

MID-PACIFIC MAGAZINE



A Friday Night Science Supper at the Pan-Pacific Research Institution, Honolulu.

The Mid-Pacific Magazine

CONDUCTED BY ALEXANDER HUME FORD

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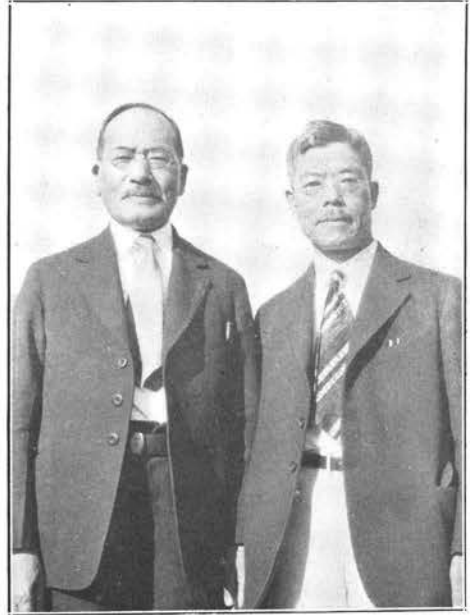
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The early history of Japan is full of Koreans doing important work in building up the Japanese nation, says Dr. R. Nakaseko of Japan.

Changing Conditions of the Japanese Race

By DR. R. NAKASEKO
At the Pan-Pacific Research Institution.



Dr. T. Harada and Dr. R. Nakaseko.

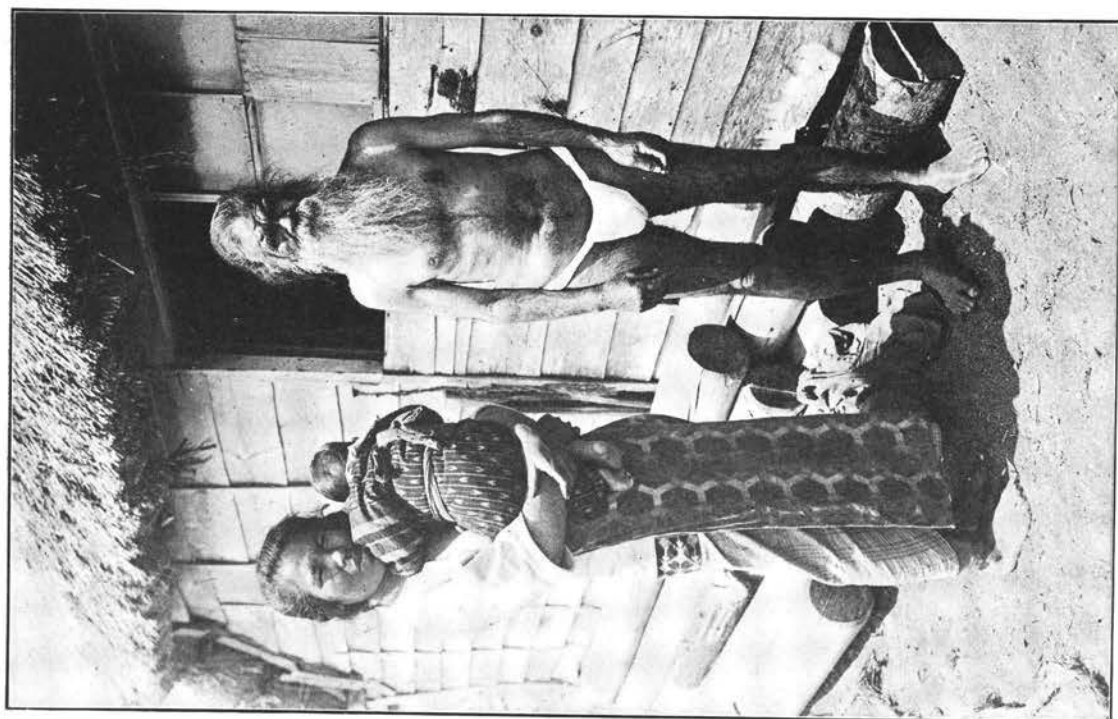
First I wish to speak about the Japanese language. The Japanese language is a unique language. It has no connection with any language spoken in the neighboring countries. There is no resemblance, no similarities between the Japanese language and the Korean language, between the Japanese language and the Chinese language. Although in grammatical construction it has some connection, some relation to the Korean language, the relation between the Japanese and the Korean languages is not quite so intimate as the relation between the English language spoken today and the Hindustani spoken in India today.

How did this unique language come to exist? We do not know, but the same Japanese language is spoken all over the Japanese Empire from the extreme Southwest of Kyushu to the extreme Northeast of the island of Hokkaido, which is an island until recently owned by a different people. Recently it has been colonized by Japanese people, so Japanese people now predominate in it.

Now, about the Japanese race. While the Japanese language is an independent language with no similarity to the language of the surrounding countries, the Japanese people are very strange people. In the Japanese people, if we closely examine them, we find no one independent people; they are a composite people. The Japanese people is a production of the combination of many different elements.

From what elements this present Japanese people came I do not know. Nobody knows. First of all, I must tell you that the whole empire of Japan was owned originally by Aino people, who are now in Hokkaido. Today they are very backward people. Perhaps they cannot count numbers above 10. If they are taught they may remember but it seems to be very hard for them to count, for them to add, much harder to subtract, and almost impossible to multiply and divide. My friend, a professor of physiology in Kyoto Imperial University, keeps in his own house one old Aino and another young Aino boy. He is trying to educate this young boy in the public school, but he finds his mental capacity is very much limited. But the original Aino 2000 years ago doesn't seem to have been so backward. They seem to have been of an average ability.

There are many reasons why we say the Aino people originally inhabited the entire Japanese islands. The first reason is that there are wares and vases they have left all over the country, earthenware which they used in their religious



The hairy Ainu gave their blood to the Japanese as there was a mixture of these aboriginal people with the invaders. This is perhaps shown in the beards of some of the present day Japanese.

services, the first sample of which was found in Tokyo. The Japanese people had at first no name to call their country. Japan is a name originated by Marco Polo, who in the 13th century came to Peking and in going home made the report of his travels. His report was written in French, then translated into Latin, then into Spanish and Portuguese, and then to German and English, then back to Latin again. The original word that he used for Japan I have forgotten, but in the Latin edition I think it was "Zipangu". This was changed into "Japan". Marco Polo got that word from a Chinese word, written in two characters, which might be different in different parts of China; in some parts perhaps they pronounced it "Zinpangu", in some parts "Zipong," etc. In some parts the "J" changes into "N" in Chinese. In European languages the English "J" is pronounced as "Y" in German, but in Chinese in some parts of the country the "J" is changed into "N", so that Japan is changed into "Nippon". "Nippon" means the Land of the Rising Sun. It means the sun and the "pong" or "hong" or "fong" and the two together mean the sun's origin. Literally the word "Japan" means the "sun's origin", that is, the land of the origin of the sun, so that the word which we Japanese use today for our country, Nippon or Japan, is not a Japanese word, it is a Chinese word.

Some Japanese think we had our own Japanese name for our country, that is, Yamato; but if you study the language of the Aino people you find that "Yamato" is an Aino word. When they landed in this country the Ainos named in their own language different sections, different mountains, and different rivers. There was a central province where the first emperor of Japan founded his capital. The name of the province was called by the Ainos "Yamato", so that the first emperor who came from the southern part of the island to this central province simply took the name that was being used by the original inhabi-

tants. The word "Yamato" means "Chestnut pond." This part of the country was thickly overgrown with chestnut trees, which are now nearly extinct, being used as the timber for laying railroad ties. If you come to Yamato, which is very near Kyoto, you do not find chestnut trees as in the old days. The word "Yamato" comes from the Aino language. Therefore I count the Ainos as one important element of the present Japanese race.

About one thousand years ago during the first years of the capital at Kyoto, there was one warrior from the south, Sakanoue. He was half Japanese and half Aino. He was tall, strong, and a great fighter. Even today his tomb is at the top of the eastern hills, and from the top of the highest hills near Kyoto Sakanoue is today looking down on the city of peace. He was of half blood.

Then I must speak of the ancestors of the present dynasty of the Japanese emperors. The present emperor is the 124th of the dynasty. The grandfather of the first emperor of the present dynasty (I say present, but there has been only one dynasty of which we are so proud), came over to Japan about 1900 years ago. Many Japanese historians wish to say 2600 years ago, but more exact historians research teaches it is better to put it about 1900 years ago. I am speaking roughly. About or a little after the time of Christ he landed on the southwest extreme of Kyushu Island. The legend which is supposed to be an accurate story of the Imperial household tells that he landed there and married a girl of the fisher folks. His son married another fisherman's daughter and his grandson married again another fisherman's daughter, living in this neighborhood, and this grandson became the first emperor of Japan. Now this first emperor of Japan, whom we call Jimniu Termo had perhaps one or two hundred followers whom he mustered, and, sailing along the eastern coast of Kyushu Island, entered the Inland Sea, and took possession of the places on the

sea. After several years he reached the eastern extremity of the Inland Sea, where Osaka is situated, Japan's greatest industrial city. Japan's greatest political city is Tokyo; literarily and artistically the greatest city in Japan is Kyoto, but Osaka is the greatest industrially.

The first emperor reached Osaka and tried to enter the central province, which I called Yamato, but there were some strong tribes which resisted the entrance of Jimmu Tenno. Thereupon he had to withdraw his army, and sailed around a promontory to the eastern side of Hondo. Through a very thick high mountain range he reached at last the same spot which he aimed at from the first. So he took possession of this central province and there he fixed his first capital. We now see that the first emperor of Japan came from somewhere outside these countries, that is, from the south. The invaders were chiefly men, and they had to marry the daughters of the native fishermen. So after entering the central province Jimmu Tenno, not carrying his wife with him, married again the daughter of a native chief of this province. It is evident that from the beginning there has been a constant intermarriage, mixture of blood.

Then I must speak of the Korean elements. Koreans began to come to Japan in great groups perhaps 500 years after Christ. It was Koreans who brought literature first to Japan. The Japanese people until about 500 years after Christ could not read or write, and didn't know how to count. I don't know how they managed to live, but they didn't know how to record. So the Koreans about 500 years after Christ came over to Japan and taught them how to write and how to count, and the emperor's government of that day respected the Koreans very much higher than do we Japanese of today. Koreans were made ministers of the treasury, and some were made governors of provinces. So about 750 years after Christ the emperor Shomo built that great image of Buddha. I was told in boyhood

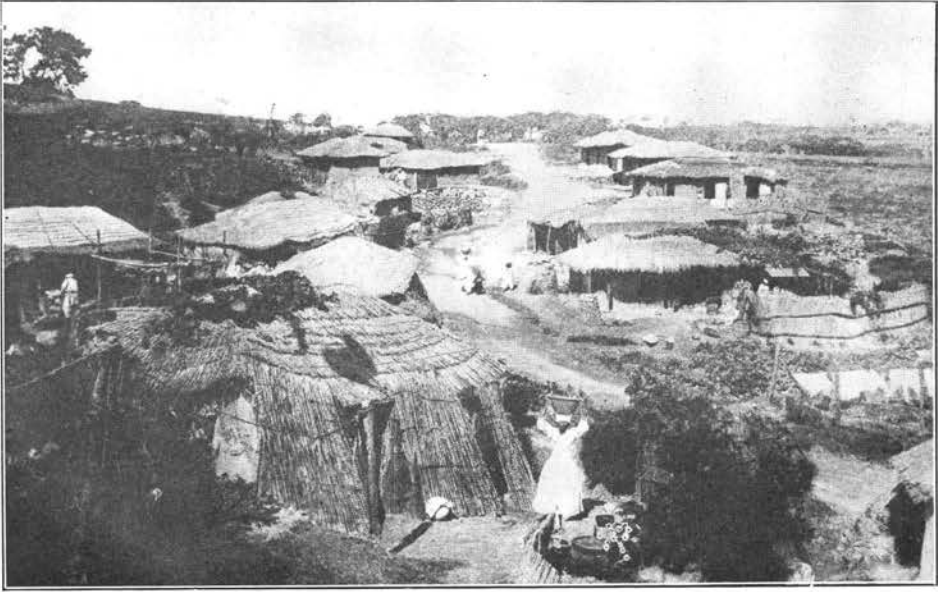
that one could walk with a spread umbrella through the nostril of this great Buddha. The architect who built that big temple, and the artist who built the Buddha image were all Koreans or descendants of Koreans or of mixed blood of Koreans and Japanese.

Towards the end of the construction of this great big temple the gold gave out, so the Empress was very sad because she could not finish this great enterprise, but very fortunately the governor of the northeast province brought in a rich present of gold. The Empress was greatly rejoiced and with the gold the Buddha image was finished. She celebrated this discovery of gold by all kinds of national feasts.

Now the governor who gathered gold in the northeast part of Japan and brought it over to the central capital to help finish the construction of the Buddha, was a Korean, you see that early history of Japan is full of Koreans doing important work in the building up of the Japanese nation.

Then the Chinese helped to do a great deal, too. The knowledge, the science, the literature that Koreans brought to Japan was originally introduced to Korea from China. Although the Koreans are quite a different race from the Chinese, the Korean civilization was entirely Chinese. Korea was dominated by Chinese civilization for more than 2500 years.

The Chinese, through Korea and directly from China, began to influence Japanese civilization, not only the culture but the blood. The Chinese began to pour into Japan in great numbers, so that about 600 years after Christ there was a census taken and the records show that in this neighborhood there were 92 colonies of Chinese and the number of people was 198,000. They were noted because they were specializing in cultivating the mulberry and raising silk. Today Japan's trade with the United States chiefly consists in exporting of silk to America and importing cotton from the southern states. Japan's export trade to America today



How the poorer Koreans have lived for centuries.

amounts to about 1,000,000,000 yen, of which the silk product constitutes 850,000,000 yen.

This silk producing was started by Chinese colonists in Japan. The Japanese people in those days were leading a very simple life. They did not wear silk clothes. It was the Chinese who brought in literature, culture and silk raising, the art of weaving and sewing and the art of agriculture. Until about 1000 years after Christ Japan had been constantly importing Korean arts, Korean civilization, Korean blood together with Chinese arts, Chinese engineering, Chinese culture, Chinese blood. Until 1000 years after Christ it was for Japan the age of mixing, of the melting pot.

After 1000 A. D. somehow the importation of Koreans and of Chinese stopped and Japan began to be made a very homogeneous, simple, pure nation. Until that time it was a conglomerate of different elements. After that time Japan began to produce its own literature, its own art, its own manners, its own culture. So I might put 1000 A. D. as the time when the characteristic Japanese nation

began to exist as an independent, homogeneous harmonious nation.

But, when the foreign influences stopped coming in, there came in degeneration. Before going to degeneration, I must say that during this unifying process there were produced many things in Japan, of which we are very proud. I may mention one thing, the literature, the writing made by one woman author, Shikibu, who wrote her great novel of forty-seven volumes about 900 A. D. That is 300 or 400 years before Chaucer began writing literature in England. She wrote this fiction and it was towards the end of last year that it was completely translated into English by Arthur Walley, in five or six fine volumes, and the London Times and other prominent English papers in their book reviews called this work one of the ten greatest novels of the world. The later Japanese writers could never surpass this work done in 900 A. D.

So this was the age of great rise in Japanese literature, culture and art. The language used in this book is purely Japanese having almost no connection gram-

matically or in any other way with the Korean literature or the Chinese literature,—it was an independent Japanese literature. But very soon, when the foreign stimulus, the importation of foreign things and foreign blood stopped, then degeneration came. I will not dwell very long on this degeneration process. We find a very interesting fact. Because of this degeneration the people could no longer support the government and it was moved to Kamakura near Tokyo. Those who have visited Japan already have visited another great big Buddha there.

The seat of government stayed there more than a hundred years and then degeneration permeated to this part, so that it was again moved back to Kyoto. Three hundred years ago Tokugawa had to establish his seat of government in what is now Tokyo, in about 1600 A. D. Since the opening of Tokyo most of what you call Japanese art, Japanese literature, and Japanese music, almost everything that you call Japanese, began to grow during that 300 years.

But Japan, as you know, was closed; for a long time she had to exclude all foreigners except Dutchmen. Dutch merchants were allowed to come to Nagasaki. Through this one little hole Europe had very little access to Japan for 300 years. During this shutting up the degeneration set in again. So when Commodore Perry came and shook the whole country, the people in that part of Japan were unable to resist and cope with the recent developments of the world, so that the people of the western extremity of the Inland Sea, Chosu, and the southernmost extremity of Kyushu Island were the people who stood up and revolutionized Japan and brought in the present progress of Japan.

When Chinese civilization was brought into Japan 700 years after Christ, Japan sent students to China. Today Japan is sending students to America and Europe.

Thus you see in this new era, Japan again is trying to perform a mission of a melting pot of civilization and culture of the East and the West.



An Ainu house of today.



A modern building in Tokyo erected by engineers.

The World Engineering Congress in Japan

By DR. M. KAMO

Before the Pan-Pacific Club of Tokyo

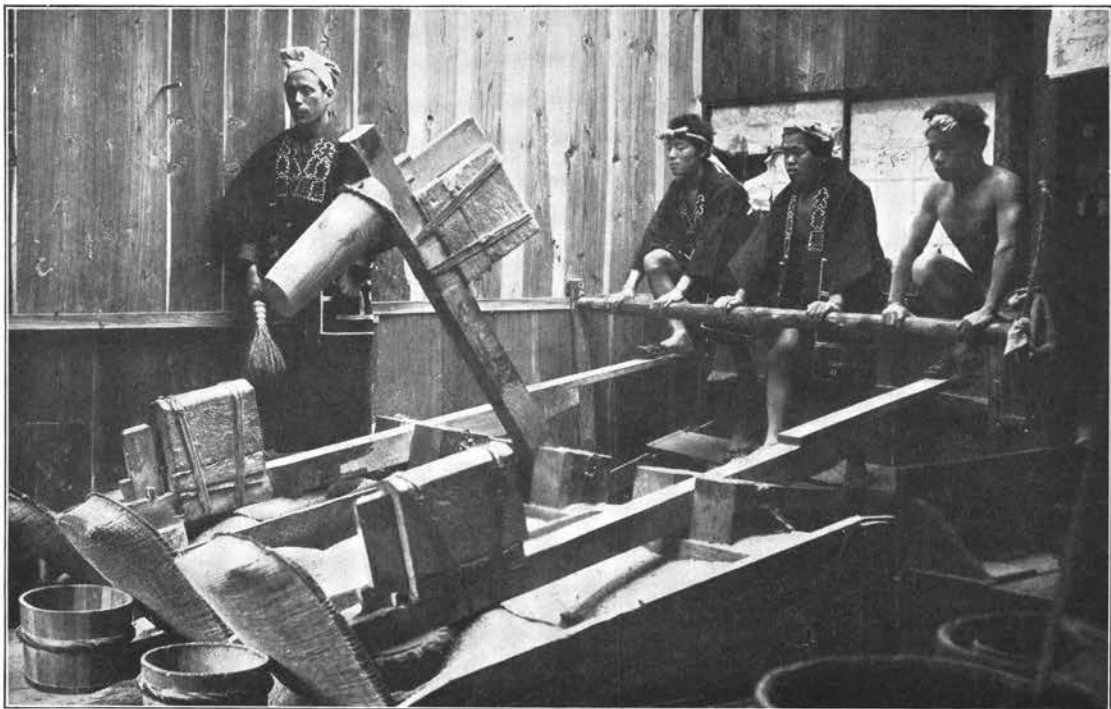
I feel highly honored to have been given an opportunity of addressing you today, and I wish to give you a brief account of the Fuel Conference which I attended last fall in London, and of my tour round European countries and America in connection with the World Engineering Congress and the Tokyo Sectional Meeting of the World Power Conference, which are to be held simultaneously in Tokyo in October to November this year.

The Fuel Conference held in the Imperial Institute in London last autumn was organized as a Section Meeting of the World Power Conference, by the British National Committee, and was the most comprehensive conference ever held in regard to fuel. The papers presented from some 40 participating countries

numbered 167. Japan contributed 12, and I was much pleased to see that our contribution was fully up to the average.

It is hardly necessary to say that fuel is of vital importance for life and the progressive development of every nation, and it is quite certain that a nation with an ample supply of fuel, whether oil or coal, black, brown or white, is in a very advantageous position in every respect. As an example I may mention the country in which the conference was held, Great Britain. Her great growth, especially during the nineteenth century, in manufacturing and prosperity, was largely based upon her coal supply, not only ample in quantity but of wonderful quality.

However, since the Great War, oil has



Power will be one of the chief topics of discussion in Japan this fall at the Power and Engineering Conferences. In these pictures is seen early man power in Japan and the electric power plant of today in Manila

come prominently forward. Now-a-days the control of the ocean depends on heavy oils, the control of the air on highly refined oils, and of the land on petrol and illuminating oils. The world is now struggling for oil. "Who has oil has empire," exclaimed Henry Bérenger, in a diplomatic note which he sent to Clemenceau on December 12th, 1929, on the eve of the Franco-British conference held in London to consider the future of Eastern Europe and Asia Minor. Even President Coolidge stated that "It is probable that the supremacy of nations may be determined by the possession of available petroleum and its products."

But the Fuel Conference was a conference of neither diplomats nor politicians. We engineers had to make a faithful study as to how to utilize the available fuel resources most efficiently for the welfare of mankind at large. Naturally the interest was concentrated on the extraction of oil from coal, namely the low temperature carbonisation of coal and the efficient use of the resulting half coke. The views expressed on that occasion were by no means unanimous. But the general impression acquired was the necessity of coordination with the power generation or the water gas manufacturing plant on a large scale in order to make the low temperature distillation a paying industry.

As to liquid fuels for use in automobile and aircraft engines, Dr. Egloff of Chicago put forward very optimistic views, and intimated that by cracking petroleum, coal oils, lignite oils, shale oils, vegetable oils and fish oils, there was practically an unlimited supply of gasoline for many centuries.

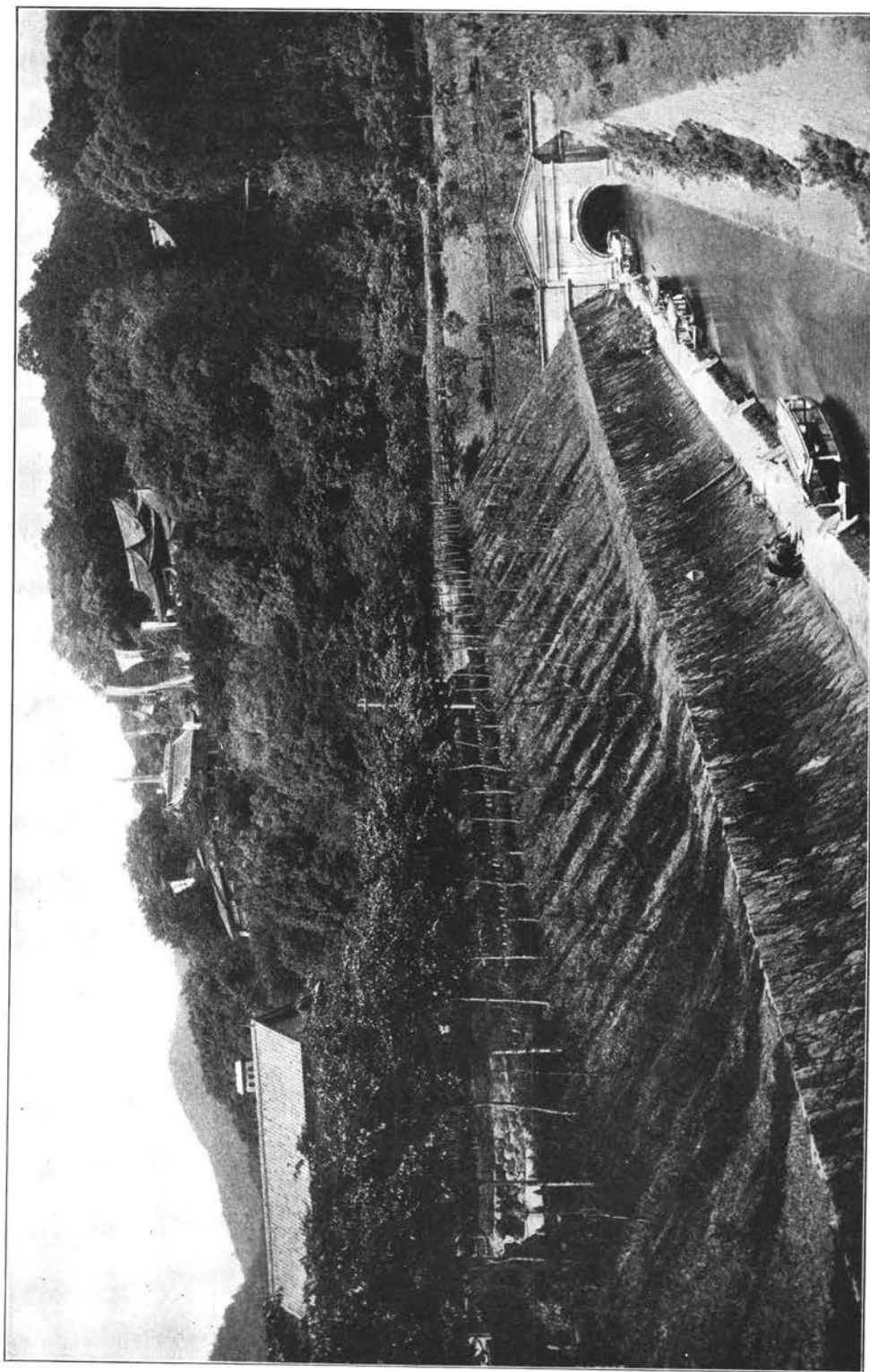
Dr. Walter von Hohenbau of Germany made a still more startling intimation. He suggested that one ton of fuel could be obtained from one ton of water. The idea was to decompose water into its constituent elements, hydrogen and oxygen, of which the hydrogen is an excellent fuel. In his opinion the oxygen could

be converted into hydrogen by splitting its nucleus, through the agency of electrical energy. This might be a similar procedure to converting mercury into gold, as was invented by our Professor Nagaoka. Unfortunately I have no information regarding how long it will take or how much it will cost. But should it ever develop into a paying process, Japan will become a most richly gifted country with fuel resources, and I am patiently waiting for such a realisation in the not far distant future.

To pass on to another subject. As you are probably aware arrangements have been made to hold the World Engineering Congress in Tokyo in October to November this year. The meetings are being organized under the auspices of the Kogakkai, and Baron Furuichi will be the president. His Imperial Highness, Prince Chichibu, has graciously consented to honour the Congress by being its Patron, and our government is giving the organisers substantial financial assistance. Most of the principal engineering concerns as well as the interested individuals are generously contributing towards the expenses, in order to provide the necessary setting for an international gathering that will not compare unfavourably with any of its predecessors.

Notwithstanding these efforts, however, the success of the Congress depends greatly on the cooperation extended to it by the general public, and to my mind the interest of the members of this Club, who are so prominent in international affairs, is a most important factor. I presume it was with this idea in mind that our chairman specially invited me to address you here today, and I should like to take the opportunity offered of appealing to you for your personal assistance in support of the forthcoming Congress.

The Second Announcement of the World Engineering Congress, which I hope you will take with you, gives you



Japan has performed great engineering feats, such as tunnelling under mountains and laying canals through these tunnels. This is the canal connecting Kyoto with Lake Biwa.

all the necessary information concerning the meetings. As you will see, the Congress deals with subjects relating to every branch of engineering industry, including several questions such as Technical Education, Statistics, International Cooperation of Engineers, Science Management and Architecture, not usually found in the programme of such a Congress. These problems will be discussed in 13 to 14 sections, and we are expecting to have the most comprehensive conference ever held.

While the preliminary work for this Congress was in progress we received word in the summer of 1927 from the Central Office of the World Power Conference in London advising us to hold a Sectional Meeting of the World Power Conference at the same time. As it was thought that all members of the Congress would undoubtedly be interested in power problems, and the holding of such a Sectional Meeting simultaneously with the proposed Congress would naturally add to the size and importance of the coming international meeting, it was agreed that the Sectional Meeting of the World Power Conference would also be convened in Tokyo in the autumn of this year, under the auspices of the Japan Power Association, that is the Japanese National Committee for the World Power Conference.

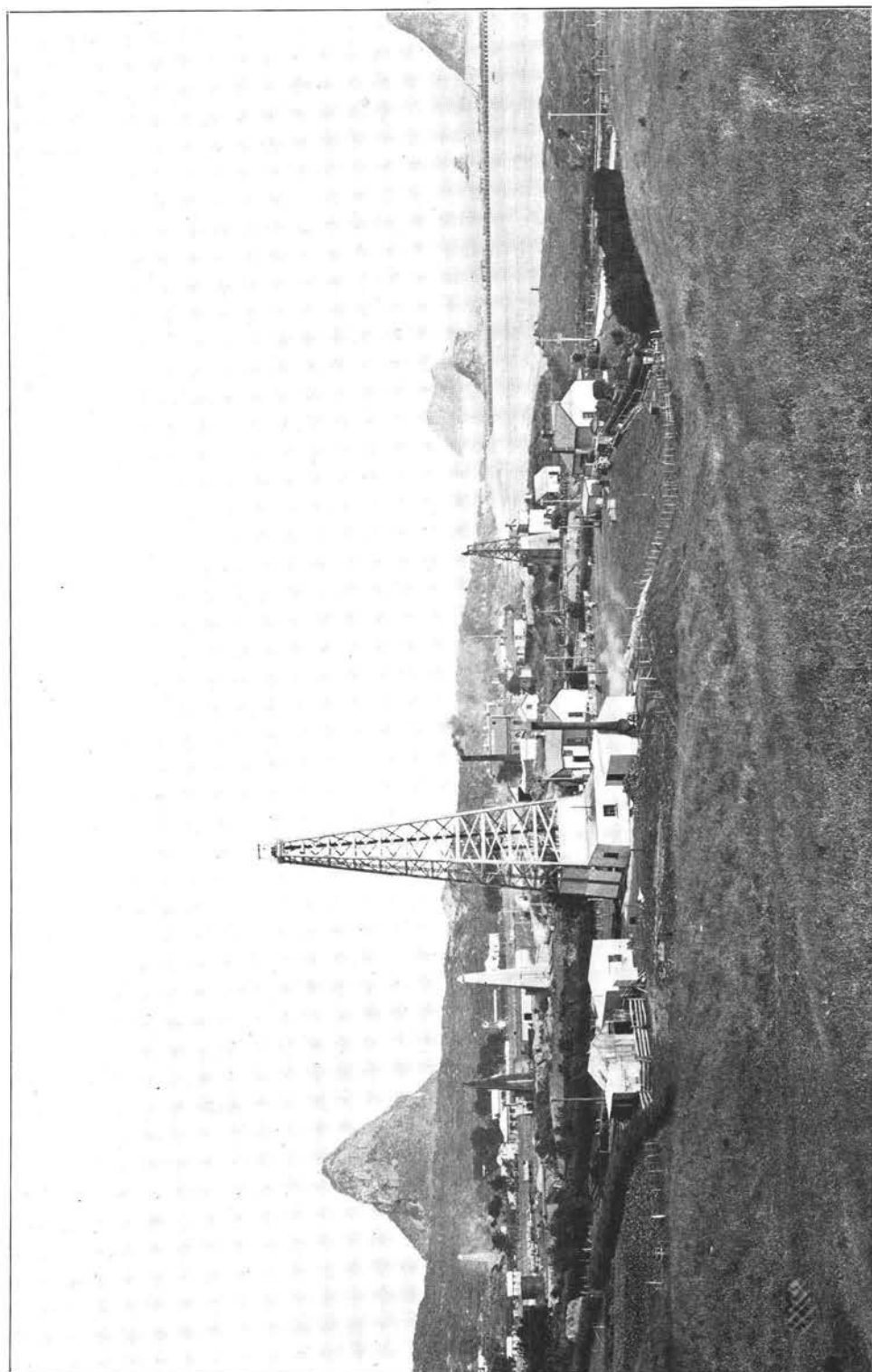
At this Tokyo Sectional Meeting, however, it is proposed to discuss several important subjects pertaining to power, principally from an economic standpoint, while at the World Engineering Congress the discussions will be conducted along scientific and technical lines as far as the power problems are concerned. Such an arrangement was made with the idea of avoiding overlapping and repetition, which might otherwise occur, in the proceedings and papers of these conferences.

This Sectional Meeting is also approved by our government and will be subsidised substantially. The meetings of the Engineering Congress and the

Sectional Meeting will be held concurrently in committee rooms of the House of Parliament, under the presidency of Baron Furuichi, and the members are privileged to attend whichever meetings they may be interested in. The papers offered will therefore be presented to either of the meetings according to the author's wish.

But we are not thinking, in this way, to burden the members with the programme of heavy work only. Much attention has been paid to the necessary recreation. Fortunately this country can show visitors much beautiful scenery and many things of historic and artistic interest. Our programme wholly covers these interests and pleasures in addition to the inspection tours to the principal industrial establishments and engineering works. Furthermore, a special exhibition of old arts is being arranged in connection with the Congress. In short, we wish thus to offer for inspection of the members the best Japan has produced in the past, what she is doing today, and the method by which she hopes to develop in the future. We hope to further in this way a mutual understanding of our respective countries, which is the necessary preliminary to international cooperation and indeed to a firm foundation for the peace of the world.

As some of you are probably aware, the idea of holding such an international congress in Japan was first expressed in my speech on the occasion of the dinner given by the American Delegation during the First World Power Conference held in London in 1924. This desire was more firmly cemented by the conference with the American representative engineers, when I was in New York on my way home at the beginning of 1925. Right after my return to Tokyo I received, on March 8th, a cablegram from Dr. Sperry, a prominent American engineer and inventor, who is well known in this country. He advised me to put this idea into effect within a period of five years, and



Oil is a great source of power in the world today and engineering has much to do with the drilling of oil wells. This will be discussed at the Engineering Conference.

this was practically the beginning of the proposed international congress. Preliminary steps were immediately taken in consultation with our leading engineers.

In the meantime our project was communicated to the Hon. Herbert Hoover, the then only engineer member in President Coolidge's Cabinet, who approved the idea by giving it as his opinion that:

"It would be a well deserved compliment to the progress made in Japan for the engineers of the world to send representatives to such a conference. It will have another important effect outside the promotion of engineering science and industry."

This fact greatly aroused the interest of our government in the proposed Congress, and resulted in its decision to grant the Congress a substantial subsidy. I received word of this while in New York again in October 1926. I was then able to announce it to the representatives of the American engineering societies at a luncheon given in my honour on October 20th. So great was their approval and satisfaction that the first public statement was then made of the intention to hold the World Engineering Congress in Tokyo in the autumn of 1929.

I am confident, therefore, that the inception of this idea would not have borne fruit without the enthusiastic support which it received from the engineering fraternity of the United States. It really illustrates how closely our country and the neighbour across the Pacific are able to work together.

Such being the case, Americans are most enthusiastic about the forthcoming Congress. They organized a special participation committee over a year ago, with Mr. Hoover as Honorary Chairman, and their preparations and interest distinctly surpass those of any others. However, in order to provide fully for the international nature of the coming conferences, I tried to stir up European countries during my visit there last autumn.

In all the countries I visited, conferences were held through ambassadors and ministers with the representatives of the government departments, the principal engineering societies, universities and industrial concerns. Each of them, impressed with the importance of the proposed conferences, has given me the assurance of their cordial support. In Great Britain and Sweden special committees have been organised for their participation. In Germany, France, Switzerland and Denmark, national committees for the World Power Conference are working along the same lines. Especially in Sweden Mr. Luebeck, Minister of Home Affairs, has taken much interest, and the government is making a special request to the Diet for an appropriation for sending delegates.

Every country is thus trying to have the finest representation of very high character at the Congress. Among prominent figures already registered are the following names:

From Great Britain—

Mr. Trench, Past President of the Institute of Civil Engineers.

Mr. Allen, President of the Institution of Mechanical Engineers.

From Germany—

Herr Krupp von Bolen.

Dr. Oskar von Miller, President of the German Technical Museum.

Dr. Koettgen, General Director of Siemens Schukert Werke.

Dr. Matschoss, Director of Verein Deutsches Ingenieure.

From Sweden—

Prof. Enstroem, Director of the Royal Academy of Engineering Science.

Dr. Ruths, Inventor of Ruths Steam Accumulator.

Dr. Ljungstroem, Inventor of Steam Turbine Locomotives.

From Denmark—

Mr. Lasen, President of Schmidt & Co., Cement Machine manufacturer, and a man of 72 years of age.

