catch

them. The rat that lives in trees is a tree rat living there habitually regardless of the presence of the mongoose.

The native owl is another natural enemy of rats, especially those which live in fields. In some localities this owl may be seen flying over the fields in search of prey at almost any hour of the day. Regurgitated pellets have been found to be composed of nothing but rat fur and bones. However, these birds are not numerous and so play a small part in keeping down the rat population. The native hawk is so rare that its rôle as predator is practically nil. Dogs and cats which roam the fields no doubt catch and destroy many rats but little actual data are available concerning their value as rat exterminators.

Living in fields, the native rat also damages crops under cultivation. At present the extent of its depredations is not definitely known but the future possibilities of crop damage are limited only by the rat population. With few natural enemies and with food and cover abundant, conditions are ideal for rats to reproduce and multiply. This potential increase in numbers must, therefore, be controlled by man with traps, poisons and other devices.

Hawaii, a Friendly Land*

By HOMER HAYES, JR.

HAWAII is as integral a part of the United States as is the State of Texas.

We of Hawaii are proud to boast of the fact that we pour in the federal treasury more money, annually, in the form of taxes, than fourteen States of the Union.

But two steps lie between Hawaii and a full-fledged state: the first, that the president of the United States appoints a governor, who is always an island resident, and secondly, our delegate to Congress has only the right of speech but no vote.

Our territorial government functions as independently of the national government as does that of any State. The territorial Senate and House of Representatives have in the past 37 years—since the annexation—made our laws and shouldered the responsibilities in a noble manner.

Hawaii is truly a melting pot in the fullest meaning of the term. It is abnormally so. This is due, directly, to the geographical location of the islands and, also, to the labor conditions which have arisen as a result of the rapid development of Hawaii's agricultural enterprises which necessitated the importation of foreign labor. The Portuguese, the Chinese (until the anti-Chinese labor law), the Japanese, and more recently, the Filipinos came in as laborers. The others — French, Germans, Italians, Russians, English and almost every other conceivable racial representative either came across the islands while traveling transpacifically and so fell in love with their charms that they decided to adopt them or else came with the definite purpose of entering a comparatively virgin field.

Imagine, for yourselves, what a grand conglomeration of races has developed at this Pacific intersection which is but little more than a pinpoint dot on the map. And yet, Ben Robertson, Jr., an American sociologist, says, "Few peoples in modern times have developed a state with more intellectual wisdom, with greater industrial possibilities or with finer social understanding than the people of Hawaii during their 37 years under American rule."

This conglomeration is what the late Wallace R. Farrington, former governor of Hawaii, called "the world's greatest adventure in friendship."

We asked to be annexed to the United States and, thus far, have been happy as Americans. The younger generation, like myself, has been mighty proud to be born full-fledged American

* An address before the World Fellowship Society of Los Angeles, in competition with youths from all parts of the world. Homer Hayes, son of Homer Hayes, M.D., and Mrs. Hayes, of Honolulu, tied for first place.

citizens. Speaking about the younger generation brings to the front the problems created by the "white collar" educated offspring of those peoples who came to the islands for the sole purpose of working in the sugar and pineapple fields. These young people, who have proven to be surprisingly excellent intellectuals, have entered into their new callings with an attitude almost perfectly suited to the conditions.

Ben Robertson says of them, "All give, all take, none attempt to dictate to the other."

As a Hawaiian I am proud further to quote Mr. Robertson when he says, "Much of this condition has resulted from the friendly disposition of the Hawaiian. He has taken the Chinese from the workshop; he has broken down the formalities of Japanese manners; he has mellowed the stern Puritanism of the missionaries from Massachusetts."

Children of all races play together in the fields, in the schools and on the beaches. Regardless of race, color or creed, Babe Ruth is their common hero, Norma Shearer the lady of their dreams. No kings, no dukes, no mikados are their ideals, only the president of the United States. When together these young people speak but one language—English. While in the Orient the Chinese and the Japanese are shooting each other down, in Hawaii it is a common sight to see a Japanese boy courting a Chinese girl, or vice versa.

Through intermarriage, the *hapa-haole*, or half Hawaiian, half Caucasian, is gradually becoming a race in itself. In fact, this new mixture is increasing more rapidly than the pure Hawaiian is dying out. Lillian Syme in an article What About Hawaii? says, "In scientific circles, to be sure, Hawaii has long been famous as an invaluable laboratory in genetics and racial relationships, a test tube paradise for biological and sociological students."

Friends, the Hawaiian has but one word for this happy racial intermingling —*Aloha*. This word, when applied in this instance, means Love Thy Neighbor. The spirit of aloha has been so infused within the very souls of the present inhabitants of Hawaii that a newcomer to the islands who thinks in terms of racial prejudices can keep aloof for but a short time under the magic spell cast by friendly, smiling, brown, blue, gray or almond eyes. He, too, soon becomes one of the "happy crowd."

Therefore, as a representative of this small land across the seas, I offer to the mighty nations of the world the spirit of aloha, and ask them to peep into our happy paradise and from that take a lesson in "world fellowship, the basis of world friendship."

If We Could All Be Schooled in Hawaii

By MARGARET BAIROS
Exchange Student from the University of Hawaii
to Occidental College, Los Angeles, California

I WANT TO show you a picture of registration day on the campus at the University of Hawaii. A *malihini* (newcomer) appears. She is a smartly dressed co-ed from Mills College, California. She scrutinizes the long line of students, and frowns. Can she really be in America with all these Orientals, these dark-skinned Hawaiians and Filipinos, these Latinate Portuguese and Spanish? She looks around for a *haole* (white) girl, to inquire about the dean's office. She cannot seem to find one among the heterogeneous mob, so she approaches a small Japanese girl, with long heavy black hair arranged in a modern coiffure.

"Can you tell me where I can find Dean Andrews' office? I am new here."

"Yes, right over there," pointing down the long corridor filled with students of every race and color imaginable. Anything else I can do for you?" And the almond-shaped eyes of the girl became narrower, as she smiled at the stranger.

"Thanks!"

The Mills co-ed walks off, puzzled at

the perfect English the Japanese girl had used. She turns around to get a good look at her chic linen outfit with the cocky little piqué hat to match. She frowns in bewilderment. She is very much surprised!

It is natural for anyone not acquainted with life in Hawaii to doubt the feasibility of a "melting pot," a city where people of radically different religions, race, and nationality, mingle and live together harmoniously. "The theory's good, surely, but you can't tell me I'd appreciate an Oriental sitting next to me in class!"

That attitude is obliterated in the Islands. In fact, we old-timers there look upon racial prejudice as ignorance!

Probably nowhere else in the world do races get along as beautifully as they do on the verdant campus in Manoa Valley, Honolulu. As children we learn to respect and admire the cultures of the various races.

My first playmates were Japanese, who spoke English as well as I. I learned to eat rice out of a bowl with chopsticks when we played house, and to say "ohio" for "hello." I understood the meaning of the large red paper fish that were hung from the bamboo poles over the house in honor of Japanese Boy-Day, every May 5. A fish for every boy that will carry on the name of the family and survive in power and strength forever, they say.

I saw the children dress themselves in their complete kimono outfits with the little white heavy cloth stockings with the queer separation for the big toe and the rest of the foot; with high wooden slippers that clapped as they walked along the sidewalk but which they left outside their door before entering the house lined with neat mats.

I watched the intricate operation of the girls putting on the many-colored *obi* at the back of the kimono sash. I would sit and listen to my friend Suzuki play her weird-sounding Oriental music on the long-stringed instrument and learn to hum the minor tunes. I would watch her read the jumbled characters out of the paper-bound Japanese language book, which she read backwards. I would clap with the rest when she did for us the native fan dance in costume with a pretty parasol on the grammar-school programs. We would attend the colorful lantern parades together, and she would explain with enthusiasm the various floats as they passed by. We saluted the same little American flag together as American citizens, sang together the Star-Spangled Banner and the national Hawaiian anthem, Hawaii Ponoi.

Every Sunday morning we walked hand-in-hand to the little near-by Kaimuki Christian Mission and sang the same Christian hymns together. Did I consider myself better than she because my skin was white, because my eyes were hazel and rounder than hers, because my name was not Ozawa? How could I?

From the Japanese we learn to be quiet and reserved, learn to tolerate other people and make friends in a silent manner. Their houses are immaculately clean, their dress very precise and neat, and their appreciation of any kindness unforgettable. Their culture is centuries old, with a traditional respect and honor for parents and elder people which is remarkable for its persistence in Twentieth Century life today.

I am reminded of an interesting incident, which may prove the point I am trying to make about how Americanized the Orientals are in Hawaii. Of course, anyone born in the Territory is an American citizen by birth, whether or not his parents are full-blooded Chinese, Japanese or any other foreign race. One little Chinese playmate of mine, American by birth, was dressed in a complete Chinese pajama costume one day, and upon seeing her, I said: "You look so nice in that, Ngit, why don't you wear it more often?"

And she replied, much to my amusement, "Oh, I'm afraid people might think I'm Chinese instead of American!"

It seemed perfectly natural for me to receive odd-looking packages wrapped in flaming red paper, hard-boiled eggs colored red, and little cakes of smooth white and red dough every time Ngit's family had a little one celebrating its month-old anniversary. I delighted in the rites that the family held sacred every time a new baby was a month old. We ate lichee nuts, rice candy and

Happy race relations exemplified on the University of Hawaii campus by Chinese, Anglo-Saxon, Caucasian-Hawaiian, Japanese and Portuguese.

shot firecrackers! It didn't seem funny to me, as I had experienced a part of the old culture of China along with my natural childhood.

From the Chinese we gain that delicate beauty, so well expressed in their drama and the lovely hues in the royal costuming and rich headdresses used in their stage work. For every motion on the stage there is a specific pattern that takes years of training and grace and skill to perform accurately. A sense of duty and determination and perseverance is inherent in the modern Chinese of today. Biologically, that is the reason why scientists claim that the Hawaiian-Chinese mixture is so good a race. There is just enough of the determination of the Oriental and the slow-going qualities of the Hawaiian.

I saw my first hula dance many years ago as a child. My little Hawaiian friends would delight in singing to their ukuleles and dancing in their fresh-green "ti-leaf" skirts at any time. They did not consider themselves entertainment. They enjoyed dancing! I would visit the large native family and sit on the cool lanai with eyes wide open as each one of the happy brown-skinned girls would dance and sing. I learned from them to sing the old Hawaiian melodies and learned to play the ukulele, and learned how to soften the "ti-leaves" and tie the stripped leaves into skirts, learned to weave flowers into leis and eat poi with my fingers.

To the Hawaiian the natural grace and beauty of the body is sacred. Their self-expression is revealed through their physical grace. And now when I see mainlanders, who have never learned what the word "hula" means, get up and manifest an ultra-modern "shimmy" or Hollywood chorus interpretation, as recently viewed in "Flirtation Walk," I want to get up and scream!

The hula means to the Hawaiians and to us "kamaainas," just what the Irish jig does to a native of Dublin. It is as natural and as moral to have part of the leg showing in a hula skirt as it is for a Scotchman to wear a short kilt!

With graceful movements of the hands, the hula interprets "meles" or chants. Each twist and turn of the hand forms a pattern which means something—it might mean the rain or sea or love.

I was sorry, but not at all surprised, to hear one of the California co-eds warn me that "perhaps you had better not do the hula before a mixed audience. The college might object!"

What about the social problem, now, you ask? As college men and women we work together. We "haoles" (white) take courses in the culture, art, music and drama of the Orient, given

by such outstanding professors as Dr. Peng-Chun Chang, prominent Chinese philosopher of today, and Dr. Shao Chang Lee of China. We have a full-blooded Hawaiian, John H. Wise, to instruct in the native language and Mrs. Dorothy Kahananui to preserve the old traditional songs used in Glee Club work on the campus. Thus every student becomes educated to understand the cultures and arts of the various races. We understand the background of these foreign peoples; we work with them, side by side in the classroom, and we understand them!

Last year the student-body president was a white boy, born and raised in the islands; the vice-president, a native of India, and the secretary, a Japanese-Hawaiian girl. The college paper, *Ka Leo*, was edited by a Chinese boy with a staff working under him, including "haoles," Japanese, Chinese, Korean and Hawaiians. Everyone got along splendidly without the slightest hint of any racial superiority or inferiority complexes.

Each major race on campus has its own fraternities and sororities. No preference is given to the "haole" bridge parties or wedding or other social affairs in the newspaper write-ups. And at college mixers, held in the large gymnasium, it is remarkable how all the organdie-clad co-eds of seven major races get along. Snobbishness is nonexistent on the campus at the University of Hawaii.

Nowhere else in the world is there existing today an organization like the Theater Guild of the University of Hawaii. Every year each of the four major racial groups . . . Japanese, Chinese, Caucasian and Hawaiian, presents a play of its own nationality with a complete cast of the respective races. Last year, under the direction of Professor Arthur E. Wyman, former codramatist with Christopher Morley in Hoboken, New York, the university presented "He Who Gets Slapped," a tragedy by Leonid Andreyev; "Son of Chao," translated from the Chinese by Voltaire; "Hizakurige," a Japanese comedy, and "Queen Lei," a pageant in Hawaiian, which was presented on the colorful Lei Day.

Elaborate and authentic costumes and scenery are used by each of the complete Japanese, Chinese, Hawaiian and Caucasian casts. Because of the insight we gain into the cultural foundations we do not laugh or sneer ignorantly when the Chinese stage the characteristic battle scene, nor when the Japanese talks in fanciful symbolic language, nor when the Hawaiians dance to the chants in the lei pageants. The élite of Honolulu attends these productions, and two years ago we were favored with Bernard Shaw's presence at "Where the Blue Begins," directed by the author himself, Christopher Morley.

For years now people have attended various conferences on interracial problems. Many fine theories have been devised, but considering the lengthy discussion groups and intense study of the matter, how many typical mainlanders could, or better, would be willing to throw down their race prejudices, so that a practicable and a workable plan would eventually evolve? Very few!

Now let me give you another scene. It is registration day again, and this time the setting is a California university. I am a strange girl—inquiring for information concerning the dean's office.

I am helped, pleasantly, by students of my own color which is, of course, white like yours. And they are so gracious in their kindness that I am very glad of this year on the mainland, this opportunity to round out the cultural sphere that began with my childhood in the crossroads mixing pot of the Pacific.

There is one thing, however, that even yet baffles me occasionally: When I explain that I was born and reared in Hawaii, people invariably say with surprise:

"Oh, . . . you're the first native I've ever seen."

And when I laugh and explain that I am not Hawaiian or part-Hawaiian but wish I were, some of them raise their eyebrows slightly.

That makes me rather glad my education has been so complete.

Old-Fashioned Ways in Modern Japan

Intimate sketches of days and nights where the spirit of ancient times lingers in city and village.

By CHARLES R. FRAZIER

(Illustrations from photographs by the author)

NEITHER the Imperial Japanese Railway nor the Japan Tourist Bureau publishes any descriptive matter in English about that part of the San-in railway line running from Shimonoseki on the northern coast along the Japan Sea until Taisha is reached. Yet on this route, skirting the edge of the water, is some of the most fantastically Japanesy scenery in all the great Empire.

Here life is more primitive and the country more sparsely populated. There are no cities—only fishing villages. The coast line is more rugged. Every narrow valley opening out into the sea has its cluster of grass-roofed huts and fishing boats.

Pine trees cling precariously to otherwise bare rock islets all along the coast, their roots like long crooked fingers and their trunks bent, gnarled and haggard from their desperate effort to hold on to life. How they exist, let alone grow, on these soilless rocks, buffeted by every wind and storm, is beyond my power of imagination.

I was on my way over this route to see some of the out-of-the-way places in Japan. I wanted to take pictures and I got them. I wanted insights into Japanese manners of living—the ways of the simple, common people—I got them also. My traveling companion was my wife. She helped with the pictures and kept a diary. But most of all she helped me by showing keen appreciation for all the charming experiences we both enjoyed. We traveled as far north as Sapporo and as far south as Kagoshima. But the compass of this article can cover only a few spots. If you like these places you would like every day of three months we spent in Japan. We were there in the autumn season, which we both count equal with springtime as the ideal periods to visit the Land of the Rising Sun.

Had I believed tall stories at home about what would happen to me and my camera if I tried to take pictures in Japan I would have left the camera behind. But, knowing something about the good sense and friendliness of the Japanese people, I made my camera as conspicuous as possible by hanging it around my neck and walked boldly off the steamer at Yokohama. As I expected, nothing happened; no one took the slightest interest in the blatant camera crying for notice as it dangled before me.

The Japanese are very serious when they prohibit sketching or photographing in their fortified areas—a little too particular, I think. But it's their country and they have a right to make the rules. Imagine me or any foreign visitor trying to take pictures of navy equipment at Pearl Harbor in Hawaii, U.S.A. It cannot be done in America or any country; likewise it cannot be done in Japan; only, in Japan there are more restricted areas. Certain Imperial Castles and sacred shrines cannot be photographed without one's being stopped by the authorities, especially if you aim your camera directly at them. From what I can gather they interpret it as lack of respect. In some temple grounds a local photographer will have a concession that might interfere with your desire to make a picture. But generally speaking Japan offers a wealth of opportunities for picture taking without any restriction whatsoever, and if you smile agreeably when you ask some one to pose you will get friendly coöperation. I was

Rarely photographed is this image of Taiko Hideyoshi in a shrine especially built to house it at Kyoto. Here come all and sundry to honor the memory of Japan's greatest military genius who, in the 16th century, brought all Japan under one undisputed rule for the first time. A ten-minute exposure was necessary to obtain this photo with the author's little Leica.

accorded courtesy and hospitality everywhere I traveled.

One thing I know; it doesn't pay to cheat against the rules in Japan. The Japanese can be just as disagreeable to those who ignore the rules as they can be courteous to those who play fair. Even those who do play fair sometimes suffer for sinners who have gone before them.

I carry a Leica and with this little instrument have made thousands of pictures in Japan from Hokkaido to the southern end of Kyushu without a single unpleasant experience. From the efficient Japan Tourist Bureau I got maps showing the restricted areas and then was very careful to observe the rules.

When we reached Taisha we lodged at Inabaya, a comfortable Japanese inn. The people here retain much of medieval customs. Arrangements for our coming had been made in advance, so manager, maids and boys met us at the entrance as in days of old, on their hands and knees with heads bowed to the floor as a sign of welcome. We were received just like daimyos of old, our courier told us.

The people at native inns marveled at the amount of our baggage. A Japanese traveler need carry only what he has on his back. He puts on *yukata,* a cotton bath garment which serves also for night clothes. Over the yukata he wears, in the autumn season, the *tanzen,* a padded, striped silk kimono. Both are furnished to all guests by the inn. *Zori,* slippers, and *geta,* wooden clogs, take care of his feet. In the wash room is a tooth brush sealed in a paper envelope, tooth powder or salt, a shaving brush and soap. The maid washes his shirt, collar, handkerchief and socks and has them fresh, dry and ironed when he needs them again. So he uses the clothes supplied by the inn and starts out fresh in his own garments next morning.

The hotel proprietor escorted us in the morning to the great Izumo Shrine, second only to the shrines of Ise as the holiest in Japan. Lafcadio Hearn was the first European to cross its sacred portals. Read his description of it, see the shrine, then, fully to appreciate it, read again what Hearn wrote.

To walk through native villages is of never-failing interest. On our way to the sand bathing beach, through Taisha village, we heard the sound of spinning-wheels. Women were boiling cocoons and winding the silk on to square reels as they manipulated the spinning-wheels by hand and foot. After we saw how it was done we bought, for only thirty sen, a skein of the raw silk, reel and all, to keep as a souvenir—*o-miyage,* the Japanese call it. It was the time of *Kami-arizuki* (month of the gods) in Taisha and we saw several small shrines where the Shinto gods were holding their annual meeting to arrange marriages among the Japanese people for the coming year. All the rest of Japan must get along without gods during this important time. Thus the

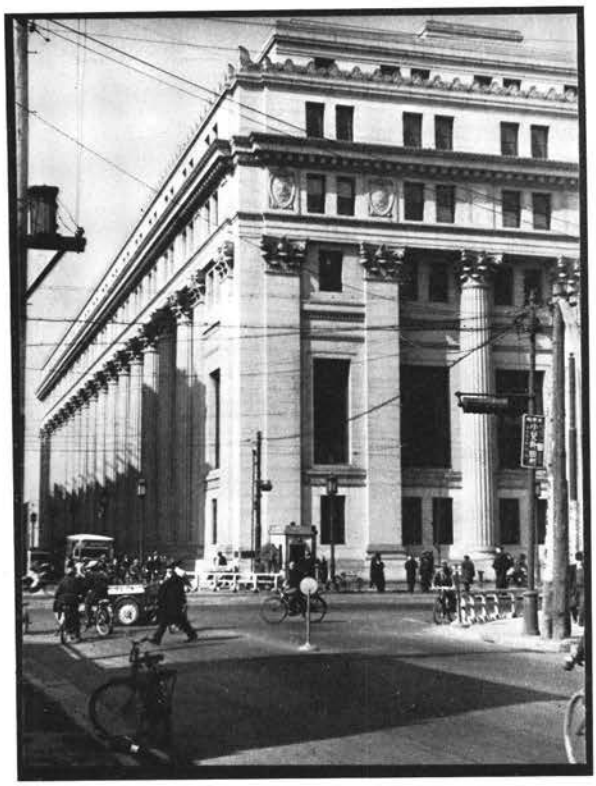
month of October (lunar calendar) is called elsewhere in Japan *Kannazuki* (month without gods).

Next day when we came to Matsue we were shown some simple relics once used by Lafcadio Hearn. Here was his double rack of tobacco pipes, about twenty of them, from each of which he took his two or three puffs of smoke from fine-cut Satsuma tobacco, using the pipes successively from the upper rack and laying them, when he finished smoking, on the lower racks to be cleaned. Then there were *hibachi* (charcoal braziers), *zabuton* (cushions) and other household articles. The most interesting relics were English newspapers on which he had scribbled, with a Japanese *fude* (brush) lessons in pictures for the instruction of his son.

We had tea in the house where he lived when he taught school in Matsue. His memory is held in simple reverence by the Japanese people of this district. A memorial hall has been erected next door to his old home. In it are displayed the personal effects which we saw and such other Hearn memorabilia as have been collected. Admirers of Hearn, possessing letters and other material, who would perpetuate his memory in a place he loved, should communicate with Matsue municipal authorities.

We met, by chance, Mr. H. J. Woodman, an American who is teaching school in Matsue. The following day Mrs. Woodman led us up thirteen hundred granite steps (we didn't count them) past many small shops on the way up where water in small brown jugs is sold to cure any eye trouble you might have. An old, old couple, the

Transportation old and new in Japan: Top, afoot for obvious reasons in the mountain villages; next below, papa-san taxi, very old anywhere; next, heavy hauling where the teamster always walks though the uninitiated would hardly dare to expose a defenseless back to one of those sour-tempered little Manchurian stallions here meek enough and carefully protected from rain by the straw cape also worn by his master; below, left, the author's wife seems happy enough in this hill-country sedan, and, right (standing behind fender), despite difficulties of navigation by modern means through village streets of standard gauge — for feet.



Modern Japan expressed in adapted architecture such as Mitsui Bussan Kaisha Building on this busy Tokyo corner and the ubiquitous bicycle, motors, electric service, traffic signals amplified by barriers (corner, right) to prevent pedestrian crossing yet echoes of the past expressed in kimono-clad gentlemen, sentry box (opposite corner) for watchful policeman.

woman almost totally blind, made a pathetic picture as they circled the temple and prayed before the altar each time around that the darkness might be lifted from their sight. We prayed for them in our own way, too, as they toddled before us hand-in-hand down the steps when they had completed their supplications for the day.

When we left on the train next morning Mrs. Woodman handed my wife a package. When we opened it on the train we found a hearty and welcome luncheon of dainty sandwiches.

In middle November we reached Kyoto. Mr. Shimomura, head of the department stores, Daimaru, Ltd., of Osaka, Kobe and Kyoto, was at the train station to meet us with his big Fiat car, and conducted us through the Nijo and old Imperial Palaces.

At Nijo we learned something new about insect control. Gardeners were busy tying broad belts of straw around pine trees in the palace grounds. We thought they were intended to keep the trees warm in the coming winter, but learned that insects seek the warmth of the straw instead of entering the ground. When winter comes and they are comfortably located in their false security the gardeners bundle up straw and insects and burn the lot.

We wanted to try a city Japanese-style hotel, so we went to Hiiragiya. Go, in fancy, to the inn with us now and judge whether you would like it.

We drove up a narrow street in a motor car to the entrance gate of the inn—'rikishas are merely a memory now of worse days. A few steps through a tiny garden brings you to the door. Of course, you have made your reservation and apprised your host of the time of your arrival. Pretty *neisan* and boys, and probably the manager, Mr. Nishimura himself, will be there to greet you with their chorus of *"Yoku irrashai mashita!"* (Welcome). Take off your shoes and slip your feet into soft felt slippers placed there for you, then pass all your wraps to the neisan whom you follow to your rooms. Step out of the slippers before entering your room. Japanese people do not wear slippers on the soft, clean straw *tatami* (mats).

As you enter, a pleasing perfume of delicate violet incense will greet your nostrils. In the room is a handsome lacquered hibachi that was once a treasure in a high-class home. It is very much of a treasure now, and you will admire it more and more each time you look at the design worked in gold on its broad brim. *Danna-san*, head of the family (myself, in this instance), takes the place of honor nearest the *tokonoma* (recess for pictures and ornaments). You sit down, or squat if you can, on luxurious silk zabuton, feeling that they are almost too beautiful to be on the floor. While the maid is preparing tea you glance about the room and notice a jolly bronze *Hotei-sama* (fat god of contentment) on a low teak table in the tokonoma in front of the *kakemono* (a long scroll hanging in the recess). It is decorated with some queer-looking

writing which is an ancient Chinese poem of mystical sentiment that even few Japanese can understand. The rest of the furniture is very simple. A low square teak table is in the center of the room. The ceiling is in handsome polished native wood. There is no sign of a bed in this room or in the smaller one adjoining. But in the latter is a small dressing table with mirror, to be used while you sit on a zabuton before it. A handsome lacquer rack provides a place for some of your wraps. Your heavy clothes are placed on hangers and put into a closet behind a sliding paper door.

There is also a smaller hibachi, which can be easily moved about; a telephone and writing table with paper, ink and blotter.

Outside the room is a narrow veranda. Here a concession is made to guests—Japanese people, too—in a foreign-style high table and two wicker chairs. It is romantic to sit on the zabuton, but the chairs provide relaxation if you get tired. Many modern Japanese cannot sit for long on the floor with comfort. The lavatory in this inn is strictly Western in all its accommodations.

The maid has brought in *chawan* (tea bowls) half filled with Japanese green tea, also sweet dumplings or some sponge cake to eat with the tea.

The bath will soon be ready. You must prepare for this by taking off your clothes and donning a cotton yukata over which you put on a tanzen. You will probably fall in love with both and want to own them. I did, and persuaded Mrs. Nishimura, the proprietor's wife, to have a complete outfit made for me, including the handsome *obi*—for men—and a *haori* (coat). The maid folds your under garments, shirt and trousers and lays them in a basket tray with as much care as she would place a baby in a cradle. *Furo-ban* (bath man) arrives. The honorable bath is ready. It is a private bath but the tub, of immaculate white *hinoki* wood, is large and roomy and you may take it *en famille* if you wish.

