PUBLIC EDUCATION IN THE PANAMA CANAL ZONE

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Foreword

AMERICANS are justly proud of the Panama Canal, the first and the most significant of our larger ventures as a Nation in commercial engineering. Old as were the dreams, and varied, among European nations the dreamers, who were concerned with briding the Isthmus by land or water, it remained for the nineteenth century and the Government of the United States to realize their materialization. Two successful means of trans-Isthmian travel are now in operation—one by rail, established with the completion of the Panama Railroad, and one by water with the completion of the Canal. These enterprises were built and their operation is administered by a group of people representative of every State in the Union. The community is unique among American communities in many respects, in selection, in occupational, social, and economic homogeneity, for example. It occupies a narrow strip of land approximately 50 miles long extending from the Atlantic to the Pacific Oceans, known as the Canal Zone. All of its people are directly or indirectly engaged in the operation of the Canal and the railroad. They number approximately 60,000, about half of whom are white citizens of the United States and half Jamaican Negroes.

Almost simultaneously with the advent of families—in the fall of the same year in which the United States secured control of the Canal Zone, September 1904—the Isthmian Canal Commission authorized schools. The establishment of the principle of universal education at public expense has been the policy consistently followed in American occupation of extracontinental territory. In the Canal Zone this principle, followed over a period of years, has probably been realized more fully and successfully than in any other area in the jurisdiction of the United States outside the 48 States. The story of the school system of the American community living in this territory in the tropics, where continuous summer prevails, and in the midst of a foreign country, yet maintaining itself as an American community in all its social standards, including education, is the subject of this bulletin. It is one of a series planned to familiarize the people of the United States with the schools and school systems located in each of our outlying parts.

BESS GOODYKOONTZ,
Assistant Commissioner of Education.

Public Education in the Panama Canal Zone

Introducing the Canal Zone Community

AMONG American communities lying outside the normal boundaries of continental United States, yet an integral part of it, that located in the Republic of Panama is unique in so many respects as to be of more than passing interest. Here, in a strip of territory known as the Canal Zone, is the home of a community of citizens of the United States, most of them born in one of the 48 States, and responsible for the upkeep of the Panama Canal—probably our most important governmental venture into the field of commercial engineering. The education of the children of this community, of citizens of the United States, and of a large group of noncitizens engaged in the maintenance of the Canal and resident on the Canal Zone is a significant phase of the responsibility assumed by our Government for the social welfare of the people.

The Canal Zone is a narrow strip of land approximately 50 miles long and 10 miles wide extending across the Isthmus of Panama at one of its narrowest points. Through the center of the zone or its approximate center, runs the Panama Canal—the waterway connecting the Atlantic and Pacific Oceans and dividing the two American continents. It lies almost directly south of the eastern section of the State of New York. It is 9°—about 800 miles north—of the Equator in the Torrid Zone.[1] The climate is therefore tropical, moderated considerably by trade winds and the proximity of the two oceans. Continuous summer prevails throughout the year.

The Canal Zone is unique among American communities in a number of ways. Approximately half its population of 38,873 is made up of white persons who are citizens of the United States; while the other half (approximately) discussed in another section, are colored, noncitizens, chiefly men and women from the island of Jamaica, close by, of the British West Indies. It was established and is maintained with a single purpose, the operation of the Panama Canal, a purpose which has a very decisive influence on the attitudes and manner of living of the community. Its people are all engaged, directly or indirectly, in that particular enterprise, and are with few exceptions employees of the United States Government in its civil or military

[1] Bishop, Farnham. Panama, past and present. New York, The Century Co., 1916.

The new Canal Zone housing program will soon result in all gold employees living in homes such as these at Gatun.

services. The bulk of the population lives in the two largest settlements—Balboa on the Pacific side and Cristobal on the Atlantic—adjacent to the Panamanian cities Panama and Colon, respectively Other smaller settlements are located along the route of the Canal

While the operation of the Canal is mainly a commercial project, security and protection of the project itself and the people concerned, demand that it be well fortified. Both military and naval forces are maintained in the zone, lending to the character of the community both civil and military aspects. The Government assumes many of the responsibilities for the welfare of the community that are usually characteristic of a military reservation—housing, for example, and the maintenance of commissaries. In addition it provides educational facilities for its employees resident in the zone—a responsibility not generally assumed on military reservations.

The largest single group of Canal and Panama Railway employees is made up of skilled craftsmen, machinists, mechanics, electricians, painters, plumbers, and the like. Their children form one of the large groups attending the schools. In addition there are office employees, including higher officials, accountants, cashiers, draftsmen, and general clerical employees; persons employed in the business of health and sanitation involving the service of druggists, nurses, physicians, sanitary inspectors, and the like; in the conduct of the commissary stores and hotels and miscellaneous occupations, and in the operation of the Panama Railroad—these together with the Army, Navy, and Marine

Corps personnel make up the employed population whose children attend school. The salaries of American employees who are heads of families may range from $100 per month to a maximum of $833.33; the average is estimated at $250 per month.[2] This means, of course, that salaries of many are both below and above that figure, but there is not the range on either side of the median usually found in communities elsewhere.

Economic homogeneity is, of course, only one phase of the whole situation. Of equal importance is the situation concerned with general health and sanitary conditions, all of which are regulated by the Government of the Canal Zone and all of which are equally good regardless of the economic status of the resident. The zone is a model in sanitary and health conditions and these conditions are naturally reflected in the appearance, content, and happiness of the entire community and its people. Medical and hospital services are available to adults as well as to school children.

It follows that standards of living among the white population of the zone, while not uniform, are not characterized by the extremes usually observed in communities and correspondingly in school systems of similar size in the United States. Residents, who are practically all employees of the Federal Government, live in quarters built by and belonging to the Government of the United States. There is considerable similarity in the type and character of Canal Zone homes, particularly, of course, in the style of architecture and general upkeep of buildings and grounds. The people of the zone purchase their food and clothing from the Government commissaries; for recreation and amusement they frequent the same places—theaters, recreation parks, swimming pools, ball grounds, and the like. For education and culture—the same schools, concerts, and other opportunities are available, more or less regardless of the social and financial status of the people concerned.

Nor are these physical and social aspects of community life the only unifying influences. The attitudes and interests of the people are perhaps even stronger ones. They make up an American community somewhat isolated from the homeland in foreign surroundings—in itself an important unifying factor. Over a long period of years the recognized purposes of the Canal Zone and its people have been the successful building and operating of the Panama Canal. The achievement of the latter is still the common responsibility of the whole community; that of the former, a continuing and still powerful influence. Many of the original group concerned with building the canal are still resident in the zone, in positions commanding respect and of importance. Their tradition of acceptance of and devotion to a common responsibility, if not shared by, has at least influenced the attitudes of the

[2] Information from unpublished material from the office of the Superintendent of Schools.

The Ancon Clubhouse is one of many such community centers provided for the enjoyment of canal workers.

community as a whole. The cumulative effect is an apparent unity and homogeneity in the Canal Zone unique among American communities.

In general, as would be expected, living in the Canal Zone follows a pattern very similar to that in the United States. In its white citizen population, over a period of time, if not continuously, all of the 48 States are represented; to the majority of them some one of the States is still "home." Surely in few communities within or without the borders of continental United States is there so much extended travel per person in the population as in the Canal Zone, much of it concerned with going to and coming from the States. Among the teachers there is probably more than the usual amount of foreign travel. South and Central American countries especially are visited frequently and by a relatively high percentage of their number.

While the Canal Zone must be thought of as a representative American community, it is not, of course, a typical one. There are several unique features as indicated, but they are due to the history of the Zone and to conditions prevailing there—not to differences in the character or aspirations of the people.

History and Development of the Panama Canal

The opening of the Panama Canal in 1920 by the Government of the United States to the ships of the world for commerce and travel marked the culmination of 400 years of seeking or planning for a water

route between the two great eastern and western oceans; the realization of the dream that inspired Columbus to search for the waterway he so ardently believed was to be found between Europe and the coveted riches of the Indies. Though he could not have been aware of it in 1502 when he sighted the shores of Panama and anchored in the bay, named Almirante in his honor, there was, in ancient geological periods, a natural channel where the Continental Divide, extending from Alaska to the Straits of Magellan, dips to its lowest point. Later the land rose to form the barrier between the oceans which is now the Isthmus of Panama. Centuries of erosion followed involving the formation of valleys on either side of the central ridge accessible to the early explorers, who found the distance between the shores at several places, including the one where the Canal is now located, such as to make a connecting canal seem feasible as well as desirable.

Plans for Connecting the Oceans Followed Early Discoveries

The history of the Isthmus of Panama really begins with Columbus; the idea of an ocean-connecting canal across it dates at least as far back as 1520 [3] when Charles V, King of Spain, ordered a survey of the Isthmus to explore the feasibility of a waterway. However, a road over land had to suffice for the time, though the waterway was reported feasible, since money for financing the undertaking was not then available. Only a year later—1521—Gil Gonzales is said actually to have transported ships across the Isthmus though he had to take them to pieces carrying them on mules and the backs of Indians to achieve it. The Conquistador, Cortez, was another seeker for the much-desired strait then believed to exist. He actually "did open up a line of communication across the Isthmus of Tehuantepec" [4]—the line long afterward considered for the Ead's proposed ship railway.

Strange as it now appears, some of the early contemplated routes followed closely the one finally selected for the Canal after hundreds of years of surveying and exploring and after many other contemplated routes had been considered and abandoned. Spain made at least two additional early gestures toward canal building. In 1534 the King of Spain dispatched Pasqual di Andagoya to make a survey with the idea of "constructing a canal via the Chagres River as far as Cruces, then connecting with the Rio Grande." [5] Again in 1616, Philip III ordered a survey of the "Darien Country" with the same objectives. The former reported as feasible the route via the Chagres River—the basic source of water for the Canal now operating. The obstacles to these projects seemed insurmountable. The danger from raids of pirates then infesting both the Atlantic and Pacific coasts in the

[3] Haskin, Frederic J. The Panama Canal. New York, Doubleday, Page & Co., 1913.
[4] Ibid.
[5] Verrill, A. Hyatt. Panama, past and present. New York, Dodd, Mead & Co., 1921. p. 27.

vicinity of the Isthmus, and the cost which was more than Spain could then afford, intervened and the projects were never undertaken.

During the early period of discovery and exploration Spain was the most influential and successful of the European countries interested in colonization of the New World or in the exploitation of its wealth in gold, silver, and precious stones. However, other European countries were only a little less active and successful in these enterprises. It is not surprising, therefore, that they too considered the possibility of building a bridge or canal connecting the oceans, following Spain's example and their own growing acquisitions of territory. These early plans and contemplated projects were, however, without practical results.

Early Isthmian Travel

For years the area now known as the Isthmus of Panama thrived as the source as well as the clearing house of wealth incalculable for European countries, especially, of course, for the mother country, Spain. With the conquest of Peru and Mexico and early colonization in Central America, Panama was the great distributing center for untold wealth in gold, silver, pearls, and other precious stones. Throughout the known world Panama was famed as Spain's richest colony destined to be her last as well as her first stronghold in America.[6] Collection of wealth on the Isthmus from Pacific ports involved no great difficulties, but getting it across to the Atlantic side, where galleons waited to transfer it to Europe involved great hardships and an army of laborers. Charles V, the first Spanish monarch to consider the possibility of building a canal across the Isthmus, realized the necessity of an improved means of transporting his treasure from one side of it to the other. Under his direction the stupendous task of building a road across the Isthmus was undertaken. The new road, completed under the greatest difficulties, was known as "the gold road." It was a rock-paved trail through dense jungle territory—fragments of which still exist—from Panama on the Pacific side to Las Cruces (The Crossing) where it met the Chagres River. From the Atlantic side the road followed the river as far as it was navigable. There, pack trains met the galleons transferring the precious cargo to and from Panama—then as now the chief Pacific port.

The Isthmian gold road, like that built by Cortez across Mexico from ocean to ocean, was among Spain's early achievements in road building—together they were forerunners of our own El Camino Real familiar in the southwestern areas of the United States.

Looking backward over the history of the Isthmian area three rather distinct eras are of interest in the history of the Canal and the

[6] Haskin. Op. cit.

Canal Zone. Each is a period of adventure and prosperity, followed by neglect, poverty, and near-desertion. The first era, characterized by discovery and adventure, closed with the virtual triumph of the pirates and freebooters who for years had raided the coasts—even ventured, by way of the Chagres River, into the mainland. Among these, Drake, and later Morgan, are primarily responsible for raids which proved most disastrous to Spain's colonial population. Toward the last quarter of the seventeenth century Morgan, an English raider and native of Wales who had escaped from slavery in the Barbados and joined the buccaneers of several nations which then infested the Atlantic coast, succeeded in capturing first, Porto Bello, and later Panama. He captured, sacked, and looted the city which had grown to be one of Spain's richest colonial cities. While credited by some historians with a population numbering from 30,000 to 50,000, Bishop estimates that 10,000 is more nearly correct.[7] The old city was burned to the ground and never rebuilt. The ruins remain on the original site even to the present day. Some years later, in 1672, Spain built a new city some 4 miles away on the present site of the capital of the Republic of Panama.

Following the downfall of the old city the first era of prosperity and adventure passed. The difficulties of getting cargoes across the Isthmus by the old road were too great for practical success as Spain's colonial empire declined. A feasible route around South America by way of Cape Horn was opened about 1640, as a result of which the Isthmian route was practically abandoned. A long period of inactivity and lack of prosperity followed. Spain failed to regain her place of leadership in the Americas. The territory now known as Panama—then part of "New Granada"—along with other southern and central American countries, became independent under the great civil and military leader, Bolivar, in 1831.[8]

The next period of prosperity for the Isthmus, eventful in the history of trans-Isthmian travel, is marked by the building of the Panama Railroad, an achievement second in importance only to that of building the Canal. The discovery of gold in California in the days of the "forty-niners," brought new life to the Isthmus and the old "gold" road was revived, this time largely for human travel rather than transportation of gold and precious stones. Thousands of Americans were poled and paddled up the Chagres and rode over the old road, by that time a worn-out trail, to Panama City. The journey was characterized by hardships and discomforts almost unbelievable. High prices prevailed and often the travelers who withstood the hardships as well as the dangers involved in living in a tropical climate to which they were unaccustomed and for which they were not prepared, were forced to wait months at Panama for a ship to San Francisco. At San Fran-

[7] Bishop. Op. cit., p. 86.

[8] Verrill. Op. cit., p. 40.

cisco ships rode at anchor at the wharves often weeks, even months, while their crews went gold hunting.[9] Difficult as conditions were, the lure of gold was overpowering, travel continued, and the Isthmus boomed again as it had in the golden days of the galleons.

After the admission of Oregon and California into the Union, Congress authorized a line of steamers on both coasts of the Isthmus carrying mail. This increased the realization of the need for improved transportation across the Isthmus and aroused the interest of American capitalists in the provision of a trans-Isthmian railway. As a result, a company was formed which obtained the exclusive rights for the construction and maintenance of a railroad across the Isthmus through Panama, then a state in the republic of Granada. In 1850 work began on the construction of the railroad connecting the two coasts, a project which was successfully completed about 5 years later.

The difficulties involved in this enterprise anticipated early experiences in the building of the Canal. There were untold hardships; jungle insects and tropical fevers ravished the population, so that new recruits to the army of laborers required in building the road were constantly necessary. Financial difficulties also beset the company. Unanticipated costs developed due to unexpected natural barriers and other difficulties concerned with building a railroad through a dangerous, well-nigh impenetrable jungle. The road was unusually costly measured by lives lost as well as by money invested. The reputation gained by the railroad that "a life was spent for each tie laid" is said by some historians not greatly to exaggerate the actual human cost. More conservative estimates placed the number of lives lost at about 1,000.

However, the work progressed in spite of difficulties. Building proceeded from both sides of the Isthmus. Workmen, to begin building on the Pacific side, were recruited in the United States and elsewhere and sent around South America via the Horn to Panama. They built 11 miles of railroad from the Pacific side to Culebra. Here the road joined the sections begun on the Atlantic side. In January 1855, the first locomotive passed over the road from ocean to ocean and "the bridge of the world became a world's highway in truth." [10]

Almost from its opening the Panama Railroad was eminently successful and became a source of high revenue to the management and investors. While costs of building the railroad and maintaining it were abnormally high, so were rates charged for passenger travel and freight. A large and profitable business flourished for at least two decades. In the relatively short period of 10 years the railroad is said to have paid for itself, while it continued for years to bring an unusually high income to the investors reponsible for it. The building of the Union Pacific Railway following permanent settlement of the Pacific

[9] Bishop. Op. cit.

[10] Verrill. Op. cit., p. 43.

and Middle West brought this period of Isthmian prosperity to a close.

During the years covered by this period, various possibilities of consummating the long-contemplated plans for a canal connecting the Atlantic and Pacific Oceans were receiving serious consideration in a number of European countries as well as in the United States. Although none of the several proposed projects materialized, their cumulative effects on the final dénouement were significant. In 1779 the King of England ordered an investigation into the feasibility of connecting the Nicaraguan lakes with the sea. In 1825 the federation of states known as the Central American Republic entered into an agreement favored by Henry Clay, then Secretary of State, with New York capitalists for the construction of a canal through Nicaragua. In 1838 the Republic of New Granada, which was then in possession of what now is the Republic of Panama, granted a concession to a French company to build a canal across the Isthmus. The United States Government became deeply interested in Isthmian Canal projects during the 40's of the last century. The extension of the national domain to the Pacific Coast emphasized the importance of an Isthmian Canal and the possible danger from control of such a waterway by a foreign power. One result was that the American Government advised the British Government that it would not tolerate the control of an Isthmian Canal by any foreign power. This brought about the Clayton-Bulwer Treaty which made neutral the territory of the proposed Nicaraguan Canal.[11]

The cumulative effect of these and other contemplated projects—too numerous, many of them even fantastic, to refer to here—was to stimulate and keep alive interest in an isthmian canal in the Americas, including the United States. This led naturally to the third of the eras referred to as of interest in Canal Zone history, that of actual construction, characterized by failure at first; ultimately, as the world knows, by triumphal success.

The completion of the Suez Canal was the immediate cause of a new impetus to the idea of an American Isthmian canal, particularly in France. Looking backward over this period it appears to be the real beginning of the movement which resulted finally in the actual undertaking of the project by the United States.

