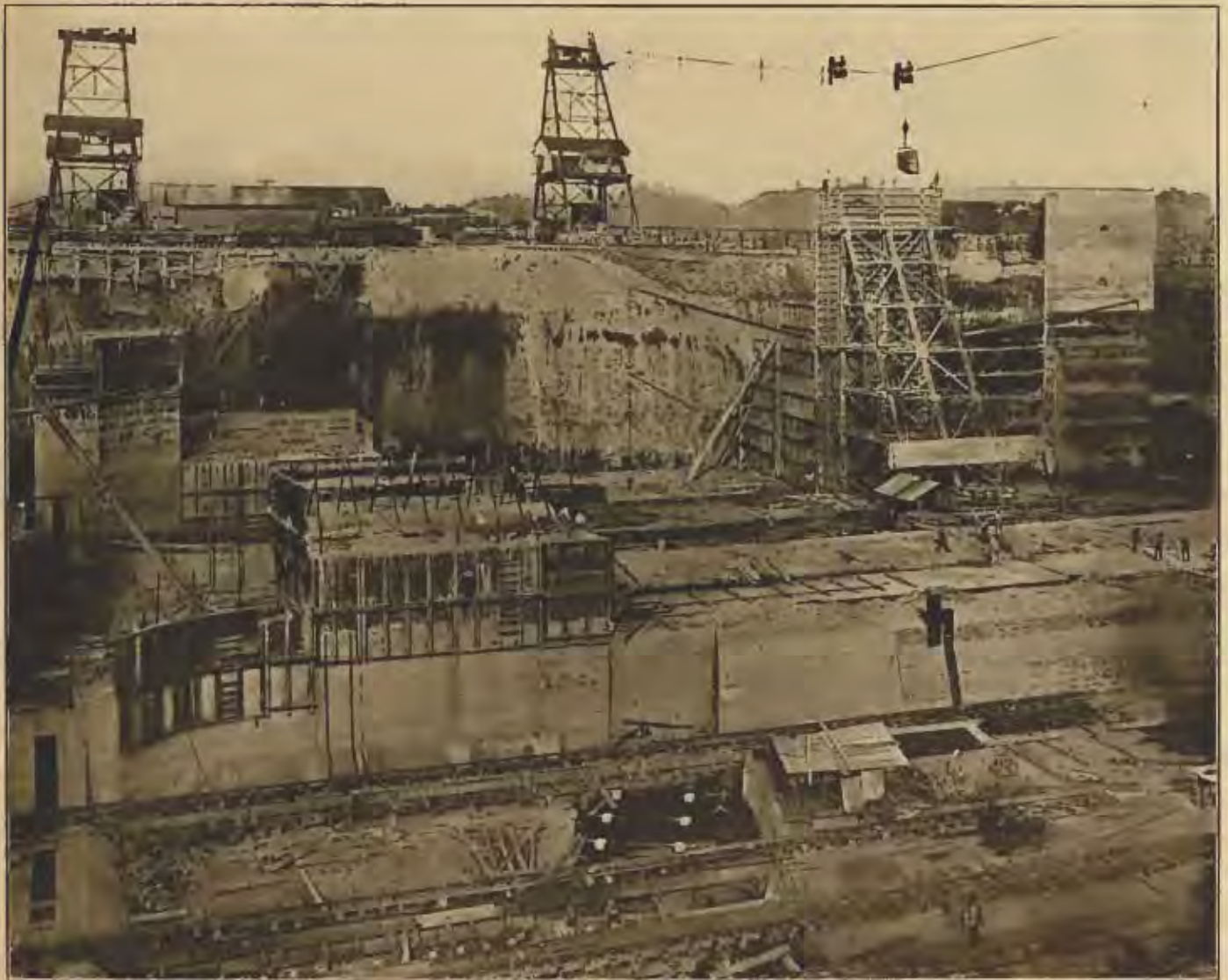


as one after another Secretaries of War and Generals of the Army have unavailingly pleaded for a return to the canteen system, it is unlikely that facts presented by a mere writer will have any effect on the narrow illiberality which prompted the Congressional action.

It is a curious fact that in the tropics where one would expect to find cooling rather than heating beverages as a rule the demand is chiefly for the "hard stuff." The walls of the saloons, the floors of the cantinas, or native drinking places, are covered with bottles or barrels of whisky, rum, brandy and gin. Only in places frequented by the Spanish and Italians are the lighter wines often seen. The Jamaica negro is devoted to the rum of his country,

and one sees him continually in the most unexpected places producing a quart bottle from some mysterious hiding place in his scanty clothing, and benevolently treating his crowd. In excess—and that is what he aims at—it makes him quarrelsome and a very fair share of the 7000 annual arrests on the Zone are due to the fortuitous combination of the two chief products of Jamaica—rum and the black. It is doubtful, however, whether the Jamaican could be kept to his work without his tipples, and it was for that reason that the unusual expedient of permitting liquor selling on a government reservation was adopted.

The Commissary branch of the Subsistence Department is a colossal business run by the govern-



*Photo by Underwood & Underwood*

#### CONSTRUCTION WORK SHOWING CONCRETE CARRIERS AND MOULDS

The buckets containing concrete are controlled from a station in the steel scaffolding—run out, stopped and emptied at the proper point



HOW THE NATIVES GATHER COCOANUTS

ment for the good of the dwellers on the Zone. It gathers together from the ends of the earth everything needful for these pampered wards of Uncle Sam, and sells its stock practically at cost price. From pins to pianos, from pigs-knuckles to pâté de

foie gras you can get every article of use or luxury at the Commissary. At least you can in theory, in fact the statement needs toning down a little, for you will hear plenty of grumbling on the Zone about the scanty satisfaction derived from shopping in "that old Commissary."