The bath may be mighty hot. The Japanese like it that way. You may run cold water from the tap into it if you can't stand the heat. I have learned by practice to take it as hot as the Japanese. All it does is to make a rosy glow on my skin.

Of course you don't wash yourself in the beautiful tub. The tub is only for relaxation. You scrub yourself with soap and hot water from a tiny wooden tub while you sit on the little stool provided for the purpose. *Furo-ban,* or a maid, will scrub your back if you ask for such service, but otherwise will not intrude. The washing over, you let yourself down into the tub by easy stages to accustom your skin to the heat and, with the water up to your ears, just dream about anything you like. Hiiragiya furnishes luxurious towels and a new cake of soap. In the ordinary country inn, you must carry these things with you. The old-fashioned Japanese do not dry themselves but simply put on their yukata. I have tried their way and it is marvelous how quickly one becomes dry after a hot bath in this climate.

The bath over, the neisan will bring in the dinner. You have ordered that before the bath. If you are a tyro I recommend a *sukiyaki* dinner of vegetables and Kobe beef cooked on a brazier before you by the charming maid. Everybody likes sukiyaki. But if you want delicious food more Japanesy in character let me suggest a menu:

Start with *sui-mono,* a clear consommé, containing probably a bit of mushroom, bamboo shoot, oysters, clams or fish, served hot in a covered lacquer bowl. Then you will have fried lobster, called by the Japanese *ebi*—pronounced like the first two letters of our alphabet. If you order simply "Ebi," they will most likely bring you prawns; but tell them *"Ise-ebi,"* that means those sweet, small lobsters so delicate of flavor in Japan. The prawns can be cooked into *tempura* (fritters) but Ise-ebi is best fried without batter. Order also *chawan-mushi.* I cannot promise what you will get, but you will like it. It is a custard containing bits of vegetables, chicken, shrimps or whatever the cook fancies at the moment. With these things will be served sliced small cucumbers, *daikon* (garden radish), and some Japanese pickles, some of which you will *not* like. You finish up

There is at this inn at Lake Towada no sign of a bed but futon—quilts upon the floor (foreground) piled thrice high for the foreigner unaccustomed to hard beds —small dressing table with mirror (maid sitting before it), classical bronze figurine on a low teak table before the kakemono (scroll, right background), and there is your hotel bedroom, Japanese style.

with rice and fruit. Just at this season they have *nashi* (Japanese pears), *kaki* (persimmons), *ringo* (apples), *budo* (grapes) and bananas, all of fine quality. You can have coffee, beer, or Ceylon tea with trimmings, if you want them; otherwise you will be served Japanese tea without milk or sugar.

If, at the finish of the dinner, the maid brings in a double-deck dish and you see all the others take the mint-flavored warm water from the upper dish, rinse their mouths with it and then eject it into the lower dish, don't be shocked. Just do it yourself. It's a custom of the inn, and very refreshing.

Dinner over, I like to do a little *bura-bura* (strolling) around the shops; or go to Theatre Street and see the night life. The maids will see you off, beseeching *"Ohayo okaeri nasai"* (a quick return).

When you get home you will find the dining room transformed into a sleeping room. Being a Westerner, unaccustomed to a hard bed, you will find your couch piled up three times as high with *futon* (quilts) as are provided for a native guest. The long futon you are to sleep on are of the softest silk overlaid with real linen sheets. Your bedcovers are downy comforters of pretty-patterned white-lined silk, with great sleeves for your arms. You sink into this luxurious couch and are soon in the land of dreams and quiet sleep.

In the morning you will open your eyes and pinch yourself to prove that you are not in fairy land. Now, step out on your little veranda and look down into your garden; enclosed within the compass of a thirty-foot strip of land, but containing some pretty trees, a passion-fruit vine with ripe fruit on it and a goldfish-stocked pond with waterfall and bridges.

Breakfast consists of fruit, good Brazilian coffee, oatmeal, ham and eggs or fried fish, toast and rice. The butter—from Hokkaido—is good and all the food is wholesome and fresh. My wife likes sui-mono for breakfast. That much is Japanese style but all the rest is foreign. The prices at this inn are about the same as the Kyoto or Miyako hotels.

I cannot tell you about *all* the good things; I simply say, try it for yourself when next you are in Kyoto. If you are staying at the Splendid Kyoto Hotel ask Otsuka (Oscar), the manager, to arrange with Mr. Nishimura for a night at Hiiragiya. Both are Rotarians and will treat you well. The *sayonara* (if it must be) is as affecting as the greeting. You will cherish the experience at a Japanese inn.

One day we went to Koyasan, where a Buddhist monastery was founded in 819 A.D. by the renowned Shingon priest, Kobo-Daishi. Koyasan is a mountain about 2,800 feet high on Kii peninsula, 44 miles south of Osaka. The monastery reposes peacefully on its summit and the experience of at least one night there is something no trav-

Seijoshin, a Shingon temple, "where our attendants were young priests (right) . . . we ate the food served to us . . . entirely vegetables . . . one who is finicky can bring his own food . . . but we liked the experience of trying orthodox food," served on o-zen, little individual tables.

eler to Japan should miss. A funicular railway carries one quickly to the top where rikishas are on hand to complete the journey to the monastery. We were comfortably lodged at Seijoshin, a Shingon temple, where our attendants were young priests. Before dark we walked along an avenue of cryptomerias to the mausoleum of Kobo-Daishi. We passed many moss-covered memorials erected long ago to honor people once famous in Japan. I was reminded of the famous cemetery of Pére Lachaise in Paris.

In our Shingon temple quarters we ate the food served to us, which consisted entirely of vegetables. One who is finicky can bring his own food, but we liked the experience of trying the orthodox menu. The air was cold on the mountain top and we looked forward with some misgiving to the night. But our young acolyte attendant brought a *kotatsu* (fire box of live coals) which he deposited in a well in the floor of our room and then fixed the bedclothes on a frame over the box. Of course, sleeping with a stove in our bed, we were warm and snug all night.

Next morning about 5:15 our attendant called us for the early service. We washed the sleep from our eyes with icy cold water and then followed our guide along a narrow nightingale* passageway for some distance until we came to an assembly hall. As we neared the hall we could hear the monotonous murmur from the recital of a litany and when we were admitted through a sliding door a strange feeling of awe came over us at the sight. About fifteen priests, monks and acolytes squatted before stands on which were spread the scrolls from which they were reciting. They faced toward a large image of Amida Buddha. Immediately in front of the image was the head priest, who led in the intermittent recitation and was followed each time in response by the others. The hall was dimly lighted with many candles. Besides my wife and I there was only one other visitor, a Japanese. Evidently our companion belonged to the Shingon sect, because the head priest came to him and motioned for him to follow. The visitor got down on his knees and walked on them a short distance to a cushion at the altar. He bowed before the image, thrice took a pinch of incense from a dish and dropped it into a smoldering burner. If he uttered any prayer we could not hear it. Having burnt the incense he bowed once more, backed away, returned to his place beside us. To our surprise, the priest then came to us and said in clear English, "You are Christian people, but if you care to participate in our ceremony you are quite welcome."

Momentarily I was at a loss for words, then almost stuttered, "Yes, we are Christians, but we respect the religions of all other countries; we will be pleased to join in your ceremony."

As we placed incense on the fire a blue-grey smoke, perfume-laden, slowly ascended and we looked up at the be-

* So called because the creaking boards suggest a nightingale's song.

Charles N. Frazier

"I have seen three great sights in this world; Fujiyama is one — I forget the other two." Thus the author to his guide, Yagisan, when temperamental Fuji unveiled her head. A few minutes of fast photography turned out badly, and it took a return trip to get this enchanting Sakasa-Fuji (literally, Fuji upside-down) when the elusive mountain showed her majestic head for a brief quarter hour.

nign image with mingled feelings of reverence and wonder.

At Miyanoshita we visited a shop where, ten years before, we had purchased a large brass hibachi. The proprietor remembered the purchase, even satisfying any doubt we might have about his sincerity by describing the article.

The Fujiya hotel was ablaze with chrysanthemums, at this season the glory of Japan. Every little shop and every tiny residence had a proud exhibit at the front door of from one to three specimens of this lovely flower, which they had trained and tended as carefully as their own children.

Miyanoshita is noted for the hobby of breeding cocks with tails many feet in length. Residents of this district vie for first place in exhibits where an inch is as good as a mile.

One day we made an excursion with a Japan Tourist Bureau friend, Yagi, over the marvelously beautiful Izu peninsula. At Shimoda, we went through the Buddhist temple which was once the residence of Townsend Harris, first American consul-general to Japan. Night found us in the mountain spa of Shuzenji. In the morning we motored to Mito. How splendid Fujiyama loomed in the distance. My little camera was worked overtime as I tried for a good picture. I was thrilled with the loveliness of the scene across the blue waters of the bay. A foreground of pine trees, twisted and gnarled in contrast to the graceful symmetry of the mountain, and a rugged coast of rocks and surf made the whole a perfect picture. "Yagi-san!" I exclaimed in my enthusiasm, "I have seen three great sights in this world. Fujiyama is one; I forget the other two."

But my picture of Fujiyama was a disappointment. This I did not discover until some days later when the film was developed. I determined then to get a picture more worthy of the glorious subject. I traveled to Numadzu and in the early morning went by train to the village of Suzugawa where I found a taxi to take me to the fishing village of Tago-no-ura. But rain and clouds frustrated my efforts.

The Fujiya Hotel . . . ablaze with chrysanthemums, at this season the glory of Japan.

Back to Numadzu I went to wait for another day. The only inn available was Japanese where no English was spoken or understood. A phrase book is a wonderful help. I had picked up enough of the lingo to blunder through. The Japanese were very patient and helped me along. I knew what they said when they asked, "What will you have for dinner?" *"Nan demo yoroshii"* (anything will do) I said, smiling. Having put myself in their hands they gave me a fine dinner.

During the night the weather cleared. When I awoke next morning I could see from my window Fujiyama sharply outlined against the sky. I prayed fervently that she would remain undraped by clouds until I could get back to Tago-no-ura. When I got to the fishing village temperamental Fuji gave me just fifteen minutes for picture-taking. Then she buried her head in the clouds. Later that day I encircled the great mountain by automobile, passing the five lakes, but of elusive Fuji not another sight!

Kwangsi, a Model Province of China*

By WING TSIT CHAN, Ph.D.
Educational Director and Professor of Chinese Culture at Lingnan University

YOU must have heard a great deal about China in general. I wish, therefore, to tell you something about South China, not for its local interest, but for its national significance, the Model Province of Kwangsi. What urges me to speak on this subject is that very same thing that attracted famous scholars such as Dr. Hu Shih to make a 1,000-mile trip from Peking to see the place, to linger for ten days, and then to publish a most enthusiastic article in its glorification. It is that very same thing that inspired the six largest national learned societies of China to travel from Peking and Shanghai, 1,000 miles away, to hold their joint meeting last August in this interior, not easily accessible and insignificant province.

Kwangsi, northwest of Kwangtung and northeast of Indo-China, with a population of 10 million and an area of 85,000 square miles, has come into the limelight only in the last three or four years. Hitherto it has been very little known, since it is mountainous, medieval, and socially and economically almost isolated from other parts of China. Modern civilization has crept in, it is true, but it has not shaken the social and economic foundations to such an extent as to cause alarm or even to invite attention. Aside from military connection, it remained closed, isolated, and unheard of until the last three or four years, when the Chinese people suddenly woke up to find in this impotent, inland province a new social consciousness, a new intellectual challenge, a new spirit, and a new life.

A few friends and I went to Kwangsi a year ago primarily for a rest. After an overnight steamer trip from Canton, we arrived at Wuchow, the largest city of the province, although it has only 90,000 inhabitants. We found the city monotonously similar to other reconstructed cities in China, with all its walls torn down and in their place run stone, cement, or dirt streets where rickshas are being replaced by buses and automobiles. In this city, as in many, many others, a Sun Yat-sen Park has become a fashionable addition, whether the money is more urgently needed elsewhere or not.

In this city there is also a state university, which, in my opinion, is entirely unnecessary, since its standards are nearer to those of a junior college and Kwangsi province needs more well-trained technical high school graduates. But this university attracts attention because it offers a new conception in higher education for China which led to the policy that the central government finally adopted for university education for the country. It has a school of science, of engineering, of mining, and of agriculture, but no college of arts, law, or social sciences. It seems that Kwangsi made up her mind ten years ago to look to science for the solution of her problems and was willing to get along without any poets, musicians, or sociologists.

We went to Kwangsi primarily to rest, without the slightest thought of observation or the faintest hope of discovery. But the concrete street along which we strolled immediately imposed on us with something unusual, something puzzling. In spite of the deafening yells of the coolies, the continuous ringing of the ricksha bells, and the unceasing automobile horns, we felt the prevalence of a strange silence.

Then suddenly we woke up to the fact that there was missing the "pung, paak"; characteristic noises of *mah jong*. Mah jong, an evil practiced all over China for hundreds of years, by old and young, men and women, rich and poor, the old-fashioned and the modern, is entirely prohibited in Kwangsi.

* An address to the Pan-Pacific Union, Honolulu, at the regular weekly luncheon meeting of September 30, 1935.

Many places in China have tried to stop the vice, but only Nanking and Kwangsi have succeeded in conquering this widespread evil. The Kwangsi people seem to realize that if instead of wasting our time and money in mah jong, we should devote them to something urgently in need, we could have either the strongest army, navy, and air force in the world, or at least 50 million miles of modern roads.

No, you cannot play mah jong in Kwangsi. What, then, do they do at evening parties? Bridge is ruled out, because poker is prohibited and, to the police, whether you play with thirteen cards or with five, you are playing poker just the same. Dancing? No. You can't find partners. If you bring your own partners, you can't find the music. And if you furnish your own phonograph, you can't find the floor anyway. Sing-song girls or opium is sometimes indulged in, but the most common feature of social gatherings is the ancient game of Chinese chess, which has taken the place of mah jong in Kwangsi.

I have just mentioned opium. I cannot help mentioning its sister evil, which is just as widespread and degenerative, *fan-tan*. Isn't the situation abnormal, paradoxical—absolutely absurd, that while Kwangsi cannot tolerate mah jong and poker, it nevertheless endures the evils of fan-tan and opium? The answer to this question is indeed a most regrettable as well as a most tragic one. That poverty-stricken, non-productive province has to rely on these two major crimes for 34 per cent of her 50 million dollars annual revenue. Shall we accuse her of hypocrisy and compare her to the pirate in one of Lord Byron's poems who left a name

> . . . . to other times,
> Linked with one virtue and a thousand crimes?

Or shall we sympathize with her and sing with the ancient Chinese poets:

> The winds come fair from the East,
> On the hills overhead.
> There is never a blade that is green,
> Not a leaf but is dead.
> My worth you forget,
> But my faults linger yet.

Early the next morning we were ready for a 350-mile drive to Nanning, capital of the province. We could have taken the airplane which has maintained regular service for the past two years, an air line regarded as the most comfortable in China by Dr. Lo Wen Kan, former minister of foreign affairs, who has traveled by all the air lines of the country.

In a month or so, you will be able to fly from Honolulu to Nanning, making connections at Manila, Macao, and Canton.

We preferred to travel over the Wuchow-Nanning Road, a trunk line dividing the province in half. Nothing remarkable can be said about this road, as it still needs concrete pavement and reenforced concrete bridges, but it is regularly maintained by the government. It is symbolic of the extensive road construction program of that poor, mountainous province. Over 4,000 miles of roads have been completed. Kweichow, formerly three weeks from Canton, requires only five days since last April, when the 500-mile extension road from Nanning was opened to traffic.

Farmers find it difficult to appreciate the roads, as they do not offer them any cheaper means of transportation than the rivers, but instead impose upon them heavy taxation for their construction and maintenance. But they do appreciate the fact that this net of roads helps to keep bandits almost entirely away from them.

All along the road the artistic, dreamland landscape immersed us in bewilderment. But what attracted us more were the numerous basketball fields, one in almost every village. Who plays? Do those poor villages have the idle money to buy imported American basketballs? Does the deep-rooted, agelong disapproval of recreation in this medieval province give way so readily to modern sports?

Well, in a day and a half we arrived at the ancient city of Nanning. Our first experience in Wuchow was here repeated. As soon as we arrived a policeman required us to fill in personal information, our names, age, destination, reasons for travel, period of stay, etc., the same information that we supplied in Wuchow. Every passenger is closely checked up. Such a check-up, it is claimed, has reduced the number of

major crimes 50 per cent, because no person can possibly get away from Kwangsi under such severe police vigilance. Passing along the streets, I saw one of the first woman-police in China, armed with neither revolver nor club, but with a long sword obviously for show rather than for protection. My curiosity compelled me to gaze at her. Apparently amused with the childishness of a stranger, she spread a smile, swung her sword, and walked away.

The first person we called on was General Li Chung-yen, leader of an ironside army, a simple, warm, kind-hearted person. He is the embodiment of the trinity of the government, the army, and the Kuomintang of Kwangsi. In him they blend into a harmonious trio for which we find in other parts of China no counterpart. Their smoothly working together demonstrates the fact that the Chinese leaders, if left to themselves, free from internal disturbance and foreign interference, do have enough sense to coöperate, after all.

After we had a short talk with the general, his attendant reported to him that his hour for horse riding had arrived. We bade him good-bye and proceeded along the main streets to the new Civic Center. Horse riding, it was revealed to us, was encouraged to replace automobiles in Kwangsi so far as military officers are concerned. The generals, the chiefs of staff and others, all go to their offices on horseback. That means not only economy for the government but also friendliness with the people. The governor, Mr. Wong, even prefers a daily 20-minute walk to his Yaman. Before he leaves his house, he always bows to his venerable eighty-year-old father. One day, it was reported in the paper, in his great hurry, he neglected to do so, and that old gentleman, terribly furious over his son's revolutionary, unfilial conduct, chased him with a stick, and the governor had to bow right in the street, to the great amusement of the watching crowd.

The tranquil atmosphere of this historic city reminds us of an ancient interior town. But the radio, the movie, and the bus convinced us that even a medieval city will surrender to modern civilization. We rode in a clumsy, bumping bus in which dust and exhaust gas were competing to give us a free meal.

"You can't possibly help this dirt," we complained, "but why waste the gasoline?"

"It is not gasoline," came the answer, "it is the charcoal."

The buses were experimenting with charcoal, produced in Kwangsi in abundance to replace imported oil. This experiment was so successful that governments in several provinces have established factories to manufacture special carburetors, etc., for the charcoal buses and automobiles. Charcoal does not give strength, to be sure, but it effects economy.

Finally we arrived at the new Civic Center, where we found a central administrative building, an auditorium, a radio broadcasting station, a library, a dormitory for the civil service men, and a number of athletic fields. In the playgrounds were some seven or eight hundred people, old and young, boys and girls, the barefooted and the shod, mingled together to play basketball. The village boys and girls, you see, make their own balls and play for recreation and excitement. To our great amazement, we saw among the basketball crowd the least-expected person—Gen. Li himself. The Kwangsi government has been sharply criticized that, laudable though their reconstructive program may be, it aims to serve the government rather than the people. But Kwangsi has gone a long, long way when its officials and military leaders can play together with the common folks in athletic fields.

The next person we called on was Mr. Louie, commissioner of education for Kwangsi for the third time. He has an American wife, and naturally I expected him to dress in American style. You can imagine therefore, how completely surprised I was when I saw him not clad in American style, nor in Chinese long gown, but in the uniform of a common soldier, a suit made of native cloth at not more than $2.00 gold. Such uniforms are worn by all civil workers and students all over Kwangsi; another of those things required in other parts of China but rarely observed.

I have great admiration for Mr. Louie, because he sacrificed a position in a city near Shanghai which gave him

$500 a month to accept a position in Kwangsi for only $200. Somehow, Kwangsi attracts conscientious and devoted men of the highest caliber in China who want to dedicate their lives to the salvation of their Fatherland. Many political reformers, social workers, and educational experimentalists have gone to Kwangsi to seek the best environment for constructive and creative projects, and a few have already started work there. Mr. Louie, although a high official second only to the governor, does not occupy an aristocratic mansion appropriate to his position, but lives in a commonplace clan temple, a place more suitable for clerks, students, or even vagabonds.

"My monthly personal budget is only $30," he explained, "and on that I will have to treat you fellows to Tea."

The Chinese consider "face" as important as life itself, but Mr. Louie, like all his colleagues, prefers honesty and hard work to "face."

As has been said, Kwangsi has an annual revenue of only 50 million Chinese dollars. Besides supporting a huge army of 200,000 men, nobody would expect that she could appropriate as much as 15 per cent of her total revenue for educational purposes, an appropriation higher both in percentage and in actual sum than many of the richest provinces of China. The appropriation for education comes second only to military expenditure and is twice as much as administrative costs.

With the $7,000,000 at his disposal, Mr. Louie runs a university, a great number of public schools, and the most liberally financed educational research institute of any government in China. This Institute for Research in Foundation Education aims to find a workable plan whereby in five years' time all children in Kwangsi shall receive foundation education; two years for those from six to nine years old, and one year for those from ten to sixteen.

Vigorous efforts and remarkable progress are being made in textbooks, curriculum, and organization. The latest report said that there is already a school in every two villages, and the goal is to have a school in every one. These schools are not merely places where children learn to read and write, but also centers of social reconstruction. From these village schools is now spreading actual field work in four directions, economic reconstruction, adult education, public health, and citizenship training. A number of teachers have already been trained along these lines. For Kwangsi has definitely pledged, as Dr. James Yen in his Ting Shien Experiment has pledged, to wipe out from the land the four cardinal evils of poverty, ignorance, illness, and selfishness.

Next, we paid our respects to the gentleman who daily bows to his father; the governor. He invited us to tea, where nothing like cakes, sandwiches, or coffee was served, but instead only cups of green tea, a dish of toast, and another dish of fresh peanuts. Simplicity of living is the key to the comparative cleanliness of the Kwangsi government. The only honor Mr. Wong enjoys as governor is the distinguished number of his seat in the weekly assembly hall. All seats are numbered and assigned, and the governor has number one.

The governor comes first in another matter. He was the first one to practice military drill. Kwangsi requires all male citizens between certain ages to take up military training for three months. They want to make every one a soldier so that, in times of emergency, they can relieve the army, the village guards, and the police for the frontier. To set a good example the governor practiced military drill himself first, then his assistants, and finally the common people.

In one of the evenings I was asked to speak through the radio on Modern Ideals and Education.

"What do the people in the streets care for such an academic subject?" I wondered.

"Don't you worry," the director told me. "There will be at least 90 magistrates of the different districts listening to you."

All the magistrates, I understand, are required to tune in on the radio every evening for half an hour for, more often than not, government orders and instructions are sent out through the radio, thus bringing the entire province into unity in a single moment, whereas it used to take at least two weeks to reach all the districts by mail. Political

unity works beautifully in that mountainous land.

When we came to another historic city, Liu Chow, we were in the industrial center of the province. Kwangsi, poor as she is, has an ambitious economic program, involving forestry, mining, and stock-raising. The eight or ten factories operated by the government, such as the sugar factory, the sulfuric plant, the alcohol plant, etc., have attained only moderate success, and the entire scheme is ever open to the danger of incoördination and inefficiency.

Kwangsi has been depending on lumber for its livelihood. Some thirty stations for nursery, experiment, etc., have been put up by the government to improve the trade. To mining, however, Kwangsi looks most anxiously for its future economic development. Only 15,000 of the 7,000,000 tons of tin, only 10,000 of the 23,000,000 tons of iron, and only 1,500,000 tons of the 298,000,000 tons of coal have been mined. The central government is now extending its helping hand. A number of prominent men, including Dr. Lo Wen Kan, former minister of foreign affairs, are investing heavily in mining in Kwangsi. But additional capital must be sought. There is no secret that negotiations are going on with the American Economic Mission. There is also the report that Japanese capital is being solicited.

"If we can carry out our mining projects," the Kwangsi government announces, "we will eliminate opium and fan-tan entirely." Already they have localized and restricted the sale and consumption of the dreadful drug.

In thus presenting Kwangsi to you I know I might have subjected myself to the suepicion of idealizing the situation. But I have not manufactured anything out of my imagination. I have only presented bits of reality to you which are, as William James would say, concrete, stubborn, and irreducible facts.

But you may say, "Mr. Chan, you must have portrayed only one bright corner of the whole picture of China, and a very small corner indeed."

I will then bow to you three times, saying, "My dear friend, you could hardly be nearer to the truth. I have shown you only the brightest corner of the whole picture, and a very small corner at that. But don't you hear this little corner singing to the other parts of China, 'Brighten the corner where you are'?"

Mid-Pacific Magazine Valued for Reference

FROM C. C. CHANG, General Secretary, The Foreign Trade Association of China, 6 Tifeng Road, Shanghai, comes a request for the MID-PACIFIC MAGAZINE, as follows:

The Foreign Trade Association of China endeavors to bring about better understanding between importers and exporters of Chinese produce, so as to promote closer trade relations between China and other countries. Among its varied activities, the Association undertakes to make research in connection with trade problems, commercial commodities, international tariffs and similar questions. It is understood that the MID-PACIFIC MAGAZINE, published by you, furnishes authentic data and is valuable for reference purposes. We shall greatly appreciate it, therefore, if you will find it possible to place us on your mailing list.

New Book on Hawaii Forthcoming

THE TRAGEDY OF HAWAII by Donald L. Sloan of Klamath Falls, Oregon, will be released by Caxton Printers (Houghton, Mifflin Co.) Idaho, in April, 1936. It is non-fiction, historical, with a background of personal experience giving a picture of the Hawaiian Islands as they are today and how the present conditions came about.

The author was domiciled at the Pan-Pacific Research Institution, Manoa Valley, Honolulu, while preparing his manuscript for publication. He sailed October 22 for Samoa, there to spend six months gathering material for another book.

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Address all communications to MID-PACIFIC MAGAZINE, 1067 Alakea St., Honolulu, Hawaii, for attention of THE EDITORS. An open forum for discussion of problems concerning food production, distribution, conservation and consumption; public health; current habits and customs, or any subject relative to human welfare in countries bordering upon the Pacific Ocean.

Fishes of the American Northwest

A Catalogue of the Fishes of Washington and Oregon, With Distributional Records and a Bibliography

By Leonard P. Schultz and Allan C. DeLacy
School of Fisheries, University of Washington, Seattle, U. S. A.

INTRODUCTION

THIS CATALOGUE is divided into the following five parts, which are: I. Catalogue of the fishes of Washington and Oregon with distributional records. II. A list of species whose occurrence in Washington and Oregon is doubtful. III. Bibliography. IV. Index to scientific names of fishes. V. Index to common names of fishes. VI. Index to geographical locations. The catalogue includes those species of fish known to occur in Washington and Oregon, either from published records or from specimens collected by Carl L. Hubbs and Leonard P. Schultz in 1926, the senior author, and many of his students since 1928. Those most active in collecting fishes have been, Howard Baltzo, Wilbert Chapman, Allan C. DeLacy, Leo Erkkila, Claude Flock, George Garlick, Samuel Hutchinson, Tom Martin, Daniel Merriman, Loyd A. Royal, Ralph Silliman, Richard T. Smith, William A. Spoor, Lawrence Townsend, Arthur D. Welander, Rennie Wells, and Albert Young.

In general, economic fisheries papers and papers of a popular nature have not been included in the bibliography unless they contain definite authentic identifications with scientific names of species and distributional records. Common names, except where they specifically refer to a particular species, have not been used in compiling this paper.

