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HARVESTING THE BANANA [See Page 27]

THE STORY OF THE BANANA

"The most delicious thing in the world is a banana"

BENJAMIN DISRAELI

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INTRODUCTORY NOTE

On account of the widespread and steadily increasing interest shown in bananas and the many requests for literature on the subject, this brief article has been compiled. The description of the banana industry is based mainly on the operations of the United Fruit Company, and as these operations are so interwoven with its various other activities, a short statement of what that Company is and does has been appended.

The editor feels that whatever merit the article may possess is due to the help and coöperation given in its compilation by his associates, and he wishes to record his appreciation of their assistance.

THE STORY OF THE BANANA

Compiled and edited by PHILIP K. REYNOLDS,
Assistant to the President of the United Fruit Company.

EARLY HISTORY

Probably few of the millions who enjoy the banana as a daily article of food ever stop to consider its origin or growth, or the long and rapid present-day journey of this remarkable fruit from the tropical plantation to the consumer's table.

While the commerce in bananas is of comparatively recent growth, the plant has been cultivated and used from the earliest historical times. The bas-reliefs of the monuments of Assyria and Egypt show that the fruit was known and used in those lands in ancient times. When Alexander the Great invaded India, he found large tracts of land in the lower valley of the Indus devoted to the cultivation of the fruit.

The original home of the banana is believed to be India, at the foot of the Himalayas, where it has been cultivated since remotest antiquity. Its origin in the New World is as doubtful as the origin of the American Indian. Indigenous to Asia and Africa, where more than twenty distinct species of the genus are known, it is said to have been brought first to America from Spain early in the sixteenth century and planted in the island of Santo Domingo, whence its spread was rapid throughout the surrounding islands and the mainland. This has never been authentically established, however, and some authorities include the banana among the articles that formed the base of the food supply of the Incas and the Aztecs before the arrival of the Spaniards. Certain it is that throughout the whole of tropical America there is a strong tradition that at least two species of the banana were cultivated long before the coming of the Europeans. Furthermore, it is singular that in all the languages indigenous to the regions where the banana appears, the plant has a special name, not proceeding from the conquerors, as was the case with the names of many other plants, animals and various articles introduced into America after its discovery.

The first known importations of bananas into the United States were in the late sixties, when small quantities were brought to New Orleans by schooners from the Bay Islands off the coast of Spanish Honduras, and shipments on a very small scale were made by steamer to New York from Colon (within the present Panama Canal Zone). In 1870, a few bunches were brought into Boston from Jamaica by schooner. In the years immediately following, further small quantities were brought by schooners from Jamaica and Cuba into Boston, New York, Philadelphia and Baltimore. In 1872, the first steamer shipment (250 bunches) was made from Colon to New Orleans, which resulted in flooding that market. About 1879, bananas were first shipped from Costa Rica to New York by steamer. The fruit, even at this time, was looked upon as a curi-

osity, no one dreaming of its later becoming an important factor in the food supply of the United States. In the eighties, schooners generally gave way to steamers for carrying bananas, but it was not until the formation of the United Fruit Company in 1899, that the banana industry really assumed large proportions.

Bananas were first imported commercially in small quantities into England from Madeira in 1878 and from the Canary Islands in 1882, but were regarded as exotic rarities. In 1901, banana shipments by steamer from Jamaica to Great Britain were started by Elders & Fyffes, Ltd. Although refrigerator ships were used, the venture was not successful until the following year when the United Fruit Company began to supply that company with bananas from Jamaica and Costa Rica specially selected for the British market.

The history of the banana trade is one of the romances of business. From small beginnings, hardly more than a generation ago, it has developed into an industry of great size and economic importance. Moreover, it is unique in its economic aspects since it involves a highly specialized system of production in widely separated tropical localities, the maintenance of adequate, expensive and carefully controlled means of rail and water transportation and highly organized distributing agencies in the countries to which the fruit is sent.

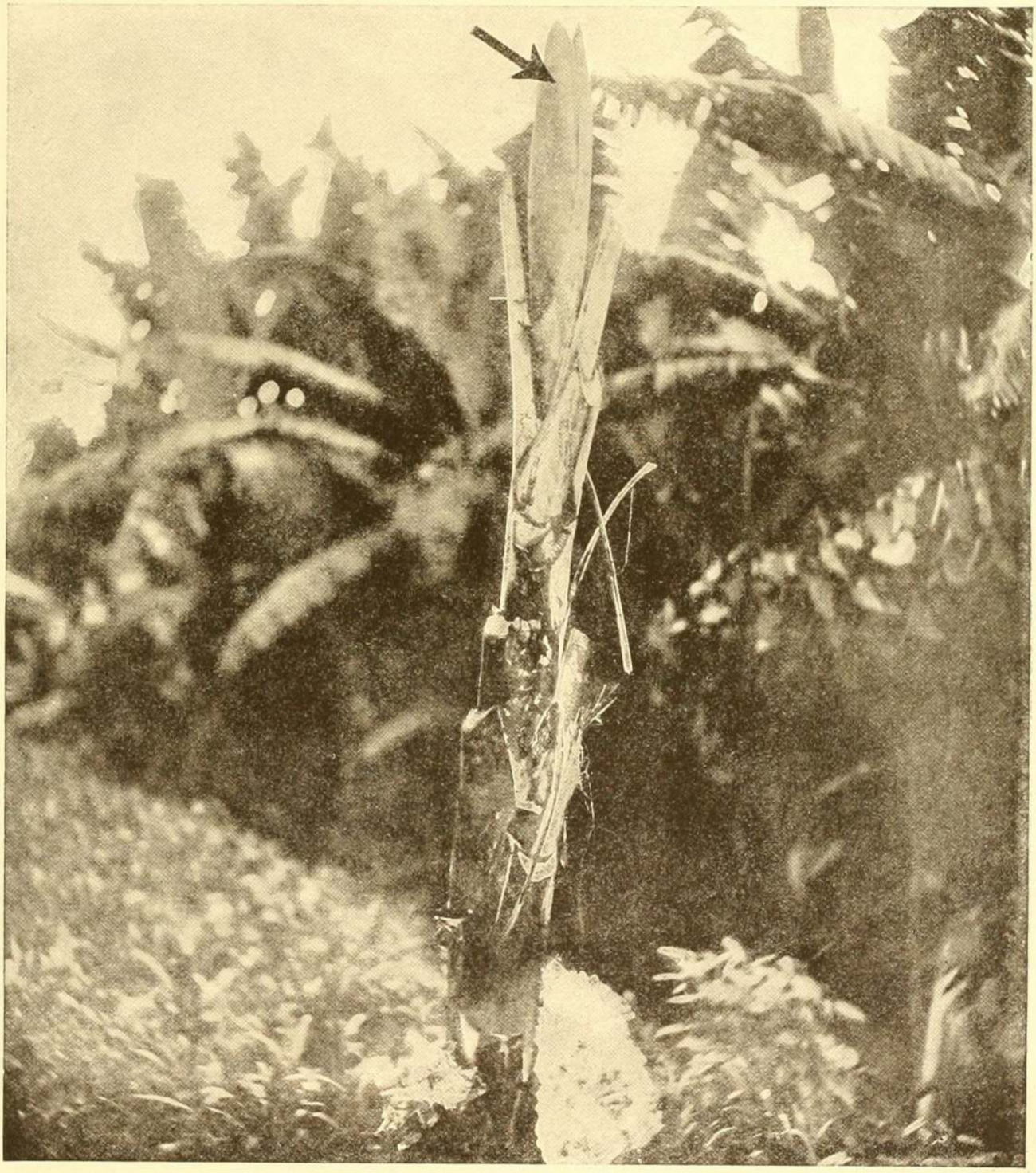
PRINCIPAL SPECIES

The banana belongs to the family *Musa* and is one of the most important and interesting of all food products. Grown on an equal acreage, it will support a larger number of persons than wheat. There are many species of the plant, but the most important are: first, *Musa sapientum*—Fruit of Knowledge—deriving its name from the belief that the ancient sages of India reposed in the shade of the banana tree and refreshed themselves with the fruit thereof,—formerly thought to be a distinct family, but now known to be a species, which is found growing in the West Indies and on the American mainland, from the Tropic of Cancer to the Tropic of Capricorn; second, *Musa cavendishii* (Chinese or dwarf variety), found in the Canary Islands, on the African mainland, in portions of Asia and in the Islands of the Pacific and Indian Oceans; and third, *Musa paradisiaca* —Fruit of Paradise—deriving its name from the legend that the banana tree grew and flourished in the Garden of Eden and was the tree of the source of good and evil. This last variety is known as the plantain, which is found throughout all the regions named, and which is eaten only when cooked.

There are a number of varieties of the *Musa sapientum,* the most common being known as *Gros Michel* ("Great Michael") which grows to the best advantage at from 50 feet to 250 feet above sea level and which is the principal banana of commerce. In the ripening process, the skin of the *Gros Michel* assumes a beautiful yellow color. Another variety of the *Musa sapientum* is the "claret" or "red" banana (deriving its name from the color of its skin), which is found in Central America and the West Indies. This banana has been classified by the botanists as *Rubra,* but it is also known as *Baracoa, Red Jamaica* and *Red Spanish.* In comparison with the *Gros Michel,* the bunch is smaller while the fruit itself is shorter but larger in diameter, giving it a somewhat stubby appearance. Although the red banana has a pleasant flavor, there is a very limited demand for it.

THE PLANT

The banana plant is a rapidly-growing herbaceous perennial which contains in the aggregate about 85% water. It is probably the largest terrestrial plant not having a woody stem above ground. It is closely related to some of our common decorative plants,



BANANA PLANT ABOUT TEN MONTHS OLD WITH LEAVES CUT AWAY TO SHOW CLEARLY THE FLOWER-BUD AS IT EMERGES AT TOP OF "TRUNK"

belonging to the same family as the Canna so frequently grown in gardens. The real trunk or main stem of the plant is underground, and is a thick, fleshy rootstock, known as a rhizome, on which large buds or "eyes" are developed, somewhat as the eyes develop on the potato. From the buds on this short solid rhizome, or bulb-root, the leaves grow

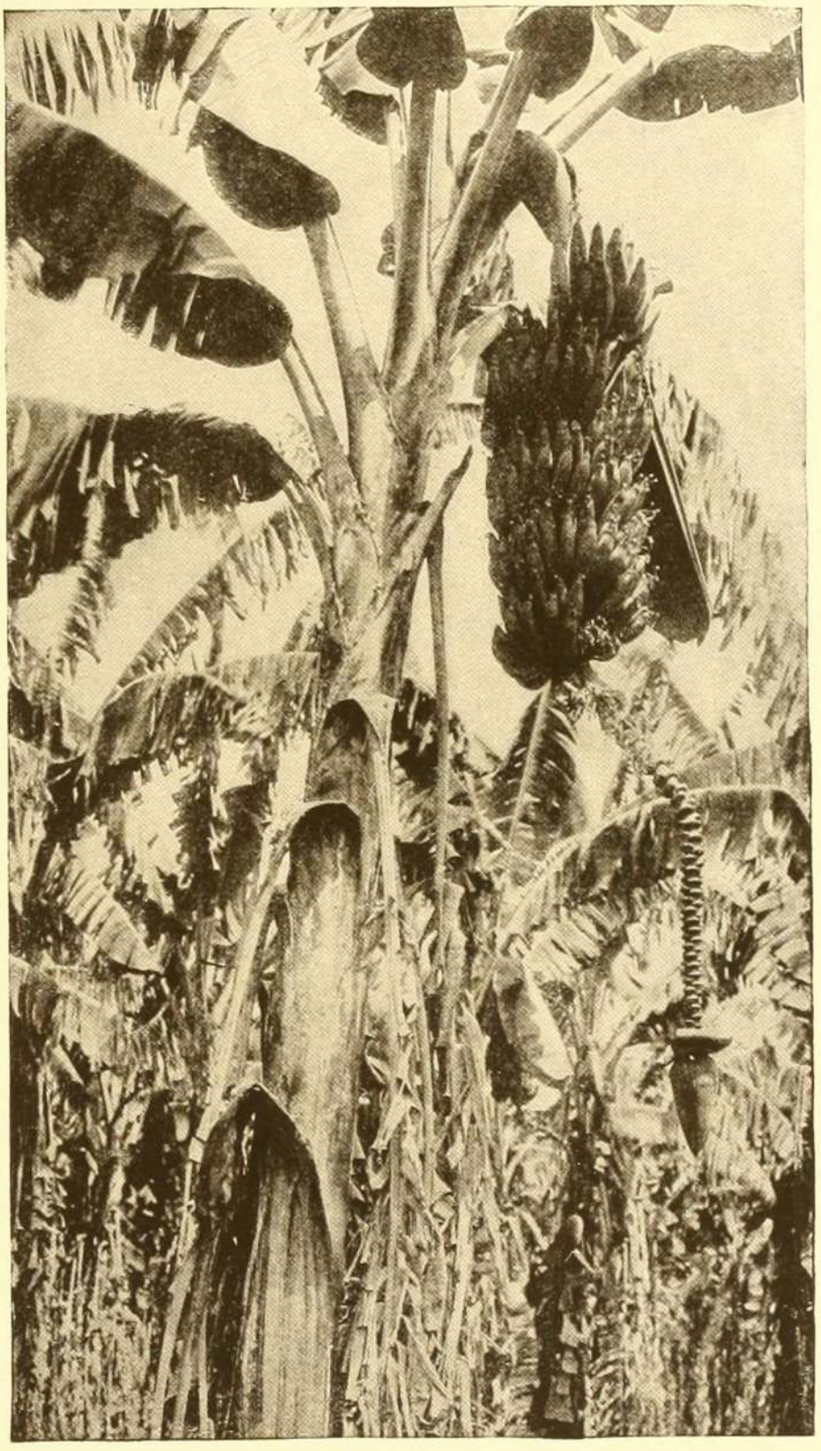
FLOWER-BUD A FEW DAYS AFTER EMERGING AT TOP OF "TRUNK" AND BEFORE ANY BRACTS HAVE FALLEN

FLOWER-BUD A FEW DAYS AFTER SOME OF THE BRACTS HAVE FALLEN, PARTIALLY EXPOSING THE "FINGERS"

YOUNG BUNCH WITH ALL THE BRACTS OFF, SHOWING THE "FINGERS," WHICH HAVE JUST STARTED TO TURN UPWARD

(The Blossom-end at Tip of Bunch Contains Flowers which are Infertile.)

upward, the first ones tightly rolled and sharply pointed. Growth takes place rapidly, new leaves pushing up through the centre while the stalk increases in height until it is several yards above the ground. What seems to be the trunk of the young tree is in reality only a compact mass of leaf-sheaths, spirally arranged and overlapping. As the plant develops in size, the older leaf-sheaths are pushed outward by the young growing leaves within, and a smooth, shiny, strong pseudo-stem, or trunk, is formed. At the upper end of the "trunk" the leaves cease to clasp the stem and each one develops a true petiole or leaf-stem. These petioles quickly develop into immense, bright green leaves, or fronds, and spread out or rise almost vertically, giving a very graceful palm-like aspect to the whole plant. The number of leaves so appearing varies from eight to twenty or more, according to the vigor of the plant and the soil conditions. These leaves are often of great size, attaining a length of from 8 to 12 feet and a width of 2 feet or even more.



FULLY-DEVELOPED BUNCH READY FOR HARVESTING

The trees vary much in size, those growing in the rich river bottoms along the Atlantic coast of Central America sometimes reaching a height of 40 feet, with a diameter of 18 to 24 inches. It is interesting to note, in comparison, that the average height of the banana tree in Jamaica is from 18 to 25 feet, and in Cuba from 12 to 18 feet, showing the effect of climatic conditions as we recede from the humid warmth of the torrid zone.