From the United States—

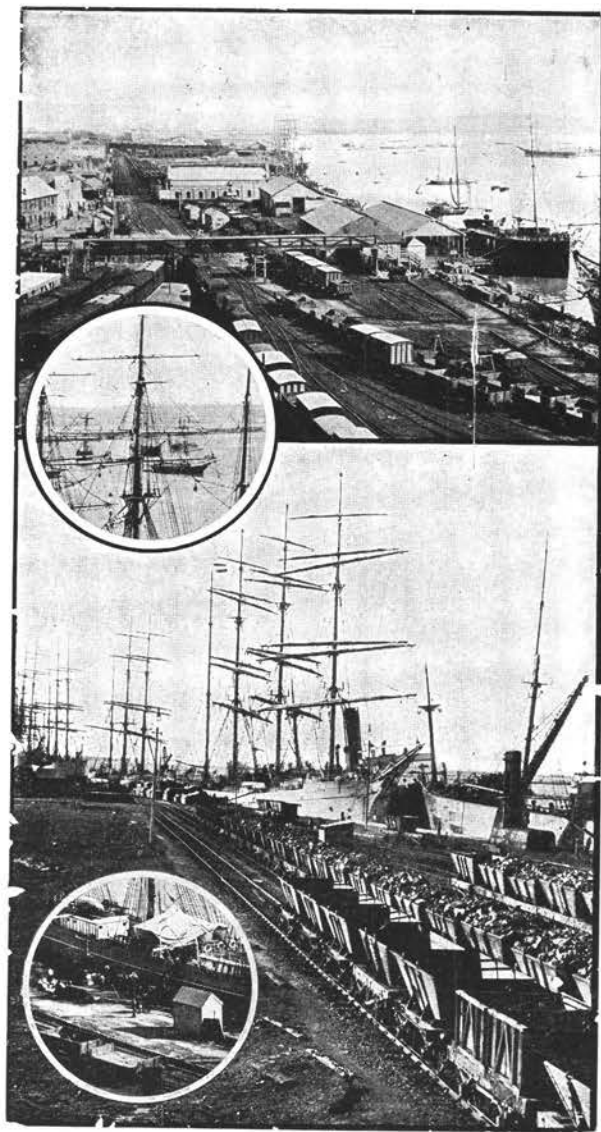
Dr. Sperry, President of Sperry Gyroscope Co.

Mr. Hollanf, Chairman of National Research Council.

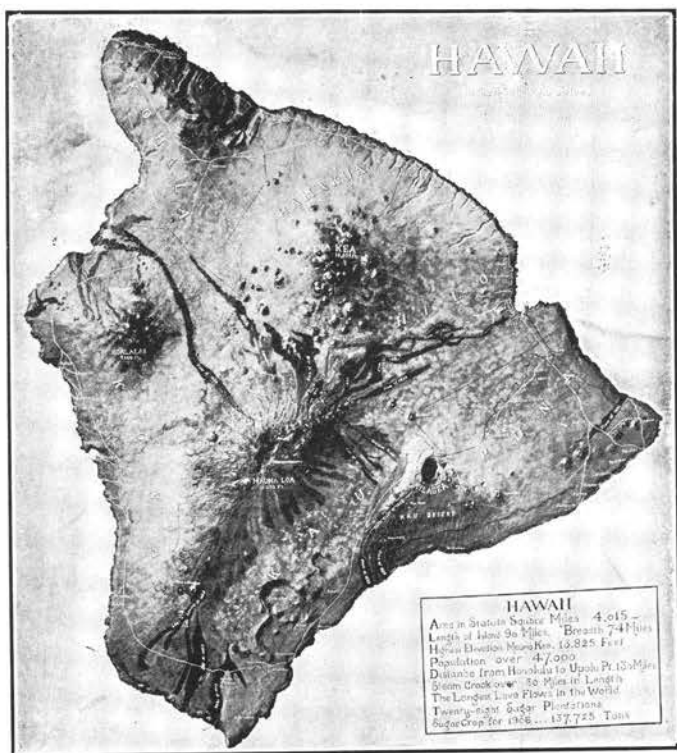
I should expect now about 100 from European countries, and 250 from America, counting delegates and their companions together. As to the papers to be presented, we have already received ad-

vance information for no less than 250 from abroad and an almost equal number from home.

We realise that it naturally involves a great work to consummate a project of this kind, and I cannot refrain from a word of personal appeal for your sympathetic cooperation in order to make the forthcoming Congress an outstanding success.



Coal as a source of power will be up for discussion.

*The Island of Hawaii.*

The Island of Hawaii

By LAWRENCE HITE DAINGERFIELD

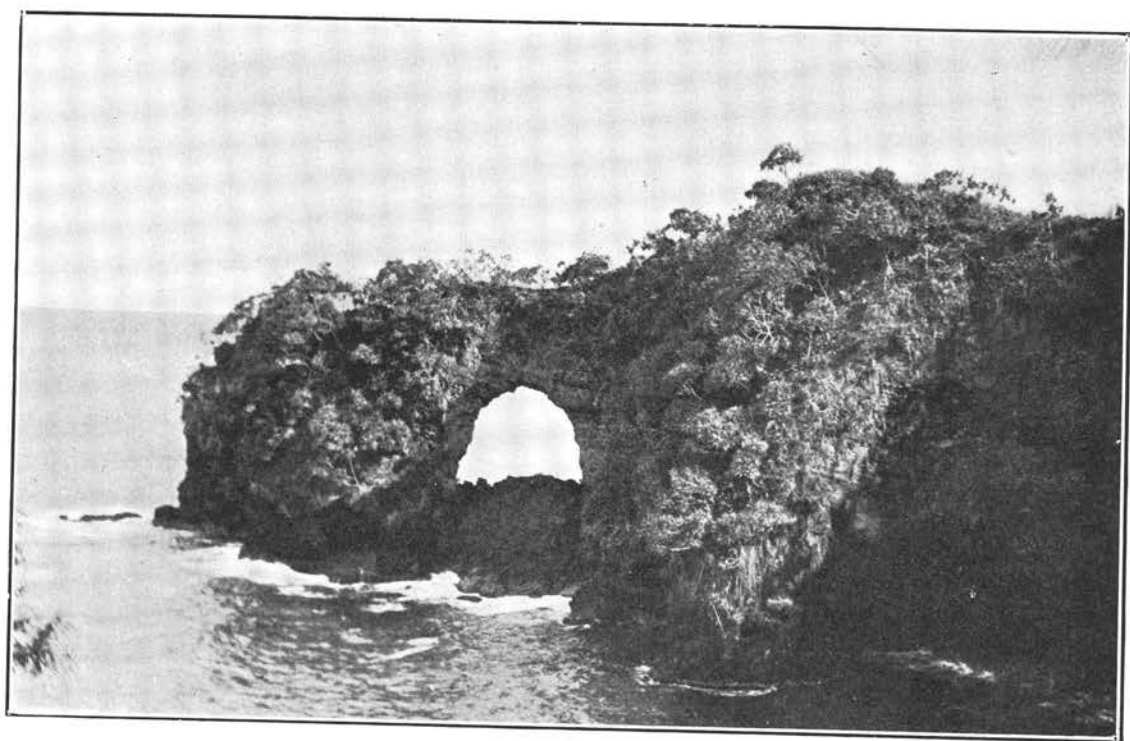
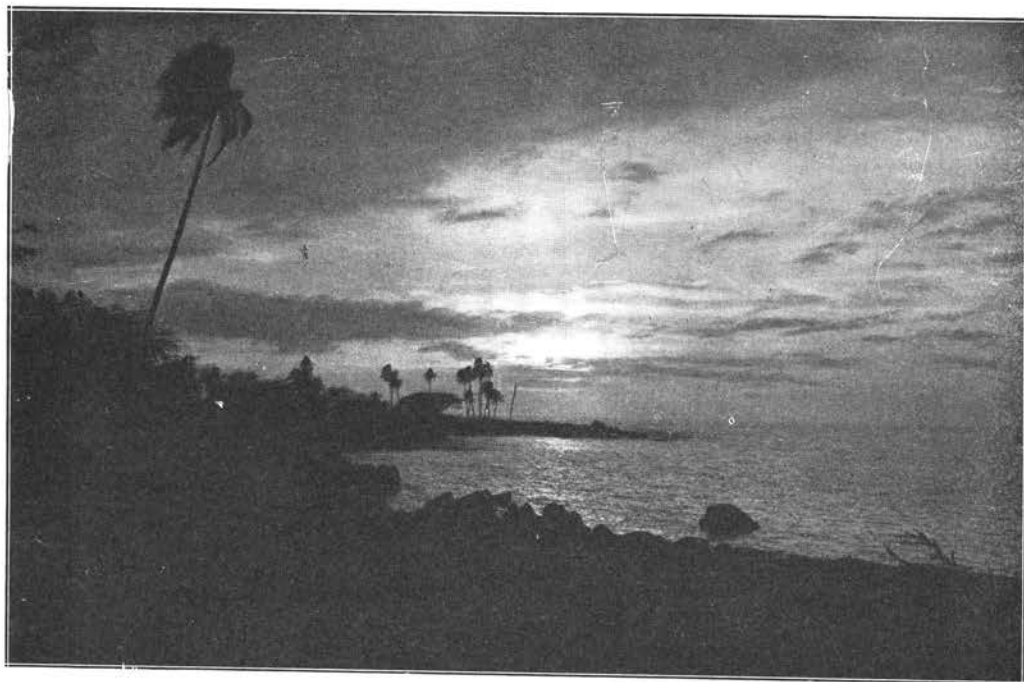
PHYSICAL FEATURES

Suppose we make an imaginary airplane flight from Haleakala, across the A-le-nui-ha-ha Channel, to the great Island of Hawaii. It lies thirty miles to the southeast of Maui. We observe that Hawaii is roughly shaped like a triangle, with sides of nearly equal length. There are no land-locked harbors. The great Hilo breakwater renders the harbor at that place quiet even in stormy weather.

The Ko-ha-la Mountains in the North and South Kohala districts, form the only mountain system of the Island. They extend in a northwest-southeast

direction for about 18 miles, with enormous gulches cutting into the windward or northeast side. These giants gulches run to the sea to the northeast. The longest of them is Ho-no-ka-ne, near the north end of the series. One of the largest of these terrifying gulches is Wai-pi-o at the south end of the group. Much of Hawaii's early history is linked with Waipio Gulch. All of these great gulches bear evidence of the tremendous action of water in wearing away the valley beds.

Judging by the depth of these gulches, what should be the nature of the rainfall



Two pictures showing coast formation of the Island of Hawaii, one in the Puna District, the other the famous Onomea arch near Hilo.

in the Kohala Mountains? Down on the leeward or southwest and west slopes, the soil becomes dry and red. The land is broken, but does not show the intense action of water that is so evident on the windward side.

Proceeding southeastward we find that we must fly extremely high to skim over a great cone-shaped mountain. This is Mau-na Ke-a, the "White Mountain," rising 13,825 feet above the sea. The slopes become treeless above about 10,000 feet. Near the summit, carved out of the side and lying between two cones, is Lake Wai-a-u, that is often covered with ice. This is one of the highest bodies of water on earth, rising 13,044 feet above the sea. Just above the lake is a great cone and beyond this still another—the summit of Mauna Kea, rising higher than any other mountain mass in any ocean on earth, with snow banks that never disappear. It slopes away through barren wastes for thousands of feet.

We see the evidence of ancient glaciers for two or three thousand feet down the slopes. There are great boulders strewn about. These stones have had their surfaces rounded and polished by being carried down by the slowly moving masses of snow. There are dikes, ridges of table-like rocks, that have been smoothly polished on top. The long parallel scratches (striations) running down their surfaces show where the ancient glaciers passed over and grooved them in the long ago.

A thousand feet beneath the lake, or about 12,000 feet above the sea, we discover a great mass of flakes of stone. At the top of the pile and extending back into the mountainside is a deep, low cave. Here it was that the adz makers and spearhead makers of ancient times worked and made the tools of peace and war. From a nearby pali, intensely hard, dense, bluish rock was quarried or cut away and carried to this cave. Here they chipped and carved away the smaller stones to supply the people of Hawaii with stone implements. There was no metal for the

workmen, who wrought in olden days far up in this cold zone to fill the needs of the people. And so the art was passed on from father to son through the ages.

Far down the slopes we come to the land of sparse, dry grass, and then to the ma-ma-ni trees, dotting the land like a giant orchard of apples. Over to the west or leeward, the slope runs down to the sea, red and arid. To the east we find deep jungles that open up on cane fields, bordering the long northeast coastline of Hawaii.

Let us fly over to that rugged peak toward the southwest. This we recognize as Hu-a-la-lai. Here we shall find seven or eight large crater pits. Some of them are about the size of Ki-lau-e-a-i-ki—a thousand feet across and hundreds of feet deep. We now see that they are grouped at and about the mountain summit in an intricate tangle. Over near Pu-u-wa-a-wa-a, or north side of the summit, we see a black mass of lava piled above one of the rims. Here we find a small shaft or tube about 25 feet across and dropping into the dark depths of the mountain. It is called Hu-a-la-lai, after which the great mountain is named. Its depth is unknown, for it has never been explored. It is thought to be slightly in excess of three hundred feet.

The summit of Hualalai is 8,269 feet above the sea. It is thinly clad with pu-u-ki-a-we, o-he-lo, o-hi-a le-hu-a, and bunch grass. Goats roam about the rims of the pits, and tiny native birds, the e-le-pai-o, i-i-wi, and the a-ma-ki-hi, flit retiringly from bush to tree. Down the slopes of Hualalai many small cones of old volcanoes are seen in the midst of the increasing forests. Let us fly over these cones to the southeast and over the wide lava field that is more than a mile above the sea toward the greatest mountain mass in any ocean—Mau-na Lo-a.

We skim along and above its cruel lava surface even to the summit at Mo-ku-a-we-o-we-o crater, 13,675 feet above the sea. We arrive at our first "live" vol-

about twenty miles east of the peak, and continue out to sea another 33 miles to the northeast, to sound the ocean depths, we shall find 3,000 fathoms, or 18,000 feet of water above the ocean bed. Mauna Kea rises from this profound abyss to a height of about 32,000 feet, or 3,000 above the summit of Mt. Everest, the loftiest peak of the Himalayas, or of any mountains in the world. In fact, there is not a wide strip of shallow water surrounding the Island of Hawaii. The 100-fathom or 6,000-foot line is less than ten miles off shore from any point of the long shore line. Usually it is extremely close to shore.

CLIMATE AND FOREST COVER

Knowing what we do concerning the influence of mountains on climate, what should we expect to find on the east and west slopes of the great mountains of this Island? Suppose we make some cross sections of Hawaii. First let us climb the steep, windward or northeast slope of the Ko-ha-la mountains, near the north end of the Island. We almost immediately enter the wet zone, which increases in wetness as we ascend. The normal annual rainfall reaches 277 inches at Kawai-nui (upper), 4,080 feet above the sea. A heavy jungle of "rain trees," ohia lehua, massed with ferns and vines, is first traversed. Passing over the 5,500-foot summit, however, and going down on the southwest slope, the whole scheme of nature is changed. We are soon in a dry region of sparse grass. It is exposed to the afternoon sun and is cut off from the ascending trade winds. This condition becomes intensified as we approach the leeward coast at Ma-hu-ko-na or Ka-wai-hae. Again ascending from the east coast—this time from near Ha-ka-lau—we quickly enter the wet zone, finding 142 inches at Hakalau, at 200 feet above the sea. This annual rainfall rises to the torrential catch of 274 inches at Hakalau (mauka), at an elevation of 1,200 feet above the sea. We are now in the true wet zone, beyond which the amount of

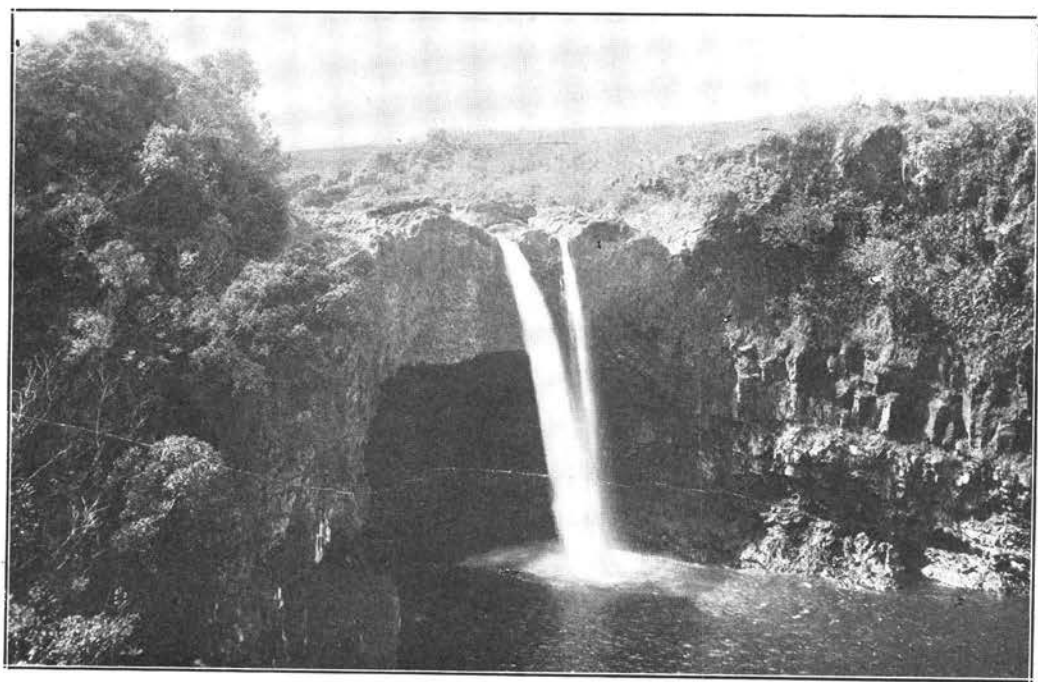
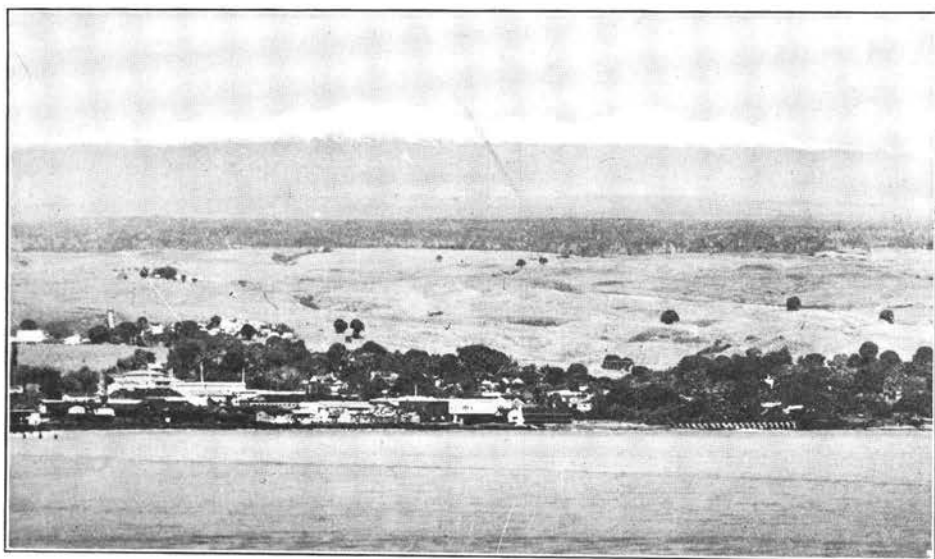
rainfall begins to decline as the trade winds sweep up the long slope to the summit of Mauna Kea, or swing to the right or left of the peak over the great plateaus.

Observe that the mountain slope toward Hakalau is quite steep. Why does this cause heavy rain? We again pass through great rain forests back of the upland cane fields, until we arrive in the more open grass land of Pu-u O-o Ranch, at 6,450 feet above the sea, still on the windward slope. Here the annual rainfall has faded away to 100 inches. The Hu-mu-u-la Ranch house at Ka-lae-e-ha, elevation 6,685 feet, is located slightly around the left shoulder of the mountain; here the annual rainfall is only 32 inches.

We are now in the realm of the mamani trees, with their big, flat crowns, spreading far and wide in open stands up the slopes of Mauna Kea. Pu-u-ke-a-we bushes are frequently seen, and bunch grass fringes the many pu-us or old volcanic cones. When we reach Pu-u Ke-a, at 8,560 feet, near the forest line on the Ku-kai-a-u Ranch, we find an annual rainfall of only 36 inches; this is truly on the windward slope. Give a reason for the marked decline on rainfall as we ascend Mauna Kea. Contrast the wet zones of Mauna Kea with that of the mountains on the other islands of the group—especially Mt. Wai-a-le-a-le on Kauai.

At about 10,000 feet above the sea the mamani trees become small and scattering and soon give way to the barren and worn lava.

A silver-leafed geranium and a few silver sword plants are the last signs of vegetation to give way to the arid, cold, upper slopes of Mauna Kea. Permanent snowfields of small extent are found at the summit, 13,825 feet. No plant life exists in this arctic zone. Passing over and down by the Wai-a-u lake, with its emerald green glacial water, lying between two sheltering cones, we behold the arid leeward or western slope. Here we



Snow clad Mauna Kea sloping from Hilo to near 14,000 feet toward the skies with as much more under water, and Rainbow Falls and lava beds near Hilo.

are in the shadow of the great mountain, with the winds descending the slope, warming and drying by compression.

Observe the rainfall maps of North and South America in your general geography. Notice that the arid regions lie in the shadow or on the leeward side of the great mountain ranges extending practically from Alaska to Cape Horn. In fact, there are places in Northern Chile, in South America, where the rainfall is less than three inches annually. This is much less than any known place in Hawaii, although near the coast at Mahukona it is probably less than 16 inches a year.

Now let us make a cross section of Hawaii from Hilo over the top of Mauna Loa to the coast in South Ko-na District at Na-po-o-po-o. Starting with an average annual rainfall of about 40 inches, where showers occur almost daily, we find frequent long rainy periods, especially in the winter months. We travel "mauka" (mountainward) until we reach Mountainview, about fifteen miles up the trail. The wet zone of Mauna Loa seems to lie between this village and Glenwood, at an elevation of 2,300 feet. Here is a region of dense tropical verdure, where ohia lehua, pandanus (ha-la), and great tree ferns luxuriate. The annual rainfall has crept up to over 200 inches annually. We are now in the region of the great "rain forest," through which the Volcano Road winds upward to Ki-lau-e-a. On either side crimson-blossomed "rain trees" greet us. Many graceful ferns wave to us in the passing trade winds. The vegetation frequently drips under the weight of the torrential rains.

Upon reaching the crater of Ki-lau-e-a, 4,000 feet above the sea, the whole plan of nature seems to change. Here the annual rainfall has shrunk to less than 100 inches. The trees are in a more open stand. Continuing our ascent we soon enter the koa forest, made delightful by the songs of the native birds. We leave the koas and enter the region of the o-he-lo berries, and the pu-u-ki-a-we,

where we find a thin stand of ohia lehua and sparse grass.

Finally we enter the great lava fields of Mauna Loa, between 6,000 and 7,000 feet above the sea. The absence of vegetation for several thousand feet above this zone is due more to the lava than to an absence of moisture or warmth. Here is an utter lack of soil in the slowly decaying lava.

Far up the long 36-mile slope from the crater of Kilauea and beyond the Rest House at Pu-u U-la U-la ("Red Hill"), we find the snow, even in July, hidden in the deep crevasses, telling the story of the low temperature about the great summit crater of Mo-ku-a-we-o-we-o, rising above the clouds. Here the precipitation is light and mostly in the form of snow. Compare Mauna Loa and its frequent snow blanket, especially noticeably in the winter season, with Po-po-cat-e-petl (17,881 feet) and Or-i-a-ba (18,206 feet), near Mexico City, in about the same latitude as Mauna Loa. (Study your general geography in this connection). Compare Mauna Loa, also, with Chimborazo in Ecuador, South America, which rises 20,702 feet above the sea, at the earth's equator. Perpetual snow lies on Chimbarazo's lofty summit. Like Mauna Loa, Chimbarazo was once a mighty volcano; but, unlike Mauna Loa, Chimbarazo has long since burned out, and even its summit crater has disappeared through the processes of erosion.

Before leaving the summit of Mauna Loa, let us consider the winds for a moment at this high level (13,675 feet). We have frequently referred to the prevailing Trad winds, coming from a northeasterly direction. The Trade winds advance toward the equator from a region of high air pressure. There are two of these regions of high pressure over the Pacific Ocean. One lies from about 30 to 40 degrees north of the equator and the other a like distance to the south of the equator. The winds advance toward the southwest from the high pressure region lying

north of the equator, and toward the northwest, from the high pressure region which lies to the south of the equator. That is, we have northeast Trades north of the equator up to about 25 degrees, and southeast Trades down to about 25 degrees south of the equator.

Now over the wide tropical and semi-tropical belt of 25 to 30 degrees on either side of the equator, it is believed that there is a return upper current flowing from a westerly direction, called the anti-Trade wind. Far to the north and south of the equator this current comes right down to the surface of the ocean. Over the Hawaiian Islands, however, it is believed to range from 10,000 to 15,000 feet above the surface of the sea, changing its elevation from season and, even, from day to day. It is quite probable that the summits of both Mauna Loa and Mauna Kea may sometimes extend into this realm of the prevailing westerly winds, known as the anti-Trades.

Now let us descend the slope of Mauna Loa to the westward. We clamber down over barren lava slopes, again entering the forest on the Kona side between 6000 and 7000 feet above the sea. These forests are composed largely of ohia, lehua, koa and kukui. We have found the distinctive climate of the Kona slope of Mauna Loa. The Trade winds have disappeared, and we find persistent southwest winds coming in from the sea and up the slopes of Mauna Loa. Not only this, but the southwesterlies are stronger and more persistent in summer than in winter, owing to the warming and resulting uplifting of the air over the considerable land mass of the Island of Hawaii.

The air temperature changes only slightly over the ocean. Water receives and loses heat much more slowly than land. Hence the air in the tropics is warmer and lighter over the land than over the ocean—especially in summer. Therefore the air moves from the sea

and up the west slope of Mauna Loa. It is merely Nature's effort to establish a balance in the air over sea and over land. As this movement is stronger in summer than in winter in the Kona districts, the result is that more rain falls in Kona during the warm months than during the cold. Of course there is no marked difference in temperature between summer and winter in Kona. This is the one exception in all the Territory of heavier rains in summer than in winter. The rainfall over Kona is light along the coast and moderate to heavy over the uplands above 1000 feet to an undetermined elevation, ranging from 50 to 90 inches in a normal year. Lying as it does on the west slope of Mauna Loa, this district would be the driest region in the Territory if it were not for the happy provision Nature made in these southwest winds. Note how dry the country is over the western slopes of Mauna Kea and the Kohala Mountains.

THE STORY OF AHUA UMI.—Up on the southeast shoulder of Hu-a-lai-lai, at about 5000 feet above the sea, stands a remarkable ruin of an ancient he-i-au (temple). It is surrounded by eight a-hus or stone heaps. The ruin and the ahus are out on an arid plain of sand and gravel, about a quarter of a mile to the right of the old Judd Trail and about thirteen miles from the Government road at Ho-lua-loa. It is in a direct line between Mt. Hualalai and Mauna Loa. You may ask: "How did this heiau and its surrounding ahus come to this strange, dry country, a mile above the sea?"

It appears that there was a wise ruler over the Island of Hawaii, who lived and reigned about the year 1500 A. D., or four centuries and more ago. His name was "Umi, the Good." It was his pleasure to build a great temple, known as an a-hua or heiau, out here on this high, bright plain. Its ground plan covered about 93 by 74 feet and its raised platform was probably eight to



The rich rice and taro land of Waipio Valley.

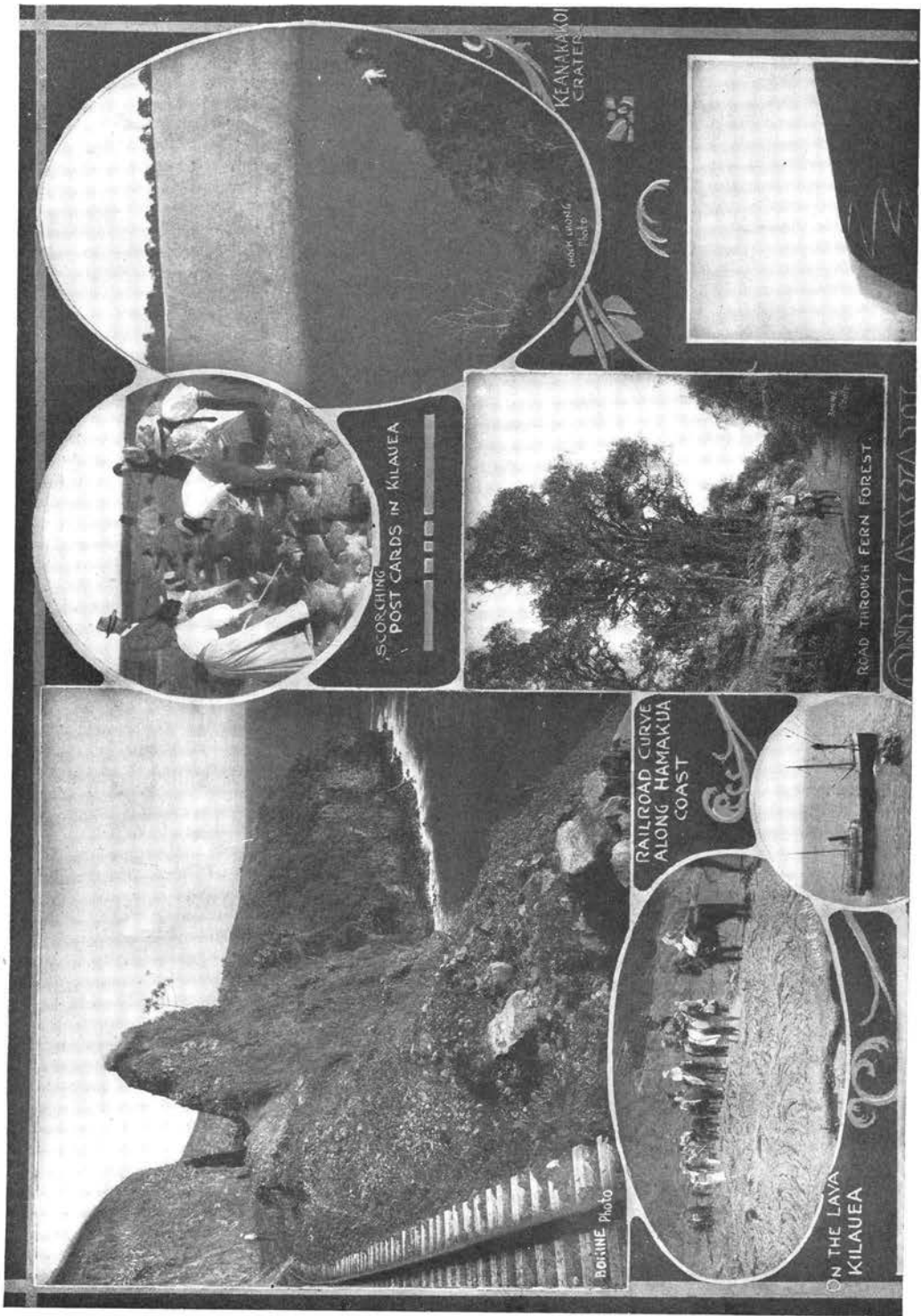
ten feet in height. When completed it appears that the good Umi called all of his people together to the great plain about his heiau for a religious festival. Then occurred the first numbering of the people ever known to have been made in all Hawaii.

Now while the King and his Counselors sat together in the great heiau, he ordered each subject of the many people there assembled to bring a stone. The stones were piled at the King's orders in eight great ahus or heaps. These were erected in the direction of the eight districts of Hawaii: Ka-u, Hi-lo, Ha-ma-ku-a, North and South Ko-hala, and North and South Ko-na. The people placed the stones in the piles representing the districts from which they came.

To this day some of these piles are much as they were four centuries ago. If the stones could be counted, we might know how many people lived in each of the eight districts on Hawaii in those ancient days. The Ha-ma-ku-a A-hu is shown on page —. To this day the place is called the "Plain of Numbering."

How do you suppose all of the thousands of the subjects of the good Umi found water with which to quench their thirst, out on that arid plain? It happens that not far across the plain to the north is a cavern, called "Wai-ku-lu-ku-lu cave." Waikulukulu means "dripping water." Over to the right, just a little way to the east of the cave, are many deep cracks in the pa-ho-e-ho-e lava, with water holes in them, which are called "lu-a-wais." Little ahus or stone heaps may be seen to this day throughout this luawau country. Thin, light stones of pahoe-hoe have been laid over the precious water in these holes by the Hawaiians, and fine, cool water may be found there by the initiated at the present time.

Over in Waikulukulu Cave and in the luawais the good King Umi and his thousands of subjects must have found the mysterious water with which to quench their thirst at the time of the numbering in the long ago. But how did the water gather in the cave and in the luawais? (The Hawaiian would say "na luawai"). This is a desert land. It is said that an engineer, while travel-



A page of typical views on the Big Island of Hawaii.

ing in Russia found in certain arid parts of the country piles of rock on clay soil. The moisture of that was condensed from the vapor state on the cool rocks at nighttime, drained down to the clay floor.

Now in an arid country, like the "Plain of Numbering" there is a remarkable cooling of the rocky surface during the long, clear nights. May not this explain why the air, containing water vapor, and coming in contact with chilled rocks, is cooled enough to surrender some of its moisture as water or dew? This water then formed actual "dew-ponds" to quench not only the thirst of Umi's people, but of many wayfarers passing that weary way during the succeeding centuries. Other dripping caves and "na luawai" may be found in many of the arid places of Hawaii, by Hawaiians who know their country.

KI-PU-KAS.—Special reference to these peculiar openings in the lava fields, most prominent over the Island of Hawaii, should be made at this time. These openings are frequently found over the great plateaus or uplands between Mauna Loa and Hualalai and Mauna Loa and Mauna Kea. They may be found, in fact, on all of the slopes of Mauna Loa. They are not entirely free of lava, although their floors frequently are composed of very ancient lava, surrounded by recent great flows, which have destroyed the adjoining forests. Here are to be found delightful glens of native trees, ferns, shrubs, and all manner of vegetation, rarely if ever seen beyond the limits of these secluded little areas, where they seem to be shut in to a tiny world all their own. Here are sometimes found "na luawai" or water holes.

It was in just such a kipuka that we found the water holes that quenched the thirst of Umi's subjects in days of old. Here may be found the native birds. Here, also, may be found the welcome shade and refreshment for

the traveler through a weary land. Kipuka is the native name of these openings in the lava fields. They range in size from tiny dots with a score or more of trees to wide areas of many acres. Such a wide expanse is the "Ki-pu-ka Pu-au-la of Ka-u," mauka (mountainward) from Ki-lau-e-a on the first slope of Mauna Loa, commonly called the "Bird Forest," so delightfully described by Charles Kraebel, of the Territorial Forest Service:

"All over the world there are little nooks and byways, just off the beaten track of tourist travel, which are often far more attractive than the places of larger interest to which the public is directed. Reports of such places are usually brought out by those venturesome individuals, gifted with the instinct of exploration, who wander into these corners and emerge vivid with enthusiasm. Here in Hawaii we have been aroused to the existence of many interesting spots through tireless penetration of the Hawaiian Trail and Mountain Club, the scientific student, and other out-of-doors people.

But for all this active publicity, there is always some otherwhere whose charms seem not to have been sufficiently heralded. Such a spot is the Kipuka Puauulu of Kau, Hawaii, commonly known as the "Bird Forest." . . . In the Hawaiian Forester and Agriculturist for December, 1921, an account of the trees of Hawaiian National Park by C. S. Judd refers with enthusiasm to the Kipuka as a charming tree garden in which true lovers of nature, visitors of Kilauea, could spend a large part of their time with profit and enjoyment. . . .

Literally a kipuka means an opening, a calm place in a high sea; pua is a blossom, and ulu 'belonging to that which grows.' One might make of this . . . An oasis of flowering trees,' or, still more fancifully, 'The flower of the forest,' for such in truth it is . . .

Three miles by road and trail west-

ward from the Volcano House up Mauna Loa trail, through a low growth of Hawaiian heather, ohelo, and scrubby lehua—until the sight of smooth turf and clean open forest meets the eye, as pleasant and as varied an approach as we could wish. Arrived at the threshold, we pass under the branches of two ancient peach trees, cross the grass-grown furrows of what was once a field of corn, and stand in the shadow of 'The Tall Tree!' We are at the Kipuka Pauulu!