The punctuation used in this catalogue has a definite meaning. For example see species number 37. Following the number "37" are the numbers "(779a, 779c, 779h)" in parenthesis, which refer to the number of this same species in the publication by Jordan and Evermann (1896-1900). Below the name *Salmo clarkii clarkii* is given in small type the specific name used in the original description by the author, and a reference to his paper including the type locality. Following the type locality "Cathlopootl R., Oregon" is a colon, and then the names of the authors who did not describe this particular species are listed after the colon. These authors merely used that scientific name in their publications. Likewise, in the list of synonyms in the next paragraph below, a colon separates the scientific name and its author or describer (if his name is in the list of authors who furnished records) from those authors who merely made use of the name in their publications. For example "*Salmo brevicauda* Suckley 1862a: 1874; Günther 1866".

Washington and Oregon have been divided into certain geographical regions arranged as follows: Puget Sound Region, or Puget Sound Drainage; Coast of Washington; Columbia River Mouth; Columbia River Drainage; Coast of Oregon; Oregon Lakes

(this refers to the isolated lakes of southeastern Oregon); and Goose Lake Drainage. The scientific name used by the author given under "Records" may be located by referring to the list of synonyms, which are arranged alphabetically, and the authors' names chronologically. The date following the author's name, for example, Girard 1858, refers to the date of publication, which may be looked up in the bibliography, a list of all references which have been used in obtaining records of the distribution of fishes in Washington and Oregon.

The asterisks which occur after many of the locality records mean that the authors have seen specimens which were collected from these places. In many cases they represent new records of distribution never before published.

Although the manuscript was checked through many times, errors may have gone unnoticed, and important publications containing valuable records may have been overlooked. Since the authors intend to revise this catalogue at intervals, they will be grateful to have their attention called to errors and omissions.

LEONARD P. SCHULTZ
ALLAN C. DELACY.

PART 1. Catalogue of the Fishes of Washington and Oregon with Distributional Records.

Family 1. EPTATRETIDAE Hagfishes

1. (5). POLISTOTREMA STOUTII (Lockington). Hagfish.

Bdellostoma stoutii Lockington, Amer. Nat., 12, 1878: 793, Eel River, Cal.
Polistotrema stoutii: Gilbert 1895; Fowler 1923.

RANGE: British Columbia to San Diego, California. Marine. Common. Destructive to fish.

RECORDS: Puget Sound Region: Seattle—Fowler 1923.

Coast of Washington: Cape Flattery—Gilbert 1895. 15 mi. S.W. by W. of Cape Flattery, 85 fathoms*.

Coast of Oregon: Latitude 43° 54'*. Yaquina Bay*.

2. (–). POLISTOTREMA DEANI Evermann and Goldsborough. Black hagfish.

Polistotrema deani Evermann and Goldsborough, Bull. U. S. Bur. Fish., 26, 1906 (1907): 225, fig. 1, *Albatross* Station 4238 in Behm Canal off Nose Point in 229 to 231 fathoms: Hubbs 1928.

RANGE: Alaska to Santa Barbara Islands. Marine. Common. Destructive to fish.

RECORDS: Coast of Washington: 15 mi. S.W. by W. of Cape Flattery, 85 fathoms*.

Coast of Oregon: Latitude 43° 54'*—Hubbs 1928. Yaquina Bay*.

Family 2. PETROMYZONIDAE Lamprey "eels"

3. (11). ENTOSPHENUS TRIDENTATUS (Gairdner). Three-toothed lamprey. Pacific lamprey.

Petromyzon tridentatus Gairdner in Richardson, Fauna Bor.-Amer., 1836: 293, falls of the Willamette R., Oregon.
Ammocoetes cibarius: Girard 1858; Eigenmann and Eigenmann 1892. *Ammocoetes tridentatus:* Collins 1892; Eigenmann and Eigenmann 1892. *Entosphenus tridentatus:* Jordan and Gilbert 1881f, 1882; Gilbert and Evermann 1895; Jordan and Starks 1895; Seale 1895; Evermann and Meek 1898; Gilbert 1898; Gilbert and Thompson 1905; Snyder 1908a, 1908b; Evermann and Latimer 1910; Kincaid 1919; Creaser and Hubbs 1922; Schultz 1930a. *Ichthyomyzon astori:* Günther 1870. *Petromyzon astori:* Girard 1858. *Petromyzon lividus:* Girard 1858.

RANGE: Unalaska to Southern California (Creaser and Hubbs 1922). Freshwater and marine. Common. Destructive to fish. Slight commercial value.

RECORDS: Puget Sound Region: Jordan and Gilbert 1882; Eigenmann and Eigenmann 1892; Jordan and Starks 1895; Kincaid 1919. Ft. Steilacoom—Girard 1858. Seattle—Seale 1895. L. Washington—Gilbert and Thompson 1905.

Coast of Washington: Schultz 1930a. Dickey R.*. Pleasant L. and Bogachiel R.—Evermann and Latimer 1910. Humptulips R.*. Satsop R.*.

Columbia River Drainage: Collins 1892; Eigenmann and Eigenmann 1892. Astoria—Girard 1858; Günther 1870; Jordan and Gilbert 1881f, 1882. Willamette R.*—Richardson 1836; Girard 1858; Gilbert and Evermann 1895; Snyder 1908a. Walla Walla R. and Garrison Cr.—Bean, T. H. 1883. Rock Id. Dam*.

Coast of Oregon: Nestucca, Umpqua, Coquille, and Rogue Rivers—Snyder 1908a. Rogue R., Medford*. Klamath R.—Gilbert 1898; Snyder 1908a. Upper Klamath L.—Evermann and Meek 1898.

Goose Lake Drainage: Goose L.—Snyder 1908b.

4. (14 in part). LAMPETRA FLUVIATILIS (Linnaeus). Parasitic river lamprey.

Petromyzon fluviatilis Linnaeus, Syst. Nat., Ed. 10, 1758: 230, Europe.
Lampetra fluviatilis: Creaser and Hubbs 1922; Schultz 1930a.

RANGE: Eurasia and western North America (Creaser and Hubbs 1922). Freshwater. Locally abundant. No commercial value. Parasitic.

RECORDS: Puget Sound Drainage: L. Washington*—Schultz 1930a. L. Cushman, Wash.*.

5. (14 in part). LAMPETRA PLANERI (Bloch). Non-parasitic brook lamprey.

Petromyzon planeri Bloch. Oekon. Naturgesch. der Fische Deutschlands, 3, 1784(1785): 47.
? *Ammocoetes cibarius* Suckley 1860. *Ammocoetes*

plumbeus: Jordan and Gilbert 1881f, 1882; Bean, T. H. 1883. *Lampetra cibaria:* Jordan and Starks 1895; Seale 1895; Kincaid 1919. *Lampetra planeri:* Creaser and Hubbs 1922; Schultz 1930a, 1930b.

RANGE: Eurasia and western North America (Creaser and Hubbs 1922). Freshwater. Common. Considerable commercial value as bait. Non-parasitic.

RECORDS: Puget Sound Drainage: Suckley 1860; Jordan and Gilbert 1881f, 1882; Jordan and Starks 1895; Kincaid 1919. Newauken Cr.*—Schultz 1930b. Seattle—Seale 1895. L. Washington*, Green L.*, and Matthews Cr.* in Seattle. Evans Cr. near Redmond*—Schultz 1930a, 1930b. Chimacum*.

Coast of Washington: Trib. Satsop R.*.

Columbia River Drainage: Garrison Cr., Walla Walla—Bean, T. H. 1883. Bellfountain*.

Coast of Oregon: Near Reedsport*.

Family 3. HEXANCHIDAE Cow sharks

6. (19). HEXANCHUS GRISEUS (Bonnaterre). Shovelnose shark. Mud shark.

Squalus griseus Bonnaterre, Ichth. R. 1788: 9, Mediterranean; after le griset Bonn.
Hexanchus corinus Jordan and Gilbert 1881g: 1881f, 1882; Eigenmann and Eigenmann 1892. *Hexanchus griseus:* Starks 1911; Kincaid 1919.

RANGE: Mediterranean to Scotland; Cuba; Pacific Coast of North America from Puget Sound to Monterey Bay. Marine. Not rare. Slight commercial value.

RECORDS: Puget Sound Region:* Jordan and Gilbert 1881f, 1882; Eigenmann and Eigenmann 1892; Kincaid 1919. San Juan Islands—Starks 1911.

Coast of Washington: Neah Bay—Jordan and Gilbert 1881g.

7. (17). NOTORYNCHUS MACULATUS Ayres. Mud shark. Spotted cow shark.

Notorynchus maculatus Ayres, Proc. Calif. Acad. Nat. Sci., 1, 1855: 72, San Francisco Bay: Jordan and Gilbert 1882; Kincaid 1919.
Notorhynchus borealis: Gill 1865. *Notorhynchus maculatus:* Gill 1863b; Jordan and Gilbert 1882; Kincaid 1919.

RANGE: Puget Sound to Monterey Bay. Marine. Not rare. Slight commercial value.

RECORDS: Puget Sound Region*: Jordan and Gilbert 1882; Kincaid 1919. Nisqually—Gill 1863b, 1865.

Family 4. SCYLLIORHINIDAE Cat sharks

8. (24). APRISTURUS BRUNNEUS (Gilbert). Brown shark. Cat shark.

Catulus brunneus Gilbert, Proc. U. S. Nat. Mus., 14, 1891: 542, Gulf of California: Gilbert and Thompson 1905; Kincaid 1919.

RANGE: Puget Sound to Gulf of California. Marine. Not rare.

RECORDS: Puget Sound Region: Hoods Canal—Gilbert and Thompson 1905; Kincaid 1919. Saratoga Passage.* Off Everett.*

Family 5. CARCHARIIDAE Gray sharks

9. (38). PRIONACE GLAUCA (Linnaeus). Great blue shark.

Squalus glaucus Linnaeus, Syst. Nat., Ed. X, 1758: 235, seas of Europe.
Carcharhinus glaucus: Jordan and Gilbert 1882; Eigenmann and Eigenmann 1892. *Prionace glauca:* Jordan and Gilbert 1881f; Schmitt et al. 1915; Kincaid 1919.

RANGE: Warm seas, and occasionally taken on the Atlantic and Pacific coasts of the United States. Marine. Rare northward. No commercial value in this region.

RECORDS: Puget Sound Region: Jordan and Gilbert 1881f; Eigenmann and Eigenmann 1892; Kincaid 1919. Near Seattle—Jordan and Gilbert 1882.

Coast of Washington: Off Grays Harbor—Schmitt et al. 1915.

Coast of Oregon: Schmitt et al. 1915.

Family 6. GALEORHINIDAE Soup-fin sharks

10. (36). GALEORHINUS ZYOPTERUS Jordan and Gilbert. Soup-fin shark.

Galeorhinus zyopterus Jordan and Gilbert, Synop. Fishes North Amer., 1883: 871, San Pedro, Calif.: Schmitt et al. 1915.

RANGE: Vancouver Island to Lower California. Marine. Rare northward. No commercial value in this region.

RECORDS: Puget Sound Region: Vancouver Island near Nanaimo*, specimen identified by Dr. Clemens and Mr. Wilby.

Coast of Oregon: Off Coos Bay—Schmitt et al. 1915.

Family 7. ALOPIIDAE Thresher sharks

11. (63). ALOPIAS VULPINUS (Bonnaterre). Fox shark. Long-tailed shark.

Squalus vulpinus Bonnaterre, Tableau Encycl. Ichth., 1788: 9, Mediterranean, after Pennant.
Alopias vulpes: Hubbs 1928; Hubbs and Schultz 1929.

RANGE: Mediterranean Sea, Atlantic and Pacific Oceans. Marine. Not rare. Slight commercial value.

RECORDS: Coast of Oregon: Coos Bay*—Hubbs 1928; Hubbs and Schultz 1929.

Family 8. LAMNIDAE Mackerel sharks

12. (67). LAMNA NASUS (Bonnaterre). Salmon shark.

Squalus nasus Bonnaterre, Tableau Encycl. Ichth., 1788: 10, shores of Cornwall.

RANGE: North Atlantic and North Pacific. Marine. Common northward. No commercial value.

RECORDS: We find no published records but it has been reported doubtfully from this locality by fishermen.

Family 9. CETORHINIDAE Basking sharks

13. (69). CETORHINUS MAXIMUS (Gunner). Basking shark. Elephant shark. Bone shark.

Squalus maximus Gunner, Trondhjem Skrift., III, 1765: 33, Coast of Norway.

RANGE: Arctic seas, straying southward to California, Virginia, and Portugal. Marine. Common northward. No commercial value in this region.

RECORDS: Dr. W. A. Clemens reports this shark as not uncommon off the coast of British Columbia but we are unable to find a definite record for this area.

Family 10. SQUALIDAE Dogfish sharks

14. (72). SQUALUS SUCKLEYI (Girard). Grayfish. Dogfish shark.

Spinax (Acanthias) suckleyi Girard, Proc. Acad. Nat. Sci. Phila., 7, 1854: 196, Ft. Steilacoom, Wash. *Acanthias suckleyi:* Girard 1858; Suckley 1860. *Squalus acanthias:* Jordan and Gilbert 1881f, 1882; Jordan and Jouy 1882; Jordan 1884j, 1887; Alexander 1892; Collins 1892; Eigenmann and Eigenmann 1892; Tanner 1892. *Squalus sucklii:* Jordan and Starks 1895; Starks 1896, 1911; Schmitt et al. 1915; Kincaid 1919. Common name: Hammond 1887.

RANGE: Aleutian Islands to Santa Barbara. Marine. Abundant. Considerable commercial value, but also destructive to other fish.

RECORDS: Puget Sound Region: Suckley 1860; Jordan and Gilbert 1881f, 1882; Jordan and Jouy 1882; Jordan 1884j, 1887; Hammond 1887; Collins 1892; Eigenmann and Eigenmann 1892; Jordan and Starks 1895; Kincaid 1919. Ft. Steilacoom—Girard 1856b, 1858. Pt. Ludlow—Starks 1896. Hoods Canal*. San Juan Is.*—Starks 1911.

Coast of Washington: Schmitt et al. 1915. Neah Bay—Rathbun 1894. Cape Flattery—Tanner 1892; Rathbun 1894. Cape Johnson—Rathbun 1894. La Push*. Grays Harbor—Alexander 1892.

Columbia River Mouth:* Schmitt et al 1915.

Coast of Oregon: Schmitt et al. 1915. Tillamook Head—Rathbun 1894.

Family 11. SOMNIOSIDAE Sleeper sharks

15. (76). SOMIOSUS MICROCEPHALUS (Bloch and Schneider). Sleeper shark.

Squalus microcephalus Bloch and Schneider, Syst. Ichth., 1801: 135, Northern Seas. *Somniosus microcephalus:* Jordan and Gilbert 1881f, 1882; Jordan 1884j; Eigenmann and Eigenmann 1892; Jordan and Starks 1895; Kincaid 1919.

RANGE: North Atlantic and North Pacific south to San Francisco Bay. Marine. Common. Slight commercial value.

RECORDS: Puget Sound Region:* Jordan and Gilbert 1881f, 1882; Jordan 1884j; Eigenmann and Eigenmann 1892; Jordan and Starks 1895; Kincaid 1919.

Family 12. SQUATINIDAE Angel sharks

16. (78 in part). SQUATINA CALIFORNICA Ayres. Angel shark.

Squatina californica Ayres, Proc. Calif. Acad. Nat. Sci., 2, 1859: 29, San Francisco: Schultz, Hart, and Gunderson 1932.

RANGE: Southeastern Alaska and southward. Marine. Rare northward. No commercial value.

RECORDS: Puget Sound Region: Near Seattle*—Schultz, Hart, and Gunderson 1932.

Family 13. RAJIDAE Skates and rays

17. (101). RAJA RHINA Jordan and Gilbert. Long-nosed skate. Sharp-nosed skate.

Raja rhina Jordan and Gilbert, Proc. U. S. Nat. Mus., 3, 1880: 251, Monterey and San Francisco: Jordan and Gilbert 1881f; Jordan and Jouy 1882; Eigenmann and Eigenmann 1892; Starks 1911; Kincaid 1919.

RANGE: Alaska to Point Loma, California (Starks and Morris 1907). Marine. Common. Slight commercial value.

RECORDS: Puget Sound Region:* Jordan and Gilbert 1881f; Jordan and Jouy 1882; Eigenmann and Eigenmann 1892; Kincaid 1919. Seattle*. Off Everett*. Hoods Canal*. Saratoga Passage*. San Juan Is.*—Starks 1911. Orcas Is.*.

18. (102). RAJA BINOCULATA Girard. Big skate.

Raja binoculata Girard, Proc. Acad. Nat. Sci. Phila., 7, 1854(1856b): 196, San Francisco: Suckley 1860; Jordan and Gilbert 1881f; Jordan and Starks 1895; Starks 1896, 1911; Evermann and Goldsborough 1907; Schmitt et al. 1915; Kincaid 1919; Fowler 1923.

Raia binoculata: Jordan and Jouy 1882; Eigenmann and Eigenmann 1892. *Raia cooperi:* Girard 1858; Tanner 1892.

RANGE: Sitka, Alaska to San Diego Bay. Marine. Abundant. Slight commercial value.

RECORDS: Puget Sound Region: Suckley 1860; Jordan and Gilbert 1881f; Jordan and Jouy 1882; Eigenmann and Eigenmann 1892; Jordan and Starks 1895; Evermann and Goldsborough 1907; Kincaid 1919. Seattle*—Fowler 1923. Pt. Ludlow—Starks 1896. Hoods Canal*. San Juan Islands*—Starks 1911.

Coast of Washington: Schmitt et al. 1915; *Albatross* Station 3450—Evermann and Goldsborough 1907. Cape Flattery—Tanner 1892. Cape Johnson*. La Push*. Shoalwater Bay (Willapa Harbor)—Girard 1858.

Coast of Oregon: Schmitt et al. 1915. Yaquina Bay*. Coos Bay*.

19. (106). RAJA STELLULATA Jordan and Gilbert. Prickly skate.

Raia stellulata Jordan and Gilbert, Proc. U. S. Nat. Mus., 3, 1880: 133, Monterey Bay. *Raja stellulata:* Gilbert 1895; Starks 1911; Kincaid 1919.

RANGE: Unalaska to Southern California. Marine. Not rare. No commercial value.

RECORDS: Puget Sound Region: Kincaid 1919. San Juan Islands—Starks 1911. Upright Channel*. St. Juan de Fuca—Gilbert 1895.

20. (103). RAJA INORNATA Jordan and Gilbert. California skate.

Raja inornata Jordan and Gilbert, Proc. U. S. Nat. Mus., 3, 1880 (1881f): 457, San Francisco: Gilbert 1895.

RANGE: St. Juan de Fuca to San Diego. Marine. Rare northward. No commercial value.

RECORDS: Puget Sound Region: St. Juan de Fuca—Gilbert 1895.

21. (108). RAJA TRACHURA Gilbert. Roughtailed skate.

Raja trachura Gilbert, Proc. U. S. Nat. Mus., 14, 1891: 539, off Santa Barbara, at *Albatross* Station 2923 in 822 fathoms: Hubbs 1928.

RANGE: Central Alaska and Santa Barbara in deep water (Hubbs 1928). Marine. Rare. No commercial value.

RECORDS: No specimen has been recorded from Washington or Oregon.

22. (—). RAJA KINCAIDII Garman. Black skate.

Raja kincaidii Garman, Bull. Mus. Comp. Zool., 51(9), 1908: 254, Friday Harbor, Washington: 1913.

RANGE: Puget Sound, Washington. Marine. Rare. Only one specimen known.

RECORDS: Puget Sound Region: Friday Harbor—Garman 1908, 1913.

Family 14. TORPEDINIDAE Electric rays

23. (111). TETRANARCE CALIFORNICA (Ayres). Torpedo. Crampfish.
Torpedo californica Ayres, Proc. Calif. Acad. Nat. Sci., 1, 1855: 74, San Francisco: Crawford 1927a.

RANGE: Nootka Sound, Vancouver Island[1] to San Diego Bay. Marine. Rare northward. No commercial value.

RECORDS: Puget Sound Region: Pt. Susan*.
Coast of Washington: 300 miles northwest of Cape Flattery*—Crawford 1927a.

Family 15. CHIMAERIDAE Chimaeras

24. (142). HYDROLAGUS COLLIEI (Lay and Bennett). Ratfish. Chimaera.
Chimaera colliei Lay and Bennett, Beechey's Voy., Zool., 1839: 71, North Pacific: Ayres 1855; Girard 1858; Suckley 1860; Jordan and Gilbert 1881f; Jordan and Jouy 1882; Bean, T. H. 1884; Eigenmann and Eigenmann 1892; Tanner 1894; Dean 1906; Kincaid 1919; Fowler 1923.
Hydrolagus colliei: Gilbert 1895; Jordan and Starks 1895; Evermann and Goldsborough 1907; Starks 1911; Schmitt et al. 1915. *Chimaera:* Richardson 1836; Alexander 1892; Rathbun 1894. *Hydrolagus:* Dean, Harrington and others 1896.

RANGE: Alaska to San Diego Bay. Marine. Abundant. No commercial value.

RECORDS: Puget Sound Region:* Suckley 1860; Jordan and Gilbert 1881f; Jordan and Jouy 1882; Eigenmann and Eigenmann 1892; Jordan and Starks 1895; Dean, Harrington, and others 1896; Dean 1906; Kincaid 1919. Ft. Steilacoom—Girard 1858. Seattle*—Rathbun 1894; Fowler 1923. Whidby Island*. Hoods Canal near Holly*. Pt. Townsend—Bean, T. H. 1884. Discovery Bay—Richardson 1836. San Juan Islands*—Starks 1911. St. Juan de Fuca—Tanner 1894; Gilbert 1895.
Coast of Washington: Tatoosh Is.—*Albatross* Station 3790—Evermann and Goldsborough 1907. Cape Flattery—Ayres 1855; Girard 1858. Destruction Is.—Rathbun 1894. Grays Harbor—Alexander 1892.
Coast of Oregon: Off Yaquina Head*. Off Newport, Heceta Bank, and off Coos Bay—Schmitt et al. 1915.

Family 16. ACIPENSERIDAE Sturgeons

25. (145). ACIPENSER TRANSMONTANUS Richardson. White sturgeon.
Acipenser transmontanus Richardson, Fauna Bor.-Amer., 3, 1836: 278, Ft. Vancouver: Girard 1857a, 1858; Suckley 1860; Günther 1870; Jordan and Gilbert 1881f, 1882; Goode 1884; Collins 1892; Eigenmann and Eigenmann 1892; Gilbert and Evermann 1895; Rathbun 1899; Evermann and Latimer 1910; Kincaid 1919; Fowler 1923; Gudger 1934. *Acipenser acutirostris:* Gudger 1934.

RANGE: Alaska to Monterey. Marine and freshwater. Once abundant, now much depleted. Considerable commercial value. Maximum weight 1,285 lb. (Gudger 1934).

RECORDS: Puget Sound Region: Jordan and Gilbert 1881f; Eigenmann and Eigenmann 1892; Rathbun 1899; Kincaid 1919. St. Juan de Fuca—Fowler 1923.
Columbia River Drainage: Richardson 1836; Girard 1857a, 1858; Suckley 1860; Günther 1870; Jordan and Gilbert 1881f, 1882; Goode 1884; Collins 1892; Eigenmann and Eigenmann 1892. Mouth*. Chinook—Evermann and Latimer 1910. Kalama and Vancouver—Gudger 1934. Ft. Vancouver—Richardson 1836. The Dalles—Collins 1892. Snake R.—Gilbert and Evermann 1895. Mouth Yakima R.—Gudger 1934.

26. (146). ACIPENSER ACUTIROSTRIS Ayres. Green sturgeon.
Acipenser acutirostris Ayres, Proc. Calif. Acad. Nat. Sci., 1, 1854: 14, San Francisco.
Acipenser medirostris Ayres 1854: Jordan and Gilbert 1881f, 1882; Goode 1884; Eigenmann and Eigenmann 1892; Evermann and Meek 1898; Rathbun 1899; Snyder 1908a; Kincaid 1919.

RANGE: North Pacific southward to Monterey Bay. Marine and freshwater. Not abundant. Slight commercial value.

RECORDS: Puget Sound Region: Rathbun 1899; Kincaid 1919.
Columbia River Drainage: Jordan and Gilbert 1881f; Goode 1884; Eigenmann and Eigenmann 1892. Astoria—Jordan and Gilbert 1882.
Coast of Oregon: Siuslaw R.—Evermann and Meek 1898. Yaquina Bay*. Coos Bay*. Klamath R.—Snyder 1908a.

Family 17. CLUPEIDAE Herrings

27. (686). CLUPEA PALLASII Cuvier and Valenciennes. Pacific herring.
Clupea pallasii Cuvier and Valenciennes, Hist. Nat. Poiss., 20, 1847: 253, Kamchatka; based on Pallas's specimen: Collins 1892; Gilbert 1895; Jordan and Starks 1895; Rathbun 1899; Washburn 1901; Evermann and Goldsborough 1907; Starks 1911; Thompson 1917; Kincaid 1919; Fowler 1923; Rounsefell 1930; Rounsefell and Dahlgren 1933; Shelford et al. 1935.
Clupea mirabilis: Ayres 1855; Girard 1858; Jordan and Gilbert 1881f; Jordan 1884g, 1887; Eigenmann and Eigenmann 1892. Common name: Thornton 1849; Hammond 1887.

RANGE: Kamchatka to San Diego. Marine. Abundant. Very great commercial value.

RECORDS: Puget Sound Region:* Jordan and Gilbert 1881f; Jordan 1884g, 1887; Hammond 1887; Eigenmann and Eigenmann 1892; Jordan and Starks 1895; Kincaid 1919; Rounsefell 1930. Steilacoom—Girard 1858. Seattle*—Fowler 1923. Hoods Canal*. Holmes Harbor*—Rounsefell and Dahlgren 1933. Discovery Bay*, Port Angeles—Gilbert 1895. Utsaladdy*—Evermann and Goldsborough 1907. San Juan Islands*—Starks 1911; Powers 1921; Shelford et al. 1935.
Coast of Washington:* Collins 1892; Thompson 1917. Cape Flattery—Ayres 1855; Girard 1858.
Washington: Rathbun 1899.
Coast of Oregon:* Thornton 1849; Collins 1892; Washburn 1901; Thompson 1917. Tillamook Bay*. Yaquina Bay*. Coos Bay*.

28. (693). ALOSA SAPIDISSIMA (Wilson). Shad.
Clupea sapidissima Wilson, in Rees's New Cyclopedia, 9g, neither pagination nor date, but prior to 1812 (1812), no locality but probably Philadelphia.
Alosa sapidissima: Swan 1883; McDonald 1884; Collins 1892; Evermann and Meek 1898; Smith and Kendall 1898; Kincaid 1919; Leach 1925; Schultz 1929. Common name: McGuire 1896.

RANGE: Atlantic coast of U. S. and southeastern Alaska to Monterey. Marine and freshwater. Abundant. Introduced. Slight commercial value in this area.

[1] Mr. G. V. Wilby reports the capture of this species Sept. 1, 1928 at Nootka Sd. The specimen is now at the Pacific Biological Station.

RECORDS: Puget Sound Region*: McDonald 1884; Collins 1892; Kincaid 1919; Leach 1925; Schultz 1929. Seattle*—Swan 1883. Upright Channel*.

Coast of Washington: Grays Harbor*.

Columbia River Drainage:* Smith and Kendall 1898; Leach 1925. Mouth*. Mouth of Snake R. (first planting in Washington); also at Wallula and in Willamette R.—McGuire 1896.