With the success of the Suez Canal definitely established, interest in what seemed a similar project was easily aroused in France. In 1878 the Universal Interoceanic Canal Company was organized with Ferdinand de Lesseps, the successful builder of the Suez Canal, at its head. The plan contemplated by this company was to result in a sea-level canal across the Isthmus of Panama, located approximately where the canal now is. The actual work of building was formally inaugurated by de Lesseps on New Year's Day, 1880.

[11] Haskin. Op. cit.

The newly established company acquired the controlling interest in the Panama Railway and during a period of at least 5 years spent vast amounts in excavation and other work directed toward the building of a sea-level canal. The same terrific loss of life that characterized the building of the railway accompanied the French efforts to build the Canal. All practical measures then known to science were employed to stamp out malaria and yellow fever but with indifferent success. Science had not yet found the way. Bad management of the financial affairs of the company augmented the difficulties and hardships which natural obstacles interposed. Bankruptcy finally ended the efforts of the original company after approximately 10 years of existence. A new company was formed and work resumed in 1895, but despite extensive excavating, high expenditures, and great loss of life, the efforts of the French failed to reach the final goal.

Enter—The United States

Interest in a canal on the Isthmus or somewhere in its vicinity, while dormant during the French efforts, was still an important issue in the United States. In 1886, immediately after the French failure, the Senate of the United States requested the Secretary of the Navy to furnish all available information pertaining to the possibility of a canal across the Isthmus. It was reported at that time that 19 canal and 7 railway projects had been proposed, the most northerly across the Isthmus of Tehuantepec and the most southerly at the Isthmus of Panama at the Gulf of Darien, 1,400 miles apart. Eight of the projects were located in Nicaragua.

During the Spanish-American War renewed interest was aroused among the people of the United States in an American-owned and operated canal. The dramatic trip of the battleship *Oregon* from New York to the Pacific Ocean around the coast of South America by way of Cape Horn, commanded by Captain Clark and consuming 2 months even at record speed for that time and type of ship, focused the attention of the American people and the Government of the United States on the need for a shorter water route between the two coasts controlled by the United States. By 1903 sentiment had crystallized and Congress proceeded to take the necessary steps preparatory to planning and building a canal.

The route across the Isthmus through Panama was finally chosen, after considerable discussion of other possible routes, provided that a satisfactory treaty with Colombia could be negotiated and titles, rights-of-way, etc., of the French company proved valid. The alternative was the adoption of a route through Nicaragua.[12]

While some serious difficulties arose among the three countries concerned, the United States, Colombia, and Panama, in regard to

[12] Haskin. Op. cit.

the acquisition of territory and treaty rights, they were finally adjusted. Congress then authorized the purchase of the New French Canal Company's rights, appropriating forty million dollars for the purpose, and paid the Republic of Panama ten million dollars for the initial rights in the territory through which the Canal runs, including a strip of land 10 miles in width extending across the Isthmus. In addition, the United States agreed to pay an annual sum of a quarter of a million dollars to the Republic of Panama for continuing rights to this territory since known as the Canal Zone.

By 1904 the Government of the United States had purchased the French rights to properties in the Canal territory; Panama had freed herself from Colombia; treaties had been agreed upon between the United States and Panama; and work on the Canal under the auspices of the Government of the United States was well under way. The third era in the history of the Canal was under way, and a new period of prosperity, of a substantial and apparently permanent nature, inaugurated.

The completion of the Panama Canal and its subsequent successful operation have been characterized as the world's greatest engineering feat. Probably of equal significance is the success of the sanitary measures adopted for the control of a situation, largely responsible for previous failures. Inability to check the ravages of the tropical diseases which decimated the employee population during the French efforts rather than lack of engineering skill played an important if not the deciding part in the failure of the French companies to complete the Canal. The discovery of means of controlling yellow fever and malaria; the success of the sanitary measures inaugurated by the Americans in ridding the Canal Zone of the causes of these destructive diseases, are as responsible as skill in engineering for the final success of the Canal, a fact which is now generally conceded.

The story of the building of the Canal under American auspices is brief in point of time, characterized by quick and decisive action. Work began in 1904 and the Canal was opened to commerce August 15, 1914. The official and formal opening of the Canal was proclaimed by the President of the United States on July 12, 1920.[13] No stain of graft or inefficiency taints the record though unforeseen difficulties arose and there were definite differences of opinion, particularly concerned with the question of what type of canal, whether lock or sea-level, was best adapted to the Isthmian situation. A prompt decision was made by the President of the United States in favor of the lock canal recommended in the minority report of the committee appointed to study the situation.

The task of building the Canal and of governing the zone was originally assigned to the First Isthmian Canal Commission, a board

[13] The Panama Canal: Condensed information. Washington, D. C., The Panama Canal.

of seven men appointed by the President and responsible to him through the Secretary of War. Of this Commission Rear Admiral Walker was chairman; Major General Davis, War Department, was named Governor of the zone; the other five members were engineers. This first Commission laid the ground work for the building of the Canal, began the fight against yellow fever, and organized the nucleus of an operating force for construction. It served until the spring of 1905 when a second commission was appointed. The chief engineer of this Commission was John Stevens, who is generally credited with being the engineer largely responsible for the plan of construction followed in building the Canal. During this Commission's regime Colonel Gorgas, who was placed in charge of sanitation by the first Commission, completed the fight for the control of yellow fever. In 1907 a third Commission with highly centralized authority under Colonel Goethals, chief engineer and governor, was placed in charge. The new Commission made its headquarters in the Canal Zone instead of in Washington, where headquarters had previously been located, and served until 1914 when the Canal was practically completed and the Commission abolished. The new organization for the government of the Canal Zone was then effected practically as it now operates. Colonel Goethals was made first Governor of the Canal Zone. The opening of the Canal to ships took place in August 1914. It was, however, blocked for nearly a year and a half because of formidable slides. It was again opened, this time permanently, in 1916. Since then no serious difficulties have interfered with continuous, successful operation.

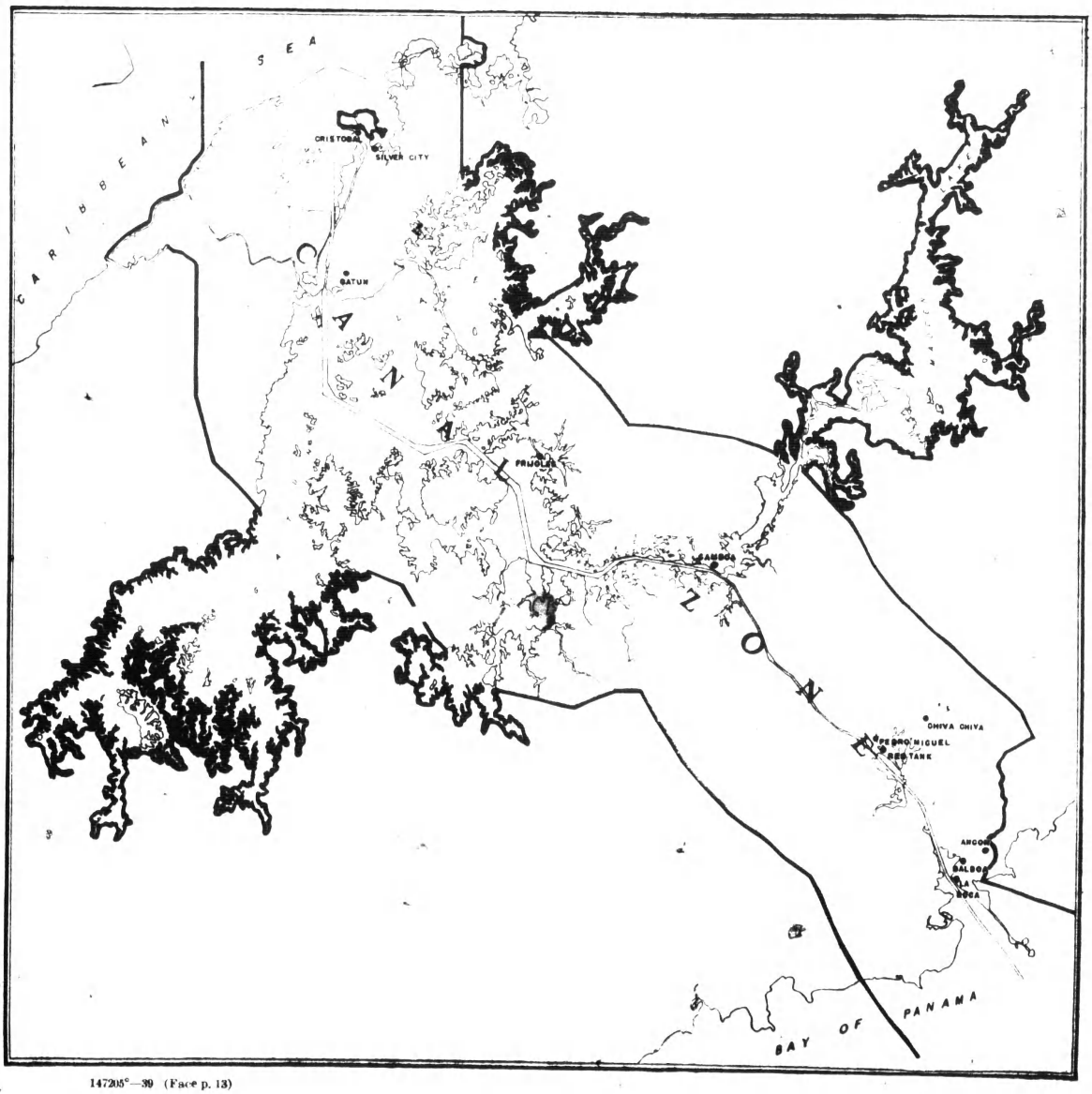
The Canal and the Canal Zone

To understand fully and to appreciate the Panama Canal and its operation [14] one should take a trip through it—preferably an actual one, but if that is not possible, an imaginary one. Whether one's interest is in the structure of the Canal itself and its history; in the marvels of the mechanical operations concerned with lifting and lowering and guiding ships through the series of locks designed for these purposes; in the Canal as an engineering achievement; in the romantic history of the Isthmus; or from whatever point of view, a trip through is an impressive as well as a unique experience.

Entering from the Pacific side one sails at sea level for approximately 8 miles before reaching the first series of three locks—located at some distance from each other with the Canal a narrow channel between each. Miss Core, in her interesting story of Panama,[15] describes the experience as similar to that of going up three high

[14] The Panama Canal. Op. cit.

[15] Core, Susie Pearl. Trails of Progress or The Story of Panama and Its Canal. New York, Knickerbocker Press, 1925.



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stair steps totalling 85 feet in height, sailing across the country 32 miles through the artificially formed lake which has resulted from damming the Chagres River; then down three similar stair steps—this time the steps being closer together—and again sailing 6 miles at sea level into the Atlantic. Such a trip occupies about 8 hours.

Entering from the Atlantic side the process is, of course, reversed. The Canal traverses the Isthmus from northwest to southeast in a generally southeastern direction, not as one naturally thinks of it, from the east—Atlantic—to the west—Pacific—sides, due, of course, to a decided bend in the Isthmus where the Canal is located. The Pacific entrance is about 27 miles east of the Atlantic entrance—the Atlantic entrance being, therefore, 27 miles west as well as 33½ miles north of the Pacific entrance. Only with great difficulty does one keep directions correctly in mind in the Canal Zone, when, as in Panama, the sun rises in the Pacific and sets in the Atlantic.

The "steps" are huge locks built in pairs side by side. Ships bound in opposite directions can traverse the locks at the same time. The outer walls are more than 50 feet thick at the bottom, narrowing toward the top; the middle wall is 60 feet thick. The process of raising or lowering ships en route is repeated three times at each end of the Canal.

The level of the water is raised or lowered in the lock by letting in water from a higher level or draining it out to a lower level through large culverts controlled by gates or valves. The culverts admit or draw off water through openings in the floor of the lock chambers to prevent surges in the chamber that would throw the ship against the side wall of the canal.[16]

The line of the Canal is up the valley of the Chagres River from the Atlantic Ocean, passing through the Continental Divide at Gaillard Cut, and descending to the Pacific Ocean down the valley of the Rio Grande. It measures 50 miles in length from deep water to deep water—an air-line distance of slightly more than 43 miles. An immense dam across the valley of the Chagres River forms Gatun Lake, which floods the greater part of the valley. Ships traverse this lake for approximately 32 miles of the course across the Isthmus. Because its surface is 85 feet above sea level the three steps up and down at the opposite sides of the lake are necessary. Its height of 85 feet served also to reduce by that number of feet the depth of the excavation necessary to make the channel between Gatun on the Atlantic side of the Isthmus and Pedro Miguel on the Pacific side. The change in elevation is made by three locks some distance apart on the Pacific side and by one set of three adjacent locks on the Atlantic side. Gatun Lake, the second largest artificially formed lake in the world, has an area of approximately 163 square miles and a shore line of 1,100 miles when the surface is at its normal elevation of 85

[16] Statement from official of the Panama Canal.

feet above sea level. The Atlantic sea-level section of the Canal is about 6 miles long; the Pacific sea-level section about 8 miles long. The cut is 8 miles long.

In addition to Gatun Dam, the water supply is regulated and supplemented by Madden Dam—more recently completed. The reservoir created by this dam increases by about three-fifths the dry-season storage formerly available; it increases also the year-round capacity of the Canal. When traffic warrants, the Canal can be operated 24 hours during the day. Its capacity is about 48 ships of usual size per day, or about 17,000 per year. The maximum size of vessels which can pass through the Canal is, of course, limited by the size of the lock chambers, each of which has a usable length of 1,000 feet, a width of 110 feet, and is about 70 feet deep. Miraflores locks, on the Pacific side, are an exception. Because of the tidal variations in the Pacific Ocean they are somewhat deeper. Vessels are towed by powerful machinery through the lock chambers; they pass through the other sections of the Canal under their own power.

The Canal is maintained primarily because of the distance it saves ocean commerce. For example, the distance between New York and San Francisco by way of the Straits of Magellan of 13,135 nautical miles is reduced by way of the Canal to 5,262 miles, or about three-fifths. From New York to Valparaiso the distance via the Canal is reduced 3,747 miles. Between New York and several South American ports, and between New York and New Zealand, Australian, and Eastern Asiatic ports reductions in mileage as well as in time are significant. It is because of this saving in time and mileage that ships of all countries find it profitable to pay the toll charge, regulated according to their respective capacities, for traversing the Canal. The toll is levied on the net tonnage of ships.

The Canal Zone is a strip of land extending 5 miles on either side of the center line of the Canal and 3 marine miles beyond the low-water mark in the Atlantic and Pacific Oceans. It includes also such areas outside the 5-mile limits as are covered by Gatun and Madden Lakes and lands immediately adjacent to them. The cities of Panama and Colon, while within the 5-mile limits, are exempted from the jurisdiction of the United States, with the exception that in both the United States Government exercises jurisdiction with respect to sanitation and quarantine matters. The cost of the Canal has been calculated at $525,812,661, as of June 1921—the date at which commercial traffic reached normal development. While opened for traffic in August 1914, its early years of operation were hampered by slides and the war era which followed its opening.

Beside the waterway across the Isthmus via the Canal the Government maintains and operates the Panama Railroad extending across

it and paralleling in general, though not exactly, the route of the Canal. There are three regular daytime passenger trains running each way daily which cross the Isthmus in about 1½ hours. One-way passage costs from $1.20 to $2.40. There is no motor highway across the Isthmus though excellent paved roads extend into the Republic of Panama from the Pacific side. Two hotels, one on each side of the Isthmus, and several commissaries are maintained in the Canal Zone by the Government. The commissaries are for employees of the Panama Canal who are residents only. No privately owned shops or industries are conducted within the zone.

Weather on the Isthmus is continuous summer. The temperature varies from 59°, the lowest, to 98° Fahrenheit, the highest temperature recorded in the zone. There are two seasons. The normal dry season is from January to April, inclusive. During this time there is little rainfall with moderate to strong northerly trade winds. May to December, inclusive, is the rainy season, a period with light to moderate variable winds. During this season the rainfall is about 63 inches on the Pacific side and 117 on the Atlantic. During the rainy season—approximately 245 days in length—there is an average of 154 rainy days on the Pacific side and 189 on the Atlantic side.[17]

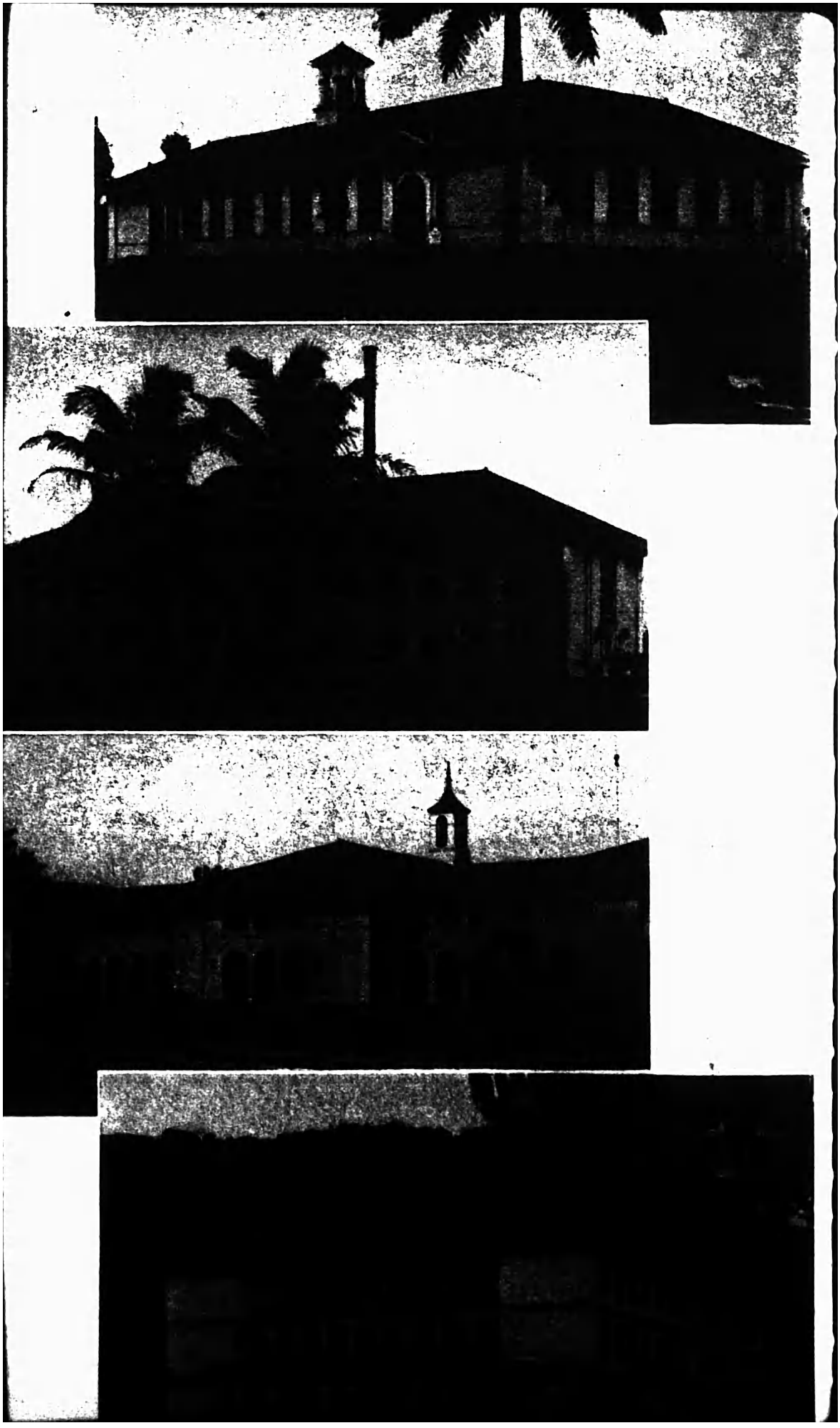
Sanitation and municipal engineering have made the Canal Zone as well as the two Panamanian cities—Colon and Panama—as healthful for the traveler as the United States or Europe. An abundant supply of pure water is available.

