

CHAPTER XIV

THE SANITATION OF THE ZONE



THE seal of the Canal Zone shows a galleon under full sail passing between the towering banks of the Culebra Cut, with the motto, "The land divided; the world united". Sometimes as I trudged about the streets of Colon or Panama, or over the hills and through the jungle in the Zone, I have thought a

more significant coat-of-arms might be made up of a garbage can rampant and a gigantic mosquito mordant—for verily by the collection and careful covering of filth and the slaughter of the pestilential mosquito all the work done on the Zone has been made possible. As for the motto how would this do—"A clean country and a salubrious strait"?

It is the universal opinion of those familiar with the Canal work that if we had approached the task with the lack of sanitary knowledge from which the French suffered we should have failed as they did. No evil known to man inspires such dread as yellow fever. Leprosy, in the individual, does indeed, although well-informed people know that it is not readily communicated and never becomes epidemic. Cholera did strike the heart of man with cold dread, but more than one generation has passed since cholera was an evil to be reckoned with in civilized countries. Yellow fever is now to be classed with it as an epidemic disease, the spread of which can be absolutely and unerringly controlled.

The demonstrated fact that yellow fever is transmitted only by the bite of a *stegomyia* mosquito which has already bitten, and been infected by, a human being sick of the fever has become one of the commonplaces of sanitary science. Yet that knowledge dates back comparatively few years, and

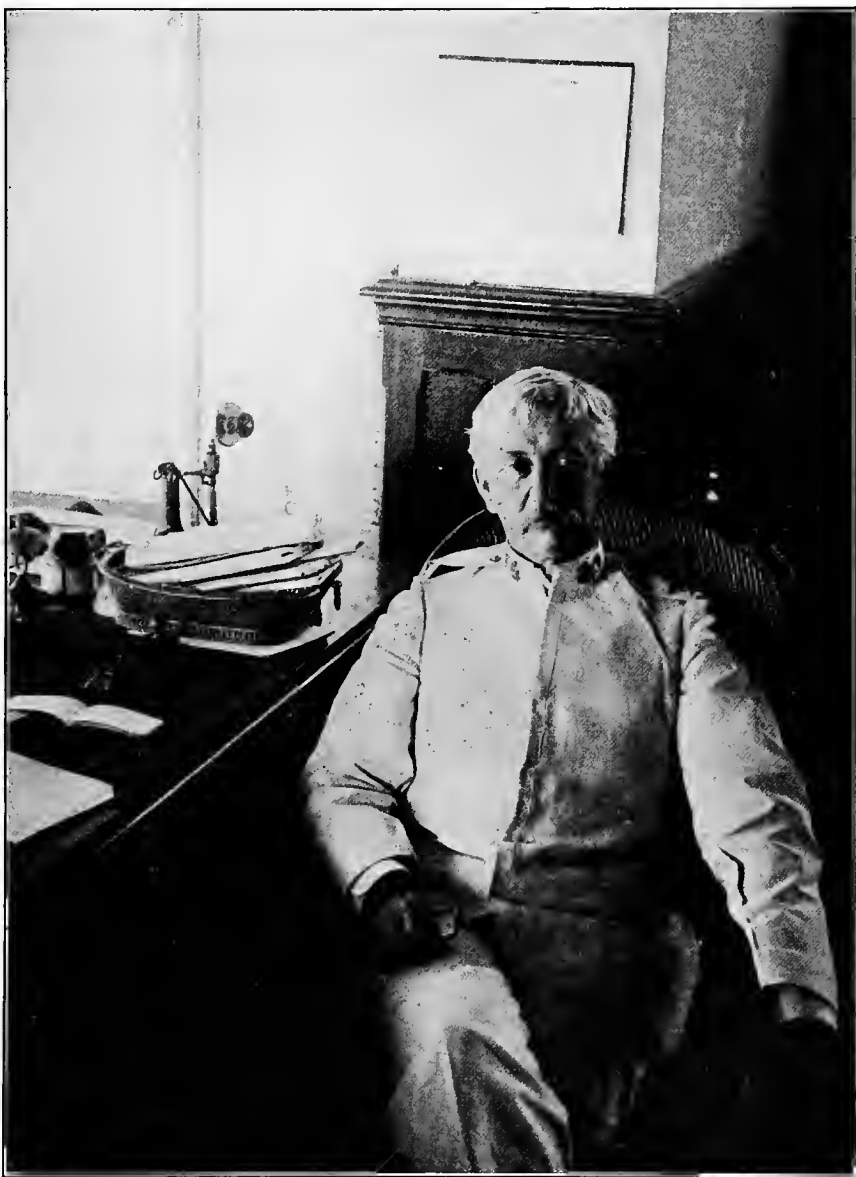


Photo by Underwood & Underwood

COL. W. C. GORGAS

The man who changed the Isthmus from a pest-hole to a spot as fit for human habitation as any place on the globe



Photo by Underwood & Underwood

WHAT COL. GORGAS HAD TO CORRECT

was not available to mankind at the time the French began their struggle with tropical nature. Over the honor of first discovering the fact of the malignant part played by the mosquito there has been some conflict, but credit is generally given to Dr. Donald Ross, a Scotchman in the Indian Civil Service. His investigations however were greatly extended and practical effect was given them by surgeons in the United States Army engaged in the work of eliminating pestilence from Havana. To Majors Walter Reed, Jesse W. Lazear and James Carroll the chief credit is due for testing, proving and applying the theory in Havana. Lazear bravely gave up his life to the experiment, baring his arm to the bite of a mosquito, and dying afterward of yellow fever in terrible agony.

The fact of this earlier application of the mosquito theory does not in the slightest degree detract from the great honor due to Col. W. C. Gorgas for his work in changing the Isthmus of Panama from a pest-hole into a spot as fit for human habitation as any spot on the globe. Unfortunately, as the impending success of the Canal enter-

prise became apparent, rivalry for the prime honor grew up between the followers of the two chief figures, Col. Goethals and Col. Gorgas. That either of these gentlemen shared in this feeling is not asserted, but their friends divided the Isthmus into two hostile camps. Rivalry of this sort was unfortunate and needless. In the words of Admiral Schley after the battle of Santiago: "There was glory enough for all". But the result was to decry and to depreciate the work of Col. Gorgas in making the Isthmus habitable. As a matter of fact no historian will for one moment hesitate to state that only by that work was it made possible to dig the Canal at all. Col. Goethals himself in his moments of deepest doubt as to the

size of the appropriations for sanitation purposes would hardly question that statement. That some other man than Gorgas might have done the work with the experience of the French and the discovery of the malignant quality of the mosquito to guide him is undoubtedly true. That some other man than Goethals might have dug the Canal with the experience of two earlier engineers, as well as of the French to serve as warnings, is equally true. But these two finished the work and to each belongs the glory for his part.



