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Department of Economics

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THE PHILIPPINE SUGAR INDUSTRY

presented by

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candidate for the degree of Doctor of Philosophy, and hereby certify that it is worthy of acceptance.

May 18, 1935

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THE PHILIPPINE SUGAR INDUSTRY

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INTRODUCTION

The sugar industry is now the primary one of the Philippines, this country having become one of the leading cane producing and exporting countries of the world. Sugar is well adapted to the soil, climate, and labor of the Archipelago. Even during the last fifty years of the Spanish regime in the Islands, the value of the annual sugar exports constituted from 25 to 59 per cent of the total value of all the exports, showing clearly that sugar, in spite of the antiquated methods of producing and manufacturing it, played a major part in the economic life of the Filipino people.

Although it is known that sugar has been grown for more than a century in the Philippines, progress in the industry was very slow under the Spanish regime.

The Spaniards did not pass any legislation favorable to the industry. Rural credit associations or other Governmental financial institutions were not in existence during that period. Labor problems greatly handicapped the Philippine sugar planters. There was no real incentive for the development of the industry. In reality, the Spaniards were more interested in monopoly of tobacco for their own advantage.

Under the American flag, there has been and still is a great interest in the development of sugar growing and processing. The legislation of the American Congress has been favorable to the development of sugar cane. The Americans and Filipinos have cooperated in the introduction of scientific

methods and management, and have encouraged the adoption of modern machinery for the production and manufacture of sugar. The Philippine Government has approved legislation for the establishment of financial institutions to help the Philippine sugar planters. The Bureau of Agriculture has assisted through its plant breeding and other work in improving the industry. The College of Agriculture of the Philippine University has trained students in technical knowledge.

The legislative measures of the United States Government created a great incentive for investment of American capital in the industry. The Americans pioneered the erection of the first Philippine "sugar central" in San Jose, Mindoro Island in 1910. The first cooperative central, the Calamba "Sugar Central," was soon started in Laguna Province, Luzon Island. The investment of American capital has also encouraged the use of Philippine capital.

The sugar industry contributed approximately $1,000,000 in 1923 and $10,236,000 in 1933 in direct and indirect taxes to the revenue of the country, or 43 per cent of the total estimated income of the government in 1933 (appendix, table A). It is estimated that two million people are engaged in the growing of sugar cane and in the manufacture of sugar. It comprised 48 and 63 per cent, respectively, of all the income derived from the foreign trade in 1931 and 1932, and it has been primarily responsible for the favorable balance of trade in recent years. Sugar comprised nearly 30 per cent of the gross annual income of $200,000,000 during 1932

The Philippine sugar industry is now the leader in the Archipelago. Competition in the markets for Philippine sugar

has become keen. Legislative acts of foreign countries have tended to bar the Philippine sugar cut of the principal world markets. International agreements have set quotas for production and exports. Because of these facts, together with a lack of available economic information for the students and research workers and others associated with the interprise, it seems wise that the economics of the Philippine sugar industry and its future be studied.

SCOPE AND METHOD OF INVESTIGATION

This study covers the growth and internal economy of the Philippine sugar industry, the competition of other countries, the effects of tariffs and free trade, price relationships, principal markets and its future. The data covers many years of the Spanish regime on the islands, as well as the whole period of American administration. Considerable data for the Spanish period were lacking. More complete recent data were obtained. In order to make the data from a variety of sources comparable many adjustments were necessary.

The research work was started during the winter of 1933. Letters of inquiry were sent to bureaus and to the College of Agriculture of the Philippine Government, to bureaus at Washington, D. C., and to various universities and private companies of the United States, Dutch East India, Cuba, Hawaii, Puerto Rico, Rome, Vienna, League of Nations and London. The Librarian of Michigan State College aided in borrowing the published material not obtainable for free distribution or for sale.

The foreign terms of weights, measures and monies are explained or converted into American terms so that they may be understood.

CHAPTER I

SUGAR PRODUCTION UNDER THE SPANISH REGIME

Origin of Sugar Cultivation in the Philippines

Sugar cane was cultivated in the Philippines before the discovery of the islands by Magellan in 1521. Historians state that the discoverer of the Islands found this plant among others grown by the natives near their homes for food. Pigafetta reported an incident which occurred that year when the "Rajah" of Mindanao served sugar cane to the Spaniards. He told of the Moros manufacturing various kinds of sweets from the juice of cane. Legaspi, in 1565, wrote of meeting a boat laden with products of the Islands, among them sugar. Governor Sande (1588) and Father Alonso Sanchez (1588) mentioned sugar cane in some of their writings. The latter tells of sugar cane being offered by the natives of Bantal and Moragui to the Spanish soldiers in token of submission. It was observed and recorded in 1591 that the natives of Cagayan on Luzon Island were cultivating large quantities of sugar cane.

All of these early records suggest that sugar cane might have been indigenous to the Philippines. Records and publications in the Philippine Library at Manila indicate that at times the quality of Philippine sugar was considered superior to that of Java, China and Bengal (India). Spanish and other authorities, while agreeing that it came to the Philippines from India, believed that it was first taken to China and Formosa and subsequently introduced from one or both of these countries to the Islands.(1)

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(1) Fairchild, George H., Sugar Central and Planters News, Vol. 6, No. 9, August 1925, pp. 465-467

Spanish Commercial Policy

The tariff revenue acts of the Philippines passed during the Spanish regime were derived from the Laws of the Indies. In 1511 the Council of the Indies was formed with the power of making laws for the Spanish colonies. Control over the commercial and shipping rights between Spain and her colonies was vested in the Casa de la Contratacion or Board of Trade. It had also the power to impose heavy taxes on the colonists. In January 1593, a commercial policy was inaugurated, restricting the external trade of the Philippines to Spain and Mexico. Spain did not want her colonies to deal with foreign countries not only because of political jealousy but also because of economic competition. The laws of the Islands did not allow any foreigner to enter the Spanish colony without a permit from the Spanish authorities. Colonists found trading with foreign merchants were liable to the extreme penalty of death.(1)

In 1785 the "Real Campania de Filipinas" was chartered by royal decree which gave it almost absolute control of the mercantile affairs of the Islands. This company was semi-official in character, one-fifth of the shares being retained by the king and clergy. The company was required to spend 4 per cent of its net income upon the development of the agricultural resources of the country. The company's capital was freely expended in the establishment of numerous plantations of sugar, tobacco and coffee. Many of these flourished for only a short time. The Real Campania proved a failure, partly because of lack of technical knowledge on the part of its officers, and

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(1) Egerton, Hugh Edward, Origin and Growth of the British Dominions, Oxford University Press, Aug. 1903, pp. 43-44.

partly because of the opposition by merchants of Manila to its methods and to the assumption of special privileges by many provincial governors in the Islands. The company's charter was terminated about 1830, at which time the trade of Manila was thrown open to foreigners. Subsequently the ports of Sual in Pangasinan on Luzon, Iloilo in Panay Island, Zamboanga in Mindanao Island and Cebu in Cebu Island were opened to foreign shipping.(1)

A portion of Philippine goods exported to Mexico was kept there, while the other part was re-shipped to Spain. The Spanish King subsidized two ships that sailed only once each year and granted the privilege of using them to high officials and favorites. Under this restrictive policy the commerce of the Archipelago languished. Although relaxing its early policy of monopolizing Philippine trade, Spain continued to maintain extremely high tariff restrictions upon foreign imports as the tariff act of 1832 remained in effect until 1891.(2) Spain enjoyed preferential treatment in the Philippine ports for both imports and exports.

The preferential treatment given by Spain to Philippine

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(1) U.S.D.A. Yearbook, 1909, pp. 521-522; Commercial Handbook of the Philippine Islands, Bureau of Commerce, Manila, 1924, pp. 17-18.

(2) Spanish commodities were admitted at a uniform ad valorem rate of 10 per cent. Export duties were levied on principal articles. The export duty on sugar was 5 cents per 220 pounds, while the tobacco duty was from $1 to $1.50 per 220 pounds. The products of the Philippines were given preferential treatment in Spain. After 1892 sugar from the Philippines, Cuba and Puerto Rico were subject to an import duty, higher than the internal tax paid on Spanish goods. United States Tariff Commission, Colonial Tariff Policies, 1922, p. 587; Commercial Handbook of the Philippine Islands, Bureau of Commerce and Industry, 1924, p. 49.

goods did not encourage the exportation of a great amount of sugar to the mother country. The high tariff duties were a handicap to the development of the foreign trade of the Islands. Free trade countries that desired to import sugar from the Philippines in exchange for their goods could not do it under such unfavorable terms. On the other hand, Spain because of its great distance from the Archipelago, especially before the opening of the Suez Canal in 1869, afforded a very limited market for Philippine exports. These conditions partly retarded the development of the sugar as well as the other industries of the Islands.

Spanish Agricultural Policy

The Real Sociedad de Amigos del Paid (Society of Friends of the country) organized in 1823, fostered the cultivation of sugar in the Philippines. This association sent cane seed from Panay Islands to Havanna. It inaugurated a movement to compile a series of memoirs, which resulted in an offer by a Mr. Sagra in 1874 of a gold medal for the best and most complete treatise of experiments on the cultivation of sugar. The Spanish authorities did not give any attention or consideration, however, to Mr. Sagra's suggestion to develop the sugar industry. The sugar planters were therefore left to their own resources. At one time, about the middle of the eighteenth century, the authorities in Manila prohibited the exportation of sugar. The Spaniards were more interested in the tobacco monopoly (which employed compulsory labor) for revenue purposes.(1)

(1) U.S.D.A. Yearbook, 1901, pp. 522-524

In 1849 the King of Spain promulgated a decree granting to the religious order of the Recoleto Friars a monopoly in the ownership and commerce of Negros Island. This organization, with the financial backing of the British vice-consul, Nicholas Loney, aided the development of the sugar industry.

By royal decree of November 26, 1887, a school of agriculture at Manila was ordered to be created for the purposes of theoretical and practical education of skilled farmers and overseers, and for the promotion of agricultural development in the Philippines by means of observation, experimentation and investigation. This school was opened July 2, 1889. In addition to this institution courses in agriculture were given at the University of Manila and at the Municipal Athenaeum. Instriction was given and experimental work performed by the students in the study and analysis of soils, irrigation, seeds, methods of cultivation, testing new crops, metecrology as related to agriculture, cost of crop production, animal husbandry, plant and animal diseases and the means for their repression, agricultural machinery, etc. The Real Sociedad de Amigos del Pais succeeded later in inducing the government to establish an experiment station on the slope of Mount Arayat in Pampanga Province, Luzon Island, where Manuel Sota demonstrated the value of scientific methods and advantages to be derived from irrigation. Subsequently the government organized a model farm at La Carlota, Negros (Occidental) Island near the then principal sugar producing district of the Philippines. This provision for agricultural research and education does not appear to have produced the results contemplated. In 1888, according to Foreman, - - - - -

"the budget provided the sum of $113,680 for a school of agriculture in Manila and ten model farms and schools of cultivation in the provinces. Instead of benefitting the colony, this sum went to furnish the salaries of needy Spaniards. Very little was achieved in the teaching of agriculture by the Spaniards. The produce of the land devoted to agricultural experiments was enjoyed by the officers." (1)

Production of Sugar Under Spanish Rule

Development in Luzon Island. The earliest commercial development of the Philippine sugar industry was probably in Pampanga Province on Luzon Island, which still ranks second among the sugar producing provinces. Extensive application of old type implements and methods of producing, manufacturing and packing of sugar which were of Chinese origin were found here. Pampanga and Pangasinan Provinces on Luzon Island produced less than 7,000 short tons of sugar per year during the first decade of the nineteenth century, most of which was exported in Chinese sampans and other foreign vessels. There must have been a considerable expansion in sugar production by 1835, in spite of primitive methods of production and manufacture, since at that time 12,981 short tons were exported from Luzon Islands.

In 1849 the production was reported as 26,455 short tons. The rapid increase in consumption of sugar throughout the civilized world which began about 1850 greatly enhanced the price and made the industry very profitable. This condition proved an encouraging factor to capital, and increased investment in the Philippine sugar industry quickly followed, re-

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(1) U.S.D.A. Yearbook, 1901, p. 523.

sulting in an enlargement of the area in cane and an increase in production up to 1895.(1)

Most of the larger sugar plantations in the Philippines were owned by the Spanish gentry. Two of the most prominent of these were located in Pampanga Province on Luzon Island. Mr. Rafael Gil, a member of one of the oldest families in Pampanga, managed his Hacienda de Pio from 1864 to 1898 with such success that at the end of the 34 years his sugar plantation was the largest in Pampanga, with 2,000 people living on his estate. The first steam engine in Pampanga was installed by him on Hacienda de Pio. The first hydraulic mill was also constructed on his plantation at Porac.

The late Don Valentin Arrastia, another member of one of the oldest Spanish families in Pampanga, also devoted himself to agriculture. Of the 1,234 acres in his estate he had 748 planted to sugar cane. He took a leading part in the adoption of modern methods of agriculture and the fostering of centrifugal sugar manufacture in his province. He aided in the establishment of the first bona fide sugar central in Luzon Island and was active later in the organization of the Pampanga Sugar Planters Association.(2)

Development in Visayan Islands. While in Luzon Island the sugar industry was mainly controlled by Spanish gentry, development on Negros Island, which has become the most important

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(1) Pitt, Harold M., The Sugar Industry of the Philippine Islands, Handbook on the Sugar Industry of the Philippine Islands, Bureau of Agriculture, Manila, 1912, pp. 13-14; Handbook of Philippine Sugar Industry, Sugar News Co., Manila, 1929, pp. 1-4

(2) Sugar Central and Planters News, Vol. 2, No. 5, May 1921 p. 167.

sugar producing area of the Archipelago, was largely promoted by foreigners. Prior to 1836 when its ports were opened to foreign traders, sugar production on Negros amounted to only about 250 tons annually. In Negros, the sugar industry was first established in Saravia, Silay, Bacolod and Baga districts.(1) The mills in Negros for grinding the cane were crudely made of wood and stone.