As many buds or eyes are developed from a single rootstock, there eventually arises a little colony of plants from the same underground mother-root, but in the course of time each plant develops a bulb of its own.

As the individual plant approaches maturity, it produces a flower-bud which later becomes a bunch of bananas. The stem which is to bear the fruit pushes up from the rhizome through the centre of the leaf-sheath, until at the end of the ninth or tenth month after planting, the flower-bud emerges at the top of the trunk, looking not unlike a huge ear of corn enveloped in its husks or bracts. As this flower-bud increases in size its weight causes it to bend over and downward; the coverings or bracts then drop off, disclosing the young bananas, quite small and pointing outward, but bending upward as they become larger. The terminal flower-bud on the cluster is sterile and produces no fruit.*

THE FRUIT ITSELF

Each plant developed to maturity from the rootstock bears but a single bunch of bananas, which is made up of so-called "hands" or clusters. These hands grow separately in spirals, each containing from ten to twenty-five individual bananas or "fingers." Commercially, bananas are classed as ranging from nine to six hands, any bunch having less than six hands not being readily marketable. The standard commercial sized bunch has nine hands, all bunches with nine or more hands being classed as "nine hand" fruit. A nine hand bunch varies in weight according to the variety of the fruit and the soil and climatic conditions under which it is grown, the average weight ranging from 50 to 75 pounds. Occasionally a bunch of bananas is produced which has as many as twenty-two hands with more than three hundred individual bananas, weighing approximately 150 pounds, but this is extremely rare.†

The heaviest and the best developed fruit comes from Panama and the lightest fruit from Cuba, the difference being entirely explained by the same differences in the agricultural conditions, which, as we have seen above, similarly affect the size of the tree itself.

One will readily appreciate the necessity for infinite care in handling a bunch of bananas when he pauses to consider that this fruit, which is cut from the tree in a green state, is, until fully ripe, practically a living organism drawing sustenance from its stalk,

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* The inflorescence is a terminal spike with floral leaves placed spirally, and sometimes magnificently colored; in the axils of each of these, several flowers are situated in two transverse rows (accessory buds); the lowest flowers are pistillate, the upper ones staminate, so that the fruit is found only in the lower region of the inflorescence, the remaining portion persisting as a naked axis after the bracts and flowers have fallen off; the inflorescence terminates in an ovoid bud, formed by the flowers which have not opened.

† Commercial Banana Terms:

"Variety" indicates the country where produced and exported. For example: "Limons" are grown in the vicinity of Port Limon, Costa Rica. "Changuinolas" are grown in the Changuinola District of Panama, etc.

Bananas are divided into classes based on the number of hands to each stem.

a. "Nines" are bunches of bananas containing nine or more fully developed hands.
b. "Eights" are bunches of bananas containing eight fully developed hands.
c. "Sevens" are bunches of bananas containing seven fully developed hands.
d. "Sixes" are bunches of bananas containing six fully developed hands.

"Stems" is a general term applied to bananas regardless of class and has exactly the same meaning as "bunches of bananas."

"Grade" refers distinctly to the fullness of the fruit when cut and is expressed as follows: three-quarter, full three-quarter and full. Thin fruit, the fingers of which are not sufficiently filled out, is the exact opposite of full fruit.

with sap flowing and tissues changing; that it generates heat within itself in the ripening process; that a few degrees of temperature above or below normal may stimulate too rapid ripening on the one hand, or produce checked vitality and chill on the other; and that from the plantation to the ripening room it is shipped "loose," *i.e.*, without box, crate or wrapping of any kind.*

WHERE GROWN

Bananas are now cultivated in most tropical countries, where they constitute one of the principal foods. They can be grown in sub-tropical zones, but to produce the fruit to the best advantage a tropical climate and considerable rainfall are necessary. In addition to the immense production of bananas in Central and South America, the West Indies and Mexico, they are grown (in some localities for export but chiefly for local consumption) in the tropical sections of Africa, Asia and Australia where the rainfall is abundant; also in the Canary Islands, Hawaiian Islands, Philippine Islands, Malay Archipelago, Fiji Islands and the various islands of the Pacific within the torrid zone. In certain localities where the soil is good but the rainfall insufficient, irrigation is practiced, but this is possible only where an abundant water supply is available, as the water requirement of the banana is enormous.

Central America offers ideal conditions for banana cultivation. The main mountain backbone runs along the Pacific Coast, the lesser ranges to the eastward, leaving wide slopes, river valleys and lowlands on the Caribbean side. It is in this section, a few miles back from the coast, at an elevation of not more than 250 feet above sea level, with its hot days and humid nights and with an annual rainfall of from 80 to 200 inches, that the wilderness of tropical jungle has made way for the greatest fruit farms of the world. All within the past forty years an enormous agricultural industry, with its related interests of railways, stores, docks, villages and hospitals, has sprung up in a region formerly almost uninhabited. Central America may indeed thank the banana trade for by far the most progressive development and constructive influence which have ever reached its shores.

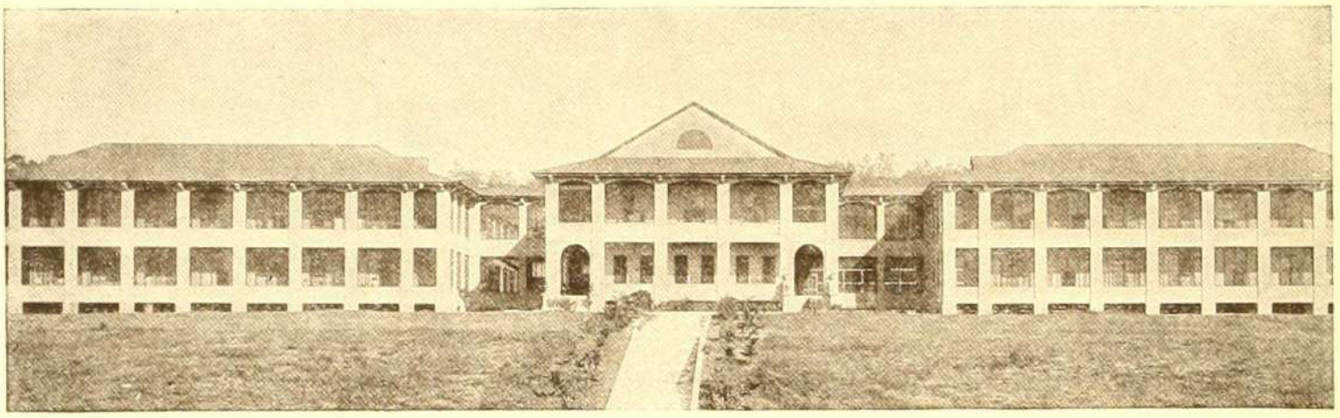
SCOPE OF THE MODERN PLANTATION

The modern banana plantation is a marvel of system and immensity, all the more impressive because of its setting of primeval jungle. In the transformation within a few years from a riotous wilderness of huge trees, palms, vines, ferns and other tropi-

* Canary and Hawaiian bananas are exceptions. Hawaiian bananas, which are shipped in small quantities to San Francisco, are wrapped first in a layer of soft paper, usually newspapers, then in a padding of rice straw, with finally an outer covering of banana fibre or leaves, the bundle itself being tied securely with a heavy hemp cord. Each bunch is baled separately and the curved end of the stem is allowed to extend through the wrapping to facilitate handling.

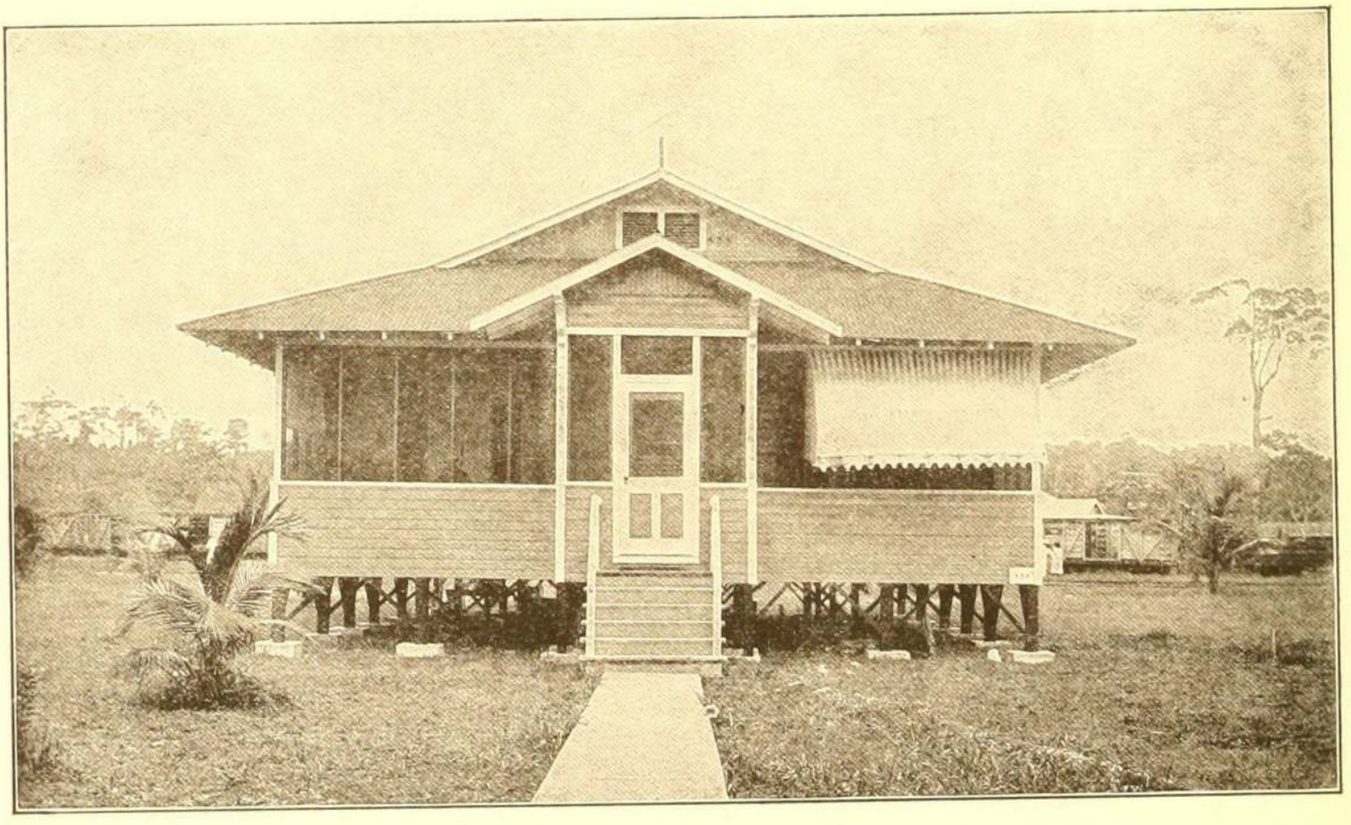
Canary bananas, which are shipped in limited quantities to British and Continental ports, are packed in strongly made wooden crates—the larger fruit one bunch to a crate, the smaller fruit two, and sometimes three, bunches to a crate. The bottom of the crate is first covered with a layer of straw; then the bunch is wrapped in a large sheet of paper and carefully placed in the crate, which is thereupon stuffed with straw. In the last few years, cylindrical leatherboard drums have been used to a considerable extent in the place of wooden crates.

cal growth to a vast tract of cultivated land, there is a succession of steps which can scarcely be contemplated by those familiar only with farming operations in the temperate zone. The surrounding country is first thoroughly explored as to its fitness



BANANA PLANTATION HOSPITAL

for banana cultivation. Then comes the clearing away of forest and brush, the digging of the main drainage ditches, the building of houses, railroads and tramways and the planting. Then follows the gradual development and extension until



BANANA OVERSEER'S HOUSE

vast areas are pouring their product methodically and regularly into the holds of the ships at the loading ports.

The personnel of a farm consists of an overseer or "mandador," timekeeper, foremen, stockman and laborers. The land, when surveyed in the first instance, is laid out in sec-

tions of a size convenient for allotting the work and for keeping proper records of physical conditions, operating costs and production from the time of planting. Aside from the necessary transportation, housing facilities, stores and equipment, a supply of foodstuffs and merchandise must be made available at reasonable prices. Hospital treatment must also be provided in case of sickness or accident, and the general sanitary condition of the plantation and the welfare of its employees and laborers must be properly looked after in order to maintain an efficient organization.

The quality and condition of the fruit and its prompt and careful handling are the all-important factors. To dispatch the modern type of refrigerator steamer at regular and frequent intervals, with a cargo of from 40,000 to 75,000 stems of prime, freshly cut fruit, requires a vast area of good producing land, connected with the tropical port by railways whose total length may extend into the hundreds of miles. The railways in turn are fed by a still more extensive system of light tramlines. The fruit in some instances is subject to a railway haul of seventy miles. The riding, work and pack animals required on the farms run into the thousands, and a small army of employees and laborers is constantly engaged. Each plantation must have good telephone communication with its district headquarters and with a central office for the prompt distribution of cutting advices, control of deliveries and operation of the fruit trains. This central office in turn communicates by cable or radio with the head offices and with the ships *en route*, and every effort is made to have the arrival of the fruit and the steamer at loading port coincide, as well as to have the fruit, after it is cut, put aboard the ship in the briefest possible time. The whole system forms a most interesting example of organization and attention to detail.

DEVELOPING THE NEW PLANTATION

The first and most important step is the selection of the land. Many factors must be considered, such as climate, soil, rainfall, drainage, liability to damage by floods and hurricanes and the feasibility of securing labor and supplying transportation.

The plantation is developed from virgin land, covered, as a rule, with forest and a dense tropical undergrowth. After the land has been selected and the surveying and drainage ditches completed, it is underbrushed, lined and staked, after which it is ready for planting. Underbrushing, as the name implies, consists in chopping down the undergrowth with cutlasses ("machetes") so that one may move about freely between the trees. Lining and staking consist in carefully laying out and marking the land with stakes set at the distance at which it is intended to plant the bananas, so that the young plantation will have regularity and orderliness. The distance between the stakes varies according to soil and climatic conditions. In Central America the planting distance is usually from 18 to 24 feet each way and in Cuba and Jamaica, owing to the small growth of the tree, about 12 by 12 feet. As the plantation develops, the underground rootstocks send up new suckers, or young plants, on all sides of the original plant. Only a few of these young plants are allowed to develop to maturity, but in an old plantation each hill, or mat, consists of from half a dozen to a dozen plants standing more or less closely in an area which may be several feet in diameter; thus the alignment of a young plantation is gradually lost and the rows become irregular.