ADMINISTRATION BUILDING, HOUSING THE SANITARY DEPARTMENT

Col. Gorgas first visited the Isthmus in 1904. In a little pamphlet which I have before me he then described simply the essence of the problem he had to meet. He found camped on a hill, perfectly drained and supplied with good water, 450 marines—who of course were men of exceptionally good physique, robust and vigorous. Yet in four months 170 out of the 450 were infected with malaria, and Col. Gorgas said, "if these men were our laborers, working daily in Culebra Cut, exposed to the sun and weather, many of these cases would

is partial to malaria—which had already bitten an infected negro. The result was the spread of the infection among the marines. As Col. Gorgas put it, "The condition is very much the same as if these four or five hundred natives had the smallpox and our marines had never been vaccinated". To correct this condition he proposed, "to take this village, put it under a systematic scheme of inspection, whereby we will be able to control all water barrels and deposits of water, so that no mosquitoes

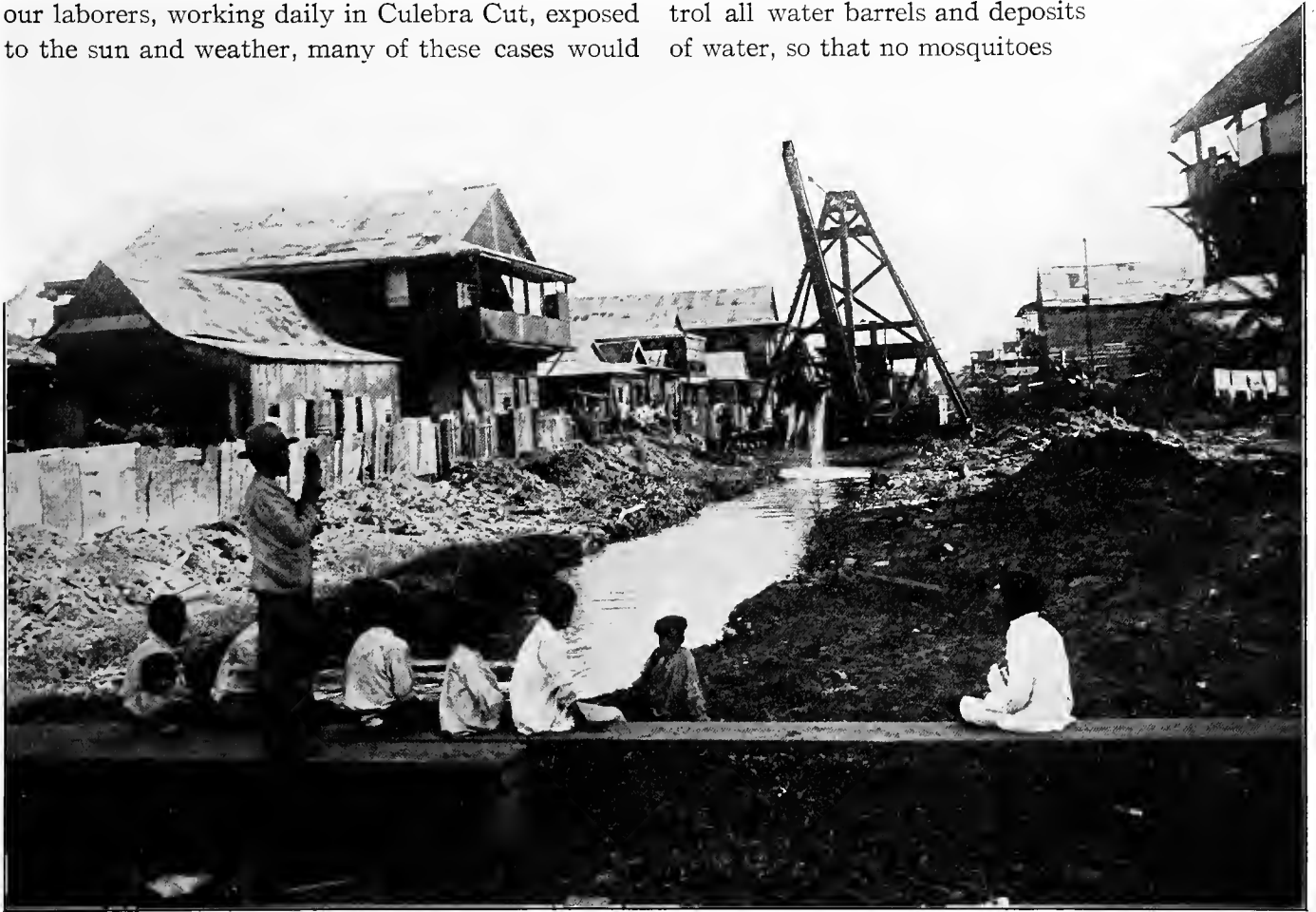


Photo by Underwood & Underwood

DREDGING A COLON STREET

So near tide level is the surface of Colon that the dredges made canals in the public streets

be severe in type and at the end of the year we would be approaching the mortality of the French". The cause for the infection was apparent. Though the marines' camp was clean and sanitary there was at the foot of the hill, on which it was perched, a village of 400 or 500 Jamaica negroes. Examination of the people showed that all suffered from chronic malaria. The marine strolling in the village would be bitten by a mosquito—the *anopheles* which

will be allowed to breed, look after its street cleaning and disposal of night soil, etc., so as to get it in good sanitary condition, then have the population examined and recorded, so that we will have on a card a short history of each individual and keep track of them in this way. Those suffering from malaria will be put under treatment, and watched as long as the malarial parasite is found in the blood. I hope, in this way, to decrease to the smallest



THE WAR ON MOSQUITOES. I.

The men are oiling the surface of the streams to kill the larvae

limit the number of *anopheles*, the malarial-bearing mosquito, and, at the same time, to gradually eliminate the human being as a source of infection, so that at the end of a year it will be entirely safe for an unacclimated man to live in this village”.