All the same its activities are amazing. It launders linen at prices that make the tourist who has to pay the charges of the Tivoli Laundry envy the employees their privileges. It bakes bread, cake and pies for the whole 65,000 of the working population, and does it with such nice calculation that there is never an overstock and the bread is always fresh. Everything of course is done by machinery. Kneading dough for bread and mixing cement and gravel to make concrete are merely co-ordinate tasks in the process of building the Canal and both are performed in the way to get the best results in the least time. Everything is done by wholesale, Hamburger steak is much liked on the Isthmus, so the Commissary has a neat machine which makes 500 pounds of it in a batch. That reminds me, of a hostess who preferred to make her own Hamburger steak, and so told her Jamaica cook to mince up a piece of beef. Being disquieted by the noise of chopping, she returned to the kitchen to find the cook diligently performing the appointed task with a hatchet.

In the icy depths of the cold storage plant at Cristobal, where the temperature hovers around 14 degrees, while it is averaging 96 outside, you walk through long avenues of dressed beef, broad pergolas hung with frozen chicken, ducks and game, sunken



Photo by Elliott

LOOKING DOWN MIRAFLORES LOCKS

gardens of cabbage, carrots, cauliflower and other vegetable provender. You come to a spot where a light flashes fitfully from an orifice which is presently closed as a man bows his head before it. He straightens up, the light flashes and is again blotted out. You find, on closer approach, two men testing eggs by peering through them at an electric light. Betwixt them they gaze thus into the very soul of this germ of life 30,000 times a day, for thus many eggs do they handle. Yet the odds are that neither has read the answer to the riddle, "did the first hen lay the first egg, or the first egg hatch the first chicken?" Unless relieved by some such philosophical problem to occupy the mind one might think the egg tester's job would savor of monotony.

Out of the railroad yards at Cristobal at 3.45 every morning starts the Commissary train, usually of 21 cars, 11 of which are refrigerated. Its business is to deliver to all the consumers along the 47 miles of Canal villages and camps the supplies for the day. Nineteen stores, and as many kitchens, messes and hotels, must be supplied. Ice must be delivered to each household by eight in the morning. Ice is one of the things that the employees do not get free, but though nature has no share in making it, they get it cheaper than our own people, for whom nature manufactures it gratis and a few men monopolize the supply.

If one is fond of big figures the records of the Commissary Department furnish them. The bakery for example puts forth over 6,000,000 loaves of bread, 651,844 rolls and 114,134 pounds of cake annually. Panama is a clean country. Every tourist exclaims at the multitudinous companies of native women perpetually washing at the river's brink and in the



HOSPITAL AT BOCAS

interior I never saw a native hut without quantities of wash spread out to dry. But the Commissary laundry beats native industry with a record in one year of 3,581,923 pieces laundered—and it isn't much of a climate for "biled" shirts and starched collars either. There is a really enterprising proposition under consideration for the retention of this laundry. A ship going west would land all its laundry work at Cristobal and by the time it had made the passage of the Canal—10 hours—all would be delivered clean at Balboa via the railroad. East bound ships would send their laundry from Balboa by rail.



Photo by Underwood &amp; Underwood

NEW AMERICAN DOCKS AT CRISTOBAL

It is an amazing climate for ice cream, however, and the Commissary supplied 110,208 gallons of that. Some other annual figures that help to complete the picture of mere size are butter, 429,267 pounds; eggs, 792,043 dozen; poultry, 560,000 pounds; flour, 320,491 pounds.

As I said before, the population of the Zone, fed mainly through the Commissary, numbers about 65,000. When one reads of the quantity of food needed one wonders at the skill and energy that must have been employed in our Civil War to keep armies of 300,000 and more in the field. However, in



OX METHOD OF TRANSPORTATION

those days perhaps eggs and ice cream did not figure in the Commissariat, and we have no statistics as to poultry, though the poet laureate of Sherman's army referred feelingly to "how the turkeys gobbled that our Commissaries found."

The Commissary is not wholly popular. Native shop keepers, of course, are against

it. For a time Zone employees were permitted to use their books of coupons for purchases in native stores, the storekeepers afterwards exchanging them for cash at the Commissary. This practice for some reason has been ruled out, and the native stores lost a certain amount of trade by the ruling. Nor are the natives the only discontented ones.

Americans in Panama, not in the employ of the Isthmian Canal Commission, are inclined to grumble because



ROAD MAKING BY CONVICTS

they are not permitted to make purchases at the Commissary. That, however, was a matter of serious agreement between the United States and the Republic of Panama. When the United States first announced its purpose of taking over the Zone and building the Canal, there was joy among the business folks of Panama and Colon. They saw fat pickings in purveying the necessities of life for a new population of considerable size. Visions of the return of the flush times of the French engaged their imaginations. All these pleasurable anticipations were doused under the wet blanket of the Commissary into which goes the major part of the spending money of the employees. But there are Americans on the Zone, other than employees and their families, and these by a solemn international compact are handed over to the Panamanian mercies. To buy at the Commissary you must have a coupon book, and without an employee's number

all very well, but lacks in those superfluities for which every one yearns. The two governments, by the way, which protected the Panama merchants against American competition also protected a hand-



COCONUT PALMS NEAR ANCON



ENTRANCE TO BOUQUETTE VALLEY

and brass check no coupon book will be forthcoming. Of course many evade the rule by borrowing a book from a friend, but after one has thus evaded the provisions of a treaty, one usually finds there is nothing special to buy after all. My own opinion is that for the necessities of life the Commissary is

ful of Panamanians in their clutch upon certain municipal monopolies. With the completion of its power house at Gatun the Canal Commission will have a great volume of power to sell or waste. Wasted it will have to be, for a group of capitalists control the light and power company in Panama City, and the United States has agreed not to compete with them.

Salaries on the Zone during the period of the "big job" were much higher than in the States, but it is probable that upon reorganization they will be materially reduced for those who remain in permanent service—of these Col. Goethals reckons that there will be for the Canal alone about 2700.

If the Panama Railroad organization should be kept up to its present strength there will be in all about 7700 men employed. This is altogether unlikely however. The railroad will no longer have the construction work and débris of the Canal to carry, and the ships will take much of its





RICE STACKED FOR DRYING

Gov. Thatcher was appointed in 1909 and brought his department to a high state of efficiency. This department has supervision over the posts, revenues and customs, the police and fire departments, the Division of Public Works, and schools, churches and the judiciary.