As the seeds of the banana are practically atrophied in the cultivated varieties, the planting is done with a piece of rhizome, or bulb-root, containing a bud or eye, very much as potatoes are planted. A shallow hole about 12 inches deep is dug at each stake and a section of the rhizome, with the eye toward the bottom, is placed in the hole and

CLEARING LAND FOR BANANAS

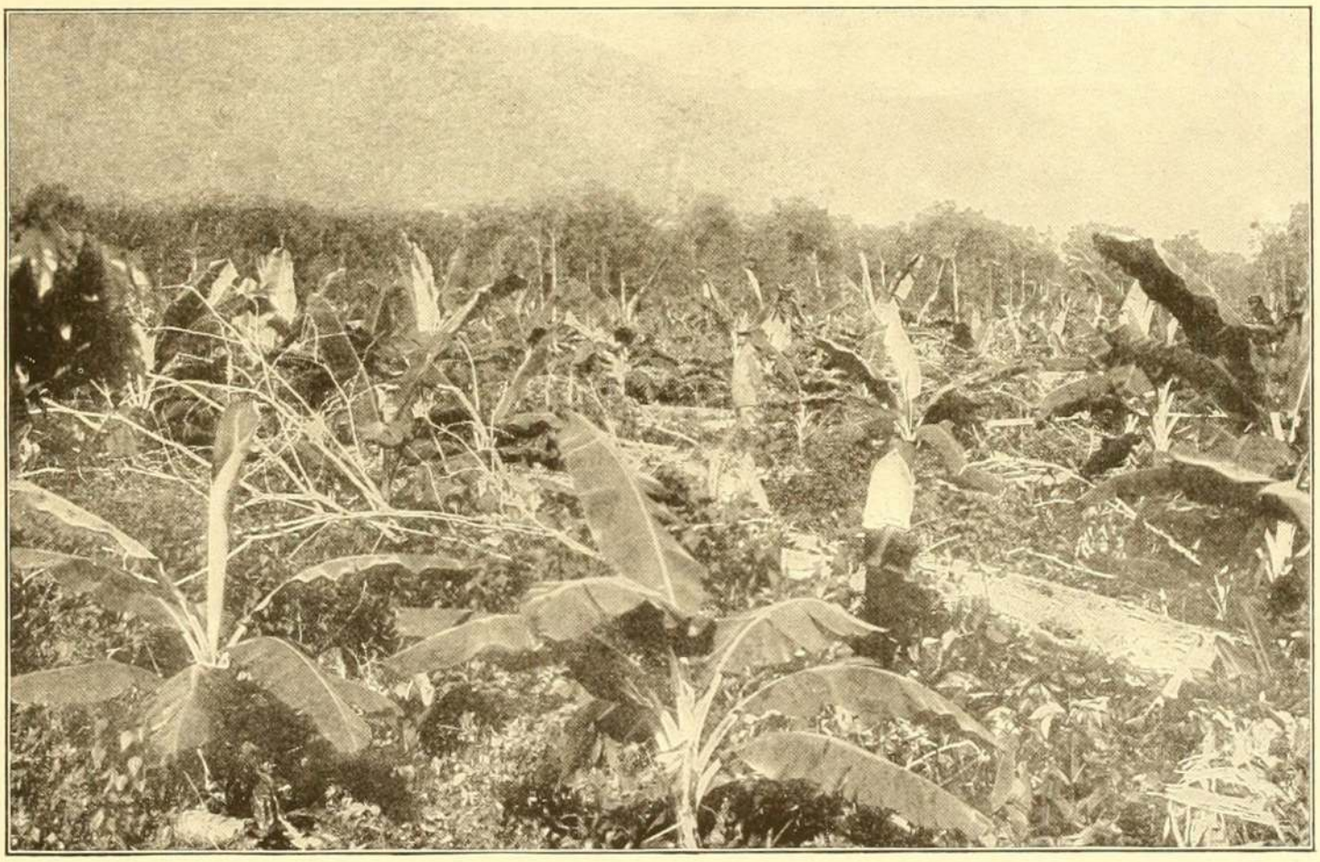
covered with earth. These portions of seed-bulbs or "bits," weigh from three to four pounds each and are usually cut from rhizomes taken from adjacent vigorous cultivations.

When digging bits for planting, care is taken to see that each has at least one good eye. Only the larger bits are used, as a small bit produces a weak plant and requires more time and labor to yield fruit. After the bits have been carried to the place where they are to be planted, they are again inspected, any with a bruised eye being rejected.

With the completion of the planting and before the young plants have appeared above the surface of the ground, the felling of the larger trees is done, the dense tropical growth making this operation laborious and expensive. The tropical forest usually contains a large variety of trees, many of them of great size. It is not unusual to encounter giants of the jungle which require considerable time for one man to chop down. Of these huge trees the Ceiba and the Guanacaste are the most frequently found. Where irrigation is necessary for the successful cultivation of bananas, the felling

usually follows immediately after the underbrushing and the whole mass is then burned, after which the land is lined, staked and planted.

After the felling, the future plantation is an almost impassable tangle of stumps and trees, with interlocked branches and matted vines. In fact, its aspect at this stage is one of a heavy forest shorn off at the ground and laid flat in a tangled mass. The felled land gives the impression that one is in the wake of some devastating agent instead of in the midst of a plantation in the making. Through this mass must be cut the right of way for railway lines, narrow-gauge tramways and roads. This stage is a very critical one in the building of a plantation; in case of a drought many of the bulbs may not germinate, which necessitates replanting later on, or the felled timber may catch on



BANANA PLANTATION THREE MONTHS AFTER PLANTING

fire, which is disastrous to the planting. On the other hand, in the event of heavy rains, the area may become flooded, which is equally disastrous to the young plants. To the outsider it might appear that felling the forest trees on the newly planted ground would entirely destroy the young plants; this, however, is not the case. The felling is done before the bits have started to sprout, and even if a log crashes down on top of one of these bits, the plant will usually grow up around the log and adjust itself to the situation. The enormous amount of logs, branches, leaves and trash covers the ground like a mulch and instead of being destructive, actually establishes the most favorable conditions possible for the growth of the young banana plants. The hot humid atmosphere and the wealth of fungus and bacterial organisms cause the felled trees to undergo rapid decomposition. The twigs and smaller branches quickly

rot, adding to the humus in the soil. The larger branches decay more slowly; the huge trunks may withstand this action for several years, and are sometimes burned to get them out of the way.

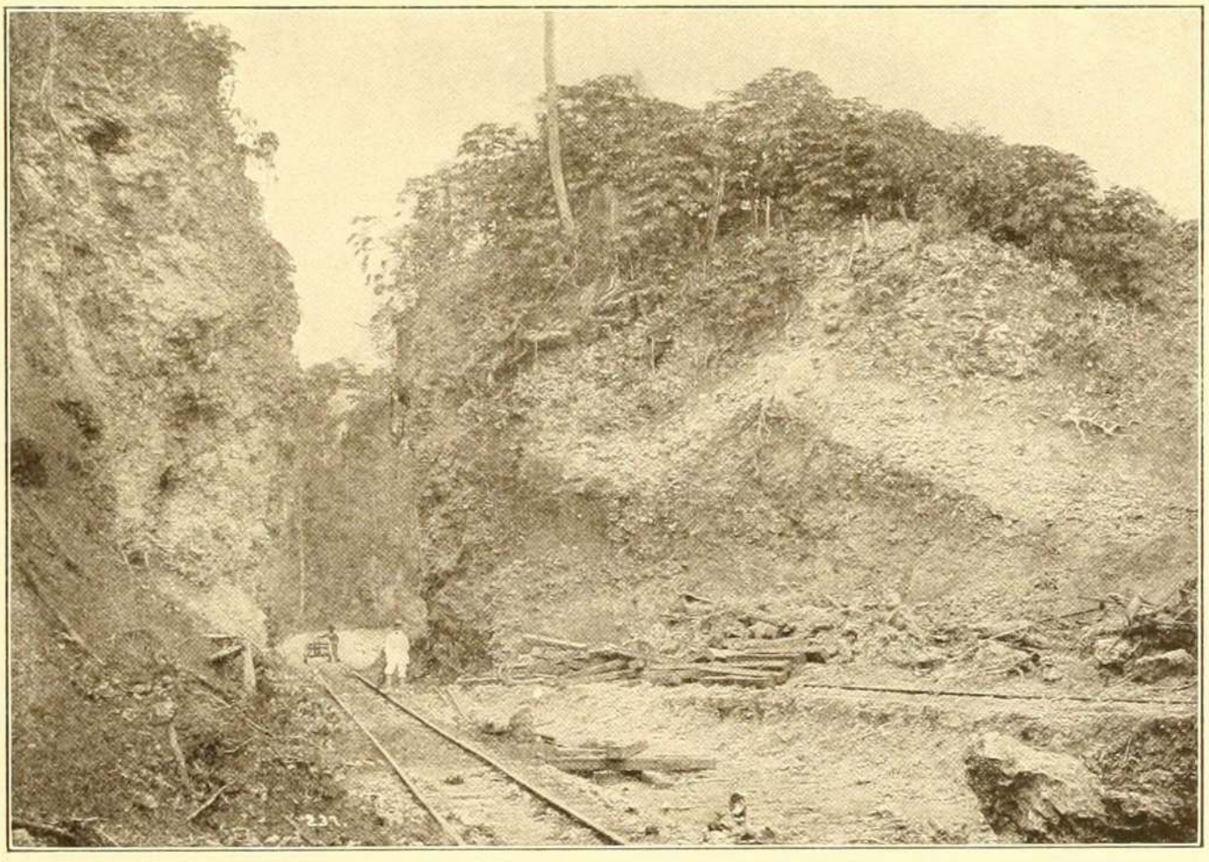
About three months after planting, the plantation is ready for its first "cleaning." This consists in cutting down the smaller limbs and branches of the felled trees as well as chopping down the weeds and tropical growth that have sprung up, which, if left, would soon choke out the young banana plants. From now on, at intervals of from three to four months, the plantation has to be cleaned. Through the various cleanings much of the original forest growth felled has been carried off or has decayed, although the stumps and logs of the larger trees may still remain. At each cleaning, any failure of the original rhizome to come up, commonly termed "misses," or any damage to the young plants by felling or ravages of animals has to be overcome by "supplying," *i.e.*, replanting. This is usually done by using "suckers" (although "bits" are occasionally used) which are obtained from older fields and are, as previously described, young plants which have developed from the underground buds or eyes on the bulb or root-stock. By means of a sharp mattock they are cut cleanly off from the parent root-stock or "mat" and carefully removed so as not to break off the small roots. The green leaves are cut back and the young plant is then set out in its place in the row and soon begins to take root and to send out new leaves. The success of the plantation depends in a great measure on the "stand" obtained from the original planting.

A great deal of other work must be done simultaneously with or soon after the planting, in order to be prepared to handle the crop which begins to come in from twelve to fifteen months later. As the banana plantation is established on virgin land, the operations may be a few or many miles from any habitation. Railway construction must follow closely behind the planting in order to bring in material and supplies for laborers and for construction. Quarters for employees and laborers have to be constructed, areas cleaned and pastures made for work animals, and tramlines laid down throughout the plantations as fast as the right of way can be cleared through the felled land. It is a race against time to accomplish all of this, in which the uncertainty of nature's elements plays an important part. Owing to the heavy and irregular rainfall, both farm and construction work are continually interrupted. The most promising outlook may be turned into disaster overnight by a flood, and several months' time and labor lost.

On account of the soft, porous nature of the soil and the heavy precipitation, it has been found more economical and efficient to supply the plantations with a system of light tramlines, rather than to attempt to build wagon or cart roads on which to bring out the fruit. The distance which the bunches of fruit can be carried by men or packed on animals over such land is very short, especially during wet weather. This necessitates a vast network of tramways, with the lines only a few hundred yards apart, the cars in many cases being hauled by draught animals.

After the primary construction period has passed, a large force of laborers is constantly required to keep down the rapid tropical growth, and to give each section its cleaning and supplying at the proper time. Old drainage ditches have to be cleaned out and new ones dug. There are innumerable small bridges for the tramroads over the ditches and small creeks which require constant attention and repair, especially after

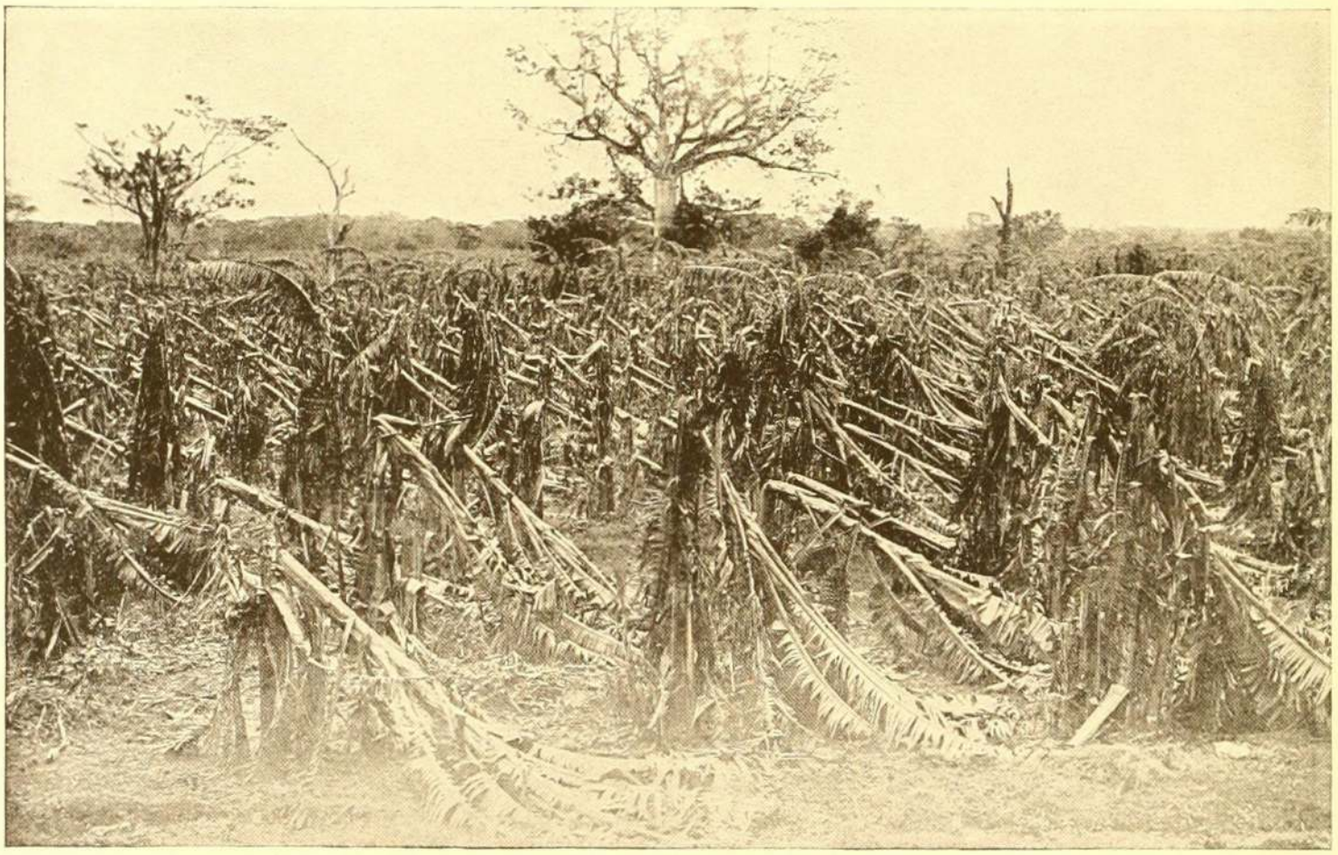
BRIDGE UNDER CONSTRUCTION FOR A BANANA RAILROAD



EXTENSIVE CUT MADE FOR A BANANA RAILROAD

each heavy rain, during which many of them are washed away. Part of this labor is also organized into cutting gangs for harvesting the fruit on cutting days.