The School Program of the Canal Zone

Early History

The history of American occupation of the territories and insular possessions of the United States shows one policy consistently followed, namely, that of establishing the principle of universal education at public expense and of taking at least the initial steps toward the establishment of a public-school system. In the Canal Zone this principle, followed over a period of years, has been realized probably more successfully than in any other area under the jurisdiction of the United States outside its continental boundaries. In the fall of the same year in which the United States secured control of the Canal Zone (September 1904) the Isthmian Canal Commission authorized the establishment of a school system. A few months later the system was placed under the jurisdiction of the collector of internal revenue. In June 1905 a school census was taken and preliminary plans laid for the provision of necessary buildings and equipment with a view to opening schools as soon as the necessary arrangements could be completed.

[17] The Panama Canal. Op. cit.



The first public school established under the jurisdiction of the United States Government was opened at Corozal in January 1906, the first superintendent of schools having been appointed the preceding December. The school term was approximately 4 months, the enrollment from 6 to 7 pupils on an average, with a maximum of 9. This enrollment is accounted for by the fact that a number of schools had previously been opened throughout the zone which were operated by the municipalities and which were then enrolling more than 150 children. For a time then two types of systems were in operation. The municipal systems were, however, shortly transferred to and consolidated with the Government system.

At about the time these events were transpiring a school building program was inaugurated. The buildings were municipally financed, and compulsory attendance ordinances were enacted by the municipalities. The budding system, with buildings financed by the municipalities and the maintenance financed by the Government, grew in numbers of children and in school facilities. Toward the end of the year 1906, 30 schools were in operation enrolling 1,237 children and employing 34 teachers. The 12-month school year and the 6-hour school day characterized the new school system. Attendance was largely Negro; Negroes, of course, predominated in the population at this stage of the Canal building. Only about 10 percent of the children were white.

Even at this early date satisfactory housing for teachers was a problem, as it still is, though to a far less extent. In the early history of the Canal, the difficulty of securing suitable quarters for women teachers was one of the greatest obstacles to employing them. A large majority of the teachers who were employed either lived with friends or relatives employed on the Isthmus or were married women whose husbands were employed or for some other reason lived there.[18]

The next important move affecting the schools placed the system under the Department of Law and Government, a department of the Isthmian Canal Commission, and gave it an independent status. Following this change a new salary scale was placed in operation, a 9-month term established, and a plan inaugurated for grading and classifying pupils on the plan followed in schools in the 48 States.

[18] A résumé of the Canal Zone public-school system, 1917, by Albert R. Long, Superintendent of Schools, Balboa Heights, Canal Zone. Extract from Year Book, Society of the Chagres, 1916–17.

Top: Elementary school for white children, Pedro Miguel, Canal Zone.

Upper center: Cristobal elementary school for white children, Colon Beach, Cristobal, Canal Zone.

Lower center: The Cristobal High School, an outstanding school plant.

Bottom: Balboa Elementary School, Balboa, Canal Zone.

High-school classes were organized in two communities, Culebra and Cristobal. These changes marked the first concerted effort toward patterning the work of the zone schools on that of the 48 States—a policy which is still followed with only such modifications as are consistent with modern school practices. Then as now it was considered desirable that pupils should be able to continue their schooling without loss of time when they returned to the States from which they came or moved from place to place within the zone, as not infrequently happened.

Other policies which have become permanent, established early in the history of the school system, were those of furnishing "school supplies" without charge to pupils and of charging tuition for nonresidents not employed by the Panama Canal.[19] The latter policy is still followed in the system and textbooks, laboratory supplies, and other essential materials except certain items used in the manual training shops are furnished free at the present time.

By 1909, when the school system was practically 5 years old, it was beginning to take on aspects of permanence. The most important problems concerned with housing and securing teachers were at least on the way to solution and attention could now be given to the selection, equipment, and surroundings of building sites, to lighting and ventilating, and similar problems with which school administrators are normally concerned.

As knowledge of conditions in the Canal Zone as well as a more sympathetic understanding of its needs, extended among the people of the United States, the initial difficulty of securing prepared and experienced teachers was gradually overcome. Moreover, parents, with an increasing feeling of stability and permanence of position and residence, were now demanding more education and of a better quality for their children. Not only was the white adult population increasing, but families were coming into the zone and the enrollment of white children reached between 500 and 600 in number, large enough to facilitate the classification involving at least a minimum of uniformity throughout the system. Ease of transfer from school to school in the Canal Zone was of considerable importance in the early history of the school since employees and their families were necessarily moved from one community to another as the work of the canal building made necessary.

Among other needs which the increasing stability of the system brought to light was that concerned with professional supervision. Teachers were selected from all parts of the United States, with training varying in quality and type. They brought with them a variety of methods and practices. Supervision was not only considered desirable from the point of view accepted by school systems generally,

[19] Ibid.

but was particularly desirable as a unifying element under the conditions which characterized the school system of the Canal Zone. The first supervisor was a supervisor of primary grades who was selected and began work during the school year 1909. The same year 4-year courses were established in the secondary school at Cristobal.

The system was then organized on the plan followed in the United States, namely, on the 12-year basis with eight elementary and four high-school grades;[20] professional administration and supervision were provided, and housing and equipment were becoming increasingly satisfactory. During the next 5 years, from about 1909 to 1914, progress was made toward a stabilized and efficient school system in a number of directions, including organization, curricular adjustment and enrichment, centralization of small schools, sanitation, and improved care of buildings and grounds. Attention to health needs was provided through the detail of a physician to the Division of Schools. Progress was made toward establishment of the schools of the Canal Zone as a permanent system, one resembling more and more school systems of similar size in the States.

In 1914 a permanent organization of the government of the zone was effected, thereafter known as the Panama Canal. The Division of Schools was placed under the jurisdiction of the Executive Secretary, an organization which is still maintained. This change placed the school system on a permanent basis as a function of the Government of the Panama Canal, a status which it has since enjoyed. The change was marked also by certain advances in the school program. Five concrete school buildings were erected following the new regime and revised salary schedules were placed in operation. The secondary school program was reorganized at the same time with the addition of a commercial department and courses in sewing and the household arts. Growth in efficiency and changes in standards, generally following those prevailing throughout the United States, especially those concerned with the education of white children, have proceeded normally during the years intervening.

Organization for Administration

The Executive Department of the Panama Canal is one of several departments of the established Government of the Canal Zone, all of which are under the general direction of the Governor (chart I). The relationship of the Division of Schools to other divisions of the Executive Department such as Police and Fire Division, Division of Civil Affairs, Personnel Bureau, and the like, is shown in chart II. The Division of Schools is indicated as coordinate with the Police and Fire Divisions and the Division of Civil Affairs, all under the control

[20] Applies to schools for white children.

of the executive secretary who is the chief officer of the Executive Department.

The Division of Schools, while independent with respect to problems concerned with the professional management of the school system, is dependent on the other branches of the Government in a number of fields such as plant maintenance, health service, personnel. The budget for school expenditures is an independent item in the congressional appropriation for the Canal Zone. It is, however, under the control of the Governor and the executive secretary. The responsi-

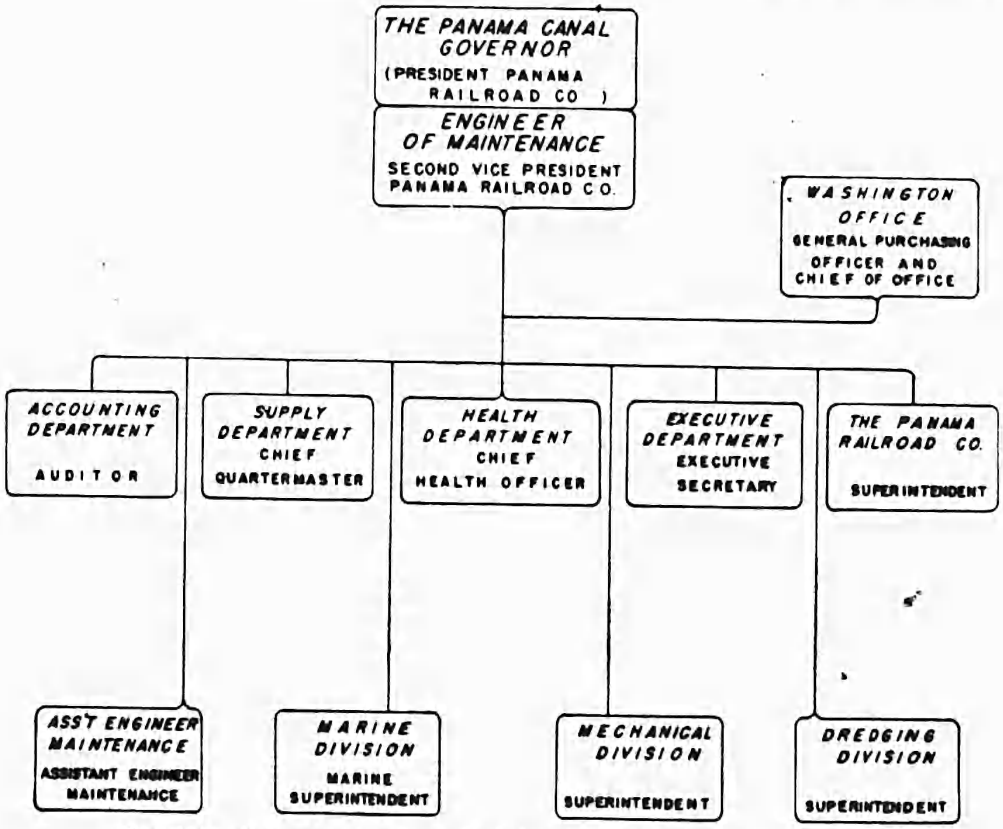


Chart I. Organization for administration, the Panama Canal.

bility for expenditures for schools is exercised by the superintendent of schools with the advice and authority of the executive secretary and the Governor.

The schools of the Canal Zone are supported by direct appropriation made by the Congress of the United States for the purposes indicated. School facilities are free to children of residents of the Canal Zone and employees of the Panama Canal, the United States Army, Navy, and Marine Corps personnel and other "gold," that is, white personnel (United States Government employees) resident on the Isthmus. Separate schools are maintained for white and colored children.

The school system is administered by a superintendent of schools who is a professional officer serving, as indicated in chart III, as the

official in charge of the Division of Schools in the Executive Department. He is assisted by an assistant superintendent and two assistants to the superintendent. There is also an office assistant and two clerks. Of the two assistants to the superintendent one has charge of the white elementary schools, grades 1–6; the other has charge of the white secondary schools, including grades 7–12. Research activities and supervision of the colored schools are responsibilities of the assistant superintendent. The offices of the Division of Schools are located in the Administrative Building of the Canal Zone in which the offices of the executive secretary and all general offices of the Panama Canal are located. In addition to the central office staff the supervisory force of the Division of Schools includes an apprentice-learner-coordinator, one supervisor of music, one supervisor of art, one supervisor of penmanship, two full-time white secondary school principals, two full-time elementary school principals, one supervisor of colored schools, and two full-time colored school principals. All other principals are part-time teachers.

The teaching staff, including teaching principals, totals 209. Of these, 1 is instructor in the apprentice-learner school, 8 are in the Canal Zone junior college, 40 are high-school teachers, 16 are white junior high school teachers, 53 are white elementary school teachers, and 92 are teachers in the colored schools.

School organization is on the 6-2-4-2 plan—6 elementary grades, 2 junior high school grades, 4 senior high school grades, and 2 junior college years.[21] The system as a whole includes 19 different schools housed in 24 different buildings. The enrollment on January 1, 1939, was 5,910 with a total of 209 teachers.

The junior college is a relatively new development of the system, offering 2 years of college grade work. It is located in Balboa on the Pacific side of the Canal. The junior college is housed, administered, and supervised as a part of the regular system. It is maintained chiefly, however, by tuition fees.

Schools For White Children

The Children

The children one finds in the schools and classrooms of the Canal Zone differ perceptibly from those in classrooms familiar to observers in the "States"—as the 48 States on the continent are usually referred to in the Canal Zone. Homogeneity among the adult population has been discussed elsewhere.

As would be expected, this homogeneity is apparent also among the children in the schools. They come from families of American employees of the Government of the Panama Canal, the Panama Railroad

[21] The senior high school grades and junior college grades are maintained for white children only.

Co. on the Isthmus, or of employees of the Government in the Army, Navy, and Marine Corps, resident in the eight Army posts and three naval stations located in the Canal Zone.

The unusual evenness in economic conditions; the similarity in home and other out-of-school situations which characterize the adult

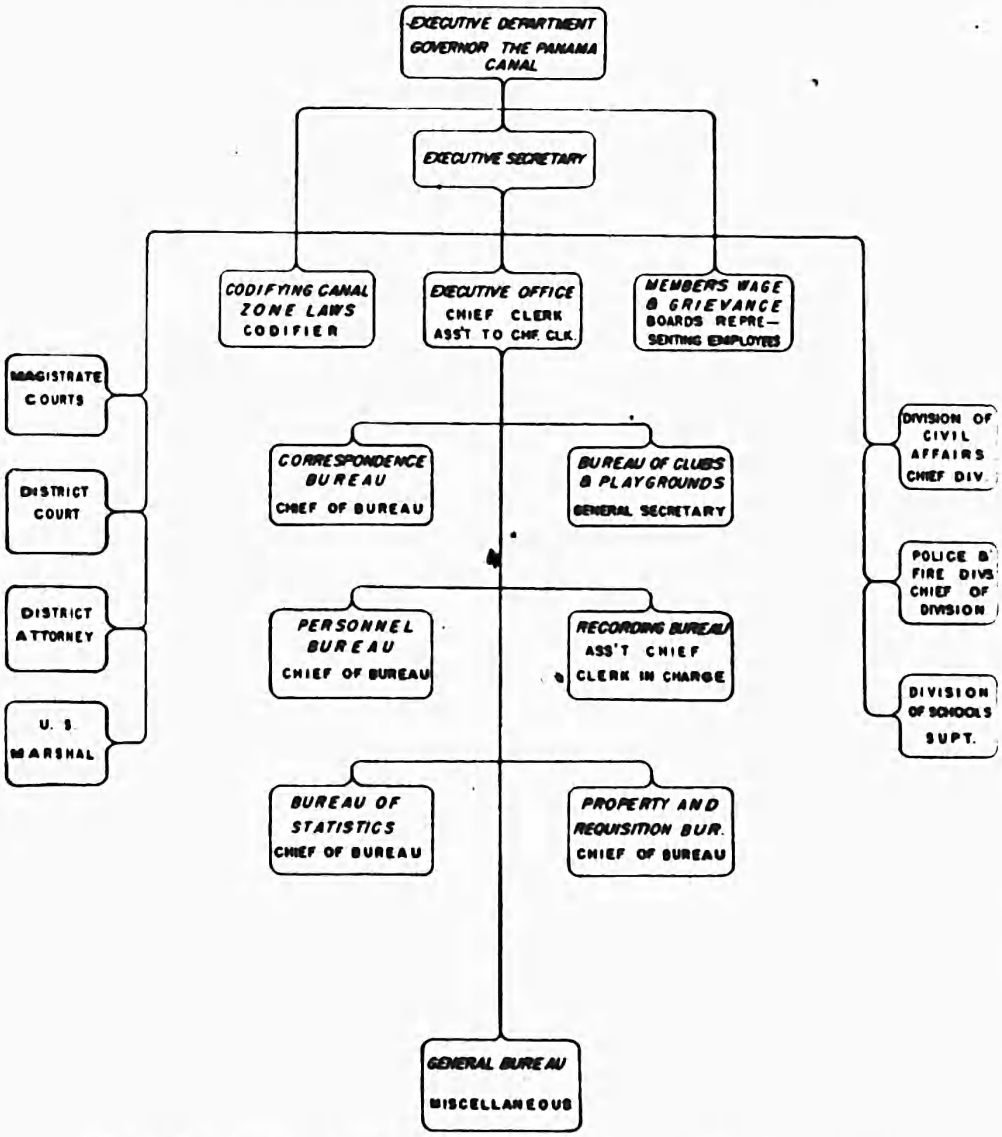


Chart II. Organization for administration, executive department, the Panama Canal.

community; favorable health and sanitary conditions; the careful upkeep of personally occupied and community-used property, and the like, which prevail throughout the zone are as one would expect reflected in the classrooms, in the appearance and attitudes of the children.