Being appointed Chief Sanitary Officer Col. Gorgas put this plan into effect not only in that village but in every part of the Canal Zone, particular attention being given to the cities of Panama and Colon. In these cities the visitor will be impressed with the comparative cleanliness of the streets and sidewalks and the covering of all garbage receptacles. No other Central American city shows so cleanly a front. Screening, however, is little in evidence. How great the mortality had been under the French it is impossible to tell. Their statistics related almost wholly to deaths in their hospitals and very largely to white patients. Men who died out on the line, natives who worked a day or two and went back to their villages to die were left unrecorded. In the hospitals it was recorded that between 1881 and 1889, 5618 employees died. The contractors were charged a dollar a day for every man sent to the hospitals, so it may be conjectured that not all were sent who should have been. Col. Gorgas estimates the average death rate at about 240 per 1000 annually. The American general death rate began with a maximum of 49.94 per 1000 sinking to 21.18, at or about which point it has remained for several years. Among employees alone our death rate was 7.50 per 1000. The French with

an average force of 10,200 men employed, lost in nine years 22,189 men. We with an average force of 33,000 lost less than 4000 in about an equal period.

When Col. Gorgas came to the Isthmus the two towns Panama and Colon were well fitted to be breeding places for pestilence. Neither had sewers nor any drainage system. The streets of Panama were paved after a fashion with cobblestones and lined with gutters through which the liquid refuse of the town trickled slowly or stood still to fester and grow putrescent under the glowing rays of the tropic sun. Colon had no

pavement whatsoever. Neither town had water-works and the people gathered and stored rainwater in cisterns and pottery jars which afforded fine



THE WAR ON MOSQUITOES. II.

Burning the grass that affords cover

breeding places for the mosquito. As a matter of fact, the whole Isthmus, not the towns alone, furnishes plenty of homes for the mosquito. With a rainy season lasting throughout eight months in the year much of the soil is waterlogged. The stagnant back waters of small streams; pools left by the rains; the footprints of cows and other animals filled up with rain water quickly breed the wrigglers that ultimately become mosquitoes. Mr. A. H. Jennings, the entomologist of the Commission, has identified 125 varieties of the mosquito, of which, however, the *anopheles* and the *stegomyia* are the ones peculiarly obnoxious to man. The others are merely the common or summer resort variety of mosquito with a fondness for ankles and the back of one's hand, which can be observed any time on Long Island or in New Jersey without the expense of a trip to Panama. A careful study of literary authorities indicates to me that at this point in the description of the mosquito plague on the Isthmus it is proper to indulge in humorous reflections upon the fact that the bite of the female only is dangerous. But, given the fact, the humorous applications seem so obvious that the reader may be trusted to draw them for himself—it would be idle to say "herself", for the women will not see anything humorous about it at all.

The fight then against disease on the Isthmus resolved itself largely into a war of extermination upon the two noxious varieties of mosquitoes. It involved first a cleaning up, paving and draining of the two towns. Curiously enough bad smells are not necessarily unhygienic, but they beto-

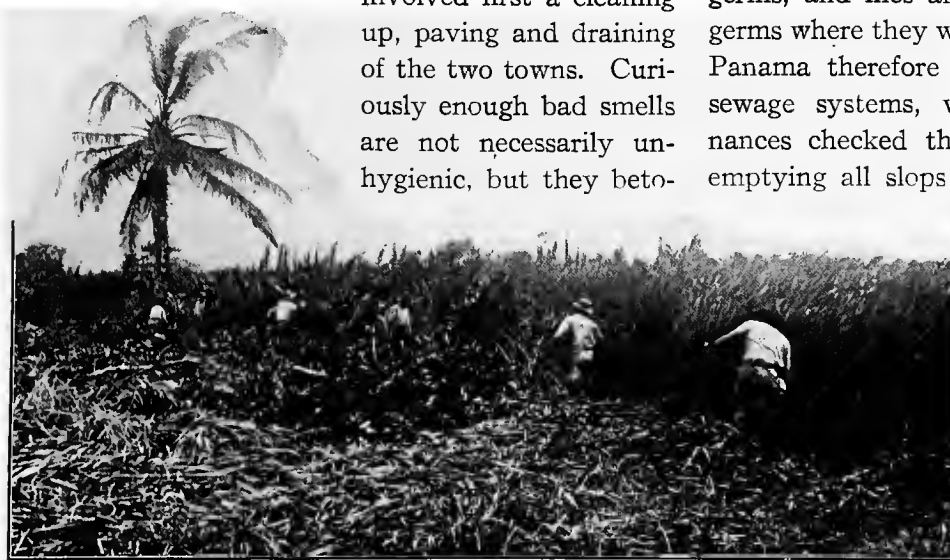


Photo by Underwood & Underwood

THE WAR ON MOSQUITOES. IV.

Cutting down brush which will later be burned thus destroying mosquito covert



THE WAR ON MOSQUITOES. III.

Spraying the brooks with larvacide

ken the existence of matter that breeds disease germs, and flies and other insects distribute those germs where they will do the most harm. Colon and Panama therefore were paved and provided with sewage systems, while somewhat stringent ordinances checked the pleasant Panama practice of emptying all slops from the front gallery into the street. It is fair to the Panamanians to note that in the end they will pay for the vigorous cleaning and refurbishing of their towns by the Americans. Our sanitary forces did the work and did it well, by virtue of the clause in the treaty which grants the United States authority to prosecute such work in the two cities and collect from