In addition to the labor involved in keeping in check the riotous tropical vegetation, the banana plantation must be ready for other emergencies. At times, excessive rains cause the rivers to overflow their banks and change their course, which results in great damage to or total destruction of large banana areas, as well as heavy damage to the main roadbed and bridges. Occasionally, a hurricane may sweep through a district, causing a total loss of the crop. Windstorms of a velocity not exceeding 20 to 30

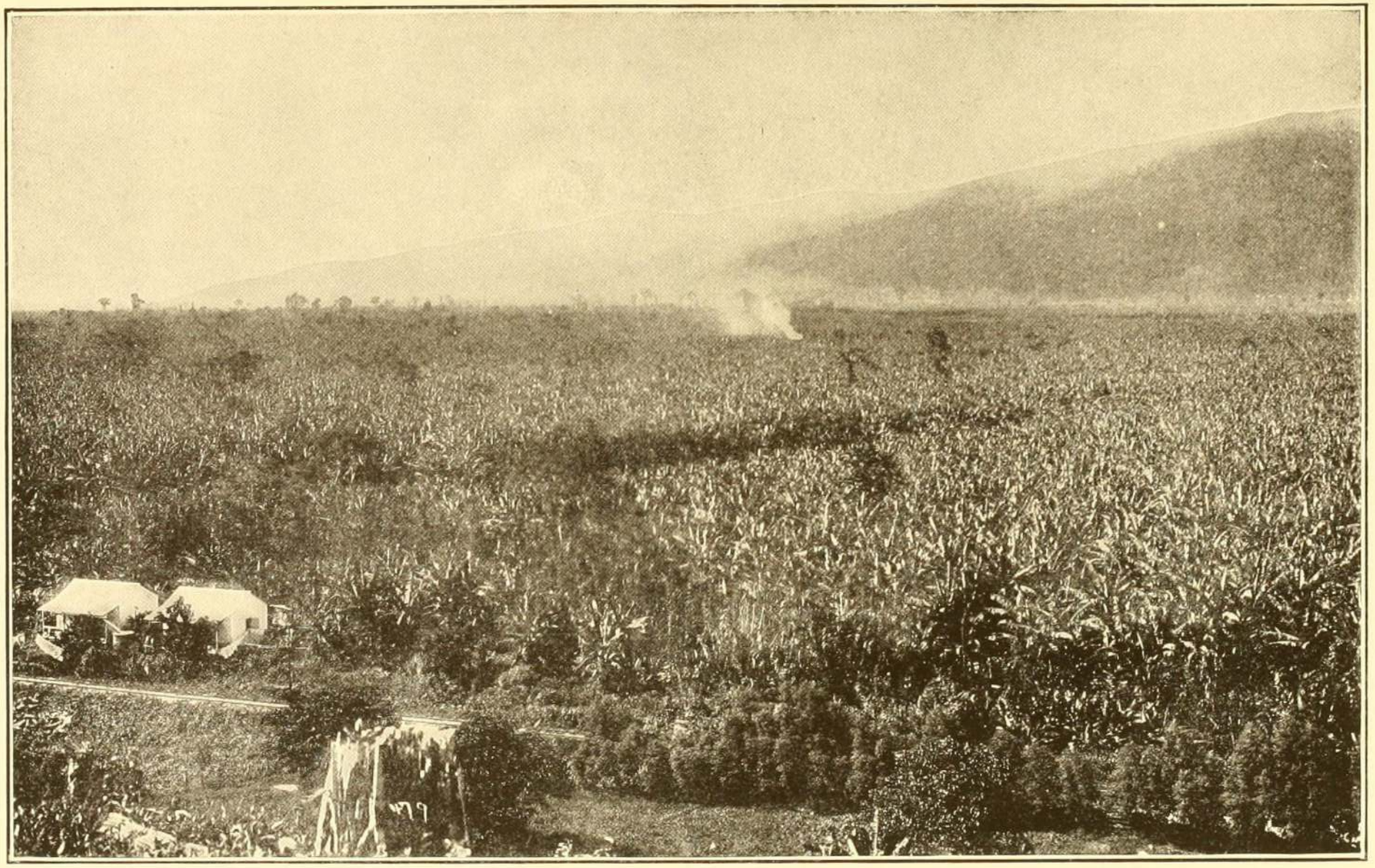


EFFECTS OF A WINDSTORM

miles an hour often prove very destructive to banana plantations, especially to the trees bearing fruit ready for cutting which, on account of the heavy weight of the bunches, are more apt to be blown down. Then again, a drought may occur which seriously retards or damages the fruit; also ravages of insect pests, such as locusts, must sometimes be combated. All these and other conditions necessitate frequent revision of the estimate of the plantation output in order that ships of the proper carrying capacity may be supplied.

HARVESTING THE BANANA

As previously stated, the trunk of the banana plant, or tree, as it is commonly called, is nothing more than a leaf-sheath. Three or four weeks after the rhizome has been planted, this leaf-sheath appears above the ground and in the course of about twelve months the plant will have reached a height of from 20 to 40 feet, depending upon climatic conditions. Usually by the tenth or eleventh month from the time of planting, the stem which is to bear the fruit has pushed itself up from the rhizome through the



BANANA PLANTATION IN PRODUCTION

centre of the leaf-sheath, and the blossom has "shot" or appeared in the centre of the crown of the leaf-sheath. From three to five months are then required to develop a bunch of bananas ready for cutting, this fruition period varying considerably with the weather conditions.

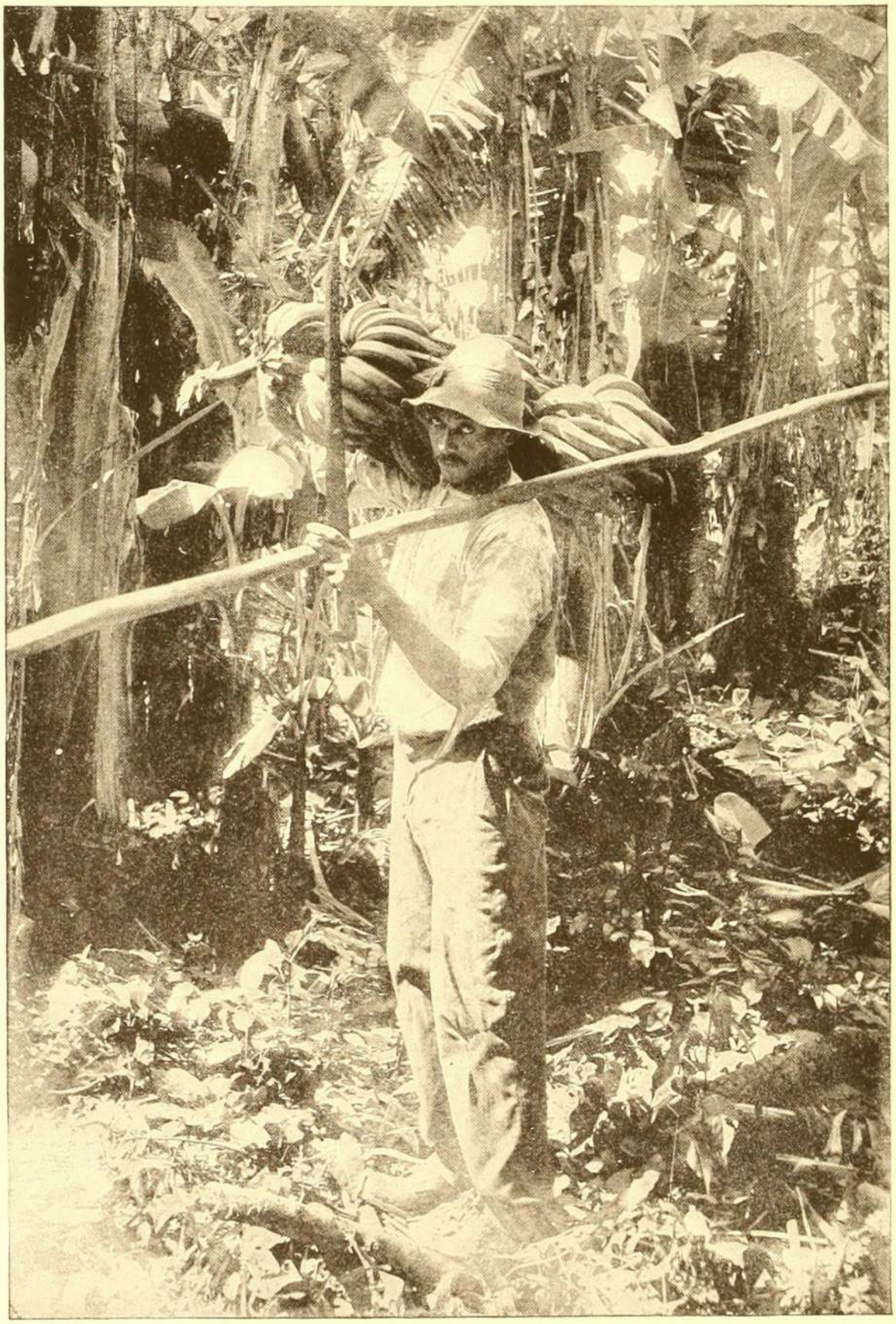
HEART OF A BANANA PLANTATION SHOWING TRAMWAY

After the first crop, some of the young shoots or suckers, which spring up around the original plant from the same rootstock, are cut away, from two to five of the most promising being left to grow up and supply fruit later. This is termed "pruning." Thus, as the plantation comes into bearing, there are always young plants coming to maturity to replace those which have already borne fruit and have been cut down, so that after a time the production becomes practically continuous over a period of several years. Areas are known, where, as a result of a single planting, the trees have continued in production for twenty years.

As fruit of various stages of development is coming on at the same time, a practiced eye is required to select the bunches of proper grade to be cut for shipment. Cutting of the fruit in a given section is done once, and frequently twice, a week. A cutting "gang" usually consists of three men: the "cutter," the "backer" and the "muleman." The "cutter" uses a long pole with a special knife attached to the end. (See Frontispiece.) He nicks the trunk of the tree a few feet below the bunch and the weight of the bunch

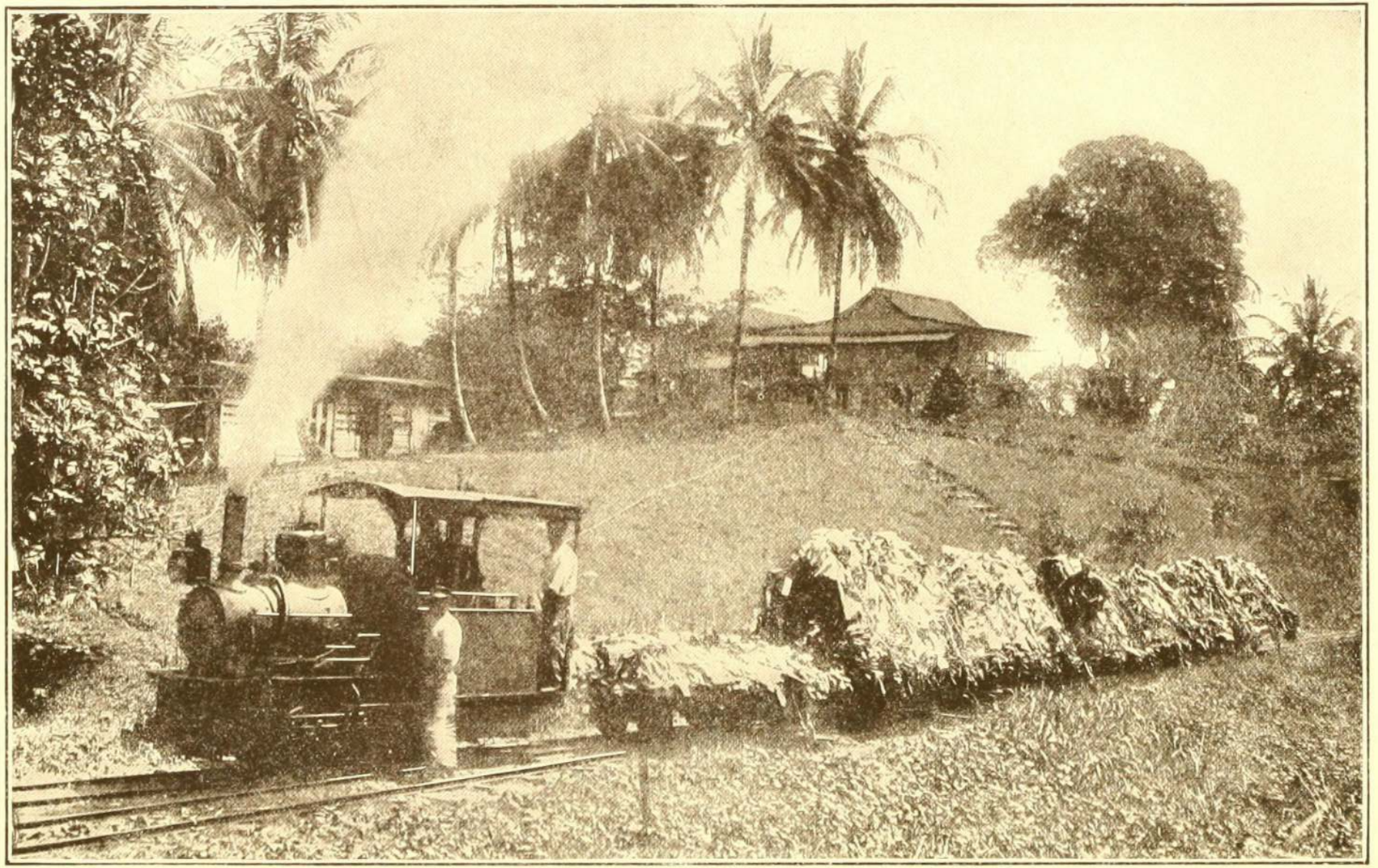
CUTTING OFF THE BUNCH FROM THE TREE

causes the trunk to weaken and bend where it has been cut. The top of the tree with its bunch of fruit is steadied by the pole to avoid its coming down with a rush and crushing the fruit. It is eased down until within reach of the "backer," who receives the bunch on his shoulders and the "cutter" severs the bunch from the tree with a machete and cuts off the blossom end. The "backer" immediately carries the bunch on his shoulder to the nearest packroad or tramline, and the "cutter" then cuts down the tree itself near the ground, where it quickly rots, the decayed stalk forming humus which acts as a good fertilizer for the soil. The fruit is then carried out on pack animals or loaded on tramcars for transportation to the railway. In some instances, where the railway is very near, the bunch is "backed" right out to the track. In others, it is first "backed" a



"BACKING" THE BUNCH

HAULING BANANAS BY OX-TRAM TO RAILWAY



HAULING BANANAS BY STEAM-TRAM TO RAILWAY

short distance, then packed on a mule and finally loaded on tramcars. The pack by animals as well as the haul by trams is of varying distance, depending on the location of the land with respect to the railway and tram facilities. A great many pack and tram animals are required on some farms, while on others small locomotives are used on the trams, instead of animals, on account of the very long heavy hauls.

TRANSPORTING THE FRUIT TO THE LOADING PORT

Upon arrival at the railroad two methods are employed in loading the fruit on railway cars, depending on the quantity of fruit assembled at one point, the location and the track facilities. Where possible, the trams are run to sidings or spurs of the main line,

LOADING BANANAS INTO RAILWAY CARS

and the fruit is passed from the tramcars to the waiting railway cars as fast as it comes out from the farm. In other cases, the bunches are placed alongside the track on turf or wooden platforms, and covered with leaves, to be loaded subsequently on fruit trains by loading gangs who travel with them.

Definite loading orders are received in advance of the arrival of the steamship. In due course cutting orders are transmitted to the district headquarters, based on the carrying capacity of the ship, and the estimated quantity of fruit of the required grade and quality ready for cutting in each district. District headquarters distributes orders for the required amount among the farms and each farm overseer in turn makes his allotment to the individual sections and to the cutters, and sees that everything is in order to start the cutting at daylight the following day. Rigid inspection is en-

forced by the farm overseer, foremen, selectors and travelling inspectors, from the time the cutting commences until the fruit is loaded on railway cars.