As a whole they impress one as being somewhat above the average of similar groups in the States in health, nutrition, regularity of at-

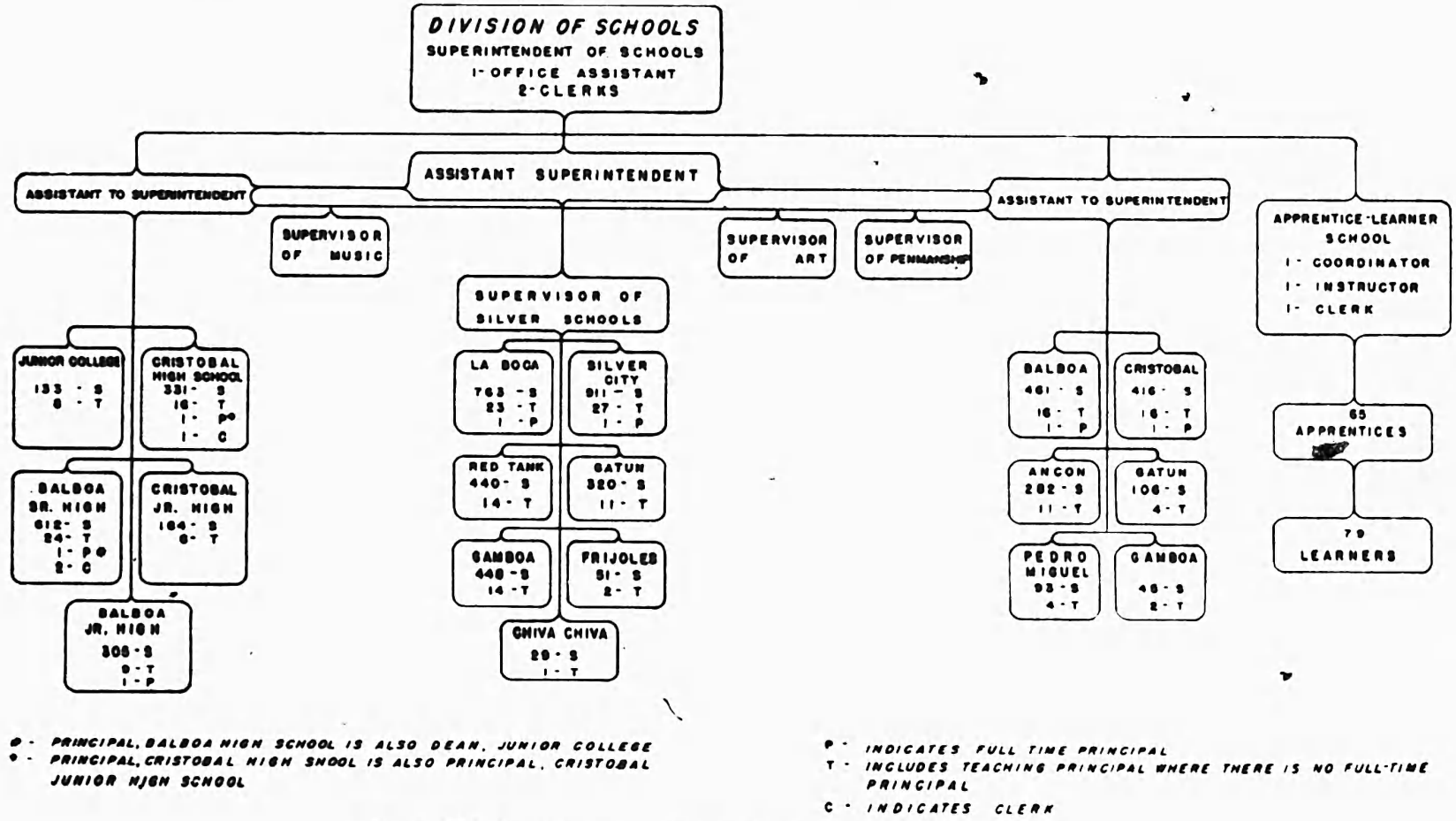


Chart III. Organization, division of schools, the Panama Canal.

tendance, in breadth of experience, and in general school readiness. Achievement tests over a period of years indicate that the children are above average for the United States in subject-matter accomplishment.

Enrollment and Attendance

Exact data showing the relationship between school population and school enrollment are not available No official annual census which shows the number and ages of children is taken in the Canal Zone and dependence is therefore placed on the United States Census which is taken once in 10 years only. The data available are, therefore, too old to be reliable as a basis of estimating this relationship at the present time. The administrative staff makes estimates based on such data as birth rate compared with first-grade enrollment and relation of adult population to school enrollment. These, however, have serious limitations. Birth statistics are not available from the Republic of Panama where a number of children enrolled in the zone schools live and there probably is a larger than normal transient population in the Canal Zone itself. Since there are no compulsory attendance laws, and truancy officers are not employed in the zone, the need for the annual school census which is taken in so many States is not felt to be serious. However, the school officials are confident that all the children of school age "eligible to free school privileges" actually enroll in school and attend regularly. The information which is presented herein, though not as definite as would be desirable, tends to support this confidence.

The number of children enrolled in schools for white children has compared favorably with the probable number of children who should be in school judged by the adult population over a long period of years (see chart IV). There has been a consistent increase over the 5-year period from 1933 to 1938 in the number of children enrolled [22] in the secondary grades (chart IV and table 1) and a decrease in those enrolled in the elementary grades—a situation common to school systems throughout the United States. For the system as a whole the total enrollment has increased year by year with the exception of the year 1936 when there was a slight decrease. In 1934 the total number belonging was 3,014; in 1938 it was 3,249 (table 1).

The average daily attendance for the school year 1937–38 by grades and by schools, with totals for the six elementary schools, is shown in table 2. The number of children belonging in each of the different schools according to schools and school levels, namely, elementary grades (1 to 6) and all secondary grades, is shown for February in

[22] "Enrolled" and "number belonging" are terms used in data available. They are used interchangeably when either one is the only information available in instances in which such use seems justifiable for comparative purposes.

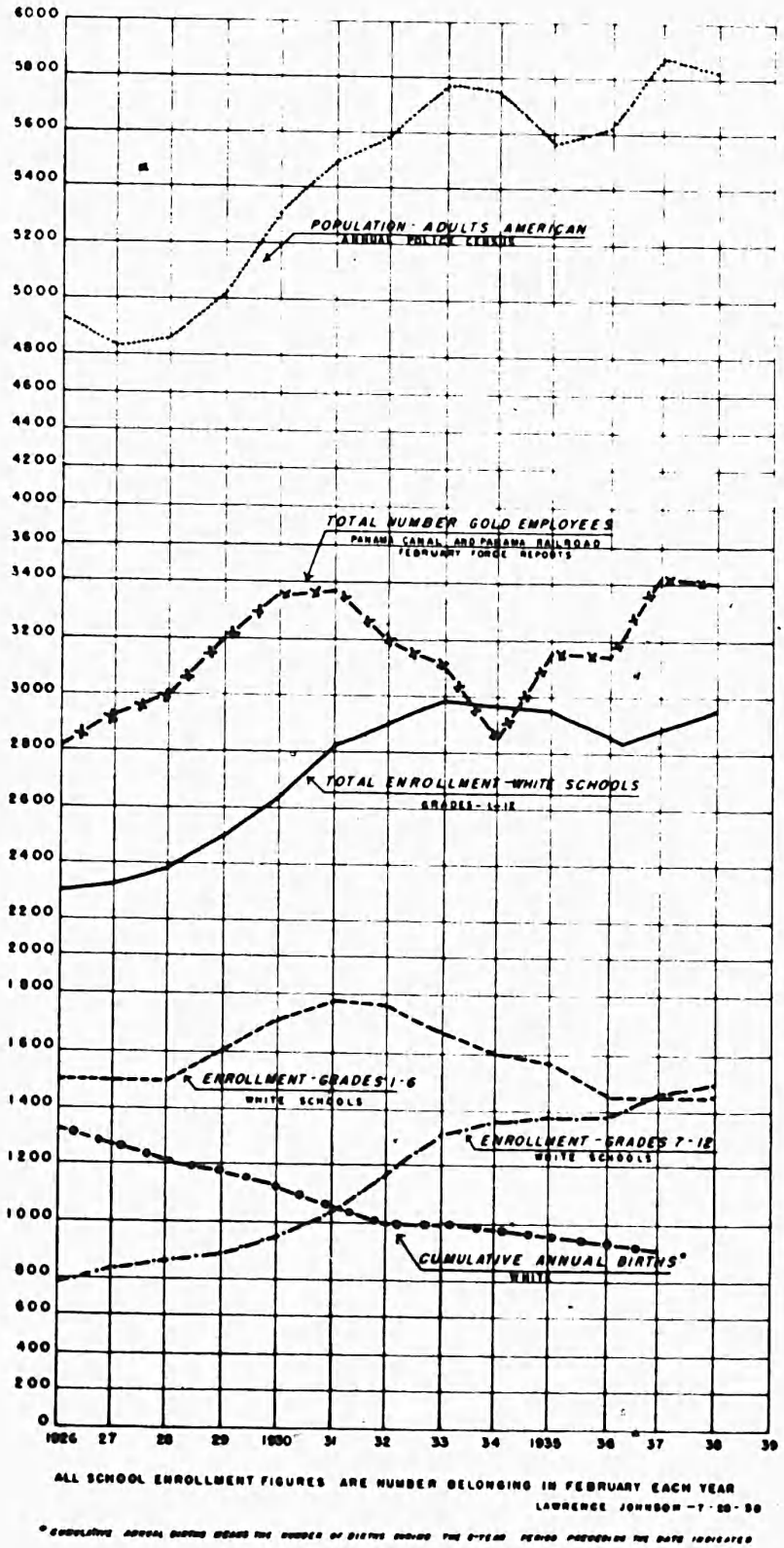


Chart IV. Comparison of school enrollment with number of gold employees, adult population and birth rate, Canal Zone, 1926-38.

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each of 6 years of which 1938 is one in table 1. It is possible, therefore, to compare the average daily attendance with the number belonging—a figure which corresponds closely to enrollment. Judging by these tables there is relatively little absence—certainly little unnecessary absence on the part of the children enrolled or belonging in the schools. This is indicated by the fact that the total membership (all grades) as of February 1938 is 2,944. The average daily attendance for the school year 1937–38, is 2,765, a percentage of approximately 94. This is an excellent record and compares favorably with the best school systems in the States.

TABLE 1.– *Pupils belonging at end of February in Canal Zone schools (schools for white children)*[1]

School and grades	1933	1934	1935	1936	1937	1938 [4]	Percent of increase or decrease 6 years
1	2	3	4	5	6	7	8
Grades 9–12							
Balboa	534	547	547	566	615	636	19.1
Cristobal	242	264	321	331	366	351	45.0
Total	776	811	868	897	981	987	14.3
Grades 7–8							
Balboa [2]	343	339	323	320	304	315	−8.1
Cristobal [3]	203	206	187	169	172	188	−8.5
Total	546	545	510	489	476	503	−7.8
Secondary							
Balboa	877	886	870	886	919	951	8.4
Cristobal	445	470	508	500	538	539	21.1
Total	1,322	1,356	1,378	1,386	1,457	1,490	12.7
Grades 1–6							
Ancon	309	291	291	285	284	291	−5.8
Balboa	563	531	472	470	467	470	−16.5
Pedro Miguel	131	123	121	109	111	115	−12.2
Paraiso	48	50	43	39	41		
Gamboa						41	
Gatun	128	110	107	95	102	101	−21.1
Cristobal	491	499	551	452	434	436	−11.2
Total, Pacific side	1,051	995	927	903	903	917	−12.7
Total, Atlantic side	619	609	658	547	536	537	−13.2
Total	1,670	1,604	1,585	1,450	1,439	1,454	−12.9
Total, all grades	2,992	2,960	2,963	2,836	2,896	2,944	−1.6
Canal Zone Junior College		54	98	112	[4] 110	[5] 305	
Grand total		3,014	3,061	2,948	3,006	3,249	

[1] From the Division of Schools monthly reports for February in the years indicated. February enrollment figures are shown because the enrollment of the year usually reaches its peak during this month.
[2] Includes all Pacific side seventh and eighth grades, except Paraiso, white.
[3] Includes all Atlantic side seventh and eighth grades.
[4] Includes 45 freshmen, 36 sophomores, 4 special part-time students, and 25 students of adult accounting class.
[5] Includes 87 freshmen, 24 sophomores, 6 special part-time students, and 188 students in extension classes.

Another indication of what appears to be a satisfactory record in school attendance as related to number of children of school age is found in table 3 which presents data on the number of children com-

pleting each of the three units, elementary, junior high, and senior high school grades in one column and the average daily attendance in the final year of each particular unit, both for the year 1938, in another.

TABLE 2.—*Average daily attendance Canal Zone schools, 1937–38 (schools for white children)*[1]

School	Grade												
	1	2	3	4	5	6	7	8	9	10	11	12	Total
1	2	3	4	5	6	7	8	9	10	11	12	13	14
Ancon	54.6	43.8	35.2	38.4	52.5	51.1							275.6
Balboa	84.3	74.6	71.2	68.0	81.7	66.1	144.5	153.9	171.0	158.7	127.2	134.1	1,335.6
Cristobal	84.1	73.5	57.5	73.0	60.4	64.1	89.1	85.9	82.4	76.5	87.5	83.4	917.6
Pedro Miguel	19.6	12.3	17.3	18.2	22.5	14.3							104.2
Gamboa	9.2	12.3	4.3	3.8	3.2	7.7							38.5
Gatun	15.7	11.8	13.4	16.4	21.9	14.9							94.1
Total	267.5	228.3	196.9	217.8	242.2	218.2	233.6	239.8	253.4	235.2	214.7	217.5	2,765.1

[1] Principals' monthly reports, Canal Zone schools.

In the sixth grade the number completing the grade slightly exceeds the number in average daily attendance. A similar situation is found if we compare the number of pupils in average daily attendance and the number completing the eighth grade (last year of junior high school), while approximately 90 percent of the seniors in average daily attendance in the high school graduate. All data are for the school year ending June 1938. Additional information bearing on the effectiveness with which the zone schools enroll children is shown in chart V which shows the number of children born in the Canal Zone in specified years and the grade 1 enrollment 6 years later. The totals over the period given show a mean enrollment in grade 1 somewhat in excess of the number of children born 6 years earlier.

TABLE 3.—*Graduates, June 1938, and average daily attendance, 1937–38, Canal Zone schools (white)*,[1]

Grade:	Graduates	Average daily attendance [2]
Elementary (grades 1 to 6)	221	218
Junior high (grades 7 and 8)	256	239
Senior high (grades 9 to 12)	243	217
Junior college	22	[3] 51

[1] Report, Division of Schools, Canal Zone, 1938 (typewritten).
[2] For final year of unit indicated.
[3] Matriculates, 1938.

Data compiled to show the progress children make through the school grades are among other statistical facts not available for the schools of the Canal Zone. Some light is thrown on the subject by comparison of the enrollments by grades and the number completing the different school sections—elementary, junior high, and senior high

schools, compared to average daily attendance in the final year of each, referred to in table 3.

In addition to the fact that the number of children completing each section compared to the membership or average daily attendance in the final year of the section is high, the table indicates that probably all of the children who complete the elementary school complete also the junior high school grades and a high percentage of children completing junior high school complete also the senior high school grades. For example: The average daily attendance in the sixth grade is 218, the number completing the grade, 221. The number completing junior high school is 256, the average daily attendance in the eighth year, 239. The number completing senior high school, 243; average daily attendance, 217. These data seem to indicate, first, reasonable regularity in attendance—without it a high percentage of failure would be expected; second, because the number in attendance and number completing each section is fairly constant, that a high percentage of the children remain in school until they have completed the junior and senior high schools.

Table 4, which concerns persistence of enrollment in the Canal Zone schools 1927 to 1937, also throws some light on the question of progress through school. Assuming that the children reported in the first grade in 1927 remained in the Canal Zone and therefore in the school system during the period indicated, it is possible to follow the group to the eleventh year of schooling. In 1927 the first-grade enrollment was 297; this group would normally advance to the second grade in 1928, enrollment in which was 298. Following the group through, enrollment in the third grade was 305; in the fourth, 300; in the fifth, 313; and so on until we reach grade 11 in 1937 in which the number is 236. If, therefore, our original assumption is valid, the group of 297 children entered in the first grade in 1927 numbered 218 at the end of 11 years, on enrollment in the junior year of the senior high school. The number represents 79.4 percent, as indicated below the line under column 11, of the number of pupils who entered the first grade in 1927. In a similar way any entering group may be followed through a number of years. In general the number of children is fairly constant if followed from the first through the upper elementary and secondary grades as shown in the table.