There were, during the period of greatest activity, 17 post offices on the Zone. The stamps used are Panama stamps, purchased from the Republic at 40 per cent of their face value and with the words "Canal Zone" printed across their face. Stamps to the amount of about \$80,-

000 were sold annually and the money order business during the active years exceeded \$5,000,000 annually, most of which represented the savings of the workers.

The Zone police force compels admiration. It is not spectacular, but is eminently business-like and with the heterogeneous population with which it has to deal it has no doubt been busy. At the outset President Roosevelt sent down to command it an old time Rough Rider comrade of his. In late years a regular army officer has been Chief of Police. At that period it was a problem. Not only was the population rough and of mixed antecedents, but many foreign nations were looking on the Isthmus as an excellent dumping place for their criminals and other undesirable citizens. It was not quite Botany Bay, but bade fair to rival that unsavory penal colony. Closer scrutiny of applicants for employment checked that tendency, and a vigorous enforcement of the criminal law together with the application of the power to deport undesirables soon reduced the population to order.

In the early days crimes of violence were common. If one carried money it was wise to carry a gun as well. Organized bandits used to tear up the railroad tracks and wantonly destroy property for no reason



BULLOCK CART IN CHORRERA

save to satisfy a grudge against the Commission. But the organization of the police force stopped it all. In the cities of Colon and Panama is little or no public gambling, and the brood of outlaws that follow the goddess chance are not to be found there. On the Zone is no gambling at all. Even private poker games, if they become habitual, are broken up by quiet warnings from the police. It isn't that there is any great moral aversion to poker, but men who sit up all night with cards and chips are not good at the drawing board or with a transit the next day. Everything on the Zone, from the food in the Commissary to the moral code, is designed with an eye single to its effect on the working capacity of the men. It is a fortunate thing that bad morals do not as a rule conduce to industrial efficiency, else I shudder at what Col. Goethals might be tempted to do to the Decalogue.

The police force in its latter days was in the command of a regular army officer. In 1913 it numbered

332 policemen, two inspectors and a chief. Of the policemen 90 were negroes, all of whom had been in the West India constabulary or in West Indian regiments of the British army. The white policemen

had all served in the United States army, navy or marine corps. The men are garbed in khaki, and look more like cavalymen than police officers—indeed a stalwart, well-set-up body of a high order of intelligence and excellent carriage. Arrests are numerous, yet not more so than in an American city of 65,000 people. Of about 150 convicts nearly all are black and these are employed in the construction of roads within the Zone. The work of the police is



Photo by Underwood & Underwood

SUN SETTING IN THE ATLANTIC AT LIGHTHOUSE POINT

greatly expedited by the celerity of practice in the courts. That Anglo-Saxon fetish, trial by jury, is religiously observed, but the juries are of three men instead of twelve and are held strictly to the consideration of questions of fact alone. There is a full equipment of civil and criminal courts with an appellate division, but no appeal lies to the



courts of the United States. There do not seem to be many lawyers in the Zone, hence there is little litigation—or perhaps because there is little litigation there are few lawyers. It is always a mooted question whether lawyers are the cause or the effect of litigation, the bane or the antidote.

Children thrive on the Canal Zone. Nearly every visitor who has had the time to go into the residence sections of Culebra, Gorgona and other large Canal villages has exclaimed at the number of children visible and their uniform good health. Naturally therefore a school system has grown up of which Americans, who lead the world in public education, may well be proud. Three thousand pupils are enrolled, and besides a superintendent and general officials, eighty teachers attend to their education. The school buildings are planned and equipped according to the most approved requirements for school hygiene, and are especially adapted to the tropics—which means that the rooms are open to the air on at least two sides, and that wide aisles and spaces between the desks give every child at least twice the air space he would have had in a northern school.



THE FRUITFUL MANGO TREE

The children like their elders' come in for the beneficence of the Commission. Free books, free stationery, free medical treatment and free transportation are provided for all. Prof. Frank A. Gause, superintendent of the Zone schools, is an Indianian and has taken a justifiable pride in developing the

school system there so that it shall be on a par with the school of like grades in "the States." He declares that so far as the colored schools are concerned they are of a higher degree of excellence than those in our more northern communities. Native and West Indian children attend the schools of this class, in which the teachers are colored men who have graduated in the best West Indian colleges and who have had ample teaching experience in West Indian schools.

The curriculum of the Zone schools covers all the grades up to the eighth, that is the primary

and grammar school grades, and a well-conducted high school as well. Pupils have been prepared for Harvard, Wellesley, Vassar and the University of Chicago. The white schools are all taught by American teachers, each of whom must have had four years' high school training, two years in either a university or a normal school and two years of



*Photo by Underwood & Underwood*

COMPLETED CANAL NEAR GATUN

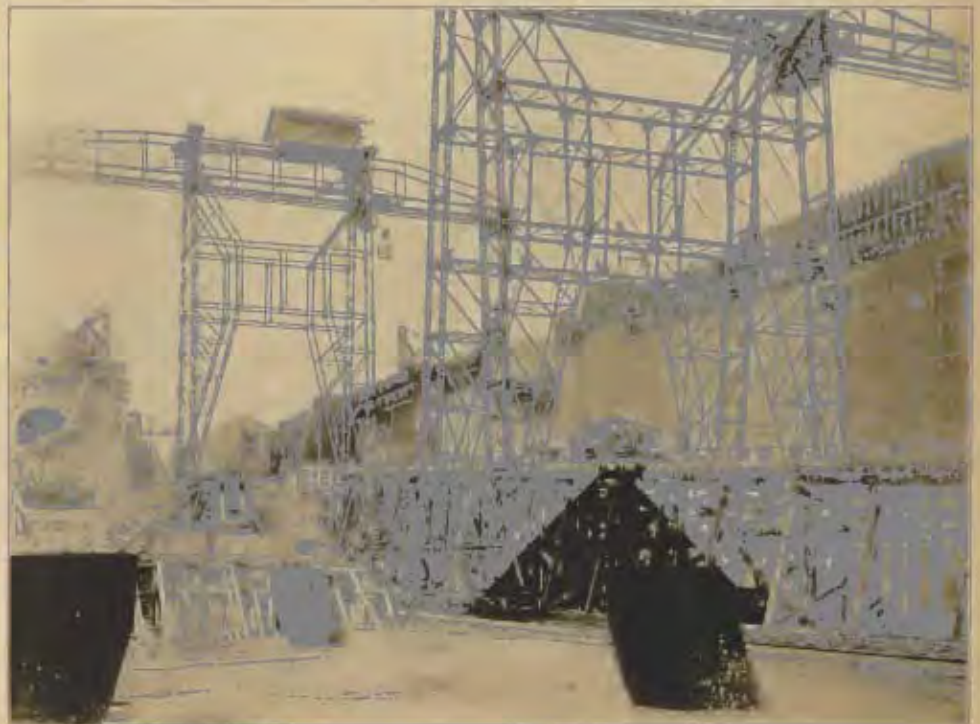
practical teaching experience. These requirements are obviously higher than those of the average American city school system. Prof. Gause declares that politics and the recommendation of politicians have no share in the administration of the Zone schools, though the efforts of Washington statesmen to place their relatives on the payroll have been frequent and persistent.