Coast of Oregon: Collins 1892; Evermann and Meek 1898; Leach 1925; Schultz 1929. Yaquina Bay*. Coos Bay*. Rogue R.—McGuire 1896.

29. (687). SARDINOPS CAERULEA (Girard). Pilchard. Sardine.

Meletta caerulea Girard, Proc. Acad. Nat. Sci. Phila., 7, 1854 (1857): 138, San Francisco: 1858; Suckley 1860.

C. sagax: Collins 1892. *Clupanodon caeruleus:* Jordan and Starks 1895; Evermann and Meek 1898; Rathbun 1899; Washburn 1901. *Sardinia caerulea:* Kincaid 1919; Fowler 1923. Common Name: Thornton 1849.

RANGE: British Columbia to Gulf of California. Marine. Abundant. Great commercial value.

RECORDS: Puget Sound Region:* Suckley 1860; Collins 1892; Jordan and Starks 1895; Kincaid 1919. Seattle*—Fowler 1923. Utsaladdy*.

Coast of Washington: Off entrance to Str. Juan de Fuca*. Shoalwater Bay—Girard 1858.

Washington: Rathbun 1899.

Columbia River Mouth: Astoria—Girard 1858.

Coast of Oregon: Thornton 1849; Collins 1892; Washburn 1901. Yaquina Bay*. Siuslaw R.—Evermann and Meek 1898. Coos Bay*.

Family 18. ENGRAULIDAE Anchovies

30. (738). ENGRAULIS MORDAX MORDAX Girard. Northern anchovy.

Engraulis mordax Girard, Proc. Acad. Nat. Sci. Phila., 7, 1854(1857): 138, and in Pac. R. R. Surv., x, pt. 4, Fishes, 1858: 334, Shoalwater Bay, Wash.: Suckley 1860; Hallock 1877; Collins 1892; Rathbun 1899; Kincaid 1919; Hubbs and Schultz 1929.

Stolephorus ringens: Jordan and Gilbert 1881f; Eigenmann and Eigenmann 1892.

RANGE: Vancouver Island to Lower California. Marine. Abundant. Great commercial value southward.

RECORDS: Puget Sound Region:* Suckley 1860; Jordan and Gilbert 1881f; Eigenmann and Eigenmann 1892; Kincaid 1919. Alki Pt., Seattle*. Hoods Canal*. Utsaladdy*.

Coast of Washington: Off Copalis*. Grays Harbor*. Shoalwater Bay—Girard 1858; Hallock 1877.

Columbia River Mouth:* Astoria—Girard 1858; Jordan and Gilbert 1881f; Eigenmann and Eigenmann 1892; Hubbs and Schultz 1929.

Washington: Rathbun 1899.

Coast of Oregon: Collins 1892. Tillamook Bay*. Yaquina Bay*. Coos Bay*.

Family 19. ALEPOCEPHALIDAE

31. (748). BATHYTROCTES STOMIAS Gilbert. Deep sea fish.

Bathytroctes stomias Gilbert, Proc. U. S. Nat. Mus., 13, 1890: 53, Coast of Oregon in 877 fathoms, *Albatross* Station 3074.

RANGE: Coast of Oregon. Marine. Rare. No commercial value.

RECORDS: Coast of Oregon: *Albatross* Station 3074 in 877 fathoms—Gilbert 1891. Jordan, Evermann, and Clark 1930, record this species twice under different names, see nos. 310 and 315, page 52.

Family 20. SALMONIDAE[2] Salmon and trout

32. (773). ONCORHYNCHUS GORBUSCHA (Walbaum). Pink salmon. Humpback salmon.

Salmo gorbuscha Walbaum, Artedi Pisc., 1792: 60, Kamchatka; after *gorbuscha* of Pennant and Krascheninnikof.

Oncorhynchus gorbuscha: Jordan and Gilbert 1881b, 1881f, 1882, 1887; Jordan 1884d, 1887; Collins 1892; Eigenmann and Eigenmann 1892; Gilbert and Evermann 1895; Jordan and Starks 1895; Rathbun 1899; Kincaid 1919; Fowler 1923; Cobb 1930; Rich 1935; Rounsefell and Kelez, 1935. *Salmo gibber:* Suckley 1862. *Salmo proteus:* Suckley 1860, 1874; Jones 1888. *Salmo scouleri* Richardson 1836; Girard 1857, 1857c.

RANGE: Northern Japan to Alaska southward to California. Marine and freshwater. Abundant. Great commercial value.

RECORDS: Puget Sound Region:* Suckley 1862, 1874; Jordan and Gilbert 1881b, 1881f, 1882, 1887; Jordan 1884d, 1887; Collins 1892; Eigenmann and Eigenmann 1892; Gilbert and Evermann 1895; Jordan and Starks 1895; Rathbun 1899; Kincaid 1919; Cobb, 1930; Rich 1935; Rounsefell and Kelez 1935. Seattle*—Fowler 1923. San Juan Islands*.

Coast of Washington:* Suckley 1860; Willapa Bay—Collins 1892.

Columbia River Drainage: Richardson 1836; Jordan and Gilbert 1881b, 1881f, 1882; Jordan 1884d; Jones 1888; Eigenmann and Eigenmann 1892; Rich 1935. Deschutes R.—Girard 1857, 1857c.

33. (774). ONCORHYNCHUS KETA (Walbaum). Chum salmon. Dog salmon.

Salmo keta vel kayko Walbaum, Artedi Pisc., 1792: 72, rivers of Kamchatka; after Pennant and Krasheninnikof.

Oncorhynchus keta: Jordan and Gilbert 1881b, 1881f, 1882, 1887; Jordan and Jouy 1882; Jordan 1884d, 1887; Collins 1892; Eigenmann and Eigenmann 1892; Gilbert and Evermann 1895; Jordan and Starks 1895; Evermann and Meek 1898; Rathbun 1899; Snyder 1908a; Starks 1911; Kincaid 1919; Cobb 1930; Rich 1935; Rounsefell and Kelez 1935. *Salmo canis:* Suckley 1862, 1874; Jones 1888.

RANGE: Kamchatka to San Francisco. Marine and freshwater. Abundant. Great commercial value.

RECORDS: Puget Sound Region:* Suckley 1862, 1874; Jordan and Gilbert 1881b, 1881f, 1882; Jordan 1884d, 1887; Collins 1892; Eigenmann and Eigenmann 1892; Jordan and Starks 1895; Evermann and Meek 1898; Kincaid 1919; Cobb 1930; Rich 1935; Rounsefell and Kelez 1935. Fort Steilacoom, and New Dungeness—Suckley 1874. Duwamish and Cedar Rivers—Rathbun 1899. Hoods Canal near Holly*. San Juan Islands—Starks 1911.

Coast of Washington:* Cobb 1930. Neah Bay—Jordan and Jouy 1882. Chehalis—Gilbert and Evermann 1895.

[2] For distribution of genera see Dymond, J. R., and Vladykov, V. D. 1935.

Columbia River Drainage: Jordan and Gilbert 1881b, 1881f, 1882, 1887; Jones 1888; Collins 1892; Eigenmann and Eigenmann 1892; Cobb 1930. Below mouth of Willamette R.—Rich 1935.

Coast of Oregon: All larger streams—Snyder 1908a; Cobb 1930.

34. (776). ONCORHYNCHUS KISUTCH (Walbaum). Silver salmon. Coho salmon.

Salmo kisutch Walbaum, Artedi Pisc., 1792: 70, rivers and lakes of Kamchatka; after *kisutch* of Pennant.

Oncorhynchus kisutch: Jordan and Gilbert 1881b, 1881f, 1882, 1887; Jordan and Jouy 1882; Jordan 1887; Tanner 1890; Collins 1892; Eigenmann and Eigenmann 1892; Gilbert 1895; Jordan and Starks 1895; Evermann and Meek 1898; Rathbun 1899; Snyder 1908a; Evermann and Latimer 1910; Kincaid 1919; Powers 1921; Cobb 1930; Rich 1935; Rounsefell and Kelez 1935; Schultz 1935. *Salmo tsuppitch* Richardson 1836: Suckley 1874; Jordan 1878; Jones 1888.

RANGE: Japan to Alaska and southward to San Francisco. Marine and freshwater. Abundant. Great commercial value.

RECORDS: Puget Sound Region:* Jordan and Gilbert 1881b, 1881f, 1882, 1887; Jordan and Jouy 1882; Jordan 1887; Eigenmann and Eigenmann 1892; Jordan and Starks 1895; Rathbun 1899; Kincaid 1919; Cobb 1930; Rich 1935; Rounsefell and Kelez 1935. Seattle*—Tanner 1890. Duwamish R. and L. Union*—Evermann and Meek 1898. Washington*—Schultz 1935. Green L.*. Hoods Canal near Holly*. Skagit R.*. San Juan Islands*—Powers 1921. Port Angeles—Gilbert 1895.

Coast of Washington:* Collins 1892; Cobb 1930. Ozette and Bogachiel Rivers—Evermann and Latimer 1910. Cape Johnson*. Dickey R.*. Quillayute R. mouth*. Soleduck R. near Hot Springs*. L. Quinault*. Upper Quinault R.*. Humptulips R.*. Hoquiam R.*. Chehalis R.*. Satsop R.*.

Columbia River Drainage:* Richardson 1836; Suckley 1874; Jordan and Gilbert 1881b, 1881f, 1882, 1887; Jones 1888; Collins 1892; Eigenmann and Eigenmann 1892; Evermann and Meek 1898; Cobb 1930; Rich 1935. Lewis and Clark R.*. Klaskanine Cr. Clatsop Co.*. Cowlitz R.*. St. Helens, Ore.*. Scappoose, Ore.*. Clackamas R.*. Wallowa R.*. Lostine R.*.

Coast of Oregon:* Collins 1892; Cobb 1930. Nehalem R.*. Nestucca R.*. Alsea R.*. Siuslaw and Tsiltcoos Rivers—Evermann and Meek 1898. Butte and Tahkenitch Creeks—Snyder 1908a. Elk Cr. near Cannon Beach*. Port Orford*. Rogue R. near Medford*.

35. (777). ONCORHYNCHUS NERKA (Walbaum). Red salmon. Sockeye salmon. Blueback salmon.

Salmo nerka Walbaum, Artedi Pisc., 1792: 71, after the *nerka* of Pennant, *narka* of Krasheninnikof; rivers and seas of Kamchatka.

Fario aurora Girard 1857c: 1857, 1858. *Oncorhynchus kennerlyi:* Jordan and Gilbert 1881f; Ward 1932; Schultz 1935. *Oncorhynchus nerka:* Bendire 1878, 1882; Jordan and Gilbert 1881b, 1881f, 1882, 1887; Jordan and Jouy 1882; Bean, T. H. 1883; Jordan 1884d, 1887; Collins 1892; Eigenmann and Eigenmann 1892; Jordan and Starks 1895; Seale 1895; Evermann and Meek 1898; Rathbun 1899; Kincaid 1919; O'Malley and Rich 1919; Cobb 1930; Ward 1932; Rich 1935; Rounsefell and Kelez 1935; Schultz 1935; Schultz and Students 1935. *Oncorhynchus paucidens:* Günther 1866. *Salmo aurora:* Günther 1866; Suckley 1874. *Salmo cooperi:* Suckley 1862a, 1874. *Salmo paucidens* Richardson 1836: Jones 1888. Common name: Bendire 1879; Gilbert 1914; Ward 1921, 1927, 1929, 1930.

RANGE: Japan to Alaska and southward to Klamath R., California. Marine and freshwater. Abundant. Very great commercial value.

RECORDS: Puget Sound Region:* Jordan and Gilbert 1881b, 1881f; Jordan 1884d, 1887; Collins 1892; Eigenmann and Eigenmann 1892; Jordan and Starks 1895; Rathbun 1899; Kincaid 1919; O'Malley and Rich 1919; Cobb 1930; Rounsefell and Kelez 1935. L. Washington*—Seale 1895; Schultz 1935. Swamp Cr.*—Schultz and Students. Sammamish R.*. Sammamish L.*—Evermann and Meek 1898. Skagit R.*—Cobb 1930. Skagit and Baker Rivers—Ward 1921, 1927, 1929, 1930, 1932. Samish L. near Bellingham*. San Juan Islands*. Lakes Crescent and Sutherland—Gilbert 1914.

Coast of Washington:* Rathbun 1899. Quinault R.*, Ozette L.—Cobb 1930.

Washington: Collins 1892.

Columbia River Drainage:* Richardson 1836; Suckley 1862a; Günther 1866; Jordan and Gilbert 1881b, 1881f, 1882, 1887; Bendire 1882; Jordan and Jouy 1882; Jordan 1884d; Jones 1888; Collins 1892; Eigenmann and Eigenmann 1892; Cobb 1930; Ward 1932; Rich 1935. Mouth*. Astoria—Girard 1857, 1857c; Günther 1866; Suckley 1874. The Dalles—Bean, T. H. 1883. Wallowa L.—Bendire 1879, 1882; Evermann and Meek 1898.

Coast of Oregon: Cobb 1930. Rogue R.—Jordan and Gilbert 1882.

Oregon: Bendire 1878; Collins 1892; Stuart L., Nicola L.—Evermann and Meek 1898.

36. (775). ONCORHYNCHUS TSHAWYTSCHA (Walbaum). King, chinook, or spring salmon.

Salmo tshawytscha Walbaum, Artedi Pisc., 1792: 71, rivers of Kamchatka; after the *tschawytscha* of Krasheninnikof, Descr. Kamchatka, 1768: 178 and the *tschawytscha* of Pennant, 1792.

Fario argyreus Girard 1857c: 1857, 1858. *Oncorhynchus chouicha:* Jordan and Gilbert 1881b, 1882, 1887; Bendire 1882; Jordan and Jouy 1882; Bean, T. H. 1883; Stone 1884; Jordan 1887; Tanner 1890; Collins 1892. *Oncorhynchus quinnat:* Günther 1866; Jordan 1879. *Oncorhynchus tschawytscha:* Jordan and Gilbert 1881f; Eigenmann and Eigenmann 1892; Gilbert and Evermann 1895; Jordan and Starks 1895; Evermann and Meek 1898; Rathbun 1899; Snyder 1908a; Evermann and Latimer 1910; Fowler 1912, 1923; Riddle 1917; Kincaid 1919; Cobb 1930; Rich 1935; Rounsefell and Kelez 1935. *Salmo argyreus:* Jones 1888. *Salmo confluentus:* Suckley 1862, 1874. *Salmo quinnat* Richardson 1836: Girard 1857c, 1858; Suckley 1874; Jones 1888. *Salmo richardii:* Suckley 1862a, 1874; Günther 1866. Common name: Thornton 1849; Swan 1857.

RANGE: Northern China to Alaska and southward to California. Marine and freshwater. Abundant. Very great commercial value.

RECORDS: Puget Sound Region:* Girard 1857a, 1857c, 1858; Suckley 1874; Jordan and Gilbert 1881b, 1881f, 1882, 1887; Jordan and Jouy 1882; Stone 1884; Jordan 1887; Collins 1892; Eigenmann and Eigenmann 1892; Jordan and Starks 1895; Evermann and Meek 1898; Rathbun 1899; Kincaid 1919; Cobb 1930; Rich 1935. Ft. Steilacoom—Girard 1857. Puyallup R.—Suckley 1862. Black R.—Suckley 1874. Seattle*—Tanner 1890;

Fowler 1923. L. Sammamish*. Meadowdale*. Skagit R.—Suckley 1862a, 1874; Günther 1866; Cobb 1930. Pt. Gamble, Port Townsend—Suckley 1874. San Juan Islands*. Pysht R.*.

Coast of Washington:* Rathbun 1899; Cobb 1930. Cape Flattery—Girard 1857, 1857c, 1858. Dickey R.*. Queets and Clearwater Rivers, Quinault L.* and R.*.—Evermann and Latimer 1910. Hoquiam R.*. Grays Harbor*. Willapa Bay—Swan 1857; Collins 1892.

Columbia River Drainage:* Richardson 1836; Thornton 1849; Girard 1857c, 1858; Swan 1857; Günther 1866; Suckley 1874; Jordan and Gilbert 1881b, 1881f, 1882, 1887; Jordan and Jouy 1882; Stone 1884; Jones 1888; Collins 1892; Eigenmann and Eigenmann 1892; Gilbert and Evermann 1895; Rathbun 1899; Fowler 1912; Riddle 1917; Cobb 1930; Rich 1935. Near mouth*. Klaskanine Cr. Clatsop Co., Ore.*. Clackamas R.*.—Jordan 1879. Bear Cr., Ore.—Bendire 1882. Walla Walla R.—Bean, T. H. 1883. Wallowa R.*—Evermann and Meek 1898. Crab Creek*. Rock Is. Dam.

Coast of Oregon:* Jordan and Gilbert 1881b, 1887; Stone 1884; Evermann and Meek 1898; Snyder 1908a; Cobb 1930. Tillamook Bay*. Nestucca system near Hemlock*. Umpqua R.*. Rogue R. near Medford*.

37. (779a, in part 779c, 779h). SALMO CLARKII CLARKII Richardson. Coastal cutthroat trout. Columbia River trout.

Salmo clarkii Richardson, Fauna Bor.-Amer., 3, 1836: 225, Cathlopootl R., Oregon: Suckley 1860, 1862, 1874; Jordan 1879; Smith 1880; Evermann 1899; Smith 1900; Snyder 1908a, 1908b; Fowler 1912; Crawford 1925.

Fario clarkii: Girard 1857c, 1858; Hallock 1877. *Fario stellatus:* Girard 1857, 1857c, 1858. *Fario tsuppitch:* Girard 1857c, 1858. *Salmo bathoecetor:* Meek 1899. *Salmo brevicauda* Suckley 1862a: 1874; Günther 1866; Hallock 1877. *Salmo clarkii clarkii:* Meek 1899; Schultz 1935; Schultz and Hanson 1935. *Salmo clarkii declivifrons* Meek 1899. *Salmo clarkii jordani* Meek 1899. *Salmo eremogenes* Evermann and Nichols 1909. *Salmo gibbsii:* Suckley 1862, 1874; Günther 1866; Hallock 1877; Crawford 1925. *Salmo mykiss:* Gilbert and Evermann 1895; Jordan and Starks 1895; Seale 1895; Kincaid 1919; Crawford 1925. *Salmo mykiss clarkii:* Evermann and Meek 1898. *Salmo purpuratus:* Jordan and Gilbert 1881f, 1882; Bendire 1882; Jordan and Jouy 1882; Cope 1884, 1889; Bean, T. H. 1884; Jordan 1884d, 1885, 1887. *Salmo purpuratus bouvieri* Bendire in Jordan and Gilbert 1883a. *Salmo stellatus:* Günther 1866. *Salmo tsuppitch:* Günther 1866; Jordan 1879; Jones 1888.

RANGE: British Columbia to California. Freshwater and marine. Abundant. Considerable commercial value.

RECORDS: Puget Sound Region:* Girard 1858; Suckley 1860, 1862a, 1874; Günther 1866; Hallock 1877; Jordan and Gilbert 1881f; 1882; Jordan and Jouy 1882; Jordan 1884d, 1885, 1887; Jordan and Starks 1895; Fowler 1912; Kincaid 1919; Schultz 1935. Deschutes R., near Olympia*—Schultz 1935; Schultz and Hanson 1935. Shelton*. Green L.*. L. Washington*—Seale 1895; Evermann and Meek 1898. Buckley*. Granite Falls*. L. Cushman*. Hoods Canal near Holly*. Pt. Townsend—Bean, T. H. 1884. Skagit R.—Günther 1866; Suckley 1874. Sauk R.—Schultz 1935. Samish L. near Bellingham*. Nooksack R.*. Olympic Peninsula—Lakes Sutherland* and Crescent*—Meek 1899.

Coast of Washington:* Schultz 1935; Schultz and Hanson 1935. Cape Flattery—Girard 1858. Dickey R.*. L. Quinault*. Humptulips R.*. Hoquiam R.*. Newaukum R.—Gilbert and Evermann 1895. Shoalwater Bay—Girard 1857, 1857a, 1857c, 1858.

Washington: Hallock 1877; Crawford 1925. Lakes and streams—Jordan 1884d. "Waha L., Wash." [Idaho]—Bendire in Jordan and Gilbert 1883a.

Columbia River Drainage:* Girard 1858; Suckley 1860, 1862, 1874; Günther 1866; Hallock 1877; Smith 1880; Jordan and Gilbert 1881f, 1882; Jordan 1884d, 1885; Jones 1888; Gilbert and Evermann 1895; Evermann and Meek 1898; Evermann 1899; Snyder 1908b; Kincaid 1919; Schultz, 1935; Schultz and Hanson 1935. Mouth*. Astoria—Girard 1857, 1857a, 1857c. Cowlitz R.*. Scappoose, Ore.*. Cathlopootl R.—Richardson 1836; Girard 1858. Clackamas R.—Jordan 1879. Deschutes R.—Girard 1857, 1857c, 1858. Ft. Dalles—Girard 1857c, 1858. Walla Walla R.*. Wallowa L.—Bendire 1882. Crab Cr.*. Wash.—Evermann and Nichols 1909. L. Chelan—Evermann 1899; Smith 1900.

Coast of Oregon:* Schultz and Hanson 1935. Lakes and streams—Snyder 1908a. Elk Cr. near Cannon Beach*. Umpqua R.*. Coos Bay*. Klamath L.—Cope 1884. Klamath L. and Siuslaw R.—Evermann and Meek 1898.

Oregon Lakes: Silver L.*—Cope 1889.

38. (779b). SALMO CLARKII LEWISI (Girard). Montana blackspotted trout.

Salar lewisi Girard, Proc. Acad. Nat. Sci. Phila., 8, 1856: 219, Falls of Missouri R.

Salmo lewisi: Suckley 1860, 1874; Hallock 1877; Crawford 1925; Leach 1933. *Salmo clarkii lewisi:* Schultz 1935; Schultz and Hanson 1935.

RANGE: Middle and Upper Columbia River drainage; introduced into western Washington. Yellowstone Lake and Upper Missouri River drainage. Freshwater. Abundant. Considerable commercial value.

RECORDS: Puget Sound Drainage: Quilcene and Birdsview—Leach 1933.

Columbia River Drainage: Eastern Washington*—Suckley 1860, 1874; Crawford 1925; Schultz 1935; Schultz and Hanson 1935. Eastern Oregon—Schultz and Hanson 1935. Cashmere*. Deepcreek*, Washington. Clarks Fork—Suckley 1874; Hallock 1877.

39. (780c, p. 2821). SALMO CLARKII CRESCENTIS (Jordan and Beardslee). Speckled trout of Lake Crescent.

Salmo gairdneri crescentis Jordan and Beardslee in Jordan, Proc. Calif. Acad. Sci., 2nd Ser., 6, 1896: 207, pl. 22, Crescent Lake, Clallam Co., Wash.: Meek 1899; Jordan, Evermann and Clark 1930 have interchanged the common names of *S. crescentis* and *S. beardslei*; Schultz 1935.

RANGE: Lake Crescent, Washington. Freshwater. Common. Commercial value.

RECORDS: Puget Sound Region: L. Crescent*—Jordan and Beardslee in Jordan 1896; Meek 1899; Schultz 1935.

40. (781b, p. 2819). SALMO GAIRDNERII BEARDSLEEI Jordan and Seale. Blueback trout of Lake Crescent.

Salmo gairdneri beardsleei Jordan and Seale in Jordan, Proc. Calif. Acad. Sci., 2nd Ser., 6, 1896: 209, pl. 23 Crescent Lake, Clallam Co., Wash.: Meek 1899; Schultz 1935.

RANGE: Lake Crescent, Washington. Freshwater. Common. Commercial value.

RECORDS: Puget Sound Region: L. Crescent*—Jordan and Seale in Jordan 1896; Meek 1899; Schultz 1935.

41. (780, 780a, 781, 781a). SALMO GAIRDNERII GAIRDNERII Richardson.[3] Rainbow trout. Steelhead trout.

Salmo gairdnerii Richardson, Fauna Bor.-Amer., 3, 1836: 221, Columbia R. at Fort Vancouver: Suckley 1860, 1874; Günther 1866; Jordan and Gilbert 1881f, 1882; Jordan and Jouy 1882; Jordan 1884d; Smiley 1885; Jones 1888; Collins 1892; Gilbert and Evermann 1895; Jordan and Starks 1895; Evermann and Meek 1898; Gilbert 1898; Rathbun 1899; Evermann and Latimer 1910; Starks 1911; Kincaid 1919; Fowler 1923; Cobb 1930; Rich 1935. *Fario gairdneri:* Girard 1857, 1857c, 1858. *Salmo gairdnerii gairdnerii:* Schultz 1935; Schultz and Hanson 1935. *Salmo gairdneri irideus:* Dimick and Mote 1934. *Salmo iridea:* Suckley 1874; Hallock 1877; Cope 1879. *Salmo irideus:* Jordan 1879; Jordan and Gilbert 1881f; Snyder 1908a; Evermann and Latimer 1910; Rich 1935. *Salmo masoni:* Suckley 1860, 1874. *Salmo rivularis:* Ayres 1855; Fowler 1912. *Salmo truncatus:* Suckley 1862, 1874; Günther 1866; Jones 1888; Stone 1889. Common name: Thornton 1849.

RANGE: British Columbia to California. (*Salmo gairdneri*: below Monterey to Bering Sea, Rich 1935). Freshwater and marine. Abundant. Great commercial value.

RECORDS: Puget Sound Region:* Suckley 1874; Jordan and Gilbert 1881f, 1882; Jordan and Starks 1895; Evermann and Meek 1898; Kincaid 1919; Cobb 1930; Schultz 1935; Schultz and Hanson, 1935. Ft. Steilacoom—Suckley 1874. Nisqually Cr.—Hallock 1877. L. Washington*. Cedar R.*. Seattle*—Fowler 1923. Buckley*. Granite Falls*. L. Cushman*. Hoods Canal near Holly*. Dosewallips R.*. Skagit R.*. Sauk R.*. S. Fk. Nooksack R.*. San Juan Islands—Starks 1911. Str. Juan de Fuca—Suckley 1862, 1874; Günther 1866. Pysht R.*. Olympic Peninsula*—Evermann and Latimer 1910.

Coast of Washington: Cape Flattery—Ayres 1855; Suckley 1874; Hallock 1877. Dickey R.*. L. Pleasant, Clallam Co.*. Soleduck R. at Hot Springs*. Quinault R.*—Evermann and Latimer 1910. L. Quinault*. Lena* L. Humptulips R.*. Hoquiam R.*. Willapa Bay—Collins 1892.

Washington: Suckley 1860; Collins 1892; Rathbun 1899.

Columbia River Drainage: Richardson 1836; Thornton 1849; Günther 1866; Suckley 1874; Jordan and Gilbert 1881f, 1882; Jordan and Jouy 1882; Jordan 1884d; Smiley 1885; Jones 1888; Stone 1889; Evermann and Meek 1898; Cobb 1930; Schultz 1935; Schultz and Hanson 1935. Mouth*. Lewis and Clark R.*. Klaskanine Cr.*. Clackamas R.*—Jordan 1879. Dallas—Hallock 1877. The Dalles—Suckley 1860, 1874. Deschutes R.—Suckley 1874. Walla Walla R.*. Touchet R.*. Tucannon R.*. Asotin Cr.*. Minam R.*. Wallowa R.*. Evermann and Meek 1898. Naches R.*. Crab Cr.*. Wenatchee R.*—Schultz 1935. Entiat R.*. Deep Cr.*. Little Deep Cr.*. Dragoon Cr.*. Spokane—Gilbert and Evermann 1895; Schultz 1935. Ferry Co., Wash.—Schultz 1935.