Comparisons with similar information from other school systems cannot be made since, as indicated here, data collected in the usual way are not available from the Canal Zone schools. However, for general comparison and to give one an idea of the situation that probably would be disclosed if comparative data were available, table 5 is included in this discussion. It was prepared from a recent study of school survival rates in the United States made in the Office of Education. It shows how many of each 1,000 children in the fifth grade

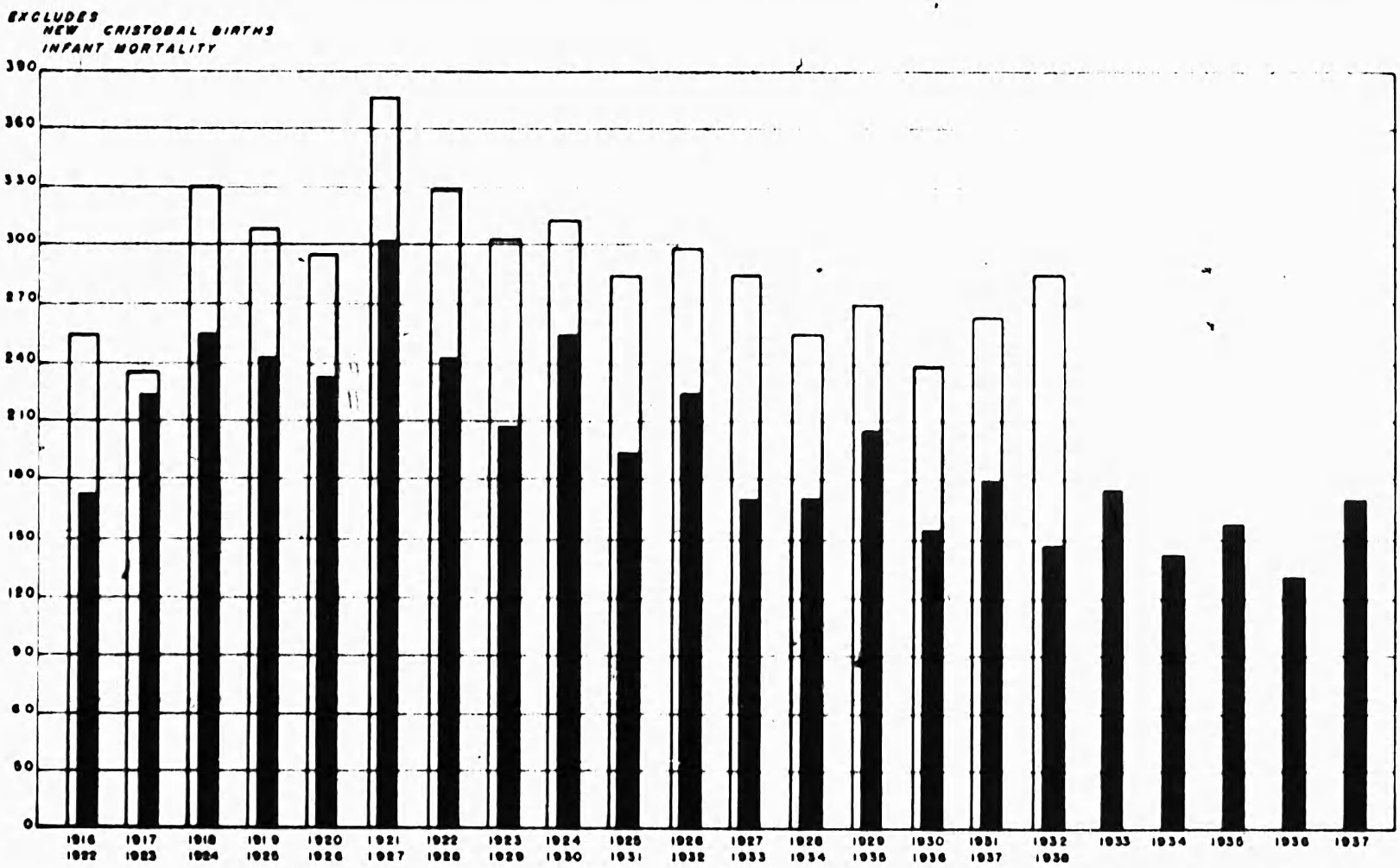


Chart V. Comparison of Canal Zone white births with grade I school enrollment, white schools, 6 years later. Blocked-in spaces represent births. (Copied from blue print furnished by Division of Public Schools, Panama Canal.)

reached the advanced grades from the sixth to the twelfth for each of 8 years. The percentage of fifth-graders continuing to the eleventh year or grade varies during the period from 34 to 52 in the study indicated.

TABLE 4.—*Persistence of enrollment, Canal Zone white schools—1927–37* [1]

Year	Grades											
	1	2	3	4	5	6	7	8	9	10	11	12
1927	297	266	233	261	204	191	203	180	151	125	89	7[illegible]
1928	278	298	244	234	251	204	183	190	178	134	103	7[illegible]
1929	305	281	305	261	242	224	179	165	178	138	113	10[illegible]
1930	324	308	295	300	246	250	201	183	161	177	116	9[illegible]
1931	287	285	316	282	313	292	214	222	193	177	134	9[illegible]
1932	298	282	279	306	274	326	257	185	244	184	147	13[illegible]
1933	287	274	279	259	290	275	295	257	215	218	178	131
1934	252	285	260	274	267	276	265	280	270	190	189	162
1935	270	270	259	260	247	279	249	261	292	252	174	151
1936	239	236	261	232	231	251	243	246	277	270	204	146
1937	261	221	235	252	240	230	249	227	276	251	236	21[illegible]
Percent		92.4	87.0	100	87.1	77.1	86.7	70.1	90.4	90.2	79.4	

[1] Data based on number of pupils belonging in February.

Source: Monthly reports of superintendent of schools to the executive secretary, Canal Zone schools.

TABLE 5.—*Survival rates for public schools of the United States, per 1,000 pupils, fifth grade through high-school graduation, 1924–31* [1]

Elementary grades					High school					
Fifth [2]		Sixth [2]	Seventh [2]	Eighth [2]	First year	Second year	Third year	Fourth year	Graduates	
Year	Number								Number	Year
1	2	3	4	5	6	7	8	9	10	11
1924	1,000	943	872	824	770	652	520	453	398	1931
1925	1,000	954	861	825	760	647	512	448	393	1932
1926	1,000	939	847	805	736	624	498	437	378	1933
1927	1,000	928	834	779	738	588	485	415	355	1934
1928	1,000	919	824	754	677	552	453	400	333	1935
1929	1,000	911	815	745	642	509	421	370	316	1936
1930	1,000	911	798	741	612	470	384	344	302	1937
1931	1,000	898	782	719	582	441	347	310	270	1938

[1] School Life, March 1938, p. 266.

[2] 1 grade lower in 11-grade system.

Following through a group of children in the schools of the Canal Zone in a similar way (see table 4), we find that in the fifth grade in 1931 there were 313 children; when the group reached the eleventh grade in 1937 there were 236 remaining, a survival rate of 75 percent.

In table 5 allowance is made for the fact that children move from place to place—a consideration which does not enter into the data in table 4 and results in a substantial difference in figures. However, even within the limitations the difference in percentages of survival is

Progressive methods of teaching keep Canal Zone boys and girls happy in their school work.

so great in favor of the zone schools that one seems justified in the conclusion that the holding power of these schools is above the average for the United States.

The established term length in schools for white children is 9 months. The actual number of days taught during the school year ending June 1938 was 173. The usual holidays are observed, such as Thanksgiving, Christmas, New Year's, Washington's Birthday, and Memorial Day. In addition, Panama Independence Day is a holiday in the zone.

The Program of Instruction

The program of instruction, as of school organization, curriculum adaptation, and other important phases of work of the school system, resembles closely that followed in representative systems in the United States. The teachers have received their education, academic and professional, in higher institutions in the States. They have had teaching experience—sometimes extended experience—in public-school systems there before coming to the Canal Zone. A similar situation prevails among the administrative and supervisory staff. There is the additional fact that general objectives and curricular procedures are definitely and consciously patterned after those prevailing in the United States, as explained elsewhere, all resulting, as it is intended to result, in a program of instruction which is substantially that followed in systems of corresponding size in the "States."

The assistant to the superintendent for elementary schools has 53 teachers and 1,454 children under her general direction. There are 8 elementary school buildings located within a relatively small area—practically all easily accessible by train and by automobile. Each of the assistants to the superintendent uses a car for business purposes. The two high schools and the junior college are supervised by an assistant to the superintendent. Though located at either side of the Isthmus they, too, are easily accessible. The secondary schools employ 40 teachers. There are 2 nonteaching and 4 teaching principals in the 6 elementary schools; a principal in charge of junior high school grades in Balboa, and one principal in charge of both junior and senior high school grades in Cristobal.

Classrooms average high in attractiveness, upkeep, equipment, size and arrangement, and the like, giving the general impression of good working conditions. Based on average daily attendance, the number of pupils per teacher averages 25 in elementary and 30 in junior high school grades.

The situation in both elementary and secondary schools is, therefore, favorable to close supervision; to frequent visitation; ease of securing attendance at group conferences, small and large; to planned teacher committee work; and to the pursuit of other accepted means of supervision as these functions are generally understood in the States. The salaries and method of selection of teachers may be expected to result in the employment of a reasonably capable and homogeneous group of teachers, amenable to supervision of a progressive type.

Attention is called elsewhere to the social (especially health) and economic homogeneity among the school children and to the fact that they average somewhat above normal on intelligence tests and in subject-matter achievement. The supervisory staff, in salary, experience, professional qualifications, and personal fitness, compares favorably with similar staffs elsewhere and supervisory practices are in accord with those prevailing and acceptable in modern school systems.

The report of the survey of 1930 recommended additions to the staff then employed of a supervisor of art and a director of research. The former has since been employed, while the assistant superintendent now assumes the responsibilities of a director of research.

These factors in the general school situation indicate that the supervisory situation is such as to justify the expectation that the school program will be designed to meet the needs of the people of the Canal Zone and to secure a satisfactory record of school achievement.

The program of studies for the elementary schools for white children covers 6 years of schooling from the first through the sixth grade. It is "designed to give a sound academic background in the fundamental tool subjects, and to provide pupils with rich cultural experiences." [23]

[23] Report, Division of Schools, Canal Zone, 1938.

Emphasis in the lower elementary grades is on teaching reading with special relation to the acquisition of rapidity in reading and ability in comprehension. In the upper elementary grades reading is correlated with the social sciences. Nature study, science, music, art, and health are among the offerings in addition to the accepted "tool subjects." A schedule follows showing the subject offerings in the program and the weekly time allotments in the elementary grades (table 6).

TABLE 6.—*Subject time allotments, Canal Zone, white elementary schools, 1935–36* [1]

Subject	Minutes per week by grade					
	I	II	III	IV	V	VI
1	2	3	4	5	6	7
Reading	450–525	375–425	300–325	225–250	150–175	150–175
Phonics	75–110	50–75				
Spelling		75–100	75–100	75–100	75–100	75–100
Arithmetic	25	140–150	190–210	225–250	225–250	225–250
Language, Grammar, Literature			150–175	150–175	175–225	175–225
Nature study and Science			20–40	20–40	20–40	20–40
Art	[2] 90	[2] 90	[3] 80	[3] 80	[3] 80	[3] 80
Health education			20–40	40–60	40–60	40–60
Music	100	100	100	100	100	100
Penmanship	100	100	100	75–80	75–80	75–80
Geography			125–175	125–150	150–200	150–200
History and civics	(4)	(4)		125–150	125–150	125–150
Physical education	175	175	150	150	150	150
Opening exercises			50	50	50	50
Free time	20–40	20–40	20–40	20–40	20–40	20–40
Social studies:						
Language						
Nature study						
Science	200–225	175–225.				
Health education						
History						
Geography						
Opening exercises						

[1] Report on the Division of Schools to Col. C. S. Ridley, Governor of the Panama Canal, by Lawrence Johnson, Acting Superintendent of Schools, 1936. P. 3.
[2] 3 days a week.
[3] Twice a week.
[4] 25 minutes per week is included for a rest period.

Table 7 is included to give the interested reader a general idea of the way in which practice in the Canal Zone schools compares with that in cities in the 48 States in studies pursued in the elementary grades and in weekly time allotments. So far as comparison of time allotments is concerned or even of content studied, only tentative conclusions can be drawn, however. More and more the unit plan of organizing content material is replacing the former practice of giving definite time allotments to each of the several school subjects to be taught. This is true in the systems reported in table 7. It is also true, at least to a considerable extent, in the schools of the Canal Zone, judging by the curricular revisions under way or indicated in the courses of study referred to elsewhere.

Examination of the two tables indicates relatively little difference in practice in the cities studied and in the zone schools in subjects

offered or time allotments to each. Possibly the zone schools allot slightly more time to physical education, arithmetic, music, and penmanship, and slightly less to handwork, language, and reading than the average for the 63 school systems studied by Kyte and Lewis. Neither household nor industrial arts are among the subjects listed in the report from the Canal Zone schools as shown in table 6.

TABLE 7.— *Average number of minutes per week allotted to elementary subjects in 1934–35 (grades 1–6)*[1]

Subject	Number of minutes per week in specified grades					
	I	II	III	IV	V	VI
1	2	3	4	5	6	7
Language	129	131	155	173	184	187
Reading	508	456	382	282	227	201
Spelling	29	82	92	92	88	86
Penmanship	76	78	84	81	74	74
Arithmetic	62	145	197	215	219	219
Social studies [2]	79	88	139	228	282	297
Science	43	46	53	48	48	49
Health education	29	26	31	35	38	38
Physical training	109	109	111	109	109	112
Recess	104	107	103	93	86	82
Household art, industrial art, and handwork	23	21	23	27	42	57
Art	98	87	85	89	89	91
Music	82	82	85	86	87	90
Opening exercises	43	43	43	42	41	38
Miscellaneous	67	74	67	63	65	61

[1] Time tables: Sixty-three school systems report time allotted to elementary subjects. By George C. Kyte and Robert H. Lewis. Nation's schools, 17: 23–25, January 1936.
[2] Includes history, civics, and geography.

The first unit in the secondary school program is made up of two grades housed in two school buildings, one at each side of the Isthmus. The courses offered in the two schools are identical. Organization is on the departmental plan covering the regular courses usually offered in the seventh and eighth grades. In addition to the required subjects which include home economics for girls and industrial arts for boys, each pupil selects three subjects from a list of four electives which includes Spanish, art, and vocal and instrumental music (table 8).

Each of the two senior high schools offers 4 years of work, designed chiefly as college preparatory but offering in addition to the usual academic courses, shop work in wood and metals; general business courses including stenography and typing, business training, and correspondence; physical education, music, and drawing.

The courses offered with the number of periods per week and credits for each with information concerning selection of work are shown in table 9. The periods are 45 and 90 minutes in length, the latter for laboratory courses, shop work, and cooking. The number of registrations and the percentage of students registering in each of the fields of study offered are shown in table F of the appendix.

TABLE 8.—*Program of studies, Canal Zone junior high schools*[1]

REQUIRED OF ALL

Grade 7		Grade 8	
Subject	Periods per week[2]	Subject	Periods per week
English	5	English	5
Social studies	5	Social studies	5
Mathematics	5	Mathematics	5
Elementary science	5	Home economics (girls)	4
		Industrial arts (boys)	4
		Occupational information	1

IN ADDITION ELECT 2 OF THE FOLLOWING

(Pupils who have a "B" average for preceding semester may elect 3)

Spanish	5	Spanish	5
Art	2	Art	2
Instrumental music	2	Instrumental music	2
Vocal music	2	Vocal music	2

[1] Report on the Division of Schools to Col. C. S. Ridley, Governor of the Panama Canal, by Lawrence Johnson, Acting Superintendent of Schools, 1936, p. 7.
[2] 1 period equals 45 minutes.

TABLE 9.—*Courses offered in Canal Zone senior high schools*[1]

Course	Periods	Credits	Course	Periods	Credits
Freshman			*Sophomore*		
Constants:			Constants:		
English 9	5	2	English 10	5	2
Electives:			Electives:		
General science	7	2	Biology	7	2
Household arts	8	2	Advanced household arts	7	2
Woodworking	10	2	Elementary mechanical drawing	10	2
Algebra 9	5	2	Plane geometry	5	2
Elementary art	5	1	Advanced art	5	1
Spanish 9	5	2	Modern world history	5	2
French 9	5	2	Spanish 10	5	2
Latin 9	5	2	French 10	5	2
Elementary world history	5	2	Latin 10	5	2
Glee club	2	½	General business training	5	2
Orchestra	2	½	Glee club	2	½
Physical training	2	½	Orchestra	2	½
Elementary mechanical drawing	10	2	Physical training	2	½
Occupational information	1	½	Woodworking	10	½
Juniors			Metal shop[2]	10	½
Constants:			*Seniors*		
English 11	5	2	Electives:		
American history	5	2	English 10	5	2
Electives:			American problems	5	2
Algebra 11	5	2	Trigonometry, 1 semester	5	1
Physics	7	2	Solid geometry, 1 semester	5	1
Elementary stenography	5	2	Advanced stenography	5	1
Elementary typewriting	10	2	Advanced typewriting	10	2
Spanish 11	5	2	Business correspondence, 1 semester	5	1
Advanced mechanical drawing	10	2	Advanced business training, 1 semester	5	1
Glee club	2	½	Spanish 12	5	2
Orchestra	2	½	Glee club	2	½
Latin 11	5	2	Orchestra	2	½
Music appreciation	5	2	Physical training	2	½
Advanced woodworking	10	2	Chemistry	7	2
			Music appreciation	5	2
			Advanced mechanical drawing	10	2
			Advanced woodworking	10	2

[1] Report on the Division of Schools to Col. C. S. Ridley, Governor of the Panama Canal, by Lawrence Johnson, Acting Superintendent of Schools, 1936, p. 11.
[2] Cristobal High School.

Curricular Organization and Revision

In the schools of the Canal Zone, as throughout the United States, curriculum revision is a continuing activity. Following rather common practice in school systems it is considered an important function of the supervisory programs carried on through committees of teachers directed by the supervisory staff. The revision now under way was undertaken in 1932 as a result of which monographs have been prepared or are in preparation for each of the subjects taught for each school year. According to the annual report of the Division of Schools for 1938, completed courses are now available for all elementary grades in art, social studies, music, health, and penmanship. In arithmetic, courses have been prepared for grades 1 to 3; in English, for grades 4 to 6. Tentative courses have been completed in nature study and reading for all grades; in arithmetic for grades 4 to 6; in English for grades 1 to 3.

The tentative courses in reading have been formulated by a committee of 24 teachers working under the direction of the administrative staff. In general, these courses follow a similar plan for all grades. The course of study in reading in the fifth grade which is reasonably typical of the courses in reading prepared for the other grades includes: (1) Statements concerned with the general objectives of teaching reading; of teaching reading in the fifth grade; (2) suggestions to teachers concerned with the importance of the development in children of discrimination in the selection of reading material, of permanent interests in reading for leisure, of appreciation of poetry and poetical expression; (3) suggestive procedures for attaining desirable results in teaching reading with these and other purposes in mind; (4) lists of references appropriate (*a*) for teachers and (*b*) for children covering a rather wide variety of material.

Courses in health education for the elementary schools have been formulated for each of the first six grades. The health courses were prepared by committees of teachers, a separate committee for each of the first, second, and third grades. A "grade" chairman was in charge of each of the three committees and a "main" chairman in charge of all three committees and of the series of courses. The preparation of these courses has been under way with different, usually overlapping, committees since 1933. Each contains a statement concerned with the purpose of the course, the function of a health program in the schools, and a short list of health rules.

The material of instruction is organized in the course for grade 1 into four units as follows: Unit I, Healthy body; Unit II, Healthy personality; Unit III, Healthy community; Unit IV, Safety education. Lists of appropriate subtopics, suggestive procedures, and references are included in each unit followed with a more extended bibliography for all units.

Handicrafts of all kinds are encouraged in the Canal Zone schools.

Courses for grades 2 and 3 follow the same plan, elaborated somewhat to fit the growing needs and comprehension of the children as they mature in years and advance in the school organization.