Special trains of empty banana cars are started out from the terminals as soon as cutting is well under way, each with its inspector and loading gang. These trains travel over the banana lines, receiving the fruit which has been placed alongside the track, picking up the cars loaded at sidings and assembling them at central points. As fast as sufficient loads are assembled they are forwarded to the port in trainloads of from twenty to forty cars.

LOADING THE BANANA CARGO

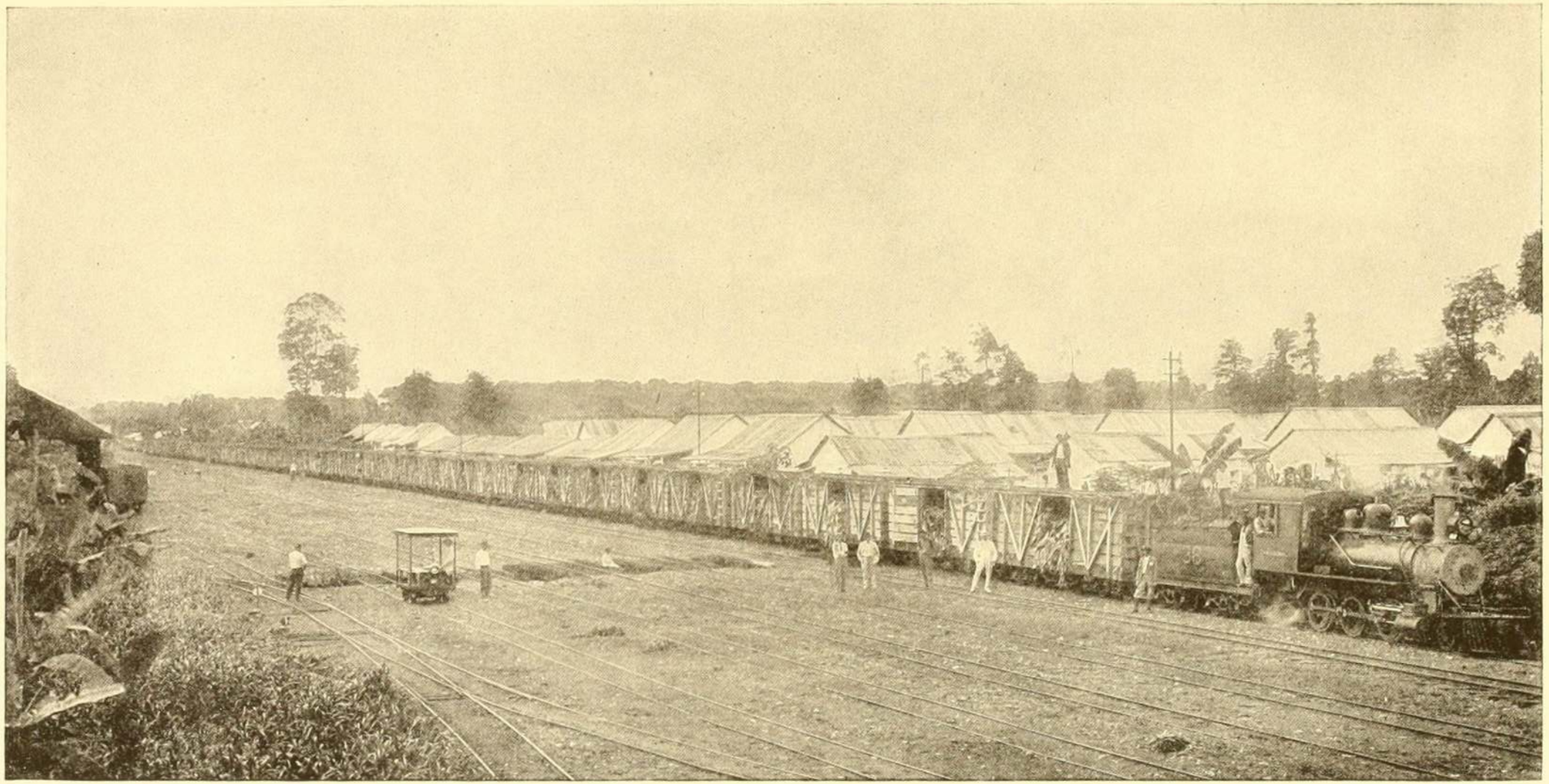
The loading of the steamer begins immediately upon the arrival of the first fruit train at the port. The cutting orders and the schedule of the fruit trains are so arranged that a continuous flow of fruit to the loading port is insured. The loading of the steamship continues day and night without interruption until completed, cargoes of 75,000 bunches being loaded in twelve to fifteen hours.

At all the principal banana loading ports, the cars of fruit are switched to the dock and the bananas carried to conveyors or loading machines, which take the bunches into the holds of the steamship. The fruit, on its way from the cars to these loading machines, is again inspected and all damaged or defective bunches and bunches showing excessive fullness or the slightest yellow color, are rejected on the wharf. Experienced gangs of laborers under direction of foremen receive the fruit in the holds of the steamship where it is carefully stowed in the various compartments and bins. These bins are constructed of wooden bars called "shifting boards" similar to the old farm gate, and prevent the fruit from rolling and becoming crushed. Each class of fruit, *i.e.*, the nine, eight, seven and six hand bunches, are usually stowed separately, and stowage plans are prepared, showing the location and quantity of the different classes, to facilitate the proper discharge of the cargo upon arrival. The bunches are stowed on end, resting on the larger end or butt of the stalk, in from one to four tiers or with one or more tiers standing and one or two tiers laid horizontally thereon. The interstices between bunches, between hands and stalks and between the fingers, form natural channels for the circulation of air.

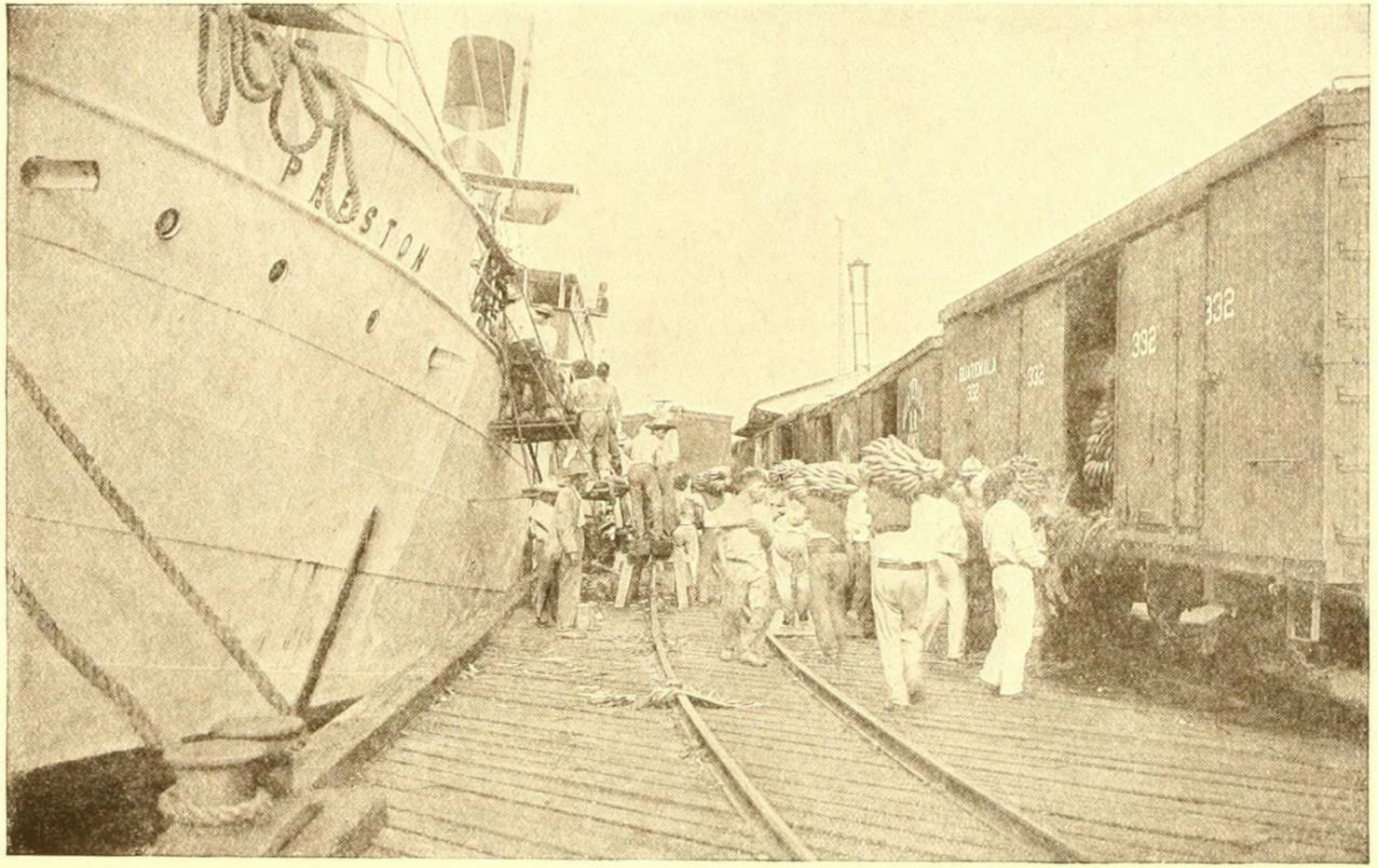
As the loading of each deck is completed, the delivery end of the conveyor is raised to the deck above. On completion of the loading of the top deck, the conveyor is removed, the hatches are put on and if the vessel is a refrigerator ship the cooling of the cargo is begun. In the process of respiration bananas absorb oxygen and throw off carbon dioxide in large quantities and the problem is to carry the fruit well ventilated within a narrow range of temperature. It is the rule to precool the holds of a refrigerator ship for a period of about 24 hours just prior to loading, and when loaded to reduce in the briefest time possible the temperature of the fruit to the desired degree and to maintain it at that point.

THE BANANA STEAMSHIP

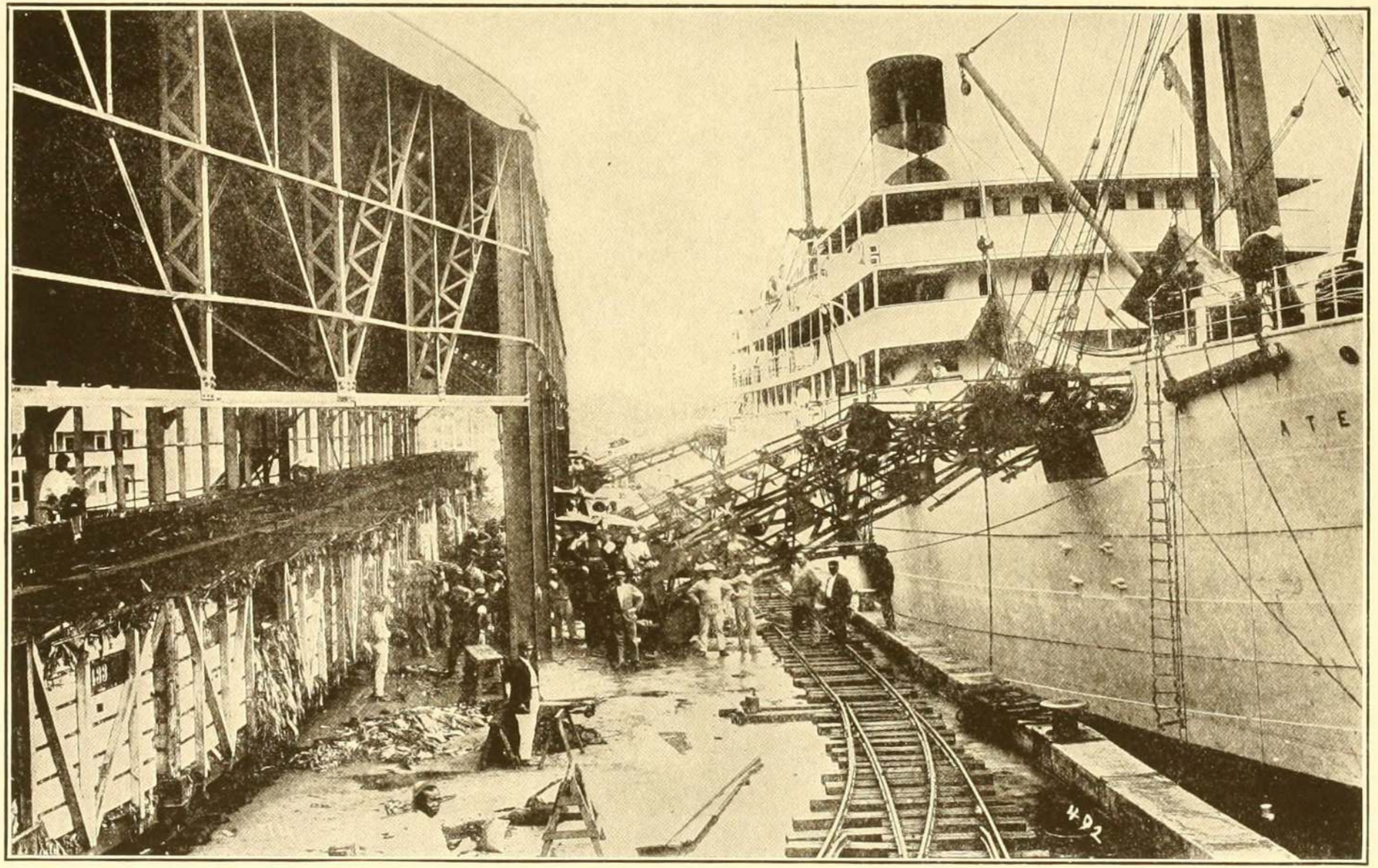
To transport bananas with any degree of success, specially designed steamships are necessary. Both refrigerator and naturally ventilated vessels are used in this trade, particular attention being given to the feature of ventilation and air circulation.