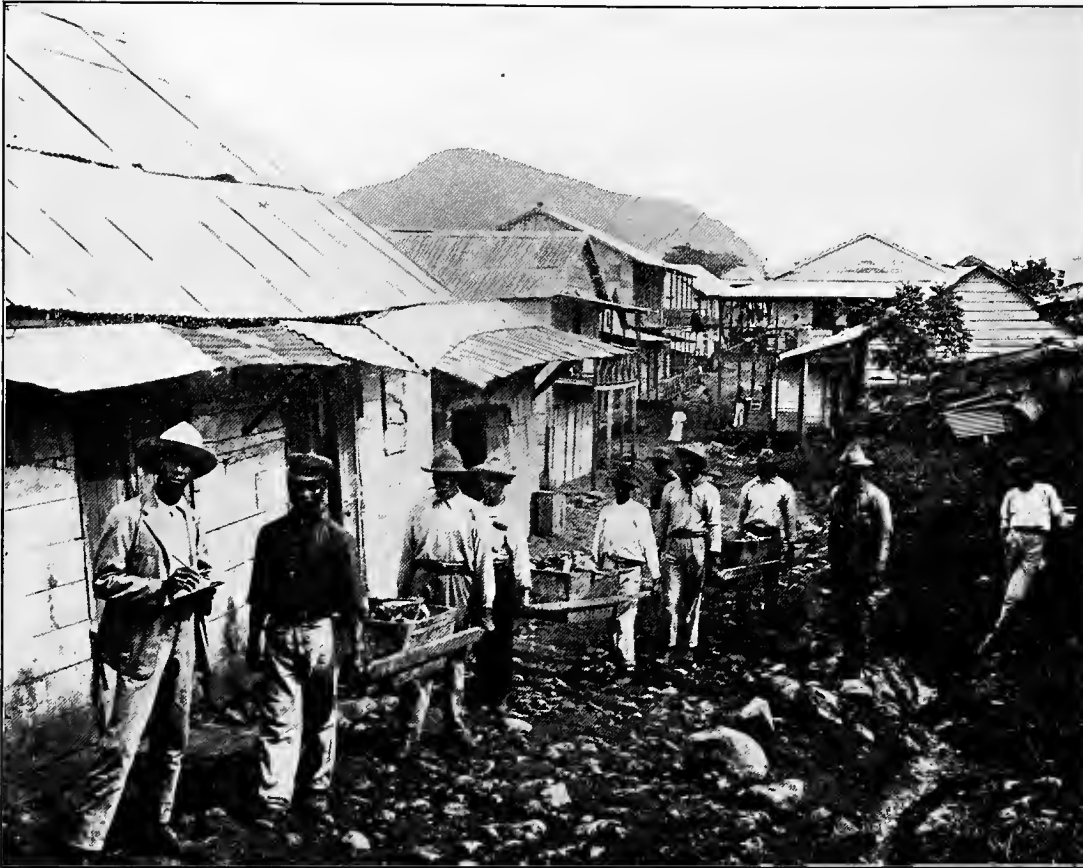


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SANITARY WORK IN A VILLAGE

The scene is in the outskirts of Culebra, now a model of cleanliness

the householder its cost by means of water and sewage rates.

This work was completed in 1908 and the final report of the Division of Municipal Engineering which conducted it showed that nearly \$6,000,000 had been expended, of which about \$2,250,000 was for pavements, sewers and waterworks in the two cities, and about \$3,500,000 for work in the Canal Zone. Nearly a million more was subsequently expended in the towns.

The first thing to do with the towns was to fumigate them. The Panamanians did not like this. Neither would we or any other people for that matter, for the process of fumigating necessarily interrupts the routine of life, invades domestic privacy, inevitably causes some loss by the discoloring of fabrics, interrupts trade in the case of stores and is in general an infernal nuisance. That much any people will say against wholesale fumigation. But to the Panamanians it was peculiarly offensive because they were immune from yellow

fever anyway, and to some extent from malaria as well, so to their minds the whole thing was an imposition by which the Americans alone would profit. If the gringoes weren't able to live in Panama without smoking people out of house and home, they had better stay away was the generally expressed public opinion of Panama.

Here the peculiar personality of Col. Gorgas came into play. Had that gentleman not been a great health officer he would have made a no-

table diplomat, particularly in these new days when tact and charm of manner are considered more essential to an American diplomat than dollars. He went among the people of the two towns, argued, jollied and cajoled them until a work which it was thought might have to be accomplished at the point of the bayonet was finished with but little friction. The bayonet was always in the background, however, for the treaty gives the United States unqualified authority to enforce its sanitary ordinances in the cities of Colon and Panama. We can send a regiment if necessary to compel a man to keep his yard clean—which is perhaps more than we could do in some benighted towns of our own United States.

The tone of the man in the street toward these American innovations is partly surly, partly jocular. In Panama he will show you a very considerable section of the town which is not yet fully rebuilt and insist that the fire which started it was caused by the "fool fumigators". There is some difference of opinion as to the origin of this blaze, and the

matter of damages is, as I write, in the hands of arbitrators, but the native opinion is solidly against the fumigating torch bearers. On the subject of the extermination of mosquitoes the native is always humorous. He will describe to you Col. Gorgas's trained bloodhounds and Old Sleuths tracking the criminal *stegomyia* to his lair; the corps of bearers of machetes and chloroform who follow to put an end to the malevolent mosquito's days; the scientist with the high-powered microscope who examines the remains and, if he finds the deceased carried germs, the wide search made for individuals whom he may have bitten that they may be segregated and put under proper treatment.

In reality there is a certain humor in this scientific bug hunting. You are at afternoon tea with a hostess in one of the charming tropical houses which the Commission supplies to its workers. The eyes of your hostess suddenly become fixed in a terrified gaze.

"Goodness gracious"! she exclaims, "look there"!

"What? where"? you cry, bounding from your



Photo by Dr. Orenstein

THE MOSQUITO CHLOROFORMER AT WORK

Once subdued by chloroform the mosquito is removed for analysis

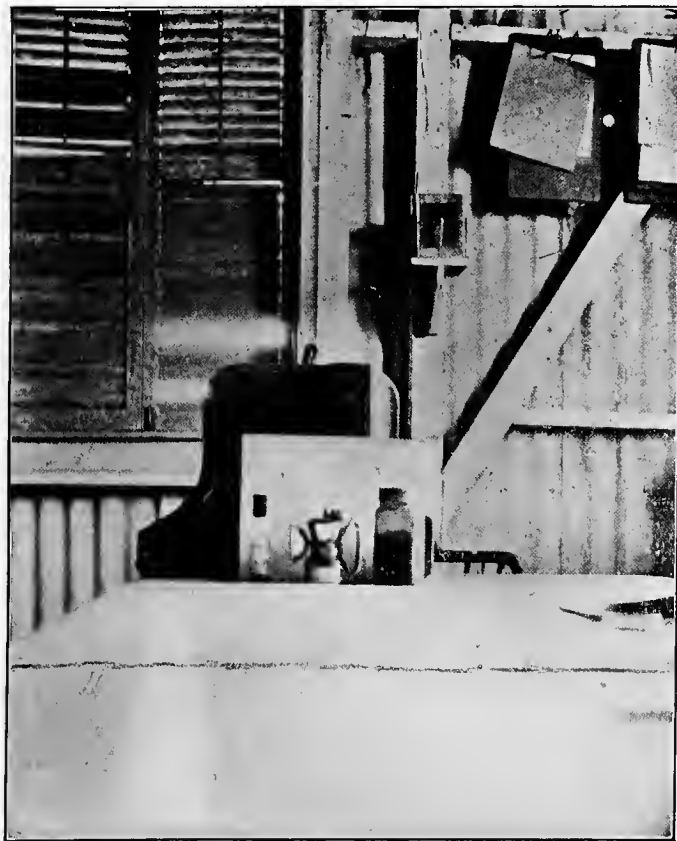
seat in excitement. Perhaps a blast has just boomed on the circumambient air and you have visions of a fifty-pound rock about to fly through the drawing-room window. Life on the Zone abounds in such incidents.