.... We throw ourselves on the grass, face upward, arms flung wide, and make an effortless study of the beautiful branching Huc's Tall Tree—the Mana-le of A'e of the Hawaiians, the *Sapindus saponaria* of Professor Joseph Rock, and the Soapberry Tree of the lei maker. What a marvel it is and what a rare quality of luminous green is lent to the golden light that filters through its leafy canopy. . . . No other tree that we shall see can give so fine a quality of green and gold to the shadows of its crown.

There is a flash of red across the green—another and another! It is the birds, scarlet I-i-wi and crimson A-pa-pa-ne, darting restlessly from tree to tree and pausing only among the flowers of the ohia to suck ambrosial food from the bright red blossoms. Once they have gained a tree-top they are almost instantly lost to view, and keen eyes are needed to distinguish their brilliant bodies from the equally brilliant flowers. A paradox of nature, this, to plume a bird in red and thus 'protect' it.

A moment ago the forest seemed quite silent, but now, lying tranquil on the grass, we discover the silence a-drone with sound. Above all others there is a singing hum of unseen bees busy among the myriad flowers, and if we harken to this alone, it becomes a very volume of sound. An endless twitter of feeding bird breaks continually into louder notes. The sweet, insistent

song of the A-pa-pa-ne, the clear ta-weet ta-weet ta-weet-ah of the I-i-wi with its remarkable flute-like quality, and the cheerful whistle of the E-le-pai-o, repeating at intervals the liquid syllables of its native name, and always quaintly accenting the 'pa.' Do you hear that timid tweet, distinguishable through all other songs despite its smallness? It is the call of the A-ma-ki-hi, fourth of this quartet of birds most commonly seen in the Volcano region, a little greenish-yellow chap quite inconspicuous in the forest.

Generations ago, when taxes of feathers were levied by the native chiefs, an accurate knowledge of the birds was a real essential to life, liberty, and the pursuit of happiness for the Hawaiians. And in the time when the native priests still sought the voice of God in the songs of the various birds, it was inevitable that their intimate bird lore should find expression in the chants of their rituals and in the me-les of their myths. The legend of La-i-e-i-ka-wai is typical:

'The Ka-hu (servant) of the king first met the princess and her companion, and, when requested by him to favor his royal master with a visit, the princess informed him that she might possibly comply with his request the night following.

'If I come,' she said, 'I will give you warning. 'Now listen and heed,' she continued. 'If you hear the voice of the A-o, I am not in its notes, and when you hear the caw of the A-la-la I am not in its voice. When the notes of the A-le-pai-o are heard, I am getting ready to descend. When you hear the song of the A-pa-pa-ne I shall have come out of my house. Listen, then, and if you hear the I-i-wi-po-le-na singing, I am outside of your house. Come forth and meet me.' And so it came to pass. In the ki-hi, or first watch of the evening, resounded the cry of the A-o, in the second watch of the evening the caw of the A-la-la, at midnight the chirruping of the E-le-pai-o, in the pi-li of the

morning, the song of the A-pa-pa-ne, and at daybreak, the voice of the I-i-wi-po-le-na. Then a shadow fell on the door, 'and we were enveloped,' said the King, 'in a thick fog, and when it cleared away the princess was seen in her glorious beauty, borne on the wings of birds.' The name of the divine being he said, was 'Laieikawai.' . . ."

In some ways these kipukas are like oases in the Sahara Tablelands of Africa. (Consult your general geography.) Explain how kipukas and oases are alike and how they differ. When the great caravans of camels cross the desert of the Sahara, with their burdens for trade, they travel from oasis to oasis, to their final destination. In like manner the tortuous trails that cross the lava fields of the uplands of Hawaii pass from kipuka to kipuka. Travelers on these trails, searching always for relief from the heat and the torture of the jagged lava desert, find the kipuka a haven of rest and deep refreshment.

CROPS AND INDUSTRIES.—Over the high grass lands and in some of the open forested regions, cattle are grazed extensively. The great Parker Ranch, alone, occupies 300,000 acres on the slopes of Mauna Kea and the Kohala mountains. Observe that cattle and sheep grazing is practiced where the region is arid or the rainfall only light to moderate. (See rainfall and industrial maps of Hawaii, pages —).

Near the north point of Hawaii, in the North Kohala District, and up to about 1000 feet above the sea, we find sugar cane to be the principal crop. Here it is raised by irrigation. Pineapples are raised, however, on the somewhat higher slopes, without irrigation. Coming on down the coast, beginning with Ku-kui-hae-le, near the mouth of the Wai-pi-o gulch, thence to Hi-lo, we find the greatest cane area in the whole Territory. It extends from near the sea level to an elevation of about 2000 feet. The rainfall is abundant along this coast, as we have seen, and cane

is raised without irrigation. Back of Hilo and extending up toward the Volcano of Kilauea for about twenty miles, lies the O-la-a Sugar Plantation—the largest in all Hawaii. After passing the crater of Kilauea and the Ka-pa-pa-la Cattle Ranch, lying just beyond, we pass through two sugar plantations and one sisal plantation, in Ka-u. (See page — for the story of sisal on O-a-hu.)

Proceeding around the southern point of Hawaii, we enter Kona, where we find some 5000 acres devoted to coffee trees. Here the great coffee fields of the Territory are found on the lower slopes of Mauna Loa, from near sea-level to 1500 or 1800 feet above the sea. Coffee, like pineapples, came to Hawaii from the outside world many years ago. It has flourished in Kona since those early times. The climate has seemed to be just right to bring the coffee bean to its best development. Today Kona coffee is used throughout the Territory.

To visit Kona in July or August, when the coffee berries, turning from green to red, weigh down the glistening, green-leaved branches, is a most interesting, instructive, and enjoyable occasion.

Beyond the coffee region and just to the northward, we pass through the sugar plantation of the "Kona Development Company"—the only cane plantation in Kona.

Extending down the long, sloping hills, above Ho-lua-loa and down toward the sugar mill, great wires have been stretched from post to post through the cane fields. When the cane is ready to harvest, it is cut and tied into bundles. These bundles are then hooked on trolley wheels, which are allowed to ride the long wires down to the distant sugar mill. **Gravity** is the strange force that pulls the bundles of cane down to the mill.

Now it happens that, long ago, the Hawaiian people built a great sliding place on these same long hills. They then laid much dry grass on the long

slide. Down this they would then coast, face down, on a sort of a sled with two curved runners. Here, again, gravity pulled the Hawaiians of the long ago, down these same steep slopes on their ancient sleds. Even to this day the place is called "Ho-lua-loa." This name signifies the "Long ho-lu-a"—the "Long Slide." There are the remains of many holuas, which may be seen throughout Hawaii. None of them are used, however, as in the days of old. Sometimes we still slide down long, grassy slopes on *ti* leaves. It is said that there were slides, in the days of old Honolulu, down the slopes of Punchbowl. Sliding down the slopes of Punchbowl was then the sport of kings. In other and colder parts of the world, where there is much snow in winter, people coast down smooth, snow-clad hills on sleds, much as the Hawaiians coasted on their holuas in the long ago.

Beyond Holualoa we again enter the cattle raising region, on the foothills of Mt. Hualalai, in the vicinity of Hu-e-hu-e and Pu-u-wa-a-wa-a.

Less important industries are found in the culture of pineapples, corn, and tobacco. Pineapples, as we have seen, are raised mostly over the uplands of North Kohala. Several thousand acres on the slopes of the Kohala mountains, between three and four thousand feet above the sea, are devoted to Indian corn. Tobacco is grown in considerable quantities in the Kona region. Like many other plants and trees, corn and tobacco came to Hawaii from other lands.

Cane raising is the great agricultural work of the Island, of course, with a normal annual output of over 200,000 tons of sugar. Next in importance to the sugar industry is cattle raising.

TOWNS AND POPULATION.—Hi-lo, the county seat, is located on Hilo Bay, in windward Hawaii. It is the largest town of the Island of Hawaii. Honolulu, the capital, is the only city in the Territory whose population exceeds that of Hilo. Observe the loca-

tion of Hilo; note its natural advantages. Beside its splendid harbor and its fine, tropical setting, Hilo has well kept streets, fine residences, and substantial public buildings.

The population is unlike that of any other city of its size, since Hilo contains the representatives of so many different races. Besides the remnant of Hawaiians, we find the people of China, Japan, the Philippines and Korea. The white people include not only the former citizens of many of the states of the Mainland and Canada, but also many from the various European countries.

The Hawaiian Consolidated Railway has Hilo as a terminal. It reaches the sugar plantations along the northeast coast, extending as far as Pa-au-i-lo. It, also, has branches extending southward into Puna and southwestward as far as Glenwood, a few miles below the Volcano of Kilauea.

Quaint towns and villages, with their varied population, lie beyond the terminals of the railway. Up on the plain between the Kohala mountains and Mauna Kea, we pass Ka-mu-e-la and Wai-me-a, the center of the great Parker Cattle and Sheep Ranch, where many Hawaiian cowboys make the country strangely picturesque.

Sometimes the whole windward coast of Hawaii is called the "Scotch Coast." Splendid Scotchmen came here as young men, installing sugar machinery in many instances from Glasgow, Scotland, "made good," and have become the plantation managers of much of this great sugar region.

As we go down through the leeward villages, through Ka-wai-hae, the Parker Ranch shipping port in South Kohala, we shall find people of Hawaii living where the earliest missionaries first saw their land on the closing days of March, 1820. Here is the great Pu-u Ko-ho-la he-i-au, the last of the Hawaiian temples that was built by order

of Ka-me-ha-me-ha, the Great, in the early years of the last century.

As we pass by the foot of that strange, grooved mountain, Pu-u-wa-a-wa-a, let us stop for a short time at the cattle ranch on its slopes and hear the Hawaiian cowboys tell the story of the great goat drive, in which 5000 or more goats were brought down from the slopes of Hualalai to the sea and killed. It was in the early months of 1922. The goats, once tame and the friends of man, had long since become wild and had scattered far and wide over the mountain ranges. There on the beautiful slopes of Hualalai, the goats prospered and grew fat. They also grew in numbers until they robbed the ranges of the luscious grass on which the cattle were supposed to graze. Thus, as the years passed by, there came a time when the goats were numbered by the thousands. The cattle ranges were almost bare of grass. The cattle were suffering for forage. Even the bushes and small brush and the once great trees had suffered and died.

Then it was that the Director of the Forest Service called for volunteers from the Boy Scouts and the men of the towns and villages of Hawaii to take part in the great goat drive. Hundreds of men and boys responded, among the best cowboys and many good rifle shots. They were to lead up the mountain slopes, where they spread out like a great fan, back of the goats, and started to drive them down the slopes to the sea. This was the greatest destruction of the pests ever accomplished on a single drive in all Hawaii.

A little way up the slope of Hualalai from Puuwaawaa Ranch brings us to Hu-e-hu-e, another cattle country, with its Hawaiian cowboys. Let us stop here for a little while, also. It was just below here, far back in the year 1801, that lava came forth from the side of Hualalai, and ran down in a great fan-shaped flow toward the sea. So far as

known this was the last eruption of Hualalai.

The old legend states that Pe-le, the Goddess of Fire, "began to eat Hue-hue, a noted breadfruit forest owned by Kamehameha, the Great. She was jealous of him and angry because he was stingy in his offerings of breadfruit groves of Huehue."

"After she had destroyed the breadfruit grove, she went in her river of fire down to the sea-shore to take Kamehameha's fish-ponds. She greatly desired the a-wa fish with the mullet in the fish-pond at Ki-ho-lo, and she wanted the a-ku or bo-ni-ta in the fish-pond at Ke-e-le-hu-lu-hu-lu. She became a roaring flood, widely spread out for the fish. . . ."

"The priests tried to stop the flow by calling to the au-ma-kuas (ancestor ghost-gods) to stop the flow, but without success. Kamehameha sent for one of the prophets of Pele and said: 'You are a prophet of Pele. . . . How can I quiet the anger of Pele?'"

"Bowling low, the priest replied: 'When you offer sacrifice to her.'"

"Kamehameha said: 'I am afraid of Pele. Perhaps I shall be killed.'"

"The prophet-priest replied: 'You shall not die.'"

"Then the king prepared offerings and sacrifices for Pele and, as a royal priest, went to the place where the lava was still pouring floods from the new-born crater. With him was the Ulu-la-ni, who asked: 'Who is that very strange fire in front of Pele?' The fire was active as if it had life itself. The prophet-priest (who had gone up also with Kamehameha) replied: 'That is the child among the au-ma-kuas, thy dead first born, which has become a ghost-god of the Pele family.' Then came a great wind, houses were overturned and trees hurled down."

Then "Kamehameha and the prophet went up to the side of the lava and placed offerings and sacrifices in the flowing fire. They prayed to Pele, but

the fire burned on and on. Then it was that Kamehameha cut some hair from his head and hurled it into the terrible fire as his last offering, thus giving himself to the goddess of fire. Then they came away, and soon the fire went out."

The great lava flow of Huehue, on the side of Hualalai, was at an end.

"It should be remembered (that as late as 1881) when Hilo was threatened with destruction from a lava flow that came from the side of Mauna Loa, near Pu-u Ula-ula, Princess Ruth, one of the last of the Kamehameha family, went from Honolulu to Hilo and up to the river of lava with a feeling that a Kamehameha, who was under the especial protection of Pele, could intercede for her people. (Strangely enough) the eruption ceased in a day or so," and Hilo was saved. (Quotations from "Hawaiian Legends of Volcanoes," by W. D. Westervelt.)

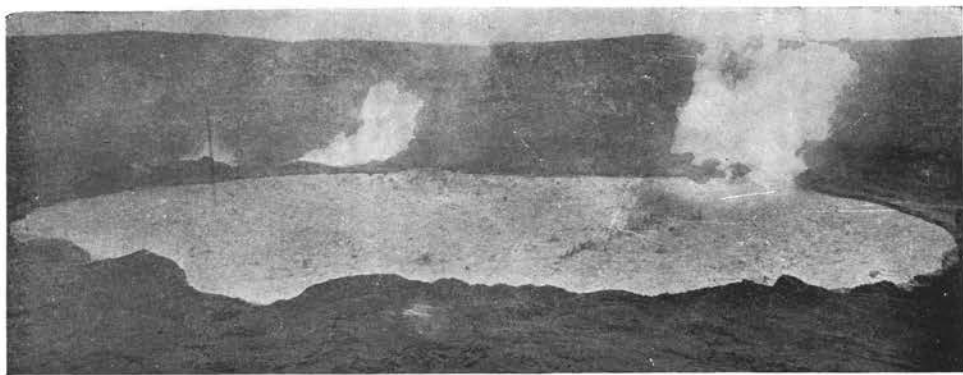
Beyond Huehue is Holualoa, a Japanese community of the "Kona Development Company." Here you may visit, also, Kai-lu-a, the seat of the coffee and tobacco industries. There are still many Hawaiians in this old, old village of the long ago. Ke-a-la-ke-kua and Na-po-o-po-o are both rich in legend and story of the ancient days of Hawaii. There many people of old Hawaii still live. Kailua and Napoopoo remain to this day important west coast ports.

Just a little way down the lava coast

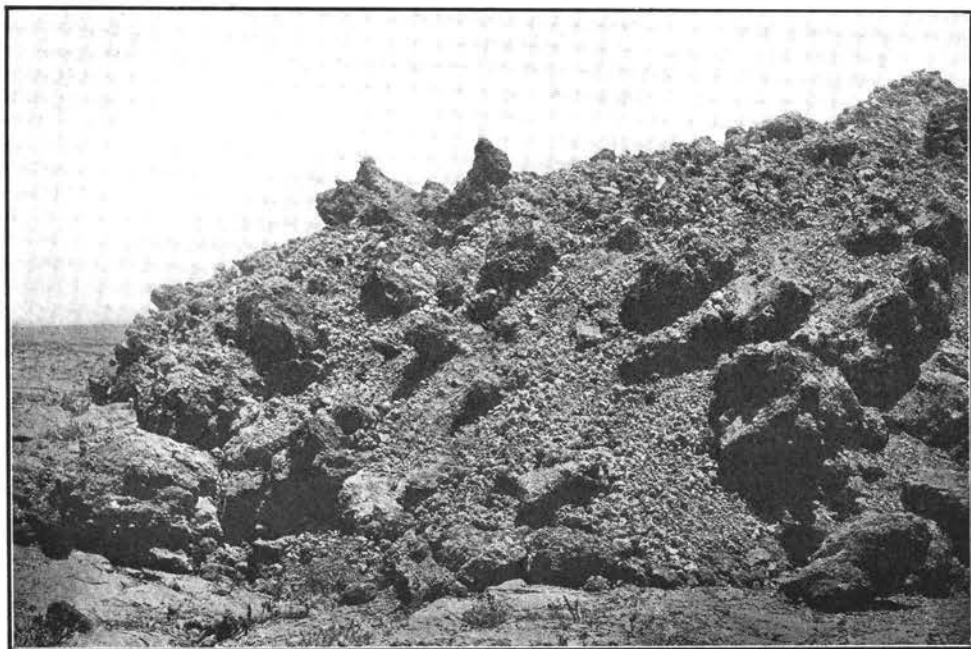
from Napoopoo we arrive at Ho-nau-nau, where a few people of Hawaii still linger to fish with their nets of o-lo-na fiber as in the olden days. Here is the place of the "City of Refuge." Any unfortunate Hawaiian of the ancient days, who had committed some wrong or broken some tabu, might enter here and find sanctuary. He who reached the "City of Refuge" was safe from those who followed in his footsteps, even to the very gates of the walled city. How many fleeing people, running from the wrath of their pursuers, were sheltered in this place of safety no book can tell, for there were no books in those days in which there might be recorded. There the old walls stand to this day. And within the strong, high walls is the great, raised stone platform of the central heiau. Here is the place before which the fugitive fell down in worship and thanksgiving at his deliverance.

A-li-ka and Ho-opu-lo-a are other villages of Hawaiian people in South Kona. In Wai-o-hi-nu, Na-a-le-hu, Hile-a, Ho-nu-a-po, and Pa-ha-la in Ka-u, the country gradually changes from Hawaiian to a Japanese and Chinese population, as we pass from the cattle ranches to the cane fields.

The total population of the Island of Hawaii in 1920 was 64,895, with the densest population in the vicinity of Hilo.



The molten lake in the pit of Kilauea crater.



How the lava piles up after an outbreak.

The Great Earthquake of 1868

Compiled from letters of F. S. LYMAN

Arranged by LEVI C. LYMAN

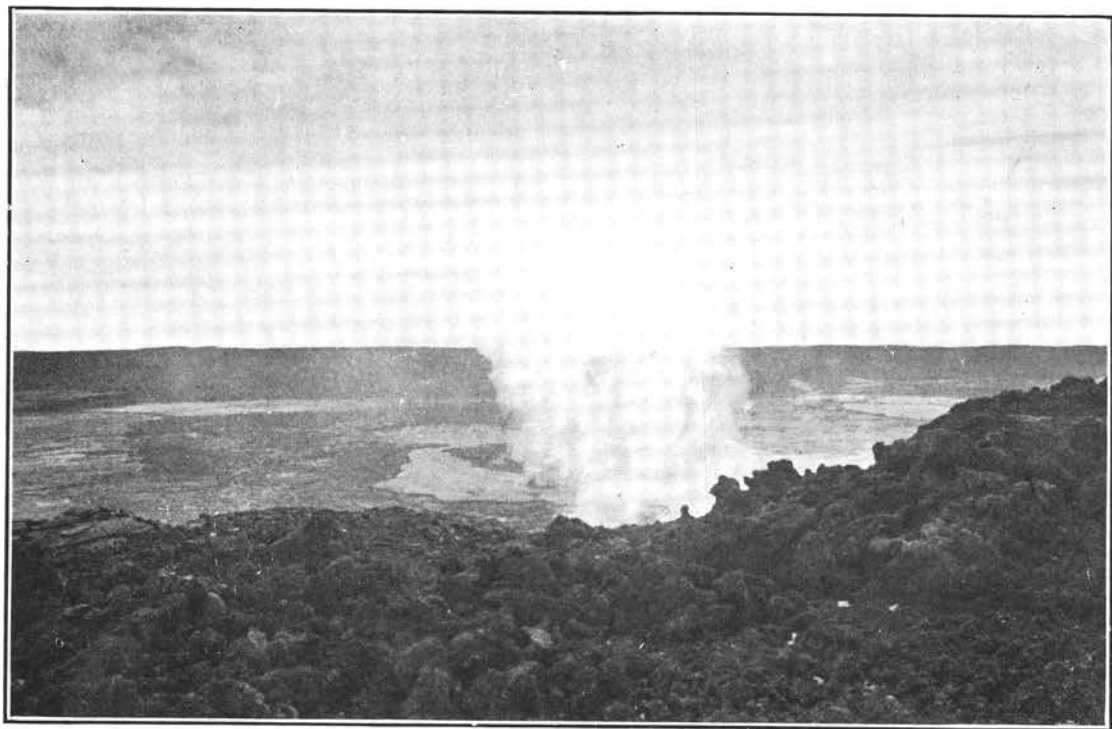
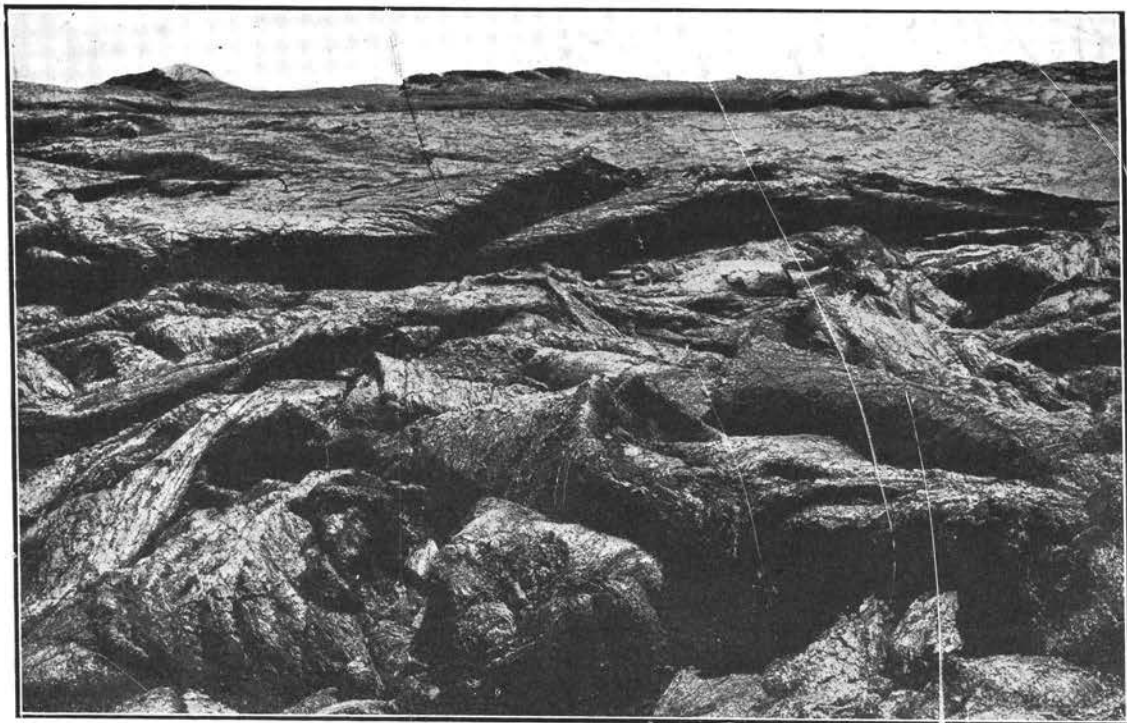
(The description is given as seen from Clover Ranch mauka of Pahala Mill.)

At about 6 o'clock, Friday morning on March 27, 1868, the boys, who were milking, called out, "See the fire on Mauna Loa." We looked up and saw a great column of smoke rising rapidly from the top of the mountain. In a short time, a second column burst forth, a little to the south of the first one. These were followed by a third and a fourth column. They rose straight in the air for thousands of feet above the mountain top, spread into a cauliflower formation and turned off toward the east. Although this eruption was thirty

or forty miles away, we stood in awe watching the spectacular display.

At seven o'clock we began to hear a-roaring from the volcano,—a noise like a great blast furnace. This kept increasing in violence until the air seemed to tremble with the incessant sound. If the noise were so loud at the great distance from us, what a mighty deafening roar it must be at the source.

The outbreak had come without the slightest warning, breaking out from the mountain top, it threw a spray of red lava high into the air. This was followed by a cloud of smoke. Then the red-hot lava began running down the sides of Mauna Loa in four streams in a southern and eastern direction. But



The outflow of lava from Mauna Loa is usually preceded by an earthquake or a series of quakes, and about the everliving fire of Halemaumau there are incessant quakes for months at a time.

clouds now covered the mountain and shut from our view this wonderful sight. At about eight o'clock the noise began to decrease, and finally ceased altogether, much to our relief, as we hoped the eruption was over.

At nine o'clock the children brought in shining, silken threads, which they had found on the ground. These were Pele's Hair, or drawn-out threads of lava from the eruption on Mauna Loa. These had been carried by the wind and were falling all about us.

At noon-time we began to feel slight earthquakes. We undertook to keep track of the number, but were obliged to give it up as the quakes numbered into the hundreds during the day, and during the night were even more frequent—every minute or two. We were unable to sleep much, for even though the quakes were slight, there was the rattle of the doors and windows.

Rev. James Kauhane, our pastor, was at Punaluu, at the seashore on the morning of the eruption. From this point he saw the red molten lava running from the top of Mauna Loa along the surface toward the south-east. This fiery river soon disappeared, however, into an underground channel. And as this great mass forced and wrenched its way under the surface, the straining and rending asunder were felt for many miles around the Island.

The next morning, when the clouds cleared away, we went some distance below to get a better view of the mountain, but all we could see was black lava, and columns of smoke rising. These columns were now about ten miles farther to the south, marking the progress of the underground flow. This continued day after day, still toward the south, and with earthquakes more frequent and more violent, coming sometimes, two together. After lunch there came the hardest shock we had so far experienced, three shocks together which lasted one minute. The motion was peculiar, forward and backward,

two or three feet each time,—a motion, which, as it continued for several seconds, made it difficult to stand. In fact the natives did not try to stand but sat upon the ground. The small children became seasick, and some of the stone walls were thrown down. We later learned that the side walls of four or five stone churches in the district had been thrown down, as well as the stone house of Captain Brown, who lived near the south point of the Island.

The quakes continued throughout the day, but were slight. Often we could hear them coming from the south, giving us a shake, and passing on toward Kilauea in a north-easterly direction. During the night the shocks were quite frequent and very severe, and with every quake the timbers of the house made so much noise that we decided to move into the thatched house in the yard. Needless to say we were all very much frightened, though we tried to be calm and put our trust in God.

Sunday morning, the 29th, was clear, and we could see that the line of smoke had advanced about fifteen miles farther than we saw it on the previous morning. It seemed to be directly mauka of Captain Brown's place at Kahuku. From the time that the lava first began to flow down the mountain no fire had been seen, only a line of smoke with an occasional glimpse of fire at the source.

All day Sunday the quakes were lighter and less frequent, only occasionally a hard one. In fact from 2 o'clock till ten o'clock on Tuesday they almost ceased. At this time there was quite a hard shock and at five o'clock a still harder one. Aside from these two there were not many quakes; but during Tuesday night from ten o'clock till two in the morning they were almost incessant, and then subsided.

Mr. Swain called and reported that at Waiohinu and Kahuku the shocks had been very hard. This region seemed to be the center of action. He also

stated that some hard quakes on Saturday had wrecked Captain Brown's stone house completely, though the family had escaped without injury. They had erected a temporary wooden structure to live in, though the natives would not even risk remaining in their thatched houses.

At Waiohinu many of the stone walls were thrown down, and the walls of the stone church were in two places rent from top to bottom. Spencer's new house was leaning over, and Rodger's two-story house shook so badly ohinu, and even here a crack opened in the earth near them. Also many large cracks opened in the earth mauka of Captain Brown's place in Kahuku. The that they did not dare stay in it. After the chimney crashed down they all moved with the Spencers and Haleys to a wooden house about a mile from Wai-temporary frame house, which he had hastily constructed to take the place of his demolished stone house, was overturned a day or so after it was built. His children entreated him to leave the place, but no, he righted up his house and defied God Almighty to drive him away. Much to his regret later on.

The water of the Waiohinu stream was reported to be red like blood and of a bad taste, this however passed off by the next day.

The motion of the quakes in the Waiohinu and Kahuku regions was up and down rather than sideways as we had it in Pahala. During the hard shake of Saturday, there had been a huge slide off the pali at Honoapu, and one from a pali near Keauhou. We saw a dust cloud in the region of Keauhou again on Tuesday, giving evidence that there was another slide there.

When it cleared we saw the smoke rising on the mountain side all along the line from the source toward Kahuku. Everyone throughout the district was very much upset over these disturbances. Our pastor gave notice on Sunday that there would be a prayer

meeting every afternoon at the church, immediately following the dismissal of school, and urged all the people to be present, and on Monday, Tuesday, Wednesday and Thursday these meetings were held, and all well attended.

After the meeting on Thursday, April 2, we came home and went on with our work. I was hewing ohia logs for gate posts, with the children sitting nearby on logs watching me. Sometime between four and five o'clock, there came the most terrible earthquake we had yet experienced. It started out as usual, but this time it did not stop; it shook east and west, north and south, up and down, round and round, in every imaginable way, decreasing in violence, only to increase again. Everything went crashing about us; the mulberry trees were thrashing about as if in a mighty wind, though there was no wind blowing. The logs rolled back and forth, and I called to the children to hold up their feet, lest they be crushed under the logs. The stone walls were shaken to the ground.

Mrs. Lyman ran from the house with the baby in her arms. As she was stepping off the porch, the gutter above her fell, she ducked instinctively, but at the instant of hanging in air, the direction of the quake reversed and the gutter was shot toward the tank house, where it hung piercing the walls. As Mrs. Lyman was thrown upon the ground she caught a glimpse of the dairy room with seventy-five pans of milk neatly arranged on the racks, from which a deluge of milk swept over the dairy boy, who was busily skimming the cream.

It was impossible to stand, we were all sitting on the ground bracing ourselves with hands and feet to keep from rolling about. Our house was shaken from its foundation, turned half-way around and left tilted crazily. Our precious water poured from the overturned water casks,—a serious loss, as we were dependent upon rain water.

In the midst of this commotion our



An old time Hawaiian grass thatch church; a village with one of these sunk many feet on the Puna coast during a quake.

attention was attracted by a great noise to the north of us,—the noise as of a mighty rushing wind. Looking in that direction we saw, about a miles and a half away, bursting from the top of the pali, what seemed to be a river of molten lava. Great rocks were thrown high in the air as this mass rushed down the steep incline and tore across the level plain, swallowing everything in its path, trees, houses, people, cattle, horses and goats. We saw droves of cattle running desperately to escape, but all were overtaken and swallowed up. The torrent rushed on like the great combers of the sea. This flow had traveled three miles in three minutes when it ceased. A tempestuous sound seaward now attracted our attention, and we ran to an elevation for a better view. After the shaking had ceased, we saw the sea boiling and foaming furiously for three or four miles along the coast directly below us and on to Punaluu, and quite red for at least an eighth of a mile out

from the land. We learned later that a great tidal wave had rushed in, covering the shore line for miles along the coast, in which seventy-five people lost their lives.

We took the children and started with all haste to a higher elevation, Nahala's Hill. All our natives accompanied us, and it was a very difficult quarter of a mile to traverse, the violent shaking almost threw us off our feet, also the ground was very much cracked up, and it appeared that every rock and pali, which could be thrown down, was already down. Reaching the hill we could see in all directions. The continued sounds of surging and rushing in the earth beneath us, were terrifying in the extreme, as we feared the lava might break out at any moment and swallow us.

At Hilea, ten miles away, we saw black, smoking lava, and beyond Punaluu a long, black point of lava was slow-

ly pushing out to sea, till it finally disappeared.

A little later we were joined by our minister, Rev. Kauhane, and his wife, carrying their children in their arms. They were bareheaded and still pale and trembling from the dangers through which they had passed. From time to time, others, who had escaped with their lives only, joined us, coming from all directions, till we had a gathering of some fifty natives with us. Together we lifted up our hearts in prayer throughout the night. And during the long, anxious hours of the night there were frequent quakes with sounds of rushing water and, or, rushing lava beneath us.

From the natives we learned what had been happening in their various localities, and they surely had marvelous tales to tell, and there had been miraculous escapes from death.

We learned that what we had taken for a lava flow to the north of us, was in reality a mud flow. It had started directly above a village from the hillside where there were springs of water. One man had come from a place just beyond the edge from which the avalanche had broken off. He was working in the woods when the big earthquake occurred, and, he said, that suddenly there was a great upheaval, and he was covered and blinded by the flying mud and earth, but fortunately was not injured. When the commotion had died down, he groped about till he found some water to wash out his eyes,—a very narrow escape he had had as he found he was very near the edge of the landslide. He at once started for the village, but instead came to a precipice some 20 feet high. He looked for his home, but it was gone, as well as the entire village.

The school teacher who lived in the village had gone to a near-by house at the foot of the pali to give notice of the prayer-meeting for the following day. He had just reached this house at the

foot of the pali, when the great quake came and the mud flow began. The rushing mass came down on both sides of this house, completely surrounding it, and leaving only this one house untouched, with himself and the inmates safe from harm.

Another story was told of ten school children from this village who had gone for a bath in the gulch, on their way home from school after the prayer meeting. They were about a mile below the point where the eruption broke out, and seeing the coming avalanche they ran for their lives, turning to one side, as they followed the direction taken by the running horses. Both children and horses were saved but the cattle, running straight ahead, were overtaken and engulfed.

A cousin of Rev. Kauhane reported that he was passing through a koa grove on the plain below when the big shake came. He had to hold on to the trees to keep from being thrown down. Immediately following the shake, he seemed to be surrounded by a veritable storm of mud, stones and water, flying all about him, and, that a great bank of earth, mixed with rocks, logs, ferns and so forth about twenty feet high, stopped a little distance from him. We saw this for ourselves, the next day as we were passing by on our way to Hilo.

On Wednesday afternoon two young men came on an errand to our house, and Mrs. Lyman told them of the next prayer-meeting and invited them to come. They smiled and promised to be there, but they did not come. During Thursday while our company was assembled on the hill, a deacon of our church, who was also the father of one of the young men, joined us and told us of his experience. After the great earthquake he and his wife had hastened to the seashore, as their son had gone there with some friends to fish. On arrival they had found everything demolished. The only living thing found was a horse lying bruised and scratched

by the tidal wave. After some searching they found their son's body on the rocks, but his wife, children and friends of the fishing party were all missing,—all had been swept out by the tidal wave. They also reported that great chasms had opened up in the rocks, out of which flowed red and green water.

Besides the seventy-five persons who were drowned in the tidal wave, thirty-one perished in the mud flow. But what seems wonderful, not one person, who had been at our prayer-meeting that day was lost. Every one of these was saved, some of them miraculously.

On Friday, April 3rd, Mr. C. E. Richardson, our only white neighbor, came from his home four miles away, on the volcano side of us, to offer help if we needed any. He said he was going to Hilo, and advised us to do likewise. He had skirted the mud flow and gave us directions for making the journey in safety. We decided at once to do this, and sent our native men to catch the horses. This they accomplished with very little difficulty, considering there were no pens, into which to drive them,—all the stone walls having been thrown down. In fact the horses seemed dazed by the event through which they had passed. One of the boys lassoed, by mistake, a young, unbroken horse, and he stood perfectly quiet, allowing himself to be unroped.

By one p. m. we were ready to start upon this fifty-mile journey to Hilo. We took nothing with us except the clothing we wore, and thirty pounds of hard poi for food on the way. Our party was made up of thirty people, including our pastor and his family. Our four younger children were too small to ride alone, and had to be carried. Many others left the district as soon as they could get away, some for Hilo, and some for Puna.

Just before starting, Mrs. Lyman remembered that she had placed some gingerbread in the oven shortly before the big quake. One of the boys was sent

to investigate, and sure enough, there it was, nicely baked. This was taken along for the use of the children. The earth was still rocking to and fro, and the roaring underground still continued. We made all possible haste to get away from this fearful place.