Coast of Oregon:* Snyder 1908a. Nehalem R.*. Nestucca R.*. Siletz and Alsea Rivers—Dimick and Mote 1934. Umpqua R.*. Rogue R.—Dimick and Mote 1934. Rogue R. near Medford*. Klamath R. and Klamath L.—Girard 1857, 1857c, 1858; Cope 1879; Gilbert 1898. Upper Klamath L.—Evermann and Meek 1898; Gilbert 1898.

Oregon Lakes Drainage: Chewaucan R.—Fowler 1912. Elder Cr.*.

Oregon: Collins 1892.

42. (780a). SALMO GAIRDNERII KAMLOOPS Jordan. Kamloops trout.

Salmo kamloops Jordan, Proc. U. S. Nat. Mus., 15, 1892: Kamloops L., British Columbia.

Salmo gairdnerii kamloops: Schultz 1935; Schultz and Hanson 1935.

RANGE: Upper Columbia River in northeastern Washington and British Columbia. Freshwater. Abundant. Commercial value.

RECORDS: Columbia River Drainage:* Northeastern Washington—Schultz 1935; Schultz and Hanson 1935.

43. (—). SALMO TRUTTA Linnaeus. Brown trout.

Salmo trutta Linnaeus, Syst. Nat. Ed. 10, 1758: 308.

Salmo levenensis: Leach 1933. Common name: McGuire 1898.

RANGE: Eurasia and North America, introduced into North America. Freshwater. Common. Commercial value.

RECORDS: Puget Sound Drainage: Baker L. hatchery—Leach 1933.

Columbia River Drainage: Clackamas R., Sucker L. (Clackamas Co.), and Multnomah Co.—McGuire 1898. Clackamas R. and Big White Salmon R.—Leach 1933.

44. (778). SALMO SALAR Linnaeus. Atlantic salmon.

Salmo salar Linnaeus, Syst. Nat., Ed. 10, 1758: 308, seas of Europe.

RANGE: North Atlantic, ascending suitable rivers. Introduced into British Columbia.

RECORDS: G. V. Wilby reports the introduction of this fish into British Columbia.

45. (782). CRISTIVOMER NAMAYCUSH (Walbaum). Lake trout. Great Lakes trout. Mackinaw trout.

Salmo namaycush Walbaum, Artedi Pisc., 1792: 68, Hudson Bay; based on the Namaycush salmon of Pennant: Schultz 1929.

RANGE: Northeastern United States. Great Lakes Region: Columbia and Fraser Rivers.

Probably introduced into the west. Freshwater. Not common. Commercial value.

RECORDS: Puget Sound Drainage: Schultz 1929. L. Whatcom Hatchery*.

[3] *Salmo gairdnerii shasta* Jordan (13th Biennial Rept. Calif. Fish Comm. 1894: 142, pl., McCloud R. at Baird, Shasta Co., Calif.) has been introduced generally in Oregon and Washington and eastern states where it is usually called *Salmo irideus* or *Salmo shasta*. Probably this form has hybridized with native rainbow trout in Washington and Oregon to such an extent that it is not now separable from them. *Salmo salar* Linnaeus has been reported from British Columbia where it was introduced, but so far we have not found it in this area.

46. (783). SALVELINUS FONTINALIS (Mitchill). Eastern brook trout.

Salmo fontinalis Mitchill, Trans. Lit. Phil. Soc. N. Y., 1, 1815: 435, near New York City.
Salvelinus fontinalis: Schultz 1929, 1935.

RANGE: Northeastern North America from Minnesota and Iowa eastward. Introduced into the western states. Freshwater. Common. Considerable commercial value.

RECORDS: Puget Sound Region: Cr. near Enumclaw*. Tributaries of L. Washington, Seattle*.

Washington: Schultz 1929, 1935.

Columbia River Drainage: Clackamas R.*. Little White Salmon R.*. Teanaway R.*. Moses L., Grant Co., Wash.*. Grand Coulee below Dry Falls*. Wenatchee R.*. North Twin L., Ferry Co.*. Dragoon Cr.*.

Oregon Lakes: Dairy Cr.*.

Oregon: Schultz 1929.

47. (784). SALVELINUS MALMA SPECTABILIS (Girard). Dolly Varden trout. Bull trout. Western charr.

Salmo spectabilis Girard, Proc. Acad. Nat. Sci. Phila., 8, 1856 (1857c): 218, Ft. Dalles, Oregon: Cope 1879; Jordan 1879.
Fario stellatus: Suckley 1860. *Salmo bairdii* Suckley 1862a: 1874; Hallock 1877. *Salmo campbelli:* Suckley 1874. *Salmo lordii* Günther 1866. *Salvelinus malma:* Jordan and Gilbert 1881f, 1882; Jordan and Jouy 1882; Cope 1884; Jordan 1884e, 1887; Gilbert and Evermann 1895; Jordan and Starks 1895; Kincaid 1919; Fowler 1923. *Salvelinus malma malma:* Evermann and Meek 1898. *Salvelinus malma spectabilis:* Schultz 1935. *Salvelinus parkei:* Evermann 1899; Smith 1900. Common name: Cantwell 1898.

RANGE: Coastal streams from Alaska to Northern California. Freshwater and marine. Abundant. Slight commercial value.

RECORDS: Puget Sound Region: Suckley 1874; Jordan and Gilbert 1881f, 1882; Jordan and Jouy 1882; Jordan 1884e, 1887; Jordan and Starks 1895; Cantwell 1898; Kincaid 1919. Puyallup, Duwamish, and Lummi Rivers—Suckley 1874. Seattle—Fowler 1923. Skagit R.—Günther 1866.

Coast of Washington: L. Pleasant, Clallam Co.*. Grays Harbor*.

Washington: Suckley 1860; Schultz 1935.

Columbia River Drainage: Suckley 1874; Jordan and Gilbert 1881f. Ft. Dalles—Girard 1857c. Wallowa L., Ore.—Evermann and Meek 1898. Naches R.—Gilbert and Evermann 1895. L. Chelan, Wash.—Evermann 1899; Smith 1900. Clarks Fork—Suckley 1862a, 1874; Hallock 1877.

Coast of Oregon: Streams west of Cascade Mts.—Jordan 1879. Klamath L.—Cope 1879, 1884.

Oregon: Suckley 1860.

Family 21. COREGONIDAE Whitefishes

48. (in part 756). PROSOPIUM WILLIAMSONI (Girard). Rocky Mountain whitefish.

Coregonus williamsoni Girard, Proc. Acad. Nat. Sci. Phila., 8, 1856, (1857a): 136, Deschutes R., Ore.: 1857, 1858; Günther 1866; Bean, T. H. 1883; Jordan 1884f; Bean, B. A. 1895; Gilbert and Evermann 1895; Evermann and Smith 1896; Evermann and Meek 1898; Evermann 1899; Smith 1900; Snyder 1908a; Evermann and Latimer 1910; Crawford 1925.

RANGE: Streams and lakes of western slope of Rocky Mountains from the Fraser to the Truckee River and Lahontan Basin of Nevada. Freshwater. Common. Slight commercial value.

RECORDS: Puget Sound Drainage: All larger streams entering Puget Sound—Crawford 1925. Deschutes R., near Olympia*. L. Sammamish*. Pilchuck R.*. Skookum Cr.*. Baker L., Whatcom Co.*.

Coast of Washington: Hoh, Queets, and Quinault Rivers—Evermann and Latimer 1910. Newaukum R.—Gilbert and Evermann 1895.

Washington: Lakes—Jordan 1884f.

Columbia River Drainage: Evermann and Smith 1896. Willamette R.—Snyder 1908a. White Salmon R., Wash.—Evermann and Meek 1898. Deschutes R., Oregon—Girard 1857, 1857a, 1858; Günther 1866; Evermann and Meek 1898. Walla Walla R.—Bean, T. H. 1883. Wallowa, Ore.—Evermann and Meek 1898. Naches R., Wash. and Umatilla, Ore.—Gilbert and Evermann 1895. L. Chelan, Wash.—Evermann 1899; Smith 1900. Little Spokane R.—Bean, B. A. 1895; Gilbert and Evermann 1895.

Oregon: Lakes—Jordan 1884f.

49. (755). PROSOPIUM COULTERI (Eigenmann and Eigenmann). Brown-backed whitefish.

Coregonus coulteri Eigenmann and Eigenmann, Amer. Nat., Nov. 1892: 961, Kicking Horse R. at Field, B. C.; Jordan and Snyder 1909; Snyder 1917; Kendall 1921.

RANGE: Alaska (Lake Aleknagik—Kendall 1921) to headwaters of the Columbia in Glacier National Park*. Freshwater. Common. Slight commercial value.

RECORDS: Columbia River Drainage: "Diamond L. Stevens Co." [Pend Oreille Co.], Wash.—Jordan and Snyder 1909; Snyder 1917; Kendall 1921.

50. (—). PROSOPIUM SNYDERI Myers. Lake Crescent whitefish.

Prosopium snyderi Myers, Copeia, No. 2, 1932: 62, L. Crescent, Washington.

RANGE: Lake Crescent, Olympic Peninsula, Washington. Freshwater. No commercial value, only one specimen known.

RECORDS: Puget Sound Drainage: L. Crescent—Myers 1932.

51. (in part 756) PROSOPIUM OREGONIUM (Jordan and Snyder). Oregon whitefish.

Coregonus oregonius Jordan and Snyder, Proc. U. S. Nat. Mus., 36, 1909: 425-430, McKenzie River, Oregon: Snyder 1918; Crawford 1925.
Irillion oregonius: Jordan 1918; Jordan, Evermann and Clark 1930.

RANGE: Columbia River and tributaries. Snake River at Moose,* Wyoming. Freshwater. Not common. Slight commercial value.

RECORDS: Columbia River Drainage: Crawford 1925. Willamette R.—Snyder 1918. McKenzie R.*—Jordan and Snyder 1909. White Salmon R. mouth*. Zillah*. Tributary Yakima R. at Ellensburg*. Rock Is. Dam.*

Family 22. OSMERIDAE Smelt

52. (790). THALEICHTHYS PACIFICUS (Richardson). Columbia River smelt. Eulachon. Oolachan. Candlefish.

Salmo (Mallotus) pacificus Richardson, Fauna Bor.-Amer., 3, 1836: 226, Columbia R.: Suckley 1860.

Thaleichthys pacificus: Günther 1866; Jordan and Gilbert 1881f, 1882; Swan 1881a; Jordan and Jouy 1882; Goode 1884; Jordan 1887; Eigenmann and Eigenmann 1892; Fowler 1912, 1923; Kincaid 1919. *Thaleichthys stevensi* Girard 1858.

RANGE: Bering Sea to Klamath River, California (Hubbs 1925). Marine and freshwater. Common. Great commercial value.

RECORDS: Puget Sound Region: Girard 1858; Suckley 1860; Swan 1881a; Jordan and Gilbert 1881f, 1882; Jordan 1887; Eigenmann and Eigenmann 1892; Kincaid 1919. Seattle [probably from market]—Fowler 1923. Off Camano Is.*.

Columbia River Drainage: Richardson 1836; Günther 1866; Jordan and Gilbert 1881f; 1882; Jordan and Jouy 1882; Goode 1884; Eigenmann and Eigenmann 1892. Cowlitz R.*.—Cat. No. 24, 775, U. S. Nat. Mus. Sandy R.*.

Coast of Oregon: Goode 1884. Naas R., Ore.[4]—Fowler 1912. Klamath R.—Hubbs 1925.

53. (791). SPIRINCHUS THALEICHTHYS (Ayres). San Francisco Bay smelt.

Osmerus thaleichthys Ayres, Proc. Calif. Acad. Nat. Sci., 2, 1860: 62, San Francisco.

Spirinchus thaleichthys: Hubbs 1925.

RANGE: San Francisco Bay. For Hubbs' 1925 record see *Spirinchus dilatus*. Marine. Abundant. Slight commercial value.

RECORDS: We find no authentic records for Washington; those by Jordan and Gilbert 1881f, and Kincaid 1919 for Puget Sound probably were for *S. dilatus*. Two collections in the U. S. Nat. Mus., Cat. No. 46,460, taken at 45° 56′ 15″ N., 124° 01′ 30″ W., *Albatross* Station 3060 and Cat. No. 37,329, Astoria, Oregon, we identify as *dilatus*, but with some uncertainty as these fish are not well preserved and in many respects seem to be somewhat intermediate between *S. dilatus* and *S. thaleichthys*.

54. (—). SPIRINCHUS DILATUS Schultz and Chapman. Long-finned smelt. Puget Sound smelt.

Spirinchus dilatus Schultz and Chapman, Ann. Mag. Nat. Hist., 10th ser., 13, 1934: 67-78, 2 pls., Nooksack River, Washington.

Osmerus thaleichthys: Jordan and Gilbert 1881f; Eigenmann and Eigenmann 1892; Rathbun 1899; Kincaid 1919. *Spirinchus thaleichthys:* Hubbs 1925. *Spirinchus starksi:* Shelford et al. 1935.

RANGE: British Columbia (Burrard Inlet and Harrison Lake*), Puget Sound Region to Tillamook Head, Oregon. Marine and freshwater. Common. Slight commercial value.

RECORDS: Puget Sound Region: Jordan and Gilbert 1881f; Eigenmann and Eigenmann 1892; Kincaid 1919. Saratoga Passage*, off Camano Is.*, Mouth of Nooksack R.*—Schultz and Chapman, 1934. San Juan Is.*—Shelford et al. 1935.

Coast of Washington: *Albatross* Station 2868, 47° 52′ N., 124° 44′ W. (which is off Teawhit Pt. south of La Push, Wash.)*—Hubbs 1925; Schultz and Chapman, 1934.

Washington: Rathbun 1899.

Columbia River Mouth: Astoria, Cat. No. 37,329, U.S.N.M.*—Schultz and Chapman 1934.

Coast of Oregon: *Albatross* Station 3060, 45° 56′ 15″ N., 124° 01′ 30″ W. (which is off Tillamook Head, Oregon)*—Schultz and Chapman 1934.

55. (—). SPIRINCHUS STARKSI (Fisk). Night surf smelt.

Osmerus starksi Fisk, Proc. U. S. Nat. Mus., 46, 1913: 293, fig., San Francisco Bay.

Spirinchus starksi: Hubbs 1928; Hubbs and Schultz 1929.

RANGE: La Push, Washington south to Monterey Bay, California. Marine. Abundant. Slight commercial value.

RECORDS: Coast of Washington: Beach at La Push*. Cedar Cr. Beach.*

Coast of Oregon: Yaquina Head*, Yaquina Bay*—Hubbs 1928; Hubbs and Schultz 1929.

56. (792). ALLOSMERUS ATTENUATUS (Lockington). Whitebait.

Osmerus attenuatus Lockington, Proc. U. S. Nat. Mus., 3, 1880: 66, San Francisco.

Allosmerus attenuatus: Hubbs 1925; Hubbs and Schultz 1929.

RANGE: Central Oregon to San Francisco Bay. Marine. Locally abundant. Slight commercial value northward.

RECORDS: Coast of Oregon: Central Oregon, U.S.N.M.. Cat. No. 46,728, 44° 56′ N., 124° 12′ 30″ W.*—Hubbs 1925. Yaquina Head*. Yaquina Bay*—Hubbs and Schultz 1929.

57. (795). HYPOMESUS PRETIOSUS[5] (Girard). Silver smelt. Surf smelt.

Salmo (Osmerus) olidus Pallas, Zoogr. Rosso.-Asiat., 3, 1811: 391, lakes and rivers of Kamchatka.

Hypomesus olidus: Jordan and Gilbert 1881f; Swan 1881, 1881a; Hubbs 1925.

RANGE: Japan to Alaska southward to San Francisco (Hubbs 1925). Spawning in freshwater. Common. No commercial value.

RECORDS: We know of no record of *olidus* in this area. The records of this species for Puget Sound by Jordan and Gilbert 1881f, and by Swan 1881, 1881a were without doubt based on *H. pretiosus*.

Argentina pretiosa Girard, Proc. Acad. Nat. Sci. Phila., 7, 1854 (1857): 155, San Francisco.

Hypomesus olidus: Jordan and Gilbert 1881f; Swan 1881, 1881a; Jordan and Jouy 1882; Goode 1884. *Hypomesus pretiosus:* Bean, T. H. 1884; Jordan 1887; Tanner 1890; Eigenmann and Eigenmann 1892; Gilbert 1895; Jordan and Starks 1895; Evermann and Meek 1898; Rathbun 1899; Starks 1911; Kincaid 1919; Hubbs 1925. *Mesopus pretiosus:* Fowler 1912. *Osmerus attenuatus:* Bean, T. H. 1882a (reexamined by Hubbs).

RANGE: Alaska to Central California (Hubbs 1925.) Marine. Abundant. Considerable commercial value.

RECORDS: Puget Sound Region*: Jordan and Gilbert 1881f; Swan 1881a; Jordan and Jouy 1882; Goode 1884; Jordan 1887; Eigenmann and Eigenmann 1892; Jordan and Starks 1895; Fowler 1912; Kincaid 1919. Seattle*—Tanner 1890. Utsaladdy*. Pt. Townsend*—Bean, T. H. 1884. San Juan Islands*—Starks 1911. Pt. Angeles*—Gilbert 1895.

[4] We have not been able to verify the existence of a river of this name in Oregon. Possibly Nass River, British Columbia, was meant.

[5] (795). *Hypomesus olidus* (Pallas). Freshwater smelt.

Coast of Washington: Quillayute R.*—Swan 1881. Hoh R., near mouth.* Beach at La Push*. Beach at mouth of Cedar Cr.*.

Washington: Wash. Territory*—Bean, T. H. 1882a; Rathbun 1899.

Columbia River Mouth: Cowlitz R.*. "Cowitz Hbr."*.

Coast of Oregon: Tillamook Bay.* Nestucca Bay*. Yaquina Bay*. Yachats*. Siuslaw R.—Evermann and Meek 1898. Coos Bay*.

Family 23. ARGENTINIDAE Deep sea smelt

58. (800). LEUROGLOSSUS STILBIUS Gilbert.

Leuroglossus stilbius Gilbert, Proc. U. S. Nat. Mus., 13, 1890: 57, from *Albatross* Stations 2997 and 2998 in 221 and 40 fathoms: Hubbs 1928.

RANGE: Unalaska (*Albatross* Station 3330) to California. Not yet recorded for Washington and Oregon (Hubbs 1928). Marine. Rare. No commercial value.

RECORDS: Str. Georgia: off Departure Bay,* 9 specimens, 200 fathoms, July 10, 1915.

Family 24. MICROSTOMIDAE Deep-sea fish.

59. (804). BATHYLAGUS PACIFICUS Gilbert.

Bathylagus pacificus Gilbert, Proc. U. S. Nat. Mus., 13, 1890(1891): 55, *Albatross* Stations 3071 and 3074, off coast of Washington.

RANGE: Coast of Washington in deep water. Marine. Rare. No commercial value.

RECORDS: Coast of Washington: *Albatross* Stations 3071 and 3074 in 685 and 877 fathoms —Gilbert 1891.

Family 25. CHAULIODONTIDAE Viper fishes

60. (878). CHAULIODUS MACOUNI Bean.

Chauliodus macouni Bean, Proc. U. S. Nat. Mus., 13, 1890: 44, off Cape St. James, Queen Charlotte Islands: Gilbert 1895.

RANGE: Queen Charlotte Islands, British Columbia, to California. Marine. Not rare. No commercial value.

RECORDS: Coast of Oregon: *Albatross* Station 3347—Gilbert 1895.

Family 26. GONOSTOMIDAE

61. (873). CYCLOTHONE MICRODON (Günther).

Gonostoma microdon Günther, Ann. Mag. Nat. Hist., 2, 1878: 188, near Bermuda.

Cyclothone microdon: Jordan, Evermann and Clark 1930.

RANGE: Atlantic and Pacific Oceans. In the Pacific it was reported from Oregon to Panama by Jordan, Evermann and Clark 1930. Marine. Not common. No commercial value.

Family 27. NEMICHTHYIDAE Thread eels. Snipe eels

62. (606). NEMICHTHYS AVOCETTA Jordan and Gilbert.

Nemichthys avocetta Jordan and Gilbert, Proc. U. S. Nat. Mus., 3, 1880(1881d): 409, Port Gamble: 1881f, 1882; Eigenmann and Eigenmann 1892; Gilbert 1904; Kincaid 1919.

Nemichthys: Tanner 1890.

RANGE: Puget Sound to Oregon. Marine. Rare. No commercial value.

RECORDS: Puget Sound Region· Eigenmann and Eigenmann 1892. Port Gamble, Wash. —Jordan and Gilbert 1881d, 1881f, 1882; Kincaid 1919. Waldron Is.—Gilbert 1904.

Coast of Oregon: Heceta Bank—Tanner 1890.

Family 28. CATOSTOMIDAE Suckers

63. (276). PANTOSTEUS JORDANI Evermann, Mountain sucker.

Pantosteus jordani Evermann, Bull. U. S. Fish. Comm., 12, 1892(1893): 51, fig. on p. 53: Whitewood Cr., etc., of Black Hills, S. Dak.: Gilbert and Evermann 1895; Evermann and Meek 1898.

RANGE: Columbia River basin and Upper Missouri. Freshwater. Common. Slight commercial value.

RECORDS: Columbia River Drainage: Gilbert and Evermann 1895. So. Fork John Day R.*. Snake R., Naches R.*, and Umatilla—Gilbert and Evermann 1895. Palouse R.*. Wallowa L.—Evermann and Meek 1898. Ellensburg Cr.*.

64. (286). CATOSTOMUS OCCIDENTALIS LACUS-ANSERINUS Fowler. Goose Lake sucker.

Catostomus occidentalis lacus-anserinus Fowler, Proc. Acad. Nat. Sci. Phila., 65, 1913: 45, Goose Lake, Oregon.

Catostomus labiatus: Cope 1879, 1884. *Catostomus occidentalis:* Snyder 1908b.

RANGE: Goose Lake and tributaries. Freshwater.

RECORDS: Goose Lake Drainage: Cope 1879, 1884; Fowler 1913. Drew, Muddy, and Cottonwood Creeks—Snyder 1908b. Dog Cr.*

65. (285, page 2792). CATOSTOMUS SNYDERI Gilbert. Coarse-scaled Klamath River sucker.

Catostomus snyderi Gilbert, Bull. U. S. Fish. Comm., 17, 1897(1898): 3, Upper Klamath Lake, Ore.: Evermann and Meek 1898; Snyder 1908a; Fowler 1913.

Catostomus labiatus: Girard 1857, 1857b, 1858; Cope 1879, 1884; Jordan 1882.

RANGE: Klamath basin, Oregon and California. Freshwater. Not common. No commercial value.

RECORDS: Coast of Oregon: Klamath R.—Snyder 1908a. Klamath L.—Girard 1857, 1857b, 1858; Cope 1879, 1884; Jordan 1882; Fowler 1913. Klamath L. and Williamson R. —Evermann and Meek 1898. Upper Klamath L. and Lost R.—Gilbert 1898.

66. (—). CATOSTOMUS MICROPS Rutter.

Catostomus microps Rutter, Bull. U. S. Bur. Fish., 27, 1907: 120, fig. 1, Rush Cr., a tributary of Ash Cr., Aden, Modoc Co., Calif.

RANGE: Goose Lake Drainage and lava bed streams of northern California. Freshwater. Not common. No commercial value.

RECORDS: Goose Lake Drainage: Bavers Cr.*

67. (288). CATOSTOMUS MACROCHEILUS Girard. Coarse-scaled Columbia River sucker.

Catostomus macrocheilus Girard, Proc. Acad. Nat. Sci. Phila., 8, 1856: 175, Astoria, Ore.: 1858; Günther 1868; Smith 1880; Jordan 1882, 1884h; Jordan and Jouy 1882; Gilbert and Evermann 1895; Seale 1895; Evermann and Meek 1898; Evermann 1899; Smith 1900; Snyder 1908a, 1908b; Evermann and Latimer 1910.

?Catostomus longirostris: Jordan 1882. *Catostomus tsiltcoosensis* Evermann and Meek 1898.

RANGE: Puget Sound Drainage, Columbia River, Coasts of Washington and Oregon as far south as the Sixes River, Oregon. Freshwater. Abundant. Commercial value.

RECORDS: Puget Sound Drainage: Jordan 1882. Green L. at Seattle—Seale 1895. Lakes Union and Washington at Seattle*—Evermann and Meek 1898. Cedar R. near Renton*. Evans Cr. near Redmond*. Cr. trib. to Hoods Canal at Holly*.

Coast of Washington: L. Pleasant and Willapa R.—Evermann and Latimer 1910. Quinault R.*. L. Quinault*. Satsop R.*.

Columbia River Drainage*: Smith 1880; Jordan and Jouy 1882; Gilbert and Evermann 1895; Evermann and Meek 1898; Snyder 1908b. Mouth*. Lewis and Clark R.*. Astoria—Girard 1857b, 1858; Günther 1868; Jordan 1882, 1884h. Cowlitz R. near Kalama*. St. Helens*. Willamette R.—Snyder 1908a. Umatilla R.*. Touchet R.*. Snake R.—Gilbert and Evermann 1895. Palouse R.*. Tucannon R.*. Grande Ronde R.*. Wallowa L., Ore.—Evermann and Meek 1898. Malheur R.*. Trib. Yakima R., Ellensburg*. Cle Elum*. Rock Is. Dam*. Wenatchee R.*. Lake Chelan.—Evermann 1899; Smith 1900.

Coast of Oregon: Nehalem*, Siuslaw, Umpqua*, Coos, Coquille, Flores, and Sixes Rivers—Snyder 1908a. Siuslaw and Tsiltcoos Rivers—Evermann and Meek 1898.

Oregon Lakes Drainage: Silvies R.*—Snyder 1908b.

68. (....). *Catostomus syncheilus* Hubbs and Schultz[6]. Fine-scaled sucker of the Lower Columbia River.

Catostomus syncheilus Hubbs and Schultz, Univ. Wash. Pub. Biol., 2(1), 1932: 1-14, Crab Creek, 7 miles below Odessa.

Catostomus catostomus: Gilbert and Evermann 1895; Evermann 1899; Snyder 1908b; Evermann and Nichols 1909. *Catostomus discobolus:* Jordan 1887a.

RANGE: Columbia River in eastern Washington, Oregon and Idaho. Freshwater. Abundant. Slight commercial value.

RECORDS: Columbia River Drainage: Jordan 1887a. Umatilla R.*. Pendleton, Ore., Walla Walla, Wash., Starbuck, Wash.—Gilbert and Evermann 1895. Palouse R.*. Smokle Cr.*. Tucannon R.*. Grande Ronde R.*. Malheur R.*. Yakima R.* at Ellensburg, Crab Cr.*, Moses L.*—Hubbs and Schultz 1932. Crab Cr.—Evermann and Nichols 1909. Rock Is. Dam*. Wenatchee*. L. Chelan—Evermann 1899.

Oregon Lakes Drainage: Silvies R.—Snyder 1908b.

69. (282a, p. 2792). *Catostomus rimiculus* Gilbert and Snyder. Fine-scaled Klamath River sucker.

Catostomus rimiculus Gilbert and Snyder in Gilbert, Bull. U. S. Fish. Comm. 17, 1897 (1898): 3, Trinity R., Humboldt Co., Calif.: Snyder 1908a.