It was the initiative of the British and American commercial houses, in rendering financial aid and in introducing modern machinery and methods of cane production, that was largely responsible for the development of sugar growing in the Visayan Islands, Panay and Negros. Mr. Nicholas Loney, the vice-consul of Iloilo, Panay, continued to loan funds to the Spanish planters in the fifties and sixties. He was regarded as the founder of the sugar industry of these Islands and a monument to perpetuate his memory was erected at Iloilo after his death.

The American trading firm of Russel, Sturgis and Company which was established near the end of the eighteenth century, grew to be one of the largest institutions of its kind engaged in business in the Orient. It had branches in Manila and Iloilo, and the latter branch was extensively engaged in the exportation of sugar from Negros and Panay Islands. The company failed in the panic of 1873. The sugar trade of these Islands was carried on afterward by British, American and Swiss merchants and bankers. They made extensive use of banking credit to provide the capital required from one season to another.

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(1) Walker, Herbert S., The Sugar Industry in the Island of Negros, Handbook on the Sugar Industry of the Philippine Islands, 1912, p. 16.

All of these commercial agencies advanced money to the planters and took payment after harvest in the form of sugar, which they extensively exported. This cooperation between financiers and planters resulted in technical improvement and in an increase of production up to 1893 (table 1).

Table 1. Development of Sugar Industry on Negros Island, 1850-1893.(1)

	1850	1880	1893
Inhabitants	30,000	200,000	320,000
Production of sugar in metric tons	190	39,096	113,850
Wooden mills		-	-
Mills run by steam		59	274
Mills run by water power		17	47
Mills of iron, run by animal power		495	500
Steam plows	-	-	3
Tramways (for transportation of cane)	-	-	23

(1) Walker, Herbert S., The Sugar Industry in the Island of Negros, Handbook of the Sugar Industry of the Philippine Island, 1912, p. 16.

In 1860, according to P. Echaus, the first steam driven mill was introduced in Negros and by 1864 seven such mills were in operation. The number of steam mills, iron mills and mills operated by water power increased rapidly and displaced the wooden mills. The installation of these modern farm mills resulted in a higher recovery of the sucrose content, thus contributing to the increased sugar output. Production on the Island was 600 times greater in 1893 than in 1850. The sugar planters in Negros began to realize at this stage of the sugar industry the value and use of labor-saving devices such as steam plows, steam mills and tramways. The industry created a growing demand for labor and it finally furnished employment for thousand of laborers not only from Negros but also from neighboring islands. From this period until the American

administration, Negros Island was one of the leading sugar producing districts of the Philippines. In the 1903 census, Senior Jose de Luzuriaga stated that the crop of 1893 of 300,000 tons was the largest ever harvested up to that date.(1)

Sugar Exports During the Spanish Regime

The earliest available record of sugar exports of 2,063 short tons was in 1780. There must have been earlier exportations of sugar to China from the Philippines because the tools and methods of grinding cane and manufacturing of sugar were introduced in the Islands by the Chinese. Part of the Philippine sugar exports was shipped in the Chinese sampans. The Chinese conducted most of the early operations of manufacturing, transportation and sale of sugar in Pampanga Province on Luzon Island and in the provinces near Manila. The throwing open of Philippine commerce to foreign merchants in 1834 was accompanied by an increase of sugar export to 12,980 short tons in 1835. Sugar packed in bayones (bags made of leaf of the buri palm) was carried by outgoing vessels in their holds as stowage cargo. During this period there was a considerable exportation of the lower grade sugar to Singapore and Macao. The completion in 1869 of the Suez Canal added greatly to the commercial development of the Islands.

Sugar which was one of the leading exports of the Archipelago was exceeded in value only by Manila hemp in 1854 (table 2). From 1874 to 1883, sugar was the principal export of the Islands

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(1) Ibid, pp. 14-16: Handbook of Philippine Sugar Industry, 1929, pp. 2-4; Pit, Harold M. The Sugar Industry of the Philippine Islands, Handbook on the Sugar Industry of the Philippine Islands, 1912, p. 14.

and averaged over 47 per cent more (or 21 per cent) than that of Manila hemp and over 36 per cent higher than that of tobacco. The average of the 1884-1893 sugar exports was nearly equal that of Manila hemp. The sugar export declined during the close of the Spanish rule.

The quantity of Philippine sugar exported increased steadily from over 42,900 short tons in 1849 to nearly 247,500 short tons in 1895 (table 3). However the exports of other products were expanded more rapidly during the last fifteen years of the Spanish rule, as indicated by the decline of sugar exports to 35 per cent of the total exports during 1890-1895.

Table 2. Philippine Exports, 1854-1895. (1)

Years	Sugar (per cent)	Manila hemp (per cent)	Coconut product (per cent)	Tobacco (per cent)	Others (per cent)
1854(1)	26	41	0.41	17	15.59
1874(2)	35	27		20	18.00
1875	49	19		19	13.00
1876	50	27		6	17.00
1877	54	21		8	17.00
1878	48	23		12	17.00
1879	49	20		7	24.00
1880	49	23		11	17.00
1881	51	36		3	10.00
1882	43	33		13	11.00
1883	46	29		11	14.00
Average 1874-83	47.4	25.8	-	11.0	15.80
1884	30	32	0.01	8	29.99
1885	42	27	0.06	11	19.94
1886	35	22	0.07	10	32.93
1887	32	42	0.11	8	17.89
1888	32	42	0.11	13	12.89
1889	36	41	0.29	9	13.71
1890	34	32	0.13	12	21.87
1891	27	50	-	10	13.00
1892	41	36	0.26	13	9.74
1893	47	35	0.05	11	6.95
Average 1884-93	35.6	35.9	0.12	10.5	17.89
1894	33	44	0.18	10	12.82
1895	31	34	-	18	17.00
1898	8	59		27	6.00

(1) Commercial Handbook of the Philippine Islands, Bu. of Commerce, Manila, 1924, P. 40
(2) Philippine Bureau of Commerce of Industry, Manila Statistical Bulletin No. 2, 1919, pp. 126-140

Sugar export constituted on the average from a third to a half of the total exports of the Philippines, being as high as 58 per cent in 1873, in spite of the use of antiquated equipment and methods in its production and manufacture.

Table 3. Sugar Exports and Proportion of Total Exports of the Philippines, 1849-1895.(1)

Years	Average annual export (short tons)	Per cent of total exports
1849-59	43,122	34.0
1860-69	63,077	33.0
1870-79	118,994	49.4
1880-89	199,161	39.6
1890-95	247,408	35.4

(1) Philippine Sugar Association, Facts and Statistics about the Philippine Sugar Industry, Sugar News Press, Manila, Aug. 1928, p. 18; Philippine Bureau of Commerce and Industry, Statistical Bulletin No. 2, 1919, pp. 136-137.

From 1861 to 1865, Great Britain was the principal market for Philippine sugar, taking 47 per cent of the total sugar export (table 4). Australia took 23 per cent, while the United States imported more than did China and Japan although these countries are nearer to the Philippines. The mother country, Spain, took only 1 per cent of the total sugar exports.

Great Britain was the leading market during the early period because the British capitalists who aided the development of the principal sugar districts, were at the same time the leading importers of sugar into the British markets. The modern mill machinery which was imported by the British Vice-consul, Mr. Nicholas Loney, was loaned to the sugar planters in Negros Island and in Iloilo on Panay Island. The British traders also were influenced in exporting sugar to Australia during this period as the Queensland sugar industry was not yet highly developed.

Table 4. Distinations of Philippine Sugar Exports.(1)

Year	United States	Canada	China & Japan	Great Britain	Spain	Australia
	per cent	per cent	per cent	per cent	per cent	per cent
1861-65	16.0	0	13.0	47.0	1.0	23.0
1891	34.0	26.4	11.3	28.0	0.2	0

(1) Sugar Central and Planters News, Vol. 2, No. 11, Nov. 1921 p. 452; Philippine Bureau of Commerce and Industry, Manila, Statistical Bulletin No. 2, 1919, p. 136.

The United States, Great Britain and Canada were the chief markets for Philippine sugar in 1891, taking 34, 28 and 26 per cent, respectively, of the total exports (table 4). The proportion exported to the United States had materially declined since 1889 (table 5). Spain imported practically no Philippine sugar, due probably to her nearness to Cuba and the sugar beet growing countries of Europe. China and Japan have never been an important market for Philippine sugar except during a short time in the nineties, although there were numerous Chinese and Japenese merchants in the Islands who were exporting, and even though transportation costs were lower to these two oriental countries than to the United States.

The United States was a much greater importer of Philippine sugar than Spain, in spite of the latter's political control of the Islands and in spite of the duty imposed by the United States on Philippine and other foreign sugars.

During the last half century of the Spanish domination in the Philippines, the United States played an important part in developing the sugar industry. The sugar exports to the United States increased from an annual average of all exports of 23 per cent during 1849-1859 to 54 per cent in 1880-1891 (table 6). The United States became one of the leading markets of Philippine

Table 5. Sugar Exports and Proportion to the United States, 1876, 1880-1889. (1)

Year	Total sugar exports (metric tons)	Per cent of total exports	Sugar exports to United States (metric tons)	Per cent of sugar exported to United States
1876	130,547	50	68,830	53
1880	181,190	49	102,286	57
1882	150,422	43	78,983	53
1883	196,834	46	127,446	65
1884	122,128	30	85,172	70
1885	204,222	42	135,052	66
1886	184,939	35	117,452	63
1887	171,754	32	111,440	65
1888	160,987	32	83,718	52
1889	228,468	36	123,762	55

(1) Philippine Bureau of Commerce and Industry, Statistical Bulletin No. 2, 1919, p. 136.

sugar, partly because of the active part played in loaning funds to the sugar planters in Negros and Panay Islands by the American capitalists who were also leading exporters of Philippine sugar.

Table 6. Philippine Sugar Exports to United States, 1849-1891 (1)

Year	Average annual export to United States	Per cent of total exports
1849-59	8,663	22.7
1860-69	12,720	23.6
1870-79	43,299	39.6
1880-91	93,844	54.0

(1) Philippine Sugar Association, Facts and Statistics about the Philippine Sugar Industry, Aug. 1928, p. 18; Philippine Bureau of Commerce and Industry, Statistical Bulletin No. 2, 1919, pp. 136-137.

Status of the Sugar Industry at the Close of the Spanish Regime

The Philippine sugar industry did not progress rapidly during the Spanish rule because of the limited trade between the Philippines, Spain and Mexico, the high tariff duties imposed by the Spanish Government, and because there was no government institution in the Islands primarily devoted to the technical study of the sugar industry or to its efficient organization and administration. Improvement was made in the Islands of Negros and Panay by the introduction of some modern farm implements and modern muscovado sugar mills, but this movement had not gone far in improving the methods of production and manufacturing muscovado sugar into higher grades of centrifugal sugar. There was a great loss of the sucrose content, due to the muscovado mills not being properly equipped. These antiquated methods added to the handicap of the industry. The resulting low grade muscovado

had a very small demand in the United States and other advanced countries, because Java, Cuba, Hawaii and the beet producing countries of Europe were producing higher grades of 96° centrifugal and refined sugars which were in greater demand.

There was no governmental financial institution that aided the sugar planters in obtaining capital. The development of the industry in Negros and Panay was wholly dependent upon foreign capitalists who gave financial aid to producers, usually at high interest rates. These foreign capitalists, who were also merchants and shippers, received payments of their loans from the planters in terms of sugar after harvest. The sugar producers were forced to sell their sugar to the merchants usually at low contract prices.

The Spanish Government did not regulate labor in the Archipelago. The sugar planters suffered losses because laborers frequently disappeared after receiving advanced pay. It was often difficult for sugar producers to get sufficient laborers to work on their plantations.

Transportation facilities were lacking. Highways were inadequate. These also added to the difficulties in the development of the industry.

During the insurrection against the Spanish Government in 1896-1897, and the war between Spain and the United States in 1898, the sugar plantations were neglected. Sugar planters, as well as the rest of the population, felt the effects of the wars which caused a decline of sugar production.

CHAPTER II

GOVERNMENT AIDS TO SUGAR INDUSTRY UNDER THE AMERICAN ADMINISTRATION

Situation Following the Spanish-American War

The Philippine sugar industry was neglected at the close of the Spanish period and during the first ten years of the American occupation. The scientific methods of production and manufacturing of sugar had not been adopted and the low grade muscovado was the only type exported. The insurrection against the American sovereignity in the Archipelago which began in 1899 and continued for several years was followed by the epidemic of rinderpest which killed the greater part of the working animals. These handicaps retarded the progress of the industry. It was not until after 1910 that modern methods were more rapidly adopted, resulting in the manufacture of 96° centrifugal sugar which was demanded by United States and other countries.

In order to change from the primitive equipment, the Philippine sugar industry after the Spanish-American War needed favorable legislative action to stimulate foreign and domestic capital investment. The industry also needed more adequate credit facilities and technical institutions for training Filipinos, expecially along the lines of production, organization and administration. The development of a more assured market outlet was of special importance. Investment of capital was largely dependent on the terms under which sugar produced

in the Islands would be admitted to that country which had now assumed the responsibility for the administration of the Archipelago.

Opening the American Market to Philippine Sugar Tariff Arrangements, 1898-1909. At the time when the Philippines was surrendered to the United States under the Treaty of Paris (December 1898), the Philippine sugar was dutiable under the rates established by the Dingley Tariff Act of 1897.(1) There were no tariff reductions or preferences given to the goods of the Islands exported to the United States nor to the American commodities entering the Philippine markets from 1898 to 1902. The treaty which permitted the Spanish ships and goods to enter the Philippines on the same basis as those of the United States hindered the inauguration of free commercial relations between the Philippines and the United States.

The abatement of 25 per cent of the full duty on the Philippine sugar under the United States Tariff Act of 1902

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(1) The tariff rate on refined sugar and sugar above No. 16 Dutch standard of color was 1.95 cents a pound, while the rate on 96° raw centrifugal sugar was 1.685 cents per pound, but an additional amount was paid for each degree above 75 degrees amounting to 0.035 cents a pound, and sugars not above No. 16 Dutch standard of color and above 75 degrees by the polariscope test had a rate of 0.95 cents per pound. Handbook of the Philippine Sugar Industry. 1929, p. 41; United States Tariff Commission, United States-Philippine Tariff and Trade Relations, Report No. 18, 1931, p. 2.

gave no practical benefit to the sugar enterprise.(1) It did not encourage the American and Filipino capitalists to invest their money in modern centrifugal centrals.(2) Muscovado remained practically the only kind of sugar exported.