Soon after we had started, we received a message from a native Kahuna, stating that we could not get by the Volcano, as the way was blocked, but, if Kauhane and I would go to him with a black pig and a white hen, he would endeavor to appease the wrath of the Fire Goddess, Pele. We told him that our trust was in Jehovah, and rode on.

We made good headway on our journey and reached the volcano shortly after dark, the moon lighting our way during the latter part of the journey. Mr. Richardson had thoughtfully sent a man back to guide us around some dangerous cracks which had opened across the road. He brought us the following letter:

Volcano House, 3 P. M. April 3, 1868.
Mr. Lyman,
Dear Sir,—

You will find some difficulty, after you get within two miles of this place on account of cracks, but we arrived here safely. The native, who takes this, will show you the way. All the natives of Kaauhou are gone, no lives lost. I am afraid that part of Hilo is also gone. I hear that the road is good from here to Hilo.

Yours truly,

C. E. Richardson.

We spent the night at the house of a pulu picker, named Kaina, whose hospitality was much appreciated. We found that the earthquakes had not been as severe here as in Kau. They even had kerosene lamps burning, much to our surprise, since everything breakable of ours had been absolutely wrecked.

We were ready to start by seven o'clock the next morning, and took lunch at the halfway house. Ten miles

from Hilo we found fresh horses awaiting us. These had been kindly sent by father, Brother Rufus and Mr. Coney. We reached Hilo before dark, realizing that we had been greatly favored by the Lord, for never before had we taken the journey, with the children, in so short a time and with so little preparation, and with as great ease.

Mr. Richardson started again for Kau on Monday, April 6th., reaching Kapapala at noon the next day. He found the earthquakes still frequent and severe. He spent but two or three hours attending to matters on his ranch and then started back for Hilo. He slept on the sand plains below the volcano where he was overtaken by darkness. When the clouds lifted he saw a great lava flow in the region between Waiohinu and Kahuku, some twenty-five miles away. The lava had burst through the surface there and had apparently reached the sea.

Later we heard descriptions of the happenings in that place from Mr. Swain and others. The whole side of the pali above Waiohinu went crashing down with terrifying commotion, but no damage was done to the little village, itself.

Mr. Swain lived at Kahuku, about a mile above Captain Brown's place already referred to. At about dusk, on Tuesday evening, one of Captain Brown's daughter said, "Father, what is that noise like grinding coffee?" Looking through the window, they saw a great river of molten lava, a mile wide, coming down on them from the mountain. Just then Mr. Swain came running to get them away. Mrs. Brown, who was large and heavy, said she could

not run, that they should leave her and great themselves out of danger as quickly as possible. But Captain Brown took one arm and Mr. Swain the other, and together they helped her along. The children ran just as they were, barefooted and in their night clothes. The pet cow, sensing the danger, ran along with them, across lots one quarter of a mile to the side. They had only succeeded in reaching the higher ground when the molten river swept past them toward the sea, seven miles away. And it reached the sea before morning. The Browns, glad to be alive after their terrifying experience, walked eight miles to Waiohinu, their way being illuminated by the glow from the lava flow.

The next morning when Mr. Richardson passed the Volcano, he could see neither fire nor smoke from Kilauea. It was found later that a great crack had opened up, extending from the Volcano, out through the Kau desert, for about twenty miles, opposite the Kapapala Ranch house, from here it veered off to the sea. All the lava from Kilauea drained out of the crater along the line of this crack, and broke out as a surface flow near the sea.

During this period a section of Puna Coast, thirty or forty miles long, settled down several feet, leaving the high coconut trees standing in the sea.

After the lava stream broke out at Kahuku the pressure was relieved and there were no more severe quakes, though slight ones continued at less and less frequent intervals for about a year.

We never returned to Kau to live, the nervous strain, through which we had passed, proved greater than we could surmount.

The Story of Leprosy

Address by
DR. G. GUSHUE-TAYLOR
Before the Pan-Pacific Research
Institution, Honolulu.

I shall give you just a picture of the situation regarding leprosy as it touches Japan and Formosa.

Leprosy is supposed to have begun 3500 years ago in Central Africa and from there extended all over the world. In Europe 700 years ago there were 20,000 leper houses—in France 2000 and in England over 600. Today in England there is only one leper house with 25 patients in the whole country, so as a problem leprosy has disappeared.

In India there are supposed to be 1,000,000 lepers, in China 1,000,000, and another two million scattered throughout the world. In Japan there are registered some 15,300 lepers. There is a law governing the segregation of lepers but they cannot segregate all the lepers because they haven't got the room to house them. They registered 15,300 lepers and it is estimated there are in Japan about 50,000 lepers. If by general census you find one leper, there usually are two or three you don't know of in the early stages. In Japan they have these 50,000 lepers; there are five government hospitals; one in the north in Aomori, one near Tokyo with 800 lepers, another in Osaka, another in Oshima, and another in Kumamoto. In those five houses they have housed over 2400 lepers, almost exclusively lepers of the beggar class. There are also eight private hospitals in which they house 500 lepers.

This is Formosa down here (pointing



Dr. G. Gushue-Taylor.

to map). The railway line shows you the level part of the country; the center here is occupied by very high mountains, 13,000 or 14,000 feet high. The only part valuable for agriculture is less than one-fourth of the whole area. The population is composed of about 4,000,000 people, of which 100,000 are aborigines and 200,000 Japanese.

The chief products of Formosa are tea, sugar, rice and camphor. About 80% of the world's supply of camphor comes from Formosa.

Now to come down more closely to the work I am doing there: During the last five years I have had more and more lepers coming to our place because the first one who came I treated and he told his friends and they came and finally we have about 100 to 110 coming every week. We bought a church and made it into a clinic building and divided it into two days a week. We have been using the ordinary treatment, chalmogra oil, the hydnocarpus oil mixed with creosote,



It is said that the Chinese coolies brought leprosy to Hawaii and that they have carried leprosy to most of the lands about the Pacific. In India and in Hawaii the natives believe that leprosy enters through the feet.

etc. The results have not been as rosy as we have been taught to expect in the Philippines and India.

Two years ago I made a tour around Eastern Asia, including leper hospitals in Manila and Siam, and from there up to Japan. Last year I went to the leper hospitals in Korea and three more in Japan and one in China. My idea in making that tour was this: We have in Formosa a leprosy situation which has not been handled and I wanted to see what was being done in other countries before I made an attempt to do much in Formosa. There we estimate to have 4,000 lepers. The Japanese authorities say they have 756. When they gave me that figure I asked them how many they had in the capital city. They said 42. I said of that 42 I have 120-odd coming to my clinic regularly. I said, "This is no discredit to you; it is universal". In India the census was taken in 1921 and they discovered some 220,000. Dr. Muir found in one village 25 lepers not registered at all and estimates the number to be 1,000,000 or over.

We started this campaign and the government registered 756 lepers—registered by police and not by doctors; so they had only the most serious cases. I had many interviews with government authorities with the view of doing something to segregate these leper people. They are scattered throughout all the population, bakers, laundrymen, sellers of fruit, business men, doctors, dentists. One dentist I persuaded to give up his work and under treatment he has become remarkably better so he is sufficiently well to get back in society if he would, but he is quite happy to stay and promised to live in the colony and do dentistry for my patients.

I put the situation before the government people and asked them if they would help in my missionary work. It is generally recognized that leper work is a function of the government, but there are few governments that have sufficient money to take care of their leper problem. In this

country it is being taken care of financially very well. As regards the room for segregation, on the mainland of America it is generally believed there are 1,100 or 1,200 lepers in America. In the one big leper settlement in Louisiana they have only 385. Where the others are I don't know. When in a country as big and as wealthy as America there is not sufficient room to segregate all the lepers you cannot be surprised that Japan with a problem fifty times as big and with a financial capacity much smaller, is in difficulties.

That brings me to answer a question often put to me, "Why should we as Americans or Britishers try to help Japan in her leprosy problem?" I answer it this way: Because America is a rich country with a small leprosy problem; Japan is a poor country with a big leper problem; and because we are all brothers. That is the only reason why we should try to help Japan. Besides, it is an international problem. In Hawaii today there are forty or fifty Japanese lepers in Molo-kai and Kalihi. If there were no leprosy in China probably there would have been no leprosy in Hawaii, probably because the Chinese have carried leprosy to most of the lands around the Pacific basin.

To come back to Formosa: The authorities are not dealing with the problem, but they are beginning. Recently they have decided to build a government hospital of 100 beds. In the meantime I am planning a colony for 200 patients. The government has promised me a piece of land. I asked for one hundred acres and they promised from fifty to one hundred acres, 25,000 yen for construction, and a guaranteed granting aid of 4½c per day per patient. That will not go very far. I asked them for the big sum of 12c a day. I figured it would cost 15c a day and I guaranteed to supply all the rest. You can do it cheaper there than here. It is up to me to try and find some money to make up the deficiency. When I came away I told them my term was about up to get away, and I

said, "When I go home I want to bring my course along those countries where there is a leprosy situation and I want to study it for the sake of the work here." They very kindly appointed me a member of the staff of the Governor General of Formosa with a grant of 3,000 yen toward the expenses of the tour. This is the second time they have done that for me. They said this was the first appointment the Japanese medical people in Formosa government circles had made to a foreigner. The Governor General gave me a very cordial letter, endorsing the work and thanking me for it.

The problem is this: First I have to find the site for the leper colony. I did find a very charming site and asked the government for it. Through some misunderstanding through language they thought they would build their little hospital on the same site. That means I have to find another. It has put me in an awkward situation, but I credit myself with this, that they tried for a long time to find a site for themselves and did not succeed and I was able to find a sufficiently good site which they accepted.

There is the situation and now I am going around the world studying leprosy in various hospitals. This is the twentieth I have visited and investigated around the Pacific basin. I go from here to San Francisco and down to Carville, Louisiana, where the Federal hospital is. From there to New York, where last week I heard there were eight cases.

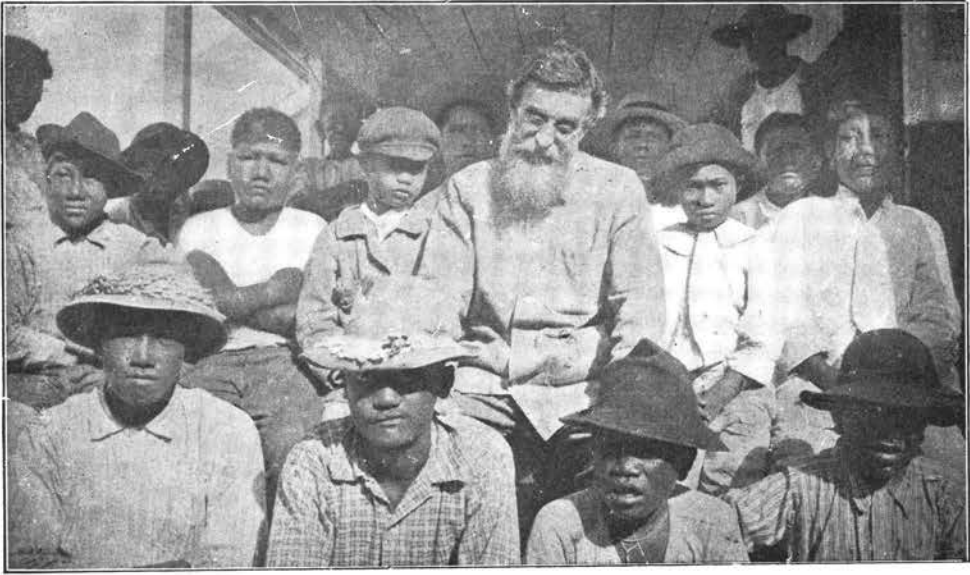
The general population go into hysterics much too freely over leprosy. Tuberculosis has many points similar to leprosy and the infectiousness is much higher. Take a person who dies from tuberculosis and you get a most horrible picture on the inside. Take a tubercular patient and turn him inside out and turn a leper outside in and you would reverse the ostracism society places on leprosy. That is the position which some of us in the medical profession take. So do not be too hysterical over the poor old leper.

Before I left Formosa I said: "I want to try to collect money here." They said I must have a definite permit from the government and that it was very difficult. They finally gave me the permit and I had an extraordinarily good reception from all classes. I collected 63,000 yen in three months, much to the amazement of my friends and the government, but not to my own. I had sufficient faith that I was going to get that money. I had three books to receive the subscribers' names, one fat book for tens, another thinner book for hundreds and a still thinner book for thousands. There is an aristocracy in paying money for subscriptions. (Describes his method of collecting money). You would be amazed at some of the men who are touched by the appeal of leprosy who would not be touched by anything else.

I am taking the story of that 63,000 yen to England and to America and putting it up as a challenge. The people want to help themselves. I am willing to be a go-between and help them, but we are putting it up to this country.

I went to Molokai the other day and saw the people there and told them what we were doing. The next day two or three came up and said they were interested in my remarks, but that I hadn't asked them for any money. I think they were quite hurt that I hadn't treated them as ordinary people and asked them. They said they wanted to do something and they gave me \$25. One of the silver dollars I have here with me. That dollar I am going to take all around the world and I will tell the history of its origin—that it came from Molokai, the site of the life and death work of Father Damien.

It takes \$1,000 gold to build one of our cottages over there of brick and reinforced concrete. If we built of wood alone it would be useless because the white ants would eat it in 12 months. On the basis of this incident I shall collect \$1,000 and build a cottage to be called "Molokai Settlement Memorial Cottage". Think of



Brother Dutton and his leper associates at Molokai. He has lived with them a long lifetime.

the poor people who were really a bit hurt because I didn't ask them for money, but I didn't have the cheek to ask them, and they wanted to be treated as ordinary folk.

This is the first lap in my journey and while I am studying leper conditions I am taking every opportunity to tell people about it hoping that before I leave I may get the sum of \$3,000. Yesterday I went to the Japanese Thursday Club and told them this story. I suggested they form themselves into a committee and decide to raise \$1,000 and I would call the cottage the "Honolulu Japanese Residents' Memorial Cottage". They formed their committee and said they would try. I hope they form themselves into a permanent committee and give support year by year, which is what we need.

As to world leprosy: The British Empire has formed a society called "The British Leprosy Relief Association". Their object is to eradicate leprosy from the British Empire; my object is to eradicate leprosy from the world. I am one of the British Empire, but our slogan is, "To Rid the World of Leprosy". Of

course, I cannot do more than help rid my little spot.

Speaking of ridding the world of leprosy, do not be led away by too optimistic or rosy reports. It is a matter of decades rather than years. I think in any country where it is properly tackled from fifty to one hundred years is as much as you can expect before leprosy will be under control. So I am sure I shall be dead and gone before it is controlled, but while we are here let's get together and do what we can.

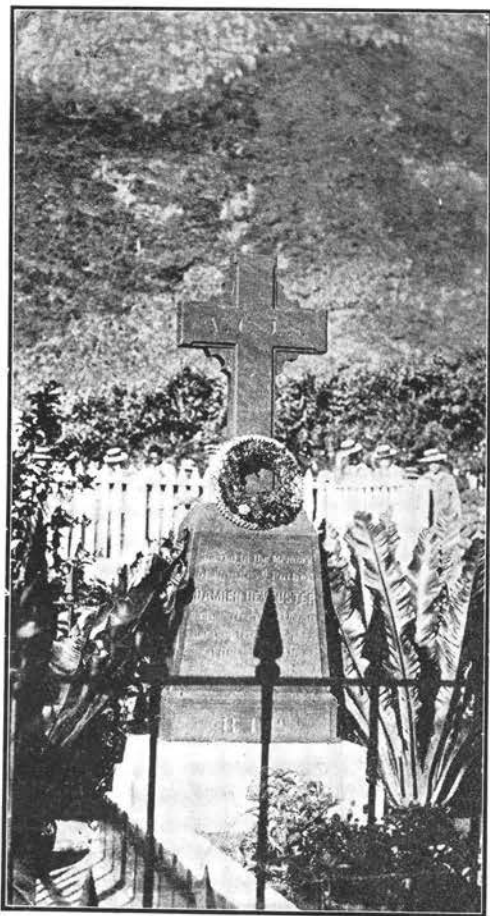
It is up to you people to supply the money. I am speaking impersonally to all the people around the world with whom I may come in contact. The problem is difficult. Leprosy has never been successfully inoculated into man or animal. There have been about thirty inoculations into humans, but it has never resulted in a "take" and leprosy has never been inoculated into an animal. There is a condition of rat leprosy, but that is not the same as human leprosy. The leprosy bacillus has not been cultivated. The chamoogra oil and other oils in my experience have not given the results anti-

pated. There is considerable difference of opinion today as to the results. In tackling leprosy we do not use some specific remedy, but all efforts of hygienic remedies such as fresh air, exercise and food, just as in fighting tuberculosis. In addition, chalmogra oil is used. Some people say the results we get would have come without any specific remedy.

My wife is a nurse, I am a doctor, and we have no children, so we are quite pleased for the rest of our normal lives to spend our time in Formosa at this problem. It requires continuity of effort

and people who are not handicapped by a family or by social ties. There is a great opportunity and field there and a great reward in ordinary human affection from these people. Before I went to Siam twenty of the leper women bought me a wedding ring, so I feel I am more or less married now.

We look to men of good will in Formosa as well as in other lands to aid us financially as we seek to do something worth while in caring for these people whom we seek to treat as folk with a disease.



The grave and monument to Father Damien on Molokai.

Future of Man in the Tropics

By DR. A. S. PEARSE

Professor of Zoology in Duke University and Visiting Professor in Keio University
before the Pan-Pacific Club of Tokyo

I am reminded of Mark Twain, and of the occasion when, towards the end of his life he was ill and the newspapers announced his death. On recovering he gave out a statement saying that the reports of his death were greatly exaggerated. I think that is true of the reports which have appeared about me in the papers here.

I am sure it is a great pleasure to be here today, and I appreciate the honour of being allowed to address you. We get quite a kick out of meeting princes and barons as we cannot meet them in America.

I am here to do what I can in the way of teaching, and will speak to you today on the Future of Man in the Tropics. I have been many times in the tropics, West Africa, South America, and in the Philippines. As I see it the only future of the race is in tropical countries. There used to be a saying: "Go west, young man, and grow up with the country", but that is not possible now because the west is taking a leading position in America. The University of California has more students than any other university in the United States. There is a chance, however, to go to the tropics. I was once in Columbia where I met a man who came there with nothing and had a plantation of four miles square. He had some difficulties, and at one time an army of revolutionaries came and tried to carry off all his labour, but he stood firm and made some red hot speeches, and the army went away.

The tropics are always warm. You never have to buy heavy clothing for winter, and anyone who has been there once

wishes to go there again and again. Many people think that the tropics mean sitting under a palm tree and eating fruit, and perhaps you wonder why everyone has not gone there already if it is such a nice place. But one of the reasons is the instability of the governments in tropical places. In Central America they have had many revolutions. I know a man in Nigeria, a Scotchman (the Scotchmen are holding down the majority of the hard jobs in the world and seem to make good at it) who was running a tin mine, and said that he had put down a stone to see how much dirt had been moved in a week. The stone was turned over during the night, and he replaced it. It was turned over again. He thought the matter over, and after he put it back a third time, the head man of the village came and a lot of people, saying, "If you move this stone all our crops will grow up side down". Being a Scotchman he said: "Would you make any objection if I put a mark on the top of the stone?" and he did that and the people went away, and they all lived happy ever after.

You meet things like that in the tropics, because you meet primitive people and unstable governments.

Another thing is the lonesomeness of life, that leads men to become second class men. There are many second and third class men in the tropics, and they become so because through lonesomeness they turn to drink or women or some other means of amusement. In Nigeria you can buy a woman for \$75, and all women are bought and sold. In Venezuela I had the good fortune to become acquainted with the president of the

country who had 104 children, and is still having them as far as I know. The young man who comes from a country with different ideals and different standards of living and looks for some means of keeping himself amused, is apt to fall into drunkenness and gambling and having a few children. Then he develops into a lower grade man.

The thing which interests me most in regard to the tropics is the diseases. Some diseases are more prevalent there because people live a looser and easier life; they have fewer sanitary arrangements, and less clothing. Malaria is very prevalent. The great scourges of the tropics are malaria, hookworm, and yellow fever, and yellow fever at the present time is the most hopeful of all these three. If only they can be retarded the tropics will be much more habitable. There are hundreds of miles of land which can be had almost free if these diseases can be fought. A man can keep from having malaria by taking remedies, such as quinine. Hookworm can be avoided by keeping away from contact with the soil. This is a big problem in plantations, for the labourers go barefooted, and as they are careless and pollute the soil they become infected. In India there was an employer who made his coolies dip their feet into tar before going into the fields.

Malaria is much more hopeless than either yellow fever or hookworm. Hookworm can be kept down by education. But these tropical diseases will long hold back the people there, prevent them from accomplishing anything, and make them mentally incompetent. Hookworm causes retardment in development, and we owe it to Dr. Styles for pointing out that the lack of progress among people in certain districts is due entirely to hookworm infection. Yellow fever can be transmitted only during the first three days of infection, but may give it to a mosquito, so if you can keep down mosquitoes and keep infected people isolated, then yellow fever will not spread.

Tropical diseases are gradually being checked, and the Rockefeller Foundation has for many years sent people to all parts of the earth to endeavor to make the tropics more habitable.

Then there is another factor, and that is climate. It has been made plain to the world that the human race accomplishes nothing in monotony, and if you think of it, the big cities of the world like Tokyo, London, New York, Paris, are not in the most equitable climates. The human race does its best work where the climate is varied, and one thing against the tropics is that the climate is monotonous. If we are going to invade the tropics, and I favour the spreading of the human race rather than birth control, we must consider means for keeping people from being lonesome, must consider diseases, and the protection of the human race from monotony. Now white people are not at their best in warm and damp climates, but the black people are at their best there, so we must leave these countries to the black races most suitable for them. While we may exploit those countries and direct them and raise them to a higher level, I do not think that it will be possible for races from a temperate climate to go there permanently. I am convinced that the thing to do is to give young men in the tropics short tours of duty. Women from temperate zones should not live there indefinitely.

The invasion of the tropics is a social, a commercial, and a scientific problem, and I feel that the human race in the next three or four generations must take advantage of the cheap labour of the primitive people in the tropics. In Africa the common rate of pay is from 1/—downwards, that is 30 to 50 sen. So those countries will be kept cheap with primitive people who can stand the tropical climate and are more or less immune from tropical diseases. From the products of such countries—palm oil and rubber—we can derive great benefits.

The International Labor Office in Geneva

By Its Representative to Hawaii
DR. IWAO AYUSAWA
Before the Pan-Pacific Club of
Honolulu

"Once upon a time a poor speaker like myself was addressing an audience somewhere in a country district and he was talking on a very dry subject. People in the audience began to open their mouths wide and stretch a little and one after another began to leave the hall very discreetly. The hall became practically vacant; there was only one man left and he was right in front of the speaker. The speaker was very much impressed with the patience of this man and he said, 'Sir, you are certainly remarkable to have stood all of my speech. May I ask who you are?' The man said, 'I am the next speaker.'

In a very short time I am going to tell you of the International Labor Office from which I come and the League of Nations. When I talk to you about the International Labor Office inevitably I have to tell you about the League of Nations, although the League of Nations proper is not the same thing as the International Labor Organization. The latter is an autonomous body, independent of the League, having its own annual conferences, apart from the assembly of the League. But this may be the first time you heard of the difference between the two; however, at a distance of so many thousand miles, the two may look the same and the audiences everywhere have been insisting on my speaking on the League of Nations



Dr. Iwao Ayusawa.

rather than the International Labor Office.

Perhaps it is necessary to say a few words on the differences between these two organizations. They are both for creating, planning and maintaining permanent peace in the world, but on two different bases, working for the same end but working through different means.

The League of Nations you have heard a great deal about already. Ten years ago the information spread through the width and length of the United States to the effect that it is "a super-state, an organization created above all states with the power to impose its will on the unwilling states be-



*With deep interest in the Pan-Pacific
Union*
Woodrow Wilson

Woodrow Wilson, former president of the United States and first honorary president of the Pan-Pacific Union, father of the League of Nations and the doctrine of self-determination.

longing to it." I presume that it is not necessary to tell you that this is untrue. But then the idea spread that this was a League of the Victorious alone. Perhaps partly it was true once upon a time. Conditions, however, have changed greatly in the course of these ten years. Especially since the admission of Germany, the League has begun to assume a far more important character than before. Developments have taken place in Europe and outside, politically and economically, and the situation is no longer the same as it was ten years ago. The League as it functions today is something greatly different from the League you heard about ten years ago.

However, when I talk about the organizations in Geneva I must say that I am not representing officially, either the League or the International Labor Office, although I bring to you friendly greetings from M. Albert Thomas, Director of the International Labor Office, and those friends of yours who are working seriously at Geneva. They are looking to you with great hopes and confidence in the success that you will achieve here.

The League of Nations started with the idea that the world can no longer afford to have another war, that another war will inevitably wreck the civilization men have created. Impressed by the horrors of the last great war, the statesmen who met in Paris were determined to organize the world into a company to insure peace. It was President Wilson's insistence when he went to Paris that if they were to conclude peace it must be a permanent peace, a peace on active principles. The document signed at the peace conference must be preceded by a covenant of all the nations to organize the world into an active body for creating peace sentiments and making it impossible for any State to resort to war. You recall that the Treaty of Versailles and other treaties of peace are preceded by a solemn pledge of all the signatory powers agreeing not to resort

to war, but to respect treaty obligations, by the prescription of open, just and honorable relations between nations. They founded the League, a permanent organization, in order to promote international cooperation and to achieve durable peace and security—so as to make the recurrence of war impossible.

So these nations were organized, fifty-five of them. There are in all some 63 or 64 independent states, at present on the globe. This means that nearly five-sixths of the nations of the world are organized now definitely with those guiding principles to create a world which will wage no more war. The League of Nations proper consists of three important organizations,—first of all, *the Assembly of the League of Nations*. All the member states belonging to the League send delegates year after year in the autumn to Geneva to discuss problems,—social, economic, political, and financial, which have anything to do with peace or war, in order to do away with any causes of friction, racial or international. These Assemblies are great features at Geneva now. Very often at the Assembly there are eighteen or twenty ministers of foreign affairs; half a dozen prime ministers of great nations; sometimes kings of small kingdoms or presidents of small republics come and participate in the activities of the Assembly of the League of Nations. They come to discuss various questions frankly in committees and in the plenary sessions. They are quite serious about it.

It was at one of the Sessions of the Assembly that a very significant remark was made by Dr. Benés, the foreign minister of Czechoslovakia a few years ago. He said "There is no state in Europe today, great or small, which can afford to establish its foreign policies without reference to the League of Nations." When he said this there was great applause; it was agreed to unanimously by everybody present at the Assembly.

Secondly, there is *the Council of the League of Nations*. Unlike the Assembly

which meets only once a year as a rule, the Council meets from time to time, quite frequently because the Assembly is a very big affair with representatives of 55 countries, coming from all corners of the world, whereas the Council consists of only 14 members. Though the Assembly is the supreme organ of the League of Nations, it is a cumbrous body and cannot be meeting all the time. There are urgent matters which have to be discussed and decided upon speedily if war is to be prevented. Any slight conflict, such as the killing of one man or two men may cause another such great conflagration as burned down the great edifice of European civilization in the last war. In order to prevent the recurrence of such a catastrophe there has to be an organ competent to deal with the urgent problem and that is one of the functions of the Council. Now the Council meets on very short order, the Secretary General of the League sends out telegraphic messages to the members of the Council and they come almost at once. The Council consists today of the representatives of Germany, Great Britain, France, Italy and Japan who are permanent members; beside nine members who are elected from among the representatives of other member-states. If U. S. A. were in the League, it is certain that she would have a permanent seat on the Council. When emergency arises and the action of the Council is urgently required, the Secretary General of the League of Nations sends out telegraphic messages to the 14 members of the Council and they assemble at once. Once the foreign minister of Finland was a member on the Council, when he received the radio, he flew by airplane to Geneva, to attend the Council meeting. In order to settle a difficult dispute, the Council appoints a commission and summons the plaintiff and the defendant, and in their presence, the Commission talk over the matter. The case is thoroughly examined with the help of the documents furnished by the parties to the dispute as well as

by giving them fair hearing and through peaceful means the dispute is settled.

That is the common procedure adopted in dealing with critical situations, but you hear very little about it because there is nothing striking in the procedure. You read in the paper that a dozen men sat around a table and talked quietly to settle a dispute. Nothing is more uninteresting. If the report were on the killing of 10,000 men it would be enough to create sensation and you would hear a great deal about it. But that does not happen any more. If you hear very little that is sensational, you may be sure it is because of the smooth-working of the peaceful methods employed by the League of Nations.

Now in the third place, in order to insure success of this organization you have to have an office where you get authentic, reliable, and impartial information, and we have such an office in Geneva called the *Secretariat of the League of Nations*. There you have something like 400 officials, both men and women coming from all over the world representing some 36 or 37 different nationalities, speaking all different languages. There at the Secretariat, information is sent in by the member states. There is a constant stream of official documents and others relating to industrial activities, commerce, immigration, employment, education, etc., flowing into the Secretariat. These documents are studied carefully by the men and women experts on the staff of the Secretariat, and the results of their impartial, international studies are published. They also furnish the Assembly and the Council with information before these bodies meet and decide on international affairs.

Side by side with the League of Nations is the International Labor Organization, consisting of all the states belonging to the League as well as other states which have adhered to it without being members of the League of Nations. Since 1920, for example, Germany has been a member of the International Labor Organization, though she was admitted into

the League only two years ago. When Spain declared her intention to withdraw from the League, she declared that she would remain in the International Labor Organization. These facts illustrate the autonomous character of the Organization. In the International Labor Organization, there are organs analogous to the three organs of the League of Nations.

In the first place, parallel with the Assembly of the League of Nations we have the *International Labor Conference* which meets at least once a year. Secondly there is the *Governing Body* which corresponds more or less to the Executive Council of the League of Nations. There is thirdly the *International Labor Office* which corresponds to the Secretariat of the League of Nations.

The International Labor Conference is attended by two government representatives and one employers' and workers' delegate from each country. There are these three different elements represented at the Conference each delegate having equal and independent vote, without being obliged to vote in line with other delegates coming from the same country. The Labor Conferences are, thus, quite different from the former diplomatic conferences. At the International Labor Conference, when an international agreement to protect workers is proposed the government representatives will argue either from national or administrative point of view, whereas the employers' delegate is likely to argue from the point of view of safeguarding industrial or economic interest. The workers' delegate, on the other hand, will discuss the matter with the view to ameliorating the working conditions of the laboring class which he represents.

So these three elements representing varied interests get together, and come to an agreement somewhere where everybody can agree—on an *international* basis. But why should this be done internationally? Can't the condition of labor be improved without going to Geneva? Isn't the labor problem a domestic ques-

tion? In the preamble of Chapter 13 of the Peace Treaty which treats only the labor problem, you find the statement of two very interesting principles, relating to this question. One of those principles is this: 'As long as any country maintains labor conditions which are inferior to the conditions of labor in other countries, that country which maintains inferior standards of labor will impede the social progress of other countries.' Suppose in your country you continue to work your mills ten hours every day instead of eight, while other countries have agreed and begun to work only eight hours. That is a difference of 20% per day. By working 20% longer you can undersell other countries 20%. Instead of selling the goods at \$1 you will sell them at 80 cents. You will thereby drive away the goods of other countries and get the market. It is an unfair competition which is a new form of warfare. Nowadays great industrial states do not openly declare war and send troops or battleships. The new imperialism employs methods which are more subtle than hitherto. The statesmen who met in Paris at the Peace Conference foresaw the dangers of war in the economic rivalry, which is carried out by ruthless exploitation of the working class on the one hand and at the sacrifice of international goodwill on the other. The reform is going to be possible only when all the states agree to similar conditions of labor, and there comes the necessity for international conventions.

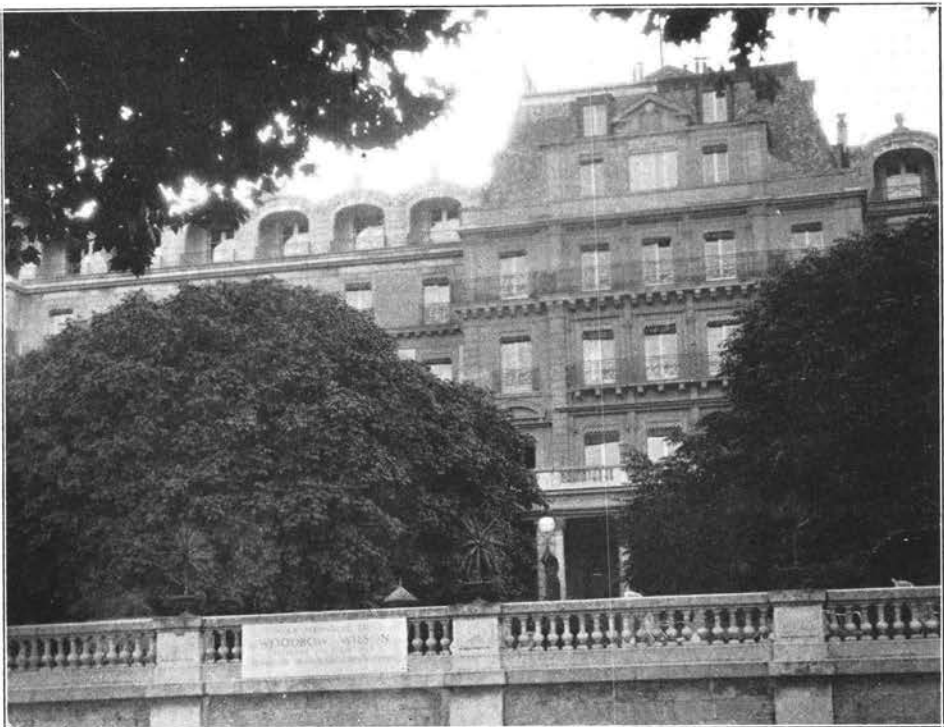
That is one of the two principles enunciated in Chapter 13 of the Peace Treaty. The second one is this: 'That the League of Nations was created for the maintenance of permanent peace in the world, but peace is going to be forever impossible so long as there is social unrest among workers everywhere. When men and women are forced to work long hours and for wages which won't guarantee a decent standard of living, when children are forced to do work in mines without proper education, as long as these

conditions persist there will be unrest among the working people, and it is going to menace the peace of the world.' *Si vis pacem, cole justiciam*, 'If you wish peace, cultivate justice' is the motto of the International Labor Organization. The aim of the Organization is to base industrial society on justice and to insure thereby the world peace.

In closing, let me point out that both the League and International Labor Organization are organizations the success of which depends not on force but on public opinion. Neither the League nor the International Labor Office has its army or navy to enforce the decisions of the Geneva Conferences. Though various 'sanctums' are provided for by the Treaty of Peace, everything depends ultimately—not on force but on the backing

of the public opinion in all countries. The experience of these ten years has demonstrated unmistakably that the power of public opinion is strongest and most effective. The pen is mightier than the sword, and public opinion is really mightier than any army you can create, national or international. A number of incidents with tremendous international significance have proven this. We have only to go on creating international consciousness, establishing faith in international order.

I appeal to you, then, to stir up, awaken and organize public opinion in every community wherever you are and to help these schemes for world peace. I am sure my appeal is not made in vain when I am in the Paradise of the Pacific which has realized a complete inter-racial harmony—the ideal which we must bring about everywhere throughout the globe."



The League of Nations Building, Geneva.

Cold Packing Fruits and Vegetables for Retail Distribution

By M. A. JOSLYN and W. V. CRUESS

Fruit Products Laboratory, University of California

FROZEN FRUITS

Investigations at the University have shown that freezing storage can be made a very important method of preserving and distributing perishable fruits direct to the consumer. Although this method is extensively used for the distribution of meat and fish to the consumer, it has not been applied to the distribution of fruit.

The methods of freezing storage are simple and efficient and sufficiently elastic to compensate for fluctuations in crops. The value of this method is such as to merit the attention of growers, co-operatives, canners, cold storage establishments, ice cream manufacturers, fruit preserving factories and others who are in a position to store the fruits in small containers and distribute to the retail trade through ice cream stores, grocery stores and other retailers possessing refrigerating counters.

Our preliminary sales tests show that a potential retail market for frozen fruits exists; and its development should not be difficult. Frozen fruits, especially berries packed in a manner to be described will readily attract a large retail trade. The frozen product can be used in the home as a cold dessert, or after thawing as a plain dessert or with cereal.