[6] *Catostomus catostomus* (Forster), the northern sucker, was found not to occur in Washington and Oregon in the Columbia River by Hubbs and Schultz (1932). The form passing under that name was found to be a new species. They suggest that Snyder's 1908b record of *C. catostomus* from the Silvies River is either *C. syncheilus* or an unnamed form but not the true *catostomus*. Recently L. P. Schultz took *C. catostomus griseus* from the Flathead River system in Glacier National Park, Montana.

RANGE: Rogue and Klamath Rivers, Oregon and California. Freshwater. Common. No commercial value.

RECORDS: Coast of Oregon: Rogue* and Klamath Rivers—Snyder 1908a.

70. (.....). *Catostomus warnerensis* Snyder. Coarse-scaled sucker of Warner Lake basin.

Catostomus warnerensis Snyder, Bull. U. S. Bur. Fish., 27, 1907 (1908b): 81, Warner Cr., and Honey Cr., Oregon: Fowler 1913.

Catostomus batrachops: Cope 1884. *Catostomus tahoensis:* Cope 1884.

RANGE: Oregon Lakes and tributaries. Freshwater. Common. No commercial value.

RECORDS: Oregon Lakes Drainage: Silver L. and Warner L.—Cope 1884. Warner L., Warner Cr., Honey Cr.*—Snyder 1908b. Warner Cr.—Fowler 1913. Oregon Lakes—Snyder 1918.

71. (298). CHASMISTES BREVIROSTRIS Cope. Klamath Lake sucker.

Chasmistes brevirostris Cope, Amer. Nat., 13, 1879; 785, Klamath Lake, Ore.: 1884; Jordan 1884h; Seale 1896; Gilbert 1898.

Lipomyzon brevirostris: Fowler 1913.

RANGE: Upper Klamath Lake. Freshwater. Moderately common. No commercial value.

RECORDS: Coast of Oregon: Klamath L.—Cope 1879, 1884; Jordan 1884h; Seale 1896; Gilbert 1898; Fowler 1913.

72. (297a). CHAMISTES STOMIAS Gilbert. Upper Klamath Lake sucker.

Chasmistes stomias Gilbert, Bull. U. S. Fish Comm., 17, 1897 (1898): 5, Upper Klamath L., Ore.: Evermann and Meek 1898.

RANGE: Upper Klamath Lake. Freshwater. Modcrately common. No commercial value.

RECORDS: Coast or Oregon: Upper Klamath Lake—Evermann and Meek 1898; Gilbert 1898.

73. (297b). CHASMISTES COPEI Evermann and Meek. Klamath sucker.

Chasmistes copei Evermann and Meek, Bull. U. S. Fish Comm., 17, 1897 (1898): 70, fig. 3, Pelican Bay, Upper Klamath L., Ore.

RANGE: Upper Klamath Lake, Oregon. Freshwater. Moderately common. No commercial value.

RECORDS: Coast of Oregon: Upper Klamath L., Ore.—Evermann and Meek 1898.

74. (299). DELTISTES LUXATUS (Cope). Lost River sucker.

Chasmistes luxatus Cope, Amer. Nat., 13, 1879: 784, Klamath Lake, Ore.: 1884; Jordan 1884h.

Catostomus rex Eigenmann, R. S. 1891. *Deltistes luxatus:* Seale 1896; Gilbert 1898; Fowler 1913.

RANGE: Klamath Lakes Drainage. Freshwater. Moderately common. No commercial value.

RECORDS: Coast of Oregon: Klamath R.—Gilbert 1898. Klamath Lakes—Cope 1879, 1884; Jordan 1884h; Seale 1896; Gilbert 1898; Fowler 1913. Lost R.—Eigenmann, R. S. 1891; Gilbert 1898.

Family 29. CYPRINIDAE Minnows. Chubs

75. (page 201). CYPRINUS CARPIO Linnaeus. Common carp.

Cyprinus carpio Linnaeus, Syst. Nat., Ed. 10, 1758: 320: Goode 1884.

RANGE: Eurasia and North America. Freshwater. Abundant. Introduced into North America. Considerable commercial value.

RECORDS: Columbia River Drainage: Gilbert 1894. Mouth of Umatilla R.*. Rock Lake*. Crab Cr.*. Rock Is. Dam*.
Washington: Schultz 1929.
Oregon: Goode 1884; Schultz 1929.

76. (page 201). CARASSIUS AURATUS (Linnaeus). Common goldfish.
Cyprinus auratus Linnaeus, Syst. Nat., Ed. 10, 1758: 323.

RANGE: Eurasia and North America. Freshwater. Abundant. Introduced. Considerable commercial value as an aquarium fish.

RECORDS: Washington: Schultz 1929. L. Wash.*. L. Union*.
Columbia River Drainage: Mouth*. Kalama*. Moses L., Grant Co., Wash.*.
Oregon: Schultz 1929.

77. (332). ACROCHEILUS ALUTACEUS Agassiz and Pickering. Chiselmouth. Square mouth.
Acrocheilus alutaceus Agassiz and Pickering in Agassiz, Amer. Jour. Sci. Arts, 19, 1855: 99, Willamette Falls and Walla Walla R., Ore.: Günther 1868; Jordan 1879, 1884i; Bean, T. H. 1883; Gilbert and Evermann 1895; Snyder 1908a, 1908b.
Lavinia alutacea Girard 1857b.

RANGE: Lower Columbia River System, and Malheur Lake Drainage, Oregon. Freshwater. Common. No commercial value.

RECORDS: Columbia River Drainage: Günther 1868; Jordan 1884i; Gilbert and Evermann 1895. Willamette Falls—Agassiz and Pickering in Agassiz 1855; Girard 1857b. Willamette R. and tributaries—Snyder 1908a. Clackamas R.—Jordan 1879. John Day R*.—Bean, T. H. 1883. Umatilla R.*. Walla Walla R.—Agassiz and Pickering in Agassiz 1855; Girard 1857b. Touchet R.*. Wallula, Starbuck, Wash.—Gilbert and Evermann 1895. Tucannon R.*. Grande Ronde R.*. Yakima R. near Zillah*. Lower Crab Cr.*. Rock Is. Dam*. Wenatchee R.*. Little Spokane R.*. Hangman R.*.
Oregon Lakes Drainage: Silvies R*.—Snyder 1908b.

78. (352). MYLOCHEILUS CAURINUS (Richardson). Columbia River chub.
Cyprinus (Leuciscus) caurinus Richardson, Fauna Bor.-Amer., 3, 1836: 304, Columbia R. at Fort Vancouver.
Clarkina caurina: see Snyder 1905, 1908a, and Hubbs and Schultz 1931. The two specimens under this name are now interpreted as hybrids between *Acrocheilus alutaceus* and *Ptychocheilus oregonensis* (Hubbs and Schultz 1931). *Leuciscus caurinus:* Snyder 1905, 1908a. *Leucosomus caurinus:* Günther 1868. *Mylocheilus caurinus:* Girard 1857, 1857b, 1858; Jordan 1879, 1884i; Jordan and Jouy 1882; Bean, T. H. 1883; Gilbert and Evermann 1895; Seale 1895; Evermann and Meek 1898; Evermann 1899; Smith 1900; Fowler 1925. *Mylocheilus lateralis* Agassiz and Pickering in Agassiz, Amer. Jour. Sci. Arts, 1855: 231, Columbia R. at Fort Vancouver: Girard 1857b, 1858; Suckley 1860; Snyder 1905, 1908a. *Orthodon microlepidotus:* Jordan and Jouy 1882. *Rutilus symmetricus:* Evermann and Latimer 1910.

RANGE: Drainage system from the Columbia River to the Fraser River. Freshwater. Common. Slight commercial value.

RECORDS: Puget Sound Drainage: Jordan and Jouy 1882; Jordan 1884i; Steilacoom—Girard 1857b, 1858; Suckley 1860. Clear L., Pierce Co.*. Sherwood Cr., Mason Co.*. L. Washington* at Seattle—Seale 1895; Evermann and Meek 1898. L. Sammamish*—Evermann and Meek 1898.
Coast of Washington: Pleasant L.*., Clallam Co. La Push*. L. Quinault*—Evermann and Latimer 1910.
Columbia River Drainage: Günther 1868; Jordan and Jouy 1882; Jordan 1884i; Fowler 1925. Mouth*. Lower Columbia R.*—Gilbert and Evermann 1895. Lewis and Clark R.*. Astoria—Girard 1857, 1857b, 1858. Willamette R. Basin—Snyder 1908a. Clackamas R., Ore.—Jordan 1879. Corvallis—Snyder 1905. Vancouver, Wash.—Richardson 1836; Agassiz 1855. White Salmon R., Wash.—Evermann and Meek 1898. Mouth of Umatilla R.*. Mill Cr. trib. of Walla Walla R.—Bean, T. H. 1883. Lower Crab Cr.*. Wenatchee R.*. L. Chelan—Evermann 1899; Smith 1900.

79. (in part 357). PTYCHOCHEILUS OREGONENSIS (Richardson). Squaw fish. Oregon pike.
Cyprinus (Leuciscus) oregonensis Richardson, Fauna Bor.-Amer., 3, 1836: 305, Columbia R.
Gila oregonensis: Jordan 1879. *Leuciscus oregonensis:* Günther 1868. *Ptychocheilus gracilis* Agassiz 1855. *Ptychocheilus oregonensis:* Girard 1857, 1857b, 1858; Suckley 1860; Jordan and Jouy 1882; Bean, T. H. 1884; Jordan 1884i; Collins 1892; Gilbert and Evermann 1895; Seale 1895; Evermann and Meek 1898; Evermann 1899; Smith 1900; Snyder 1908a, 1908b; Evermann and Latimer 1910; Fowler 1923, 1925.

RANGE: Puget Sound drainage, Columbia River drainage and Coastal drainage of Oregon and Washington. Freshwater. Abundant. Slight commercial value.

RECORDS: Puget Sound Drainage: Jordan and Jouy 1882. Sherwood Cr., Mason Co.*. Steilacoom—Girard 1857b, 1858. Seattle*—Fowler 1923. Green L. in Seattle—Seale 1895. L. Washington*, Seattle—Evermann and Meek 1898. L. Sammamish*. Pt. Townsend—Bean, T. H. 1884.
Coast of Washington: Ozette L. and Pleasant L.*—Evermann and Latimer 1910. Quinault R.*. Chehalis R.* and tributaries—Gilbert and Evermann 1895. Satsop R.*.
Columbia River Drainage: Richardson 1836; Jordan and Jouy 1882; Jordan 1884i; Gilbert and Evermann 1895. Astoria and Vancouver—Girard 1857b, 1858. Willamette R.—Agassiz 1855; Girard 1857, 1857b; Collins 1892. Willamette and tributaries—Snyder 1908a. Clackamas R.*—Jordan 1879. Fort Dalles — Suckley 1860. Umatilla R.*. — Touchet R.*. Grande Ronde R.*. Malheur R.*. Trib. Yakima R., Ellensburg* and Zillah*. Lower Crab Cr.*. Wenatchee R.* Entiat R.*. L. Chelan, Wash.—Evermann 1899; Smith 1900. Okanogan R. at Omak.* Little Spokane R.*. Hangman R.*. Colville R.*.
Oregon Lakes Drainage: Malheur L. Basin —Snyder 1908b. Silvies R.*. Silver L.—Fowler 1925.
Oregon: Günther 1868.

80. (in part 357). PTYCHOCHEILUS GRANDIS (Ayres). Sacramento pike. Squaw fish.

Gila grandis Ayres, Proc. Calif. Acad. Nat. Sci., 1, 1854: 18, San Francisco.
Ptychocheilus grandis: Snyder 1908b.

RANGE: Sacramento River system and other streams of California. Probably present in Goose Lake. Freshwater. Common. Slight commercial value.

RECORDS: No record for Oregon but was taken in Pitt R., Calif. Snyder 1908b.

81. (—). PTYCHOCHEILUS UMPQUAE Snyder. Squawfish (of Umpqua system).

Ptychocheilus umpquae Snyder, Bull. U. S. Bur. Fish., 27, 1907 (1908a): 170, fig. 2, in part Callopooia Creek, Oakland, Oregon.
Ptychocheilus oregonensis — Evermann and Meek 1898.

RANGE: Coastal streams of Oregon—Siuslaw River to Umpqua River. Freshwater. Common. Slight commercial value.

RECORDS: Coast of Oregon: Siuslaw and Umpqua* rivers—Snyder 1908a. Below Drain, Oregon*. Tsiltcoos and Tahkenitch rivers—Evermann and Meek 1898.

82. (376). RICHARDSONIUS BALTEATUS BALTEATUS (Richardson). Red-sided bream.

Cyprinus (Abramis) balteatus Richardson, Fauna Bor.-Amer., 3, 1836: 301, Columbia River.
Abramis balteatus: Günther 1868. *Abramis lateralis:* Günther 1868. *Alburnus balteatus:* Jordan and Jouy 1882. *Cheonda cooperi:* Girard 1857b, 1858; Suckley 1860. *Leuciscus balteatus:* Eigenmann 1895; Gilbert and Evermann 1895; Seale 1895; Evermann and Meek 1898; Evermann 1899; Snyder 1908a, 1908b; Cockerell and Allison 1909; Evermann and Nichols 1909; Fowler 1925. *Leuciscus bicolor:* Evermann and Latimer 1910. *Leuciscus cooperi:* Günther 1868. *Leuciscus siuslawi* Evermann and Meek 1898. *Richardsonius balteatus:* Girard 1857b, 1858; Suckley 1860; Bean, T. H. 1883. *Richardsonius lateralis:* Girard 1857b, 1858; Suckley 1860.

RANGE: Fraser R., Columbia River System, and streams of Washington and Oregon. Freshwater. Abundant. Slight commercial value as food for other fishes.

RECORDS: Puget Sound Drainage: Jordan and Jouy 1882; Fowler 1925. Deschutes R.*. Steilacoom—Girard 1857b, 1858; Suckley 1860; Günther 1868. L. Washington*—Suckley 1860; Eigenmann 1895; Gilbert and Evermann 1895; Seale 1895; Evermann and Meek 1898. Green L. in Seattle—Seale 1895; Cockerell and Allison 1909. L. Sammamish*.

Coast of Washington: L. Quinault—Evermann and Latimer 1910. Skookumchuck R. to Newaukum R.—Eigenmann 1895; Gilbert and Evermann 1895.

Columbia River Drainage: Richardson 1836; Günther 1868; Gilbert and Evermann 1895; Evermann and Meek 1898. Cowlitz R. near Kalama, Wash.*. St. Helens, Ore.*. Vancouver, Wash.—Girard 1857b, 1858; Suckley 1860. Willamette R.*—Snyder 1908a. Dalles, Ore.—Girard 1857b, 1858. S. F. John Day R.*. Umatilla*, Walla Walla, Grande Ronde*, Naches*, Spokane*, Colville, and Hangman* rivers, and at Pasco—Eigenmann 1895. Touchet R.*. Malheur R.*. Trib. Yakima R.*. Crab Cr.*.—Evermann and Nichols 1909. Wenatchee R.*. L. Chelan, Wash.—Evermann 1899. Little Spokane R.*. Little Deep Cr.*. Elk Cr.*.—Cockerell and Allison 1909.

Coast of Oregon: Siuslaw R.—Evermann and Meek 1898; Snyder 1908a. Tsiltcoos, Tahkenitch, and Umpqua* rivers—Snyder 1908a. Drain*. Reedsport*.

Oregon Lakes Drainage: Warmsprings, Silver Cr., Silvies R.*—Snyder 1908b; Evermann and Cockerell 1909.

83. (397). RICHARDSONIUS BALTEATUS HYDROPHLOX (Cope).

Clinostomus hydrophlox Cope Hayden's Geol. Surv. Mont., for 1871, 1872: 475, Blackfoot Creek, Idaho.

RANGE: Palouse River of eastern Washington: Bovill Idaho; and above the falls of Snake River in Idaho; Salt Lake drainage, Utah.

RECORDS: Columbia River Drainage: Palouse R. near Hooper*. Smokle Cr. 14 miles west of Pullman*. Pine Cr. at Malden*. Hardman Cr. at North Pine*. Palouse R. 2 miles above Colfax*, and at Palouse*. S. Fork Palouse R. above Pullman*.

84. (365). TIGOMA BICOLOR Girard. Chub.

Tigoma bicolor Girard, Proc. Acad. Nat. Sci. Phila. 8, 1856 (1857b): 206, Klamath Lake, Oregon: 1857, 1858. *Cheonda caerulea:* Girard 1857, 1857b, 1858. *Leuciscus bicolor:* Günther 1868; Evermann and Meek 1898; Gilbert 1898. *Squalius caeruleus:* Cope 1884.

RANGE: Klamath Lake and tributaries. Freshwater. Not rare. No commercial value.

RECORDS: Coast of Oregon: Klamath L.*.—Girard 1857, 1857b, 1858; Günther 1868. Upper Klamath L.—Evermann and Meek 1898; Gilbert 1898. Lost R.—Girard 1857, 1857b, 1858; Cope 1884; Gilbert 1898.

85. (—). HESPEROLEUCUS MITRULUS Snyder. Northern roach.

Hesperoleucus mitrulus Snyder, Bull. U. S. Bur. Fish. 32, 1912(1914): 67, Drew Creek, Lake Co., Oregon.
Myloleucus parovanus: Cope 1884. *Rutilus symmetricus:* Snyder 1908a, 1908b.

RANGE: Streams tributary to the north end of Goose Lake. Freshwater. Common. No commercial value.

RECORDS: Oregon lakes: Camas Cr.* tributary to Crump L.

Goose Lake Drainage: Drew Creek, Lake Co., Oregon—Snyder 1908a, 1908b, 1914. Dog Cr.* Fish L.*.

86. (385). SIPHATELES BICOLOR OBESUS (Girard). Roach.

Algansea obesa Girard, Proc. Acad. Nat. Sci. Phila., 8, 1856: 183, Humboldt R., Nevada.
Siphateles obesus: Snyder 1918.

RANGE: Lakes and streams of Lahontan Basin. Freshwater. Common. No commercial value.

RECORDS: Lahontan Drainage: Southeastern Oregon—Snyder 1918.

87. (386). SIPHATELES BICOLOR BICOLOR (Girard). Roach.

Algansea bicolor Girard, Proc. Acad. Nat. Sci. Phila., 8, 1856 (1857b): 183, Klamath Lake, Oregon: 1857, 1858.
Rutilus bicolor: Evermann and Meek 1898; Gilbert 1898; Snyder 1908a, 1908b. *Rutilus thalassinus:* Fowler 1913a. *Siphateles bicolor:* Snyder 1918.

RANGE: Klamath River, Klamath Lake, and tributaries (Snyder 1918). Freshwater. Common. No commercial value.

RECORDS: Coast of Oregon: Klamath R.—Girard 1857b; Snyder 1908a. Klamath L.*—Girard 1857, 1857b, 1858; Gilbert 1898; Snyder 1908b, 1918; Fowler 1913a. Upper Klamath L.—Evermann and Meek 1898; Gilbert 1898. Lost R.—Gilbert 1898.

88. (387). SIPHATELES BICOLOR FORMOSUS (Girard). Roach.

Algansea formosa Girard, Proc. Acad. Nat. Sci. Phila., 8, 1856: 183, Merced and Mohave R., Calif. *Myloleucus thalassinus:* Cope 1884. *Rutilus thalassinus:* Snyder 1908b; Fowler 1913a. *Siphateles formosus:* Snyder 1918.

RANGE: Goose Lake and tributaries, Sacramento-San Joaquin system. Freshwater. Common. No commercial value.

RECORDS: Goose Lake Drainage: Goose L.—Cope 1884; Snyder 1908b, 1918; Fowler 1913a. Cottonwood Cr. and Muddy Cr.—Snyder 1908b. Dog Cr.*.

89. (—). SIPHATELES BICOLOR COLUMBIANUS (Snyder). Roach.

Rutilus columbianus Snyder, Bull. U. S. Bur. Fish., 27, 1907(1908b): 92, fig. 4, Warm Springs near Harney Lake, Harney Co., Ore. *Siphateles columbianus:* Snyder 1918.

RANGE: Columbia River and Malheur L. Basin. Freshwater. Common. Slight commercial value.

RECORDS: Columbia River Drainage: Snyder 1918. Kalama*. Lower Crab Cr.* below Moses Lake. Moses Lake*, Grant Co., Wash.

Oregon Lakes Drainage: Warm Springs, Harney Co.—Snyder 1908b. Malheur L. Basin—Snyder 1918.

90. (—). SIPHATELES BICOLOR OREGONENSIS (Snyder). Roach.

Rutilus oregonensis Snyder, Bull. U. S. Bur. Fish., 27, 1907(1908b): 87, fig. 3, XL, spring, Abert Lake, Oregon. *Myloleucus formosus:* Cope 1884, 1889. *Rutilus formosus:* Fowler 1913a. *Siphateles oregonensis:* Snyder 1918.

RANGE: Lakes of southeastern Oregon. Freshwater. Common. No commercial value.

RECORDS: Oregon Lakes Drainage: Abert*, Summer*, Silver, and Alkali lakes and Chewaucan, Ana* and Warner rivers—Snyder 1908b. Chewaucan R.* — Fowler 1913a. Crump L.*, Warner L.* and Silver L.—Cope 1884, 1889; Fowler 1913a. Fields Reservoir* near Field. Southeastern Oregon—Snyder 1918.

91. (—). TINCA TINCA (Linnaeus). Green or golden tench.

Cyprinus tinca, Linnaeus, Syst. Nat., ed. 10, 1758: 321. *Tinca vulgaris:* Schultz 1929.

RANGE: Columbia River, certain streams and lakes of Puget Sound drainage, and Vancouver Island. Freshwater. Locally abundant. Introduced. No commercial value.

RECORDS: Puget Sound Drainage: Lakes Washington* and Union*—Schultz 1929.

Columbia River Drainage: Kalama*. Mouth Umatilla R.*. Rock Is. Dam*. L. Chelan*.

92. (—). OREGONICHTHYS CRAMERI (Snyder). Oregon chub or minnow.

Hybopsis crameri Snyder, Bull. U. S. Bur. Fish., 27, 1907(1908a): 181, fig. 5, Willamette R. at Oregon City, Oregon.

RANGE: Willamette and Umpqua rivers. Freshwater. Common. No commercial value.

RECORDS: Columbia River Drainage: Willamette R. at Oregon City—Snyder 1908a. Coast of Oregon: Umpqua R.*—Snyder 1908a.

93. (507). RHINICHTHYS CATARACTAE DULCIS (Girard). Long-nosed dace.

Argyreus dulcis Girard, Proc. Acad. Nat. Sci. Phila., 8, 1856: 185, Sweetwater R., Neb. *Rhinichthys cataractae dulcis:* Gilbert and Evermann 1895; Evermann and Latimer 1910. *Rhinichthys dulcis:* Evermann and Meek 1898; Snyder 1908a. *Rhinichthys transmontanus:* Bean, T. H., 1883.

RANGE: Streams of northwestern United States. Freshwater. Abundant. No commercial value.

RECORDS: Puget Sound Drainage: Tacoma Cr.—Evermann and Latimer 1910. Stillaguamish R.*.

Coast of Washington: Queets, Clearwater, Quinault, and Willapa Rivers—Evermann and Latimer 1910. Satsop R.*.

Columbia River Drainage: Kalama*. Willamette R.—Snyder 1908b. Castle Rock*. Garrison Cr., Walla Walla—Bean, T. H. 1883. Palouse R.*. Tucannon R.*. Grande Ronde R.*. Minam R.*. Lostine R.*. Wallowa, Oregon—Evermann and Meek 1898. Trib. of Yakima R., Zillah*. Naches R.*—Gilbert and Evermann 1895. Ellensburg*. Teanaway R.*. Cle Elum*. Wenatchee R.*. Nason Cr.* Entiat R.*. Little Spokane R.*. Little Deep Cr.*.

Oregon Lakes Drainage*: Silvies R.*.

94. (—). RHINICHTHYS EVERMANNI Snyder. Long-nosed dace (of Umpqua River System).

Rhinichthys evermanni Snyder, Bull. U. S. Bur. Fish. 27, 1907 (1908a): 178, fig. 4, South Umpqua R., Roseburg, Oregon.

RANGE: Umpqua R., Oregon. Freshwater. No commercial value.

RECORDS: Coast of Oregon: South Umpqua R.*. at Roseburg—Snyder 1908a. North Umpqua R. near Winchester.*

95. (515). APOCOPE OSCULA NUBILA (Girard). Black-sided dace.

Argyreus nubilus Girard, Proc. Acad. Nat. Sci. Phila., 8, 1856 (1857b): 186, Ft. Steilacoom, Puget Sound: 1858; Suckley 1860. *Agosia nubila:* Gilbert and Evermann 1895; Snyder 1908a. *Apocope nubila:* Bean, T. H. 1883.

RANGE: Lower Columbia River and coastwise streams of Washington and Oregon. Freshwater. Common. No commercial value.

RECORDS: Puget Sound Drainage: Ft. Steilacoom—Girard 1857b, 1858; Suckley 1860. Cedar R. near Elliott*.

Coast of Washington: L. Quinault*. Humptulips R.*. Satsop R.*. Newaukum* and Skookumchuck rivers*—Gilbert and Evermann 1895.

Columbia River Drainage: Cowlitz R.*. St. Helens R.*. Willamette R.—Snyder 1908a. S. F. John Day R.*. Garrison Cr., Walla Walla—Bean, T. H. 1883. Teanaway R.* Crab Cr.*. Little Spokane R.*. Deepcreek*.

Coast of Oregon: Nestucca*, Yaquina, Alsea, Siuslaw, Umpqua,* Coos and Coquille rivers*—Snyder 1908a. Near Drain, Ore.* Above Reedsport, Ore.*

(To be continued in January-March issue, and run through all issues in 1936)

BULLETIN of the PAN-PACIFIC UNION

For Oct.-Dec., 1935. Number 176

All Pan-Pacific associations and clubs throughout Pacific countries are requested to send in reports of current activities for publication in this section. Address communications to MID-PACIFIC MAGAZINE, 1067 Alakea Street, Honolulu, Hawaii, for attention of THE EDITORS.

Sketch History of the Pan-Pacific Union

By ALEXANDER HUME FORD

IT IS UPSETTING in the extreme to step ashore at New York after a year's travel in Europe and Central Asia to find at the dock a cablegram from far-off Honolulu demanding by return air mail a carefully prepared article for the MID-PACIFIC MAGAZINE "which you brought into being just a quarter of a century ago in the crossroads city of the greatest of oceans, the home of more than half the races and population of the globe." Yet this is my task and I surrender.

The story of the MID-PACIFIC MAGAZINE, and of the Pan-Pacific Union of which it has been for a quarter century the official organ, is too great a romance, too great a tale of adventure in the realms of international friendship to rush into the telling lightly. A few high lights of reminiscence are all that can be undertaken in this hasty review to be written and airmailed to Hawaii almost within the hour.

I can look back now to nearly forty years' acquaintance with Hawaii and the Orient, and over some quarter century of residence in Honolulu—to the birth of that child of mine, the MID-PACIFIC MAGAZINE.

One day I said to the late Lorrin A. Thurston, publisher of *The Honolulu Advertiser*, and one of Hawaii's great men, that I intended to bring out a 150-page highly illustrated monthly magazine, printed and published in Honolulu, to be devoted to the promotion of better relations between the countries bordering on the Pacific.

"Who is darn fool enough to back such a hare-brained scheme?" was Thurston's smiling rejoinder.