Preferential Trade Arrangements, 1909-1913. The enactment of the Payne-Aldrich on August 5, 1909, provided for the entry of 336,000 short tons annually of the Philippine sugar into the United States.(3) During the application of this act all sugar from the Islands entered the United States free of duty because the exports to the latter country did not reach this limit until 1924.

The passage of this Act immediately caused an inflow of American capital into the Islands for the development of the sugar industry. The first modern centrifugal sugar central was successfully established at San Jose, Mindoro Island by

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(1) The act passed on March 8, 1902 provided that the Philippine commodities not on the general free list of the act of 1897 should be given a 25 per cent preferential reduction. The Products of the United States received by the Philippines were to pay the general Philippine import duties. Any export duty collected in the Archipelago on shipments which were subject to the United States tariff duties must be deducted from the American import duties. All the import duties collected in the United States on Philippine products were to be paid into the Philippine treasury. United States Tariff Commission, United States-Philippine Tariff and Trade Relations, Report No. 18, 1931, p. 2.

(2) A central is a place where a large specialized can-sugar mill grinds the cane and manufactures it into centrifugal sugar.

(3) This Act was passed under the administration of President Taft, who had been the first Civil Governor of the Philippine Islands, and who was a strong advocate of a liberal commercial policy between the United States and the Philippines. He believed that such a policy would serve to develop more rapidly the natural resources of the Archipelago and benefit the people. United States Tariff Commission, United States-Philippine Tariff and Trade Relations, 1931, pp. 2-3.

an American company in 1910, in spite of the opposition of the Philippine government officials and the great pioneering difficulties encountered by the company.(1)

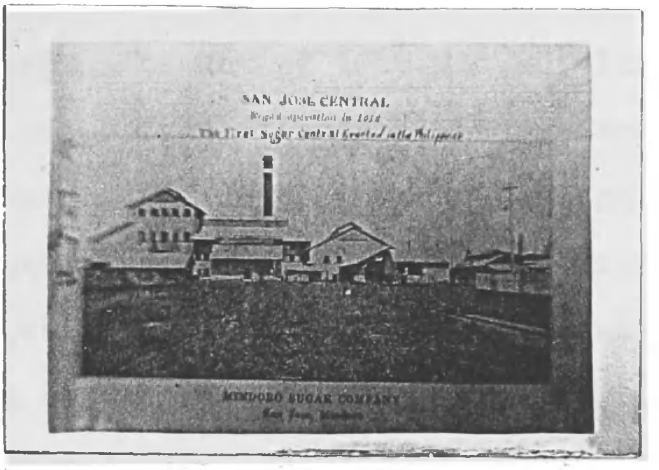

Fig. 1. First Sugar Central in the Philippines

The government officials feared the exploitation of the Islands by American and other foreign capitalists.

The Talisay sugar central, Negros Island, which was erected with Filipino capital, began operation in 1912. Two cooperative sugar centrals, one established at San Carlos, Negros Island, and a second at Canlubang, Laguna Province on Luzon Island, both erected by Americans, began operation in 1914. There were at least ten modern centrifugal sugar centrals built after the passage of the Payne-Aldrich Act, during 1909-1916. These plants made possible both larger scale production and higher grade sugar (96°) centrifugal) than could be obtained from the old farm mills which produced only muscovado sugar.

Unconditional Free Admission, 1913-1934. The Philippine sugar industry was stimulated by the Underwood-Simmons Tariff act of 1913 which provided for the removal of the limitation on the quantity of Philippine sugar to be admitted free of duty

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(1) Handbook of the Philippine Sugar Industry, Sugar News Press, Manila, 1929, pp. 6-7.

into the United States.(1) The Tariff Act of April 27, 1916, effective May 1 of the same year repealed the provision of the Tariff Act of 1913 dealing with the transfer of all sugars to the free list. The Act of 1916 did not limit the amount of Philippine sugar free of duty. The preferential duty on Cuban sugar and the tariff duty on other foreign sugar were restored. This Act guaranteed a tariff protected free market in the United States. The sugar centrals increased rapidly during this period until they numbered 19 in 1920. The production increased from 127,993 short tons in 1909 to 234,457 in 1919.

The Fordney Emergency Tariff Act of 1921, the Fordney-McCumber Act of 1922 and the Smoot-Hawley Act of 1930 protected further the Philippine sugar (table 7). It raised the duty on foreign sugar from 1.256 to 2.5 cents a pound on 96° centrifugal sugar, the Cuban preferential duty on 96° centrifugal sugar from 1.0048 to 2.00 cents a pound, and on Cuban refined sugar from 1.0752 to 2.14 cents a pound. The Cuban sugar producers therefore were not given as much advantage as Hawaiian and Puerto Rican sugar planters. The Philippine sugar producers received only partial benefit of their free

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(1) Duty on all sugar reduced 25 per cent from and after March 1, 1914 and providing all sugars be transferred to the free list May 1, 1916. The duty on 96° sugar from Cuba was 1.0048 cents per pound and from foreign countries 1.256 cents per pound. The duty on refined sugar from foreign countries other than Cuba was 1.36 cents per pound. United States Tariff Commission, United States-Philippine Tariff and Trade Relations, 1931, Report No. 18, p. 3; Handbook of the Philipine Sugar Industry, 1929, p. 42.

market in the United States because their cost of transportation was greater than that of Cuba, Hawaii and Puerto Rico.

The favorable trading relations with the United States aided in further increasing the number of modern centrifugal sugar centrals to 45 in 1932 and the production to over 1,102,000 short tons, or to 867,650 more than in 1920.

Table 7. United States Tariff Rates on Sugar, 1897-1930.(1)

Tariff Acts	Duty on 96° centrifugal sugar: Full rate (cents per lb.)	Duty on 96° centrifugal sugar: Cuban rate (cents per lb.)	Cuban rate on refined sugar (cents per lb.)
July 24, 1897	1.6850	1.6850	1.8031
Aug. 6, 1909	1.6850	1.3480	1.4425
Mar. 1, 1914	1.2560	1.0048	1.0752
May 28, 1921	2.0000	1.6000	1.7121
Sept. 22, 1922	2.2060	1.7648	1.8885
June 18, 1930	2.5000	2.0000	2.1402

(1) Lippert S. Ellis, The Tariff on Sugar, The Rawleigh Foundation, Freeport, Illinois, Jan. 1, 1933, p. 48.

Government Aid to Sugar Centrals

Modern sugar centrals were necessary in order to replace the thousands of plantation sugar mills which manufactured low grade muscovado sugar which was demanded only in the Chinese and Japanese markets. The cooperation of the Philippine Government was therefore essential for this development. On October 15, 1914, Governor General Harrison recommended to the Philippine Legislature that cooperative agricultural associations to provide small farmers with credit facilities be created and regulated. He recommended also that the government cooperate in the construction of sugar centrals in places where they were needed. In compliance with the latter part of this recommendation, Act. No. 2577 was passed on February 4, 1916 creating a Sugar

Central Board Consisting of the Governor General, the Speaker of the Philippine Assembly or their authorized representatives, and three members appointed by the Governor General with the consent of the Philippine Commission. This board was charged with the duty of promoting and aiding the sugar industry through the establishment of sugar centrals.(1)

Insular Land Policy

During the Spanish regime the agricultural land best adapted to sugar cane production was under monopolistic control of the Spanish religious corporations and private individuals. In 1903 the public domain was increased by 396,690 acres purchased from Spanish religious societies and wealthy Spaniards. Under the American Administration, land for production of sugar and other crops has been made available by the Philippine Government in the form of homestead grants, lease holds,

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(1) The Sugar Central Board was empowered: "(a) to guarantee to the concern establishing a sugar central the payment of its value and interest from the net proceeds of the sugar manufactured, after deduction of fifty per cent of the gross product, which shall be distributed pro rata among the producers of the cane milled and after the further deduction of the operation expenses.

"(b) To purchase from a corporation or corporations composed of owners of land planted in sugar cane, bonds issued upon the security of the property of said corporation or upon the security of the first mortgages upon the land or part of the land of the individual owners who are stockholders in the said corporation, or upon both securities mentioned; provided, however, that the base value of the land received as security for the said bonds shall not exceed the value certified by an appraiser who shall be appointed to inspect and appraise the same.

"(c) To make loans secured by first mortgage to a corporation or corporations owning and operating a sugar central or sugar centrals for addition and the improvements thereto."

Rafael R. Aluman, Now, The Past, Present, and Future of the Philippine Sugar Industry, Manila, Vol. 13, No. 49, Oct. 15, 1932, pp. 10-12.

sales of public lands or sales of friar lands under Act. No. 926, enacted by the Philippine Commission on October 7, 1903.

The Act of the United States Congress on July 1, 1902 placed a limitation of 2,560 acres on land holdings in the Archipelago by agricultural corporations. This limit has never been changed even though the Philippine Legislature was empowered by the Act of Congress of August 29, 1916 to legislate concerning landholdings in the Islands.(1)

The Homestead Act of 1903 allowing 40 acres to be acquired by any Filipino or American for agricultural production was amended by Act No. 2874 of November 29, 1919 to permit 60 acre homestead.(2) The total number of applications for homestead during the five year period 1905-1910 was 8,951, covering a total area of 285,007 acres (3)

The 1903 Public Land act permitted only 40 acres of land to be purchased by any Filipino or American from the Philippine

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(1) United States Tariff Commission, United States-Philippine Tariff and Trade Relations, Report No. 18, Second Series 1931, p. 29.

(2) The Homestead Law of October 7, 1903 provided that any citizen of the Philippines or of the United States over 18 years of age, or the head of a family who did not own more than 60 acres (24 hectares) in the Philippines, might enter an application for a homestead not exceeding 60 acres of agricultural land on the public domain. After filing of the application and with the approval of the Director of Lands, possession might be taken upon the payment of $5 as an entry fee. The period granted by the law to homesteaders for the improvement and cultivation of their claim was from 2 to 5 years. The applicant was entitled to get a deed upon payment of an additional amount of $5, after he has complied with all requirements of the law. United States War Dept., Bureau of Insular Affairs, A Brief Resume of the Rules and Regulations Relating to the Disposition of Public Lands in the Philippine Islands. 1934, p. 1.

(3) Forbes, W. C., Phil. Islands. The Friar Land-Inquiry, Manila, 1910, p. 128.

Government. This was increased to 250 acres by the amendment in 1919 and to 360 acres under the Philippine Land Law of 1925 (No. 3219). The period of payment was extended from 5 to 10 years by this last law. Under the original act, any person of legal age could buy not more than 40 acres of the "friar land" which had been purchased previously by the Government. A corporation duly registered in the Philippines was granted the privilege of purchasing as much as 2,500 acres.(1) The sale of "friar lands" like that of other public land, was at public auction. The total area sold by the Government during 1905-1910 was 24,922 acres involving 332 sales.

Under the 1903 Leasing Act any citizen of the Philippines or of the United States, of lawful age (21 years), could lease from the Philippine Government 2,560 acres. Corporation or an association could lease 2,560 acres of land provided it was organized and constituted under the laws of the Philippines or of the United States, and if authorized to transact business in the Islands and if at least 61 per cent of the capital stock belonged wholly to the citizens of the Archipelago or the United

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(1) Citizens of countries, the laws of which grant to citizens of the Archipelago, the same right to acquire public lands as to their own citizens, may, while such laws are in force, with the express authorization of the Legislature, purchase any parcel of agricultural land not more than 250 acres. Lands sold by the government ARE appraised by the Director of the Bureau of Lands, with the approval of the Secretary of Agriculture and Natural Resources. The minimum selling price is fixed by the government, and the payment may be in full or installment annually for 12 years, with interest at 4 per cent. The appraised value of land must at least be equal to the expense or that which may be incurred by the government is connection with the application for purchase. A deed is issued after all is paid.
Commercial Handbook of the Philippine Islands, 1924, pp. 72-77; United States Tariff Commission, United States-Philippine Tariff and Trade Relations, No. 18, Second Series, 1931, p. 29.

States. An individual or corporation that owned land could also lease additional land to bring the total up to not more than 2,560 acres. The lease could extend for a period of not more than 25 years and was subject to renewal at the option of the lessee. The annual rent could not be less than 3 per cent of the value of the land.(1) The total area leased from 1905 to 1910 was 123,759 acres including 185 leases.

The Public Land Act of 1924 (No. 3164) permitted any native of the Philippines to apply for free patent. The deed would be given provided the farmer did not own more than 60 acres of land and provided he or his predecessors had since July 4, 1907 or prior to that date continously occupied and cultivated the tract of public land. The filing of free patent applications for lands was limited to December 31, 1938 which is the last day when freepatent applications for lands will be accepted.(2) The total number of free patent applications during 1905-1910 was 15,877, covering 130,039 acres.

Under the land acts, 563,727 acres of government land were obtained by 25,345 individuals or corporations during 1905-1910. During 1931-1932, the only other years for which data are available, 226,055 acres were disposed of by free grant, sale or lease to individual farmers or corporations.(3) As during the earlier period the homestead grants were the most important.

This favorable land policy of the Philippine Government has aided the sugar planters and others to acquire a large

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(1) U. S. War Dept., Bureau of Insular Affairs, Brief Resume of the Rules and Regulations Relating to the Disposition of Public Lands in the Philippine Islands, 1934, pp. 8-10.
(2) Ibid, p. 11.
(3) Phil. Dept. of Agr. and Nat. Resources, Annual Report, 1933, p. 54.

area of agricultural land for the production of sugar cane as well as for other types of farming. For example, the San Jose sugar estate in Mindoro, the Calamba sugar estate in Laguna Province (Luzon Island) and other large sugar plantations in Luzon and Visayan Islands covering thousands of acres, were acquired by the sugar planters from the Philippine Government for cane production.