It has been known before that perishable fruits such as apricots, cherries and berries when properly packed and frozen will retain their characteristic flavor and color almost indefinitely at temperatures of 0-15°F. In texture, however, these products when thawed are

slightly inferior to the fresh fruits. This is due to the formation of ice crystals in the cells which rupture the cell wall. Probably, as in the case of fishery and meat products rapid freezing will obviate this loss in texture. Frozen fruit, in other respects, is superior to fruit preserved by other means as it does not possess any "preserved" flavor and odor or other abnormal qualities.

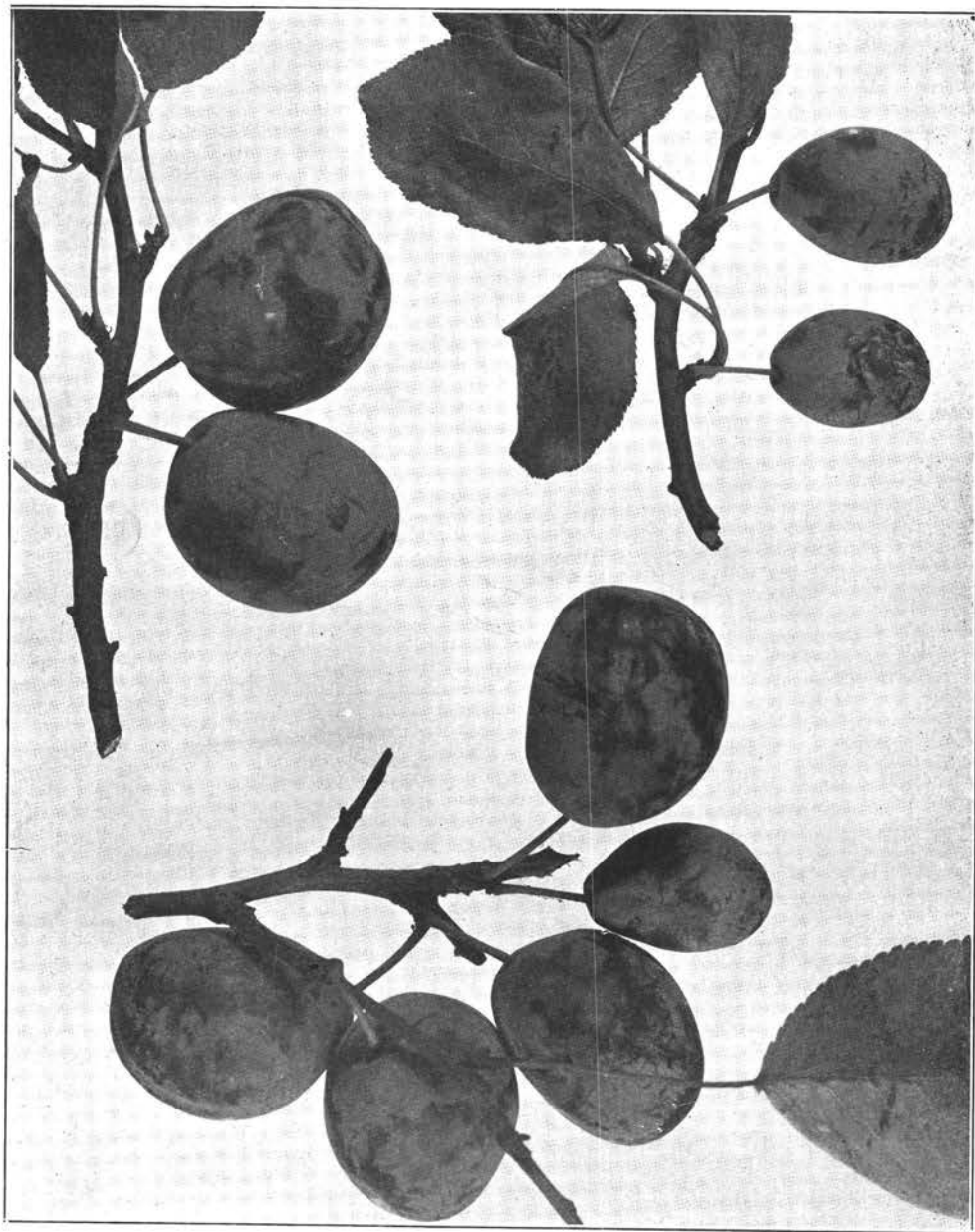
As a result of recent investigations the following method of packing is recommended for fruits to be preserved and distributed in the frozen state.

1. Use fully ripe but not over-ripe fruit. Fruit that is too ripe for canning may be used, as only firm ripe fruit is desired in canning. Tree ripened fruit is to be preferred. It is desirable to pack only the full flavored varieties of fruit.

2. Grade the fruit for quality and size. No matter what method of preservation you choose, you cannot get a first class product from second class fruit. As the chief selling point of the frozen product will be quality, it is necessary to insure this from the start.

3. Peel, halve or slice such fruits as pears and peaches. Pit apricots and peaches, hull the berries and otherwise prepare the fruit as for canning. Lye peeled fruit should be washed thoroughly and then rinsed in a dilute citric acid solution.

4. Wash the fruit thoroughly with water. This step is important especially in packing whole berries. Where the fruit is to be packed in large containers it is recommended that the final washing



Twenty per cent of the California prune crop is dehydrated. This method succeeds that of sun drying, occupying twenty-four hours instead of two weeks. Dehydration plants are being erected everywhere in California.

be given with ice cold water where practicable. This will aid in chilling the fruit.

5. Drain the fruit to remove excess water.

6. Pack in the size and style of container desired. Cylindrical, friction top paraffined paper containers of the paper bottle type are recommended for the retail trade. Quart, pint and half-pint sizes of these containers are available. These paper containers are cheaper and more chemically inert than other types of closed container. The friction or slip on top fits sufficiently tight to minimize the absorption of cold storage odors and flavors by the product. Larger containers such as paraffined kegs and barrels and enameled cans may be used for wholesale trade.

7. Cover the fruit with a sirup testing 40° Balling. In larger containers it will be advantageous to precool the sirup. An ice cold sirup is recommended. It is necessary that the fruit be thoroughly covered with sirup during freezing storage as well as when serving after thawing. Otherwise browning of the fruit surface occurs and impairs the quality of the product.

8. Cap or seal the containers.

9. Store the packages in the freezing or sharp room directly after packing until frozen. It is necessary that the fruit be frozen as soon as possible after picking. Delay in freezing results in an inferior product. To permit the circulation of cold air around the containers it is desirable that the cartons or other containers used be staggered. The freezing or chill room should be preferably kept at temperatures below 10°F. although a temperature as high as 15°F. is satisfactory when lower temperatures cannot be secured. After the fruit is frozen it can be stored at between 15° and 20°F. The storage temperature should not be above 20°F. and preferably should be as low as 15°F. At these temperatures the frozen fruit can be kept indefinitely.

Rapid freezing and immediate freezing

storage of the fruits directly after packing is necessary to preserve the characteristic flavor and odor of the fruit.

The directions just given are for whole, halved or sliced fruit. Investigations at the Fruit Products Laboratory have shown that a quality product can be secured from blemished fruit unsuitable to packing as such. Off quality or off grade fruit is trimmed and then reduced to pulpy mass by grinding, crushing or passing through a cyclone. The resulting product retains the characteristic flavor and odor of the fruit without its blemishes. The crushed or pulped fruit has found a ready market for home use in the bakery and confectionery trade and in the ice cream and soda fountain trade. Familiar examples are crushed peaches, crushed pears, and prune pulp placed upon the market by investigators at this laboratory.

We have found that such crushed products can be well preserved by freezing storage. At freezing temperatures in closed containers they will retain their flavor and color indefinitely. With crushed fruits best results will be obtained by adding some sugar. Some fruits are better with 1 part of sugar to 3 parts of fruit and others with 1 of sugar to 6 of fruit.

The following fruits have been preserved successfully by freezing storage methods: apricots, avocados, berries, cantaloupe, cherries, figs, whole grapes, peaches and persimmons.

FROZEN VEGETABLES

Investigations at the University have shown that the retention of the freshness of our common garden vegetables such as peas, corn, string beans and several others lies in freezing storage in small containers. We have successfully preserved the delicate flavor, aroma and color of these vegetables by cold packing them in paper containers as follows:

1. Select firm, fresh vegetables.
2. Trim, or otherwise prepare as for canning.

3. Steam blanch or water blanch at 212°F. for 2-3 minutes. For certain products the steam blanch is superior to the water blanch.

4. Chill in cold water or if required also in a blast of cold air.

5. Pack in paraffined paper friction top cylindrical containers.

6. Cover with a nice cold dilute brine.

7. Cap.

8. Store at 15°F. or less.

FROZEN FRUIT JUICE

Previous investigations in the Fruit Products Laboratory have shown decisively that of all common methods of preservation freezing storage is best suited to the preservation of fruit juices. The frozen juice retains its characteristic flavor and suffers no deterioration during storage. The frozen juice is far superior in flavor to the pasteurized juice. Our recent investigations have shown that the paraffined paper, friction top container, makes an ideal package for frozen juice that is to be dispensed in the retail mar-

ket. Freshly pressed grape juice and freshly burred citrus juice when immediately frozen retained their flavor well during storage and were indistinguishable from the fresh on thawing. It is desirable, however, to clarify fruit juices other than citrus juices and possibly apple juice before packing in the small containers. During freezing the pulp and other "muck" is precipitated in an unattractive sediment. This is especially true of grape juice where precipitation of cream of tartar occurs. Possibly the best procedure for most fruit juices would be to first freeze the juice in large containers, then thaw and carefully rack the juice to free it from all sediment. The juice thus pretreated could then be re-packed in the smaller paper container.

SUMMARY

As a result of investigations at the Fruit Products Laboratory directions are given for cold packing fruits, crushed fruits, fruit juices and vegetables for the retail trade.



Fruits that may be frozen.

Finding New Uses for Prunes

By E. M. MRAK

Research Assistant in Fruit Products, University of California

Prunes are no longer confined in their use to the well-known boarding house stewed prunes. Recent development at the Fruit Products Laboratory have paved the way for their use in the finer and more popular foods as ice cream, milk shakes, and pastries.

Prior to the last two years it was not necessary to develop new uses for prunes as the annual crops were usually sold at a price sufficient to allow the producer a satisfactory return. During the last two years, however, the annual production, but not the consumption, has more than doubled. In view of the fore-mentioned fact it was found necessary by the Growers to seek new fields in which prunes might be utilized. In cooperation with The California Prune and Apricot Growers' Association the Fruit Products Laboratory under the direction of Professor W. V. Cruess undertook a study of prune utilization.

Whole pitted prunes were first used in various products but because of coarseness, bits of pits present in the fruit their use was found impracticable. In an effort to find a product which when used in ice cream and pastries would give a good appearance and texture and an evenly distributed flavor a product termed "prune pulp" consisting of the screened flesh of soaked prunes was developed. It is free of pits, has small bits of skin and the characteristic flavor, odor and color of prunes. The texture is smooth and the consistency and appearance resemble that of a fruit butter or canned pumpkin.

The process of preparation is relatively simple. It consists of:

1. Washing the fruit thoroughly.

2. Boiling slowly under water until the fruit is quite soft and watery.

3. Passing the hot mixture through a conical brush type pulper having a screen with horizontal slits 1" x 5/16". This operation separates the flesh from the pits and breaks the skins into small pieces.

4. The pulp may then be canned or stored at 32°F. The canning procedure consists of filling the pulp into cans hot (about 215°F.) sealing, cooking 30 minutes at 212°F. and cooling 3 minutes.

Prune pulp is distinctive in that it is a real fruit pulp free of any added chemical preservative or sugar and maintains the health properties and other qualities of prunes. The raw materials are cheap and the process of manufacture inexpensive so prune pulp even though a pure fruit product can undersell most competing materials.

On rare occasions ice cream manufacturers and bakers have used prunes but have never featured prune preparations because of the amount of preliminary work required to prepare prunes for use in their products. Formerly a preliminary treatment of the raw product consisted of:

1. Washing the prunes.
2. Soaking the prunes.
3. Cooking.
4. Pitting by hand.
5. Screening or chopping into the desired form.

Prune pulp eliminates the forementioned preliminary treatment and permits the ice cream man or baker to handle prunes as easily as he would any of the other fruits.

An excellent prune ice cream can be made by adding 14 pounds of prune pulp to 45 pounds of standard mix. Ice cream made after this formula would contain about 25% fruit pulp. The per cent of fruit in this product is high but the cost of fruit added does not exceed that of the fruit in other fruit ice creams. Prune ice cream is being made by several firms in the State and may be obtained locally at the Harris Candy Store.

Chocolate and fruit milk shakes are in great demand because of their flavors. In the past there have been no "Malts" or "Milk Shakes" that have possessed both flavor and health properties. A shake with the health appeal of prunes can be made by adding 3 heaping teaspoons of pulp to a vanilla flavored malt. The product has a delicious mellow flavor, a good color and pleasing odor. Prune Shakes and Malts are now being dispensed at the Harris Candy Store, Berkeley and at the A. S. U. C. fountain on the campus. After a period of 4 months the prune drinks have been found to out-sell the chocolate "shakes" at the Harris Store.

Open face pumpkin type prune pies offer great promise. The open face prune pie has a peculiar honey fruit flavor which meets with public approval. A trial at the local Pig and Whistle restaurant proved successful.

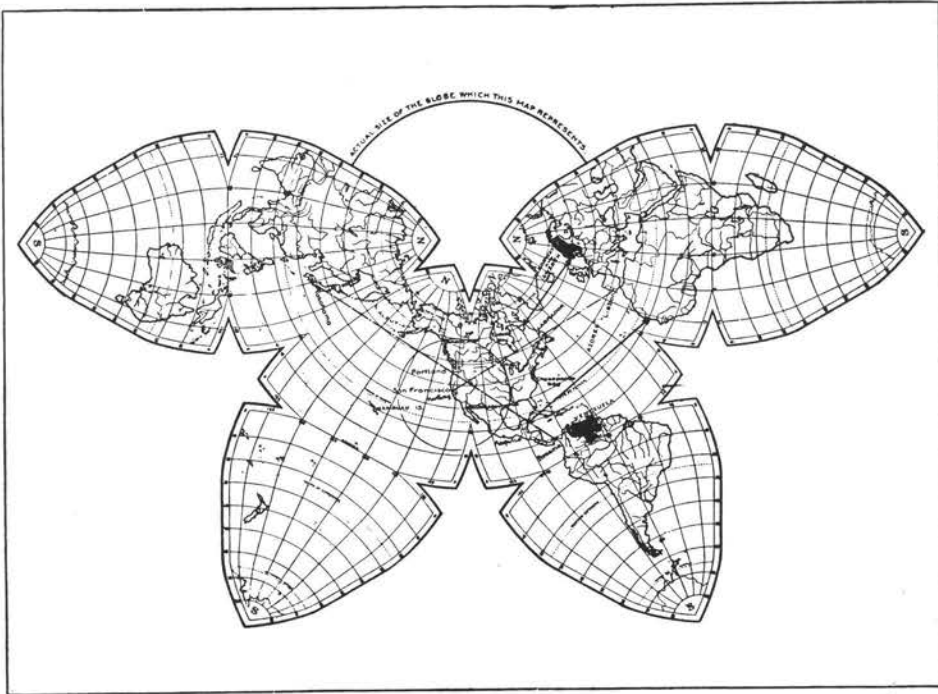
Other products that prune pulp may be used in are, prune butter, plum pudding, infant food, coffee cakes, wreaths, turnovers, whips, mousses, candy and a number of other food preparations.

SUMMARY

1. The marketing of small size and surplus prunes presents a serious problem in years of heavy production.
2. Investigations in the Fruit Products Laboratory of the University of California have demonstrated that several products have commercial possibilities and one in particular, a canned pulp made from dried prune, has unusual promise.
3. The canned pulp can be prepared during the "off-season" by any canner with very little or no added equipment and provide a wide general utility in the ice cream, candy, baking and household trade.



How the apple orchards are irrigated in Wenatchee, Washington State.



*The Butterfly map on the same scale as the Mercator projection shown on page 64.
The lines and circles are explained in the text.*

The Butterfly Map

(Based on a discussion at the Pan-Pacific
Research Institution, November 18, 1927)

For centuries map makers have been trying to produce on a flat surface a satisfactory map of the whole of our spheroid world. To attempt to do this is like trying to "square the circle", or making a 29-and-a-fraction day month go evenly into a 365-and-a-fraction day year, which has been the bug-bear of our calendar makers.

One of the most accurate projections of the world yet produced is the so-called Butterfly Map, designed by Mr. B. J. S. Cahill, F.R.G.S., a prominent California architect. Mr. Cahill began work on this problem about 23 years ago. The map which he exhibited at the Pan-Pacific Research Institution is as nearly free from

exaggeration, distortion and disruption of land masses as it is possible to make on such a scale.

The principle of the map is illustrated in the accompanying diagrams, and it is briefly as follows. Only about one-eighth of the surface of a sphere can be seen at one time without noticeable foreshortening. The surface of the globe is divided into eight equal segments, four north of the equator and four south. In order that the land areas may fall within these octants, each of which contains 90 degrees of latitude and longitude, the meridian of $22\frac{1}{2}$ degrees west is taken as the starting point, instead of the zero meridian of Greenwich. Half the side of each oct-

ant is flattened so that each can be joined to its proper neighbor. The segments need not be fitted together as shown in the diagrams, but any of them may be joined, as desired.

A practical demonstration of this principle may be had by using a little rubber ball. After the oceans, continents, and lines of latitude and longitude have been drawn on the ball, it is cut thru as shown in the diagrams. It may now be flattened out beneath a piece of glass to form a Butterfly Map, and upon its release will reform itself into a globe again. This shows how exactly the map corresponds with the actual surface of the globe.

The great feature of this projection is that areas and distances in all parts of the map are true to scale, and that great circles are represented by straight lines. On no other style of map are all these correct at the same time. Especially are they exaggerated on the Mercator projection, so commonly employed in making maps of the world for school and business use. On the Mercator maps all the meridian lines, which should converge at the north and south poles, are shown parallel. This makes the width of the pole as long as the equator, 25,000 miles. A line on the Mercator map from Africa to the Yucatan Peninsula appears to be no longer than one from Norway to Labrador, although the distance is over twice as great.

The Mercator projection makes Greenland three times as large as Australia, whereas we know that Australia has three times the area of Greenland: an error of 900 percent. North and South America are about equal in size, although you will observe how much larger North America looks on the Mercator maps, much to the annoyance of our South American friends. North America appears even larger than Africa, although the area of the latter is greater by three million square miles. All these errors are corrected on the Butterfly map, the land areas and distances being shown in their proper proportion.

Following the teachings of Euclid, we generally think of a straight line as being the shortest distance between two points. Brought up as we are with Mercator maps of the world, few of us realize that the shortest distance from Panama to Japan does not cross the Pacific, past Hawaii, but goes around it. We are scarcely willing to believe that the most direct ship route from the Panama Canal to Yokohama hugs the Pacific Coast of North America and skirts the Aleutian Islands of Alaska; but such is the case. Not only that, the direct airplane route between those two points would be over the Gulf of Mexico, Texas, Arizona, Nevada, Oregon and would not be over the Pacific Ocean at all until one got to Portland. A similar direct air route from San Francisco to Lisbon would pass thru Labrador. The accompanying Mercator and Butterfly charts of the world are on the same scale. Compare the directions, distances and comparative size of land areas as distorted on the former and correctly shown on the latter.

Such obvious inaccuracies should not be perpetuated. School children, business men and scientists alike are given wrong notions of the relative sizes and distance of places from the use of maps of the world on projections which were never meant to be used by other than navigators of sailing ships.

The inventor of the Butterfly Map amply demonstrated its superiority in teaching correct land forms in physical and political geography; for the statistical exposition of world-wide subjects; and for commercial use, and transportation by land, sea and air.

Speaking before the Pan-Pacific Research Institute, Mr. Cahill said, "You have been discussing entomology; under that heading you may introduce a new kind of butterfly. I don't know how many of you have seen this map. It is a map of the world. It is quite old. I began on this 23 years ago. This is a picture of the provisional map. It is an effort to show the surface of the whole world on

a span in a practical way so that the areas are practically the same as on the globe and the distances and also the great circle lines. In this map we achieve all those three things approximately.

The map of the whole world can never be a very large map. Necessarily it would have to be shown on a small scale. A scale of 1/20th millionth would make a map about that wide across the wing tips. (Stretches both arms out).

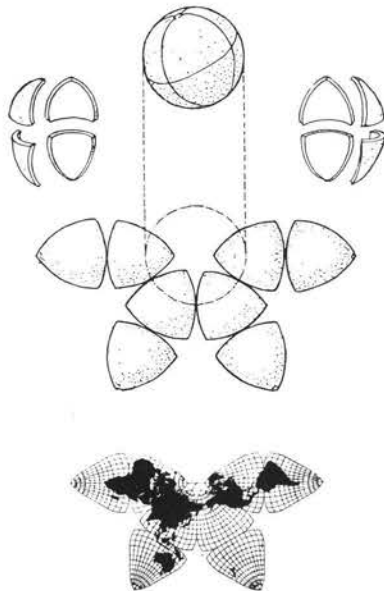
This map is meant to correct the errors of Mercator's map. We all know its value in navigation, but it is so misleading. We all know that Greenland appears to be three times Australia. We know that Australia actually is just three times Greenland, so it is just 900% wrong. North America on Mercator's map is larger than South America. I have had South American people tell me they are sore because the North American continent dominates the map so much. A great deal of North America is ice covered islands. This map shows that the two continents are practically the same size.

Africa, on Mercator's map, appears to be much smaller than North America.

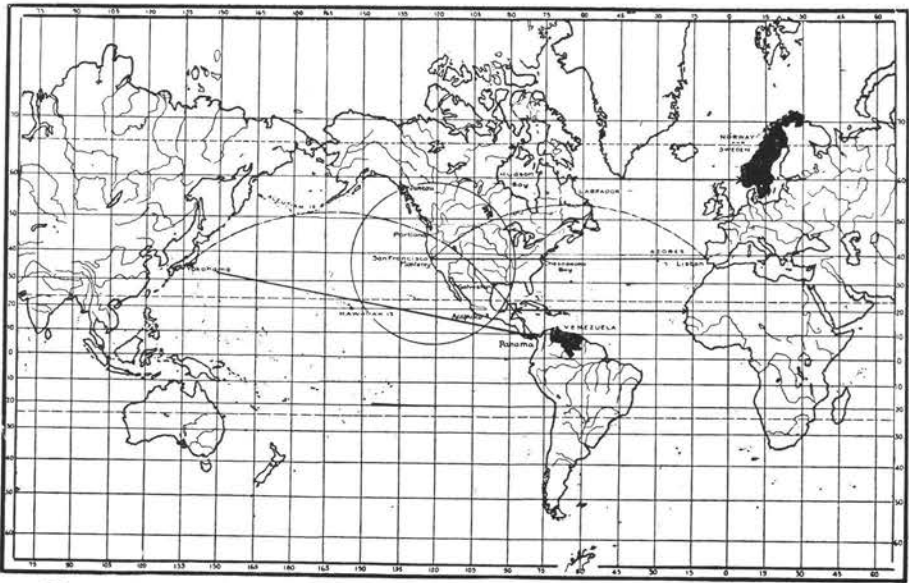
Most children grow up with the notion that North America is much larger than the African continent, but Africa is at least 3,000,000 square miles larger than North America. On this map it appears to be much larger than South America, as well as North America. All the areas on this map are practically the same as the globe.

On Mercator's map, if you measure the distance between West Africa and the Carribean Sea, you would find it exactly the same as the distance between the West Coast of Norway and Labrador on the 60 parallel. The Equatorial distance is exactly the same. On this map you will notice the difference between the West Coast of Africa and the West Coast of Yucatan is just twice the difference. If the North Pole were on an island and that island were one mile wide, on Mercator's map that would have to show 25,000 miles wide.

On Mercator's map if you take a ruler—the average human looking at a map of a small country naturally supposes that the Euclidean axiom with the greatest distance between two points is a straight



The Butterfly Map is like a rubber ball cut into eight segments and flattened out.



*Mercator's map of the world on the same scale as the Butterfly Map on page 61.
The lines and circles are explained in the text.*

line. That will not work on Mercator's map of the world. If you put a ruler on a Mercator map from Panama Canal right across to Yokohama, Japan, you will find that line will go straight out into the Pacific Ocean and right thru the Hawaiian Islands. That is the route on Mercator's map, in a straight line. A navigator would not fall into that mistake but the average layman would.

The great circle line goes not into the Pacific but straight up to Yucatan, then to Galveston, Texas, and then to Salt Lake City, then into the ocean a little above Portland, Oregon. It then skirts the Aleutian Islands and down Northeast. That is the short line.

Supposing two men in flying machines both started from Panama to go to Yokohama, and one man went the Great Circle route and the other man went thru the Hawaiian Islands, according to the Mercator map. The man who went on the Great Circle route would be 1000 miles ahead of the other man. I have worked that out.

This map works out those various problems in a map of the world. This is merely a provisional map worked out ten years or more ago. It was not worked out scientifically. If you attempt to work it out four variations become associated area, distance, form, and direction, and one of the four must be sacrificed.

In order to understand in a rough, ready way the principle of this map, here is a globe, an ordinary little child's play ball. It can be any size you choose. Mark the meridians, parallels and the globe on it. Then we start following the three great circle lines. One begins $22\frac{1}{2}\%$ degrees West of Greenwich, the meridian that goes from Bojador in the Cape Verde Islands. That is the average prime meridian. If you will recall your geography, the meridian shifts a bit. Divide the world $22\frac{1}{2}\%$ degrees West and then 90, 90, and 90, you will divide the world into several peninsulas. Here is your little globe and by drawing these three great circles and cutting where they intersect, you are able to lay the surface globe down flat. That can be flattened with very little distortion.

JOURNAL

OF THE

Pan-Pacific Research Institution

A Periodical Record of Investigations Bearing on Problems of Food Production, Distribution, Conservation and Consumption, as well as on Public Health, and Race and Population Problems as Related to the Countries Bordering on the Pacific.

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More frequent publication as acceptable material is contributed.

Sunlight in Hawaii

By NILS P. LARSEN,

Director, Queen's Hospital, Research Department.

(From the Queen's Hospital Bulletin, May-June, 1929.)

The Castle Foundation subsidized for a two-year period the work on the analysis of sunlight. The preliminary work was financed by the Pan-Pacific Union. The need of such study is apparent when we consider that in the last annual report of the Board of Health there is a picture of a row of tuberculous children getting "sun baths" at one of our sanatoria. The director of the sanitarium expresses in no uncertain terms the belief that sunlight is harmful in pulmonary tuberculosis. Besides this, we have popular opinions which vary all the way from considering sunlight as a degenerating influence to the belief which considers the sun as capable of curing all the ills of mankind. The wave of overadvertising of the ultra-violet lamps which has finally resulted in notes of warning being issued cautioning people against overexposure is another phase which suggests the need of more accurate knowledge.

The first consideration was an attempt to find an easy practical method of determining the quantity of ultra-violet in the sunshine. Many methods were tried, but the oxalic acid method of Anderson was considered the most accurate and gave the most consistent results. This was also tried by workers in different laboratories around the Pacific, and amazingly consistent results were obtained by the different workers. This seems a practical method to use whenever sunlight therapy is to be given. During the course of two years various types of curves were produced, i. e., daily variations, monthly vari-

ations and yearly variations. The most interesting is the sudden rise in ultra-violet between February 15 and March 15, and the sudden drop in September. Although the skin is not considered a good indicator for ultra-violet due to its marked variation in ability to react, nevertheless one experiment showed that early in February one hour's exposure failed to produce erythema, whereas in March, 20 minutes exposure gave marked erythema. Naturally, therefore, the sunbaths between September and March are not going to give the same results as baths between March and September. Other interesting observations were the type of curves on different days, i. e., on certain types of cloudy days the ultra-violet curve was high. The practical application of this is evident. Sunshine must be used sensibly and its variations must be taken into account, whether it is by a tourist on the beach trying to tan or by a patient in a hospital. Only in this way can a strong therapeutic agent be used in any degree of accuracy.

Another interesting observation to which the method was applied was the comparison of results given by different therapeutic lamps. These vary a great deal in new lamps as well as in the same lamp after running for a length of time.

A preliminary report of this work was given before the Hawaiian Academy of Science by Lois Godfrey, who has been engaged in making these measurements. The full report has not been published.

Ants, Bees and Wasps in the Hawaiian Islands

By FRANCIS X. WILLIAMS

Experiment Station, Hawaiian Sugar Planters' Association.
(Address before the Pan-Pacific Research Institution.)

Ants, bees and wasps belong to the Order Hymenoptera. A typical hymenopteron has four membranous wings, the mouthparts fitted both for chewing and for lapping, the female is often armed with a sting, the metamorphoses or changes that take place during growth are complete, there being an egg, a larval or grub, pupal and adult stage, and finally, the best brains among insects belong here. Excepting the termites or "white ants," quite unrelated to true ants, there is no real cooperative social or community life among insects outside the order Hymenoptera. All ants are social, from several to a great number of individuals comprising one nest; so also are many bees and wasps; the non-social species are termed solitary bees and wasps because each mother attends entirely to her own brood, whether it be a clay cell, a hollow twig or in a tunnel underground. Forms intermediate between social and solitary occur.

In a great measure because the Hawaiian Islands are so remote from large land masses, comparatively few insects have by natural methods reached these shores, and the successful arrivals, usually of moderate or small size, have in some cases given off new species that are more frequently found in the mountains where they, often rather delicate, suffer the least molestation. Other insects are more hardy or are recent arrivals, coming here in the same manner as the first or through commerce. These have not changed. Thus we have endemic insects, i. e., those that are found nowhere else than in the Hawaiian Islands, and those that are immigrant or exotic. Examples of the latter may be found in the European cabbage butterfly, the widely ranging monarch butterfly, and most of our pests.

The ants in Hawaii are nearly all im-

migrants. We have between 25 and 30 species, but it seems that only one of these, a species of *Ponera*, is found nowhere else in the world. There is then little of interest in our ant fauna. In some parts of the tropics it is safe to say that as many as 150 species of these insects may be found in an area equal to or smaller than that of the Hawaiian Islands. We have no very large ants, nor species making nests in trees, nor living almost entirely underground. Ours are all rather commonplace.

The ponerine ants usually live in small colonies and are carnivorous. In Hawaii, *Leptogenys falcigera* var. *insularis* captures the small land crustacean known as sow bugs or armadillo bugs and occasionally also, small millipedes, the bleached remains of the prey being often strewn about the entrance to the ants' nest. Of Myrmicine ants, *Phidole megacephala* is the common small dark brown ant of which some of the workers have very large heads. It is our dominant species and has exterminated or considerably reduced many of the insects of its territory, which extends well up in the mountains. *Phidole* is probably largely responsible for the scarcity of houseflies here; so while it is at times a pest it does a deal of good as well. *Solenopsis gemminata*, the fire ant stings painfully; it is paler brown and it also has some workers with large heads. It inhabits restricted portions of the lowlands.

Our large *Camponotus maculatus* var. is a very active brown ant of nocturnal habit, that is sometimes a nuisance when it nests indoors. While usually living in wood it utilizes old cavities or tunnels there and is not a true borer. The *Pre-nolepis* ants, among others in the winged form, are often a nuisance at lights.

We have more than 60 kinds of bees

here and most of these are peculiar to the Islands. The native ones belong to the genus *Nesoprosopis* that are usually rather small polished black (some in part red or yellow) insects most common in the mountains and where any observant person may see some of them feeding at the flowers of the ohialehua, naio, etc. They are solitary bees that nest in hollow twigs and in the ground, and the mother bee herself constructs the cocoon of her offspring. The leafcutter bees (*maga-chile*) cut neat little discs out of the leaves and petals of plants and use them in constructing their cells. But one species (*Megachile schauinslandi*) utilizes a gummy material instead of leaves and plugs up her cells in nail holes, etc.

The correct name for the large shining black bee (the male is tawny) that bores holes in redwood and other timber is Carpenter bee (*Xylocopa varipuncta*). It is often erroneously referred to as a bumble bee; but bumble bees differ a good deal in structure and besides, are true social insects and are not found here.

The ordinary honey bee (*Apis mellifera*) has been here for a long time and is the most numerous of bees at flowers. Their combs can be found in hollow trees and among lava rocks.

Native stinging wasps that make nests and store them number 140 or more species. Most of these are peculiar to the Islands.

Sceliphron caementarium, the common American thread waisted mud-dauber, often seen at puddles, makes the unsightly nests of mud that so often disfigure lanai ceilings, eaves, etc. The cells composing these masses of mud are stuffed with spiders, food for the wasp larva which eventually spins a cocoon and produces an adult. The genus *Pison* consisting of three foreign species, all spider-catching mud-daubers, of which one makes neat little roundish cells in some angle or crack.

Nesomimesa and *Dinomimesa* are very handsome, slender black wasps native to the forests; they store leafhoppers in

cells underground and, formerly, when the sugar cane leafhopper was very numerous, *Nesomimesa* used to frequent the more upland cane fields in search of these insects.

The larrid wasp *Notogonidea subtesellate*, a Philippine species, stores her tunnel with paralyzed field crickets; *Larra luzonensis* imported from the same country, preys on mole crickets, which it stings to temporary paralysis, so that she may lay her egg on it; the cricket recovers and buries itself but in a few days is overcome and eaten by the *Larra* grub which forms its cask-like cocoon in the cricket's burrow. *Silaon rohweri*, a very small active wasp inhabits the dry lowlands and preys on bugs.

The 20 or 30 species of Crabronidae are all native insects and prey on flies. It was observed that full fed *Crabro* larvae went into a resting period, their circulation at that time being considerably retarded.

Dolichurus stantoni, the little cockroach wasp, imported from the Philippines, stores small cockroaches in some cavity which she discovers after she has captured and subdued her prey. This wasp prefers the mountains. It is shining black and very active.

Anoplus luctuosus, a blue black spider wasp, that constantly flicks her wings, is a western United States insect that was first observed here in 1910.

Scolia manilae imported in 1916 from the Philippines has a wide lowland distribution. It has reduced the *Anomala* cane-root grub to harmless numbers and also attacks the grub of the Chinese rose beetle (*Adoretus*). *Scolia manilae* is black and yellow and may often be seen circling almost in swarms over bare areas in cane fields.

Over 100 species of native *Odynerus* wasps are found in our Archipelago. All prey on caterpillars. They nest in hollow twigs, in porosities in lava, in old mud-dauber cells, in the soil, while one, *Odynerus oahuensis*, makes neat little mud cells which it suspends from rootlets ex-

posed in earthen banks, in rolled up leaves, etc. These wasps are mainly blackish. *Nesodynerus rudolphi* is conspicuous because of its deep iridescent blue wings and shining black body.

Pachodynerus simplicicornis, an American insect first noted here in 1911, has tawny yellow wings and a black-yellow body. It is very common in the lowlands.

The three species of *Polistes* make the familiar pediceled paper nests under eaves, palm leaves, etc. They are good stingers and destroy many caterpillars, which they feed day by day to their offspring. *Polistes aurifer* is parasitized by a strepsipterous insect that is often seen protruding sac-like from between the seg-

ments of the abdomen, which is thereby distorted.

Vespa occidentalis the yellow and black hornet is an immigrant from the west coast of America. Thus far it occurs only on Kauai and builds a social nest underground.

The Bethylineae are small black wasps very numerous in species. One kind *Epyris extraneus*, attacks false wireworms, others prey on small caterpillars and the larvae of beetles.

The true parasitic wasps differ structurally from the predaceous species we have been referring to and, in addition, the parasitica make no nests for the reception of their prey but leave them in situ.

Suggested Agenda for the Fisheries Section of the Second Pan-Pacific Food Conservation Conference

By CARL L. HUBBS,

University Museum, University of Michigan

- I. Systematic ichthyology.
 - (a) General survey of fish fauna of Pacific.
- II. Racial investigations.
 - (a) Analysis of local races of the important food fishes.
- III. Life-history investigations.
 - (a) Determination of spawning habits, seasons and grounds; protection of spawning fish.
 - (b) Location of nursery waters; protection of young.
 - (c) Investigation of growth-rate of important species; determination of most satisfactory size for capture.
 - (d) Determination of size and age at breeding; protection through at least one spawning.
 - (e) Continued analysis of age com-
- position of commercial catch; determination of depletion.
- IV. Migrations of commercial species, determined by—
 - (a) Racial studies.
 - (b) Marking experiments.
 - (c) Behavior experiments, etc.
- V. Oceanographical surveys—
 - (a) As related to migrations of fishes.
 - (b) As related to success of spawning.
 - (c) Therefore as related to real or apparent depletion of fish stock; determination of natural causes in fluctuation of fishery yield.
 - (d) As related to predictions as to future yield of fishery (predictions based on natural cycles of abundance and on differential abundance of larvae).