"There"! dramatically. "That mosquito"!

"I'll swat it", you cry valorously, remembering the slogan of "Swat the Fly" which breaks forth recurrently in our newspapers every spring, though they are quite calm and unperturbed about the places which breed flies faster than they can be swatted.

"Goodness, no. I must telephone the department".

Speechless with amazement you wonder if the police or fire department is to be called out to cope with this mosquito. In due time there appears an official equipped with an electric flash-light, a phial and a small bottle of chloroform. The malefactor—no, the suspect, for the *anopheles malefactor* does no evil despite his sinister name—is mercifully chloroformed and deposited in the phial for a later post mortem. With his flash-light the inspector



THE MOSQUITO CHLOROFORMER'S OUTFIT

Used in tracking the criminal *stegomyia* to his lair



ANCON HOSPITAL AS RECEIVED FROM THE FRENCH

examines all the dark places of the house to seek for possible accomplices, and having learned that nobody has been bitten takes himself off.

It does seem a ridiculous amount of fuss about a mosquito, doesn't it? But since that sort of thing has been done on the Zone death carts no longer make their dismal rounds for the night's quota of the dead, and the ravages of malaria are no longer so general or so deadly as they were.

Nowadays there are no cases of yellow fever developing on the Zone, but in the earlier days when one did occur the sanitary officials set out to find the cause of infection. When the French seek to detect a criminal they follow the maxim "*Cherchez la femme*" (Look for the woman). When pursuing the yellow-fever germ to its source the Panama inspectors look for the *stegomyia* mosquito that bit the victim—which is a little reminiscent of hunting for a needle in a haystack.

A drunken man picked up on the street in Panama was taken to the hospital and there died of yellow fever. He was a stranger but his hotel was looked up and proved to be a native house occupied only by immunes, so that he could not have been infected there. Nobody seemed to care particularly about

worthy citizen was sought out and was discovered hiding away in a secluded lodging sick with yellow fever. Whereupon the theater was promptly fumigated as the center of infection.

Clearing up and keeping clean the two centers of population was, however, the least of the work of sanitation. The whole Isthmus was a breeding place for the mosquitoes. Obviously every foot of it could not be drained clear of pools and rivulets, but the preventive campaign of the sanitation men covered scores of square miles adjacent to villages and the Canal bed, and was marvelously effective in reducing the number of mosquitoes. Away from the towns the campaign was chiefly against the malarial mosquito—the *anophelinæ*. The yellow fever mosquito, the *stegomyia*, is a town-bred insect coming from cisterns, water pitchers, tin cans, fountains in the parks, water-filled pans used to keep ants from the legs of furniture and the like. It is even said to breed in the holy-water fonts of the multitudinous churches of Panama, and the sanitary officials secured the co-operation of the church authorities in having those receptacles kept fresh. The malarial mosquito however breeds in streams, marshes and pools and will travel sometimes

the deceased, who was buried as speedily as possible, but the Sanitary Department did care about the source of his malady. Looking up his haunts it was discovered that he was much seen in company with an Italian. Thereupon all the Italians in town were interrogated; one declared he had seen the dead man in company with the man who tended bar at the theater. This

a mile and a half from his birth-place looking for trouble.

As you ride in a train across the Isthmus you will often see far from any human habitation a blackened barrel on a board crossing some little brook a few inches wide. If you have time to look carefully you will see that the edges of the gully through which the brook runs have been swept clear of grass by scythe or fire or both, and that the banks of the rivulet are blackened as though by a tar-brush while the water itself is covered by a black and greasy film.

This is one of the outposts of the army of health. Of them there are several hundred, perhaps thousands, scattered through the Zone. The barrel is filled with a certain fluid combination of oil and

divers chemicals called larvacide. Day and night with monotonous regularity it falls drop by drop into the rivulet, spreads over its surface and is deposited on the pebbles on the banks. The mosquito larvæ below must come to the surface to breathe. There they meet with the noxious fluid and at the first breath are slain. Automatically this one barrel makes that stream a charnel house for mosquito larvæ. But up and down throughout the land go men with cans of the oil on their backs and sprinklers in their hands seeking for pools and stagnant puddles which they spray with the larvacide. So between the war on the larva at its breeding point and the system of screening off all residences, offices and eating places the malarial infection has been greatly reduced. It has not been



Photo by Underwood & Underwood

THE CANAL COMMISSION HOSPITAL AT COLON BUILT BY THE FRENCH



FRENCH VILLAGE OF EMPIRE AFTER CLEANING UP BY AMERICANS

eradicated by any manner of means. The Panama cocktail (quinine) is still served with meals. In one year 2307.66 pounds of the drug were served out. But if not wholly obliterated the ailment has been greatly checked. Dr. A. J. Orenstein, of the Department of Sanitation, says in summing up the results of the policy:

"The campaign against malaria was inaugurated on the following plan: (1) Treatment with adequate doses of quinine (about 30 grains a day for adults) of all cases of malaria. First, because this treatment is curative; and, second, because unless so treated, each case of malaria constitutes a focus from which malaria spreads. In malarial regions there are many persons who have what is often spoken of as chronic malaria. Such individuals frequently do not suffer any serious inconvenience. They more of-

ops within this mosquito into the form capable of causing malaria in the individual whom the *anophe-line* may bite a week or so thereafter. (2) Protecting dwelling with copper wire gauze against the ingress of mosquitoes. All houses occupied by Ameri-

ten suffer from occasional headaches, anemia or slight fever. These are the people most dangerous from the standpoint of the sanitarian. It is in the blood of these individuals that the malaria-causing parasite has attained the form in which, if taken by a female *anophe-line*, it devel-



THE BAY OF TABOGA FROM THE SANITARIUM'



THE LITTLE PANGO BOATS COME TO MEET YOU

cans and most of the others are screened.

(3) Catching and killing mosquitoes within the dwellings. This is done by negro "mosquito catchers", and is of great value in preventing malaria where other prophylactic measures cannot be inaugurated.