Agricultural Credit Measures

The Spaniards did not create any government credit institution during their sovereignity in the Islands, whereas the Americans have fostered the development of government credit facilities as part of their program to aid the farmers. The Agricultural Bank which was created on October 16, 1907 (when the first Philippine Assembly was organized) for the purpose of extending loans to the planters for the development of their farms, aided only to a limited extent the progress of sugar production in the Islands. The $500,000 capital stock of the bank which was appropriated by the Philippine Legislature from the general fund was inadequate to fulfill the needs of the sugar producers. The bank lasted only 8 years, when its functions were transferred to the Philippine National Bank which was established by the Philippine Legislature in 1916. The purpose of this bank was to finance the domestic commerce and the development of natural resources. The sugar planters have been able to borrow from it to the extent of 50 per cent of the value of the land and improvements for the

purpose of erecting sugar centrals.(1) This bank has also loaned money to the sugar planters for cane production and for exportation of sugar, as well as for importation of fertilizers, etc. Lower interest rates have been charged by this bank than by the private banks or sugar merchants.

The bank financed the construction of six sugar centrals, partly through the sale of bonds during the boom period prior to 1920. During the depression of 1921 when losses were incurred, the centrals could not pay the principal and interest on the bonds or the bank loans. The bank placed them under its control through legal procedure for a few years and then turned them again to the Filipino companies when the latter were able to pay the farmer by installments.

The bank has aided materially in encouraging the Filipinos in their participation in the development of the sugar enterprise. The government's financial aid has been one of the most important factors in the rapid progress of the industry.

Educational Provisions

Philippine Bureau of Agriculture. The Bureau was organized under the Act of April 30, 1902 and has aided in collecting and purchasing sugar-cane seeds for experimental research and for distribution to sugar planters. It has also improved the varieties of sugar cane by careful selection and breeding.

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(1) Rafael R. Alunan, Now, The Past, Present, and Future of the Philippine Sugar Industry, Vol. 18, 4th Series, No. 49, Oct. 15, 1932, p. 12; George, Edwin B., Philippine Trade Financing and Exchange, Trade Information Bulletin No. 49, July 1926, p. 11; Commercial Handbook of the Philippine Islands, 1924, pp. 19-20.

The first chief of the Bureau of Agriculture visited New Orleans, Louisiana, and Charleston, South Carolina to select modern farm machinery used in cultivating sugar cane and rice. He procured a large consignment of general agricultural equipment.

In November 1902, the Philippine Government appropriated $25,000 to carry on the work at La Carlota in the western part of Negros Island. This experiment station's major project has been the growing of cane for experimental purposes as well as for production of points (puntas)[1] for distribution to planters. Alabang Stock Farm, Rizal Province, Luzon, has been used for producing cane for distribution. The plant at Singalong Experiment Station is employed mainly for quarantine work on cane diseases and for experimentation on varieties imported from abroad. The Lamao Horticultural Station is maintained for propagation work with seedling varieties. Experimental research was started in 1914 for the purpose of producing new varieties suited to Philippine conditions, resistance to drought, excessive water, insect attacks and cane diseases. The Bureau distributed about 37,300 points of different varieties to the farmers in 1918.[2]

Experts of the Bureau of Agriculture are conducting demonstration work to teach the sugar planters the value of scientific methods of sugar cane production, such as the selection of seeds for planting; methods of propagation; modern methods

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(1) Points or puntas is the white top of the sugar cane used for seed (20 to 25 centimeters).
Hernadez, Adriano, Sugar Central and Planters News, Vol. 1, No. 4, Oct. 1920, p. 25.

of preparation of land for planting; methods of planting, cultivating, harvesting and milling; the value of fertilizers and insecticides; use of modern machinery; modern manufacturing methods; and handling of locomotives for transportation of sugar cane and sugar products.

Agricultural Education. In 1919 a bill providing an appropriation for a miniature sugar central at the Agricultural College of the Philippine University was approved by the Philippine Legislature.(1) Since then Dr. Manuel L. Rozas,

Fig. 2. Miniature Sugar Central at the Agricultural College of the Philippine University

former Head of the Chemistry Department and now the Under-Secretary of Agriculture and Commerce, has offered courses for students majoring in sugar technology. These courses are part of the college curiculum, leading to a degree of Bachelor of Science in Sugar Technology. Students are trained in designing and laying-out drainage and irrigation canals and plots for experimental work on sugar plantations, and in the principles and practice of the analysis of sugar and its by-products. The students also study the problems of organizing and operating sugar centrals. Dr. N. B. Mendiola, Head of the Agro-

(1) Sugar Central and Planters News, Vol. 2, No. 3, Nov. 1919, p. 20.

nomy Department of the same college has offered courses dealing with sugar cane varieties, production practices, selection of natural or hybrid seedling adapted to the different cane regions of the Islands, and with other modern methods of propagation. The college has distributed a great number of high-yielding sugar cane points to sugar farmers. Many of the graduates of this college are holding responsible positions in sugar centrals. The technical and business training of students has materially aided the sugar industry of the Archipelago.

The Philippine Bureau of Science. The Bureau has aided the sugar planters in the control of those pests and diseases which were injurious to the sugar cane. The scientific research conducted by this bureau has caused the majority of farmers to plant the more resistant varieties of sugar cane which have also a high sucrose content.

CHAPTER III

DEVELOPMENT OF SUGAR PRODUCTION SINCE 1900

Growth and Localization of Cane Production

The two islands, Luzon and Negros have produced over 90 per cent of the sugar of the Philippines since 1900. Panay has averaged 6 per cent while the production of Mindoro, Mindanao, Palawan, Marinduque and Batanes Islands has been insignificant.

The area utilized in sugar cane production in the two islands, Luzon and Negros, during 1902-1903, averaged 444,270 acres. The acreage for the entire country was only 205,425 in 1910. This was increased to 640,275 in 1932. The average acreage under cane cultivation was 352,368 in 1910-1914, 560,199 in 1920-1924 and 635,357 in 1930-1932.

Luzon has led in land area devoted to sugar cane production since 1900. In 1919-1920 Luzon devoted 243,357 acres of land for the cultivation of cane or 1.6 times more than that of Negros Island (table 8). Of the total acreage (190,592 acres) under sugar production in Visayan Islands, the area occupied by Negros constituted 81 per cent. Panay Island used 23,725 acres while Mindoro Island produced only 4,980 acres of cane. In 1930-1931 the average acreage in sugar cane in Luzon Island reached 321,075 acres or 32 per cent more than in the Visayan group, which was expanded to 34 per cent until it averaged only 3 per cent less than that of Luzon Island. During the same period the cane acreage on Panay Island was more than

Table 8. Acreage of Sugar Cane, by Islands.(1)

Islands	1919-1920(1) average	1930-1931(2) average	1932(3)
Luzon Island	243,357	321,075	316,325
Visayan Islands	190,592	311,650	308,000
Negros Island	153,727	238,062	239,150
Panay Island	23,725	50,187	47,900
Others	13,138	23,401	20,950
Mindoro Island	4,980	7,212	6,325
Mindanao Island	2,457	2,312	2,100
Palawan Island	122	-	75
Marinduque	97	637	525
Batanes Island	80	200	125
Total	441,685	643,086	635,775

(1) Hines, Cleve W., Economic Resources and Development of the Philippine Islands, Manila 1920, p. 53.

(2) Philippine Department of Agriculture and Natural Resources, Annual Report, Manila, Dec. 31, pp. 217-218.

(3) Philippine Department of Agriculture and Commerce, Statistical Handbook of the Philippine Islands, Manila, First Number, 1933, pp. 41-43.

doubled.

In 1932, the area on all of the islands except Negros was slightly lower than in 1931.

In 1902-1903 the production on Luzon and Negros Islands averaged 198,654 short tons. The output of the entire Philippines declined during the next few years since the total production was only 130,048 short tons in 1910. Production was steadily increased to 1,279,040 in 1932-1933. (Table 28,p.101a) The average production was 201,278 short tons in 1910-1914, 322,360 in 1920-1924 and 1,030,966 in 1930-1933.

Sugar production was most advanced on Negros Island in 1902-1903 since this island had 40 per cent of the cane area and produced 52 per cent of the sugar, while Luzon contained 50 per cent of the area and produced 38 per cent of the sugar. Negros even during the Spanish regime, received financial aid from foreign investors who introduced better equipment and methods of production and manufacture of the muscovado sugar.

In 1932 Luzon Island produced 402,557 short tons of 96° centrifugal and panocha(1) sugars while Negros Island produced 661,208 tons on a 24 per cent smaller acreage, indicating higher yield which were partly due to the more advanced development of sugar production on the latter island. The production of Negros Island constituted over 87 per cent of the total output of the Visayan group both of centrifugal and panocha sugars, and over 56 per cent of the entire production of the Philippines.(2)

(1) Panocha is a low grade sugar prepared in the form of cake molded in half shells of coconuts. The size varies from 1 to 2 pounds and is consumed generally throughout the Archipelago.

(2) Stine, Dr. O. C., U.S.D.A.-Bu. of Agr. Econ., 1934 (arranged).

Place of Sugar Cane Production in Philippine Agriculture.

Area Devoted to Sugar Cane and other Principal Crops.

Rice and corn are the two important food products of the Philippine Islands, while sugar, coconut, abaca, tobacco, maguey, coffee, and cocoa are the leading cash crops.

The total area devoted to the cultivation of these nine principal crops was expanded from an average of 5,933,747 acres in 1910-1914 to 9,259,902 in 1930-1931 or 56 per cent, while the area in sugar cane increased 78 per cent during the same period. (Tables 9 and 10, Fig. 3)

Sugar occupied 6 per cent in 1910-1914, 7.66 per cent in 1925-1929 and 7 per cent in 1930-1931 of the total acreage of the nine principal crops.

The area in rice has constituted from 44 to 49 per cent of the total acreage devoted to the nine crops since 1900. The average was increased from 2,186,238 in 1910-1914 to 4,413,500 in 1930-1932. The acreage under coconuts was increased steadily from 9 to 15 per cent, the area in corn was slightly decreased from 16 to 15 per cent, while the acreage in abaca was decreased from 17.8 to 12.7 per cent of the total area during the same period. The other principal crops have used an insignificant proportion of the total acreage.

The area planted to sugar cane was increased steadily as a result of the favorable legislation of the American Congress and the Insular Government, improvement in yield and the assured market in the United States.

The area in rice has been increased to meet the demand of a growing country although a small proportion has been exported

Table 9. Average Annual Acreage of Sugar Cane and Other Principal Crops.[1]

Years	Sugar (acres)	Abaca (acres)	Coconuts (acres)	Tobacco (acres)	Maguey (acres)	Rice (acres)	Cocoa (acres)	Coffee (acres)	Corn (acres)	Total (acres)
1910-1914	352,368	1,046,184	529,795	152,924	29,722	2,816,238	2,870	2,062	1,001,584	5,933,747
1915-1919	466,580	1,176,029	765,695	160,809	67,777	2,959,876	2,744	1,919	1,603,685	7,206,114
1920-1924	560,199	1,285,173	1,075,161	192,062	72,405	3,863,142	3,124	2,312	1,235,190	8,288,768
1925-1929	601,851	1,200,759	1,254,403	194,213	86,214	4,385,709	3,649	2,645	1,328,986	9,058,429
1930-1931	629,228	1,176,000	1,395,000	188,500	90,000	4,413,500	4,038	3,136	1,360,500	9,259,902

(1) Phil. Bureau of Commerce and Industry, Statistical Bulletin No. 1, Ibid., 1918, pp. 51-53; U. S. Philippine Tariff and Trade Relations, Report No. 18, 1931, p. 101; Stine, O. E., Compiled from Annual Report of Department of Agriculture and Natural Resources, Dec. 31, 1932.

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Table 10. Per Cent of the Acreage Devoted to Sugar Cane Production in Relation with Other Principal Crops of the Philippines.(1)

Years	Sugar (per cent)	Abaca (per cent)	Coconuts (per cent)	Tobacco (per cent)	Maguey (per cent)	Rice (per cent)	Cocoa (per cent)	Coffee (per cent)	Corn (per cent)
1910-1914	6.00	17.80	8.80	2.40	0.56	47.62	0.0360	0.03	16
1915-1919	7.00	17.20	11.00	2.20	0.86	45.20	0.0032	0.02	16
1920-1924	6.40	15.00	12.60	2.40	0.10	47.60	0.0030	0.02	15
1925-1929	6.60	13.20	13.80	2.00	0.10	48.60	0.0034	0.02	15
1930-1931	7.00	12.70	15.00	2.00	0.10	47.65	0.0400	0.03	15

(1) Phil. Bureau of Commerce and Industry, Statistical Bulletin No. 1, Ibid., 1918, pp. 51-53; U. S. Philippine Tariff and Trade Relations, Report No. 18, 1931, p. 101; Stine, O. E., Compiled from Annual Report of Department of Agriculture and Natural Resources, Dec. 31, 1932.