"You are," I replied. "*The Advertiser* is printing it—contract's signed."

"Has my business manager let me in for this?" he asked.

"Yes."

"All right, then, let's make it a wedding and not a funeral."

Strange to say, *The Advertiser* (then Hawaiian Gazette Co., Ltd.) never lost a cent on publishing the magazine. For two years it was issued from Gazette presses. Then it passed over to the presses of the *Honolulu Star-Bulletin* (where it has been printed continuously for 23 years) and I became associated with the foremost of Hawaii's then younger men of vision and energy, Wallace Rider Farrington, publisher (with Frank Atherton, one of the first vice-presidents of the Pan-Pacific Union) of the *Honolulu Star-Bulletin*.

Governor of the Territory of Hawaii for two terms (1921-1929), Wallace R. Farrington was also president of the Pan-Pacific Union until his death in 1933. His enthusiasm for, and practical support of, the ideals of the Pan-Pacific Union never wavered. His son, Senator Joseph Rider Farrington, now general manager of the Star-Bulletin, Ltd., is, I am happy to learn, carrying on as a vice-president and trustee of the Union and chairman of the Executive Committee.

At the passing of Wallace Rider Farrington another of Hawaii's great men, Judge Walter F. Frear, Governor of the Territory (1907-1913) and vice-president of the Union, was drafted for the presidency despite protestations that innumerable calls upon his time would interfere with the attention he felt the

office demanded. In my opinion it is right and proper that Judge Frear should head the Pan-Pacific Union to which he has always given generous financial and moral support.

The MID-PACIFIC MAGAZINE caused no childbirth pains. It was born with advertising that carried it through many years of prosperity until depression times came and the American dollar was clipped forty per cent. The magazine carried some thirty-two pages of advertising in its first issue, all good for a year if the magazine lived that long. Some sixteen of these pages of advertising ran for a score or more of years with never a contract, merely verbal offers to assist. It was wonderful, those first twenty years, during which time more than a million dollars gold of Honolulu money passed through my hands for the MID-PACIFIC MAGAZINE and the Pan-Pacific Union, and not a dollar stuck. Every cent of earnings of the magazine and my salary as executive director of the Pan-Pacific Union was spent on the cause by which I was obsessed—the bringing about of better relations amongst Pacific peoples.

I was always ready to rush in where angels feared to tread, and could take the magazine and the Pan-Pacific Union with me. For a time I was a sort of Hitler, Mussolini and Stalin rolled in one, and the Hawaiian community stood for it, appalled and helpless.

Overnight it would be decided that a Pan-Pacific educational, press, commercial, science, women's, surgical, or other Pan-Pacific conference would be called to meet in Honolulu on a given date. The magazine would foster the propaganda work, and the conference would be held, the delegates entertained by the people of Honolulu and Hawaii as no delegates have ever been entertained before or since; the entertainment provided by the affiliated Pan-Pacific Association of Japan for the Third Pan-Pacific Science Conference, however, coming a close second.

Today, after a quarter century, the younger element in Hawaii is taking a real, vital interest in the work of the Pan-Pacific Union and in its magazine. Well-planned business methods promise to carry on the pioneer work of the early organizers.

Alexander Hume Ford and Dr. Iga Mori (right) en route to Japan to found the Pan-Pacific Club of Tokyo, 1923. Dr. Mori is now in Honolulu, a vice-president of the Pan-Pacific Union; member of resident Board of Trustees.

In Japan, Prince Iyesato Tokugawa best understood and conducted the Pan-Pacific Union work. For more than a decade he has headed the Pan-Pacific Association of Japan with its branches in the larger cities of Dai Nippon, and has presided over, or been present, with great regularity at the weekly luncheons of the Tokyo Pan-Pacific Club, founded in 1923. Prince Tokugawa has for nearly half a century been the willing and indefatigable instrument of the Japanese government in an endeavor to bring about friendship between the peoples of Japan and those who visit them from abroad. In this he has been miraculously successful. After twenty-five years of ceaseless work at bringing about better understanding among the peoples of the Pacific, I yield, so far as Japan is concerned, to Prince Tokugawa's wise leadership.

Viscount Tadashiro Inouye, another consistent Pan-Pacific booster, has been president of the Tokyo Club continuously since its organization.

In Hawaii the Pan-Pacific Union, aiming at better understanding, began

its existence in embryo in 1907; in reality in 1911, with its first Pan-Pacific Congress. In 1917 it was granted its international charter by the Territory of Hawaii, better to prepare for the series of Pan-Pacific conferences held in Honolulu and other great cities of the Pacific during the decade of the "twenties." Out of this grew the Institute of Pacific Relations of which Frank C. Atherton, always a loyal supporter of the Pan-Pacific Union, said in 1928:

> The Pan-Pacific Union was the pioneer organization in arousing our people here to the importance of studying international problems and getting together in a friendly spirit. . . . As this Union has developed some of us have been conscious of the fact that there are points of real difference, points of misunderstanding, and so there has grown up another institution, the Institute of Pacific Relations. It seems to me there is a vital need for both of these organizations and one can supplement the other. The Union is doing a splendid piece of work . . . in bringing about harmonious relations; the other in studying points of difference, trying to get at the facts, and seeing how we can work out these problems in a right, cordial, and cooperative spirit.

I have heard that someone in Honolulu made the comparison: "The Pan-Pacific Union is the family doctor; the Institute of Pacific Relations a specialist."

The Pan-Pacific workers in Hawaii have learned through long years of effort and experience that even in this delightful international racial experiment station at the Crossroads of the Pacific each race and group would cooperate only if permitted to carry out its ideas for better friendship or understanding in its own way.

It was in Afghanistan that I began to sense the tremendous divergence between the primitive Aryan and the Oriental, and in Norway I sensed thoroughly the vast mental gulf between the Nordic and the Aryan and the still vaster mental and cultural gulf between the Nordic and the Oriental.

The most valuable mental asset of my life is this year I have spent in Asia and Europe studying peoples and races. In this span of time I have absorbed and learned more than in a quarter of a century of study of Pacific lands.

I have learned much during this past year, first in Japan among the common people; then for months in Asia, across the continent by lorry and motorbus and throughout Europe I studied and compared the civilizations of the Old World, side by side. I know now the nature of the colossal mistakes I made during twenty-five years of honest endeavor toward real understanding among the races, and yet I might have learned all this in the one great racial experiment station of the world—Hawaii.

I have learned that where race prejudice has been overcome, race preference remains, and it will never be otherwise, and should not be. Race preference will not preclude interracial friendship, interracial understanding.

I have found everywhere in Asia that the Nordic is always a powerful, dynamic machine, ever leading, ever envied, ever misunderstood, ever unwelcome, but always bringing to the static Asiatic better things and better government than he has ever known. The Nordic has, in my Nordic opinion, a tremendous mission of leadership to fulfill, an obligation to the entire world, which he cannot escape.

My selection of Hawaii as a home and the place of my activities was an accident. In 1899, voyaging to Siberia to assist in the building of what is now the South Manchurian Railway, then the Russian Far Eastern, or Trans-Siberian, I met on the boat to Hawaii three brothers, George, James, and William Castle. They had been to Washington on some matters of annexing the United States to Hawaii, I believe. At any rate we became friends. James Castle interested me in a plan he had for settling a colony of white Americans on the sugar plantations of Hawaii, so that seven years later on my way around the world I dropped off at Honolulu to learn the fate of the American colony; fell for the lure of Hawaii and the splendor of its people, the most altruistic in all the world, and made Hawaii my home.

In the organization of the Pan-Pacific Union J. P. Cooke, Governor Walter F. Frear, and Frank C. Atherton gave the first helping hand. Later William R. Castle and his brother, George, placed a quarter of a million dollars' worth of property at the disposal of the Pan-

Pacific Union as an educational interracial center. The two Castles and J. P. Cooke have passed on but the result of their generosity remains.

Canada and her premiers have always taken a deep interest in the work of the Pan-Pacific Union. In the Philippines Manuel L. Quezon, now president of the new Commonwealth, with Dr. Roxas and Gregorio Nieva, have been the leading spirits of the Pan-Pacific Association of the Philippine Islands. Even Siberia had her Pan-Pacific clubs until the Russians began their great experiment. Recent letters from Pan-Pacific Union headquarters in Honolulu indicate that Russia did not lose interest, however, as shown now by applications for membership from the USSR diplomatic corps and by various fine articles for the magazine contributed by some of Russia's great scientists.

China has always been interested in the work of the Pan-Pacific Union, and a financial supporter. Her Pan-Pacific Club of Shanghai, Dr. C. T. Wang, president, inaugurated the movement of good roads to bind China together; so successfully that one may now go by motorbus to almost every part of that vast country, and the great roads are really binding China together. Pan-Pacific luncheon clubs in all parts of China are being established now by the Pan-Pacific Association of China, of which Dr. H. H. Kung, Minister of Finance, is president. The late Sun Yat-sen, father of the Republic of China, educated in Honolulu, was one of the first vice-presidents of the Pan-Pacific Union and its loyal supporter in China. He was a contributor to the MID-PACIFIC MAGAZINE in its early days as were most of the great men of the Pacific. I hope some day to publish a book of these outstanding outpourings as they first appeared in the pages of the MID-PACIFIC MAGAZINE.

In the course of the quarter century of life of the magazine and the Pan-Pacific Union I visited practically all the lands of the Pacific. I was received by presidents and premiers, emperors and kings, and by the intelligentsia of the vast Pacific. Yet I can truly say that to me the lowliest peasant or the humblest worker was often as interesting and congenial company as was the highest potentate in the land.

First supporters of the MID-PACIFIC MAGAZINE, outside of Hawaii, were the governments of Australia and New Zealand (see text, page 389). Australia, or to be more correct, New South Wales, possessed the greatest genius yet discovered in the tourist promotion field—Percy Hunter, one of the world pioneers in this field. (See text, page 385.) He fiated tourist hotels, mountain resorts, introduced skiing to Australia, and stocked the streams with trout; his energy was prodigious. He put Australia on the map as a tourist resort and there it has remained. In Sydney he created the Millions Club, at first a branch of the Pan-Pacific work, and now one of the largest clubs in Australia.

In New Zealand at the same time was the mighty T. E. Donne, creator and head of the New Zealand Tourist Bureau. He made known at home and abroad that New Zealand was the scenic wonder of the world, so that in a short space of time this marvelous scenic wonderland of less than a million population a quarter of a century ago, became known the world over as the land of scenic wonder. Both Donne and Hunter were early supporters of the MID-PACIFIC MAGAZINE and the Pan-Pacific Union, to which their governments made appropriations of funds.

Siam and Indo-China took an early interest in the Pan-Pacific Union and continue that interest.

The United States government has given financial and diplomatic support directly and through the Territory of Hawaii which always has been, and continues to be, liberal in its financial and moral support.

In Japan I was often criticized for not going to Washington and securing additional funds for the support of the Pan-Pacific Union, but my attitude was, and is, that each country should do its share, and my mission to Japan was to discover in what way she would coöperate in the general support of the Pan-Pacific Union.

For twenty-five years the magazine has published at least one laudatory illustrated article in every issue on each Pacific land; never in the course of its

career has it published an adverse criticism of any Pacific land or race. It is a great and lasting example in a great adventure in friendship.

It is a tremendous task in a few hours to write and send by air mail to Hawaii an article for the Twenty-fifth Anniversary Number of the MID-PACIFIC MAGAZINE. It would be easier, far easier, leisurely to write a history of those years but not in a few hours. No other land in all the world would have given the backing, support and help that Hawaii has given. Money was never refused, and now that the brains and energy of the younger generation of Hawaii are to be poured into the magazine and into the work of the Pan-Pacific Union, great things should happen. For a quarter century I have waited, longed for and hoped for this day, and now that it has come I feel that I may be permitted to retire from a life of remorseless action and activity to sit down quietly in my declining years (I still climb mountains of 15,000 feet) and put that activity into my pen to record the many things that have happened in the Pacific area, during the past quarter century, that lead to better friendship.

In rushing this manuscript by air to Honolulu after hasty writing, I feel very much like the executive who ends his letter with "Dictated but not read." But what could I do? The cable from Hawaii was imperative, and I owe Hawaii more than I can ever repay. So do all the countries about the Pacific that have benefited in the past twenty-five years from the experiments in better racial relations so successfully carried on in Hawaii, the greatest interracial experiment station in all the world, and land of the most remarkable group of philanthropists and pioneers in interracial friendships known to our times—or to any other.

Greetings from Pan-Pacifica

HEARTWARMING messages received at Pan-Pacific Union headquarters, Honolulu, furnish inspiration alike to the directors, staff and membership and are indicative of the cordial and increasing interest of Pacific peoples in the work of the Pan-Pacific Union. Your Board of Directors gratefully acknowledge the following: (alphabetical order geographically)

AUSTRALIA: Canberra: *Message from The Prime Minister of Australia, The Right Hon. J. A. Lyons, M.P., for the* MID-PACIFIC MAGAZINE:

It is appropriate that the 25th year of publication of the MID-PACIFIC MAGAZINE should take the form of a special Hawaii number. My recent visit to Honolulu, short though it was, convinced me of the important part Hawaii is playing and will continue to play in the affairs of the Pacific.

The Pan-Pacific Union is doing a fine work which I trust will continue for many years. Every day the Pacific looms larger in world politics, and the progress of any integral part of that great ocean is reflected to the benefit of the other parts. More and more, with increasing speed of communications and increasing facilities for travel, are the peoples of the Pacific coming closer together, and the aims of the Pan-Pacific Union to further peaceful cooperation between the nations whose shores are washed by the waves of this great ocean, deserve the commendation of all who have at heart the happiness of mankind.

J. A. LYONS.

Willara: Sydney: *Greetings from Percy Hunter, publicist (retired) to the Pan-Pacific Union:*

The Secretary of the Pan-Pacific Union has asked me to write a message for the 25th anniversary number of the MID-PACIFIC MAGAZINE. How gladly I comply with this request. The anniversary coincides nearly with the Silver Jubilee of His Majesty George V, and I remember staying at Honolulu with Alexander Hume Ford when on my way to the King's Coronation. It was then that the MID-PACIFIC MAGAZINE had its birth. I had been in Honolulu a few years before when my old friend Ford started his Hands-Around-The-Pacific Club, which was to grow into the Pan-Pacific Union, an international organization of humanity that is now famous in all countries of the world. The Union is a tribute to the many fine qualities to be found in the people of Honolulu, and particularly in their leader in this matter, Alexander Hume Ford. Long may it prosper and long may Ford live to continue his brilliant

humanitarian work which shines across the darkness of misunderstanding and bigotry as his own shining character illumines and vivifies every venture he embarks upon.

Melbourne: *Greetings from Dr. Georgina Sweet, first president, Pan-Pacific Women's Association:*

I would like to add my tribute of interest and appreciation for the good work which the MID-PACIFIC MAGAZINE does in stimulating and maintaining the interest of peoples in so many countries round the Pacific in each other: in this way it must be a very definite aid towards that mutual understanding of peoples which is so necessary to the peace of the world.

BRITISH COLUMBIA: Victoria: *Message from the Mayor of the City of Victoria to the Pan-Pacific Union:*

I think the work of your Union deserves support from all Nations bordering on the Pacific and trust the special Canadian number of your magazine will meet with every success.

I note that members of Canadian Chambers of Commerce will be paying you a visit this Fall and hope you will have a large representation.

Yours faithfully,

D. LEEMING,
Mayor.

Victoria: *Message from the Office of Gray Line Motors, by Harold Husband, General Manager, to the Pan-Pacific Union:*

Thank you for your letter of August 17th, also for the copy of the MID-PACIFIC MAGAZINE which arrived, and which we perused with interest.

We are very much interested in any organization which encourages friendly relations between the people of all countries bordering on the Pacific, and we are, of course, interested in any movement or organization which will popularize our Pacific Northwest.

May we take this opportunity of extending to you and your organization our best wishes for success in your endeavor to unify and popularize the countries of the Pacific and to assure you of our heartiest cooperation?

Yours very truly,

HAROLD HUSBAND,
General Manager, Empress Taxi & Sightseeing Co., Ltd.

CALIFORNIA: Los Angeles: *Message from Agnes L. Peterson, a delegate to Second Pan-Pacific Women's Conference, Honolulu:*

I firmly believe that every thinking person, who has the good fortune to spend a little time with the Pan-Pacific Union, learns much, and at least I came away with more hope of building up sane and friendly international relations than I ever dreamed possible. You are daily illustrating the great possibility of our dreams of actually cooperating with traditional enemies.

CHINA, Canton: *Message delivered in person by Dr. Wing Tsit Chan, Honorary Secretary, Canton Branch, Pan-Pacific Association of China, principal speaker at the Pan-Pacific Union weekly luncheon, Honolulu, Sept. 30, 1935:*

Hearty greetings from the Canton Branch of the Pan-Pacific Association of China. The Canton branch was only organized last March, with some fifty charter members from eight different nationalities, under the able presidency of Dr. Wing Kwong Chung, president of Lingnan University, assisted by an American member as vice-president, a German member as honorary treasurer, and my humble self as honorary secretary. On behalf of the Canton Association, I wish to present you our sincere greetings.

Shanghai: *Message from Chengting T. Wang, President Shanghai Pan-Pacific Association, to the Pan-Pacific Union:*

The distinctive feature of man is his dream for perfection. From the time when he was just like any other species of the animal kingdom but perhaps with a little more intelligence, he has steadily, although sometimes very slowly, reached out for a higher and higher civilization. From family to clan, from clan to tribe, from tribe to nation and from nation we are now working towards world cooperation. But progress towards that goal has been very slow. Nationalism dies hard. Nevertheless we are making progress as exemplified in the Covenant of the League of Nations, in the World Court and in Non-Aggressive Treaties between nations.

Mr. Alexander Ford, in bringing into being the Pan-Pacific Union is one of those men who work for an ideal. That ideal is the advancement of understanding, good will and international peace. On the occasion of the 25th anniversary of the MID-PACIFIC MAGAZINE, I wish to voice for those of us on this side of the Pacific who believe in this Union, our deep appreciation for and loyal support to its work. May the magazine be a torch to light up the path towards a still higher civilization, when nations will seek diligently for understanding, good will and world peace.

HAWAII: Iolani Palace; Honolulu: *Greetings from the Hon. Joseph B. Poindexter, Governor of the Territory of Hawaii, to the Pan-Pacific Union:*

I take pleasure in congratulating the Pan-Pacific Union on the occasion of the 25th Anniversary of its official publication, the MID-PACIFIC MAGAZINE.

Dedicated, as this anniversary number is, to the Hawaiian Islands, this publication should

spread the message of the Hawaiian Islands to the four corners of the world.

Extending over more than a quarter century of active participation in the promotion of good will and better relationships among the peoples of the Pacific area, the Pan-Pacific Union has played an important and recognized part in the forming of a common bond among the various racial groups. The Pan-Pacific Union, its officers and members are to be highly commended for their active interest in spreading the gospel of good fellowship throughout the countries bordering on the Pacific Ocean.

With its headquarters located here in Honolulu, the Pan-Pacific Union has become a recognized force in this community and, as Governor of the Territory of Hawaii, I take pride in extending my heartiest congratulations to the Pan-Pacific Union.

Very truly yours,

J. B. POINDEXTER,
Governor of Hawaii.

U. S. NAVY; Pearl Harbor Naval Station: *Message from H. E. Yarnell, Rear Admiral U.S.N., Commandant, 14th Naval District, to the Pan-Pacific Union:*

On this occasion of the 25th anniversary of the publication of the MID-PACIFIC MAGAZINE, I desire to express to the Pan-Pacific Union the Navy's appreciation of their successful work in furthering the cause of common understanding and good will among the peoples of the Pacific.

H. E. YARNELL,
Rear Admiral, U.S.N.,
Commandant, 14th Naval District.

Honolulu Hale (City Hall); Honolulu: *Greeting from George F. Wright, Mayor of the City and County of Honolulu, to the Pan-Pacific Union:*

On the occasion of the 25th Anniversary of the MID-PACIFIC MAGAZINE, I take great pleasure in extending to the Pan-Pacific Union sincere felicitations and congratulations on behalf of the people of the City and County of Honolulu.

The Pan-Pacific Union has been a beneficial influence in cementing a closer bond of understanding among the various social groups, not only in Hawaii but also in the many countries of the Pacific area.

The limits of the City and County of Honolulu are not bounded by the geographic lines of the Island of Oahu, but extend to and include the Palmyra Islands on the south and Midway to the northwest with many thousands of square miles within this area.

Therefore, as mayor of the city and county of Honolulu, I wish to say that Hawaii is proud of its veteran organization, the Pan-Pacific Union, and to extend to the Union our fond ALOHA!

GEORGE F. WRIGHT,
Mayor of Honolulu.

Honolulu: *Greeting from W. A. Gabrielson, Chief of Police for the City and County of Honolulu, to the Pan-Pacific Union:*

On behalf of the Honolulu Police Department, I take great pleasure in extending to the Pan-Pacific Union my sincere congratulations upon the 25th anniversary of its official publication, the MID-PACIFIC MAGAZINE.

Working in a humanitarian cause in the promotion of better relationships and common understanding among the various nations of the Pacific area, the Pan-Pacific Union, spanning more than a quarter century of activity, has indeed set a worthy and commendable mark of achievement.

The Pan-Pacific Union has set a splendid example in cementing the bonds of common fellowship among the various racial groups, not only here in the Territory, but also throughout the lands of the western hemisphere.

As Chief of Police of the Honolulu Police Department I wish to express recognition of the manifold efforts of the Pan-Pacific Union in furthering the cause of peace and good will among mankind.

W. A. GABRIELSON,
Chief of Police.

CHINESE CONSULATE; Honolulu: *Greetings from the Hon. King Chau Mui, Consul-General for the Republic of China, to the Pan-Pacific Union:*

I am pleased to offer congratulations to the MID-PACIFIC MAGAZINE on its 25th anniversary.

The great sage Confucius taught that man of virtue is the man who can extend his sympathy and understanding to others. During the last quarter century the Pan-Pacific Union has accomplished much in promoting mutual sympathy and mutual understanding among the different races living in countries bordering the Pacific. These peace promotion activities are recognized and appreciated throughout the world.

On behalf of the Chinese people of the territory, I extend to you best wishes for continued success and even greater achievement.

Aloha,

KING CHAU MUI,
Consul General of China.

JAPANESE CONSULATE; Honolulu: *Greetings from the Hon. Teijiro Tamura, Consul General for Japan, to the Pan-Pacific Union:*

On the occasion of the 25th anniversary of the MID-PACIFIC MAGAZINE, I wish to offer most sincere congratulations on behalf of my people at home and also in Hawaii.

Hawaii, as it is situated in the Mid-Pacific, occupies the most strategic position to digest

and disseminate a friendly feeling of all Pacific countries. This also applies to the different racial groups within the Territory, whether each individual happens to be an American citizen or an alien.

It is only natural that those Japanese people who have been residents in the Territory should act in the social sense in the same way as citizens, even though they are Japanese subjects in a political sense. It is gratifying that the MID-PACIFIC MAGAZINE has acted as the official organ of the Pan-Pacific Union, whose principle and *raison d'etre* are for the promotion of genial, friendly feeling, both within and without Hawaii, a most commendable manner.

It is my sincere hope that this laudable principle should perpetuate among the different peoples of all countries whose shores the waters of the Pacific Ocean wash and purify for the good of mankind and peace of the world.

CONSUL-GENERAL TEIJIRO TAMURA.

Honolulu: *Greeting from Charles F. Loomis, Secretary, The Institute of Pacific Relations, to the Pan-Pacific Union:*

I remember very vividly my associations with Mr. Ford in 1911 when he was promoting the Outrigger Club, the Trail and Mountain Club, the Hands-Around-the-Pacific Club, and was launching his MID-PACIFIC MAGAZINE. In connection with the magazine, I believe he was a pioneer in writing advertisements in interesting narrative form. Those were the days of the famous "Ford's fish chowders" and the elaborate Chinese banquets.

On behalf of the Institute, I am glad to join with the many friends of the Pan-Pacific Union in congratulating it on the 25th anniversary of its MID-PACIFIC MAGAZINE, and wish you all success in the future.

Sincerely yours,

CHARLES F. LOOMIS.

PAN-PACIFIC UNION, Honolulu: *Message from the Hon. Walter F. Frear, President Pan-Pacific Union, to members and friends:*

Gratifying indeed is the rapidly growing strength of the Pan-Pacific Union as indicated by steady and substantial increase in membership and expressions of cordial good will from all Pacific lands. To members and friends throughout the Pacific and the world we extend our thanks and aloha.

To me it hardly seems a quarter century since the first issue of the MID-PACIFIC MAGAZINE. It is cause for no little gratification that this magazine has flourished all these years—especially when we consider the high mortality rate, concomitant with the high birth rate, of publications in Hawaii during the more than a century since the birth of the first, although one, the oldest west of the Rockies, is now 93 years old, and another, at first a weekly and now the oldest daily in Hawaii, will be 80 next year. May the new plans now being formulated for the magazine bring it richer content, enlarged circulation and wider and more potent influence.

The Pan-Pacific Union also, like its magazine, has had a notable career. Its activities have been many. Outstanding among these, aside from the magazine, is its sponsorship of numerous international conferences which, with other conferences sponsored by the Institute of Pacific Relations and the Chamber of Commerce, have gone far to justify Honolulu's appellation as the Geneva of the Pacific. Noteworthy also are the establishment of branch or similar organizations in other countries of the Pacific and their periodic interracial meetings.

For both the Union and the magazine, too much credit cannot be given to the founder and never-failing inspiration of each—Alexander Hume Ford. May their future be even more helpful than their past towards promoting understanding and cooperation among Pacific peoples.

JAPAN: Kyoto: *Message from Dr. Hachiro Yuasa, President, Doshisha University, member the Pan-Pacific Club of Kyoto:*

Thank you very much for your letter together with the MID-PACIFIC MAGAZINE. Yes, I would like to see your new headquarters in Alakea Street.* The new emblem is very interesting. I spoke about it to Mr. Takino the other day.

Believing that the solid foundation of international peace is justice and love in humanity, and appreciating the splendid service rendered by the MID-PACIFIC MAGAZINE during its significant career of 25 years, I take pleasure in extending my sincere congratulations to those whose pioneering spirit accompanied with untiring efforts made this important publication a real success. An enterprise of this nature is necessarily an adventure in human good will. It can never succeed unless it is unstintingly supported by all people to whom the peace of the world in general and that of the Pacific area in particular are a real responsibility. May you find constant *inspiration* and whole-hearted support to continue your noble task.

DR. HACHIRO YUASA

HACHIRO YUASA,
President.

* Dr. Yuasa spent six months in residence at the Pan-Pacific Research Institute during a stopover on a world tour in 1932.

NEW YORK: Carmel: *Message from Arthur Sullivant Hoffman, editor and author, to the Pan-Pacific Union.*

It happens that while contemplating the 25th anniversary of *Adventure*, the fact that I officiated at its birth, and the not so cheerful fact that 25 years is a long time, I made the acquaintance of the MID-PACIFIC MAGAZINE via its special China issue. Why I didn't meet it long ago I can't imagine. It would have been of decided value to me as an editor—particularly of a magazine that strives for real knowledge of the lands that feature in its stories.

However, the important point is that here is a second magazine at its 25th anniversary. Instead of just congratulating it on its excellent contents, the appropriate and pleasant thing to do is for a fellow who was editor of the other through most of its life to send to the MID-PACIFIC his ex-official felicitations on its birthday and to wish it many more quarter-centuries of success and valuable service.