(4) Destroying the breeding places of *anophelinæ* by filling, draining, and training the banks of streams. (5) Destroying the *anophelinæ* in the larval and pupal stages by oiling the water in which they are found, or applying a special larva poison to this water. (6) Clearing the rank vegetation

in the immediate vicinity of dwellings and settlements, so as to destroy the shelter for such mosquitoes as may find their way to the vicinity of the houses; to hasten evaporation and the drying of small water collections and marshy places; to expose to view small breeding places and to remove the temptation to throw water containers into the vegetation.

"These measures, conscientiously and painstakingly carried out, resulted in reducing the number of malaria cases treated in the hospitals from 6.83 per cent of the working force per month in 1906 to 1.53

per cent of the working force per month in 1911, and the death from malaria among employees from 233 in 1906 to 47 in 1911".

"The malaria sick rate for 1906, if continued to 1911, would give, on the basis of the number of employees in 1911, about 40,000 cases of malaria sick in the hospitals for the year, or a loss in labor of about 200,000 days of work. The total number of employees sick in hospitals with malaria in 1911 was 8946—or a loss of 44,730 days of work. A gain of about 155,000 days was, therefore, made. Placing the loss to the Government for each day's labor,

plus treatment, at the rather low figure of \$3 per man, the gain in this one item of saving more than offset the cost of sanitation proper. These figures do not include malarial cases treated in the dispensaries and in homes. Among this class of patients the gain has undoubtedly been proportionate to the gain in hospital cases, and in addition it must not be forgotten that malaria is a disease that undermines a man's health insidiously and lowers his working efficiency to an extent not approached by any disease with the



OLD CHURCH AT TABOGA

The square box on the corner of the wall contains the mummied head of a favorite priest



THE RIO GRANDE RESERVOIR



IN PICTURESQUE TABOGA

possible exception of hook-worm. The less malaria the fewer inefficient workers in an organization".

Of course the screening system was vital to any successful effort to control and check the transmission of fever germs by insects. But the early struggles of Col. Gorgas to get enough wire netting to properly protect the labor quarters were pathetic. "Why doesn't he screen in the whole Isthmus and let it go at that"? inquired one Congressman who thought it was all intended to put a few more frills on houses for already highly paid workers. The screening has indeed cost a pretty penny for only the best copper wire will stand the test of the climate. At first there was reluctance on the part of disbursing officers to meet the heavy requirements of Col. Gorgas. But the yellow-fever epidemic of 1905 stopped all that. Thereafter the screening was regarded as much of an integral part of a house as its shingling.

The efforts that were put forth to make the Canal Zone a liveable spot have not been relaxed in keeping it so. A glance at the report of the Chief Sanitary Officer for any year shows something of his continued activity. You find records of houses fumigated for beriberi, diphtheria, malaria, leprosy, and a dozen other evils. The number of rats killed is gravely enumerated—during the year 1911 for example there were nearly 13,000. It may be noted in passing that the rats distribute fleas and fleas carry the germs of the bubonic plague, hence the slaughter. Incidentally guests of the native hotels in Panama City say that the destruction was far from complete.

Two large hospitals are maintained by the Canal

Commission at Colon and at Ancon, together with smaller ones for emergency cases at Culebra and other points along the line. The two principal hospitals will be kept open after the completion of the Canal, but not of course to their full capacity.



IN THE GROUNDS OF ANCON HOSPITAL

Ancon alone has accommodations for more than 1500 patients, and when the army of labor has left the Zone there can be no possible demand for so great an infirmary. Both of these hospitals were inherited from the French, and the one at Colon has been left much in the condition they delivered it in, save for needed repairs and alterations. Its capacity has not been materially increased. The Ancon Hospital however has become one of the



THE SANITARIUM AT TABOGA INHERITED FROM THE FRENCH

great institutions of its kind in the world. The French gave us a few buildings with over 300 patients sheltered in tents. The Americans developed this place until now more than fifty buildings are ranged along the side of Ancon Hill. When the French first established the hospital they installed as nurses a number of sisters of St. Vincent with Sister Rouleau as Sister Superior. The gentle sisters soon died. The yellow fever carried them off with heart-rending rapidity. Sister Marie however left a monument which will keep her fair fame alive for many years yet to come. She was a great lover of plants, and the luxuriance of the tropical foliage was to her a never-ending charm. To her early efforts is due the beauty of the grounds of the Ancon Hospital, where one looks between the stately trunks of the fronded royal palms past a hillside blazing with hibiscus, and cooled with the rustling of leaves of feather palms and plantains to where the blue Pacific lies smooth beneath the glowing tropic sun. Beside the beauty of its surroundings the hospital is eminently practical in its plan. The many separate buildings permit the segregation of cases, and the most complete and scientific ventilation.

Making the hospital attractive was one of the points insisted

upon by Col. Gorgas. Some of the doctors think that possibly it has been a wee bit overdone. Some of the folks along the Zone look on a brief space spent in the hospital as a pleasant interlude in an otherwise monotonous life. As they have thirty days' sick leave with pay every year they are quite prone to turn to the pleasant slopes of Ancon Hill, with a week at the charming sanitarium on Taboga Island as a fitting close—a sort of café parfait to top off

the feast. Surgery even seems to have lost its terrors there. "Why, they even bring their friends to be operated on", said one of the surgeons laughingly when talking of the popularity of the hospital among the Zone dwellers.

Charity cases have numbered as many as 66,000 a year and the records show that during the period of greatest activity on the Zone as many as 70 different nationalities were ministered to. The question of color was often an embarrassing one. The gradations of shades between pure white to darkest African is so exceedingly delicate in Panama that there is always difficulty in determining whether the subject under consideration belongs to the "gold" or the "silver" class, for the words black and white



A FETE DAY AT TABOGA

are tactfully avoided in the Zone in their reference to complexions. "This is my plan", said Col. Mason in charge of the hospital. "On certain days the patients are allowed visitors. When the color of the inmate is problematical, as is usually the case with women, I ask if she wants her husband to visit her. If she does and he proves to be a negro, she goes into the colored ward. If she still insists that she is white, she can go into the white ward, but must dispense with his visits".

Under our treaty the Zone sanitary department takes charge of the insane of Colon and Panama, and a very considerable share of the grounds at Ancon is divided off with barbed wire for their use. The number of patients runs well into the hundreds, with very few Americans. Most are Jamaica negroes and the hospital authorities say that they are mentally unbalanced by the rush and excitement of life on the Zone. I never happened to see a Jamaica negro excited unless it happened to be a Tivoli Hotel waiter confronted with the awful



FEATHER PALM AT ANCON

responsibility of an extra guest at table. Then the excitement took the form of deep melancholy, exaggerated lethargy, and signs of suicidal mania in every facial expression.