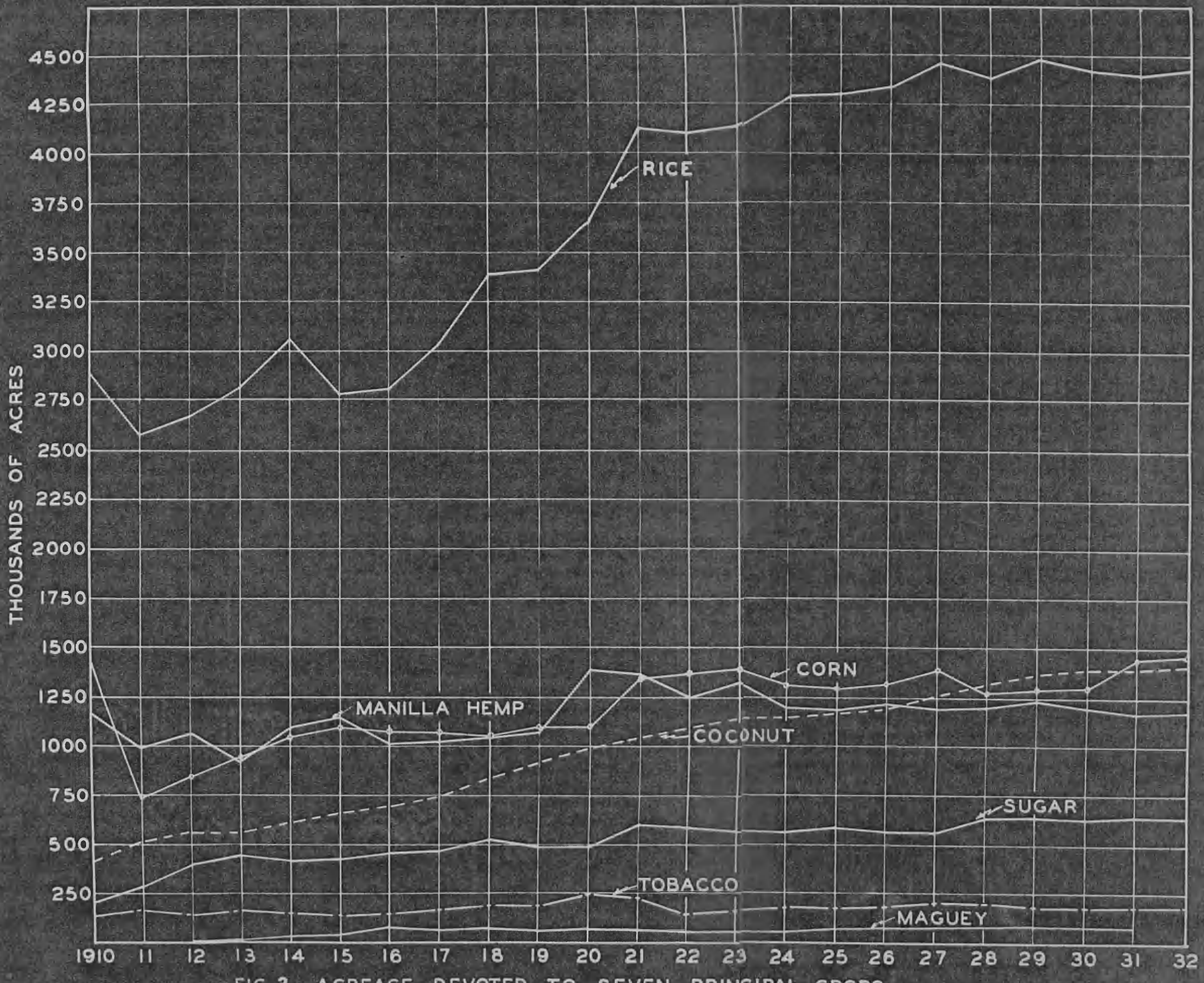

FIG. 3. ACREAGE DEVOTED TO SEVEN PRINCIPAL CROPS

recently. The area in coconuts was expanded quite rapidly due to the fact that both small and large scale farmers were encouraged to plant this crop to meet the expanding demand of the United States markets which has taken approximately 90 per cent of the coconut products.

The acreage in sugar cane has remained relatively constant since 1928. In fact, during the five years 1928-1932, the total area in the nine principal crops did not vary materially.

Farm Value of Sugar and Other Principal Crops. The annual value of sugar to farmers constituted $12,041,501 or 14 per cent of the average amount of $74,491,419 received for the nine principal crops of the Islands in 1910-1914 (tables 11 and 12). The value of sugar increased to $50,918,308 or to 22 per cent of the total value in 1920-1924. The total value of the nine important crops averaged $242,896,845 in 1925-1929 while the annual value of sugar was $53,930,206. The average total value of the nine crops declined to $141,019,672 in 1930-1931, yet the annual value of sugar rose to $57,762,280. The gross income from sugar was 379 per cent more in 1930-1931 than in 1910-1914, while the area devoted to sugar production was only 78 per cent greater in the latter period.

With the exception of rice, the farm value of sugar has been the highest of the nine leading crops since 1919. Sugar has increased steadily in value since 1910 except during the war time inflation when it rose very rapidly, and during the deflation of 1920-1922 when it fell drastically and in 1926 when there was s short crop. (See Figure 4.)

The value of sugar remained high during the first three

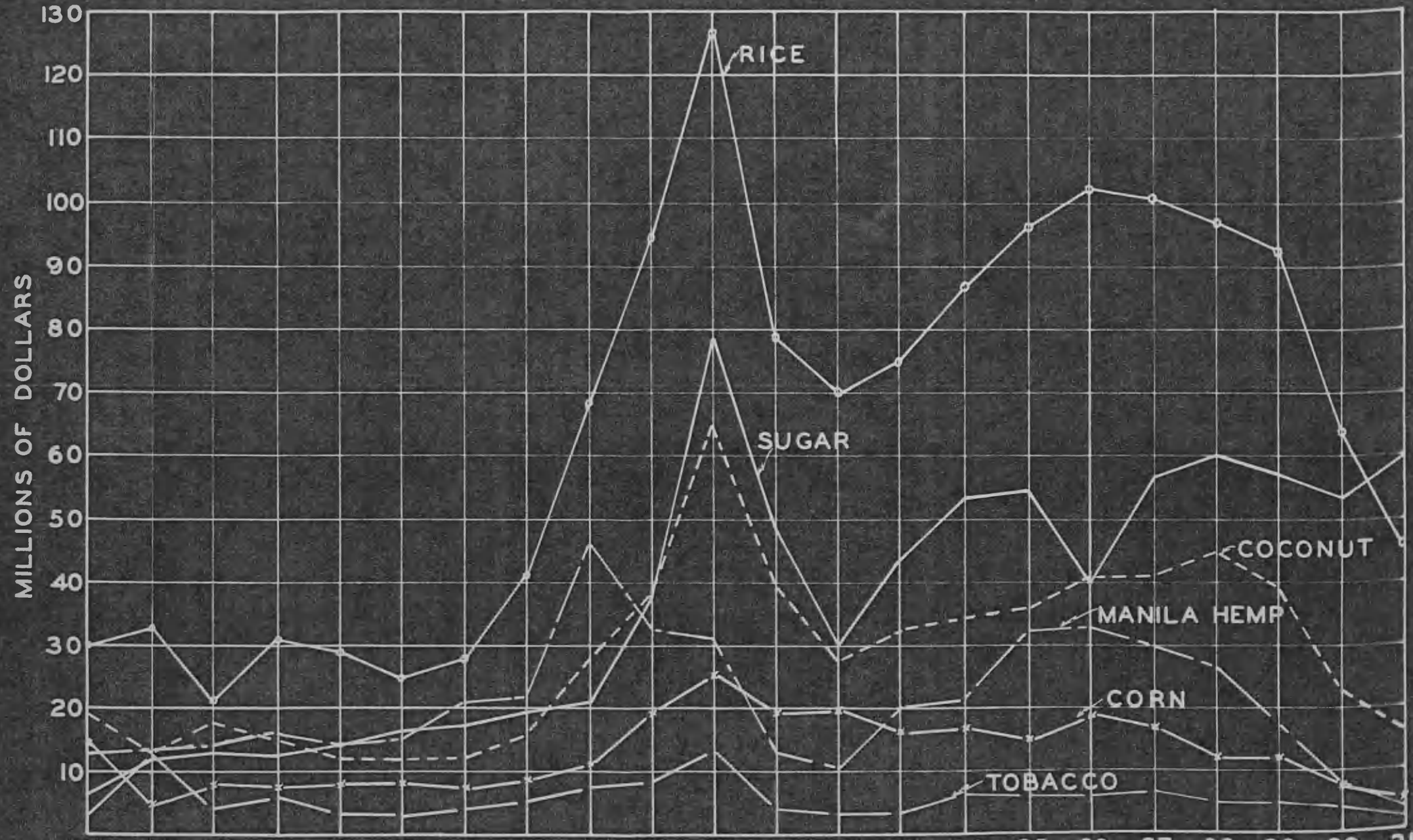

FIG. 4. COMPARISON OF FARM VALUES OF PRINCIPAL PRODUCTS

Table 11. Average Annual Value of Sugar Cane and Other Principal Agricultural Products.(1)

Years	Sugar (dollars)	Abaca (dollars)	Coconuts (dollars)	Tobacco (dollars)	Maguey (dollars)	Rice (dollars)	Cocoa (dollars)	Coffee (dollars)	Corn (dollars)	Total (dollars)
1910-1914	12,041,501	14,544,597	15,631,687	4,098,486	314,455	18,795,725	90,160	76,993	8,897,815	74,491,419
1915-1919	22,167,293	27,428,545	19,284,042	5,663,188	1,074,723	51,028,758	212,226	194,582	10,656,650	137,515,725
1920-1924	50,918,308	19,231,067	39,215,769	5,988,361	1,282,460	87,411,639	578,890	445,939	19,391,599	224,464,032
1925-1929	53,930,206	28,181,387	40,155,932	5,681,581	2,074,927	97,627,110	587,010	438,790	15,219,902	242,896,845
1930-1932	57,762,280	5,196,535	18,262,375	2,853,450	221,323	49,826,250	523,133	346,395	6,028,068	141,019,678

(1) Philippine Bureau of Commerce and Industry, Bulletin of Agriculture, 1918, pp. 51-53; U. S. Philippine Tariff and Trade Relations, Report No. 18, 1931, p. 101; Stine, O. E., Division of Statistical and Historical Research, Compiled from Annual Report of Department of Agriculture and Natural Resources, Dec. 31, 1932.

Table 12. Per Cent of the Value in Sugar Cane Production in Relation with Other Principal Crops of the Philippines.(1)

Years	Sugar (per cent)	Abaca (per cent)	Coconuts (per cent)	Tobacco (per cent)	Maguey (per cent)	Rice (per cent)	Cocoa (per cent)	Coffee (per cent)	Corn (per cent)
1910-1914	14	17	19	5	0.5	34	0.1	0.1	11
1915-1919	17	20	15	4	1.0	25	0.1	0.1	8
1920-1924	22	8	18	3	1.0	40	0.2	0.1	9
1925-1929	22	12	17	2	1.0	40	0.2	0.1	6
1930-1931	41	3.7	13	2	0.2	35.3	0.4	0.2	4.2

(1) Philippine Bureau of Commerce and Industry, Bulletin of Agriculture, 1918, pp. 51-53; U. S. Philippine Tariff and Trade Relations, Report No. 18, 1931, p. 101; Stine, O. E., Division of Statistical and Historical Research, Compiled from Annual Report of Department of Agriculture and Natural Resources, Dec. 31, 1932.

years of the depression because of unusually high yields and heavy production, and because prices were protected by the tariff in the United States market as explained later.

Sugar has become by far the most important cash crop of the Islands and constituted 61 per cent of the value of all exports in 1931.

Chapter IV

PRODUCTION OF SUGAR CANE

Sugar Land Tenure System

In Cuba about 75 per cent of the cane is grown by small farmers or colonos who produce the crop under contract with the central, and the remainder of the cane is produced under the administration of the centrals. The Hawaiian and Javan cane is produced by the centrals. In the Philippines the sugar cane is produced under the administration, tenancy, agency and small farm systems, the first two being by far the most important.

Administration System. Under this system, the owners of the centrals directly supervise all of the processes of production such as the care of the land, harvesting and transportation of cane to the mills. The management employs the laborers and consequently no settlement is made with any agents or laborers until after harvest. The costs are usually separated between the plantations and the mills in order to determine the gain from each.(1) The centrals may own or lease the farm land which they operate.(2)

The centrals employ a technical staff, permanent laborers and seasonal laborers. The technical staff consists of chemists, agronomists, engineers and farm superintendents who

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(1) Pratt, Edward Ewing, International Trade in Staple Commodities, McGraw-Hill Book Company, New York, 1928, p. 288.
(2) Ellsworth, John Orval, Thesis, Sugar Marketing, Cornell University, 1926, p. 44.

who are usually stationed at the centrals. Graduates of the Philippine University and other higher educational institutions occupy many of these positions. The sugar centrals send their technical men to the haciendas[1] which are associated with them through milling contracts to study the production problems and to give advice concerning production and harvesting practices.

Some haciendas which do not have contracts with the centrals obtain the services of the technical men either by direct hiring or through planters' associations which own the centrals, or from the Bureau of Research of the Philippine Sugar Association.

The permanent laborers employed by the sugar centrals include practical mechanics, shopmen, clerks, office help, etc. This group on the haciendas are primarily composed of the subtenants ("aparceros" or "casama") who operate other land on shares. Some of these permanent laborers are also employed in the production of other crops during the slack seasons of planting and harvesting sugar cane. The permanent laborers on some of the plantations also take care of dairy, poultry and working animals. The additional enterprises keep the laborers busy a longer period during the year.

The seasonal laborers are recruited at the time of harvesting and planting. The sugar planters in Luzon Island obtain seasonal laborers from the province of Ilocos Sur, Ilocos Norte,

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(1) Haciendas are large estates. Some of these were formerly Friars Lands belonging to the Spanish religious corporations and some were owned by wealthy Spanish individuals during the Spanish regime. They were acquired by the Philippine Government in 1903 and offered for sale to the public as previously discussed.

La Union, Pangasinan, Zambales and Bantangas. Negros Island alone requires 20,000 seasonal laborers for approximately 130 working days for harvesting the average annual production of 2,500,000 tons of cane. These laborers are recruited from Cebu Island, Antique Province on Panay Island, and other neighboring islands. Sugar plantations on Mindoro Island obtain laborers from Capiz on Panay Island and from Pampanga on Luzon Island. The seasonal labor requirements for rice do not conflict with the peak demands for sugar cane production. Consequently the Ilocano laberers who are employed in rice production move to Pampanga, Laguna, and other sugar provinces of the Islands during the planting and harvesting season.

The administration system has been the best among the ones existing because it has obtained a higher degree of efficiency in the production and manufacture of sugar. This system quickly applies any new improvements in production methods. In general under the administration system there has been developed a satisfactory contract for both the laborers and the centrals and there has been provided a fair wage scale, sanitary lodging and cheap medical care for laborers. However there is considerable difference in the treatment of laborers and in the efficiency of the centrals.

Tenancy or Casama System. The tenant operates under the terms of a cash or share lease with the owner of the sugar plantation. The amount of the share lease paid by the tenant generally ranges from 15 to 20 per cent of the value of the sugar.(1)

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(1) Pugh, H. A., Resources and Trade of the Philippine Islands, United States Dept. of Commerce, Bureau of Foreign and Domestic Commerce, Bul. No. 410, 1926, p. 6.