Which is hereby done, signed, sealed and delivered.

NEW ZEALAND: *Message from the Prime Minister's Office, Wellington, to the Pan-Pacific Union:*

The aims and objects of the Pan-Pacific Union are in themselves a sufficient guarantee that its work must prove to the general benefit of all those who dwell within the borders of the Pacific Ocean. Our problems are common ones which can only be solved by the leaders of every line of thought and action in the various countries concerned, getting together to discuss them in a friendly and truly international spirit, whenever opportunity offers.

In this way I feel that the Pan-Pacific Union is performing a valuable service to the people of the Pacific. The numerous conferences held at Honolulu during recent years are an earnest of what may yet be achieved and have already resulted in closer ties of friendship and co-operation between them.

I wish the Union and its official organ, the MID-PACIFIC MAGAZINE, every success and encouragement in the good work it has undertaken.

Yours faithfully,

GEORGE W. FORBES,
PRIME MINISTER.

OREGON, Portland: *Message from the City of Portland by the Hon. Joseph K. Carson, Jr., Mayor, to the Pan-Pacific Union:*

It was a real pleasure to receive a copy of the MID-PACIFIC MAGAZINE. The magazine is beautiful, dignified, and most informative.

Please know that the City of Portland extends its heartiest greetings to you and your fine guests of the Chamber of Commerce from Canada.

May I offer, on behalf of our people, our entire cooperation and appreciation to the end that we of the Pacific may fulfill the prophecy of the present and future importance of the civilization of a common section.

With every good wish, I am

Sincerely yours,

JOSEPH K. CARSON, JR., *Mayor.*

PHILIPPINE ISLANDS, Manila: *Message from the Governor-General of the Philippine Islands, the Hon. Frank Murphy, to the Pan-Pacific Union:*

Please pardon my delay in replying to your letter of May 22. I shall be very glad to assist your organization in the publication of a creditable Philippines issue of the MID-PACIFIC MAGAZINE. It seems to me, however, that the initiative in this matter should be taken by the Philippines chapter of the Pan-Pacific Union. I have, therefore, asked my secretary, Mr. Hill, to get in touch with Mr. Ring, one of your directors, who says he will be very glad to go ahead with the project.

Sincerely,

FRANK MURPHY,
Governor-General.

Manila: *Message from the Hon. Manuel L. Quezon, President of the Senate and President-elect of the Philippine Commonwealth; President the Pan-Pacific Association of the Philippines:*

(By radio to Alexander Hume Ford, Executive Director, Pan-Pacific Union.)

Your twenty-five years of unceasing strenuous efforts to tie Pacific countries into the bonds of friendship and cooperation are beyond commendation and I am pleased hereby officially so to state. Upon this occasion I wish to congratulate you, hoping next year's Balboa Day, with yourself here with us, will again be held at our Executive's palace with a solemnity befitting the day's significance to the nations of the Pacific, particularly now that our country is soon to inaugurate its commonwealth government, which decidedly takes us forward to the last lap preceding the establishment of the Philippine Republic. Indeed, I should feel particularly happy to do this as the Philippines' contribution to make the Union a tangible success in building up a strong spirit of unity, understanding and cooperation among Pacific nations which thus united will be of enormous value to the peace and welfare of mankind.

Let us therefore hope that, during my incumbency as president of the Philippine Commonwealth, the Philippines will be able substantially to share in such a common task dedicated to the service of humanity and civilization. Your congratulations highly appreciated.

MANUEL L. QUEZON.

Manila: *From Sr. Gregorio Nieva, Secretary, the Pan-Pacific Association of the Philippines:*

Your letter and copies of your letter to Governor-General Murphy and Senate President Quezon received, with no answer until today, because I spent my vacation this year in Shanghai and Hongkong, China, and didn't return until the 8th inst. I will, however, do my best to secure a substantial number [of memberships in the Pan-Pacific Union]. You will hear from me a little later.

Where is Mr. Ford now?* Anxious to hear from him.

* Alexander Hume Ford, founder of the Pan-Pacific Union, reached New York from Rotterdam October 22, en route to Hawaii. THE EDITORS.

Very truly yours,

GREGORIO NIEVA.

RUSSIA: *Message from the Ambassador of the USSR to China, S. Exc. D. Bogomoloff, to the Pan-Pacific Union:*

I acknowledge the receipt of your letter of August 23, and thank you very much for your kind proposal to become a member of Pan-Pacific Union.

Simultaneously I am sending through the Shanghai Association a check for Am. Dol. 10, as a sustaining member.

Wishing you all success in your useful work to bring about a closer collaboration between all the peoples bordering the Pacific, I remain

Sincerely yours,

D. BOGOMOLOFF,
Ambassador of the USSR to China.

Balboa Day Meeting at Shanghai

THE PAN-PACIFIC Association of Shanghai held a tiffin meeting in the Cathay Hotel, attended by more than 300 members and guests. Mr. H. E. Arnhold presided and in his opening address said that it was not difficult to understand the feeling which Balboa, the illustrious Spanish explorer, experienced when, from the slope of a mountain, he looked across the isthmus of Panama and gazed for the first time on the blue waters of the Pacific Ocean. It was fitting, he said, that the Pan-Pacific Association, whose aim was to promote understanding among the peoples inhabiting the Pacific area, should meet to commemorate that great historic event, which occurred on September 25, 1513.

The chairman then called upon Dr. P. W. Kuo, Vice-President of the Pan-Pacific Association, who informed the gathering of the present membership of the Association and read a telegram of greeting received from the Pan-Pacific Union in Honolulu. He was followed by Mr. P. T. Chen, who expressed the regret of Dr. H. H. Kung at his inability to be present and conveyed the latter's greetings to the gathering.

"Four hundred and twenty-two years ago," Mr. Chen said, "the great explorer Balboa discovered the ocean around which we now live and which has been named the Pacific Ocean. Thanks to the wonderful improvement of modern means of communication and transportation, this vast expanse of water has today become an important connecting link between the peoples living along its shores, instead of being a geographical barrier to international intercourse. This area is now coming into irrepressible prominence as the attrition of ancient Oriental civilization with Western ideas is producing economic, political and racial conflicts which must be resolved if there is to be anywhere in the world safety for the thing which we call civilization.

"It is a significant fact that in recent years, particularly since the World War, the theatre of international interest and activities has been gradually shifted from the Atlantic to the Pacific Ocean. Today the Pacific neighborhood forms an extremely important community of peoples, whose relations are pregnant with tremendous forces for good or for evil.

"About four decades ago, the far-sighted American statesman, John Hay, said that whoever understood the problems of China held the key to the peace of the Far East for the next three generations. We might say that whoever understands the problems of the Pacific area holds the key to the future peace of the world.

"Today as we commemorate the discovery of the Pacific Ocean by General Balboa, I like to think that the ocean has been named the Pacific or peaceful ocean, not merely because of the smoothness of the water that is in it, but because of the peacefulness of the relations among the peoples who dwell around it. Certainly the correct spirit in which to celebrate the discovery of the Pacific Ocean is to rededicate ourselves to the cause of world peace. In this spirit, Dr. Kung would like to appeal to you for your active support of this Association, which deserves all that you and I can do and give for the lofty ideals of international good will and understanding for which it stands."

The next speaker was Mr. Edwin S. Cunningham, who conveyed greetings on behalf of his colleagues of the Consular Corps and spoke appreciatively of the aims of the Pan-Pacific Association. Dr. Lin Yu-tang, famous Chinese essayist, principal speaker, kept the audience in paroxysms of laughter by a humorous analysis of national character, chiefly British and Chinese. He made it a point to avoid discussion of Pacific problems "to keep on good terms with everybody," hence the address was not pertinent to Balboa Day.

Pan-Pacific Club of Tokyo Observes Balboa Day

FIRST MEETING of the Autumn season by the Pan-Pacific Club of Tokyo was held September 25 to honor Balboa Day and for election of officers for the coming year. Prince Tokugawa was reëlected president and Viscount Inouye vice-president, both unanimously and without opposition.

Prince Tokugawa read a cablegram from Pan-Pacific Union headquarters, Honolulu, conveying greetings and best wishes to the Tokyo club. The Club cabled a response.

Addressing the large assemblage of members and guests on the subject of Balboa Day, Prince Tokugawa said in part:

The Pacific Ocean, its shores and its islands, will be the world's great hereafter.

These words were delivered from the lips of a great American statesman over half a century ago, and the prophecy of William H. Seward has become true today.

We are gathered here to commemorate the four hundred and twenty-second anniversary of Balboa's discovery of the Pacific Ocean. On September twenty-fifth, 1513, Vasco Nunez de Balboa climbed the heights of Darien on the Isthmus of Panama, and for the first time he beheld the calm, placid ocean which he took possession of in the name of the King of Spain.

For four centuries since Balboa's discovery, the call of the Pacific has inspired the hearts of the peoples of Europe and America to expand into that region. But, to us, the people of the Orient, long before Balboa's discovery, the Pacific Ocean had been the home of our ancestors and the cradle of our civilization. It was the story of ancient Cathay and of the Island of Zippangu which led European explorers to the Pacific Ocean. Thus the star of expansion took its westward course until great empires and republics have been built on the shores of this ocean.

Today the prophecy of the American statesman has come true, and the Pacific Ocean has become the center of human activities. The center of civilization has shifted from the Atlantic to the Pacific Ocean. While storms are now gathering on the Mediterranean Sea and the Atlantic Ocean, the Pacific Ocean is calm and peaceful. While the statesmen of Europe are concentrating their energies in an endeavor to secure a peaceful solution to the Italo-Abyssinian controversy, we are enjoying peace and tranquillity in the Pacific basin.

Today there are no questions among the Pacific countries which cannot be settled by peaceful diplomacy. The so-called naval rivalries among Great Britain, the United States and Japan can

easily be solved if Great Britain and America can understand Japan's principle of non-menace and non-aggression. The gradual rapprochement of the USSR and Japan will promote the peace of East Asia, and the growing friendship and coöperation between China and Japan will bring an era of permanent peace and tranquillity in the Far East.

Another speaker, S. Exc. M. Constantin Youreneff, Ambassador of the USSR to Japan, said in part:

On the occasion of our first meeting in this Club after the summer holidays, I wish to extend my most sincere welcome to all members. Today's meeting occurs on the four hundred and twenty-second anniversary of the day when the intrepid Spanish navigator Balboa reached the eastern shores of the Pacific Ocean, the first European to do so.

Since then, with the passing of the ages, close relations have been established along the whole coast of this great Ocean between the various nations inhabiting the bordering countries. Many economic and political problems have arisen from time to time. But there has been a steady interchange of scientific and cultural progress between them.

The Pan-Pacific Club is a very notable organization, inasmuch as it works with the object of uniting the nations of the world; it strives to strengthen the mutual understanding of peoples, and aims at strengthening the bonds of friendship which already exist between the people of Japan and those of other nationalities who are living in the country.

Under the able guidance of our president, His Excellency Prince Tokugawa, and of His Excellency Viscount Inouye, the Pan-Pacific Club has become not merely a highly useful organization but also a pleasant meeting place for the representatives of different nations where, in a friendly atmosphere, the valuable task of strengthening the mutual understanding of us all is carried on. As the representative of a country that is forever striving for peace and for friendly relations with the whole world, undisturbed by war or aggression, I must express my deep sense of gratitude to the Club for the great work it has undertaken.

As we celebrate the four hundred and twenty-second anniversary of Balboa's discovery of the Pacific Ocean today, may we join our efforts for the promotion of peace and security in the Pacific Ocean.

Pan-Pacific Union Luncheon Meetings

LUNCHEON meetings are held weekly on Mondays by the Pan-Pacific Union in Fuller Hall of the splendid Y.W.C.A. Building opposite Iolani Palace (the capitol) where noted speakers from many lands address large and keenly interested audiences of members and their guests.

Since last reported in your magazine, the meetings have featured, to the close of November, the following:

On September 23—two days in advance of the anniversary date of Balboa's discovery of the Pacific—the meeting observed Balboa Day. Novel feature was Balboa's own account of his life and discovery of the Pacific Pan-Pacific Union throughout the Pathrough reincarnation, for the occasion, in the person of J. Cassetevens in the correct costume of the period, even to the pointed Spanish beard. Other entertainment included a Filipino dance by Mrs. L. M. Jantoc and Jesus Cayaban; Portuguese songs by Miss Lucile Gomes, accompanied by James Gallet, and the *rumba* danced by Julia Acevedo and Juanita Aliseas of the Puerto Rican Civic Association of Hawaii.

Colbert N. Kurokawa responded to Balboa's greeting on behalf of the Pan-Pacific countries. Cabled greetings were exchanged with Pan-Pacific associations and clubs affiliated with the cific.

Subsequent meetings have featured:

Dr. Wing-tsit Chan, dean of Lingnan University and exchange professor at the University of Hawaii. Subject, A Model Province of China—Kwangsi. (See page 360.)

Dr. Arthur L. Dean, former president of the University of Hawaii, now manager of the pineapple department, Alexander & Baldwin, Ltd. Subject, the United Welfare campaign.

James M. Chapple, inspector in charge of all radio service in the Hawaiian Islands, with exception of the Army and Navy. Subject, Work of the Federal Communications Commission.

Dr. R. Ray Scott, Associate Professor of Education and Director, Adult Education Division, University of Hawaii. Subject, Adult Education Movement.

The Hon. Samuel Wilder King, delegate to Congress from Hawaii. Subject, Some of Hawaii's Problems.

Dr. Denzel Carr, instructor in French, Spanish, and Russian, University of Hawaii. Subject, The Slavic World.

Capt. Eric de Bisschop, French Naval Reserve, oceanographer. Subject, Migration of the Polynesian Race. Capt. de Bisschop and his sole sailing companion, Joseph Patibouet, a brother scientist, made a somewhat dramatic landing in Hawaii recently on the rocky coast of Molokai Island when their Chinese junk was wrecked in the pounding surf as they attempted to anchor. Both had subsisted for weeks on tallow candle drippings flavored with curry powder, all other provisions gone, and were too weak physically to save their small ship which was lost with priceless scientific data and photographic negatives. They are members of the French Geographic Society, under the auspices of which their explorations of ocean currents, winds, and other phenomena are being carried on.

It is their plan to build in Hawaii a large outrigger canoe such as the early Polynesian voyagers used, and to pursue their investigations. Meantime they are guests of the Pan-Pacific Union, domiciled at the Pan-Pacific Research Institution in Manoa Valley, Honolulu.

Pan-Pacific Research Institution Science Meetings

REGULAR weekly dinner meetings are held Friday evenings at the Pan-Pacific Union's Research Institution in Manoa Valley, one of the beautiful residential districts of Honolulu. After dinner, there is usually a lecture on a scientific subject of interest to peoples of the Pacific, followed by discussion.

In your magazine for July-September were reported speakers and their subjects to October 11 inclusive. Follows a report from October 18 to November 29 inclusive:

F. Raymond Fosberg, assistant in botany, University of Hawaii, member of the Bernice P. Bishop Museum's Mangarevan Expedition. Lecture on Climbing Oro Fena, Tahiti's Highest Mountain, illustrated with lantern slides.

George P. Gray, senior chemist, Bureau of Entomology and Plant Quarantine, U.S. Department of Agriculture; O. C. McBride, in charge of Fruit Fly Division, U.S. Bureau of Entomology. Discussion on The Mediterranean Fruit Fly.

E. H. Bryan, Curator Bernice P. Bishop Museum, Honolulu; C. E. Pemberton, Entomologist, Hawaiian Sugar Planters' Association, in charge of batrachia for insect abatement; William Miles and E. O. Farm, practical frog farmers. Discussion on the Frog Industry of Hawaii.

Chauncey B. Wightman, officer in charge, Honolulu Field Office, Sugar Section, Agricultural Adjustment Administration. Lecture on The Work of the AAA.

M. B. Magers, Home Insurance Co. of Hawaii, Ltd. Lecture on Social Security Legislation.

Margaret Bergen, Sociologist, A World Cruise (illustrated) with emphasis on types of people and their homes.

Officers of the Puerto Rican Civic Association of Hawaii: Left to right, Sitting: David Rodrigues, Treasurer; John C. Feliciano, 1st Vice-Pres.; J. B. Figueroa, President; F. R. Rosado, 2d Vice-Pres.; Francisco Amell, Secretary. Standing: Celestino Ortiz, Victor Morales, Jose R. Asevedo, Finance Committee; Antonio R. Rivera, Auditor; Joseph F. Santiago, Recording Secretary. Below: Chumba's Troubadours and Dancers, left to right: Jose Rodrigues, 1st guitar; Santiago Revira, mandolin; Angelina Ortiz, rumba dancer; Alfredo Rosa, macacas; Juanito Rodrigues, 2d guitar; Juanita Alices, rumba dancer; Confesor Rodrigues, guiro, and Manuel Rodrigues, banjo.

Puerto Ricans in Hawaii Pan-Pacific Minded

By JOSEPH SANTIAGO
Corresponding Secretary, Puerto Rican Civic Association

THE Puerto Rican Civic Association was founded March 12, 1932, and at present has an active membership of more than 200. It is an organization member of the Pan-Pacific Union, its aim being that of promoting good citizenship amongst its members and getting into a better understanding with other races in the Territory of Hawaii.

Formerly our headquarters was with the Pan-Pacific Union but their removal to a new location made it necessary for us to find another home. We are now in the Palama Settlement Building.

Puerto Ricans came to Hawaii in 1901 and there are now resident some 6,000, all American citizens by virtue of the fact that in 1917 Puerto Rico became a Territory, "organized but not incorporated," of the United States of America and citizenship was bestowed upon the population collectively.

For the benefit of those who may not, perhaps, be familiar with our homeland, a few words about its history. Puerto Rico is an island 480 miles east of Cuba on which Columbus landed in 1493. Ponce de Leon was appointed the first governor after the island became a royal province of Spain in 1509. By 1582 the aborigines, impressed for the quest of gold, were practically annihilated, as was also the gold. About 1750, Spanish colonists and Negro slaves arrived in considerable numbers. Slavery was abolished by the Spanish government in 1873. The island was ceded to the United States after the Spanish-American War. It is about 100 miles long, 30 to 40 miles wide, with a dense population of 1,543,913, about 450 to the square mile, 72 per cent Caucasian, the rest mulatto and Negro.

Music, singing and dancing are favorite pastimes with our people, and it has given the Puerto Rican Civic Association of Hawaii much pleasure to contribute, in a small way, to the always delightful programs arranged by the Pan-Pacific Union in Honolulu.

Aloha from leading Merchants, Firms, and Organizations of Honolulu to the Pan-Pacific Union on the 25th anniversary of the Mid-Pacific Magazine.

Prominent Business Houses of Hawaii

The Matson - Lassco - Oceanic Steamship Company maintains a regular, fast, reliable passenger and freight service between Honolulu and San Francisco, Los Angeles, South Seas, New Zealand and Australia. Castle & Cooke, Ltd., are local agents for the line, whose comfort, service and cuisine are noted among world travelers.

Stevedoring in Honolulu is attended to by the firm of **McCabe, Hamilton and Renny Co., Ltd,** 20 South Queen Street. Men of almost every Pacific race are employed by this firm, and the men of each race seem fitted for some particular part of the work, so that quick and efficient is the loading and unloading of vessels in Honolulu.

The City Transfer Company, at Pier 11, has its motor trucks meet all incoming steamers and it gathers baggage from every part of the city for delivery to the outgoing steamers. This company receives, and puts in storage until needed, excess baggage of visitors to Honolulu and finds many ways to serve its patrons.

The Haleakala Ranch Company, with head offices at Makawao, on the Island of Maui, is, as its name indicates, a cattle ranch on the slopes of the great mountain of Haleakala, rising 10,000 feet above the sea. This ranch breeds pure Hereford cattle and is looking to a future when it will supply fine bred cattle to the markets and breeders in Hawaii.

The Honolulu Dairymen's Association supplies the pure milk used for children and adults in Honolulu. It also supplies the city with ice cream for desserts. Its main office is in the Purity Inn at Beretania and Keeaumoku streets. The milk of the Honolulu Dairymen's Association is pure, it is rich, and it is pasteurized. The Association has had the experience of more than a generation, and it has called upon science in perfecting its plant and its methods of handling milk and delivering it in sealed bottles to its customers.

The Hawaiian Electric Co., Ltd., with a power station generating capacity of 60,000 K.W., furnishes lighting and power service to Honolulu and to the entire island of Oahu. It also maintains its cold storage and ice-making plant, supplying the city with ice for home consumption. The firm acts as electrical contractors, cold storage, warehousemen and deals in all kinds of electrical supplies, completely wiring and equipping buildings and private residences. Its splendid new offices facing the civic center are now completed and form one of the architectural ornaments to the city.

The Nippu Jiji

—attracts readers

FORTY YEARS AGO there appeared on the streets of Honolulu a four-page mimeographed newspaper called the Yamato Shinbun. Immigrants from Japan, hungry for news, seized it avidly, read it from the right-hand top of page 1 to the left bottom of page 4, and passed it on to other eager hands. The news even at that time was covered as completely as possible.

It was from this humble beginning that The Nippu Jiji grew up to become the leading Japanese newspaper in the Territory. But it did not forget that complete coverage of news is the watchword of a good newspaper. By Rengo, Associated Press (in translation), and International News services, and by local reporters and correspondents, it serves the news to its readers as completely as circumstances and facilities permit.

It publishes every day an average of 10 pages, four English and six Japanese. On Saturday, four pages English, 10 pages Japanese and four pages of colored comics.

The Nippu Jiji has adopted an editorial policy that attracts to it readers of the highest type. From 400 in 1895, it has pushed its circulation up to 13,732 by keeping in mind that the greatest function of a newspaper is to print the news.

—attracts advertisers

The Nippu Jiji attracts advertising because it has what advertisers want—largest circulation among the Japanese newspapers and readers of the highest type. Because the older Japanese read the Japanese section and the younger generation read the English, The Nippu Jiji has many more readers than the circulation figures indicate—plus value for the advertiser.

—The Nippu Jiji, 920 Nuuanu St., Honolulu, Hawaii. Represented nationally by S. H. Williams & Co., Inc.; San Francisco, 220 Montgomery St.; Los Angeles, Western Pacific Building; Chicago, 43 East Ohio St.; New York, 228 East 45th St.

BANK OF HAWAII

Incorporated December 17, 1897

THE BANK OF HAWAII congratulates the MID-PACIFIC MAGAZINE on its twenty-fifth anniversary. Much progress has been made in this publication during its lifetime. Looking back over this period, the statements of the Bank of Hawaii reveal its growth in the financial structure of the Territory during the past twenty-five years. We are justly proud of comparative statements shown below. These clearly indicate the position which the Bank of Hawaii has achieved and maintained in the community.

ASSETS

	1910	1935
Loans and Overdrafts	$3,106,539.68	$16,795,078.28
Bonds	722,217.47	17,874,070.06
Banking Premises, Furniture & Real Estate	108,500.00	784,958.63
Customers' Liability under Letters of Credit	266,706.33	1,140,848.33
Cash and Due from Banks	1,390,198.87	7,848,266.45
Other Assets	10,683.35	53,640.93

LIABILITIES

Capital	$ 600,000.00	$ 1,650,000.00
Surplus and Undivided Profits	550,100.76	1,931,299.94
Letters of Credit Outstanding	265,890.10	1,140,848.33
Other Liabilities	36,169.00	22,459.31
Deposits	4,152,685.83	39,752,255.10

Home of the American Factors, Limited
Fort at Queen Street, Honolulu, Hawaii

Sugar Plantation Agents
Wholesale General Merchandise
Insurance

American Factors, Limited

HONOLULU, HAWAII

C. BREWER AND COMPANY, LIMITED, Honolulu, with a capital stock of $8,000,000, was established in 1826. It represents the following Sugar Plantations: Hilo Sugar Company, Onomea Sugar Company, Honomu Sugar Company, Wailuku Sugar Company, Pepeekeo Sugar Company, Waimanalo Sugar Company, Hakalau Plantation Company, Honolulu Plantation Company, Hawaiian Agricultural Company, Kilauea Sugar Plantation Company, Paauhau Sugar Plantation Company, Hutchinson Sugar Plantation Company, as well as the Baldwin Locomotive Works and Kapapala Ranch. Agents for all forms of insurance.

★ ★ ★

C. Brewer and Company, Limited

Oldest Established Business House
West of the Rocky Mountains

Congratulates the Pan-Pacific Union
on its 25th anniversary publication
of the Mid-Pacific Magazine.

Cultural and Economic Center of the Pacific

Long years before California's "gold rush" days of '49, her well-to-do families sent their children to Honolulu's Punahou School for education. And Hawaiian growers shipped hay, grain, fruits and vegetables to California markets.

Today young men from India, Java, Australia, the Philippines, Cuba and South Africa come to study sugar technology at the University of Hawaii, recognized world leader in that subject. Equally advanced in scientific research, agronomy, manufacture and marketing is Hawaii's pineapple industry. And to students of the arts and languages Hawaii offers exceptional opportunities. Centered geographically in mid-Pacific, hub of transportation between all countries bordering the great ocean, glamorous in tropic beauty, with a climate never hot, never cold; a land of intelligent, friendly people of many racial descents and admixtures—Hawaii presents to the visitor a new, unique adventure on Kauai, Hawaii, Maui and Oahu.

HAWAII, U. S. A.

Invites you to come and enjoy an unforgettable holiday in this Pacific Playground.

For detailed information, write to the Hawaii Tourist Bureau. This Bureau, with headquarters at 761 Bishop Street, in Honolulu, is a non-profit organization, maintained by

THE PEOPLE OF HAWAII

to enable you to obtain accurate information on any subject concerning the entire Territory of Hawaii, U.S.A.

Home of Alexander & Baldwin, Ltd.

ANYONE who has visited the Hawaiian Islands can testify to the usefulness of the "A & B Steamer Calendars" which are to be seen on the walls of practically every office and home in Hawaii. The issuing of and the free distribution of these calendars is a distinct public service rendered for some 30 years by Alexander & Baldwin, Ltd., who are staunch supporters of all movements that work for the good of Hawaii.

The beautiful new office building pictured above was erected recently as a monument to the memory of H. P. Baldwin and S. Alexander, the founders of the firm and pioneers in the sugar business.

Alexander & Baldwin, Ltd., are agents for some of the largest sugar plantations on the Islands; namely, Hawaiian Commercial & Sugar Co., Ltd.; Hawaiian Sugar Co.; Kahuku Plantation Company; Maui Agricultural Company, Ltd.; McBryde Sugar Company, Ltd.; Laie Plantation; and also Kauai Pineapple Co., Ltd.; Baldwin Packers, Ltd.; The Matson Navigation Co. at Port Allen, Kahului, Seattle and Portland; and the following named and well-known insurance companies: Union Insurance Society of Canton, Ltd.; The Home Insurance Company, New York; Springfield Fire & Marine Insurance Co.; New Zealand Insurance Company, Limited; The Commonwealth Insurance Company; Newark Fire Insurance Company; American Alliance Insurance Association; Queensland Insurance Co., Ltd.; Globe Indemnity Company of New York; Switzerland General Insurance Co., Ltd.; St. Paul Fire and Marine Ins. Co.

The officers of Alexander & Baldwin, Ltd., are: W. M. Alexander, Chairman Board of Directors; J. Waterhouse, President; H. A. Baldwin, Vice-President; C. R. Hemenway, Vice-President; J. P. Cooke, Treasurer; D. L. Oleson, Secretary; J. F. Morgan, Asst. Treasurer; J. W. Speyer, Asst. Treasurer.

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