For the native and West Indian children a course in horticulture is given and school gardens established in which radishes, beans, peas, okra, papayas, bananas, turnips, cabbages, lettuce, tomatoes, and yams are cultivated. It is worth noting that considerable success has been achieved with products of the temperate zone, though especial care was needed for their cultivation. One garden of three-quarters of an acre produced vegetables worth \$350. There is a ten-

dency among Americans on the Zone to decry the soil as unfit for any profitable agriculture. A very excellent report on "The Agricultural Possibilities of the Canal Zone", issued by the Department of Agriculture, should effectually still this sort of talk. To the mere superficial observer it seems incredible that a soil which produces such a wealth of useless vegetation should be unable to produce anything useful, and the scientists of the Department of Agriculture have shown that that paradoxical condition does not exist. Practically all our northern vegetables and many of our most desirable fruits can be raised on the Zone according

to this report, and it goes on to say:

"Opportunities for establishing paying dairy herds appear good, . . . there is unquestionably a good opening for raising both pork and poultry. Small



*Photo by Underwood & Underwood*

TRAVELLING CRANES AT MIRAFLORES





A WHALER AT PEARL ISLAND

templation in the early days of the Zone. It was planned to invite settlement, though retaining the actual ownership of the land to the United States. By way of encouraging such settlement the Isthmian Commission was authorized to lease to settlers farms not exceeding 50 hectares (125 acres) each, at an annual rental of \$3 a hectare. This was not particularly attractive and the proposition was made less so by limiting the period of leases to twenty-five years. Moreover the limitation on the size of the individual farm made cattle farming quite impossible, and even ordinary farming doubtful, for in 50 hectares the actual area of good farming land is likely to be small. Although criticism of these provisions was current, in 1913 nothing was done for their correction because of the vigor with which the military authorities urged the entire depopulation of the Zone.

That proposition has not yet come before the American people. It has not even been debated in Congress, but at the moment of the publication of this book the Commission is proceeding calmly with its arrangements, as though the program were definitely fixed. The argument advanced by Col. Goethals and other military experts is that the Canal is primarily a military work. That the Canal Zone exists only because of and for the Canal, and should be so governed as to protect the dams and locks from any treacherous assault is admitted. The advocates of the depopulation program insist that with a residence on the Zone refused to any save those employed by the Commission and subject to its daily control, with the land grown up once

more into an impenetrable jungle so that access to the Canal can be had only through its two ends, or by the Panama Railroad—both easily guarded—the Canal will be safe from the dynamiter hired by some hostile government.

It may be so, but there is another side to the question. The Canal Zone is an outpost of a high civilization in the tropics. It affords object lessons to the neighboring republics of Central America in architecture, sanitation, road building, education, civil government and indeed all the practical arts that go to make a State comfortable and prosperous. Without intention to offend any of the neighboring States it may fairly be said that the Zone, if maintained according to its present standards, should exercise an influence for good on all of them. It is the little leaven that may leaven the whole lump.

That it can be maintained with its present population is of course impossible. When the employment, furnished by the construction of the Canal is finished, the army of engineers and laborers will disintegrate and scatter to other fields of industry. This process is already begun. Our government in



AN OLD WELL AT CHIRIQUI

securing labor from the West India islands assumed the task of returning the laborers to their homes at the expiration of their term of service and this is now being done, though not so rapidly as would have been the case except for the persistent activity of the slides at Culebra. It has been suggested that gifts of land, instead of passage money home, would be acceptable to these laborers, not merely West Indians, but Europeans as well. Thrown open to settlement under proper conditions the Zone would no doubt attract a certain class of agriculturists from the States.

Undoubtedly there will be a field for skilled agricultural endeavor there. As I have already noted Col. Goethals estimates the necessary force for the operation of the Canal at 2700. For the operation of the Panama Railroad in 1913 five thousand men were required but with the cessation of Canal work this number would be largely reduced. Probably 6000 men would constitute the working force of both Canal and railroad. A working force of that number would create a population of about 15,000. There is further the military force to be



CHOLO GIRLS AT THE STREAM

considered. Col. Goethals strenuously urged that 25,000 men be kept on the Isthmus permanently, but the opinion of Congress, toward the period of the opening of the Canal, seemed to be that about 7000 would be sufficient. In all probability the latter figure will be the smallest number of men that will go to make up the military establishment.

There is every reason to believe that at Balboa particularly the shipping interests will create a large and prosperous town, while already the cities of Panama and Colon, geographically part of the Zone, though politically independent, have a population of at least 60,000.