The lease is usually for a period of five years. If a sugar plantation is rented on a share basis, the landowner furnishes the land and the seeds while the tenant provides the working animals and implements. The landowner often advances money to provide the necessities for the tenant and for his family. This advance is later deducted from the tenant's share of the crop. The tenant prepares the land, plants the cane seeds and cultivates the growing cane plants. The landowner hires laborers to harvest the cane while the tenant provides only his own labor during harvest. The agreement usually permits the tenant to conduct other small enterprises such as growing feed crops, vegetables and poultry.

Some of the progressive central plantations are operated under a combination of the administration and tenant systems. The land is rented to the tenant who owns the working animals although they may borrow money from the sugar central in order to purchase them. If any additional funds are advanced to the tenant the amount is based on the preliminary estimate of the tonnage to be harvested after the cane begins to develop. The tenant is under the guidance of the central. The cost of harvesting, loading on the cars and transportation are to be borne by the landowner which is usually a central. The share received by the tenant depends on the legal contract with the central. The weight of the cane reported by the central where the cane is milled is the basis of payment.

Some plantations pay the tenants a certain amount for the farm work on sugar cane. If the tonnage raised is above the standard fixed by the contract he receives additional compensation. This "bonus" which is a real incentive to the tenant to

increase the yield is an improvement in the tenant system.(1)

The passage of the Philippine Senate Bill No. 388 on December 7, 1933 has improved the position of the tenants. The law requires the landlords to furnish the tenants with receipts, documents and other necessary papers in connection with the quantity of cane which the landlords take to the centrals for milling.

The advantage of the tenancy is that it provides labor, tenants and working animals for the sugar plantations of the landowners who have limited financial means. Its chief limitation is that many tenants do not want to make changes in the methods of preparing land, of selecting and preparing seeds of cane, of planting the seeds, cultivation, application of fertilizer and crop rotation. This is because the tenants have been accustomed to less progressive methods for years.

Agent System. Under this system the agent who recruits the necessary number of laborers frequently advances from $25 to $30 per worker for the transportation and subsistence of the workers and their families. The agents' remuneration is based on a straight wage or on a percentage of wages paid his workers.(2)

Labor conditions are not usually satisfactory under the agent system. The agent often replaces superior workers with relatives or friends which tends to destroy the morale and reduce the supply of the laborers. The agent frequently knows

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(1) L. R. Onrubia, Labor on Luzon Island, Sugar Central and Planters News, Vol. 6, No. 1, Jan. 1925, pp. 20-25; Jose Generoso, Sugar News, Manila, Vol. 15, No. 1, Jan. 1934, p. 52.

(2) Handbook of the Philippine Sugar Industry, 1929, p. 15; Facts and Statistics about the Philippine Sugar Industry, 1928, pp. 50-51; Onrubia, L. R., Labor on Luzon Island, Sugar Central and Planters News, Jan. 1925, Vol.6,No. 1 pp. 20-25.

but little about the work. The growers have suffered annual losses which ranged from 15 to 20 per cent of the money advanced because the laborers failed to fulfill their agreements. According to President Rafael R. Alunan of the Philippine Sugar Association, the losses of planters in Negros alone for advances to laborers who did not complete their contracts is $100,000 annually. The government provides no means for getting redress. The labor problem in the Islands is not a shortage of available man power, but is one traceable to the lack of efficient supervision and a failure to understand the needs and disposition of the potential man power in different sections of the country.

Small Farm System. The small sugar planters who own and operate their own farms produce a minor part of the sugar cane. They use labor existing in the communities. They do not usually make any contracts with the sugar centrals. The financing of of production is wholly dependent upon their own means, only a few of them getting financial aid from the Philippine National Banks. They manufacture the cane in their farm mills into low muscovado sugar and panocha. Panocha is commonly sold locally. These small farmers sell the muscovado sugar to the small merchants or to the centrals which convert it into higher grades.

The small farm system is uneconomical in producing and manufacturing sugar. It has not provided a satisfactory wage scale, living conditions for workers, or income for the farmers. It has been very slow in adopting the new improvements. (The low grade muscovado sugar is produced by the small farmers at their farm mills.)

Cane Production in the Farm Program

During the Spanish rule and the early period of the American occupation of the Islands the sugar planters and other farmers commonly produced only a single cash crop. Although the Bureau of Agriculture, Bureau of Science and College of Agriculture of the Philippine University demonstrated the value of diversified farming and crop rotation, it was not until recently that these practices were adopted by more than a very few of the sugar producers and small farmers. The government institutions have shown the value of diversified production in reducing risks of farming and the value of crop rotation in preserving soil fertility, eradication of weeds, keeping labor busy throughout the year, and in stabilizing the farm income.

In the provinces of Batangas, Pampanga, and Rizal (Luzon Island) several of the sugar planters have diversified their production and rotated their crops in recent years. The curtailment of production in the Islands due to the limitation of Philippine sugar to be exported to the United States under the import quota system of 1934 is tending to cause many sugar planters in Luzon and the Visayan Islands to diversify their production. Coconuts, coffee, cotton, rice, cassava, mungo, soy beans, string beans and other quick growing crops are being planted. They are also establishing dairy and poultry enterprises on the plantations.(1) The plantations are also

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(1) Sugar News, Manila, Vol. 15, No. 3, Mar. 1934. p. 169, 177; Ibid, Vol. 15, No. 3, Mar. 1934, p. 45.

attempting to supply more of the food for home consumption.

The diversification of agriculture should tend to stabilize and raise the farm income, make it easier to pay the interest and principal of loans, provide steadier employment and higher wages for laborers and raise the standard of living in the agricultural districts. The increased output resulting from the fact that the farm people are kept busy for a longer period on the larger number of farm enterprises should also result in a greater demand for manufactured goods.

Methods of Production

Preparation of the Land. The sugar planters of the Philippines during the Spanish regime used the old-style wooden plow (cast iron point and share) and bamboo harrow in the preparation of the soil for planting (Fig. 5). There are still a few

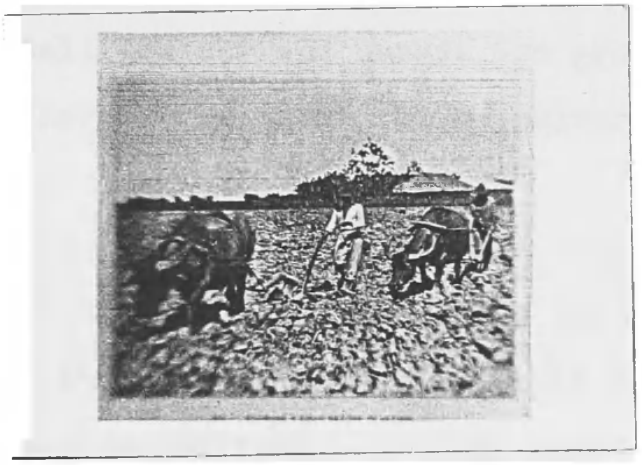

Fig. 5. Preparing land for planting.
(carabas and wooden plow)

plantations employing native wooden plows because of their simplicity, cheapness and lightness in draft. The wooden and bamboo implements do not last long and are easily destroyed causing delay in farm operations. The wooden plows do not penetrate the soil deep enough for good production. They are

especially uneconomical for large scare production. They are still commonly used by small farmers.

Under the American administration modern equipment has been introduced to save time and labor, and to efficiently prepare the soil (Fig. 6). The moulboard plows which are fitted with

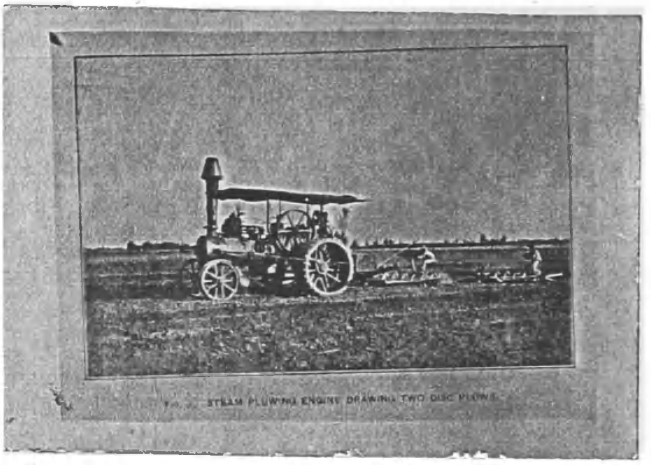

Fig. 6. Steam plowing engine drawing two disc plows.

revolving coulters and the disc plows are used for the first plowing when tall grasses and bushes are growing. The disc plow and disc harrow are then used to pulverize the soil and level the land.

The second or cross plowing which is done by cable plow, if available, is deeper in order to aid the sugar cane roots in penetrating the soil in search of plant food and moisture. The soil is again pulverized. A small plow drawn by an animal or a small tractor serves for the third plowing and harrowing because the land is loose and level after the second plowing. When the land is ready for planting it is laid out in rows preliminary to receiving the seeds.(1)

(1) Asuncion, Sivestre The growing of Sugar Cane in the Philippines, Dept. of Agriculture and Natural Resources, Bureau of Agriculture, Manila, Cir. No. 167, 1925, pp. 1-2; Hines, Cleve W., Cane Production and Sugar Manufacture in the Philippine Islands, Bureau of Agriculture, Bul. 33, 1919, pp. 78-79.

Animal power is used to produce a greater proportion of sugar cane because of the cheapness of labor. Many of the tenants and landowners could not afford to purchase the expensive tractors. The large plantations and sugar centrals use tractors.

Preparation of the Seeds. The white tops of the cane from 20 to 25 centimeters long are generally used for seeds. These points are usually cut off while the canes are still standing in the fields, although the tops may be removed after the cane is cut. Strong and vigorous buds are selected in order to insure good germination. Healthy seeds are more resistant to the attack of diseases and insect pests.

The women and children who do most of the work in the preparation of cane seeds work under contract at so much per 10,000 tops ("lacsa"). The leaf sheaths on the tops which have been cut by the laborers at harvesting are removed by hand and the points are tied into bundles of convenient size. The points (puntas) are loaded into carabao carts, wagons or rail cars and taken to streams or tanks to soak for 1 to 3 days before planting in order to promote rapid development of the buds. This insured growth in the unirrigated field and allows the seeds to get a start on the weeds. The points are taken rapidly to the field prepared for planting to prevent them from drying out. The points are not soaked if the plantation is irrigated. The planting season is from December to April.(1)

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(1) Walker, Herbert S., The Sugar Industry in the Island of Negros, Handbook on the Sugar Industry of the Philippine Islands, 1912, p. 83.

Methods of Planting Sugar Cane. The wooden plows which are used for making furrows are run either once or twice in the same furrow. The most common method of planting is to place the cane tops in a slanting position in a furrow 40 centimeters apart and one meter between the rows.(Fig. 7) Nearly 10,000

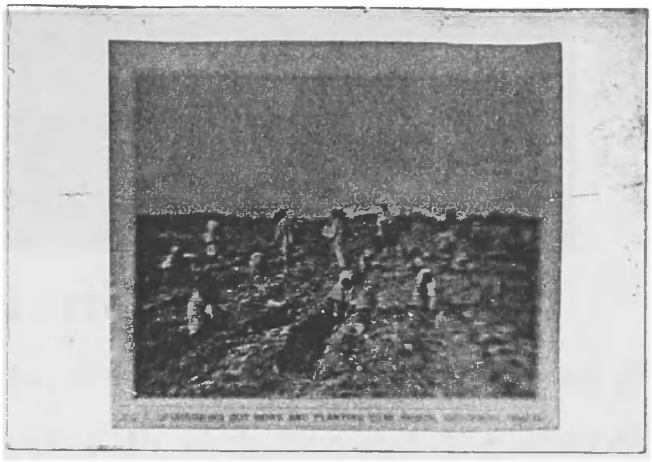

Fig. 7. Planting Cane in the Rows

seeds are planted per acre. The points which are packed with loose soil extend a few centimeters above the surface.

The square method of planting cane where two points are set together is also used. This system requires approximately 8,000 cane points to the acre. The growth of weeds can be prevented by cross plowing without danger of injuring the young plants, while planting in rows permits subsequent plowing in only one direction. However the square method permits fewer canes which requires greater expense for plowing because there is more space to be kept free from weeds, and a longer time must elapse before the shade of the cane retards the growth of weeds.

Cultivation of Sugar Cane. Wooden plows are more often employed in the cultivation of sugar cane on small farms while disc implements and five tooth cultivators are commonly used on large plantations. When the young sugar cane plants are

30 to 40 centimeters high, four or five weeks after planting, the first plowing is done. It consists of running furrows

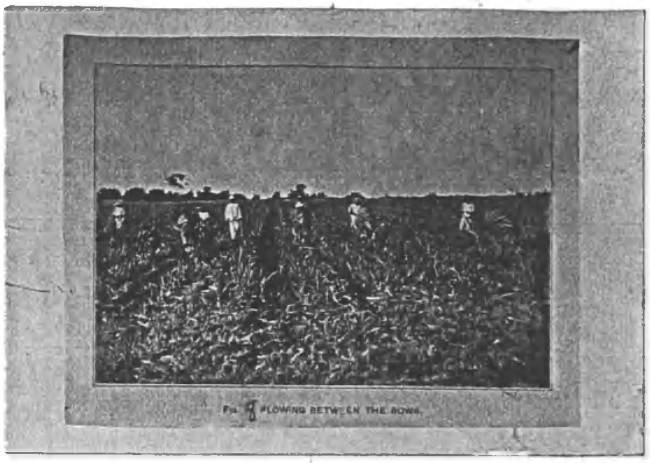

Fig. 8. Plowing between the rows.

between the rows. One or two weeks later the plow is run close along the cane in each row and the dirt is thrown away from the cane and towards the middle of the row. Care is exercised not to disturb the large brace roots. The third operation is to clear the plants of weeds by means of hoes. Another immediate cultuvation covers most of the small weeds which remain. These operations are repeated until the cane plants reach the size where there is danger of breaking them down by animals when they pass between the rows. In the last cultivation as much earth as possible is thrown up around the canes to strengthen and to enable them to resist storms better than they could under flat cultivation method. The furrow between the rows serves as a drainage ditch to remove the excess of water that might injure plant growth.