- VI. Fishery methods (chiefly experimental studies).
- (a) Determination of efficiency and harmfulness of different methods of fishing, different types of boat or gear, different sizes of mesh, etc., in use or proposed.
 - (b) Location of new fishery grounds, by experimental fishing.
 - (c) Experimental determination of depletion—by changes in yield per controlled unit of effort.
- VII. Statistics.
- (a) Development of adequate and uniform statistics of fishery yield by unit of effort.
 - (b) Analysis of these statistics to determine status of fish supply.
- VIII. Recommendations for regulations.
- (a) Determination of means for avoiding depletion or for rehabilitation of fisheries.
 - (b) Suggestions for international treaties.
- IX. Introduction of new fishes.
- (a) Discussion of desirability of proposed introductions.
 - (b) Consideration of possible spread of noxious parasites by introductions.
 - (c) Arrangement for exchange of shipments.
 - (d) Discussion of introduction of fishes for mosquito control.
- X. Fish culture (food, game and ornamental fishes).
- (a) Determination of best methods of retaining brood stock, fertilizing and hatching eggs; of proper time and stage for planting; of good methods of transportation; of proper habitat for planting.
 - (b) Discussion of pond culture; pond construction; food; fertilization of ponds; efficacy and danger of sewage treatment of ponds.
 - (c) Study of fish diseases.
- XI. Preservation and use of fish products.
- (a) Discussion of refrigeration on ship; of cold storage on shore; of sanitation in handling the fish.
 - (b) Discussion of extension of output or improvement in methods of filleting, canning, etc.
 - (c) Discussion of improved, transporting and marketing conditions.
 - (d) Discussion of means for extended market for fish, especially previously unused species.
 - (e) Discussion of utilization of bi-products.
 - (f) Discussion of advisability of using edible fish for fertilizer.
- XII. International coordination in Pacific fisheries research, in regard to—
- (a) Exchange of material for investigations.
 - (b) Exchange of literature.
 - (c) Exchange of ideas on methods of investigation, on research projects, etc.
 - (d) Closer relationships between fisheries colleges, laboratories and stations.
 - (e) Possible organization of investigators.

It is hoped that other scientists will send in suggestions for agenda for the different sections of the Second Pan-Pacific Food Conservation Conference, to be held in Honolulu, August, 1931. The full tentative agenda will be mailed to anyone on request.

Leprosy

By N. E. WAYSON,

Surgeon U. S. Public Health Service; Director, Leprosy Investigation Station.

(Prepared for the First Pan-Pacific Surgical Conference, Honolulu, August 14-24, 1929.)

Leprosy is a disease of some importance to all the countries bordering the Pacific Ocean, and is of interest to all countries. There is, however, only a relatively small amount of definite knowledge concerning its origin, cause and manner of dissemination. Hence, discussions of these phases of the ailment must be qualified by the legal phrase, "to the best of our knowledge and belief."

It is in all probability an historically old affection, and has prevailed and continues to persist, throughout the known countries of the earth. It has been recognized and studied by physicians since the very early days of medicine, and its ravages were observed and chronicled by writers whose works antedate the Christian era by centuries. In the Christian countries, much of the current information relating to it is that which has been handed down through teachings of the Bible. There is little doubt in the minds of students of natural history and of the medical sciences, that the ancient Hebrews had leprosy, but it is much more evident that many conditions were called "leprosy" by religious priests and chieftains who likely had but scanty knowledge of any disease. This latter conclusion seems entirely warranted by the establishment that much of the so-called leprosy of more recent ages has been tuberculosis, syphilis, and other chronic affections of the skin. In fact, leprosy is often difficult of diagnosis to physicians of modern training. In the book of Leviticus, a systematic effort was made to prescribe rules for the recognition or diagnosis of the disease and for its control, by the priests. Though the authors were likely much influenced by religious traditions, some of their rules are considered valid today in the light of modern experience in the control of commu-

nicable diseases. The chief among these is the principle of separation of the sick from the well by segregation, isolation, or quarantine.

The spread of leprosy over the world followed the great movements of civilizations. Observed in earliest times in India and China, it was reported later in the Mediterranean countries, and from those was spread through Europe by returning soldiers and religious crusaders. It was in all likelihood brought to the United States and Canada in colonial days. It is present in the southeastern part of the former country, and prevails more actively in centers in Louisiana. In later years it has been brought by immigration to the north central states, to the southwestern states and the Pacific coast. The manner of its spread and the time of its first appearance in the Sandwich Islands, now the Territory of Hawaii, are both conjectural. It had, however, become so widespread through the people of these islands by 1860 as to incite attention and activity toward its control. The Hawaiian people appear to have been highly susceptible. This susceptibility may indicate that the disease had not been amongst them until shortly before it became widespread, since it has been noted that the first visitation of any communicable disease to a people may result in both its rapid spread and virulent manifestations. The degree to which the Hawaiian people were affected was most severe. Fifty years ago there were about two known lepers to every hundred of the people, and though the disease was not entirely restricted to the Hawaiians, and those with whom they had married, it was practically so limited. The relative magnitude of the affliction can be appreciated by transposing the proportions to the population of continental United

States, when it will be seen that approximately two million people would have been affected, or numbers almost equal to those who developed influenza during the great epidemic of 1918-1919. Since 1890 the annual number of new admissions amongst those of Hawaiian strain has continuously though slowly fallen, but both the number and percentage of known cases amongst them remains at a distressingly high epidemic level.

Since the discovery in 1872, by a Norwegian physician, Gerhard Armauer Hansen, of a germ or bacterium in the tissues of practically all of those afflicted, evidence has accumulated to show that the disease is infectious, and is communicable from one person to another. This evidence is, however, still a subject of investigation by modern scientific methods, because the bacterial parasite has not been satisfactorily cultivated within the laboratory, and because the disease has not been reproduced in man or in animals under circumstances which are convincing.

The infection is believed to be produced by the entrance of the *Bacillus* of Leprosy (*Bacillus lepra* or *Mycobacterium lepra*) into the body through the membranes of the respiratory tract, or through the skin. Some students believe the entrance may be through the gastro-intestinal tract. It will be immediately apparent that these three modes of entrance to the body tissues practically exhaust the possibilities.

In common with most communicable diseases it develops in early life, but is recognized most frequently in adolescence and between the ages of twenty and thirty years. Wherever it has been statistically reported, it has been found more prevalent in males than in females, in the ratio of roughly two males to one female.

It has not been shown to be hereditarily contracted, as was thought during that period of medical history during which many diseases were believed to be thus developed. However, it may be

found that certain family strains are more susceptible than others.

The hypothesis that the eating of fish caused the disease has also been abandoned as disproven. It has been observed that the indiscreet eating of raw and poorly cured fish, as well as other dietary indiscretions or abuses, such as the consumption of alcohol, are frequently coincident with fresh eruptions or paralysis in the individual. In fact, the endemic centers of leprosy are in large part among those people whose diet is inadequate or poorly balanced when appraised by modern conceptions. However, sufficient evidence has not been reported which would justify a conclusion that there is anything inherent to a particular dietary in its causation.

The manner of communication from one person to another is believed to be through contact with one who is affected. Such contact is, of course, favored through the daily intercourse of family life, and is made more probable in families living amidst crowded and promiscuous conditions. The children of lepers, who remain in the household family, develop leprosy with much greater frequency than do blood relatives who do not live in the same household. When such children are removed immediately after birth from the household of their parents, and reared amidst surroundings without subsequent contact with lepers, they rarely, if ever, develop the disease.

The prominent manifestations of leprosy are the result of involvement of tissues of the body which are developed from a common developmental source in the embryo, namely the skin and the nervous system.

The first evidence of the infection may appear in the skin as a red spot or papule (pimple), a swelling such as might follow an insect bite or a bee sting, or an outbreak such as is seen in severe urticaria (hives). These findings may persist, develop, and spread, or they may entirely disappear within a few days to

a few weeks, only to reappear at a later date in the same or some other form.

The subsequent development may progress for many years, but is usually characterized by periods of active evolution, and by those of retrogression and of quiescence, or even of apparent arrest.

During this course the location, arrangement, and character of the changes in the skin may evolve in a manner to simulate those found in several other diseases. The color of the individual skin lesion (manifestation of change) may vary from that of a faint pink through different shades of red, including a copper color and a bluish red. Or they may be of shades from a light fawn to a dark brown. In older diffuse lesions there may be a greyish tinge which suggests a deposit of metallic pigment under the skin. The borders of the lesions are usually roughly circinate (ring shaped), annular (ring within a ring), circular or oval, or vermicular (resembling a crawling worm). They may be sharp and discrete, or may fade gradually into the color of the surrounding skin, or may be serpiginous (scaly, resembling a ring worm.) They may vary in size from that of a mosquito bite to that which covers an entire thigh and leg, or half the trunk of the body. Their shape may be that of a spot flush with the skin, or one slightly elevated above the skin surface, a wheal (hive), a papule, a nodule (hard rounded lump), a bleb or bulla (small or large blister). They may coalesce, or may combine several of the above characteristics during their development.

The lesions may occur in any part of the glabrous (that without prominent hairs) skin, but are more common in that of the face, ears and extremities, with a greater predilection for the back and extensor surfaces. They may appear singly or in crops, and may disappear in a few days or persist for years.

Their disappearance is usually marked by the formation of a brownish spot and some scarring, or they may leave a white spot. Their continuance is usually ac-

companied with periodic swelling, reddening, browning and scaling. Large areas of skin may become thickened and waxy or leathery.

The circulation in the skin is deranged in many cases to a degree which causes the hands and feet to be swollen and often bluish in color. This disturbance of circulation and the changes of the cells of the skin and nerves favor ulcerations in old and persistent lesions, and both ulcerations and mutilations of fingers and toes.

The changes in the nervous system are characterized by paralyses and atrophy (wasting) of muscles, and atrophy of bones, and by the loss of sensation in some portion of the skin. These changes may develop with almost the same rapidity and with like results as those of infantile paralysis. An eyelid, a finger, a hand or a foot may become paralyzed within a few days during a course in which the affected part becomes swollen, and the individual has fever. On the other hand they may gradually develop through a period of months, and may be accompanied with other symptoms of neuritis. The type of the paralysis is peripheral (such as occurs in infantile paralysis). The nerves most often involved are those supplying the lower eyelids, the lips, the fifth finger, and those to the muscles which raise the toes and foot, and turn its outer border upwards.

Accompanying these paralyses there is always a loss of sensation in the skin supplied by the affected nerves. Due to this loss of sensation the affected individual often injures his skin by cuts, abrasions and burns, and the resulting wounds are slow to heal, or become deep ulcers, extending even to an infection and destruction of bone.

The action of normal muscles is balanced or coordinated, so that when one contracts or pulls, others pull equally, or relax. When a muscle is paralyzed or permanently relaxed, the balance and coordination are lost, and the action of its opponent is exaggerated. This action re-

sults in a fixed or limited position of the member in which the muscles are attached, for example, the finger remains bent into the palm. In the paralyzes of leprosy the fingers and toes are often left in these fixed or limited positions (contractures), or the lack of muscular balance and support result in a drooping of the affected member, such as an eyelid or angle of the mouth, a hand, or a foot. The gaping eyes, drooping twisted mouths, bent and wasted hands and feet are the results of the infection, and inspire fear of it, though at this stage its communicability may not be any more likely than the communication of the infection of infantile paralysis from its paralyzed, and wasted, twisted victim. Likewise, some of the ulcerations of the skin are probably not a source of dissemination, but others doubtless may be.

The communicability of the disease during its active stages, its occasionally acute course, or its progress through many years, and its ultimate crippling, mutilating results, which are often intensified if neglected, indicate the necessity of providing two rather distinct types of institutional care and treatment. Hawaii concerned herself with such institutions sixty years ago. In 1866 a settlement was provided on a small peninsula of the island of Molokai. This peninsula contains about 5,000 acres of relatively level land, and is separated from the remaining two hundred and sixty square miles of the island by a precipitous cliff more than 1,500 feet high, and separated from the other islands by several miles of the open sea. Here in Kalaupapa, a rural community almost insularly isolated from the malicious, the meddlesome and the curious, the leper can live as he would live in any village within the Territory. His physicians live in the settlement within easy access. If he becomes helpless he may be housed in a community building, or if desirable, and desired by him, he may be hospitalized. He is required to conduct himself in accordance with the ordinary rules and laws

governing good civic behaviour, and in event he does not he may be brought by an afflicted sheriff before an afflicted judge, both citizens of the community. The Territorial government furnishes through a superintendent under the supervision of the Board of Health, his housing, his clothes, his ration, and his physicians, but he or his friends buy his automobiles, of which there are an average of one to every ten or twelve patients, aside from those belonging to the authorities. He has a choice of the church in which he will worship, and has an opportunity to entertain himself in social and athletic gatherings, and at the movies. His greatest hardship, and his cross, aside from his sickness, is his enforced separation from his family and friends. This too, is ameliorated to some degree by permission extended his kith and kin to visit him periodically under restrictions for the protection of the health of those in the settlement, the visiting friends and families, and the public, to whom these latter return. Also, he may marry one similarly afflicted within the community, and live in his home a normal conjugal life. His children which may be born are, however, separated from him immediately after their birth, and for their further protection are reared in an institution, whose residents are of like origin.

When a patient has recovered to a degree of an apparent arrest of his condition, and he desires to return to the general community, he is examined by three medical representatives of the Board of Health, and may be released under supervision and direction of the latter. He is required to report for examination, and for such treatment as the Board may consider proper until the Board is assured of his recovery.

It is to this settlement that those lepers are sent whose progress towards convalescence is slow, or who have become a burden to their friends, and objects of ridicule or abhorrence to their fellow men. However, before being made by law an inhabitant of Kalaupapa, every individual

suspected of or having leprosy is legally entitled to remain for at least six months (unless he elects to go to the settlement sooner) in another type of institution, for observation and study towards making the diagnosis scientifically accurate, and to submit to such reasonable medical treatment as may ameliorate or arrest his disease.

This institution, known officially as the Kalihi Hospital, acts as the Receiving Station for the Territory, and is conducted more in accordance with a sanitarium for contagious disease. It is more centrally located than the Settlement, and is within a few miles and easy motor transportation of the docks of Honolulu, the main port of the Territory. This location facilitates study and observation by the representatives of the Board of Health, as well as the transportation of the patients, since Honolulu is the junction point of all the inter-island communications.

The patients in this institution remain segregated from the public, by law, during the active stages of their disease. The distance from the more metropolitan districts, and the physical arrangement within an enclosed area of about five acres, as well as the governmental regulations, assist in this segregation and spare them from most of the gawking curious, but at the same time permit of visits from their family and friends under restrictive precautions. Here their needs of housing, clothing and meals are similarly furnished by the Territory, under the administration of a matron, under the supervision of the Board of Health.

Medical attention and study are carried on through, and in cooperation with, the Board of Health by medical officers of the United States Public Health Service. These officers are detailed by the Surgeon General to the Leprosy Investigation Station to direct, and participate in investigations of the disease and its treatment. They are the hospital physicians delegated by the Territorial Board of Health. The buildings of the Leprosy In-

vestigation Station belong to the Territory and are within the grounds of the hospital, but outside of the enclosed portion.

To Kalihi Hospital those suspected of being infected with leprosy are brought for examination. They have the privilege of being examined by three physicians, one of whom they may select, one of whom is selected by the Board of Health, and the third of whom may be selected by the former two. In lieu of this examination they may elect to accept the diagnosis and recommendations of the physicians in attendance at the hospital. Provisions are made for subsequent examinations in event of doubt. If they are cases of leprosy, they are admitted to the hospital for observation, study and treatment, in accordance with the provisos for transfer and release discussed previously. The exception made to the above applies to age. In practice there are no transfers to the Settlement of leprosy children of fifteen years or under, except by request of their parents residing in the settlement, or under unusually impelling circumstances. During their residence in Kalihi Hospital, the children of school age are given their schooling in accordance with the public school curriculum.

The governing officers of Hawaii in 1865 canvassed the governments and prominent physicians of the various countries interested or concerned for opinions as to the cause, nature, and methods of treatment of leprosy. In 1879 the Kalihi Hospital was organized to put in practice those methods of treatment which are most advanced. This policy has been continued and the Territorial Government has devoted millions of dollars to the care and treatment of those having leprosy. For the past twenty-five years the United States Public Health Service has assisted in these investigations and treatments.

The nature of leprosy and the restriction of the development of the infection to man, with the inability to produce it

in animals have proven to be insurmountable obstructions, thus far, to the development of a specific therapy, or one scientifically administered and controlled.

About four hundred years ago the Chinese used a nauseating, irritating oil, since recognized as Chaulmoogra oil, and later determined to have a chemical construction different from that of most oils. This oil was reputed to have medicinal value in leprosy. In more modern times it was injected under the skin, or into the muscles, but its administration in this manner resulted in such painful reactions that it could not be continuously given, though the treatment with it was reported to be beneficial. Subsequently a more refined, more fluid and less irritating product was made by the chemical substitution of ethyl or spirit alcohol for the glycerine which is in the oil. This product is known as the ethyl esters of the acids of chaulmoogra oil. This and other preparations of chaulmoogra and other oils of similar chemical architecture are used along with other drugs as medicines in the modern treatment. The treatment and control of leprosy and of tuberculosis have some features in common, and the

experience gained in treating leprosy in Hawaii and in other places suggests that some of the methods used in combating tuberculosis may be profitably employed in the control of leprosy. Leprosy is conceded to be self-arresting in a definite percentage of cases, both in relatively early and in later stages, and can be brought to quiescence and arrest in an additional percentage of cases which have not advanced to a degree in which too much destruction has taken place. This latter can be better accomplished by not relying on the development and administration of an arcanum or sovereign remedy, but must include careful clinical and laboratory studies and investigations directed towards the diagnosis of early stages, and towards treatment; and the application of modern methods of general medical and hygienic principles within a hospital or sanitarium. To assist in preventing recurrence, this hospital treatment and care must be systematically followed up in those cases who recover to a degree which permits of their return to their homes and former surroundings.

Surgery in the Orient

Surgery in the Orient will be represented at the Pan-Pacific Surgical Conference convening in Honolulu in August, 14 to 24, by men from China, Japan, and Korea. Dr. F. C. Yen, President of the College of Medicine, National Central University, Shanghai, will give a talk on "Medicinal Education in China," and will bring with him papers from other Chinese surgeons who are unable to attend. Dr. Kenelm Digby of Hongkong will give a paper on "Demonstration of Special Splints for Fractures of the Femur and Humerus," and also one on "Intraphepatic Stone Formation

in Hongkong."

Dr. Makoto Saito of Nagoya and Dr. Tei Shin Seo of Chiba, both members of the Japan Surgical Association, will present papers on "The Röntgenological Diagnosis of Cerebral Tumor," and "Surgery of the Haematopoietic Organs with Special Reference to Sphenomegaly due to Schistosomiasis Japonica and Eumyceten," respectively.

Dr. Y. S. Lee, Professor of Surgery, Severance Union Medical College, Seoul, Korea, will present a paper on "Amebic Liver Abscess," and will take part in the discussion on Tubercular Joints.

Pan-Pacific Food Conservation Conference

From many quarters letters are coming to the Pan-Pacific Research Institution with suggestions as to the final agenda for the Second Pan-Pacific Food Conservation Conference in August, 1931 (Honolulu). One of the most interesting and constructive of these is from Dr. Carl L. Alsberg, director of the Food Research Institute at Stanford University and a participant in the first Food Conservation Conference. Dr. Alsberg is on the editorial staff of the Journal of the Pan-Pacific Research Institution. His letter is as follows:

I have your letter of April 9 in regard to the Second Pan-Pacific Food Conservation Congress to be held in Honolulu in August 1931. I have read the proposed agenda, printed in the April-June number of the Journal of the Pan-Pacific Research Institution, enclosed with your letter. As an all-inclusive plan covering almost everything in the field of food production, distribution, and conservation in the Pacific area, the agenda and the several suggestions are wholly admirable. The only question that arises in my mind in connection therewith is whether so universal a plan gives the best practical results. A conference of this kind, at least so far as my experience goes, may be operated on one of two plans. One is to divide the field into an appropriate number of sections, each representing a relatively limited field of scientific work. Once these questions have been delimited, the next step is to secure distinguished scientists as chairmen. The next step is with the help of the chairmen to get a large number of scientists to come to the meeting for the presentation of papers of a scientific character, the subject matter of which must be left to the men who read the papers. It will ordinarily be a report on original research done by these men and their associates. This is the method of the international scientific congresses.

It has the advantage that the papers represent original work, much of it of lasting merit. It has the disadvantage that the entire field is not covered, but this to me is not a disadvantage, since under any plan it is impossible to cover a whole field. There is the further disadvantage that the papers must of necessity be highly technical, and therefore of interest principally to other specialists, wherever they may be located. This disadvantage may be counteracted to a considerable extent by arranging for joint sessions of sections dealing with related fields, by symposia, and by a few general sessions at which a few of the elder statesmen among the scientists present a few addresses of a general character.

The second plan is essentially that proposed in the tentative agenda. To make it successful and to carry it out completely, it is necessary to invite a whole series of men to prepare papers on specific subjects, the choice of men and subjects being so arranged as to cover the whole field. If this isn't done, a large portion of the field will remain uncovered, and there will remain sections with hardly any attendance except that of the chairman and secretary. This happened in one or two sections, as you will recall, at the last Pan-Pacific Food Conservation Conference. I refer, for example, to the section on transportation. This second plan, while it looks better than the first on paper, has the disadvantage that papers specially prepared on subjects selected by others than the author are apt to be hack work, superficial in character, and platitudinous. Their permanent value is not likely to be as great as that of scientific papers reporting the original work of the authors.

In short, I am inclined to think that the most advisable plan is to make the conference a special type of international scientific congress, devoting itself primar-

ily to problems of agricultural food production, food transportation, distribution, and conservation. This will, I fear, involve some duplication of the field of the Pacific Science Congress. This, in any event, is unavoidable, and I can see no harm in such slight duplication as may arise. *Si duo faciunt idem non est idem*. There remains for the Food Conservation Conference, even if conducted as a scientific congress, an ample field not covered by the Pacific Science Congress.

You ask me to suggest names of food scientists with whom it would be advisable for you to correspond. I am not competent to suggest names in all fields. The following is a list arranged according to certain fields: (A comprehensive list was submitted.)

The scientists in each section have been asked to submit photographs or suggestions for a series of photographs with captions that may be transferred to films for projection on the screen, the pictures and captions to tell the story of one of the subjects to be discussed at the conference. Mr. Charles M. Bice of the University of Hawaii submits a list of possible pictures in Hawaiian poultry industry there, in the hopes that agriculturalists in Pacific lands will submit similar suggestions for lists on the subjects, in which they are particularly interested. Mr. Bice's suggestions are published herewith:

Poultry Production in Hawaii

- I. Incubation of the eggs
 - (a) Choosing the incubator
 - (b) Selecting a desirable incubator cellar
 - (c) Regulating the incubator
 - (d) Selecting hatching eggs
 - (e) Caring for the hatching eggs
 - (f) Turning the eggs
 - (g) Testing the eggs
 - (h) Hatching with hens
 - (i) Pedigree hatching
- II. Brooding the chicks
 - (a) Preparing brooder house and heater

- (b) Feeding the chicks
 - (c) The chicks on range or in confinement
 - (d) Brooding with the hen
 - (e) Mosquito-proof houses and runs
- III. Summer Care of Young Stock
 - (a) Selecting the Range—Location and Site
 - (b) Supplying shade
 - (c) Location of colony houses
 - (d) Separating the sexes
 - (e) Keeping the colony house clean
- IV. Poultry House Construction
 - (a) Types of houses in Hawaii
 - (b) Interior fixtures
- V. Feeding the Layers and Breeders
 - (a) Feeding the flock
 - (b) Supplying water to the flock
 - (c) Cutting and growing alfalfa for poultry
- VI. Culling the Laying Flock
 - (a) Culling the birds not laying
 - (b) Comparing good and poor hens
 - (c) Finding the laying pullets
 - (d) Selection of pullets for the laying house
- VII. Preparing Eggs and Poultry for Market
 - (a) Gathering the eggs
 - (b) Candling market eggs
 - (c) Grading market eggs
 - (d) Fattening market birds
 - (e) Killing market birds
 - (f) Selling market birds at the market
- VIII. Preparing Birds for the Show
 - (a) Selecting birds for show
 - (b) Judging the birds
 - (c) A view of the show
- IX. Breeds of Poultry in Hawaii
 - (a) Leghorn Flocks
 - (b) Rhode Island Red Flocks
 - (c) Plymouth Rock Flocks
 - (d) Australorp Flocks
 - (e) Minorcas
 - (f) Ducks
 - (g) Geese
 - (h) Turkeys
 - (i) Pigeons

On the Subject of Attending Medical Congresses

(An Editorial by Dr. Maria Paz Mendoza-Guazon, of the University of the Philippines, in the Journal of the Philippine Islands Medical Association, December, 1928.)

Probably no other science is so subject to continuous change as is the medical science. Practitioners and research workers engaged in this field of study must be alert to keep abreast with the discoveries and changes that are announced almost every day. One cannot find the time to read even the abstracts of the most important articles that are written on medicine and, to obviate this difficulty, physicians and workers come together to discuss them and exchange ideas and methods. Thus, medical meetings enlighten those who attend them and stimulate the thirst for inquiry.

In a country like ours, isolated from the great workers, and where news arrives almost a month old, the need of meetings is felt the more. However, meeting the same persons, whose trend of ideas probably is the same as ours, over and over again is not enough. We need to know other workers from other countries, visit their clinics, study their methods of procedure, and hear their lectures in order to impart them to our countrymen on our return. This is the one way to help push the progress of the medical science in our country. Besides, by so doing we render a service to our country which, as every one knows, is little known abroad. Therefore, by participating in the numerous congresses to

which we are cordially invited now and then we accomplish two things: We contribute toward making our country and its people known, and at the same time come to know the peoples of other countries. In the last Pan-Pacific Women's Conference, which I was so fortunate as to attend as one of the delegates from our country, the voluntary attendance of the women delegates from Japan, New Zealand, and Australia aroused the admiration of the other members, because these delegates went to the conference at their own expense. This admiration increased when we learned that some of the Japanese delegates could neither understand nor speak English. They said that by simply watching they would learn something.

I am sure that many members of the medical profession of our country can go to any conference at their own expense, provided they are recognized as official delegates from the Islands. I am sure that their love of country, the great benefits that they will surely reap, and the rest they will enjoy during the trip will sufficiently reward them for the expense incurred.

However, should the Government be willing to expend for the delegates from the Philippines, so much the better.

Let us, then, hope that we will have at least a half-dozen delegates, volunteer and otherwise, not only to the Pan-Pacific Surgical Conference in August, 1929, 14 to 24, and to the scientific meeting of Tropical Medicine, but to the various medical congresses of the world.

Surgeons Attending the Pan-Pacific Surgical Conference, Honolulu, August 14 to 24, 1929

Under Auspices of The Pan-Pacific Union.

Australia

Sir James Barrett, Melbourne;
Richard Francis, Sydney;
R. I. Furber, Sydney;
Harry Harris, Sydney;
Prof. W. A. Osborne, Melbourne;
Robert Pulleine, Adelaide;
Norman Royle, Sydney;
Robert Hamilton Russell, Melbourne;
H. H. Schlink,
Prof. Watson, Adelaide;
Ralph Worrall, Sydney.

Canada

F. T. Campbell, Calgary, Alberta;
R. E. McKechnie, Vancouver;
A. R. Munroe, Edmonton.

China—Kenelm H. Digby, Hong Kong;

F. C. Yen, Shanghai.

India Major E. O'G. Kirwan, Calcutta.

Japan—Makoto Saito, Nagoya.

Prof. Teishin Seo, Sen-Dai.

Korea—Y. S. Lee, Seoul.

Latin America

Liberato Davila, Salvador;
Alfredo Delgado Cornejo, Lima, Peru;
Guillermo E. Munnich, Valparaiso, Chile;
Dr. Neuhas, Lima, Peru;
Edwyn P. Reed, Valparaiso, Chile;
Ernest Zubieta, Panama;

New Zealand

W. P. P. Gordon, Stratford;
James A. Jenkins, Dunedin;
J. Hardie Neil, Auckland;
J. Russell Wells, Ashburton.

North Africa

Palotti Giovanni and confrere, Giado, Italian Tripoli.

Philippine Islands

Jacobo Fajardo, Manila;
B. Aguilar, Manila.

United States Mainland

R. V. Ellis, Ketchikan, Alaska;
H. O. Bames, Los Angeles;
Elmer Belt, Los Angeles;
Frank S. Dolley, Los Angeles;
Ernest C. Fishbaugh, Los Angeles;
William H. Kiger, Los Angeles;
Eugene R. Lewis, Los Angeles;
Stewart Lobingier, Los Angeles;
Lloyd Mills, Los Angeles;
Alfred John Murrieta, Los Angeles;
A. J. Scholl, Los Angeles;
Elliot P. Smart, Los Angeles;
Steele Stewart, Los Angeles;
C. T. Sturgeon, Los Angeles;
John C. Wilson, Los Angeles;
Edwin I. Bartlett, San Francisco;
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Leo Eloesser, San Francisco;
Edgar L. Gilcreest, San Francisco;
Harrington B. Graham, San Francisco;

Emile Holman, San Francisco;
Frank W. Lynch, San Francisco;
Howard H. Markel, San Francisco;
Stanley H. Mentzer, San Francisco;
H. C. Naffziger, San Francisco;
George W. Pierce, San Francisco;
Emmet Rixford, San Francisco;
E. B. Towne, San Francisco;
James T. Watkins, San Francisco;
Roger Anderson, Seattle;
H. E. Coe, Seattle;
H. J. Davidson, Seattle;
C. F. Elkenbary, Seattle;
Frederick Epplen, Seattle;
C. E. Hagyard, Seattle;
David C. Hall, Seattle;
Alex. B. Hepler, Seattle;
E. O. Jones, Seattle;
Brien T. King, Seattle;
O. F. Lamson, Seattle;
A. O. Loe, Seattle;
Minor T. Lisle, Seattle;
Tate Mason, Seattle;
J. C. Moore, Seattle;
Don H. Palmer, Seattle;
Alexander Peacock, Seattle;
William Speidel, Seattle;
George W. Swift, Seattle;
A. T. Wanamaker, Seattle;
J. A. Weber, Seattle;
H. J. Wyckoff, Seattle;
M. T. MacEachern, Chicago;
Charles Mix, Chicago;
Dr. Walch, Chicago;
O. R. Gullion, Eugene, Oregon;
Sam Caldwell, Everett, Washington;
R. H. Quigley, Everett, Washington;
Fred H. Albee, New York City;
John Ridlon, New York City;
Dr. J. E. M. Thomson, Lincoln, Nebraska;
C. Jeff Miller, New Orleans, Louisiana;
L. L. Goodnow, Olympia, Washington;
C. D. Lockwood, Pasadena, California;
A. G. Bettman, Portland, Oregon;
Robert C. Coffey, Portland, Oregon;
J. Earl Else, Portland, Oregon;
Ralph Fenton, Portland, Oregon;
Thomas M. Joyce, Portland, Oregon;
Ralph Matson, Portland, Oregon;
George Norman Pease, Portland, Oregon;
Paul Rockey, Portland, Oregon;
Ernest A. Sommer, Portland, Oregon;
John S. Lundy, Rochester, Minnesota;
M. C. Findley, Salem, Oregon;
Thomas O. Burger, San Diego, California;
Samuel Robinson, Santa Barbara, Calif.;
Arthur Cunningham, Spokane, Wash.;
Horace J. Whitacre, Tacoma, Wash.;
C. J. Johannesson, Walla Walla, Wash.;
John C. Lyman, Walla Walla, Wash.;
Frederick L. Hoffman, Wellesley Hills, Massachusetts;

BULLETIN OF THE PAN-PACIFIC UNION

An unofficial organization, the agent of no government, but with the good will of all in bringing the peoples of the Pacific together into better understanding and cooperative effort for the advancement of the interests common to the Pacific area.

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HONOLULU

Published monthly by the Pan-Pacific Union
1929

AIMS OF THE PAN-PACIFIC UNION

From year to year the scope of the work before the Pan-Pacific Union has broadened, until today it assumes some of the aspects of a friendly unofficial Pan-Pacific League of Nations, a destiny that both the late Franklin K. Lane and Henry Cabot Lodge predicted for it.

The Pan-Pacific Union has conducted a number of successful conferences; scientific, educational, journalistic, commercial, fisheries, and most vital of all, that on the conservation of food and food products in the Pacific area, for the Pacific regions from now on must insure the world against the horrors of food shortage and its inevitable conclusion.

The real serious human action of the Pan-Pacific Union begins. It is following up the work of the Pan-Pacific Food Conservation Conference by the establishment of a Pan-Pacific Research Institution where primarily the study and work will be along the lines necessary in solving the problems of food production and conservation in the Pacific Area,—land and sea. Added to this, will be the study of race and population problems that so vitally affect our vast area of the Pacific, the home of more than half of the peoples who inhabit this planet. The thoughts and actions of these peoples and races toward each other as they are today, and as they should be, for the welfare of all, will be a most important problem before the Union, as well as the problem of feeding in the future those teeming swarms of races, that must be well fed to preserve a peaceful attitude toward each other.

The Pan-Pacific Union is in no way the agency of any Pacific Government, yet having the goodwill of all, with the Presidents and Premiers of Pacific lands as its honorary heads. Affiliated and working with the Pan-Pacific Union are Chambers of Commerce, educational, scientific and other bodies. It is supported in part by government and private appropriations and subscriptions. Its central office is in Honolulu, because of its location at the ocean's crossroads. Its management is under an international board.

The following are the chief aims and objects of the Pan-Pacific Union:

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 those interests that are common to all the peoples.
2. To bring together ethical leaders from every Pacific land who will meet for the study of problems of fair dealings and ways to advance international justice in the Pacific area, that misunderstanding may be cleared.
3. To bring together from time to time scientific and other leaders from Pacific lands who will present the great vital Pan-Pacific scientific problems including those of race and population, that must be confronted, and if possible, solved by the present generation of Pacific peoples and those to follow.
4. To follow out the recommendations of the scientific and other leaders in the encouragement of all scientific research work of value to Pacific peoples; in the establishment of a Research Institution where such need seems to exist, or in aiding in the establishment of such institutions.
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 men together who can understandingly 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 to bring about better understanding and cooperative effort among the peoples and races of the Pacific for their common advancement, material and spiritual.
7. To bring all nations and peoples about the Pacific Ocean into closer friendly commercial contact and relationship. To aid and assist those in all Pacific communities to better understand each other, and, through them, spread abroad about the Pacific the friendly spirit of inter-racial cooperation.

New China's Women Their Advance Under Nationalism

By MURIEL HEAGNEY

(An Australian Delegate to the Pan-Pacific Women's Conference)

Nothing more impressed those of us who, as representative women of our countries, foregathered at the Pan-Pacific Women's Conference than the advance made by the women of China—and a rare opportunity was afforded of seeing in high relief the national characteristics and personal qualities of most of the races that dwell on the shores washed by the Pacific Ocean.

By common consent the Chinese delegates, Dr. Me Iung Ting and Miss Baetsung Kyong, were acclaimed as two of the most interesting delegates. Close association with them in those wonderful days in Honolulu and a study of much of the recent literature on China is the reason, or excuse, why one who has not yet had the privilege of visiting the Flowery Land is writing on the new woman in China.

In a contribution entitled "Chinese Women Entering a New Era," published in the report of the conference proceedings, Mrs. Herman C. E. Liu summarised the chief qualifications of an ideal Chinese woman in these words:

"Swinging gracefully her body on the 'golden lilies'; walking forward without turning her face around; talking sweetly to others without lifting up her lips; considering household care her sole purpose in life; marrying an unknown person in obedience to her parents and through the agency of middlemen; obeying her father, husband—and son when the two former had passed away; cutting off her flesh to be medicated for her sick husband; mourning for life and committing suicide to show loyalty to her dead master."

Nothing more remote from the women of China today can be imagined.

Education outside the home for girls began with the establishment of mission schools as far back as 1844, but it was not till 1897 that a girls' school conducted and financed by Chinese people was opened. The Empress Dowager ordered the school to be closed in 1899, but two years later an edict was issued permitting the opening of girls' schools.

In 1916, five years after the establishment of the Republic of China, the number of scholars (not including those at mission schools) was: Boys, 3,801,730; girls, 172,764. Thus was the sphere of interest of Chinese womanhood widened, and ere long girls as well as boys went abroad to study.