Courses for grades 4, 5, and 6 have been formulated in a similar way over the same period of time with changing or overlapping committees constituted somewhat as indicated for the lower grades. The organization of the course in health for grade 4 is somewhat as follows: (1) Foreword—a general statement of the school's responsibility for the health of the children enrolled. (2) A statement of objectives. (3) A series of sections, one each concerned with the following health habits: Eating procedure; cleanliness; caring for special organs; safety; sanitation. Under each of these headings are suggestions in regard to (*a*) ways of approaching the topic; (*b*) procedures and activities suitable to the acquisition of information, and (*c*) the formation of desirable habits. Lists of references are interspersed appropriate to suggested topics and activities as are suggested tests, usually of the true-false type. A general bibliography is included. The course for grade 4 is reasonably representative of courses for the other two grades.

[redacted] music and art receive considerable attention in the curricular program throughout the full 12-year instructional course. Each is under the direction of a special supervisor. In each of the 6 elementary grades music is assigned 100 minutes per week and art, 80 to 90 minutes. Beginning with the seventh grade, that is, the first junior

high school year, both music and art are elective throughout the secondary school period. In the junior high school opportunities are available for vocal music and orchestra work. In the senior high school orchestral instruction and band instruction are offered. About two-thirds of the pupils in the junior high school and two-fifths of those in the senior high school are enrolled in the music courses. There are glee clubs, orchestras, bands, and other musical organizations, all of which participate in school and community programs including the music festivals which are held each year in the two cities on either side of the Isthmus.

Some Phases of the School Health Program

The Health Department of the Panama Canal is among the important divisions of its government. Throughout the history of the Canal, its building and its subsequent operation, the activities of this Department over a period of years have changed the very nature of the Canal Zone from a health point of view. At one time prevalence of tropical diseases practically prohibited persons from the temperate zones living there for any length of time. From an area characterized as a "pest house of disease" it has been transformed into the "most sanitary and healthful of tropical areas" anywhere on the globe. Eternal vigilance in maintaining high standards in health and sanitation is a sine qua non of community life in the tropical climate prevailing on the Isthmus as well as an essential in the successful operation of the canal, the main purpose for which the community is maintained. The maintenance of adequate health and sanitary standards from the time the work of digging the canal began until the present time is generally conceded to be responsible in large part for the completion of the Canal and its continuing successful operation. The Health Department has a prestige among government activities that can, therefore, be well understood.

It is not surprising, then, that a health program is an important part of the school program. Nor is it surprising that with the exception of the regular classroom instruction, the school health program is carried on under the direction of the Health Department of the Panama Canal. A school physician and school dentist and two full-time nurses are assigned to the school system. All facilities of the Health Department—dispensaries, clinics, and hospitals—are available to the school administration when necessity arises. The regular program includes a complete physical examination of (1) all first-grade pupils; (2) all new pupils; (3) all pupils who have not had a physical examination for 2 years; (4) all high-school seniors; (5) all students who engage in competitive athletics; (6) all pupils referred to the Department by teachers or parents as in need of attention. Defects needing correction are reported by the school physician to the parents.

Children for whom corrective treatment is recommended may receive it at the dispensaries or hospitals, all of which are under Government direction. In the greater number of cases it is reported by the school administration, the children recommended by physicians for treatment receive it at nominal cost to the individual or family concerned.

Dental service is available to all school children including a complete examination and prophylactic treatment. Corrections are referred to the regular family dentist. Rooms for examination and treatment are set aside for dental purposes in selected schools. The Health Department also maintains school clinics located in the high schools which are open one afternoon a week for consultation with parents by the school physician.

The classroom program is carried on by the regular teachers; instruction begins with a 20-minute period per week, gradually increasing to a 60-minute period in the sixth grade. Reference has been made elsewhere to the courses offered in the elementary grades. In the secondary schools health instruction is offered with science courses.

Pupil Achievement in Academic Subjects

Standard achievement tests have been administered each school year since 1930 to all pupils, both white and colored. The school officials have a double purpose in their administration—that of intelligent grade classification of pupils and as a measure of the quality of instruction offered compared to that offered in representative schools of the United States. One of the important objectives for school accomplishment in the Canal Zone is that of maintaining a favorable status in comparison with representative schools in the 48 States. Practically all white employees, it will be remembered, come from and return to one or another of the several States, either on temporary status or permanently. Often detail on temporary status is for rather prolonged periods. Change in schools attended, whether among communities within the zone or from the zone to communities in the 48 States, occur with more than the usual frequency. Standards maintained in the United States are generally accepted as desirable for the Canal Zone schools by the people as well as by school officials.

Judged by established norms in the United States achievement of pupils of the Canal Zone schools in the regular school subjects is substantially higher than in the States. The Division of Schools reports for 1938 as follows:

In the white elementary schools, grade 1, reading is 5 months in advance of State norms. General achievement in grades 2 and 3 is approximately 5 months in advance of norms in the States; achievement averages in grades 4, 5, and 6 are approximately 8 months in excess of United States averages.

In the junior high schools for white children grades 7 and 8 pupils achieve standards 6½ months above pupils in similar grades in the United States. Zone pupils are especially strong in arithmetic and geography; their weakness is spelling.

That the quality of work done in the Canal Zone high schools is comparable with that done in the better high schools of the United States is evidenced by the results of standard achievement tests in various courses according to the most recent report of the Canal Zone schools. Tests administered during the past year include Spanish, French, Latin, mathematics, science, and history. Results show that the average Canal Zone student of these subjects excels in achievement 65 percent of all high-school students who took the same tests in the United States. Detailed information concerned with tests administered in the schools, 1937–38, is given in tables H, I, J, K in the appendix.

Extension of the Secondary School Program

The establishment of a junior college as part of the regular zone school system was among the recommendations of the committee reporting in the school survey of 1930.[24] The recommendation was based on the need for opportunity for education beyond completion of high-school grades for pupils in the Canal Zone; the fact that the expense of attending college in the States was prohibitive for large numbers of young people; that leaving home with its influences was a questionable procedure for many young people of college age, and that the number of potential college students would, according to estimates, increase enough within a relatively short time to meet the desirable enrollment figures of 200, generally recommended as the essential enrollment for the establishment of a successful and economically operated junior college.[24]

[24] Report of the Survey of the Schools of the Panama Canal Zone, made by the Division of Field Studies, Institute of Educational Research, Teachers College, Columbia University. Mount Hope, C. Z., The Panama Canal Press, 1930.

Balboa High School girl athletes.

Apparently the recommendation was considered favorably by the administration of the Panama Canal and 3 years later, in September 1933, a junior college was opened and provided with temporary quarters. The college opened with an enrollment of 54 students which has increased annually since its opening. In 1935, 77 students were reported; in 1936, 95; in 1937, 81; and in 1938, 111. These figures do not include extension classes. Of these students, 87 were freshmen and 24 sophomores. The principal of the Balboa High School is dean of the junior college. There are 8 instructors under his direction to carry on the 2 years of college work.

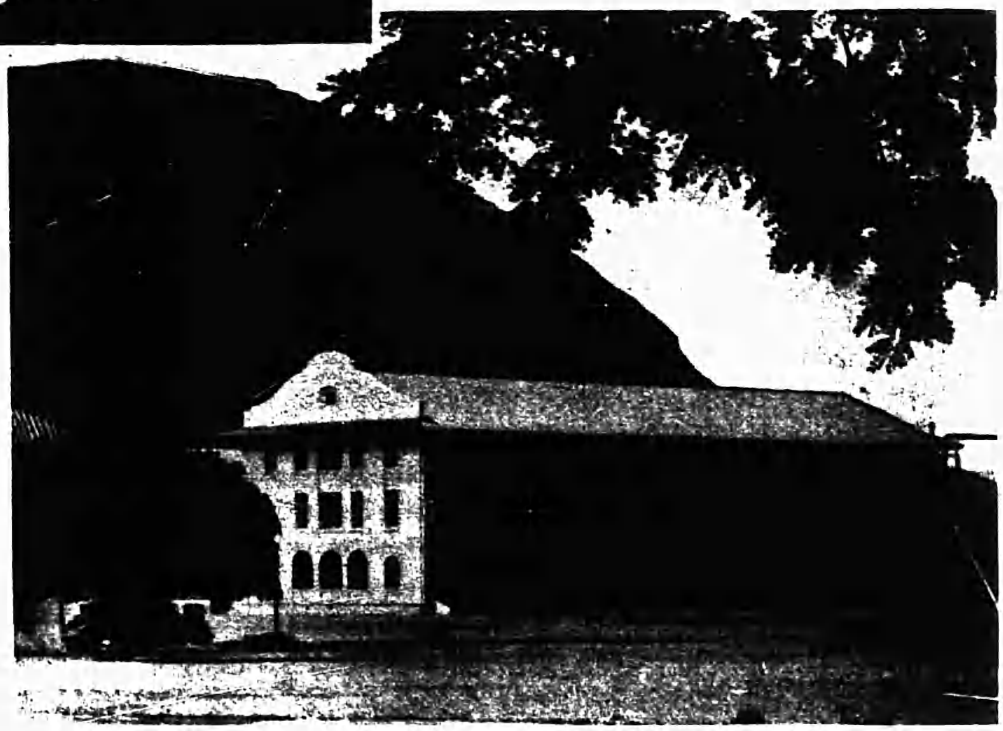
The junior college is maintained in part by tuition fees. Housing, including shops and equipment, and the administrative staff are financed by the regular school system. Other expenses are met by tuition fees. Pupils whose parents are employees of the United States Government resident on the Isthmus, pay $20 per month tuition for 9 months, or $180 per year. Those whose parents are American citizens but not employees, pay $200 per year; all other students, $225 per year.

The program of studies of the junior college is directed toward provision of the first and second years of college work for students who expect to continue their college training; 2 years of college work which are more or less complete in themselves, preparing students for work in local positions with the Panama Canal; 2 years of cultural opportunity for students who do not expect to continue their college education or to prepare for definite employment. For students of the first group who look toward any one of a number of colleges in the United States, the administration requires that students select the college they wish to attend when entering the junior college. A program of studies can then be planned definitely to meet entrance requirements of the particular college of the students' choice. Such arrangement seems to have resulted successfully since the establishment of the junior college. Because of the fact that the people in the Canal Zone come from practically all States in the Union, it follows that the colleges which the graduates of the Canal Zone system select to attend are widely scattered geographically and with a variety of offerings, entrance requirements, and the like. The arrangement indicated or a similar one will doubtless continue as long as it is effective for the ends desired.

An interesting development in extending the services of the junior college is the offering of extension courses—a policy inaugurated in January 1935. The courses are scheduled in the late afternoon and evening and are particularly for the benefit of employed adults. During the school year 1937–38, 12 classes were conducted, with a total enrollment of 174 in Balboa and 73 in Cristobal, the two cities located on the west and east coasts, respectively. The subjects

Left: Experiments of all kinds are included in the science courses.

Below: The junior college building is section B of a proposed $1,200,000 junior-senior high school—junior college plant at Balboa



offered included accounting, typewriting, stenography, engineering, mathematics, calculus, materials of construction, and Spanish.

The initiation and maintenance of a cooperative program for training young people for future employment with the Panama Canal is another development which has been under way only during the past few years. The Division of Schools conducts this program in cooperation with the Division of Personnel Administration. The project is called an apprenticeship-learnership program. Its immediate objective is that of training young people for eligibility in the occupations pursued in the maintenance and operation of the Panama Canal as well as of the Government of the Canal Zone. The apprentice program is a joint undertaking between the high school and junior college on the one hand and the shops and industries operating in the Canal Zone on the other. It provides for coordinating the practical experience offered by participation in the several occupations with allied instruction which is offered in the schools. The program is under

the direction of a "coordinator." Instruction is the responsibility of the schools. Providing opportunity for practical experience is the responsibility of the personnel administration. Definite hours allotted to instruction and definite hours allotted for gaining experience within the craft studied are requirements of the program.

Entrance requirements are set up in age and education varying according to the occupation. Both the working and the instructional programs formulated are adapted to the particular needs of the craft or occupation for which training is offered. Completion of either high school or junior college may be required for entrance, depending on the craft or occupation. Opportunities for cooperative "learnerships" are offered in the following occupations: Those connected with conduct of the commissary; with the Health Department; those concerned with electrical and mechanical operations; and with the operation of the Panama Railroad. Selecting and employing the coordinator and the apprentice-learner instructors are responsibilities of the schools as is also the determination of the type of related instruction to accompany the general courses offered for the occupations coming within the program. The primary responsibility of these positions is for instruction. During the school year 1937-38 related instruction was provided for 105 students and supervised instruction for 27 others by the school system. New "learnerships" in the clerical field were established during the present year for which instruction is being provided through the schools.

The Teachers

The teachers in the schools for white children in the Canal Zone represent a carefully selected group, probably somewhat more cosmopolitan in general make-up than teaching groups generally in systems of comparable size in the States. In 1930 the survey committee [25] reported that the teachers then employed were from more than half the States and from several foreign countries; that the staff was generally well prepared professionally, and had wide teaching experience before employment in the Canal Zone system.

The teachers now employed are apparently of at least equally high quality. The method of selection, the salary scale, the opportunities offered for travel and for further professional study, an administrative and supervisory staff adequate to make growth in service possible, all seem directed toward maintaining as high standards as possible under the conditions prevailing in the Canal Zone.

The Division of Schools of the Panama Canal sets up minimum standards for each school division which all applicants for positions must meet. Teachers selected for elementary grade positions must

[25] Ibid.

have completed at least 3 years in a professional school for teachers of recognized standard such as a State Teachers College or University. In the secondary schools completion of 4 years in standard college or university is required of junior high school teachers and 5 years of senior high school teachers. Teachers of all secondary grades must have devoted 15 semester hours to professional subjects during their college course. Successful experience is required of all teachers selected.

Selection is made on the basis of comprehensive application forms. each applicant is ranked according to training, experience, and efficiency according to certain allotted scores. When a vacancy occurs school officials prepare a list of acceptable candidates. The list, arranged in order of preference, is then sent to the Washington office of the Panama Canal where appointment is made in order of listing. "The quality of the staff testifies to the effectiveness of this method of selection." [25]

In arriving at a standard for salaries to be paid to employees of the Panama Canal in the different occupations in which they are engaged the policy followed is that the basic salary paid will be 25 percent higher than that paid for the same type of work in the States. In fixing the standards for salaries of teachers, the scale used in the District of Columbia is considered as a basic point of departure. In each of the classifications established—i. e., elementary, junior high, and senior high school teachers—the basic salary in the Canal Zone is 25 percent above that paid in the same classification in the District of Columbia. There are, however, fewer annual increments. As a result the median annual salary in the Canal Zone is not 25 percent above District of Columbia medians. Basic pay rates with salary increments prevailing in the Canal Zone system are shown in table 9. Reasonable sick leave is provided and leave of absence for travel or study is arranged under certain conditions. The average annual salaries of teachers employed in the schools for white children in 1937–38 were: Elementary schools, $2,022; junior high schools, $1,972; senior high schools, $2,422; junior college, $3,041. Entrance salaries for teachers per month are as follows: Junior college, $319; senior high school, $250; junior high school and elementary grades, $194. Maximum salaries reported for 1936 are, senior high school, $292; junior high and elementary grades, $236.

An analysis of the professional education of the 54 elementary teachers employed in 1938 shows that 31 have between 2 and 4 years education above high-school graduation; while 23 hold a bachelor's degree or have some education beyond 4 years of college. Of the 18 junior high school teachers reported, 4 have 2 to 4 years above high school, 11 have either an A. B. degree or have an A. B. degree plus

[25] Ibid.

additional training; 3 have master's degrees. Of the senior high school teachers, 10 have bachelor's degrees plus some additional training, 27 the master's degree plus some additional training. One has a Ph. D. The 8 junior college teachers each have an M. A. degree or equivalent training plus some additional professional courses. Detailed information in table 10.)

TABLE 9.— *Basis of pay rates for Canal Zone teachers, principals, and supervisors* [1]

Position	Annual salary, by year						
	First	Second	Third	Fourth	Fifth	Sixth	Seventh
1	2	3	4	5	6	7	8
Teacher:							
Elementary school	$1,746	$1,872	$1,998	$2,124	$2,250	$2,376	
Junior high school	1,746	1,872	1,998	2,124	2,250	2,376	
Senior high school	2,250	2,376	2,502	2,628	2,754	[2] 2,871	
Instructor, junior college	2,871	2,997	3,123	3,249	[3] 3,375		
Supervisor, art, music, penmanship	2,475	2,601	2,727	2,853	[4]	[4]	[4]
Principal:							
Elementary school	2,413	2,546	2,679	2,812	[4]	[4]	[4]
Junior high school	2,475	2,601	2,727	2,853	[4]	[4]	[4]
Senior high school	3,500	3,625	3,750	3,875	4,000	[4]	[4]
Apprentice-learner supervisor	3,250	3,375	3,500	3,625	[4]	[4]	[4]
Assistant to superintendent	3,250	3,375	3,500	3,625	3,750	3,875	$4,000
Assistant superintendent	4,000	4,125	4,250	4,375	4,500	4,625	4,750
Superintendent	4,750	5,000	5,250	5,500	5,750		

[1] Report on the Division of Schools to Col. C. S. Ridley, Governor of the Panama Canal, by Lawrence Johnson, acting Superintendent of Schools, 1936 (typewritten).
[2] 2 additional administrative rates of $2,997 and $3,123 for teachers who are considered outstanding and specially meritorious in their profession.
[3] 1 additional rate of $3,501 for instructors considered outstanding and specially meritorious in their profession.
[4] No further increase.

TABLE 10.— *Professional training of Canal Zone white teachers* [1]

Additional years of training	Elementary schools	Junior high schools	Senior high schools	Junior colleges
1	2	3	4	5
High-school diploma plus:				
2.0 to 2.4	10	1	0	0
2.5 to 2.9	11	0	0	0
3.0 to 3.4	3	2	0	0
3.5 to 3.9	7	1	0	0
Total	31	4	0	0
Bachelor's degree plus:				
0.0 to 0.4	20	8	7	0
0.5 to 0.9	3	3	3	0
Total	23	11	10	0
Master's degree plus:				
0.0 to 0.4	0	3	26	3
0.5 to 0.9	0	0	0	0
1.0 to 1.4	0	0	1	0
1.5 to 1.9	0	0	0	2
Total	0	3	27	5
Ph. D. degree plus	0	0	1	0
Grand total	54	18	38	5

[1] Division of Schools, Panama Canal Zone, 1938.