Application of Fertilizer. Some sugar producers believe in three applications of fertilizers. The first is applied at the time of planting, the second is made when the plants are one half of a meter in height, and the third just previous to

the rainy season. The fertilizers are mixed well with the earth through cultivation before irrigation water is applied in order to prevent them from being washed away.(1) The quantity and kinds of fertilizer vary on the plantations depending on the nature of the soil fertility. Nitrogen, phosphorous and potassium are the three elements commonly applied. There has been a great need for the use of fertilizer on the sugar plantations because many of the producers grow cane on the same land year after year. This system of production has resulted in the exhaustion of some important elements of the soil necessary for plant growth. A proper crop rotation would tend to preserve the soil fertility.

Cultivation of the Ratoon. In Negros Island and other fertile sugar producing sections, the sugar fields are allowed to ratoon from two to four crops. This is especially true in the rich soils of Ilog-Cabancalan, Binalbagan-Isabela, San Carlos and Bais. Ratooning is also practiced in areas which are overflowed by mountain streams since the silt which is deposited serves as fertilizer.(2)

The trash and leaves are burned after harvesting to facilitate cultivation. Water is immediately supplied where irrigation is practiced, to hasten sprouting. The plow is run close to the plant to loosen the dirt and to cut the old roots in order to stimulate its growth.

Ratooning saves time and reduces the labor and other

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(1) Silvestre Asuncion, Ibid., pp. 1-2
(2) Ratoon is a term applied to the second or latter year's growth from the original plantings. Silvestre Asuncion Ibid., pp. 1-2; Herbert S. Walker, Ibid, pp. 85-86.

costs but the yield is always less than that of the planted cane.

Harvesting. During the Spanish domination of the Islands, the sugar producers did not possess the scientific method of analyzing cane juice to determine its maximum sucrose and minimum glucose contents in order to know the proper time of harvesting the cane. They harvested the cane whenever they thought it was ready and when labor was available. Labor was one of the most limiting factors during early periods. Under the American administration the sugar centrals have their chemists to make tests of the sugar contents of the juice in order to determine the right time to harvest the canes.

The "bolo", a knife from 40 to 50 centimeters in length with a blade from 8 to 12 centimeters at its broadest point and with a hook at the top, is used for stripping and cutting the cane. Each laborer is assigned a row of cane from which the leaves are removed and the stalks are cut. The points which are for seeds are thrown in one pile and the cane stalks which are for milling in another. During the early times the canes were left for so many hours or days exposed to heat and moisture that rapid deterioration of the sucrose contents of the canes resulted. In recent years efficient transportation facilities convey the cut cane as soon as possible to the sugar central.

An experiment conducted in Pampanga Province, Luzon Island using the Pampanga Red variety in 1923 showed that the deterioration of topped cane after it had stood for four days before cutting and milling was 93 pounds of sugar per ton of

cane. The cut cane which was allowed to lie in the sun in an open field deteriorated more than that in the shade of bamboo and grass.(1)

Transportation of Cane to Mills. The "paragos", a sled made of wood and bamboo frames without wheels and pulled by carabao was commonly used during the Spanish time (F.S. 9.). The prim-

Fig. 9. Crude and inefficient method of transportating sugar cane.

itive two-wheeled carabao cart, the light four wheeled wagons having a capacity of about two tons of canes and drawn by two animals, and the portable tramways were also used for transportation of canes from the fields to the sugar mills.(2)

Under the American administration some of the old methods of transporting canes are used by the smaller plantations. The sugar centrals have employed more efficient methods of transportation of canes by the tramways and railroads to reduce the

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(1) Experiment was conducted under the direction of the Investigation Staff of the Bureau of Science, Philippine sugar Centrals Agency, San Carlos Milling Co., North Negros Sugar Co., Victorias Milling Co., and Hawaiian-Philippine Co. The International Sugar Journal, Vol. 25, No. 292, April 1923, pp. 212-213.

(2) Walker, Herbert S., The Sugar Industry in the Island of Negros, Handbook on the Sugar Industry of the Philippine Islands, 1912, pp. 91-92.

deterioration in the sucrose contents. The loading and unloading is done by hand.

Cost of Production and Yield

Cost of Production. The average cost of producing sugar cane in the Philippines on seven haciendas in 1924-25 was $89.28 per acre while in 1930-32 the cost was $59.46 per acre on 30 centrals (tables 13 and 14). The differences in the cost in the two studies was due to the selection of cases studied, the items included and the price level which was higher in 1924-25 than in 1930-32.(1)

Labor was by far the largest cost item, constituting the major proportion of several of the important expenses such as cultivation and harvesting. The costs of preparing and cultivating the land amounted to $17.80 per acre in the 1924-1925 studies and to $12.78 in the 1930-32 studies. Harvesting costs were only slightly less in each study. Fertilizer cost was $14.30 per acre on the seven haciendas but only 80 cents on

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(1) It was impossible to draw definite conclusions or to make comparisons between many cost items because of inadequate explanations and of differences in classification of the items included. The cost of cultivation in the 1930-32 study probably included the same items as the cost of preparing land, planting, and cultivation in the 1924-25 study. The costs of administration and of depreciation of buildings and equipment were not included in the study of the 30 centrals. Rent on the haciendas and miscellaneous rentals reported in 1924-25 probably should be combined. Interest may refer to cash payments only or to interest on the entire investments in 1924-25. If bad debts were due to advances to labor this item should be a labor cost and if due to a loss on the sale of sugar it should be deducted from the price of sugar. The cost of seed was not reported. Taxes were not reported for the seven haciendas and the items included in development cost for the 30 centrals were not explained. In general the study conducted by the U. S. Tariff Commission on cost of the Philippine sugar production is more satisfactory than the other report because it is a larger sample and is a longer and more recent period.

Table 13. Cost of Producing Cane per Acre, 1924-25.[1]

Items	Average cost per acre (dollars)
Land preparation, planting, cultivation	17.80
Harvesting	17.40
Administration	8.10
Supervision	5.20
Repair of building and equipment	2.00
Care of animals	2.10
Total labor cost	52.60
Fertilizer	14.30
Rent of hacienda	2.80
Planters association	1.70
Miscellaneous rental	1.70
Interest	5.07
Depreciation of animals	4.77
Depreciation of buildings	5.31
Bad debts	.50
Total	36.24
Total production cost	88.84
Cost per pound	.01424

(1) Carlos Locsin, Graph for Estimating Costs, Facts and Statistics about the Philippine Sugar Industry, Sugar News Press, Manilla, 1928, Table A.

Table 14. Cost of Producing Cane per Acre, 1930-32.[1]

Cost items	Cost per acre 1930-31 (dollars)	Cost per acre 1931-32 (dollars)	Average cost per acre 1930-32 (dollars)
Cultivation	12.71	12.85	12.78
Irrigation	10.98	11.71	11.345
Harvesting	11.86	14.69	13.275
Supervision	5.63	6.08	5.855
Taxes	.10	.10	.10
Fertilizer	.80	.81	.805
Development	1.75	2.25	2.00
Other	7.59	6.85	7.22
Imputed interest at 6 per cent	5.94	6.22	6.08
Total cost	57.36	61.56	59.465
Cost per pound	1.46 cents	1.18 cents	1.32 cents

(1) U. S. Tariff Commission, Report to the President on Sugar, No. 73, Second Series, 1934, p. 126-127.

the 30 centrals. Irrigation water cost $11.35 per acre on the centrals but was not used on the haciendas. These two items tend to offset each other since the fertilizer included in the irrigation water probably served the same purpose as the fertilizers applied on the unirrigated land. Administration expenses were not pro-rated to the land by the centrals but amounted to $8.10 per acre on the haciendas. The cost of supervision was over $5 per acre in each study.

The other cost items were of minor importance. The low cost of the planter's association used by the haciendas was many times compensated by the benefits the sugar planters received from the association such as improving the methods of production and marketing sugar.

The average cost of producing sugar on a pound basis was $1.42 cents in 1924-25 and 1.32 cents in 1930-32. The greater the output of sugar per acre the lower was the cost of production a pound. Of the seven haciendas the one which produced the greatest yield of 8,120 pounds per acre in 1924-25 had the lowest cost per pound or 1.11 cents (table 15). The hacienda which had the lowest yield of 4,872 pounds had near to the highest cost a pound or 1.51 cents. In 1930-31 the output of the 30 centrals averaged 3,875 pounds per acre and cost 1.46 cents per pound while the higher yield of 5,156 pounds in 1931-32 cost only 1.18 cents a pound.

Yield of Cane Sugar. The yield per acre of Philippine sugar increased steadily from an average of 1,326 pounds in 1912 to 3,704 in 1932 or from an average of 1,674 pounds in 1910-14 to 3,001 in 1929-32 (Fig. 10). The increase in the yield indicates that the expansion has not taken place on

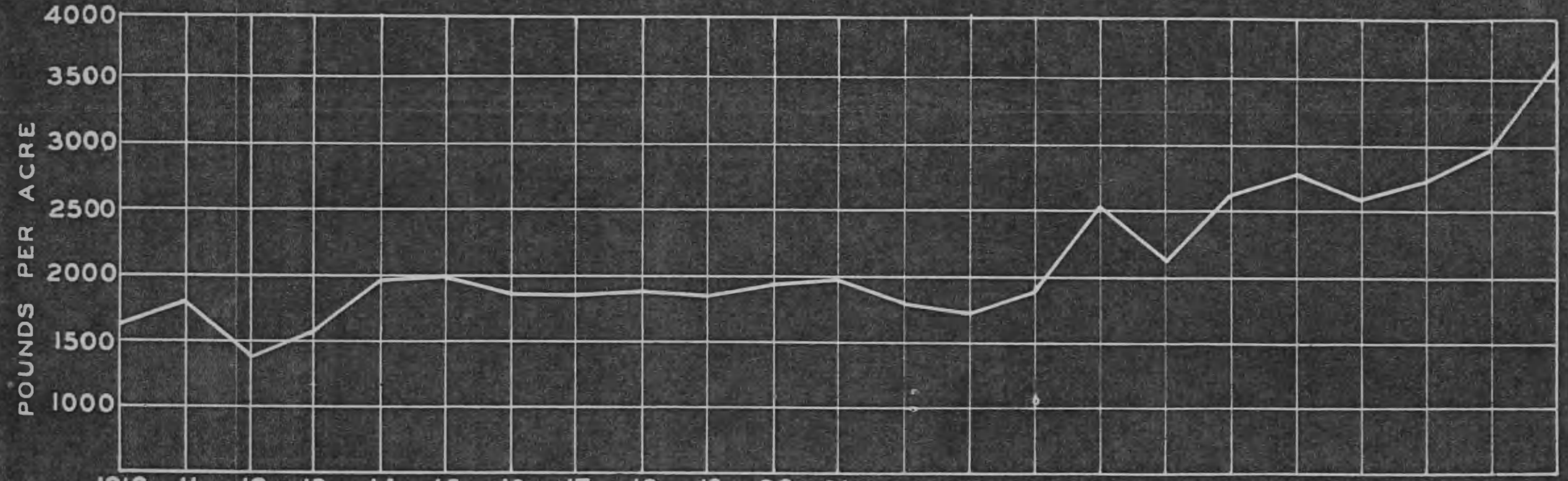

FIG.10. SUGAR YIELD

poorer land.

The increase in yield which has probably been associated with a lower cost of production has been due to the application of scientific methods of production and manufacturing sugar, the development of the sugar centrals which have recovered a higher percentage of the sucrose content and to the use of higher yielding cane varieties.

Table 15. Yield and Cost of Production of Sugar per Pound on Seven Haciendas, 1924-25[1]

on Seven Haciendas, 1924-25[1]

Hacienda	Sugar per acre	Cost per pound (cents)
A	8,120	1.11
C	6,821	1.31
B	6,166	1.53
D	6,037	1.42
F	5,794	1.59
E	5,710	1.47
G	4,872	1.51
Average	6,203	1.42

Average yield per acre = 3.1 short tons

(1) Carlos Locsin, Graph for Estimating Costs, Facts and Statistics about the Philippine Sugar Industry, 1928, Table A.

Table 16. Cane Sugar Production of the Philippines.(1)

Year	Area cultivated (acres)	Total sugar produced (short tons)	Production of sugar (pounds)
1910	205,508	168,254	1,637
1911	297,293	268,878	1,809
1912	405,889	281,355	1,386
1913	435,188	345,077	1,586
1914	418,676	408,339	1,951
1915	427,710	421,191	1,970
1916	444,189	412,274	1,856
1917	459,436	425,266	1,851
1918	507,818	474,744	1,870
1919	494,692	453,346	1,833
1920	487,783	466,913	1,914
1921	596,364	589,437	1,977
1922	595,066	533,188	1,792
1923	561,634	481,273	1,714
1924	561,386	523,142	1,864
1925	591,730	746,504	2,523
1926	572,877	607,358	2,120
1927	586,492	766,896	2,619
1928	585,627	807,808	2,759
1929	640,063	829,905,	2,580
1930	633,021	866,515	2,720
1931	640,450	956,033	2,999
1932	632,775	1,171,860	3,704

(1) Concerning Sugar, Sept. 1925,p1-2, May 30, 1930, pp. 1-5; Alunan, Rafael R., Annual Report of Philippine Dept. of Agriculture and Natural Resources, Manila, 1933, p. 142.