TRAINLOAD OF BANANAS ON ITS WAY TO THE STEAMSHIP

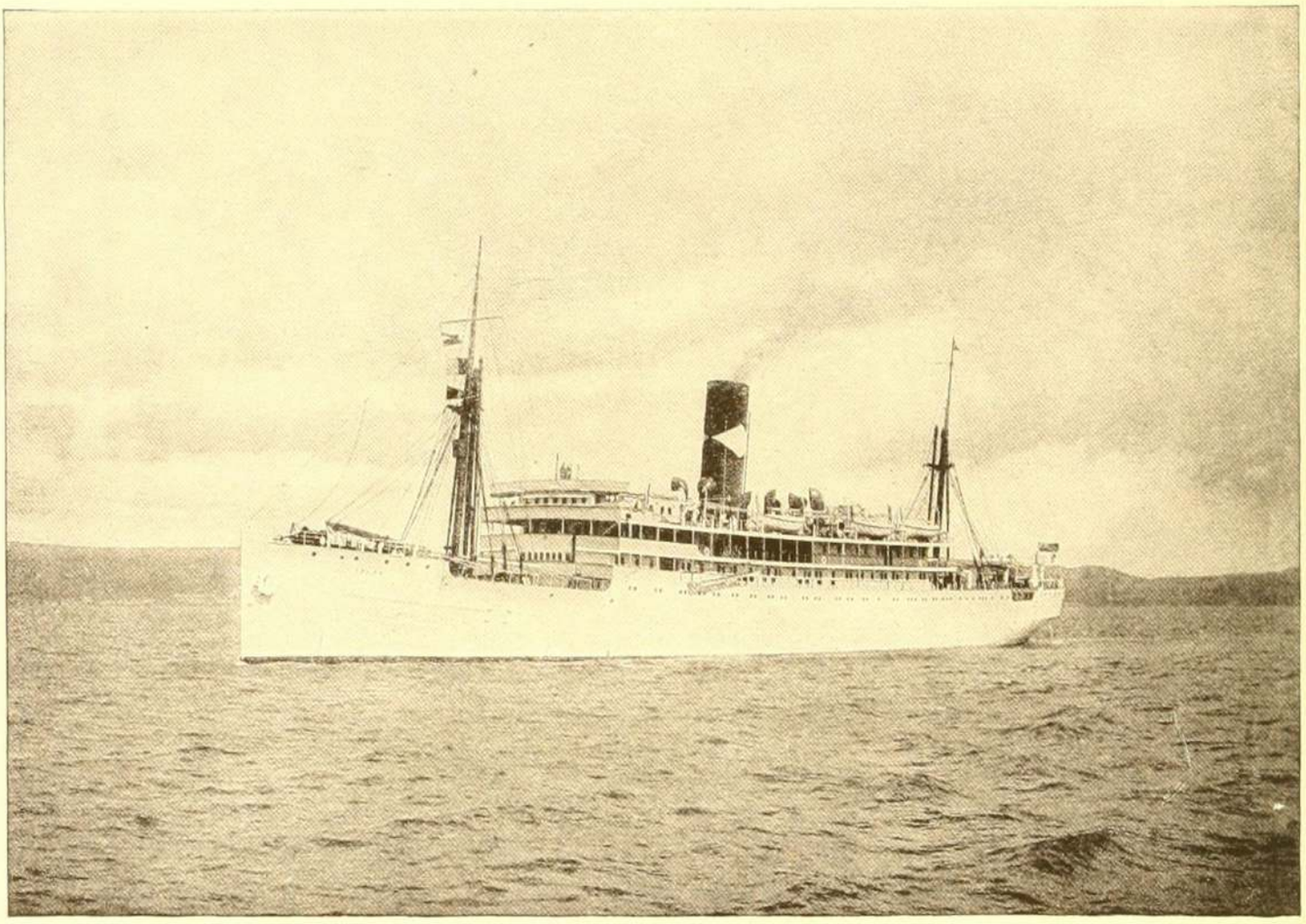


CONVEYING FRUIT FROM CARS TO STEAMSHIP (former method)



CONVEYING FRUIT FROM CARS TO STEAMSHIP (present method)

The holds of a modern banana-carrying steamer are divided by several decks, which in turn are sub-divided by vertical partitions into a number of compartments of a convenient size, the entire vessel being heavily insulated to prevent the transmission of heat. The fruit is cooled to the required temperature by refrigerating apparatus. The air is passed over brine coils, which cool and dry it, and is then circulated by fans through the fruit holds. Most people will be surprised to know that the refrigerating machinery used is much more powerful than is required for a steamer of similar capacity carrying frozen meat, although banana cargoes are carried at a much higher tempera-



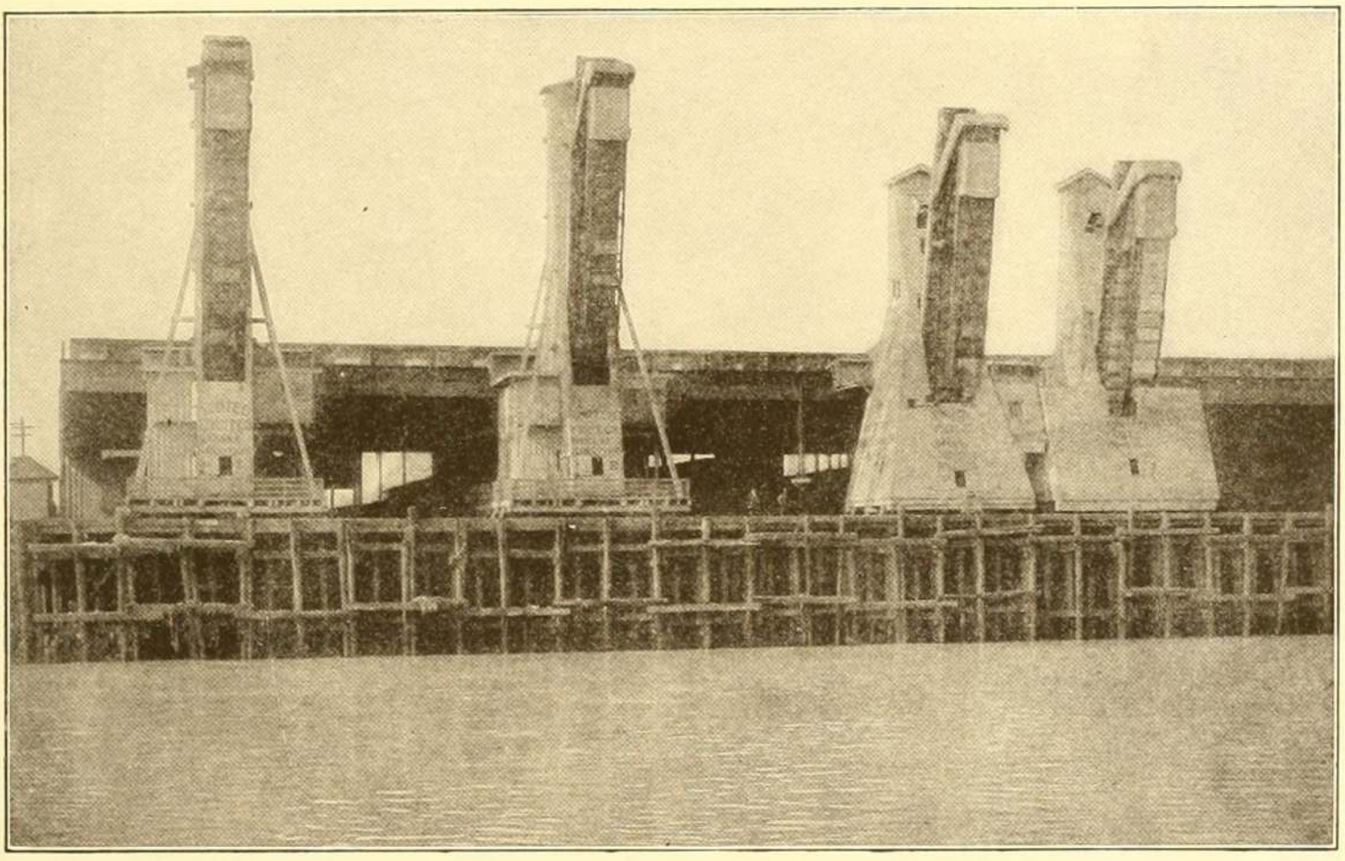
REFRIGERATOR BANANA STEAMSHIP

ture. In the case of bananas, the refrigerating apparatus must contend with the heat generated by the respiration of the fruit itself.

Naturally ventilated ships, which are generally used on the shorter runs, are equipped with large ventilators placed at convenient points to supply fresh air and draw out the stale air. These ventilators are manipulated by turning the large intake cowls to or from the direction of the wind.

During the entire voyage the fruit is carefully inspected at regular intervals every few hours, day and night, and the temperatures of the fruit holds closely observed and recorded. In the winter season while the ship is approaching the Northern Atlantic ports, it is sometimes necessary to use artificial heat in maintaining the desired temperature of the fruit.

The voyage from the various banana shipping ports of Central America and Jamaica to New Orleans, Mobile or Galveston consumes from three to a little over five days and to Boston, New York, Philadelphia or Baltimore about seven or eight days, according to the distance, route and the speed of the vessel, while the voyage to England consumes about fourteen days. On account of the longer ocean voyage the bananas shipped to the English market are of a thinner grade, *i.e.*, less fully developed, than the fruit sent to the United States.



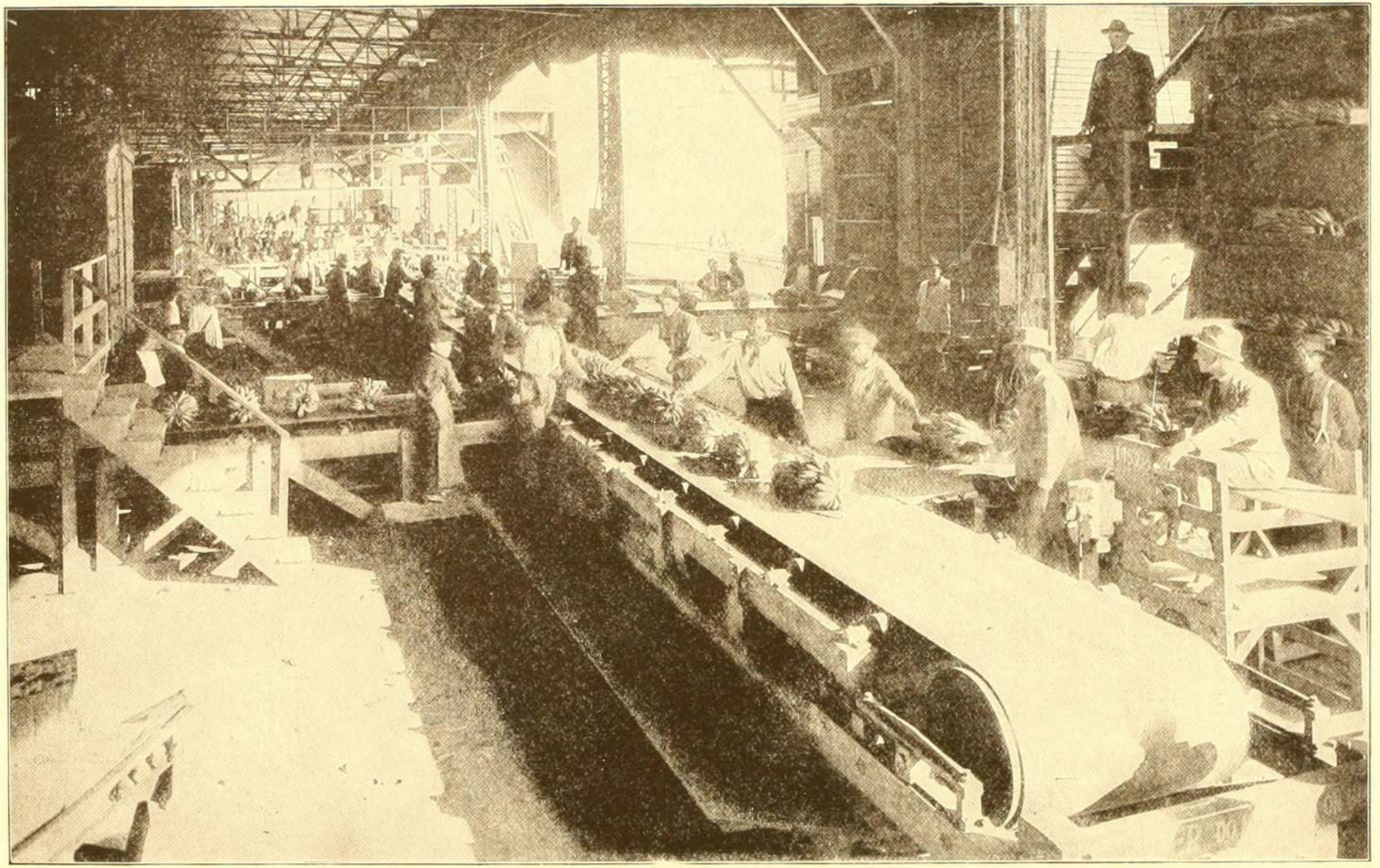
BANANA UNLOADING MACHINES AT NEW ORLEANS

DISCHARGING THE BANANA CARGO

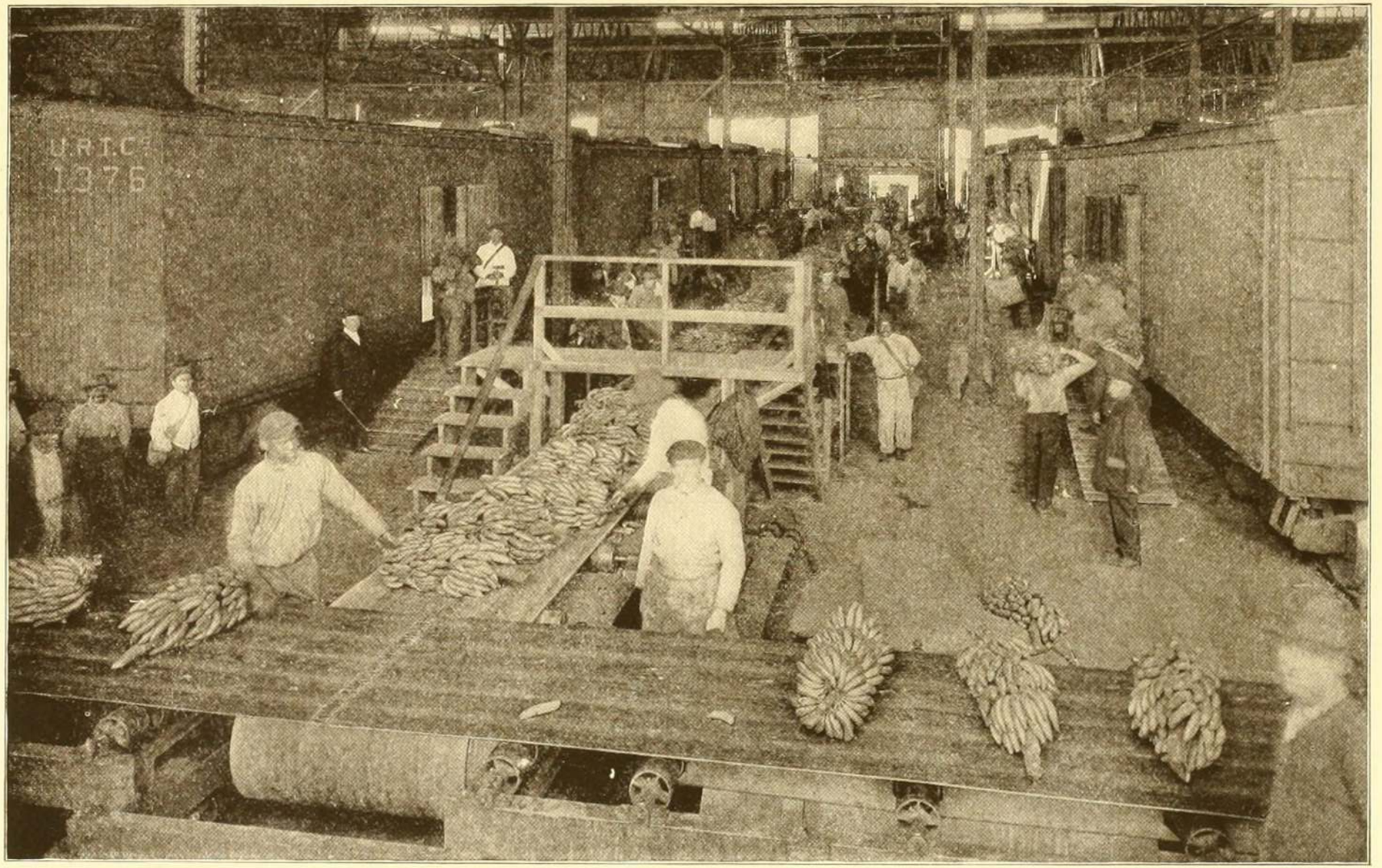
The problem of discharging banana cargoes varies according to the local conditions which exist at the different ports. As soon as the ship reaches the home port and while she is approaching the wharf, the hatches are opened up, weather permitting, and the work of discharging the cargo begins immediately the vessel is made fast.

When a cargo of bananas is being discharged the wharf presents a very busy and interesting scene. It is, however, an orderly operation under direction of the superintendents and stevedores, and a few minutes' observation reveals the wonderful speed, accuracy and sureness of a system evolved from long experience in the handling of banana cargoes.