When the Canal is once in operation there will be from 75,000 to 100,000 people on the Zone and in the two native cities within it to furnish a market for the food products that can be raised on that fertile strip of land. Today the vegetables of the temperate zone are brought 3000 miles to the Zone dwellers, sometimes in cold storage, but chiefly in cans. As for those who live in the Panama towns and are denied access to the Commissary, they get fresh vegetables only from the limited supply furnished by the few Chinese market gardens. According to the Department of Agriculture nearly all vegetables of the temperate clime and all tropical fruits can be grown on the Zone lands. This being the case it seems a flat affront to civilization and to the intelligent utilization of natural resources to permit these lands to revert to the jungle, and force our citizens and soldiers in these tropic lands to go without the health-giving



A GOOD YIELD OF COCOANUTS

vegetable food that could easily be raised in the outskirts of their towns and camps. Of the sufficiency of the market for the output of all the farms for which the Zone has space and arable soil there can be no doubt, for to the townspeople, the Canal operatives and the garrisons there will be added the ships which reach Colon or Balboa after long voyages and with larders empty of fresh green vegetables.

To the mind not wholly given over to militarism the idea that this region in which so admirable, so unparalleled a beginning of industrial development has been made should be now abandoned is intolerable. And it does not seem at all plausible that our locks and dams and spillways would be safer

in a wilderness patrolled by perfunctory guards than they would be in a well-settled and thriving community every man in which would know that his prosperity was wholly dependent upon the peaceful and uninterrupted operation of the Canal.

Doubtless there will be some discussion before acquiescence is given to the military proposition that the Canal Zone—as large as the State of Indiana—shall be allowed to revert to jungle, be given over to the serpent, the sloth and the jaguar. That would be a sorry anti-climax to the work of Gorgas in banishing yellow fever and malaria, and of Goethals in showing how an industrial community could be organized, housed and fed.



*Photo by Underwood & Underwood*

SHIPPING AT BALBOA DOCKS

## CHAPTER XIX

### FORTIFICATIONS; TOLLS; COMMERCE AND QUARANTINE



WITH the completion of the Canal appeared many problems other than the engineering ones which had for so many years engrossed public attention. Some of these problems—like the question whether the Canal should be fortified or its neutrality guaranteed by international agreement—had reached a conclusion during the last year of the constructive work. But the question of Canal tolls, the future management of the Canal Zone and the broad speculation as to the general effect upon the trade of the world were still subjects of discussion.

That there should have been any serious opposition to the fortification of the Canal seems amazing, but the promptitude with which it died out seems to indicate that, while noisy, it had no very solid foundation in public sentiment. Indeed it was urged mainly by well-meaning theorists who condemn upon principle any addition to the already heavy burden which the need for the national defense has laid upon the shoulders of the people. That in theory they were right is

undeniable. Perhaps the greatest anomaly of the twentieth century is the proportions of our preparations for war contrasted with our oratorical protestations of a desire for peace. But the inconsistencies of the United States are trivial in comparison with those of other nations, and while the whole world is armed—nominally for defense, but in a way to encourage aggressions—it is wise that the United States put bolts on its front gate. And that in effect is what forts and coast defenses are. They are not aggressive, and cannot be a menace to any one—either to a foreign land, as a great navy might conceivably be, or to our people, as a great standing army might prove.

The guns at Toro Point and Naos Island will never speak, save in ceremonial salute, unless some foreign foe menaces the Canal which the United States gives freely to the peaceful trade of the world. But if the menace should be presented, it will be well not for our nation alone, but for all the peoples of the earth, that we are prepared to defend the integrity of the strait of which man has dreamed for more than 400 years, and in the creation of which thousands of useful lives have been sacrificed.

Mistaken but well-meaning opponents of fortification have insisted that it was a violation of our pact with Great Britain, and a breach of international comity. This,



EXPLAINING IT TO THE BOSS



Photo by American Press Ass'n

SPANISH MONASTERY AT PANAMA

however, is an error. True, in the Clayton-Bulwer treaty of 1850, both the United States and Great Britain expressly agreed not to fortify or assume any dominion over any part of Central America through which a canal might be dug. But that treaty was expressly abrogated by the Hay-Pauncefote treaty. In its first draft this latter treaty contained the anti-fortification clause and was rejected by the United States Senate for that very reason. In its second draft the treaty omitted the reference to fortifications and was ratified. Lord Lansdowne, one of the negotiators for the British government, explicitly said that he thoroughly understood the United States wished to reserve the right to fortify the Canal.

It was so clear that no question of treaty obligations was involved that the opponents of fortification early dropped that line of argument. The discussion of the treaty in the Senate silenced them. They fell back upon the question of expediency. "Why", they asked, "go to the expense of building and manning fortifications and maintaining a heavy garrison on the Zone? Why not, through international agreement, make it neutral and protect it from seizure or blockade in time of war? Look at Suez!"

This was more plausible. At first glance the questions seem answerable in only one way. But consideration weakens their force. There is a Latin copy-book maxim, "*Inter armis silent leges*"—"In



Photo by H. Pittler Courtesy National Geographic Magazine  
CHOCO INDIAN OF SANBU VALLEY

"In



time of war the law is silent'. It is cynically correct. International agreements to maintain the integrity or neutrality of a territory last only until one of the parties to the agreement thinks it profitable to break it. It then becomes the business of all the other parties to enforce the pact, and it is usually shown that what is everybody's business is nobody's business. Consider a partial record:

The independence of Korea was guaranteed by four Great Powers in 1902. Inside of two years the Japanese Admiral Uriu violated the independence of the Korean port of Chemulpo by sinking two Russian cruisers in it, and shortly thereafter Japan practically annexed the country. None of the Powers that had "guaranteed" its independence protested.

Austria-Hungary in 1908 annexed Bosnia and Herzegovina, despite the fact that seven Powers, including Austria-Hungary herself, had fixed the sovereignty of those provinces in Turkey. The signatory powers grumbled a little, but that was all. Mr. W. E. Hall, recognized as the greatest living



THE RISING GENERATION

authority on international law, observes cynically, and truthfully, that "treaties are only permanently obeyed when they represent the continued wishes of the contracting parties".

Prussia once guaranteed the independence of Poland, and in two years took the leading part in blotting it off the roll of nations.