All of the teachers employed in the elementary schools during the past year—1937–38—had successful experience in teaching before they secured their present positions, varying in amount from 4 to 16 years.

Within the zone 8 of the 54 were teaching their first year, 3 their second year, while 23 had been in the positions then held 10 years or longer. Teachers employed in the junior high schools during the same year had had 2 to 12 years' experience previous to employment in the Canal Zone, while experience within the zone varied from 3 to 18 years. In the senior high schools, teachers employed the same school year had had from 1 to 17 years' previous experience in the United States, and had taught in the zone from 1 to 24 years. Prevailing tenure within the zone was within the two period groups representing from 1 to 5 and from 7 to 10 years.

TABLE 11.—*Experience of white teachers of Canal Zone schools* [1]

Years	Elementary schools		Junior high schools		Senior high schools		Junior colleges		Total	
	1937	1938	1937	1938	1937	1938	1937	1938	1937	1938
1	2	3	4	5	6	7	8	9	10	11
BEFORE COMING TO ZONE										
0	1				1	1			2	
2					[2] 1	1			1	
3			1	2	2	1	1	2	4	
4	1	2	2	1	5	5	1		9	
5	4	3	3	3	5	5	2	2	14	
6	4	5	1	2	2	3	1	1	8	
7	6	7	2	3	3	2			11	
8	12	9	4	2	5	6	1		22	
9	6	6	1		2	2			9	
10	8	8	2	1	3	5		1	13	
11	4	6	1	1	3	3			8	
12	2	5	1	1	2	1			5	
13	1				1	1			2	
14	2	1			1	3			3	
15	1	1			1			1	2	
16	2	1				1			2	
17						1				
Total	54	54	18	16	37	41	6	7	115	
SINCE COMING TO ZONE										
1	8	8	3	3	6	8		1	17	
2	2	3	5	2	5	5	1		13	
3	7	3	2	3	3	4	1		13	
4		4		2	5	5	2		7	
5						3		3		
6	4	1			6				10	
7	4	4	2		5	2	1		12	
8	6	4	2	2	3	7		1	11	
9	8	4		1	1	3	1		10	
10	3	7	1					2	4	
11	2	6	1	1					3	
12	3	1	1		1				5	
13		3		1	1	2			1	
14	1	1				1			1	
15	3	1							3	
16	2	1							2	
17		2	1						1	
18				1						
20		1								
23					1				1	
24						1				
29	1								1	
Total	54	54	18	16	37	41	6	7	115	

[1] Table 4, in annual report of the Division of Schools for the school year 1937–38 and the fiscal year 1938, to the executive secretary, the Panama Canal, July 20, 1938. Data are from teachers' professional records.

[2] This represents a teacher employed 1927–28 who had 2 years' experience before zone employment, taught 6 years at Balboa High School, resigned in 1934, and after 1 year in school and teaching 2 years in the United States he was reemployed for the year 1936–37.

The Schools for Colored Children

Approximately half the population of the Canal Zone and slightly more than half the children enrolled in the schools are colored. The adult colored population is made up almost wholly of laborers employed in the work of repair and maintenance of the canal. The original colored labor supply was recruited in large part from the West Indies. Consequently West Indian Negroes predominate in the colored population. There are few American Negroes, citizens of the United States, employed by the Panama Canal. Neither the West Indian Negroes resident in the zone nor their children born in the Canal Zone are citizens of the United States.

Definite information concerning the social and economic status of the colored population is not available. Authoritative statements from school and other officials, however, indicate that the standard of living among those residing in the Canal Zone is substantially higher than that of colored populations of the same wage-earning capacity in the West Indies and the Republic of Panama. Average earnings of the colored, commonly referred to in the Canal Zone as "silver" employees, are reported as about $700 per year; on which they seem "to be able to feed and clothe their families satisfactorily." The children in the colored schools are fairly well nourished, clean, and well clothed.[26]

Approximately half of the colored employees of the Panama Canal are housed in the Canal Zone; the others live in the Republic of Panama. A separate section in each zone community is set aside for colored employees. They live in homes provided by the Government as do white employees and can purchase food and clothing through the commissaries at moderate prices. Recreational facilities are provided through the Canal Zone clubhouses. Several religious denominations are represented with church facilities and there are the usual club and fraternal organizations.

The Government furnishes also free public-school facilities for the colored residents through the elementary and junior high school levels. There are 7 school buildings for colored children in which eight grades—6 elementary and 2 junior high school—are maintained. Enrollment in the 6 elementary grades totaled 2,373, for the school year 1938–39, with 57 teachers in charge. In the junior high school grades 957 were enrolled and 35 teachers employed. The elementary grades offer basic academic work in reading, writing, arithmetic, geography, history, penmanship, and health education. Sewing and general handicrafts are taught in the sixth grade.

Junior high schools for colored children consisting of 2 years of work, the seventh and eighth, were organized in 1931 on the depart-

[26] Information from Division of Schools, Canal Zone.

mental plan. They offer, in addition to an academic program, certain practical vocational courses. The program of studies is—

similar to that in the junior high schools for white children but provides more practical work such as cooking, sewing, shop work, and gardening and less cultural work such as music and art. The program has been worked out carefully to suit as nearly as possible particular needs of local colored boys and girls. It offers a chance for training appropriate to the situation in the academic subjects and provides also instruction in practical vocational courses.[17]

Spanish is offered in the two junior high school grades and the results have been unusually good. Standard tests indicate that colored pupils achieve more in this subject than local white pupils of similar grade. The introduction of Spanish is in line with the administration's effort to provide practical training. Knowledge of Spanish is particularly helpful in securing the types of positions in Panama to which colored boys and girls are eligible. Since 1931 the major emphasis during the junior high school years has been placed on practical vocational work. The courses include cabinet making, mechanical drawing, tailoring, and agriculture for boys; cooking, dressmaking, laundering, and general homemaking for girls.

Agriculture is taught generally through practical work in the school gardens which are cultivated for the purpose in 7 of the schools for colored. During the past year 483 boys participated in the maintenance of school gardens. Approximately 13 acres of land are under cultivation and the value of products during the past year reached a total of $4,000. School garden accounts are kept by the pupils under the direction of the teacher. They show the expenditures and receipts as well as the amount of produce raised and its disposal. Most of the produce is divided among the boys who carry on the work but a small amount of it is sold. [See Appendix for additional information.]

Considerable experimentation with tropical fruits, vegetables, and flowers has been under way during the year. The new course of study in gardening, now in process of formulation, aims to combine the teaching of scientific agriculture with practical work. The objectives of the course include basic understandings of soil, selection of plants and soils, purposes and methods of cultivation, insect enemies and their extermination, plant diseases and their prevention, and methods of gardening applicable in the Canal Zone.

Following the policy now prevailing in schools for white children, revision of the curriculum in schools for colored children was undertaken during the school year 1937–38. The general objectives of the schools are set forth in a mimeographed publication prepared under the direction of the assistant superintendent by a committee composed of teachers in the schools for colored as the first step in the preparation of the new curricular materials contemplated. The stated objectives

[17] Annual Report, Canal Zone schools, 1937.

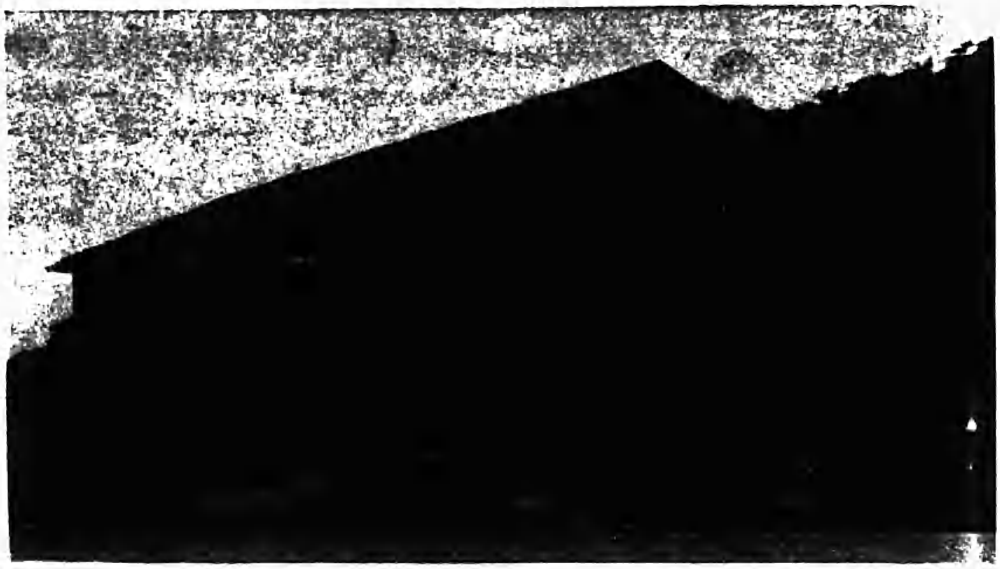
are as follows: Social adjustment, civic adjustment, economic adjustment, adjustment to the natural environment, recreational adjustment.

The pamphlet contains definite suggestions concerning topics to be covered and outlines instructional procedures to be followed in aiming to attain each of the several objectives through the school program. It is formulated as a basic statement for the guidance of teachers in meeting the specific needs of the colored children of the Canal Zone. The committee which prepared the material attempted, according to the foreword, "to survey critically and thoroughly the needs and interests of pupils and to suggest how the school can make a real contribution to the group it serves." The revised curriculum of which this pamphlet represents the first step, is looked forward to as a step in the solution of the unusual and difficult social and economic problems confronting the colored population of the zone.

Students in the Canal Zone schools for colored do not show achievement comparable to that in the local white schools. However, the work done compares well with that of typical schools for colored in the United States. In the first three grades local colored

Above: Eight colored school gardens with a total area of 9 acres produce more than $4,000 worth of fruits and vegetables each year.

Right: These young colored women are being trained to teach in the Canal Zone colored schools, in the La Boca Normal School.



The Gamboa School for colored children, Gamboa, Canal Zone, completed July 1, 1937.

children excel State norms by about 3 months. In grades 4, 5, and 6 achievement is about 4½ months below State standards. Canal Zone colored junior high school achievement averages 4 months below standards set by similar grades in the United States. Local colored pupils are strong in arithmetic, computation, and spelling, but weak in language usage, literature, and geography. Pupils in colored junior high schools do better in Spanish than pupils in white junior high schools.[28]

The school term in schools for colored is 12 months in length; the teachers are paid on a 12-month basis. Schools were in session 231½ days during 1937–38. Holidays are the same as in schools for white children.

The total enrollment in schools for colored children in 1937–38 was 3,099; the average daily attendance for the year, 2,881—approximately 92 percent. As in the schools for white children the percentage is a creditable one and indicates reasonable regularity in attendance throughout the year.

Data are not available which show the progress children make through the elementary and junior high school grades. The distribution of ages of eighth-grade children in the last year of the junior high school, i. e., the eighth year, are shown in table 12. In this grade approximately 60 percent of the children are overage for the grade in which they are enrolled.

It does not necessarily follow that an equally high percentage of children in the seventh, or in the 6 elementary grades is overage. The fact that there is no high school which colored children of second-

[28] Report on the Division of Schools to Col. C. S. Ridley, Governor of the Panama Canal, 1936.

TABLE 12.—*Distribution of ages of eighth-grade students, Canal Zone colored schools, July 1, 1938* [1]

Interval [2]	Silver City		La Boca		Red Tank		Paraiso		Gatun		Gamboa		Frijoles		Total	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
1	2	3	4	5	6	7	8	9	10	11	12	13	14	1	16	17
12 years to 12 years 11 months	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1	1
13 years to 13 years 11 months	11	8	5	3	7	3	1	1	2	0	1	3	0	0	27	18
14 years to 14 years 11 months	20	22	21	12	7	13	4	2	7	8	7	3	0	0	66	60
15 years to 15 years 11 months	26	14	13	19	5	12	4	0	4	4	6	2	0	1	58	52
16 years to 16 years 11 months	8	11	15	19	2	4	2	1	1	2	3	1	0	1	31	39
17 years to 17 years 11 months	8	4	9	7	4	2	1	1	0	1	3	3	0	1	25	19
18 years to 18 years 11 months	6	3	8	0	6	1	2	0	0	0	3	3	2	1	27	8
19 years to 19 years 11 months	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0
Total	82	63	71	60	31	35	14	5	15	15	23	15	2	4	238	197

[1] Data from Division of Schools, Panama Canal Zone.
[2] Median age for boys—15 years 5 months; median age for girls—15 years 4 months.

ary school age can attend in the Canal Zone may account in part for the fact that there is a large number of colored youths 16 to 19 years old in this grade.

Among the most significant of the steps taken by the school administration in recent years to improve the schools for colored children is the establishment some 4 years ago (1934) of a local institution for preparing teachers for these schools known as the La Boca Normal School. Recruiting teachers adequately prepared has long been a difficult problem in the schools for colored children, candidates coming in large part from the West Indian Islands. Naturally educational standards in these islands differ from those prevailing in the United States—toward which the schools for white children in the zone are directed.

It is evident that since the program in the schools for colored is modeled after that in schools for white children to a considerable extent, it is particularly difficult to attain similar standards with teachers whose preparation and experience previous to their employment in the Canal Zone had been of a character so different from that of the white teachers. As a step, then, in securing better-prepared teachers, especially in securing teachers familiar with standards in classroom practices and achievements patterned after those of schools in the United States, a local teacher-preparing institution was established.

The La Boca Normal School offers a 4-year course following completion of the last year—the eighth grade—of the junior high school. In organization and in professional courses offered, the school is somewhat similar to normal training high schools or classes still operating in a number of States. The courses offered are, however, adapted to the conditions and needs of the schools for colored in the Canal Zone. Students completing the 4-year course will have academic education about equivalent to graduation from the average 4-year high school and in addition some professional work. They will also have a good deal of practice teaching in the colored schools under the immediate direction of experienced teachers and the principal of the La Boca Normal School. The principal is a colored man with considerable experience and a degree from the University of Chicago. The first class was graduated from the Normal School in 1938. It included 37 young men and women who had been selected for entrance on the basis of scholarship and personal qualifications. It is expected that vacancies in the schools for colored will be filled as they occur from the present and future graduates of this school.

Another important step toward improvement in the schools for colored is represented by a definite effort on the part of school officials toward promoting better understanding of the objectives of education among the parents. There has been in the past a tendency to under-

estimate the place in the school program of vocational work. The opinion has long prevailed that the major business of the school was concerned with academic work. To counteract this tendency exhibits of vocational work have been held in the several schools annually during recent years in order that parents might have a chance to see the kind of work being done in the school shops and sewing laboratories. Recently several graduates of the schools have been able to secure work as helpers and beginning craftsmen, an eventuation which has enforced the efforts of school authorities to promote better attitudes toward and wider understanding of the aims of the schools.

The teaching staff in the colored schools numbers 92 (school year 1937–38), of whom 2 are full-time principals. The average annual salary for all colored teachers is $833. Because the staff has been recruited in large part from the West Indian Islands, definite data concerning their educational qualifications are not available. Many of them are teachers of considerable experience who received their education in the West Indies under conditions prevailing there. Information concerning their education collected at that time and in the West Indies would not be comparable with similar information collected at the present time under conditions prevailing in the United States. According to the survey report of 1930 [29] the median education of colored teachers was approximately 3 years beyond the eighth grade. The experience of the median teacher was reported as of about 13 years. Since the teaching staff is stable, the situation probably has not changed materially with the exception of the added experience.

School Housing and Equipment

Adequate and climatically adapted school housing has been a serious problem in the Canal Zone system from its inception. During the early years before the population was stabilized, when conditions in the school system were more or less fluctuating, makeshift and inadequate buildings were essential and more or less natural and in conformity with the general unsettled conditions of business and social affairs. As this period passed it became evident that the provision of adequate and satisfactory buildings adapted to school purposes offered some serious and unanticipated difficulties. Many problems such as are normally encountered in communities in the United States were complicated in the Canal Zone by the special needs of the tropical climate—proper lighting and ventilating, for example. Maintenance of adequate accommodations was complicated also by the difficulty of estimating the needs of a population whose size and permanence could not be gaged by conditions previously existing nor by standards prevailing in more stabilized communities in the United States. After

[29] Report of the survey of the schools of the Panama Canal Zone. Op. cit.

the completion of the canal, when normal operation was well established it became possible to make definite plans on which an adequate and economical building program could be based. Such a program, to be consummated over a period of years, has been under way since 1917.

The present stage in the housing program, while promising, leaves much to be desired. This is especially true in regard to the present situation in buildings and equipment for colored children and for elementary school children in much of the Balboa area. The newer, usually concrete or partly concrete buildings are attractive, generally well adapted to the needs of the modern school program, to satisfactory service in the tropical climate which prevails and to sanitary and hygienic requirements. Classrooms, in size, lighting and ventilating provisions, in upkeep and schoolhouse keeping, in general attractiveness and adaptation to the work of the children housed in them, are in line with good modern practice. The chief difficulty is that the program has not progressed rapidly enough. Though replacements are contemplated and will eventually be made available, a relatively large number of children are still in buildings inadequate and unsuitable for school purposes. However, the Division of Schools reports, in a recent statement to the executive secretary, that "rapid strides have been made during the preceding 5-year period toward the provision of suitable buildings to house the school population." The plan contemplates the replacement of all "temporary and otherwise unsuitable buildings with permanent concrete or concrete and wood buildings."

The children are now housed (1937–38) in 24 school buildings of which 15 are reported [30] as in good condition. Of these 7 are of concrete structure and 6 "composition," that is concrete and frame; 11 frame. Most of the last-named will eventually be replaced or abandoned.

The high-school pupils in Balboa are now housed in a building originally intended for the elementary grades while the children in the elementary grades in the Balboa area are quartered in "make shift" buildings which it is expected will be abandoned and the now scattered elementary grades accommodated in a central school. A new building for the secondary groups is, therefore, among the "urgent needs." [31] An auditorium for the Balboa section is another unit in the program contemplated for the early future.