Beside the hospital service the sanitary department maintains dispensaries at several points on the line, where necessary drugs are provided for patients in the Commission Service free. Patent medicines are frowned upon, and such as are purveyed must be bought through the Commissary. Medical service

is free to employees and their families. All doctors practicing on the Zone are on the gold payroll for wages ranging from \$1800 to \$7000 a year. I could not find upon inquiry that the fact that they were not dependent upon the patient for payment made the doctors less alert or sympathetic. At least no complaints to that effect were current.

To my mind the most notable effect upon the life of the Zone of this system of free medical attendance was that it added one more to the many in-



TABOGA FROM THE BATHING BEACH

duancements to matrimony. Infantile colic and measles are shorn of much of their terror to the young parent when no doctor's bill attends them. Incidentally, too, the benevolent administration looks after the teeth of the employees as a part of its care of their general health. One effect of this is to impress the visitor with the remarkable number of incisors gleaming with fresh gold visible where Zone folk are gathered together.

The annual vacations of the workers during the

from more temperate climes. Every employee was given 42 days' vacation with full pay, but he had to quit the Zone for some country which would afford a beneficial climatic change. Of course most went back to the United States, being encouraged thereto by a special rate on the steamship of \$30—the regular rate being \$75. But beside this vacation each employee was entitled to 30 days' sick leave. It was not an exceedingly difficult task to conjure up enough symptoms to persuade a friendly physi-

cian to issue a sick order. The favorite method of enjoying this respite from work was to spend as little of the time as possible at Ancon, and the rest at the sanitarium on the Island of Taboga.

That garden spot in the Bay of Panama where the French left the sanitarium building we now use is worth a brief description. You go thither in a small steamboat, from Balboa or Panama and after about three hours' steaming a flock of little white boats, each with a single oarsman, puts out from the shore to meet you like a flock of gulls as you drop an-



TABOGA IS FURTHERMORE THE CONEY ISLAND OF PANAMA

construction period may properly be considered in connection with sanitation work on the Zone, for they were not permitted to be mere loafing time. The man who took a vacation was not allowed to stay on the Isthmus. If he tried to stay there Col. Goethals found it out in that omniscient fashion of his and it was a case of hike for a change of air or go back to work. For, notwithstanding the fact that Col. Gorgas pulled the teeth of the tropics with his sanitary devices and regulations, an uninterrupted residence in that climate does break down the stamina and enfeeble the energy of men

chor in a bay of truly Mediterranean hue. To the traveled visitor the scene is irresistibly reminiscent of some little port of Southern Italy, and the reminder is all the more vivid when one gets ashore and finds the narrow ways betwixt the elbowing houses quite Neapolitan for dirt and ill odor. But from the sea one looks upon a towering hill, bare toward its summit, closely covered lower down by mango, wild fig, and ceiba trees, bordered just above the red roofs of the little town by a fringe of the graceful cocoanut palms. Then come the houses, row below row, until they descend to the

curving beach where the fishing boats are drawn up out of reach of the tide which rises some 20 feet.

From the bay the village with its red-tiled roofs and yellow-white walls looks substantial, a bit like Villefranche, the port of Nice, but this impression is speedily dispelled when one lands in one of the boats, propelled by the oarsman standing and facing the bow — a fashion seldom seen save in Italian waters. For seen near at hand the houses are discovered to be of the flimsiest frame construction, save for a few clustering about the little church and sharing with it a general decrepitude and down-at-the-heels air that makes us think they have seen better days. As indeed they have and worse days too, for Taboga once shared in the prosperity of the early Spanish rule, and enjoyed the honor of having entertained for a few weeks Sir Henry

Morgan, that murderous pirate, who later became a baronet and a colonial governor, as a fine finish after his deeds of piracy and rapine. Taboga must have treated the buccaneer well, for not only did he forbear to sack the town, but so deep was the devotion paid by him and his men to certain tuns of excellent wine there discovered that they let a

Spanish galleon, deep-laden with gold and silver, slip through their fingers rather than interrupt their drinking bout.

Tradition has it that the galleon was sunk nearby to save it and its cargo from the pirates, and treasure

seekers have been hunting it ever since with the luck that ordinarily attends aspirants for dead men's gold.

Just now the wine and wassail of Taboga is limited to about six grog shops, which seems an oversupply for the handful of fishermen who inhabit its tumble-down hovels. Each bar, too, has its billiard table and one is reminded of Mark Twain's islands in the South Sea where the people earned an honest living by taking in each other's washing. One wonders if the sole industry of the Tabogans is playing billiards. There is indeed little to support the town save fishing, and



BURDEN BEARERS ON THE SAVANNA

that, if one may judge from specimens carried through the lanes, must be good. Some of the boats at anchor or drawn up on the beach attest to some prosperity amongst them that go down to the sea in ships. One that I saw rigged with a fore-and-aft sail and a jigger was hewn out of a single log like a river cayuca and had a beam



HOTEL AT BOUQUETTE, CHIRIQUI

The only point in Panama at which Canal employees may spend their vacations

exceeding four feet. Before many of the houses were lines hung with long strips of fish hanging out to dry, for it is a curious property of this atmosphere that despite its humidity it will cure animal tissues, both fish and flesh, quickly and without taint.

Agriculture in Taboga is limited to the culture of the pineapple, and the local variety is so highly esteemed in the Panama markets that some measure of prosperity might attend upon the Tabogans would they but undertake the raising of pines systematically and extensively. But not they. Their town was founded in 1549 when, at the instance of Las Casas, the King of Spain gave freedom to all Indian slaves. Taboga was set apart as a residence for a certain part of these freedmen. Now what did the freedom from slavery mean but freedom from work? This view was probably held in the 16th century and certainly obtains in Taboga today, having been enhanced no doubt by the lib-

eral mixture of negro blood with that of the native Indians. If the pineapples grow without too much attention well and good. They will be sold and the grog shops will know that real money has come into town. But as for seriously extending the business—well, that is a thing to think of for a long, long time and the thought has not yet ripened. It is a wonder that the Chinese who hold the retail trade of the island and who are painstaking gardeners have not taken up this industry.

We may laugh at the easy-going Tabogan if we will, but I do not think that anyone will come out

of his church without a certain respect for his real religious sentiment. 'Tis but a little church, of stuccoed rubble, fallen badly into decay, flanked by a square tower holding two bells, and penetrated by so winding and narrow a stair that one ascending it may feel as a corkscrew penetrating a cork.