Illustrations of the failure of nations to observe the rights of neutrals are common. Turkey and Korea afford recent illustrations of nations that have entrusted their national integrity to international agreements. Nothing remains of

Korea's nationality but a name, and the Allies are rapidly carving Turkey to bits while the Great Powers that guaranteed her integrity look on in amazed and impotent alarm. The United States itself has not been wholly without share in such high-handed proceedings.

In the event of a general war



ANCON HILL, WHERE AMERICANS LIVE IN COMFORT

Panama Canal would be kept neutral just so long as our military and naval power could defend its neutrality and no longer.

Moreover, we do not want it neutral in a quarrel in which we are involved. The Canal is dug by our money and in our territory and is part of our line of defense. We do not propose to permit its passage by an enemy. That would be strict neutrality indeed, but it would make the Canal a weakness instead of a defense. Without it our Pacific Coast is practically safe from European aggression; our Atlantic coast protected by thousands of miles of ocean from any foe whose naval strength is in the Pacific. To throw open the Canal to our foes as well as to our friends would be like supplying the key to the bank vaults to the cracksmen as well as to the cashier.

The parallel with the Suez Canal strenuously urged by the advocates of neutrality does not hold. The waterway between the Mediterranean and the Red

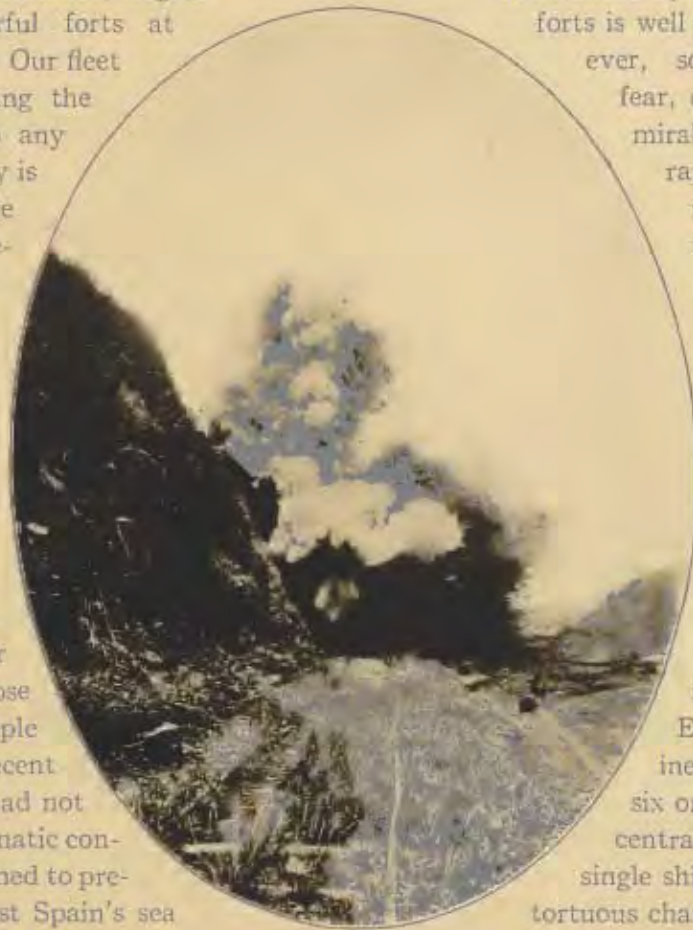
Sea was not dug as a government enterprise. It was a distinctly commercial enterprise, with its shares listed upon the exchanges and bought and sold in the open market. By the purchase of a majority of those shares the ownership of the Canal passed into the hands of the British government, but all the nations had joined in the international agreement to protect their individual rights before the British ownership was effected. Moreover, Great Britain is by no means content with the safeguards provided by the Constantinople convention, but has planted her great fortresses at Malta and at Aden, near the ends of the Canal, and maintains in the Mediterranean a naval force equal to that of any other two nations. The Caribbean is to be the American Mediterranean, and the visible and effective power of the United States in those waters must be equal, probably vastly superior, to that of England in Europe's great inland sea.



Photo by American Press Ass'n

GATUN LAKE, SHOWING SMALL FLOATING ISLANDS

Nor does the existence of a powerful navy, even the material multiplication of our present naval force, obviate to any considerable degree the necessity for powerful forts at either end of the Canal. Our fleet cannot be anchored during the continuance of a war to any one fixed point. The navy is essentially an offensive force, its part in the defense of our country being best performed by keeping the enemy busy defending his own. Farragut said that the best defense against the attack of any enemy is the rapid fire of your own guns. Extend this principle and it appears that the best way to defend our own coasts is to menace those of the enemy. This principle was not applied in our recent war with Spain, but we had not the navy then, and diplomatic considerations further intervened to prevent our employing against Spain's sea coast cities such vessels as we had. Should we rely wholly on the navy to defend our Canal entrances a mere demonstration against those points would tie up a considerable portion of our floating force, while an enemy's main fleet might ravage our thickly populated sea coasts.



A SPECTACULAR BLAST

Discussion of this question, however, is largely academic, for the fortification of the Canal has been determined upon, and construction of the forts is well advanced. There is, however, some disquietude over a fear, expressed by the late Admiral Evans, that the topography at the Atlantic terminus of the Canal is such that fortifications, however great their strength, would not be sufficient to prevent the enemy holding a position so near the Canal's mouth as to be able to concentrate its fire on each ship as it emerged and thus destroy seriatim any fleet seeking to make the passage of the Canal. The criticism was a serious one. Even to the civilian mind the inequalities of a battle in which six or eight battleships can concentrate their broadside fire on a single ship navigating a narrow and tortuous channel and able to reply with her bow guns only are sufficiently obvious. Indeed the criticism was held of sufficient force to be referred to the General Board of the Navy, which, after due consideration, made a report of which the following quotations form the substance:



THE FIRST VIEW OF COLON

"The General Board believes that the proposed fortifications at the termini of the Isthmian Canal would be invaluable in assisting the transfer of a United States fleet from one ocean to the other through the Canal, in the face of an opposing fleet. The function of the fortifications in this particular is precisely the same at the Canal termini as it is at any fortified place from which a fleet may have to issue in the face of an enemy's fleet.