At New Orleans, Mobile and Galveston, the wharves are equipped with unloading machines, each having a capacity of 2,500 bunches an hour. The great booms of these machines are lowered deep into the holds of the ship and at the sound of the gong the wheels start whirring. Suddenly up come the big green bunches in the canvas pockets



HORIZONTAL CONVEYORS WORKING IN CONJUNCTION WITH UNLOADING MACHINE (NEW ORLEANS)

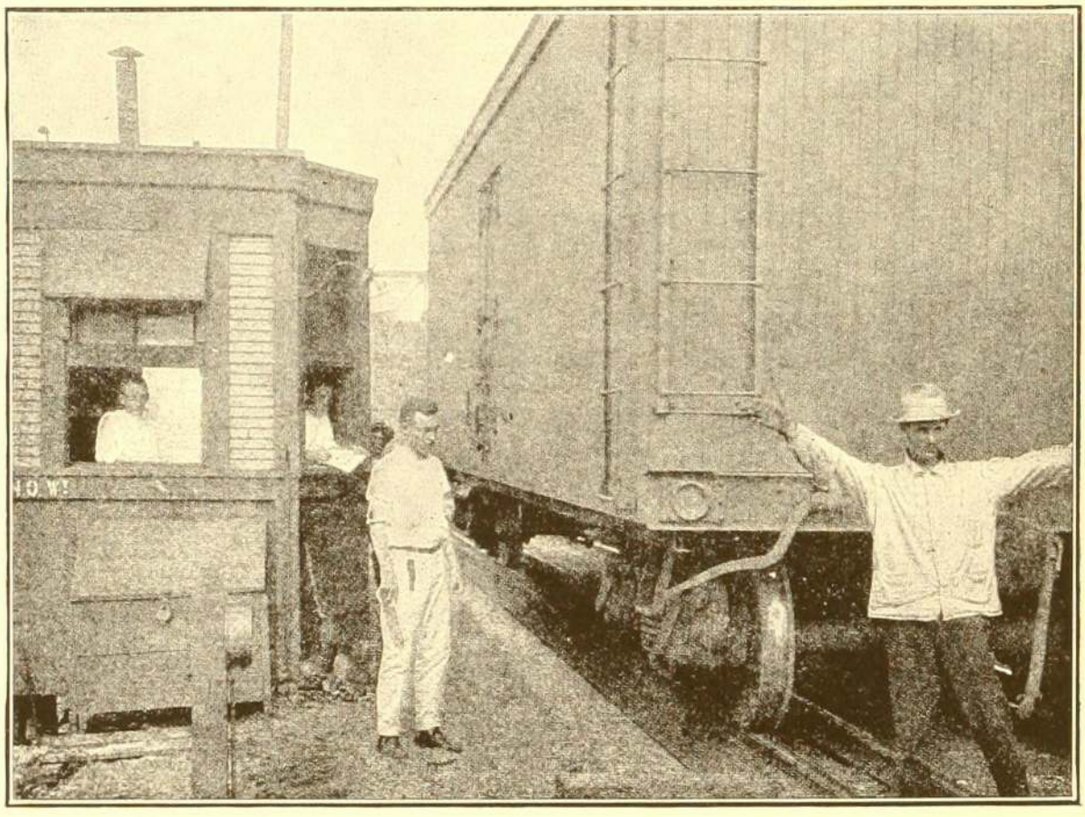


HORIZONTAL CONVEYORS WORKING IN CONJUNCTION WITH UNLOADING MACHINE (NEW ORLEANS)

of the endless chain, then across and down to the wharf, to be turned out automatically onto horizontal belt conveyors.

At New Orleans the wharf is also completely fitted with mechanical conveyors of elaborate and ingenious construction, which transport the bananas from the unloading machine to the door of the refrigerator car. In the case of Mobile and Galveston, however, the bunches are lifted from the horizontal belt conveyors to the shoulders of men who march in continuous ant-like lines to the aisles between the many rows of refrigerator cars and deliver the fruit at the car door. Inspectors are located one on each side of the delivery belt, and as each bunch reaches the point of discharge, its destination is called out in accordance with its condition, quality and classification.

At the Eastern ports, *i.e.*, Boston, New York, Philadelphia and Baltimore, where the piers are not railway terminals, as is the case at New Orleans and the other Southern ports, the unloading of banana cargoes is done by hand. The men are placed on stages in the hatchways of the vessels and the fruit is passed up by them from one man to another and is taken out either through the sideports or through the deck hatches, as is most convenient. The ship is usually discharged on both sides simultaneously, the fruit being unloaded into drays or automobile trucks on the wharf and into railroad cars on floats on the offshore side. When loaded, the car floats are towed to the various railroad



WEIGHING CARS OF BANANAS (EACH CAR IS UNCOUPLED BEFORE BEING WEIGHED)

terminals where the cars are transferred to the land terminals by means of float bridges. At Boston a considerable portion of the fruit is trucked to the railroad yards and loaded directly into cars.

Bananas are inspected and weighed at the seaboard by men specially appointed or licensed to do this work. The inspection is very rigid and any fruit showing the

slightest evidence of damage or a degree of maturity which forecasts early ripening is rejected for interior shipment and sold locally. The fruit is carefully weighed after it is loaded in the railroad cars or drays, as the case may be, the cars and drays being first weighed empty and the tare recorded.

All bunches are carefully counted with checking machines giving accurate count of the bunches as they pass through the car door (the machines used at New Orleans and Mobile working automatically), and the passport of the green bunch is thereafter the railroad bill of lading instead of the ship's manifest.

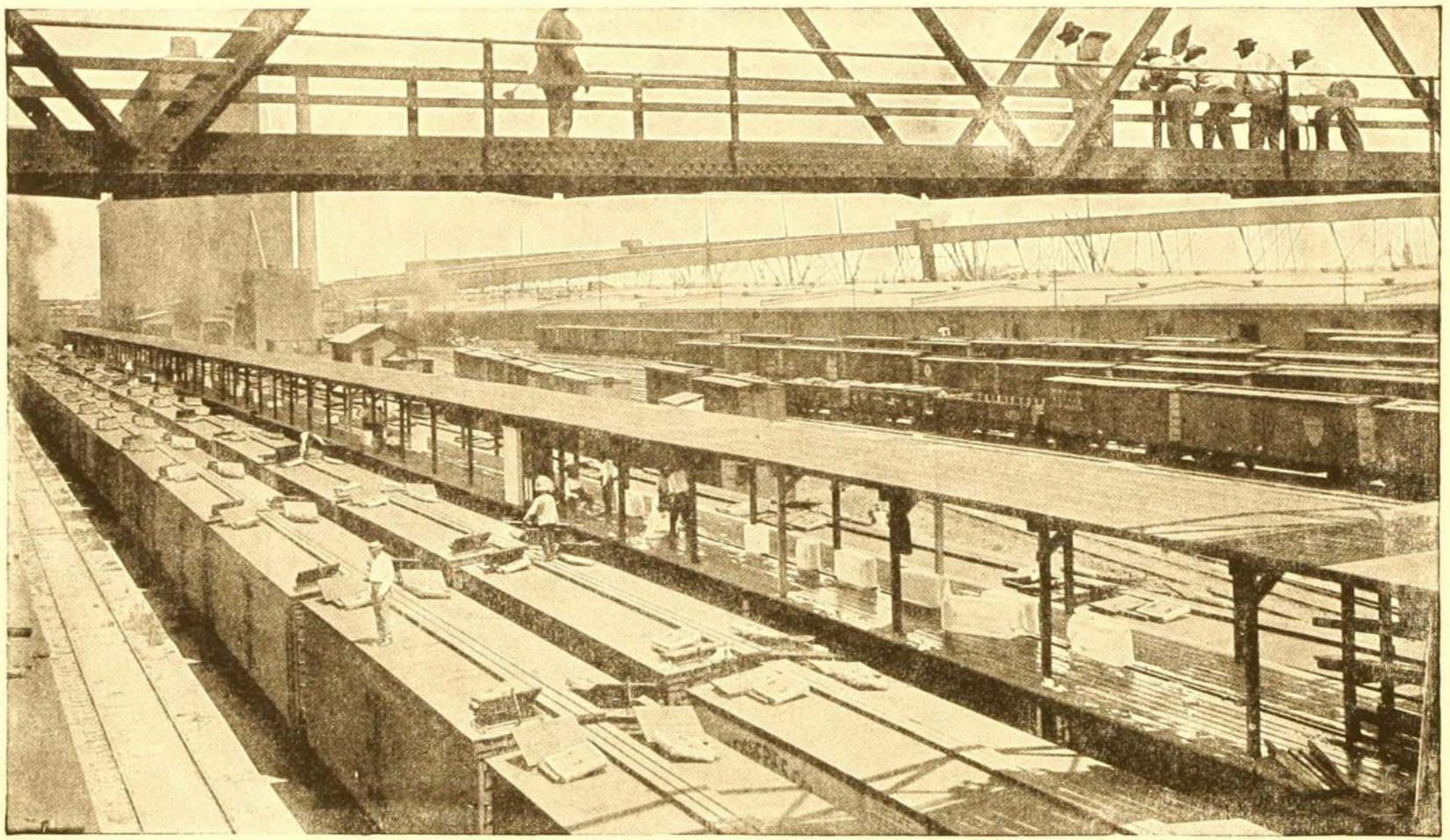
BANANA SHIPMENTS BY RAIL TO INTERIOR POINTS

After having been thoroughly inspected and equipped before being placed for loading, the cars, as previously stated, are weighed empty, and when loaded are again weighed. These cars are then made up into trains which are dispatched over the various roads on fast schedules. Caretakers, called banana messengers, travel through with the trains, inspecting, taking temperatures and arranging the ventilating devices in transit; or resident messengers, who perform the same service, meet these trains at regular intervals in order to inspect the fruit and arrange the ventilation. The shipper's office at seaboard and consignees are kept in close touch with the banana cars through telegraphic advices from messengers *en route* and resident messengers and superintendents of fruit houses, and through this service many losses incident to transportation are avoided.

The fruit is carried into widespread territory in refrigerator cars which, in most cases, are equipped with false floors or floor-racks, providing an air space of four to six inches in depth under the load. By coöperation between shippers and the various railroads and car lines, these refrigerator cars have been brought up to a high standard, although much experimental work is still being done to improve design and construction. The banana traffic is of great importance to the railroads of the United States, a very large proportion of the importations being transported by them. Usually the haul is long and in the opposite direction to the bulk of other railroad traffic.

During the warm season the cars are refrigerated. Constant refrigeration in transit is obtained by initial icing at seaboard and re-icing *en route* as needed. Large cakes of ice are used, and the ventilators of the car are carried open to some extent to provide the necessary amount of fresh outside air to preserve the vitality of the fruit and at the same time to prevent over-refrigeration near the floor of the car. Large cakes of ice present to the atmosphere less surface in proportion to the weight than crushed ice or small cakes, therefore melting more slowly and producing a cooling effect over a longer period. Convenient icing stations are established by the railroad companies at various divisional and junction points, and the cars are quickly iced in transit on advance notice given through the messenger service.

In the winter season the banana cars are papered and more or less heavily strawed according to the weather conditions so that the tiers of firmly-stowed bunches may be well fortified against the Northern cold. At seaboard points during the winter months, the cars are given an initial heating before they are loaded. At Eastern seaboard points the cars are again heated after being loaded and before the cars are started on their way. For winter emergencies great fruit houses equipped with heating plants



ICING CARS OF BANANAS AT NEW ORLEANS

are placed at convenient points, the largest, located in Southern Illinois, handling seventy-two cars at one time. If unusually cold weather prevails and produces lower temperatures in the cars than desired, they can thus be heated on the way to destination and the fruit warmed to the required degree. For the further protection of some of the shipments destined for the northern part of the United States and Canada, car heater stoves are provided by the railroad companies at convenient points. With these stoves the required temperature can be maintained during extremely cold weather and in emergency when trains are snowbound or otherwise delayed.

The distribution of bananas throughout the United States, is, generally speaking, as follows: The fruit imported through the Gulf ports is distributed all over the Southeast, south of the Ohio and Potomac Rivers, the Central West and through the great territory lying west of the Mississippi River, including Western Canada, while the fruit imported through the Atlantic ports is distributed mainly in the Eastern States, north of the Ohio and Potomac as far west as Columbus, Cleveland and Detroit, the New England States and Eastern Canada.

SELLING THE BANANA

The larger portion of the bananas imported is marketed through sales branches, located in all the important centres of the United States and Canada, which solicit and receive orders for the fruit from the jobbing trade in their territory. These orders are telegraphed or telephoned by the branches to headquarters at the seaboard for acceptance and are usually received before the cargo of bananas is discharged, although orders are taken at times for cars which have already been shipped from the seaboard. A large portion of the fruit arriving at Atlantic ports is sold locally by auction in truck lots. Bananas are sold to the jobbing trade on the weight basis and many retailers have now adopted the practice of selling by weight instead of by quantity.

HANDLING BY THE JOBBER

The successful banana jobber is on the lookout for his shipments, unloads them quickly and devotes great care to the physical handling of the fruit in order to avoid scarring and bruising. When the railroad car is unloaded at a distance from the banana rooms, the wagons or trucks which are used for transporting the fruit are provided with straw or hay. In case the car is placed at the jobber's unloading platform, an overhead track with trolley hooks is frequently used to convey the bunches separately to the banana rooms.

In winter, protection is given against chilling by thoroughly strawing the wagons in which bananas are transported, and by covering each load with blankets or tarpaulins. In most of the northern territory vans, somewhat resembling those used for carrying furniture, heated with small stoves, are used for unloading, and stoves are often placed in the cars. When the car is placed at the jobber's unloading platform, canvas windshields are employed to protect the fruit while moving from the car door to the interior of the building.

A part of the jobber's distribution is represented in the shipment of single bunches of bananas by freight or express and special crates of various sizes and designs are manufactured and used for this purpose. The returnable crate is constructed of oak

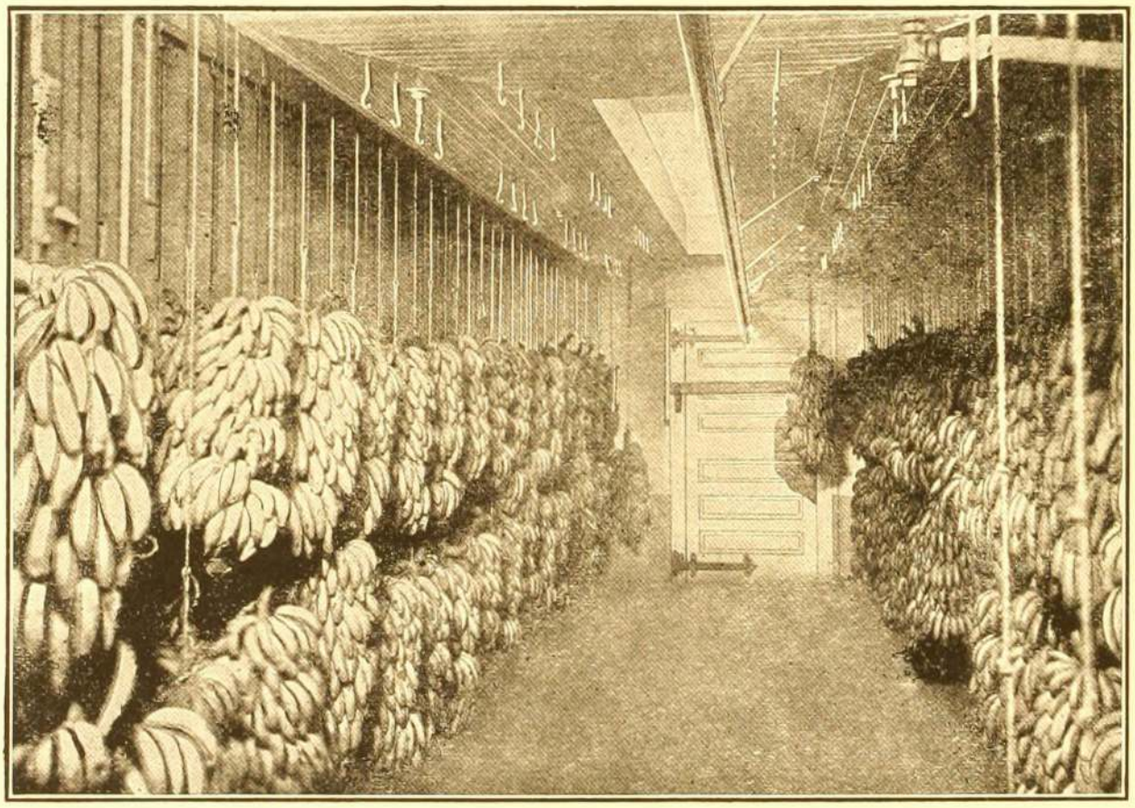
slats with a burlap bag suspended within and so tied to the structure that the bunch cannot be bruised by contact with the outer frame. The non-returnable crate is made of light slats in which the bunch of bananas, placed in a paper bag manufactured for the purpose, is packed with straw or hay. The jobbers handling the smaller classes of fruit frequently use cylindrical cardboard drums strengthened with wooden bottoms and hoops.