In medical work Chinese women are making steady progress and are devoting much attention to preventive measures. In her foreword to an address on "The Status of Health Work in China" Dr. Ting told the Pan-Pacific Conference some most interesting facts concerning that great land of infinite potentialities. She said:

"To understand any phase of the present status of China, one must review a little of her background. China suffered the misrule of an alien race, the Manchu dynasty, for two and a half centuries. When this dynasty was overthrown in 1911 it left China in a pitiable condition, which can be summarised thus:

"(a) An uneducated people of 400,000,000;

"(b) A large foreign debt, approximately 400,000,000 dollars;

"(c) A country without communications except for a few thousand miles of railway;

"(d) A staff of corrupt officials;

"(e) A volume of unilateral treaties.

"During the last seventeen years the young Republic of China had to face intricate problems from within and heavy pressure from without. In such conditions as these, preventive medicine could not find a place in our country. What little health work has been done has been initiated by individuals who were interested in health measures."

Dr. Ting herself is recognised as one of the foremost medical women of China and is medical director of the Peiyang Women's Hospital at Tientsin. The two Chinese delegates at the Pan-Pacific Women's Conference were worthy representatives of the women's movements of new China. Dr. Me Iung Ting, the medical woman, appeared about thirty years of age. She received her medical education in America, where she spent eight years.

Miss Bae-tsung Kyong was younger, perhaps twenty-three or twenty-four, and had not been out of China before. Coming from the student movement, Miss Kyong undertook social work. As industrial secretary of the Shanghai Y. W. C. A., she has been closely concerned in the industrial troubles of the past few years. With a wide knowledge of economics and industrial history, combined with experience gained in daily contact with workers during strikes, Miss Kyong proved one of the ablest among the many influential women who constituted the industrial section of the conference.

Particularly fine was her summing-up of the White-Australia policy and the Immigration Restriction Acts of America. She traced these to economic rather than cultural or racial causes, and pointed out their palpable weaknesses, drawing attention to the exportation of capital to China for the exploitation of Chinese labor in

the production of goods for sale in America and Australia in competition with the products of the workers of those countries.

Each of these delegates was an expert in her own subjects and remarkably well-informed generally. They were charming in manner and had a full command of English. On many occasions they dominated the groups in which they sat, but it was in the last session of the conference that the spirit of new China found dramatic expression through these young women, pioneer types of China's coming woman. This arose from an invitation from the Pan-Pacific Association of Shanghai for the next conference to be held in China under the auspices of that association. Dr. Ting opposed acceptance of this invitation and urged that the conference should not be held in China until the invitation came from the Chinese women themselves. In this she was ably supported by her co-delegate, and her spirited speech on that occasion will linger long in the memory of her hearers. "Our China has been saying 'Yes, yes,' to everyone," she protested, "and it is time to make known to the world her own course and say 'No,' for she does not extend this invitation. I am willing to work and be broad-minded, but in this matter I am afraid the Chinese do not understand. I represent the average Chinese woman of education. If China is going to invite you I want Chinese women to take the responsibility and help to organise the conference, not foreigners." That was the strain of her speech.

Delegates of all countries supported Dr. Ting and Miss Kyong in their attitude, and it was agreed that they should, on return to their native country, work towards an invitation for the holding of a Pan-Pacific Women's Conference in China in 1932.

The Crossroads Responsibility

By ETHEL E. OSBORNE

(In the Melbourne Argus)

In Europe one feels that to introduce into conversation the subject of Pan-Pacific affairs is not to bring up a theme in which there is very widespread interest. It seems to be a very remote sphere. Most of those who are keenly alive to Britain's home affairs and to European politics have given but scant consideration to Pan-Pacific interests, and have, in the main, little conception of the world-wide importance of such problems. There is no grasp of their full significance to the Empire, no sound understanding of the relations around the Pacific. In Australia there is no doubt in the minds of any of us of the deep import of the problems of the Pacific basin.

Last August I had the honour to be present, with other women from Australia, at a unique gathering. This was the first Pan-Pacific women's conference, which met in Honolulu, the chief city in that beautiful group of Hawaiian Islands, an outpost of the United States, in comparative close proximity to Australia. Here gathered representative women from many nations around the Pacific. These women, who had taken an active part in the social developments of their own countries, came together from distant and diverse countries; it was a great step forward in international relationship and understanding to get that group assembled for the humanitarian purpose of considering the problems of women and children around the Pacific. Already the Hawaiian Islands have won world-wide fame for their natural beauty and industrial enterprise, and for the charm and attractiveness of their chief city, Honolulu, which is becoming known by a picturesque and well-merited title, "The Crossroads of the Pacific."

But a crossroads involves a responsibility; there is always an onus of choice, the opportunity to choose rightly or

wrongly. There is also the need for correct finger-posts, adequate direction, and readiness and ability on the part of those travelling by the crossroads to profit by the guidance when it is provided. There has been a recognition by certain idealists in this island territory of the fact that its unique geographical position, with the many benefits received therefrom, entails a serious responsibility—shall we call it the "crossroads responsibility"? This is no small responsibility at this crossroads of the world, where traffic and communications are unique. Here the Occident and the Orient meet in totally different relations from those prevailing on the other side of the globe, with none of the traditions that dominate all encounters in the old Eastern Hemisphere. Here representatives of old and new civilisations and colonisations are placed in extraordinary juxtaposition.. There is no overwhelming load of history and traditions, there are no sacrosanct conventions. These idealists have evolved a Pan-Pacific Union, which describes itself as "an organisation directed by representatives of all Pacific races, supported in part by government appropriations, cooperating with chambers of commerce, scientific organisations, boards of education, and kindred bodies working for the advancement of Pacific interests." It brings together through frequent conference at the ocean's crossroads leaders in all lines of thought and action in Pacific lands, organising them into friendly cooperative effort. Its aims may briefly, but clearly be expressed as follows: "To bring all nations and peoples about the Pacific Ocean into closer friendly contact and relationship. To aid and assist those in all Pacific communities to understand one another better, and, through them, to spread about the Pacific the friendly spirit of inter-racial cooperation."

The methods adopted by this Pan-Pacific organisation to attain the ideals set before it are: First, conference, and second, research. The conferences are attended by delegations from, as far as possible, all the countries in the Pacific basin, and they are called for the consideration of specific problems. Already during recent years conferences have been held in science, commerce, education, food conservation, and, lastly, the women's conference of 1928. Any conference may create as the outcome of the deliberations of its meeting a permanent organisation, and it may become autonomous and probably, peripatetic, as, for example, the science conference, which became the Pan-Pacific Science Association. It has already held since its initial meeting in Honolulu conferences in Australia and Japan, and in Java in May.

The delegations meet as equi-potential units, sit side by side, and face together boldly and untrammelled the gigantic problems which are before their countries, and upon the right solution of which the welfare and amity of the countries of the Pacific basin depend, and thereon the prosperity and happiness of the whole world. The Pan-Pacific Union has as its president the Governor of Hawaii. Its honorary presidents are the Presidents of the United States, of the House of Peers of Japan, of Mexico, of Peru, and of Chile, the King of Siam, the Prime Ministers of Australia, New Zealand, and Canada, and the Chief Executive of China. Among its honorary vice-presidents are the Premiers of Australian States. Its director is Mr. Alexander Hume Ford.

The unparalleled development in rapidity of transportation and in communication of news entails a special duty at the present time upon the peoples bordering the Pacific Ocean of meeting for the purpose of understanding and for furthering mutual help and sympathy. Day by day the time occupied in transport is being decreased. Almost before we realise it we shall be next-door neighbours to people whom at present we regard as very for-

eign, very distant, and very remote in every way; so the importance of mutual understanding is becoming intensified.

Throughout the year the Pan-Pacific Union welcomes illustrious visitors passing through Honolulu, and arranges meetings to afford an opportunity of interchange of views. It publishes and circulates magazines and bulletins periodically, and at the present time it has regular gatherings of Hawaiian residents who have taken part in past conferences. As an outcome of the women's conference there is a weekly gathering of the women of Hawaii who took part in its deliberations and who are making provision for a further conference.

Its next big activity is a new venture. It is calling a Pan-Pacific surgical conference in August of this year, the aims of which are, first, "to bring together surgeons bordering on the Pacific," and second, "to permit the exchange of surgical ideas and methods, to develop an acquaintanceship among the surgeons meeting on a common ground, so that they may be instrumental in developing a spirit of good fellowship among the races represented at the conference." Judging from the preliminary programme which is in circulation the conference promises to be of great value, and it should more than fulfil the expectations of those who have promoted it. In addition to the purely surgical aspect, the question of hospital standardisation will be considered under the chairmanship of Dr. Malcolm T. MacEachern, whose visit to Australia is well remembered. It is to be regretted that the dates of this conference and of the Australian medical congress, to be held in Sydney, are so close together that it is impossible for surgeons to attend both.

In 1930 a second women's conference will be held in Honolulu, which will follow up the work initiated last year, and from which it is hoped that a permanent organisation may arise. In 1931 the Pan-Pacific Union proposes to hold its second food conservation conference. Preliminary programs will be sent on request.

A Letter From Geneva

International Labor Office

Geneva, February 12, 1929.

Dear Mr. Ford:

We have recently had the pleasure of a visit from Dr. Ethel Osborne, a member of the Australian delegation to the Pan-Pacific Women's Conference held last year under the auspices of your Union. I understand from her that one of the purposes of her visit to Geneva was, at your request, to familiarise herself with the work being done here with a view to consulting with you on her return journey with reference to the plans for your next Conference.

In the absence of the Director, who has not yet returned from his trip to Japan, Dr. Osborne met the Deputy-Director, as well as other officials specially interested in the work of the Women's Conference, including Miss Mundt, with whom the organisers of the last Conference were in touch. We discussed with Dr. Osborne those of the questions suggested for your next Conference which come within the scope of the activities of the Office and considered the way in which we might collaborate with the organising committee in the preparation of these questions. As a result of our discussions we have formed the opinion that the industrial questions which could most suitably be taken up by the next Women's Conference would be those referred to in resolutions Nos. 1 (c) and 2, namely, the health of women in industry in Pacific countries and the improvement of industrial standards in Pacific countries. The matters referred to in the other resolutions are of course important but it seems to us that in order to ensure effective preparation and practical results it would be well to concentrate for the present on the two I have mentioned. The Conference will certainly deal with

other matters besides industrial questions, and two items affecting industry would probably be found sufficient. Your own experience of international conferences has probably led you to share our opinion that to treat a limited number of subjects effectively is better than to treat a larger number without going exhaustively into any of them, as might happen if the programme were too large.

As regards the two questions which I have suggested, the following are the lines on which we might collaborate with your committee in the provision of the necessary information.

Health of Women in Industry. We are issuing shortly a study on this subject prepared by our Industrial Hygiene service. We should be glad to supply you with copies. I presume you will also be arranging study groups on the question in the various participating countries and they will no doubt prepare a statement of the position in their respective countries. If there is anyone appointed to co-ordinate the various study groups on this subject, we should be glad to get into touch with her.

In order to ensure that the information supplied from the different groups shall be properly comparable, it might be well to concentrate on a particular type of industry, say the textile industry. The latter is of special importance and a survey of the health of women in this industry would provide a good foundation for a general survey.

Improvement of Industrial Standards. The improvement of industrial standards is the essential purpose of the International Labour Organization, so that on this subject we could certainly be of assistance to you. We could supply the requisite documentary material and though this will naturally be a matter for the Director to decide—we might

also be able to send someone to attend the Conference in person and give further information. I feel sure that under such conditions a discussion on this question would lead to definite conclusions as to practical steps which could be taken to promote improvement in industrial standards, and this would be a valuable result of the Conference.

Child education: child labour. Though I do not suggest more than the two questions already mentioned for consideration by the Industrial Section of the Conference, I imagine that you will certainly have an Educational Section, and this Section will probably come up against such questions as the school-leaving age and its relation to the age for admission to employment, vocational guidance, vocational education, etc. Since these subjects are within our scope, we should be glad to help in the

provision of information with regard to them. We have at present in preparation a report on vocational education and vocational guidance.

Briefly, our opinion is that it is important that the industrial questions to be discussed should be limited in number and defined in their scope, and that the necessary preparatory work undertaken in the individual countries should be co-ordinated by some competent individual. We were very glad to have an opportunity of discussing things with Dr. Osborne. I am sure that her experience and knowledge of industrial hygiene, her keen interest in the work, and the insight she gained into what is being done here, will enable her to render effective assistance in the preparations for the Conference.

Yours sincerely,
W. CALDWELL (Signed).

The International Educational Cinematographic Institute Established at Rome by the League of Nations

When Dr. Ethel Osborne of Melbourne, Australia, visited the League of Nations in January as Honorary Commissioner of the Pan-Pacific Union, she conferred with Mr. A. Dufour-Férence in regard to educational films and the newly established Institution of the Educational Cinema in Rome. As one of the eight study projects for the Second Pan-Pacific Women's Conference to be held in Honolulu in August, 1930, is the "Cinema" and its educational features, the following letter from the Manager of the new institute, Dr. Luciano de Feo, gives much valuable information for cinema committees.

Rome, May 14, 1929.

Dear Dr. Osborne:

The Under Secretary-General of the League of Nations and Director of the Section of International Bureaux and In-

tellectual Cooperation, Councillor of our Institute, Mr. A. Dufour-Férence, has asked me to communicate with you, to remind you of a conversation he had with you in January, concerning the vivid interest taken by you in the problems of educational films.

Although there has been a considerable delay, caused by the many journeys I have been obliged to undertake, both in Europe and the United States, I wish to write to you and ask you to grant us your collaboration for our Institute. We should greatly value your personal collaboration, but would be very much obliged, if you could put us in touch with other organisations and particularly with the Executive Committee of the Women's Conference of the Pan-Pacific Union, to which we are addressing simultaneously our request.

The Institute has now completed its internal organization and notified its existence to the most important cinematographic industries of the world. We now turn our attention to the more deeply rooted problems and study the questions related to the educational cinema, with regard to its manifold auxiliary uses in general instruction, such as: agriculture, professional training, hygienic propaganda, social prevention, etc. At the same time, in accordance with the Committee for the Protection and Welfare of Children of the League of Nations, we have begun a thorough examination of the moral problems and are making the necessary inquiries concerning the social, psychological, ideological and criminological questions connected with the cinema and the influence they exercise on the morals, customs and modes of living of adults and particularly of the young.

But to render our enterprise wholly satisfactory and complete, it is necessary:

a. That in every centre there should exist real corresponding offices representing the Institute, which would cooperate with us and call our attention to anything which might be connected with our problems (demands, laws, examples, etc.) and on the other hand, which could address themselves to us for any local requirements.

b. That the problems should be discussed by an adequate medium destined to bring about a widespread publicity. For this purpose, we have decided to edit a grand Review, dealing with the educational cinematographic problems, which will appear in June. It will be printed in five editions, respectively in English, French, German, Spanish and Italian. Many copies of this Review will be distributed free of charge and we will endeavor always to increase this number. The Institute will distribute 6000 free copies. The profit made on subsidies, advertisements (the latter will obviously

be of great utility to the advertisers, on account of the nature of the Review and its widespread circulation in all the world) and subscriptions will amount merely to the cost price of the material, i.e., 12 shillings per annum for 12 numbers, containing 120 pages each, of text. The profits realised will be used solely to increase the number of copies of the Review to be distributed among the personalities belonging to the world of culture, art, politics, science and industry, all over the world.

Therefore, our information centers should cooperate with us and send us useful information, collect articles by local personalities, expose the needs which arise in the various localities, particularly for the nations which are very remote from us, point out personalities and Institutions, etc., to which we could offer our Review free of charge.

We ask them to collaborate with us in every way, so as to develop more and more the great scheme which has been entrusted to us!

Certain that you and your Committee are willing to cooperate and to communicate to us your ideas on the subject, I take the opportunity of expressing my gratitude for everything you will be kind enough to do for our Institute."

The Pan-Pacific Union wishes the International Educational Cinematographic Institute all success in this new undertaking, and hopes to cooperate in every way possible. An international director for the Cinema Project is being appointed by the Executive Committee of the Pan-Pacific Women's Conference, with national correspondents in each country of the Pacific. Mrs. Willis T. Pope, President of the Hawaii Parent-Teachers' Association, and Mrs. Robbins Gilman, President of the Federal Motion Picture Council in America, 213 Citizens Aid Building, Minneapolis, Minn., have already been appointed correspondents for Hawaii and the United States mainland, respectively.

Pan-Pacific Union and Department of Public Instruction Invite World Federation of Education Associations to Meet in Hawaii

Senate Concurrent Resolution No. 11

WHEREAS, the World Federation of Education Associations has done much to promote the cause of education in the various countries of the world by offering intelligent cooperation and thoughtfulness which tend to advance the public school program in each along the lines of its best traditions, local organizations and general tendencies; and

WHEREAS, the objectives of the said organization are worthy and commendable, to-wit:

1. To promote the cause of education and to elevate the character of teaching throughout the world.
2. To secure international cooperation in educational enterprises.
3. To foster the dissemination of information concerning the progress of education in all its forms among nations and peoples.
4. To advise and promote suitable and effective means to bring into closer coordination the various agencies in every civilized country which have to do with education.
5. To cultivate international good will.
6. To promote the interests of world wide peace and understanding; and

WHEREAS, the Hawaii Educational Association, with the support of the Department of Public Instruction and of the Pan-Pacific Union, is extending an invitation to the President and Directors of the World Federation of Education Associations to hold a conference in Hawaii during the summer of 1930; now, therefore, be it

Note: The Pan-Pacific Union will be represented at the Geneva Conference by Mrs. A. H. Reeve, Miss Myra Angus, and Miss Dora Cooke.

RESOLVED, by the Senate of the Territory of Hawaii, the House of Representatives concurring, that the Superintendent of Public Instruction and the Governor of the Territory, in association with the Hawaii Education Association, are hereby requested to extend, through Miss Myra Angus, to the President and Directors of the World Federation of Education Associations an invitation to hold a world conference, or a regional conference, of that organization in Honolulu at a time which they deem to be advantageous.

THE SENATE OF THE TERRITORY OF HAWAII

Honolulu, T. H. April 25, 1929.

We hereby certify that the foregoing Concurrent Resolution was adopted in the Senate of the Territory of Hawaii on April 24, 1929.

(Signed) E. A. K. AKINA,
Vice-President of the Senate.

(Signed) ELLEN D. SMYTHE,
Clerk of the Senate.

THE HOUSE OF REPRESENTATIVES OF THE TERRITORY OF HAWAII

Honolulu, T. H., April 25, 1929.

We hereby certify that the foregoing Concurrent Resolution was adopted in the House of Representatives of the Territory of Hawaii on April 25, 1929.

(Signed) F. D. LOWREY,
Speaker, House of Representatives.

(Signed) JOSEPH ORDENSTEIN,
Clerk, House of Representatives.

Women's Influence in Government

By A. VIOLA SMITH

American Trade Commissioner, U. S. Department of Commerce
(Published in "Dawn," Perth, West Australia)

The increasing rapidity with which American women have had access to administrative and executive governmental positions and the consequent influence which they have wielded through these posts is a subject perhaps of interest to Australian women at this time. Coming to this country with a knowledge of the splendid vision and intellectual energy which Australian women have exhibited at international conferences, one is appalled to find that very few women hold administrative positions in the States, and none within the Commonwealth Government. One is led to question why, and to seek out if possible the fundamental reason, whether it is apathy on the part of Australia's professional women, or whether they are barred by legal enactment from such participation. A brief summary of the administrative opportunities which suffrage has opened up for American women, plus the insistence of an articulate body of women's organisations, may provide a new line of thought for Australian women in their own efforts to place qualified women in responsible positions.

At the outset a distinction must be drawn between women in administrative and executive positions and women in parliament. In America, while many women have served in State Parliaments, not more than three women have as yet taken their seats in the lower house of the federal government, and but one in the upper house—the latter being purely an honorary appointment of but a day's tenure. The fact which this article aims to bring out is that professional women holding important administrative positions, whether in State or Federal Governments, can have far more influence, as a rule, on the behalf of women's interests, than can

three women in the midst of four or five hundred men sitting in a lower house of parliament.

Appointment to federal service in America is governed as follows:

(1) Purely appointive positions where specialised experience is called for, or which lie within the realm of party allotments;

(2) Civil Service appointments through competitive examination under the Civil Service Commission.

The rules and regulations of the Civil Service Commission give equal opportunity to women by specifically stating that women are eligible for any examinations held under it. Thus women may qualify for the highest positions open through examinations. Whether appointment to these follows, is a matter of departmental discretion and of vacancy. It is not amiss to record at this juncture that "departmental discretion" has received a liberal course of education in public opinion in recent years, and is becoming more and more sensitive to the representations of women's organisations.

The formation of the Federal Government of the U. S. A. is not unlike that of the Commonwealth of Australia. Its nucleus is found in ten executive departments headed by a cabinet officer known as the secretary of the department (in Australia the Minister of a portfolio). Take for instance the Department of Commerce. This department is composed of a number of services or bureaux, such as the Steamship Inspection Service, Aviation Bureau, Foreign and Domestic Commerce, Census, Patents and Trade Marks, Standards, etc. Within the branches of this department women hold many important positions under Civil Service appointments.

Bureau of Standards.—A service charged with the function of technical research in establishing various industrial standards, 14 women physicists, 2 chemists, and 1 technologist contribute their share in the activities of this bureau which include highly delicate work upon electrical measuring instruments; tests of typewriter inks and ribbons; radium analyses; studies of radio signals; improving the qualities of lubricating oil; accuracy in weights and measures, etc.

Bureau of Fisheries.—Women biologists calculate the age of fish through studies of fish scales which result in beneficial regulations being enacted to maintain proper fishing seasons. A woman in Vermont State cares for the fish eggs and young fish in one of the government hatcheries. Another woman is engaged in the chemical analyses of waters in which fish live, to determine the different salts and oxygen content.

Patent and Trade-Marks Office.—Fifteen women ranging from Junior Patent Examiner to Associate Patent Examiner are to be found on the staff of the Patent Office, acting as technically trained experts in the fields of invention. Investigations range from farm machinery, furniture, glassmaking, bookmaking, to buckles and buttons!

Lighthouse Service and Steamboat Inspection Service.—Four women lighthouse keepers are on the rolls of the Department, all of whom have shown splendid courage in a hazardous work.

Bureau of Foreign and Domestic Commerce.—A trade promotion with 51 offices abroad in 40 different lands has representative women both in its foreign offices and its Washington headquarters. The highest ranking woman in the entire foreign service of the United States Government is a woman holding the rank of Trade Commissioner at Shanghai, China. A woman Assistant Trade Commissioner is attached to the Rome (Italy) office of this organization, with another woman trade commissioner recently appointed to Oslo (Norway). Over 100

women clerks and translators are in the foreign service of this bureau. At Washington women hold important positions in the commodity divisions. Women experts on tea, coffee, tobacco, dairy products, domestic, spices and fruits are filling strategic positions, as well as being expert statisticians.

The Librarian for the entire Department of Commerce is a woman who has rendered highly efficient service and built up a library acknowledged as authoritative in the realm of commercial matters. The Department's geographer is a woman—the first to hold academic degree in this profession, and one who was the first to be invited to sit upon the National Geographic Board.

In other departments of the government women have been appointed to outstanding positions purely on a basis of expert qualification. For example: Mary Anderson, Chief of the Women's Bureau of the U. S. Department of Labor, and Grace Abbott, Chief of the Children's Bureau of the U. S. Department of Labor, are holding executive positions of paramount significance to women. The former, a Swedish immigrant at the age of 17 unable to speak English, has risen to this high office by sheer ability. Two women have held the position of Assistant Attorney General of the U. S. Department of Justice. A woman commissioner sits upon the board controlling the Civil Service Commission—the organization responsible for conducting thousands of examinations for entrance into the public service. In the Customs service four women are holding the posts of Collectors of Customs at important stations. A former customs appraiser has recently been appointed Judge of the U. S. Court of Customs Appeals, being the first woman to hold such an appointment a life tenure. One of the members of the governing body of the federal Capital, is the woman who held the first federal judgeship in America—a woman who came to America as an Irish immigrant at the age of 16.

At the Pan-Pacific Research Institution

(From the Honolulu Advertiser)

Some forty scientists gathered at dinner last night at the Pan-Pacific Research Institution to reorganize the work of the Friday night science suppers which have been a feature of the Institution for the past five years.

Hereafter every other Friday meeting will be in charge of the Pan-Pacific Science Council, which has in charge the work of the Second Pan-Pacific Food Conservation Conference in 1931 and the direction of the work of the Institution. There will hereafter be no permanent chairman of the Friday night meetings, the chairmanship will rotate among the scientists.

On alternate Fridays popular science discussions will take place and leading educators will be invited to meet with the scientists. The Friday night popular illustrated science lectures will continue and the public is invited to these.

Last night Dr. Frederic Krauss outlined the work of the Crop Development Section of the coming Food Conservation Conference, and H. A. Wadsworth told of the plans for the Reclamation Section. O. H. Swezey then told of the mosquito that eats mosquitos and how he was aided in his tests by Mr. Wm. Weinrich of the Senior Scientists and Ahu Au of the Juniors. They provided mosquitos and larvae for the food of the new mosquito that will end mosquitos in Hawaii, it is hoped.

Kilmer O. Moe, who is taking to Fiji seven reels of pictures of Hawaii made in

the Junior Scientists laboratory, showed one of those and spoke of his proposed educational work among the Fijians this summer.

The Junior Scientists decided to change their weekly dinner meet to Thursday evenings and at an after meeting completed plans for transporting to Waialeale sufficient okra plants to try out an acre at the Boys' Industrial School. They believe that they have okra plants under cultivation that will bear eleven months a year against three months on the mainland and that okra canning may become an industry of Hawaii.

Letters were read from leading scientists and scientific institutions about the ocean, offering cooperation in the plan to make of Hawaii a vast Pan-Pacific Botanic Garden. Seeds of food plants are constantly arriving for the Junior Scientists to set out under the supervision of the elder scientists.

Announcement was made of proposed visits of distinguished scientists, men and women, so soon as quarters can be prepared for them in the buildings on the grounds of the Institution. They will work with the Junior and Senior scientists in carrying out the plans of the Institution, which now holds forth a promise of becoming the Woods Hall of the Pacific.

At the meeting next Friday it is expected that J. F. Childs will show motion pictures of his visit to the South Seas. The public is invited.

A Pan-Pacific Club in Harbin, Manchuria

For some time Mr. Gorovachiev has been in correspondence with the Pan-Pacific Union in regard to the establishment of a Pan-Pacific Luncheon Club at Harbin, the metropolis of Manchuria.

Recently Mr. Gorovachiev was a guest of the Pan-Pacific Club of Tokyo, and while there launched his project.

Viscount Inouye introduced Mr. M. P. Gorovachiev, Professor and President of the Institute of Oriental and Commercial Sciences, and member of the Pan-Pacific Union of Harbin, saying that President Gorovachiev is intending to start the Pan-Pacific Club of all Manchuria in Harbin.

Mr. M. P. Gorovachiev, in reply said: "Some weeks ago I received a letter from Mr. Alexander Hume Ford advising me to take steps for the establishment of the Pan-Pacific Club of all Manchuria in Harbin. Being an old worker of the Pan-Pacific Union I could not decline this proposition and have endeavored to do my best in this direction, but the situation in Manchuria is complicated, and I was obliged to confer with my colleagues, who are numerous, with the result that it was decided I must receive advice from the workers of the Pan-Pacific Club of Tokyo in regard to the principles and working in the general sense.

"I must state that in Manchuria there are many Chinese, Russians and other foreigners who are interested in the work of the Pan-Pacific Union, and as president of the Institute of Oriental and Commercial Sciences I may say that many Russian people who are obliged to live in Manchuria are greatly interested in Pan-Pacific problems. So the intellectual forces are in sufficient quantity in Manchuria to be able to work in this direction. I cannot tell yet what the direction of this work will be, but I think all who are interested in Pan-Pacific affairs will do their best. It is said that bad examples are contagious, and so also are good ones, and as our intentions are good we can hope for good results. I think that the advice and the principles elaborated in the Pan-Pacific Club of Tokyo will be a good example for us, and that circumstances will permit us to copy them."

Viscount Inouye closed the meeting, saying:

"It is unexpected but happy news for us to hear from the speech of Mr. Gorovachiev, and we will certainly do all in our power to help the formation of the club in Harbin. I hope Mr. Gorovachiev will have every success."

The American and Australasian Colleges of Surgeons

Members of the American and Australasian Colleges of Surgeons will be in attendance at the Pan-Pacific Surgical Conference in August, 14 to 24. Eight men from Australia and one from New Zealand will represent the Australasian College of Surgeons, and the British Medical Association will be represented by three men from New Zealand. More Australasian surgeons would attend if it were not for the meeting in Sydney on September 7th of the Australasian Medical Congress.

The American College of Surgeons will have a number of representatives at

the meeting, including two from Canada, and one each from Salvador, Chile, and Australia. The official representative of the College will be Dr. C. Jeff Miller, one of its founders and a member of the Board of Regents. Dr. Miller is Professor of Gynecology and head of the Department of Gynecology, Tulane University School of Medicine, New Orleans. He is also president of the American Gynecological Society.

The Japanese Surgical Society will send two delegates and the National Medical Association of China will be represented.

Women in Government in Antipodes

By MRS. C. A. FRAER

Chairman, New Zealand Delegation, Pan-Pacific Women's Conference, August, 1928.

New Zealand has not yet any women in Parliament. Women have contested seats at the two last elections, but were not successful. This is election year, and it is hoped that some women candidates will this time be more fortunate. Miss Ellen Melville is contesting a seat in Auckland, and other candidates are mentioned for Southern electorates.

It is often asked "Why is it that women in New Zealand have not made more use of their franchise?" It is to be remembered that New Zealand is still a young country. Most of her women have been engaged in building up homes. The number of women in the Dominion hardly yet equals that of men. They have not yet had the freedom and leisure of their sisters in older countries to devote themselves to public affairs. Nevertheless, women are very well represented on bodies for local government. For instance, Auckland, our great northern city, has two women on the City Council, Miss Ellen Melville and Miss Alice Basten. Mrs. Turner and Miss Jackson preside over the Children's Court in that city, without the aid of a man magistrate.

Wellington, the capital city of the Dominion, has Mrs. Fraser on the City Council and Mrs. McVicker on the Hospital Board. A woman sits with the Magistrate here also in the Children's Court.

Napier has the services of Mrs. Lusk on its Hospital Board; Nelson also has a woman, Mrs. Watson, on its Hospital

Board. Christchurch boasts of two women members of its City Council, Mrs. McCombs, who headed the poll at the last election, and Mrs. Herbert, who also took a high place in a strongly contested election. These two women, also, together with Mrs. Green, have seats on the Hospital Board of their city; and Mrs. Herbert is Chairman of the Benevolent Committee. Mrs. McCombs is a member of the Tramway Board. Mrs. Herbert sits with the magistrate in the Children's Court. In Timaril Mrs. Raymond has a seat on the Hospital Board. In Dunedin also women take their share in the local government of their city. Miss Runciman, Mrs. Gordon and Mrs. Marshall Macdonald have been for some time on the Hospital Board. Mrs. George Roberts sits with the magistrate in the Children's Court.

There are some women County Clerks. Miss Coltart is Clerk of the Malvern County, Miss Bell was for some time Clerk of the Anama Road Board. There are many other positions filled by women on local bodies.

The names given above will indicate how readily and widely women are accepting their responsibilities. In Government Departments women take their place. Dr. Ada Paterson is Director of School Hygiene. There is a woman, Miss Hetherington, in the Secondary Schools Inspectorate. There are also now many women Justices of the Peace.

At the Pan-Pacific Club of Tokyo

Luncheon Meeting held on March 8, 1929.

Viscount Inouye (Presiding)

Dr. Baty was good enough to bring here his friend, Dr. Arthur Kuhn, former president of the American Institute of International Law, and now president of the board of directors of the Institute. He is a famous student of international law, and is now on a world tour.

Dr. Arthur Kuhn

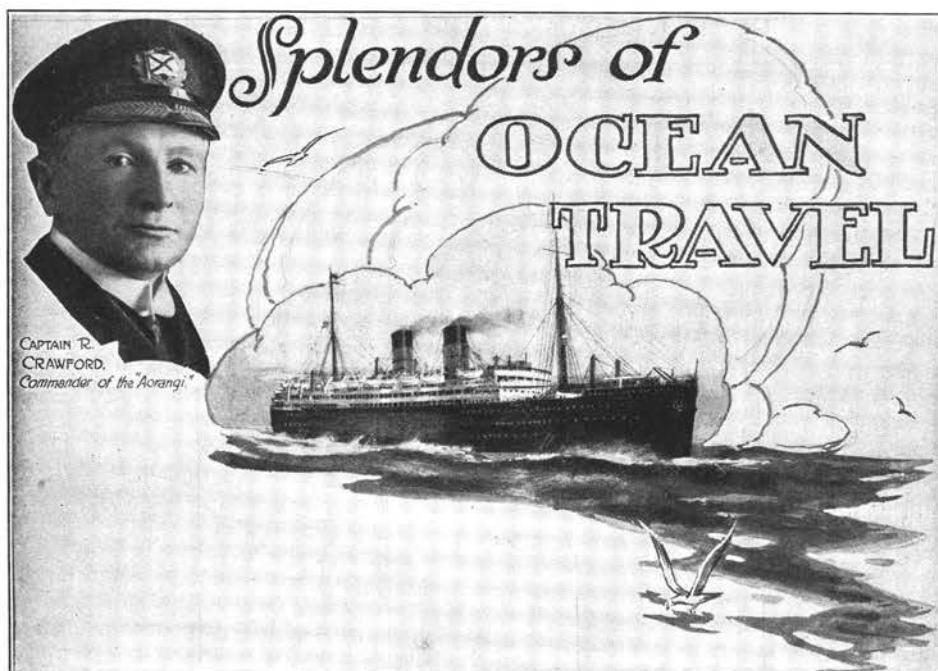
I certainly had little idea when I left the ship at Yokohama this morning to pay a visit to my dear friend Dr. Baty after fifteen years of separation that I would be lunching with you here. But I welcomed his suggestion, when he said he was coming to this luncheon, as it has given me an opportunity of meeting so many of our friends from Japan and of renewing acquaintances with Americans from across the seas.

The purpose and object of your Club is a purpose and object dear to my heart, and I am glad that I am able to spend a short time today in Tokyo in your midst with a humble heart, hoping to encourage you and be encouraged by you in your noble purpose of promoting peace between the countries bordering upon the Pacific Ocean. I wish to give you an assurance that after my short visit to Japan I will not attempt to speak authoritatively as so many passing tourists frequently do of things Japanese. I am simply an eager and earnest student. I am here to learn and to gain impressions. But I have already gained this impression from our visit, beginning at Beppu and then continued at Kobe and Kyoto and Nara, that there is, deep down in the spirit of the Japanese people, a desire to continue to remain on friendly terms with the family of nations and particularly with those who are their nearest neighbours, a spirit of warm-hearted hospitality, a desire to learn where there is something worth while to learn, and to teach when they feel they have something worth

while to teach. To learn and to teach—those are the two watchwords which can be a slogan for all of us, of whatever nationality, of whatever walk in life, or of whatever purpose, object or aim—to learn and to teach. And with that as a basis, and with a real desire to know foreign peoples, always a little bit better, coming more and more into close contact with them, learning what they have to teach and teaching what they wish to learn, the purpose that is your purpose will surely end in victory.

Life is after all for all of us, by reason of destiny, short enough as it is. Is it not a supreme waste of time to magnify the things that separate us? Is it not a supreme loss of opportunity not to promote the things that will tend to unite us? These are the purposes and objects which I understand your group here have, and I come here wishing Goodspeed. There is nothing I know that our little party on the "Empress of Australia" wish so much as to have made a slight contribution to better knowledge of what to most of us is a new country. We have many friends in Japan. We hope to renew those friendships, and by learning and teaching and by warmer contacts and better understanding, we, whatever our walk in life may be, may all of us make a humble though a worthy contribution towards the peace of nations and more particularly of the nations bordering the great Pacific Ocean.

I thank you for your cordiality to me in accepting me as a stranger, in your midst, dressed as I am in tourist attire, and I hope I may be able to greet you, all of you, some day in the United States of America, where you will find the same desire to learn and to teach and to maintain prosperous friendly relations as I have encountered here in Japan.



M.S. "Aorangi," Queen of the Pacific.