A BIT OF ANCON HOSPITAL GROUNDS

But within it shows signs of a reverent affection by its flock not common in Latin-American churches. We may laugh a little at the altar decorations which are certainly not costly and may be a little tawdry, but they show evidences of patient work on the part of the women, and contributions by the men from the slender gains permitted them by the harsh land and the reluctant sea. About the walls hang memorial tablets, not richly sculptured indeed, but showing a pious desire on the part of bygone generations to have the virtue of their loved ones commemorated within hallowed walls. Standing in a side aisle was an effigy of Christ, of human size, bearing the cross up the hill of Gethsemane. The figure stood on a sort of platform, surrounded by six quaint lanterns of panes of glass set in leaded frames of a design seen in the street lamps of the earlier Spanish cities. The platform was on poles for bearers, after the fashion of a sedan chair, and we learned from one who, more fortunate than we, had been there to see, that in Holy Week there is a sort of Passion Play—rude and elementary it is true, but bringing to the surface all the religious emotionalism of the simple people. The village is crowded with the faithful from afar, who make light of any lack of shelter in that kindly tropic air. The Taboga young men dress as Roman soldiers, the village maidens take their parts in the simple pageant. The floats, such as the one we saw, are borne up and down the village streets which no horse could ever tread, and the church is crowded

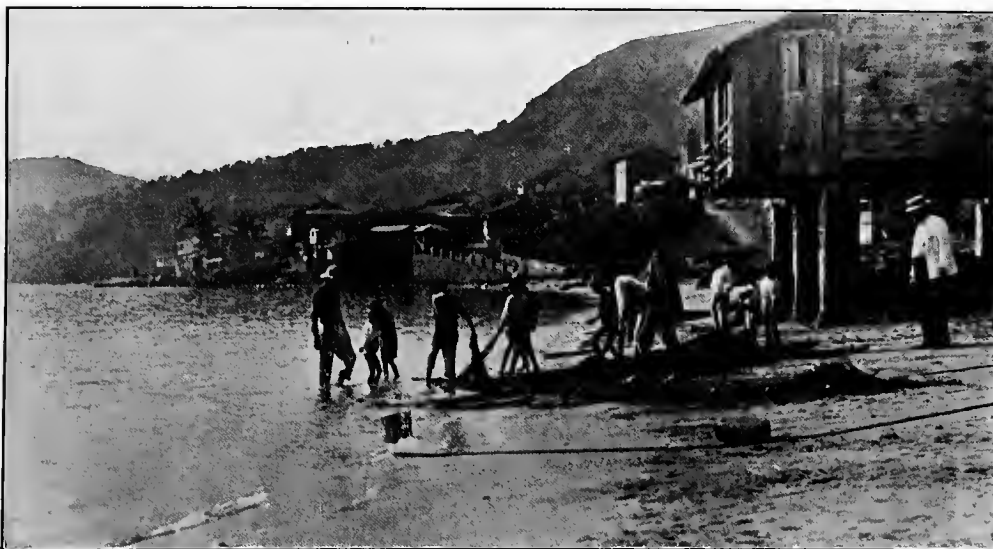


NURSES' QUARTERS AT ANCON

with devotional worshippers until Easter comes with the joyous tidings of the Resurrection.

As to the part of Taboga in the economy of the Canal work, we have there a sanitarium inherited from the French, and used as a place of convalescence for almost recovered patients from the hospitals of the Zone. After breathing the clear, soft air, glancing at the comfortable quarters and enjoying to the fullest a lunch costing fifty cents that would put Broadway's best to the test, and make the expensive Tivoli dining-room seem unappetizing in comparison, we could well understand why every employee with thirty days' sick leave to his credit gets just such a slight ailment as needs a rest at Taboga for its cure.

Near Taboga is the leper hospital and the steamer stops for a moment to send ashore supplies in a small boat. Always there are about 75 victims of this dread and incurable disease there, mostly Panamanians with some West India negroes. A native of North America with the disease is practically unknown. The affliction is horrible enough in itself, but some cause operating for ages back has caused mankind to regard it with more fear than the facts justify. It is not readily



THE CHIEF INDUSTRY OF THE NATIVES IS FISHING

communicable to healthy persons, even personal contact with a leper not necessarily causing infection unless there be some scratch or wound on the person of the healthy individual into which the virus may enter. Visitors to the Isthmus, who find interest in the spectacle of hopeless human suffering, frequently visit the colony without marked precautions and with no reported case of infection.

To what extent the sanitation system so painstakingly built up by Col. Gorgas and his associates will be continued after the seal "complete" shall be stamped upon the Canal work, and the workers scattered to all parts of the land, is not now determined. Panama and Colon will, of course, be kept up to their present standards, but whether the war against the malarial mosquito will be pursued in the jungle as it is today when the health of 40,000 human beings is dependent upon it is another question. The plan of the army authorities is to abandon the Zone to nature—which presumably includes the *anopheles*. Whether that plan shall prevail or whether the United States shall maintain it as an object lesson in government, including sanitation, is a matter yet to be determined. In a hearing before a congressional committee in 1913 Col. Gorgas estimated the cost for a system of permanent sanitation for the Zone, including the quarantine, at \$90,000 a year. As his total esti-

mates for the years 1913-14 amounted to \$524,000, this is indicative of a very decided abandonment of activity in sanitary work.

At all times during his campaign against the forces of fever and infection Col. Gorgas has had to meet the opposition charge of extravagance and the waste of money. It has been flippantly asserted that it cost him \$5 to kill a mosquito—of course an utterly baseless assertion, but one which is readily met by the truth that the bite of a single infected mosquito has more than once cost a life worth many thousand times five dollars. To fix precisely the cost of bringing the Zone to its present state of healthfulness is impossible, because the activities of the sanitary department comprehended many functions in addition to the actual work of sanitation. Col. Gorgas figures that the average expenses of sanitation during the whole construction period were about \$365,000 a year and he points out that for the same period Chicago spent \$600,000 without any quarantine or mosquito work. The total expenditures for sanitation when the Canal is finished will have amounted to less than one per cent of the cost of that great public work and without this sanitation the Canal could never have been built. That simple statement of fact seems sufficiently to cover the contribution of Col. Gorgas to the work, and to measure the credit he deserves for its completion.



THE LEPER SETTLEMENT ON PANAMA BAY