A number of schools for colored children are quite unadapted to school purposes as well as inadequately lighted and ventilated and too small to accommodate the growing attendance. Crowded rooms and a too heavy teaching load are, therefore, somewhat characteristic of conditions in the elementary grades for colored. Three new build-

[30] Report, Division of Schools, Canal Zone, 1938. [31] Ibid.

ings are contemplated in the building program to "complete proper housing for children of the colored population." [32]

During the school year 1937–38 three new modern buildings were completed. Two of these, one for colored and one for white children, are located in a new development at Gamboa, which has necessitated the transfer of a large number of employees from other communities. A new shop building at Balboa also was completed during the year and modern machinery and other equipment installed. This building will serve both the high school and the junior college.

School buildings under the long-time program are somewhat similar in design. They are of concrete or of frame with concrete foundation pillars. Play space both out of doors and under cover with concrete flooring for use in inclement weather is provided or planned for in the near future in the newer buildings. In a representative school for colored children in which junior high school grades are maintained, such as the new building at Gamboa, classrooms are provided for the six elementary grades and for academic work of the junior high school grades. In addition, there are a study hall, a science laboratory, a sewing room, a cooking laboratory, and two wood-working shops. The contemplated plans are to provide similar arrangements as new buildings are projected.

Equipment in the zone schools compares favorably with that in school systems of similar size in the United States. While in some schools it is less adequate than in others, in general, especially in schools for white children, classroom equipment, teaching materials, and books available are modern, well selected, and reasonably adequate.

Textbooks are furnished all students in the elementary and secondary schools (not including junior college) by the Division of Schools free of charge. Selections are made by committees of teachers and then reviewed by the superintendent's staff. The policy is to keep textbooks as up to date as possible but with changes not oftener than every 3 years. A careful system of issuing and checking books loaned to pupils is enforced.

Library and reference books are furnished also by the Division of Schools and made available through central, school, and home-room libraries. The Panama Canal operates two large libraries, one at Balboa Heights and one at Cristobal—the respective Atlantic and Pacific entrances to the Canal.

In general, library and reference books are available through school and home-room libraries. There is a central library in each of the two high schools to which pupils have access throughout the school day for library and reference work and from which books for general reading can be charged out for given periods of time. In the ele-

[32] Ibid.

mentary schools home-room libraries include both reference and supplementary reading materials. The policy of the school system is to maintain and enlarge these libraries as liberally as available funds permit.

In the secondary schools laboratory equipment for science teaching, household arts, the school shop, etc., is furnished by the school system without the customary laboratory fee, though certain types of materials more or less personal such as dress goods, lumber, and materials used in the shop for individual projects are generally paid for by the students. Through arrangements with the Commissary Division of the Panama Canal, the necessary supplies such as paper, pens, pencils, art materials, and the like are put up in quantities to last one pupil 1 year and sold at an annual per pupil cost of about $2.50. In general, through standardized business arrangements, school supply costs are kept at the minimum to the individual pupils and generous supplies made available. (See table E in appendix.)

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Appendix

TABLE A.—*Supervisory and administrative staff, 1938*

Superintendent	1
Administrative assistant to superintendent	1
Assistants to superintendent	2
Coordinator, apprentice-learner	1
Music supervisor	1
Art supervisor	1
Penmanship supervisor	1
Principals:	
White	4
Colored	2
Total	14

TABLE B.—*Epitome of more important statistics for years ending June 30, 1934, 1935, 1936, 1937, and 1938*

1	1934	1935	1936	1937	1938
	2	3	4	5	6
Number of school buildings	26	26	26	26	26
Buildings erected and converted	1	[1] 2	0	0	[2] 3
Book value of school property	$1,362,663	$1,654,862	$1,655,630	$1,656,579	$1,812,015
Tuition collected and miscellaneous revenue	$18,487	[3] $33,193	[3] $39,388	[3] $48,069	[3] $57,554
Total expenditures	$338,504	$388,042	$424,720	$432,751	$461,295
Number of employees in the division, including janitors	241	233	247	[4] 255	260
Absence of white teachers—days	530.5	509	656	456.5	479.5
Average annual wages of teachers: [5]					
White:					
Elementary		$1,796.80	$1,996.20	[6] $2,017.50	$2,022.00
Junior high		1,982.70	2,024.46	[6] 1,994.00	1,972.00
Senior high		2,422.43	2,406.15	2,469.00	2,422.00
Junior college		2,974.32	3,039.00	3,067.00	3,041.00
Colored		785.62	811.25	867.00	883.00
Average daily attendance:					
White schools	2,785.1	2,797.1	2,717.2	2,755.1	2,765.1
Colored schools	3,585.8	3,405.6	3,186.0	3,090.7	2,881.3
Total	6,370.9	6,202.7	5,903.2	5,845.8	5,646.4

[1] Junior college science building erected; old Y. W. C. A. building converted to Balboa High School Little Theater.

[2] Includes Gamboa White school, Gamboa Colored school, and the Balboa School Shop.

[3] These figures include junior college tuition which was not included in the 1934 figure. Junior college tuition amounted to $14,000 in 1935; $19,173 in 1936; $15,990.64 in 1937, and $26,726 in 1938.

[4] The increase of eight in the total number of employees in the division includes five additional teaching positions, one in the white schools and four in the colored schools, one coordinator, apprentice-learner school, one library learner, and one temporary clerk.

[5] While these figures represent annual salaries, white teachers are paid on a 9-month basis. Colored teachers are paid on a 12-month basis.

[6] Includes teaching principals and excludes nonteaching principals.

TABLE C.—*Number of pupils belonging and number of teachers according to schools, 1938*

Name of school and grades	Number of—	
	Pupils	Teachers
	White	
Grades 9–12		
Balboa	636	24
Cristobal	351	17
Total	987	41
Grades 7–8		
Balboa	315	10
Cristobal	188	6
Total	503	16
Secondary		
Balboa	951	34
Cristobal	539	23
Total	1,490	57
Grades 1–6		
Ancon	291	11
Balboa	470	16
Pedro Miguel	115	4
Gamboa	41	2
Gatun	101	4
Cristobal	436	17
Total	1,454	54
Total	2,944	111

Name of school and grades	Number of	
	Pupils	Teachers
	Colored	
La Boca Normal [1]	36	
Grades 1–8		
La Boca	782	27
Red Tank	459	14
Chiva Chiva	34	
Paraiso	80	
Gamboa	384	
Frijoles	52	
Gatun	325	
Silver City	947	37
Total	3,099	93

[1] Leader preparation.

TABLE D.— *Résumé of school statistics, school year, 1937–38*

Type of school	February attendance		Teachers [1]		Graduates		Entrance pay of teachers	
	White	Colored	White	Colored	White	Colored	White	Colored
1	2	3	4	5	6	7	8	9
Junior college	[2] 117		7		22		$319	
Senior high	987		41		243		250	
Junior high	503	828	16	35	256	394	194	$60
Elementary	1,454	2,235	54	57	221	415	194	60
Normal	----	36		1		37		100

[1] Includes teaching principals.
[2] Includes 87 freshmen, 24 sophomores, 6 special part-time students; 188 students were registered in the extension classes in the month of February.

TABLE E.—*Expenditures for school textbooks, Canal Zone schools, 1933–37* [1]

Type of school	1932–33 [2]		1933–34		1934–35		1935–36		1936–37	
	Cost of textbooks	Per pupil cost	Cost of textbooks	Per pupil cost	Cost of textbooks	Per pupil cost	Cost of textbooks	Per pupil cost	Cost of textbooks	Per pupil cost
1	2	3	4	5	6	7	8	9	10	11
Senior high school	$2,565.25	$3.44	$2,230.47	$2.89	$3,897.11	$4.69	$3,295.83	$3.86	$2,459.73	$2.66
Junior high school	284.12	.54	349.65	.67	113.82	.24	1,415.16	3.01	1,166.53	2.58
Elementary school	1,085.05	.69	737.54	.49	456.88	.31	3,728.80	2.70	2,062.80	1.51
Colored school	932.70	.23	997.66	.28	834.03	.25	2,289.20	.72	2,298.28	.74

[1] Textbooks are not furnished free to junior college students.

TABLE F.—*Comparison of registrations in major fields of study, Canal Zone high schools, 1934–38*

Field of study	1933–34		1934–35		1935–36		1936–37		1937–38	
	Registrations	Percent of student body	Registrations	Percent of student body	Registrations	Percent of student body	Registrations	Percent of student body	Registrations	Percent of student body
1	2	3	4	5	6	7	8	9	10	11
Art	59	7.3	53	6.1	55	6.1	64	6.4	63	7.1
Commercial	387	47.8	421	48.5	490	54.7	579	57.9	552	62.0
English	819	101.0	988	113.5	973	108.5	1,065	108.5	926	104.0
Household arts	128	15.8	125	14.4	109	12.1	100	10.2	107	12.0
Industrial arts	144	17.7	267	30.7	262	29.2	246	25.1	236	26.5
Language	575	70.9	699	80.5	815	90.9	813	83.0	669	75.1
Mathematics	560	69.1	673	77.5	701	78.2	708	70.8	654	73.5
Music	252	31.1	266	30.6	288	32.1	296	30.2	402	45.4
Science	460	56.9	516	59.4	486	54.2	478	47.8	435	48.7
Social science	434	53.5	526	60.6	541	60.3	557	56.7	422	47.4
Total	3,818		4,534		4,720		4,906		4,466	

TABLE G.—*Colored-school gardens*

Name of school	Size of garden	Number of boys engaged [1]	Value of produce [2]
	Acres		
Chiva Chiva	0.125	8	$44.97
Frijoles	.20	17	30.32
Gamboa	3.5	62	35.09
Gatun	1.5	42	689.04
La Boca	3.25	117	1,359.82
Pamiso	.75	14	551.52
Red Tank	1.00	65	639.69
Silver City	2.5	158	559.35
Total	12.825	483	3,909.80

[1] Number of students doing garden work in the month of June 1938.
[2] At Commissary prices. The produce was distributed among the boys except about 10 percent sold by the school to raise money to buy seeds.

Source: Monthly reports of school-garden activities.

TABLE H.—*Achievement test results—white schools, 1937–38*

Title of test and grades in which given	Grade norm for United States	Mean for Canal Zone	Difference between Canal Zone mean and States norm
1	2	3	4
Gates Primary			
Word recognition:			
1	1.7	2.4	0.6
Sentence reading:			
1	1.7	2.3	.5
Paragraph reading:			
1	1.7	2.2	.4
New Stanford Primary, Form W			
Paragraph meaning:			
2	2.7	3.3	.5
3	3.7	4.4	.6
Word meaning:			
2	2.0	3.3	.5
3	3.7	4.4	.6

TABLE H.—*Achievement test results—white schools, 1937–38*—Continued

Title of test and grades in which given	Grade norm for United States	Mean for Canal Zone	Difference between Canal Zone mean and United States norm
1	2	3	4
New Stanford Primary, Form W—Continued			
Spelling:			
2	2.7	3.1	0.3
3	3.7	4.3	.6
Arithmetic reasoning:			
2	2.7	3.3	.6
3	3.7	4.4	.7
Arithmetic computation:			
2	2.7	3.1	.3
3	3.7	4.2	.4
New Stanford Advanced, Form W			
Paragraph meaning:			
4	4.7	5.7	1.0
5	5.7	6.8	1.1
6	6.7	8.1	1.4
7	7.7	9.2	1.5
8	8.7	9.6	.9
Word meaning:			
4	4.7	5.7	1.0
5	5.7	6.3	.6
6	6.7	7.4	.7
7	7.7	8.5	.8
8	8.7	9.0	.3
Spelling:			
4	4.7	5.1	.4
5	5.7	5.7	.0
6	6.7	7.2	.5
7	7.7	7.5	−.2
8	8.7	8.5	−.2
Language usage:			
4	4.7	5.8	1.1
5	5.7	7.4	1.7
6	6.7	8.6	1.9
7	7.7	8.9	1.2
8	8.7	9.5	.8
Literature:			
4	4.7	5.2	.5
5	5.7	5.9	.2
6	6.7	7.9	1.2
7	7.7	7.6	−.1
8	8.7	8.4	−.3
History and civics:			
4	4.7	5.3	.6
5	5.7	7.1	.3
6	6.7	7.2	.4
7	7.7	7.5	−.2
8	8.7	8.9	.2
Geography:			
4	4.7	5.6	.9
5	5.7	6.7	1.0
6	6.7	8.3	1.5
7	7.7	9.8	2.1
8	8.7	9.6	.8
Physiology-hygiene:			
4	4.7	5.8	1.1
5	5.7	6.9	1.2
6	6.7	8.2	1.4
7	7.7	9.0	1.2
8	8.7	9.2	.4
Arithmetic reasoning:			
4	4.7	5.3	.5
5	5.7	6.3	.5
6	6.7	7.5	.7
7	7.7	8.5	.7
8	8.7	9.5	.7
Arithmetic computation:			
4	4.7	4.8	.1
5	5.7	7.2	1.4
6	6.7	9.5	2.7
7	7.7	10.0	2.2
8	8.7	10.4	1.6

Source: Reports of tests given under direction of the department of research.
Comments: All tests were administered the seventh month of the school year 1937–38; 0.5 equals 5 months; 1 year represents a 9-month school year; 1.1 equals 1 year 1 month.

TABLE I.—*Achievement tests—white schools, 1937–38*

Title of test and form	Grade	Balboa School			Cristobal School		
		Number tested	Canal Zone mean	Rank on States' percentiles	Number tested	Canal Zone mean	Rank on States' percentiles
1	2	3	4	5	6	7	8
American Council							
Beta Spanish—B	8	86	187	30	62	193	36
Solid geometry—B	11	60	140	56	29	38	54
Cooperative							
Algebra, elementary—1937	9	115	58	70	36	64	88
Algebra, intermediate—1937	11	35	63	74			
American history—1937	11	140	52	46	84	50	38
Biology—1937	10	66	53	59	24	64	91
Chemistry—1937	11	79	59	58	17	50	22
French—1937	9	24	58	91	7	43	42
	10	17	71	87	6	70	85
Latin—1937	9	23	51	59	5	54	72
	10	17	60	42	19	62	50
Plane geometry—1937	10	105	55	54	40	62	80
Physics—1937	12	47	66	84	30	64	78
Science, general—1937	9	77	58	79	27	64	92
Spanish—1934	9	125	121	92	62	109	88
Spanish—1937	10	105	59	69	69	63	82
	11	49	72	74	37	73	77
	12	23	78	67	9	70	38
Trigonometry—1937	12	34	54	37	24	61	67
History, Modern World—1937	10	39	55	72			

[1] Raw scores, all others are scaled scores.

TABLE J.—*Mental test results—white schools, 1937–38*

Title of test and form	Grade	I. Q.[1]					
		Balboa			Cristobal		
		1	2	3	1	2	3
1	2	3	4	5	6	7	8
National Intelligence—3	7	99	106	114	100	108	118
Kuhlman-Anderson Intelligence	7				100	110	120
Terman Group Test—A	9	95	104	113	100	103	112
Henmon Nelson Test—B	9				95	107	117

[1] Columns 3 and 6 record the I. Q. of the Canal Zone pupil who exceeds the lower quarter of his class. Columns 4 and 7 record the I. Q. of the middle Canal Zone pupil. Columns 5 and 8 record the I. Q. of the Canal Zone pupil who exceeded three-quarters of his class.

Title of test and form	Grade	Balboa		Cristobal	
		Mean	Rank on States' percentiles	Mean	Rank on States' percentiles
1	2	3	4	5	6
American Council Psychological—1937	12	163	41	156	37

Source: Reports of tests given under the direction of the department of research.

TABLE K.—*Achievement test results, colored schools, grades 1 to 8*

Title of test and grades in which given	Grade norm for United States	Mean for Canal Zone	Difference between Canal Zone mean and States' norm in grade
1	2	3	4
Gates Primary			
Word recognition:			
1	1.7	2.5	.8
Sentence reading:			
1	1.7	2.4	.7
Paragraph reading:			
1	1.7	2.3	.6
Word recognition:			
2	2.7	3.2	.4
Sentence reading:			
2	2.7	3.1	.3
Paragraph reading:			
2	2.7	3.1	.3
New Stanford Primary Form W			
Paragraph meaning:			
3	3.7	3.7	.0
Word meaning:			
3	3.7	4.0	.2
Spelling:			
3	3.7	4.4	.6
Arithmetic reasoning:			
3	3.7	4.1	.3
Arithmetic computation:			
3	3.7	4.1	.3
New Stanford Advanced Form W			
Paragraph meaning:			
4	4.7	4.2	−.5
5	5.7	4.6	−1.1
6	6.7	5.4	−1.3
7	7.7	5.7	−2.0
8	8.7	6.9	−1.8
Word meaning:			
4	4.7	4.4	−.3
5	5.7	4.7	−1.0
6	6.7	5.7	−1.0
7	7.7	6.3	−1.4
8	8.7	8.3	−.4
Spelling:			
4	4.7	4.9	.2
5	5.7	5.6	−.1
6	6.7	7.0	.2
7	7.7	7.8	.1
8	8.7	10.2	1.4
Language usage:			
4	4.7	4.4	−.3
5	5.7	4.9	−.7
6	6.7	6.3	−.4
7	7.7	7.4	−.3
8	8.7	9.2	.4
Literature:			
4	4.7	4.7	.0
5	5.7	4.6	−1.1
6	6.7	5.8	−.8
7	7.7	6.7	−1.0
8	8.7	10.3	1.5
History and civics:			
4	4.7	4.6	−.1
5	5.7	5.2	−.5
6	6.7	5.8	−.8
7	7.7	6.1	−1.6
8	8.7	8.7	.0
Geography:			
4	4.7	4.5	−.2
5	5.7	4.5	−1.2
6	6.7	5.6	−1.1
7	7.7	5.7	−2.0
8	8.7	7.0	−1.7

TABLE K.—*Achievement test results, colored schools, grades 1 to 8*—Continued

Title of test and grades in which given	Grade norm for United States	Mean for Canal Zone	Difference between Canal Zone mean and States' norm in grade
1	2	3	4
New Stanford Advanced Form W—Continued			
Physiology-hygiene:			
4	4.7	4.9	0.2
5	5.7	5.0	−.7
6	6.7	5.8	−.9
7	7.7	7.2	−.5
8	8.7	8.4	−.3
Arithmetic reasoning:			
4	4.7	4.2	−.5
5	5.7	4.6	−1.1
6	6.7	6.0	−.7
7	7.7	6.8	−.9
8	8.7	8.7	.0
Arithmetic computation:			
4	4.7	4.7	.0
5	5.7	5.8	.1
6	6.7	7.5	.7
7	7.7	8.2	.4
8	8.7	9.8	1.1

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