From Vancouver via Honolulu, Suva, Auckland to Sydney

The Canadian-Australasian Royal Mail line of steamers maintains a regular four-weekly service by palatial steamers between the Canadian-Pacific Railway terminus at Vancouver, B. C., and Sydney, Australia, via Honolulu, Suva, Fiji, and Auckland, New Zealand.

In itself this is a South Sea cruise de luxe, but at Suva one may rest a bit, cruise by local steamer among the Fijian Islands, then take a Union Steam Ship Co. of New Zealand palatial flyer for a visit to Samoa, Tonga, and New Zealand, or if the trip by the Canadian-Australasian vessel is continued to Auckland, here again by the Union Steam Ship Co. vessels are cruised to every part of New Zealand, to the Cook Islands, or to Tahiti. In fact, one may return by these steamers to San Francisco via Papeete, Tahiti, with a stop-over at the famous French possession.

If the trip from Vancouver is continued to its terminus, Sydney, here again one may secure bookings on the ADVT.

Union Steam Ship Co. boats for other cruises.

The Niagara of the Canadian-Australasian Royal Mail Line is one of the finest vessels afloat on the Pacific. The M.S. "Aorangi," the largest motorship in the world, makes the trip from Vancouver to Sydney in about three weeks.

Either from Australia or Canada there are tempting visits across the Pacific via the South Sea Islands. From Australia this is the richest and most comfortable route to London and the European Continent.

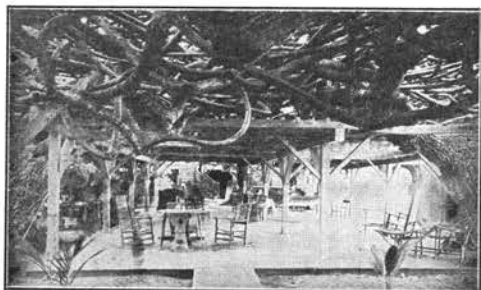
Both the Canadian-Australasian Royal Mail Line and the Union Steam Ship Co. of New Zealand have offices in the chief cities of the Pacific. In Honolulu, Theo. H. Davies & Co., Ltd., are the agents. The steamers of these lines are famous for their red smokestacks. In fact, this affiliated company is known as the Red Funnel Line. The red funnel is familiar in every port of Australia and the South Seas, to say nothing of California and Pacific Canada.

About the Big Island



The Moana Hotel at Waikiki

The Territorial Hotel Company, Ltd., maintains the splendid tourist hotel at Waikiki Beach, the Moana, facing the surf, as well as the Seaside family hotel nearby, and the palatial Royal Hawaiian Hotel, with its golf links at Waialae.



Famous Hau Tree Lanai

The Halekulani Hotel and Bungalows, 2199 Kalia Road, "on the Beach at Waikiki." Include Jack London's Bungalows and House Without a Key. Rates from \$5.00 per day to \$115.00 per month and up. American plan. Clifford Kimball.

Vida Villa Hotel and cottages are on the King street car line above Thomas Square. This is the ideal location for those who go to the city in the morning and to the beach or golfing in the afternoon. The grounds are spacious and the rates reasonable. This hotel has been under the same management for a
ADVT.

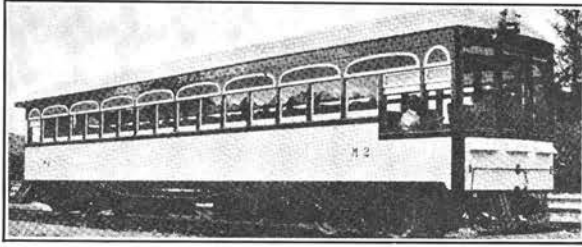
score of years, which speaks for itself. Both transient tourists and permanent guests are welcomed.

At Child's Blaisdell Hotel and Restaurant, at Fort Street and Chaplain Lane, Child's Hotels and Apartment Service accommodations are masters at getting you settled in real home-like style. If you wish to live in town there is the Child's Blaisdell Hotel in the very heart of the city, with the palm garden restaurant where everything is served from a sandwich to an elegant six-course dinner. If we haven't the accommodation you desire we will help you to get located.

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 out-going steamers. This company receives and puts in storage, until needed, excess baggage of visitors to Honolulu and finds many ways to serve its patrons.

Honolulu is so healthy that people don't usually die there, but when they do they phone in advance to Henry H. Williams, 1374 Nuuanu St., phone number 1408, and he arranges the after details. If you are a tourist and wish to be interred in your own plot on the mainland, Williams will embalm you; or he will arrange all details for interment in Honolulu. Don't leave the Paradise of the Pacific for any other, but if you must, let your friends talk it over with Williams.

OAHU RAILWAY AND LAND COMPANY



Leaving Honolulu daily at 9:15 A. M. our modern gasoline motor cars take you on a beautiful trip around the leeward side of Oahu to Haleiwa.

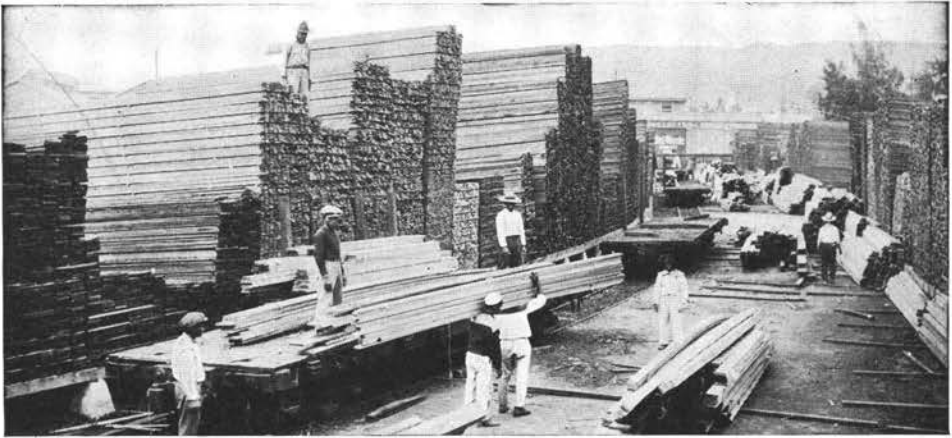
The train leaves Haleiwa, returning to Honolulu at 2:52 P. M., after having

given you three hours for luncheon and sightseeing at this most beautiful spot.

You arrive at Honolulu at 5:27 P. M.

No single trip could offer more, and the round trip fare is only \$2.45.

SEE OAHU BY RAIL



Lewers and Cooke, Ltd., Iwilei Yard

Lewers & Cooke, Limited, have, since 1852, been headquarters for all varieties of building material, lumber, hollow tile, cement, brick, hardwoods, oak flooring; as well as tools of the leading manufacturers, wall papers, Armstrong linoleums, domestic and oriental rugs, and the superior paints made by W. P. Fuller & Co.

ADVT.

They are also agents for many building specialties, Celotex, Colormix, Bishopric Stucco, corrugated Zinc, Los Angeles Pressed Brick Company products and architectural Terra Cotta, David Lupton Sons Company, Steel Windows, the Kawneer Company line, and prepared roofings and roofing tile.



THE WORLD'S MOST DELICIOUS PINEAPPLE

Canned Hawaiian Pineapple is considered by epicures to possess the finest flavor in the world. Because of exceedingly favorable conditions in soil and climate, and remarkable facilities for canning immediately the sun-ripened fruit, the Hawaiian product has attained a superiority enjoyed by no other canned fruit.

Crushed Hawaiian Pineapple is meeting favor because of its convenience in

cooking. It is identical with the sliced in quality and is canned by the same careful sanitary methods.

Many tasty recipes for serving Hawaiian Pineapple in delicious desserts, salads and refreshing drinks are suggested in a recipe book obtainable without cost at the Association of Hawaiian Pineapple Canners, P.O. Box 3166, Honolulu. Readers are urged to write, asking for this free book.



FERTILIZING THE SOIL

Millions of dollars are spent in Hawaii fertilizing the cane and pineapple fields.

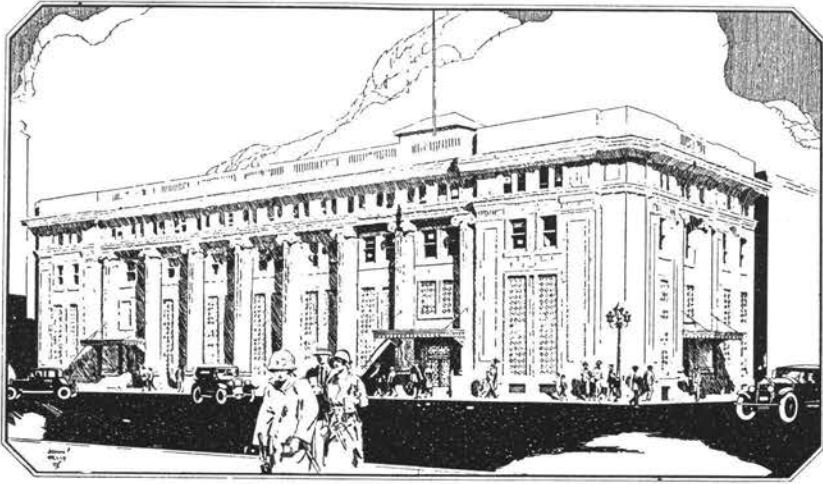
The **Pacific Guano and Fertilizer Company**, with large works and warehouses in Honolulu, imports from every part of the Globe the many ship loads of ammonia, nitrates, potash, sulphur and guano that go to make the special fertilizers needed for the varied soils and conditions of the islands. Its chemists test the soils and then give the recipe for the particular blend of fertilizer that is needed.

This great industry is one of the results of successful sugar planting in Hawaii, and without fertilizing, sugar growing in the Hawaiian Islands could not be successful.

This company began operations in Midway Islands years ago, finally exhausting its guano beds, but securing others.



MODERN BANKING IN HONOLULU



NEW HOME BANK OF BISHOP & CO., LTD.

The **S. M. Damon Building** pictured above is occupied by the Bank of Bishop & Co., the oldest bank in the Territory. Organized in 1858, the name Bishop & Co. has long been known by travelers for its service and welcome.

Bishop Street, Honolulu, T. H.

The **First National Bank** of Hawaii demonstrates the many ways in which a bank can serve. It has recently moved into its own building, one of the architectural splendors of Honolulu, on Bishop and Fort Streets, where both the First National Bank of Hawaii and the First American Savings and Trust Company of Hawaii, Ltd., closely affiliated with the First National Bank and functioning as a savings bank, are continuing their growing business in a home built to meet their exact requirements.

It was less than four months after Hawaii became a territory of the United States that the First National Bank of Hawaii opened its doors. During the war the First National Bank played a prominent part in furthering the inter-

ests of the government in the various Liberty Loan drives and thrift campaigns in which its President, Mr. L. Tenney Peck, served as chairman of the Territorial Central Committee.

The **Bank of Hawaii, Limited**, incorporated in 1897, has reflected the solid, substantial growth of the islands since the period of annexation to the United States. Over this period its resources have grown to be the largest of any financial institution in the islands. In 1899 a savings department was added to its other banking facilities. Its home business office is at the corner of Bishop and King streets, and it maintains branches on the islands of Hawaii, Kauai, and Oahu, enabling it to give to the public an extremely efficient Banking Service.

ADVT.



The Home Building in Honolulu of the American Factors, Ltd., Plantation Agents and Wholesale Merchants.



Tasseled sugar cane almost ready for the cutting and crushing at the mills.
ADVT.

ALEXANDER & BALDWIN



A cane field in Hawaii years ago when the ox team was in use.

The firm of **Alexander & Baldwin, Ltd.**, (known by everyone as "A. & B.") is looked upon as one of the most progressive American corporations in Hawaii.

Alexander & Baldwin, Ltd., are agents for the largest sugar plantations of the Hawaiian Islands and second largest in the world, namely, the Hawaiian Commercial & Sugar Company at Puunene, Maui. They are also agents for many other plantations and concerns of the Islands, among which are the Maui Agricultural Company, Ltd., Hawaiian Sugar Company, McBryde Sugar Company, Ltd., Kahului Railway Company, Kauai Railway Company, Ltd., Baldwin Packers, Ltd., Kauai Fruit & Land Company, Ltd., Haleakala Ranch Co., and Ulupalakua Ranch, Ltd.

In addition to their extensive sugar plantations, they are also agents for the following well-known and strong insurance companies: American Alliance Insurance Association, Ltd., Commonwealth Insurance Company, Home Insurance Company of New York, Newark Fire Insurance Company, Springfield Fire and Marine Insurance Company,

ADVT.

Union Insurance Society of Canton, Ltd., New Zealand Insurance Co., Ltd., Switzerland Marine Insurance Co.

The officers of this large and progressive firm, all of whom are staunch supporters of the Pan-Pacific and other movements which are for the good of Hawaii, are as follows:

W. M. Alexander, President; J. Waterhouse, Vice-President; H. A. Baldwin, Vice-President; C. R. Hemenway, Vice-President; J. P. Cooke, Treasurer; R. T. Rolph, Assistant-Treasurer; R. G. Bell, Assistant-Treasurer; R. E. Mist, Secretary; D. L. Oleson, Assistant-Secretary; G. G. Kinney, Auditor. Directors: W. M. Alexander, J. Waterhouse, H. A. Baldwin, C. R. Hemenway, W. O. Smith, C. R. Hemenway, F. F. Baldwin, J. R. Galt, H. K. Castle, E. R. Adams, R. T. Rolph, S. S. Peck, J. P. Winne, J. P. Cooke.

Besides the home office in the Stangenwald Building, Honolulu, Alexander & Baldwin, Ltd., maintain offices in Seattle, in the Melhorn Building and in the Matson Building, San Francisco.

CASTLE & COOKE

The Matson Navigation Company, maintaining the premier ferry service between Honolulu and San Francisco, have their Hawaiian agencies with Castle & Cooke, Ltd., and here may be secured much varied information. Here also the tourist may secure in the folder racks, booklets and pamphlets descriptive of almost every part of the great ocean.

Castle & Cooke, Ltd., is one of the oldest and most reliable firms in Honolulu. It was founded in the early pioneer days and has been a part of the history

of the Hawaiian Islands. It acts as agent for some of the most productive plantations in the whole territory and has been marked by its progressive methods and all work connected with sugar production in Hawaii. It occupies a spacious building at the corner of Merchant and Bishop Streets, Honolulu. The ground floor is used as local passenger and freight offices of the Matson Navigation Company. The adjoining offices are used by the firm of their business as sugar factors and insurance agents; Phone 1251.

C. BREWER & COMPANY



C. Brewer & Company, Limited, Honolulu, with a capital stock of \$8,000,000, was established in 1826. It represents the following Sugar Plantations: Olowalu Company, 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, Kapapala Ranch, and all kinds of insurance.

ADVT.



The Honolulu Construction & Draying Co., Ltd., Bishop and Halekauwila Sts., Phone 4981, dealers in crushed stone, cement, cement pipe, brick, stone tile, and explosives, have the largest and best equipped draying and storage company in the Islands, and are prepared to handle anything from the smallest package to pieces weighing up to forty tons.

The Waterhouse Co., Ltd., in the Alexander Young Building, on Bishop street, make office equipment their specialty, being the sole distributor for the National Cash Register Co., the Burroughs Adding Machine, the Art Metal Construction Co., the York Safe and Lock Company and the Underwood Typewriter Co. They carry in stock all kinds of steel desks and other equipment for the office, so that one might at a day's notice furnish his office safe against fire and all kinds of insects.

Allen & Robinson have for generations supplied the Hawaiian Islands with lumber and other building materials that are used for building in Hawaii; also paints. Their office and retail department are in their new quarters at the corner of Fort and Merchant Sts., Honolulu, where they have been since June 1, 1925. The lumber yards are located at Ala Moana and Ward Sts., where every kind of hard and soft wood grown on the Pacific Coast is landed by steamships that ply from Puget Sound, and other Pacific and East Coast ports.

ADVT.

Thayer Piano Co., Ltd., at 116 S Hotel St., is Honolulu's grand piano headquarters. In this new and spacious store may be tested the Steinway and other makes of grands as well as uprights and player pianos. Here one may obtain Brunswick and Victor phonographs and records from Brunswick, Victor and Columbia. They also handle a complete line of sheet music and band instruments. You will feel at home while doing your musical shopping at Thayer's.

Bergstrom Music Company, the leading music store in Hawaii, is located at 1140 Fort Street. No home is complete in Honolulu without an ukulele, a piano and a Victor talking machine. The Bergstrom Music Company, with its big store on Fort Street, will provide you with these; a WEBER or a Steck piano for your mansion, or a tiny upright Boudoir for your cottage; and if you are a transient it will rent you a piano. The Bergstrom Music Company, Phone 2294.

Honolulu as Advertised



The Liberty House, Hawaii's pioneer dry goods store, established in 1850; it has grown apace with the times until today it is an institution of service rivaling the most progressive mainland establishments in the matter of its merchandising policies and business efficiency.

The Mellen Associates, Successors to The Charles R. Frazier Company, oldest and most important advertising agency in the Pacific field, provide Honolulu and the entire Territory of Hawaii with an advertising and publicity service of a very high order. The organization, under the personal direction of George Mellen, maintains a staff of writers and artists of experience and exceptional ability, and departments for handling all routine work connected with placing of advertising locally, nationally or internationally. The organization is distinguished especially for originality in the creation and presentation of merchandising ideas.

The Honolulu Star-Bulletin, 125 Merchant Street, prints in its job department the Mid-Pacific Magazine, and that speaks for itself. The Honolulu Star-Bulletin, Ltd., conducts a complete commercial printing plant, where all the details of printing manufacture are performed. It issues Hawaii's leading evening newspaper and publishes many elaborate editions of books.

ADVT.

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.

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.

On Hawaii and Maui

Twice a week the Inter-Island Steam Navigation Company dispatches its palatial steamer, the "Haleakala" to Hilo, leaving Honolulu at 4 P.M. on Tuesdays and Fridays, arriving at Hilo at 8 A.M. the next morning. This vessel leaves Hilo every Thursday and Sunday afternoon at four for Honolulu, a fifteen-hour run. From Honolulu, the Inter-Island Company dispatches almost daily excellent passenger vessels to the island of Maui and three times a week to the island of Kauai. There is no finer cruise in all the world than a visit to all of the Hawaiian Islands on the steamers of the Inter-Island Steam Navigation Company. The head offices in Honolulu are on Queen Street, where every information is available, or books on the different islands are sent on request. Tours of all the islands are arranged.

Connected with the Inter-Island Steam Navigation Company is the palatial Volcano House overlooking the everlasting house of fire, as the crater of Halemau-mau is justly named. A night's ride from Honolulu and an hour by automobile, and you are at the Volcano House, the only truly historic caravansary of the Hawaiian Islands, recently reconstructed and turned into a modern up-to-date hotel of luxury for the tourist and those from Honolulu and Hilo spending vacations at the Volcano.

Should you wish to continue at leisure your sightseeing or business trip around the Island of Hawaii, there are hotels every few miles.

Building on the Island of Hawaii.—The Hawaiian Contracting Company maintains working offices at the great Hilo pier, where all steamers discharge their freight for Hilo and the big island. This concern, with branches throughout the Territory, has for its aim building for permanency. It contracts for buildings and highway construction, having a corps of construction experts at its command. In Hilo, Frank H. West is in charge of the company's affairs.

ADVT.

The First Trust Company of Hilo occupies the modern up-to-date building adjoining the Bank of Hawaii on Keawe Street. This is Hilo's financial institution. It acts as trustees, executors, auditors, realty dealers, guardians, accountants, administrators, insurance agents, and as your stock and bond brokers. You will need the services of the First Trust Company in Hilo whether you are a visitor, or whether you are to erect a home or a business block.

Hawaii Consolidated Railway, Ltd., Hilo, Hawaii, the Scenic Railway of Hawaii, one of the most spectacular trips in the world, thirty-four miles, costing nearly \$4,000,000; it crosses 10 sugar plantations, 150 streams, 44 bridges, 14 of which are steel from 98 to 230 feet high and from 400 to 1,006 feet long, and many precipitous gorges lined with tropical trees, and with waterfalls galore; sugar cane fields, villages, hundreds of breadfruit and coconut trees and palms along the way, and miles of precipices. W. H. Hussman, general freight and passenger agent.

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 Paia Store, which is conducted by the Maui Agricultural Co., Ltd., is managed by Fred P. Rosecrans. This is one of the very big plantation department stores in Hawaii. Every conceivable need of the housekeeper or homemaker is kept in stock. The store covers an area of more than a city block in a metropolitan city, and is the department store adapted to the needs of modern sugar plantation life.

Business in Honolulu

The Hawaiian Trust Company, Limited, of Honolulu, is the oldest and largest trust company in the Territory of Hawaii. How successful it has become may be gathered from the fact that it has real and personal property under its control and management with a conservative, approximate value of \$50,000,000. The resources of this organization as of Dec. 31, 1927, amounted to \$3,718,923.49, with a capital stock of \$1,250,000.00; surplus, \$1,000,000.00; special reserve, \$50,000, and undivided profits, \$81,408.95, making the total surplus of resources over liabilities \$2,381,408.95. The full significance of these figures will appear when it is remembered that the laws of Hawaii provide that a Trust Company may not transact a banking business. Mr. E. D. Tenney is president and chairman of the board and Mr. J. R. Galt is senior vice-president and manager.

The International Trust Company, with offices on Merchant street, is, as its name indicates, a really Pan-Pacific financial organization, with leading American and Oriental business men conducting its affairs. Its capital stock is \$200,000 with resources of over \$500,000. It is the general agent for the John Hancock Mutual Life Insurance Company of Boston, and other insurance companies.

The Henry Waterhouse Trust Co., Ltd., was established in 1897 by Henry Waterhouse, son of a pioneer, incorporated under the present name in 1902, Mr. Robert Shingle becoming president, and Mr. A. N. Campbell treasurer of the corporation. The company now has a paid-up capital of \$200,000 and a surplus of an almost equal amount. The spacious quarters occupied by the Henry Waterhouse Trust Co., Ltd., are on the corner of Fort and Merchant streets.

The Bishop Trust Company, Limited, is one of the oldest and largest Trust Companies in Hawaii. It now shares with the Bishop Bank its new home on Bishop, King and Merchant Sts., known as the S. M. Damon Building, jointly

owned and occupied by the Bishop Trust Company, Ltd., and the Bank of Bishop & Co., Ltd. One of the many attractive features of its new quarters is the Safe Deposit Vaults which are the largest, strongest and most convenient in the Territory.

The Pacific Engineering Company, Ltd., construction engineers and general contractors, is splendidly equipped to handle all types of building construction, and execute building projects in minimum time and to the utmost satisfaction of the owner. The main offices are in the Yokohama Specie Bank Building, with its mill and factory at South Street. Many of the leading business buildings in Honolulu have been constructed under the direction of the Pacific Engineering Company.

Wright, Harvey & Wright, engineers in the Damon Building, have a branch office and blue print shop at 855 Kaahumanu Street. This firm does a general surveying and engineering business, and has information pertaining to practically all lands in the group, as this firm has done an immense amount of work throughout the islands. The blue print department turns out more than fifty per cent of the blueprinting done in Honolulu.

The von Hamm-Young Co., Ltd., Importers, Machinery Merchants, and leading automobile dealers, have their offices and store in the Alexander Young Building, at the corner of King and Bishop streets, and their magnificent automobile salesroom and garage just in the rear, facing on Alakea Street. Here one may find almost anything. Phone No. 6141.

The Chrysler Four and Six Cylinder Cars, the culmination of all past experiences in building automobiles, is represented in Hawaii by the Honolulu Motors, Ltd., 850 S. Beretania street. The prices of Four Cylinder Cars range from \$1200 to \$1445 and those of the Six from \$1745 to \$2500. The Chryslers are meeting with remarkable sales records as a distinct departure in motor cars.

The Hawaiian Electric Co., Ltd., with a power station generating capacity of 32,000 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.

Bailey's Groceteria is the big success of recent years in Honolulu business. The parent store at the corner of Queen and Richard Sts., has added both a meat market and a bakery, while the newly constructed branch building at Beretania and Piikoi is equally well equipped and supplied, so that the housekeeper can select all that is needed in the home, or, in fact, phone her order to either house.

The Rycroft Arctic Soda Company, on Sheridan Street, furnishes the high grade soft drinks for Honolulu and Hawaii. It manufactures the highest grade ginger ale—Hawaiian Dry—from the fresh roots of the native ginger. It uses clear water from its own artesian well, makes its carbonated gas from Hawaiian pineapples at the most up-to-date soda works in the Territory of Hawaii.

A monument to the pluck and energy of Mr. C. K. Ai and his associates is the **City Mill Company**, of which he is treasurer and manager. This plant at Queen and Kekaulike streets is one of Honolulu's leading enterprises, doing a flourishing lumber and mill business.

ADVT.

There is one **East Indian Store** in Honolulu, and it has grown to occupy spacious quarters on Fort Street, No. 1150 Fort, Phone No. 2571. This is the headquarters for Oriental and East Indian curios as well as of Philippine embroideries, home-made laces, Manila hats, Oriental silks, pongees, carved ivories and Indian brass ware. An hour may well be spent in this East Indian Bazaar examining the art wares of Oriental beauty.

The Royal Hawaiian Sales Co., with agencies in Honolulu, Hilo and Wailuku, has its spacious headquarters on Hotel and Alakea streets, Honolulu. This Company is Territorial Distributors for Star and Auburn passenger cars. They are Territorial Distributors also for International Motor Trucks, Delco-Remy service and Goodyear Tires.

The Universal Motor Co., Ltd., with spacious new buildings at 444 S. Beretania street, Phone 2397, is agent for the Ford car. All spare parts are kept in stock and statements of cost of repairs and replacements are given in advance so that you know just what the amount will be. The Ford is in a class by itself. The most economical and least expensive motor car in the world.



Wonderful New Zealand

Scenically New Zealand is the world's wonderland. There is no other place in the world that offers such an aggregation of stupendous scenic wonders. The West Coast Sounds of New Zealand are in every way more magnificent and awe-inspiring than are the fjords of Norway.

New Zealand was the first country to perfect the government tourist bureau. She has built hotels and rest houses throughout the Dominion for the benefit of the tourist. New Zealand is splendidly served by the Government Railways, which sell the tourist for a very low rate, a ticket that entitles him to travel on any of the railways for from one to two months. Direct information may be secured by writing to the New Zealand Department of Tourist and Health Resorts, Wellington, New Zealand.



An ancient Maori stockade

SOUTH MANCHURIA RAILWAY COMPANY

South Manchuria Railway Company Cheap Overland Tours

Travellers and Tourists journeying between Tokyo and Peking should travel via the South Manchuria Railway, which runs from Antung to Mukden and passes through magnificent scenery. At Mukden the line connects with the Peking Mukden Line and the Main line of the South Manchuria Railway, running from Dairen to Changchun, where connection is made with the Chinese Eastern Railway for Harbin.

The ordinary daily trains have sleeping accommodation. Steamer connections between Dairen, Tsingtao and Shanghai by the Dairen Kisen Kaisha's excellent passenger and mail steamers. Wireless telegraphy and qualified doctors on board.

Modern Hotels under the South Manchuria Hotel Company's management are established on foreign lines at Mukden, Changchun, Port Arthur, Dairen and Hoshigaura (Star Beach).

Illustrated booklets and all information post free on request from the South Manchuria Railway Company.

DAIREN

Branch Offices: Tokyo, Osaka, Shimonoseki, Shanghai, Peking, Harbin and New York.

Cable Address: "MANTETSU" or "SMRCO." CODES: A.B.C. 5th, 6th Ed., A1., Lieber's, Bentley's and Acme.

ADVT.

The Los Angeles Steamship Company maintains a fortnightly palatial fast steamship service between Honolulu and Los Angeles. Its steamers also visit Hilo, Hawaii, permitting a visit to the Volcano. This is the tourist line par excellence to Hawaii, and through tickets may be booked in any city of the United States. Stopovers in Honolulu by Australasian and Oriental travellers may be made with rebookings from Honolulu to Los Angeles by this line.

The Matson Navigation Company, the pride of Hawaii, maintains regular weekly ocean greyhound service between Honolulu and San Francisco. It has recently inaugurated a Honolulu, Portland, Seattle fast steamer service and is building new palatial greyhounds for its San Francisco, Honolulu, Australasian passenger and freight service.

Benson Smith's pharmacy is located at Honolulu's business corner, Fort and Hotel Streets. Here the prescriptions of the medicos are carefully prepared and here all the latest magazines may be procured. Sodawater and candies may be enjoyed at Benson Smith's, Honolulu's oldest and most reliable drug store.

Jeff's Fashion Company, Incorporated, at Fort and Beretania Streets, is Honolulu's leading establishment for women who set the pace in modern dress. At "Jeff's" the fashions in woman's dress in Honolulu are set. Here the resident and tourist may outfit and be sure of acquiring the latest styles. "Jeff's" has its branch and a work shop in New York City.

Ishii's Gardens, Pan-Pacific Park, on Kuakini Street, near Nuuanu Avenue, constitute one of the finest Japanese tea gardens imaginable. Here some wonderful Japanese dinners are served, and

visitors are welcomed to the gardens at all times. Adjoining these gardens are the wonderful Liliuokalani gardens and the series of waterfalls. Phone 5611.

Burgess & Johnson, Ltd., now occupy their new building at the corner of King and Alakea Streets. Here are displayed the machines for which they are agents, —the New Hupmobile Century Eight, as well as the Marmon, both outstanding cars that are becoming better known and used in Hawaii.

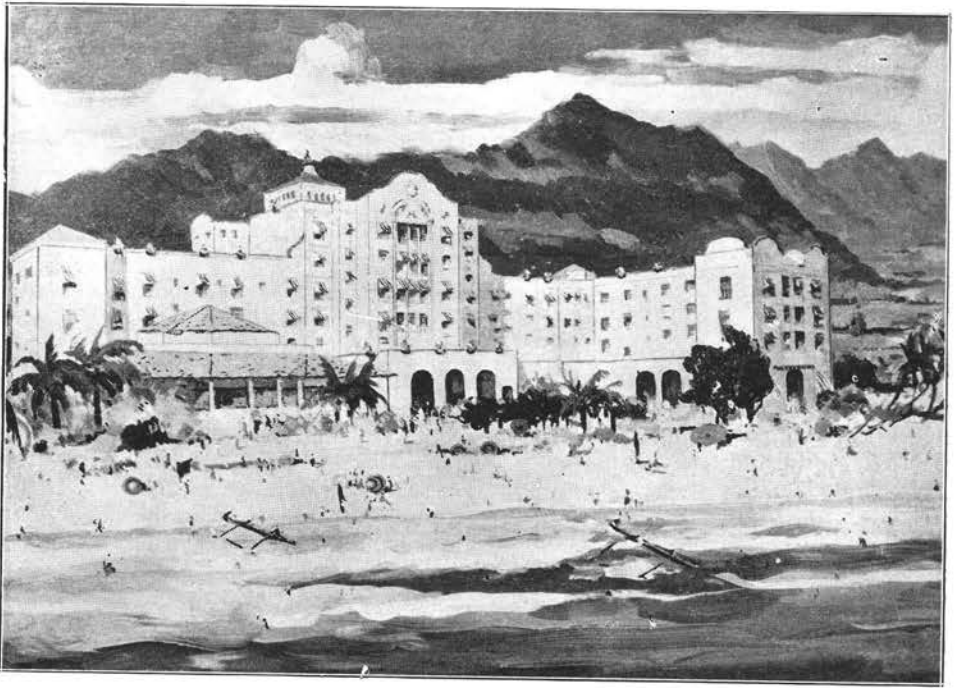
The firm still maintains its repair shop on Beretania Street, but at the new location on King and Alakea the new display rooms located at the very crossroads of Honolulu's human traffic offer a tempting invitation to anyone to enter and examine the latest there is in auto cars.

Honolulu Paper Company, successor to "The Hawaiian News Co.," deals in Books of Hawaii. At Honolulu's largest and most fashionable book store, in the Alexander Young Building, all the latest books may be secured, especially those dealing with Hawaii.

Here the ultra-fashionable stationery of the latest design is always kept in stock together with the Royal and Corona typewriters, Merchant calculators and Sundstrand Adding Machines.

Here, also, music lovers will find a home for a complete line of musical instruments, including the Edison Phonograph and records.

The Office Supply Co., Ltd., on Fort street near King, is as its name denotes, the perfectly equipped store where every kind of office furniture and supplies are on display. This is the home of the Remington typewriter and of typewriter repairing. Offices are completely outfitted at quickest notice. The Company also maintains an up-to-date completely stocked sporting goods department.



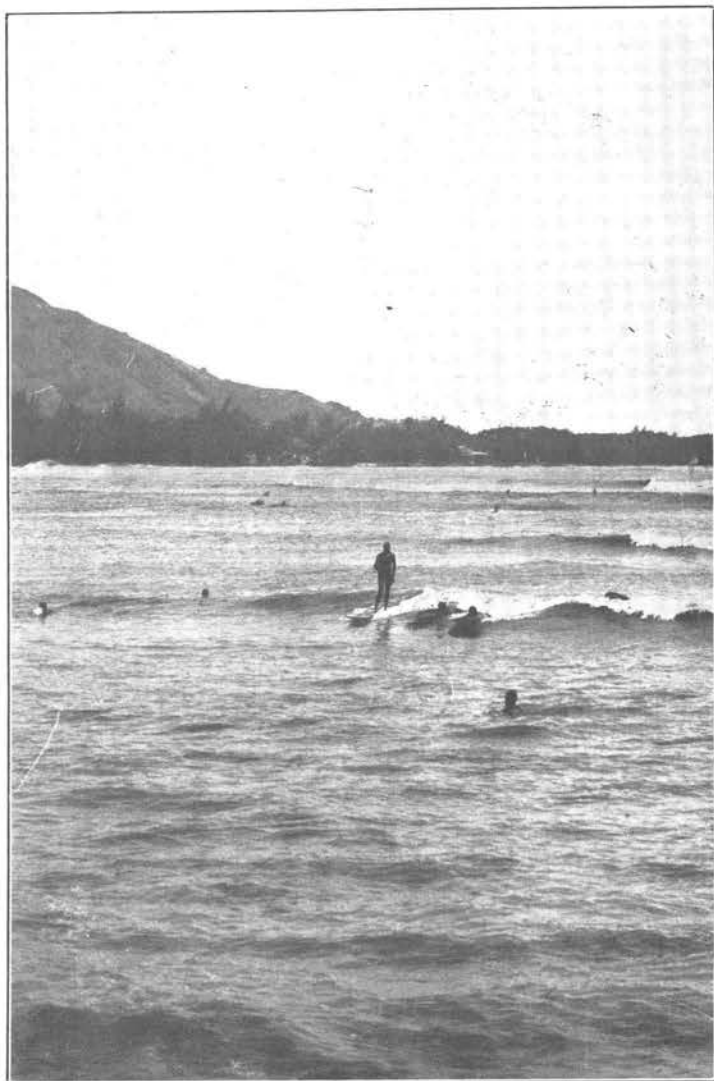
The Royal Hawaiian Hotel at Waikiki Beach will be headquarters for the Pan-Pacific Surgical Congress in July. This palatial hotel and the Moana adjoining it, both facing the ocean, are conducted by the Territorial Hotel Company, Ltd.

Gray's By-the-Sea is the wonderfully located seaside hotel at Waikiki where the very best sea bathing is right at the door; you put on your bathing suit in your own room. The rates are moderate, and in the main building all are outside rooms. There are a number of cottages on the grounds. You should visit Gray's Beach first, American plan, excellent cuisine.

The Pleasanton Hotel, at the corner of Dominis and Punahou Streets, was the home of Jane Addams during the Pan-Pacific Women's Conference. It invites the delegates to all the conferences called by the Pan-Pacific Union to correspond. There are spacious cottages on the grounds, tea rooms and wide grounds. The rates are reasonable, either American or European plan. The Pleasanton is a pleasant home while in Honolulu.

The Sweet Shop is the name of the leading downtown popular priced restaurant, opposite the Young Hotel on Hotel Street and adjoining the Central Y. M. C. A. On the street floor is the main restaurant, soda and candy counter, while downstairs is the cozy "Den," popular as a luncheon meeting place for clubs and small groups that wish to confer in quietude.

The Consolidated Amusement Company brings the latest drama films to Hawaii to provide evening entertainment. Its leading theatres are the New Princess on Fort Street and the palatial Hawaii Theatre nearer the business district. Those and the outlying theatres served by the Consolidated Amusement Company keep the people of Honolulu and its visiting hosts entertained, matinee and evening, phone for seats.



Surfboard riding at Waikiki Beach, Honolulu.