BANANA ROOMS

The care and ripening of the green fruit in the banana rooms of the jobber form an important link in the long chain of operations extending from the plantation to the retail distribution, and the present advanced type of banana room has been designed to simplify handling and to place the banana on the market as a matured product at its highest intrinsic value.

The bunches are hung systematically in the banana rooms from ceiling hooks with proper spacing to permit the requisite air circulation, and with a view to convenience in handling.

As ripening is recognized as a vital phenomenon resulting from changes taking place within the cells of the fruit, it is necessary to have normal, wholesome condi-



BANANA ROOM

tions in the banana room. Provision is made for fresh air circulation and for the maintenance of the required degrees of humidity and temperature. The room is well insulated and fitted with special heating and refrigerating apparatus in order to maintain an even temperature against exterior weather conditions. The heating appliance is so designed that the products of combustion are conveyed to the

exterior. A gravity system of ventilation constantly supplies fresh air and removes the vitiated air resulting from respiration of the bananas, which increases rapidly during the ripening period.

Bananas treated in a room of this description not only develop the color, firmness, flavor and food value requisite in the matured product of highest quality, but the losses which ordinarily occur through shrinkage by evaporation and through over-ripening and decay are minimized.

HANDLING BY THE RETAILER

The retailer's approved practice is to hang the bunches of bananas where they will be readily seen, but subject to as even a temperature as possible and to a circulation of fresh air. In winter, due care is taken to protect the fruit from draughts of cold air, and the bunches are covered with paper bags or wrappings in case the temperature is low at night. In severing the bananas from the stem a specially designed banana knife is used to avoid tearing the skin and exposing the pulp. This point of retail service should be always insisted upon by the purchaser.

FOOD VALUE OF THE BANANA

In food value and flavor, the banana easily takes its place at the head of the list of raw fruits. Moreover, it surpasses most of the vegetables in energy value and in tissue-building elements. It is one of the few fruits which reach the highest perfection in food value and flavor when harvested green and allowed to ripen after being severed from the tree or plant. It is always cut green, even when consumed locally in the tropics, for the reason that if allowed to ripen on the plant, it loses its delicious flavor and becomes insipid. The banana reaches the hands of the consumer in a germ-proof package, sealed by nature herself. No worm, blight or insect sting affects the fruit pulp, for its glove-like skin protects it from contamination of all kinds. It costs less per pound the year round than most of the common native vegetables or fruits.*

A common mistake is made in eating the fruit before it is thoroughly ripe. The riper the fruit, the more wholesome and easily digested it is, as the starch in the green banana is converted gradually into sugar in the ripening process. The fact that the skin is yellow, however, does not necessarily mean that the banana is fully ripe. As a matter of fact, the best state in which to eat the banana is

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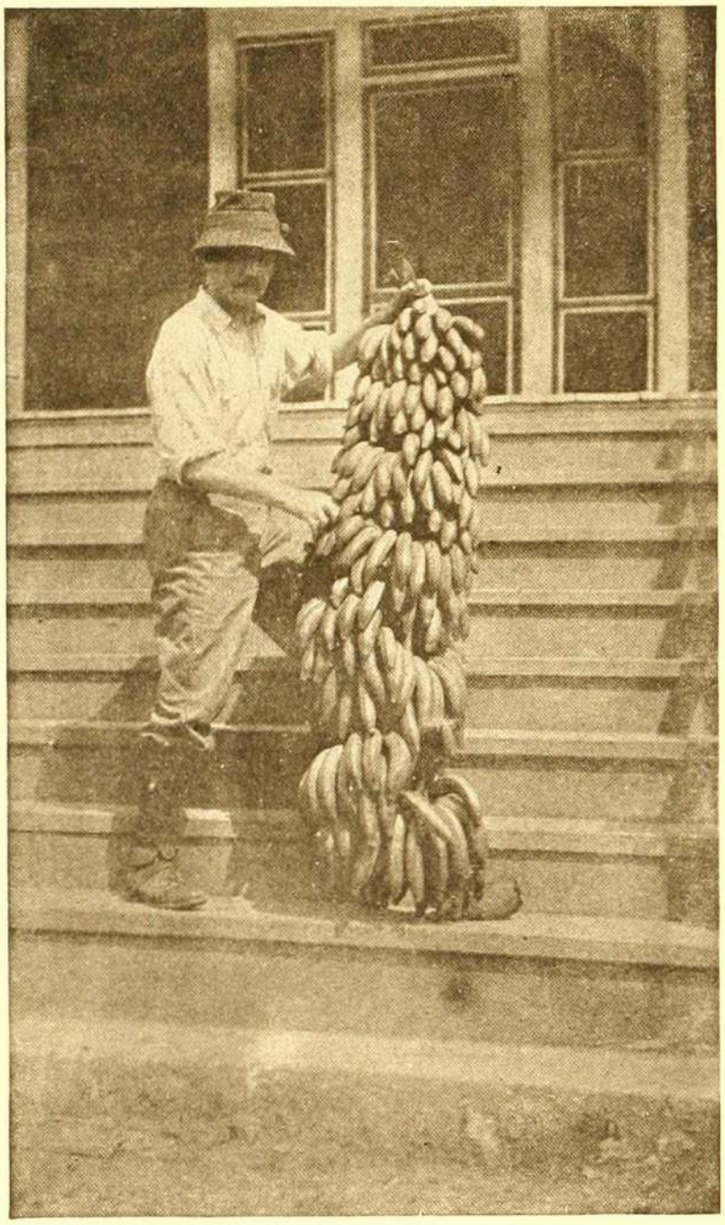
* Professor Samuel C. Prescott, of the Massachusetts Institute of Technology, one of the foremost authorities in the United States on foods and their relative nutritive values, in 1917 wrote as follows:

> "The banana today provides more actual food for the same cost than any other fresh fruit or vegetable, or fish, meat, milk or eggs. The combination of banana with milk in proper proportion, or its utilization as a vegetable to supplement a diet containing a small amount of meat will produce a ration which is ample to take care of the body needs. Meats are essentially protein foods and as such are more adapted to the development of tissue than to the quick production of heat, while the banana, on the other hand, is less a tissue-forming substance but is incomparably more effective in supplying the heat-giving materials. In a crude way we might say that the proteins are the foods which make good the losses due to wear and tear in the machinery of the body, while the carbohydrates are the foods which keep the machinery in motion and do work. From this standpoint it is seen therefore that the banana because of its higher carbohydrate content along with a certain amount of protein, would be a more useful all-round food than a pure meat diet in which the amount of carbohydrate is nil."

when the ripening process is so far advanced that the skin begins to darken and becomes slightly discolored, for then the pulp is mellow, the sugar and flavor-giving compounds fully developed and the fruit itself is easily digested. When it is desired to ripen bananas they should be kept at a moderate temperature, but never in the ice chest—a mistake very frequently made, as, instead of hastening the ripening process the low temperature retards it and damages the fine flavor which develops with normal ripening. Ripe bananas, like other ripe fruits, are nutritious and especially good for growing children.*



A GIANT BUNCH OF BANANAS

While the banana can be prepared for the table in various ways, it is surprising to find that a vast number of people are amazed to learn that it can be served baked or fried, or cooked in many other ways. The American and European people are just beginning to appreciate the possibilities of the banana, when cooked and served for daily consumption, as a vegetable.

The public, which has long regarded the banana as a luxury, is just awakening to its value as a daily food. Increased use both in its raw and cooked state will stimulate further production and so render stable an important factor in the world's food supply. The continued development of the industry means an increase in the food supply of the countries importing bananas as well as an improvement in the commercial prosperity and living conditions of the countries from which they are exported.

* The following results of an analysis reported in 1906 by Atwater and Bryant, working under the auspices of the U. S. Department of Agriculture, show the average composition of the edible portion, *i.e.*, without the skin or peel, of the apple, orange, potato and banana.

	Water	*Protein*	*Fat*	*Carbohydrate*	*Ash*
Apple	84.6	.4	.5	14.2	.3
Orange	86.9	.8	.2	11.6	.5
Potato	78.3	2.2	.1	18.4	1.0
Banana	75.3	1.3	.6	22.0	.8

A glance at the above figures will make plain that the banana contains three times as much protein as the apple, nearly twice as much carbohydrate and three times as much fat as the orange; also that it approximates closely the potato in analysis and exceeds it by about 20% in its fuel or food value.

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UNITED FRUIT COMPANY

What It Is and Does

The United Fruit Company, which was incorporated on the 30th day of March, 1899, is engaged primarily in the production and transportation of tropical products, principally bananas, sugar, cacao and coconuts. It also conducts an extensive freight and passenger business.

The territory covered by its operations in the United States is divided into Northern Domestic and Southern Domestic Divisions, the former comprising Boston, New York, Philadelphia and Baltimore, and the latter comprising New Orleans, Mobile and Galveston. Its Tropical Divisions are located in the following countries: Colombia, Costa Rica, Cuba, Guatemala, Honduras, Jamaica, Panama and the Canary Islands.

During the past ten years it has shipped from the tropics 284,000,000 bunches of bananas, of which 230,000,000 came to the United States, and 54,000,000 went to England and the Continent, the latter figure including approximately 9,000,000 bunches shipped from the Canary Islands.

It owns 1,505,000 acres of land, of which over 350,000 are cultivated. In addition, it leases 124,000 acres of land, of which 27,500 are cultivated.

It operates 1,200 miles of railroad and over 3,500 miles of telephone and telegraph lines.

It owns and operates in Jamaica two of the finest and most modern hotels in conjunction with its passenger business.

It owns 32,500 head of cattle and 8,000 horses and mules.

It does a mercantile business in Latin-America amounting to $9,800,000 yearly.

It has installed and maintains waterworks, sewerage systems and electric light plants in various localities, transforming the Atlantic Coast of Central America—where it operates—from fever-ridden swamps and jungles to modern, sanitary and healthy communities. It has $750,000 invested in water supply and electric light plants. It spends annually $250,000 for sanitation and $200,000 for parks and street-cleaning. It expends annually $250,000 in excess of receipts for operating electric light plants and waterworks and maintains hotels for employees at an annual loss of $100,000.

It has constructed an extensive system of hospitals and dispensaries for the benefit of its employees and the natives, which treat annually 170,000 cases, of which some

35,000 are non-employees. The annual cost of operating these hospitals and dispensaries is $300,000 in excess of receipts. It has just completed a new hospital in Panama and is now erecting additional hospitals in Costa Rica and Cuba.

Its steamships—which comprise the "Great White Fleet"—are built particularly for service in tropical waters, the comfort and safety of passengers being specially provided for. The passenger accommodations are unexcelled; the staterooms are large and spacious and many have private baths; the cuisine is equal to that of the best hotels. These steamships furnish regular passenger, mail and freight service between the Atlantic ports of the United States and Cuba, Jamaica and the Atlantic ports of Central America and Colombia, and, through the connecting lines at the Panama Canal, with the west coast ports of South America. In other words, the "Great White Fleet" directly serves nine countries of the Western Hemisphere and is a prime factor in the commerce of twenty-three nations of that hemisphere. During the past ten years its fleet has carried 560,000 passengers and moved 13,960,000 tons of freight. It ordinarily uses about ninety steamships in connection with its business (including its chartered steamers and English fleet).

Of the twenty-nine steamships owned by the Company and now in service, nineteen are refrigerator banana cargo and passenger ships, eight are refrigerator banana cargo ships, one is a non-refrigerator banana cargo ship, and one is an oil tanker. Several of these ships have been recently completed. It is now building five new oil-burning steamships, of which one is a refrigerator banana cargo ship with electric drive, and four are sugar cargo vessels. In addition to the above, it is building four new refrigerator banana cargo and passenger ships for its English fleet, bringing that fleet up to a total of nineteen steamships, of which six are refrigerator banana cargo and passenger ships and the balance refrigerator banana cargo ships.

It has established a system of communication comprising a chain of high-powered radio telegraph stations located in Colombia, Costa Rica, Honduras, Nicaragua, Panama and Swan Island, the United States terminal being located at New Orleans, with smaller stations at Boston, Massachusetts and Burrwood, Louisiana. These radio stations enable the Company to keep in close touch with its tropical divisions as well as with its steamships.

It also owns a substantial interest in the Wireless Specialty Apparatus Company, located in Boston, which is one of the largest manufacturers of radio equipment in the Western Hemisphere.

Its subsidiary, the Fruit Dispatch Company, which acts as its selling agent, has 50 branches in the United States and Canada. For the benefit of its customers, the Fruit Dispatch Company maintains well organized traffic and equipment departments. It is an established rule never to dump or destroy any fruit which is fit for human consumption. Fruit unfit for human consumption is dumped or destroyed only upon the written order of a Board of Health.

The United Fruit Company's English subsidiary, Elders & Fyffes, Limited, prior to the outbreak of the World War, maintained 38 branches in Great Britain and had

agencies in Amsterdam, Rotterdam, Copenhagen, Hamburg, Paris and other Continental centres.

Through another subsidiary, the Banana Specialty Company, it is producing and developing a market for dehydrated bananas.

The United Fruit Company is one of the most complete and best equipped organizations in the world devoted to the production of sugar, having in Cuba 85,000 acres of cane and two large sugar mills located at the seaboard, and owning the Revere Sugar Refinery at Boston, which is one of the most modern plants of its kind in existence. This fact is not generally known by the public, which regards the United Fruit Company solely as a banana and steamship enterprise.

It does a large business in cacao, coconuts, citrus fruits and other tropical products.

It has been and is carrying on a large amount of research work in its various tropical cultivations. It has completed and compiled in comparative form definite soil analyses of all its banana plantations. This work constitutes what is probably the most extensive soil investigation ever undertaken by a single organization.

The United Fruit Company has expended over $200,000,000 toward the development of the Latin-American countries where it does business, and has been, and is, a most potent factor in the extensive commercial relations of the United States with those countries. The extent and result of the Company's operations are tersely summed up by William Joseph Showalter in *The National Geographic Magazine* (Vol. XXIV, No. 2, p. 233) as follows:

> *"I hold no brief for the United Fruit Company, but it must be said that that great corporation has done more for Central America than all other agencies combined."*

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