"Guns mounted on shore are on an unsinkable and steady platform, and they can be provided with unlimited protection and accurate range-finding devices. Guns mounted on board ship are on a sinkable, unsteady platform, their protection is limited, and range-finding devices on board ship have a very limited range of accuracy. The shore gun of equal power has thus a great

advantage over the ship gun which is universally recognized, and this advantage is increased if the former be mounted on disappearing carriages, as are the seacoast guns of the United States.

The mere statement of these elementary facts is a sufficient proof of the value of seacoast guns to assist a fleet in passing out from behind them to engage a waiting hostile fleet outside, provided

the shore guns are mounted in advance of, or abreast, the point where the ship channel joins the open sea. Even if somewhat retired from that point they would be useful, but to a less extent.

"At the Pacific terminus of the Canal there are outlying islands that afford sites for fortifications, the usefulness of which in assisting the egress of a fleet in the face of opposition is universally ad-



A PORCH AT CULEBRA



Photo by American Press Ass'n

AVENIDA CENTRALE, PANAMA, NEAR THE STATION



Copyright, 1911, F. B. Wright.

Some say that before the days of the city water supply this pool held water for protection against fire. Nowadays it is ch

SWIMMING POOL AT PANAMA



Chiefly used for the ampu



atic revels of the boys.



mitted, as far as the General Board knows; but there has been unfavorable criticism of the possibility of fortifications at the Atlantic end to serve this purpose. The General Board regards these criticisms as unfounded and believes, on the contrary, that the conditions at the Atlantic terminus of the Canal are unusually favorable for the emplacement of guns that would be of assistance to a fleet issuing in the face of hostile ships.

"On both sides of Limon Bay, in which the Canal terminates at the Atlantic end, there are excellent sites for forts, well advanced on outlying points. The line joining these sites is 3000 yards in front of the point where the Canal prism reaches a low-water depth sufficient for battleships, and Limon Bay from this point outward is wide enough for a formation of eight ships abreast. The outer end of the most advanced breakwater proposed is only 600 yards in front of the line joining the sites for the forts; and as long as ships remain behind the breakwater, it will afford them a considerable amount of protection from the enemy's fire, while they will themselves be



A MOUNTAIN RIVER IN CHIRIQUI



IN A CHIRIQUI TOWN

able to fire over it. In order to make his fire effective against the issuing ships the enemy must come within the effective fire of the fortifications. Under these circumstances it is impossible to deny the usefulness of fortifications in assisting the issue of a fleet against opposition. The conditions in this respect at the Atlantic end of the Canal are incomparably better than those existing at Sandy Hook, whose forts nobody would dream of dismantling".

Concerning the type of fortifications now building there is little to be said. The War Department is not as eager for publicity as are certain other departments of our federal administration. In November, 1912, Secretary of War Stimson made a formal statement of the general plan of defense. No change has been made in this plan, and it may be quoted as representing the general scheme as fixed upon by the War Department and authorized by Congress:

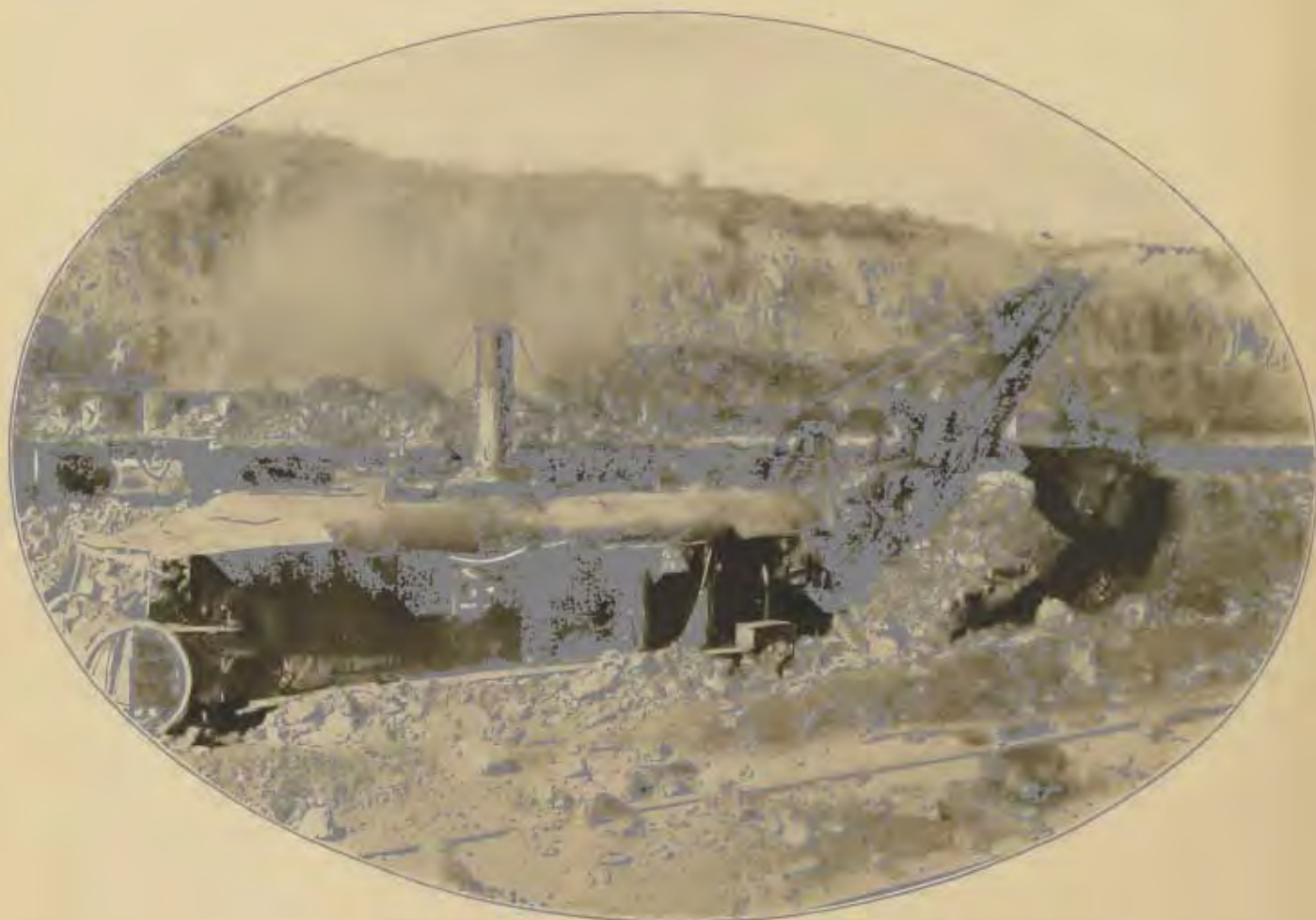
"The defenses to the Isthmus are divided into two general heads:

"1. A seacoast armament with submarine mines at the termini of the Canal, for protection against a sea attack and to secure a safe exit for our fleet in the face of a hostile fleet.

"2. The construction of field works and a mobile force of troops to protect the locks and assure important utilities against an attack by land".

"The seacoast fortifications will include 16-inch, 14-inch and 6-inch rifles and 12-inch mortars. This armament will be of more powerful and effective types than that installed in any other locality in the world. At the Atlantic end of the Canal the armament will be located on both sides of Limon Bay.

Panama Canal Zone of a mobile force consisting of three regiments of infantry, at a war strength of nearly 2000 men for each regiment, a squadron of cavalry, and a battalion of field artillery. These latter fortifications and the mobile garrison are intended to repel any attacks that might be made by landing parties from an enemy's fleet against the locks and other important elements or accessories to the Canal. As an attack of this character might



BITING THROUGH A SLIDE: FIVE CUBIC YARDS PER BITE

At the Pacific end the greater part of the armament will be located on several small islands, Flamenco, Perico and Naos, which lie abreast of the terminus. Submarine mines will complete the seacoast armament and will prevent actual entry into the Canal and harbors by hostile vessels.

"In addition to these fortifications, and the necessary coast artillery and garrison to man them, the defensive plans provide for the erection of field works, and for the maintenance at all times on the

be coincident with or even precede an actual declaration of war, it is necessary that a force of the strength above outlined should be maintained on the Canal Zone at all times. This mobile garrison will furnish the necessary police force to protect the Zone and preserve order within its limits in time of peace. Congress has made the initial appropriations for the construction of these fortifications, and they are now under construction. A portion of the mobile garrison is also on the Isthmus,



and the remainder will be sent there as soon as provision is made for its being housed".

It is to be noted that these plans contemplate only the garrisoning of the Isthmus in time of peace. The department has steadfastly refused, even in response to congressional inquiry, to make public its plans for action in war time. The only hint offered on the subject is the estimate of Col. Goethals that 25,000 men would be needed there in such a contingency and his urgency that such a garrison be maintained on the Zone at all times.

The most vulnerable point of the Canal is of course the locks. The destruction or interruption of the electrical machinery which operates the great gates would put the entire Canal out of commission. If in war time it should be vitally necessary to shift our Atlantic fleet to the Pacific, or vice versa, the enemy could effectively check that operation by a bomb dropped on the lock machinery at Gatun, Pedro Miguel or Miraflores. It is, however, the universal opinion of the military experts that this danger is guarded against to the utmost extent demanded by extraordinary prudence. Against the miraculous, such as the presence of an aeroplane with an operator so skilled as to drop bombs upon a target of less than 40 feet square no defense could fully prevail. The lock gates themselves are necessarily exposed and an injury to them would as

effectually put the lock out of commission as would the wrecking of the controlling machinery.

Col. Goethals has repeatedly declared his belief that the construction of the locks is sufficiently massive to withstand any ordinary assaults with explosives. No one man could carry and place secretly enough dynamite to wreck or even seriously impair the immediate usefulness of the locks. Even in time of peace they will be continually guarded and patrolled, while in time of war they will naturally be protected from enemies on every side and even in the air above. The locks are not out of range of a fleet in Limon Bay and a very few 13-inch naval shells would put them out of commission. But for that very reason we are building forts at Toro Point and its neighborhood to keep hostile fleets out of Limon Bay, and the United States navy, which has usually given a good account of itself in time of war, will be further charged with this duty and will no doubt duly discharge it.



COMMISSARY BUILDING AND FRONT STREET, COLON

That the locks make the Canal more vulnerable than a sea-level canal would have been is doubtless true. The fact only adds to the argument in behalf of defending it by powerful forts and an adequate navy.

General Weaver, U. S. A., raised the only serious question as to the sufficiency of the defenses on the Pacific side in his testimony before the House Committee on Appropriations:

"My views are entirely in harmony with those expressed by Col. Goethals. I think that the defenses are wholly adequate. The only question I have noted raised as to the adequacy of the defense has been as to whether guns would not be mounted by an enemy on Taboga Island, and as to whether an enemy's ships could not stand behind Taboga Island, and as to whether these land guns and naval guns could not from there control the water area in front of the Pacific terminus? The new type of mortars that the Ordnance Department is making

for the fortifications at Panama will have a range of 20,000 yards. They will cover the water well over beyond Taboga Island, and have under fire all of Taboga Island and the water for a considerable distance beyond the outermost shore lines of Taboga Island. It is about 12,000 yards from the fortifications at the Canal terminus to Taboga Island. The mortars will reach 8000 yards beyond Taboga. The 16-inch gun on Perico will have a range of 20,000 yards. The 14-inch guns on Flamenco and Naos Islands will have ranges of 18,400 yards. The 6-inch guns on Naos Island and on the mainland have a range of 6000 yards, and are well placed to oppose any attempt at landing on the lands on which the fortifications are located.

"*Mr. Sherley.*—'So far you have spoken only of the Pacific side. Now, what have you to say about the defense on the Atlantic side?'

"*Gen. Weaver.*—'On the Atlantic side the defense is, in my opinion, equally adequate. At Fort Ran-



PEDRO MIGUEL LOCKS

The deep arched recesses are provided that the gates may fold flush with the walls