CHAPTER V

SUGAR CENTRALS IN THE PHILIPPINES

Modernization of Sugar Milling. As noted in Chapter 1, sugar plantations during the Spanish regime milled their own cane. The equipment long in general use took the primitive form of crude wooden or stone rollers turned by a long sweep moved by animal (usually carabao) power. (Fig. 11) Later,

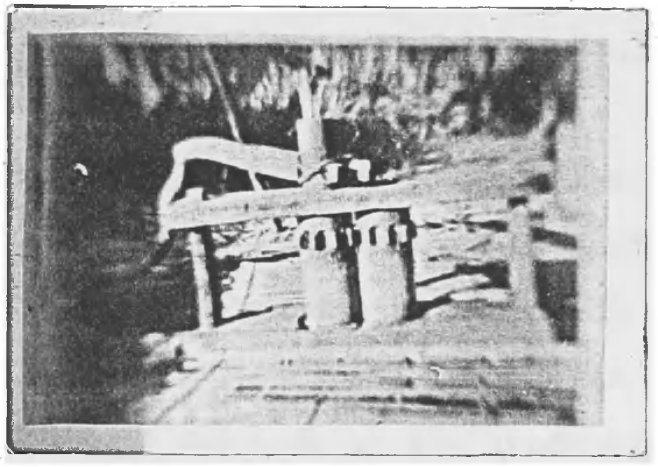

Fig. 11. Crude wooden sugar mill.

small steam engines were used and prior to American occupation a few larger mills equipped with vacuum pans were installed in the Islands of Luzon and Negros. In 1903 the number of steam driven mills was 528 while those operated by animal power numbered 470 (table 17). Although the steam mills had increased to 1,277 by 1918, there was an even larger total of the cruder type of mills which had arisen on a rapidly growing number of small native plantations. In terms of value of production, however, the output of the former in 1918 was more than 25 times greater than that of the mills depending on animal power. The mills had not increased materially either

in number or in value of production (table 17).

Table 17. Types of Sugar Mills in Operation, 1903-18.(1)

Kind of power	Year	Number of establishments	Value of production
Animal	1903	470	$ 571,793
Animal	1918	1,294	1,522,685
Hydraulic	1903	77	304,689
Hydraulic	1918	89	362,857
Steam	1903	528	2,425,022
Steam	1918	1,277	39,179,209

(1) Census of the Philippine Islands, Manila, Vol. 4, Part 1, 1918, pp. 231-232.

During the Spanish rule in the Islands, transportation facilities were inadequate and slow. Considerable loss of juice occurred in the hauling of cane from plantation to sugar mill by the crude carabao drawn carts over unimproved roads. In the crushing of the cane in the crude type of animal power and tone or wooden mill only a small portion of the sucrose content was recovered, the major part remaining in the lightly pressed bagasse. After crushing, the juice was strained and boiled in open kettles. (Fig. 12.)

Fig. 12. Old method of boiling juice (open kettles)

A further portion of sugar was wasted in this method due to

over boiling or spilling through careless handling. The juice was boiled to a thick syrup and poured into moulds to dry and harden.(1)

Several grades of crude sugar were made such as pilon,(2) mat and panochas.(3) There were three processes involved in manufacturing sugar. First, the "pilon" as a block of hardened sugar was taken from the mould. The white sugar that had formed on the top was separated from the lower portion which was heavy and wet. The latter was then taken to a wooden shed where it was again put into moulds. Second, the pilones were set on earthenware jars into which the molasses dripped through the hole in the bottom of the pilon. On top of the pilones was placed a layer of mud for about twelve days. (Fig. 13.) The purpose of

Fig. 13. Mud on top of pilon to aid in purifying sugar.

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(1) Handbook of the Philippine Sugar Industry, 1929, p.2; Cleve W. Hines, The Sugar Industry of the Philippines, Economic Resources and Development of the Philippine Islands, 1920, pp. 49-55.

(2) Mat sugar or bayones is a type of open-kettle muscovado sugar

these processes was to purify the sugar as much as possible. The sugar in some cases was boiled in large, open, cast-iron kettles. Third, the final part of the process consisted of spreading out the sugar and exposing it to the sun several times until it was completely dry. It was packed in bayones and stored in the sheds ready to be exported. The resulting sugar was a dark brown product containing considerable impurities and as such was incapable of competing with the high grade centrifugal sugar in Occidental markets.

Under the American administration the introduction after 1910 of modern centrals which grind the cane for surrounding planters and convert the juice by mechanical and chemical processes into high grade centrifugal raw sugar, has revolutionized the industry in the Islands. This system not only permits the handling of vastly greater quantities at a given point, with great economies in time and labor, but also makes possible a much larger recovery of sucrose content and the turning out of a high grade and uniform product.

The employment of better transportation facilities such as tramways or railways and more rapid handling of cane from the plantations to the sugar mills have aided materially in reducing the loss of the sucrose content under the old system. On arriving at the central the cane is passed through two heavy crushers and then through a series of from nine to eighteen rollers, subject to 400 or 500 tons hydraulic pressure. These rollers are arranged in sets of three, with jets of water playing on the crushed cane to facilitate extraction. Under this process most of the loss of sucrose content which accompanied grinding in the older type of mill is eliminated. After

successive processes of evaporation and chemical clarification the crystallized mass is run through centrifugal machines. The centrifugal machine consists of a circular basket which is lined with a circular sieve. By revolving the basket at a rapid rate, the molasses is thrown off and the sugar crystals remain in the inside the sieve.

Since the introduction of the modern centrifugal sugar central there has been a more rapid expansion of production of higher grade sugar than that of the muscovado sugar. In 1922-23 the production of the former (247,653 short tons) was only slightly in excess of that of muscovado (231,284 tons). By 1931-32 the production of centrifugal had risen to 983,699 tons, while that of muscovado had fallen to 46,332 tons. In other words the proportion of centrifugal production increased within the period from 52 per cent to 95.5 per cent of the combined output of the two classes.

Most modern centrals employ an experience superintendent, an assistant superintendent, a chief chemist, three to four assistant chemists and a production specialist whose services were not used in the old method of producing and manufacturing sugar. Practical mechanics and shop men are also employed by the central. During the milling season there were usually day and night shifts, each of which required from 50 to 75 laborers. About 50 laborers are needed in a mill with a daily capacity of 800 tons.(1) The greater division of labor under technical super-

(1) Handbook of the Philippine Sugar Industry, 1929, p. 15; U. S. Commerce Reports, No. 249, 1919, p. 249.

vision in large scare production makes possible both lower labor cost per unit of output and the manufacture of a superior and uniform product.

Relation between Planters and Central. The early independent sugar centrals owned or leased land for cane production and also obtained cane on a contract basis from cane producers. Since the capital required to construct and operate a modern centrifugal plant was beyond the resources of the individual planters, they organized planers' associations in order to establish the central or bargain with them. These associations have been effective in obtaining more favorable and uniform milling contracts between their members and the sugar centrals. The contracts are usually drawn for a period of 30 years. Each sugar central handles the cane of from 50 to 500 growers operating from 2½ to 750 acres of land. The sugar producers obligate themselves to load their cane on special cars supplied and operated on the railways by the centrals. The planters also agreed to give the right of way for the railways over their property during the term of the milling contract. The centrals contract to mill the cane of the planters for which service they received from 40 to 50 per cent of the sugar produced, the planters obtaining the balance.(1)

It has been largely through the development during the past two decades under government encouragement and assistance of efficiently managed centrals that the Philippine Islands have become an increasingly important competitor in the export of high grade sugar to the American market.

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(1) Handbook of the Philippine Sugar Industry, 1929, pp. 15-17.

Insular Distribution of Sugar Centrals

Growth and Localization of Centrals. After the erection of the first sugar central on Mindora Island in 1910, the number of centrals increased rapidly so that by 1921 there were 26 in operation. (table 18) The increased protection given to the continental and insular producers under the Fordney-McCum-

Table 18. Localization of Centrals and Output(1)

Island	1921 Number of Centrals	1921 Percent of Total	1932-33 Number of Centrals	1932-33 Percent of Total	1932-33 Output metric ton	1932-33 Percent of output	1932-33 Output per Central
Luzon	7	27.0	16	35.6	374,654	33.2	23,416
Negros	17	65.0	19	42.2	643,710	57.0	33,979
Panay	1	4.0	6	13.3	64,319	5.7	10,720
Others	1	4.0	4	8.9	45,863	4.1	11,466
Total	26	100.0	45	100.	1128,546	100.0	
Average							25,079

(1) Handbook of the Philippine Sugar Industry, 1929, Table 1; R. R. Alunan, Now, The Past, Present and Future, of the Phil. Sugar Ind., Vol. 18, No. 49, Oct. 15, 1932, Sup. A and B; G. G. Gordon, A Brief Review of the Phil. Sugar Ind., 1934.

ber Tariff Act of 1922(1) led to a rapid expansion of cane acreage in the Philippines and to the addition of 13 new centrals during the years of 1922 and 1928. Expansion was further accelerated by the still greater protection enjoyed by the Philippine producers after the passage of the Smoot-Hawley Tariff Act in 1930,(2) so that by 1933 there were 45 centrals in operation. Production of sugar in the Archipelago has expanded greatly during the period from 1922 through 1933. In 1922 only 378,739 short

(1) The Fordney-McCumber Tariff Act of 1922 fixed the duty on Cuban 96° centrifugal sugar at 1.7648 cents per pound and for foreign sugar at 2.206 cents per pound.
(2) Smoot-Hawley Act of 1930 the duty on Cuban sugar was raised to 2 cents and the full duty for foreign sugar to 2.5 cents.

tons of sugar were produced, but by 1933 production reached a total of 1,279,040 short tons.

In 1921 two-thirds of all the centrals were located on Negros Island. Of the remaining nine, seven were on Luzon Island and only two on other islands (Mindoro and Panay). By 1932 distribution had become less concentrated. Of the 19 new centrals constructed since 1921, only 2 were located on Negros Island. The number on Luzon was more than doubled and those on the less important islands (1) had increased to ten, so that the proportion on Negros is now less than half of the total in the Archipelago.

The localization of sugar centrals corresponds, of course, with the localization of cane production which in turn is determined by such factors as topography, soil, climate, labor supply and transportation facilities. Most of the centrals are tributory to the principal ports through which Philippine sugar is exported; namely, Manila, Iloilo,(Panay) and Cebu.

Table 19. Shipments of Sugar from Philippine Ports 1891-1931

Year	Manila (short tons)	Iloilo (short tons)	Cebu (short tons)
1891-97(a)	97,641	131,073	14,529
1898-1904	8,855	88,184	7,405
1905-11	31,878	114,883	2,902
1912-18	77,435	170,707	5,419
1931(b)	31,204	241,954	56,904

Data for 1931 includes only centrifugal sugar.

(a) George Fairchild, Comparative Statement of Exports of Sugar from Philippine Ports, Yearbook of the Philippine Islands, 1920, pp. 150-156.

(b) Annual Report of the Insular Collector of Customs, Bureau of Customs, Manila, 1933, p. 32.

In Luzon practically all the centrals are located within a 60 mile radius of Manila (Fig. 13.), because the top

(1) Cebu, Leyte, Mindoro, and Panay.


Fig. LOCATION OF CANE SUGAR CENTRALS
IN THE PHILIPPINES
1932
LEGEND
*Principal Cities • Mills
Luzon
Manila
CHINA SEA
PACIFIC OCEAN
Mindoro
Samar
Panay
Iloilo
Leyte
Cebu
Negros
Bohol
Palawan
SULU SEA
Mindanao
CELEBES SEA

ography, soil and climate of southern Luzon are well adapted to sugar cane cultivation, although heavy winds and rains have destroyed part of the growing crops almost every year. These densely populated provinces are better provided with railway facilities than any other region of the Archipelago, the lines all converging on Manila as the business, financial and shipping center. The centrals situated near Manila have the further advantage of obtaining easily available laborers with experience in sugar central work and less expensive transportation of recruited laborers during the harvesting season.

Most of the centrals on Negros Island are clustered along the western coast within the convinient shipping range of the port of Iloilo on Panay Island, across the Visayan Channel. The port of Iloilo became the leading sugar export outlet during the latter part of the nineteenth century largely through the enterprise of foreign merchants and bankers. (See Chapter 1.) Topographical and soil conditions are more favorable to cane production on Negros than on Panay Island, but Negros does not have a harbor location comparable to Iloilo on Panay. While Negros Island has less than half (42.5 per cent) of all the centrals of the Philippines, her 19 factories supplied 57 per cent of the total output in 1932-33. The average output per central in Negros was about 50 per cent more than for Luzon and almost three times as great as that for the other islands. This is attributable mainly to the larger average investment and capacity represented by the centrals on Negros. Negros and Luzon together constitute the principal sugar producing area of the Archipelago, embracing between them two-thirds of all the centrals and about two-thirds of the

total output.

In recent years, cane production has been developed in the eastern Visayan Islands of Cebu and Leyte. Prior to 1928 no modern centrals were to be found on these islands. By 1932 there were three centrals in operation whose output of centrifugal sugar was exported mainly through the port of Cebu on the Mindanao Sea. (Table 20, p. 78.)

Daily Capacity of Centrals. Daily capacity was calculated as the average number of tons of cane capable of being milled during a 24 hour day, operating 135 days a year. The total daily capacity of the Philippine centrals in 1928 was 43,475 metric tons of which more than half (54 per cent) was accounted for by the 18 centrals on Negros Island. The average daily capacity per central in the Philippines was 1,115 tons. For Negros Island the corresponding figure was 1,309 tons. This was 22 per cent more than the average for the centrals on Luzon and double that of the centrals on the other sugar growing islands. That the sugar centrals on Negros Island had superior equipment is indicated by the fact that their average investment per ton capacity was equivalent to $2,250, compared with $1,900 for all the centrals in the Philippines. The greater investment in equipment on Negros Island resulted in a higher average output per central in 1932-33 being 45 per cent greater than the corresponding figure for Luzon, and three times that of the centrals on the smaller islands. The output per central on both an absolute and percentage basis is shown in table 18.

Investment in Sugar Centrals. Capital investment in sugar centrals according to the authority of the Philippine Sugar Association, includes investment for sugar mills, build-

Table 20. Insular Distribution of Investments in Centrals by Nationality. 1928.[1]

Philippine Islands

Nationality	no. of centrals	per cent	Total investments	per cent	Average investment per central	1922-28 Average annual output	per cent	Annual average output per central
			thousand (dollars)		thousand (dollars)	(metric tons)		(metric tons)
Filipino	17	44	41,531	50	2,443	213,000	50.8	12,500
Spanish	11	28	19,027	23	1,730	74,000	17.7	6,727
American	10	26	21,538	26	2,154	128,900	30.8	12,900
Cosmopolitan	1	2	542	1	542	3,184	0.8	3,184
Total	39	100	82,638	100		419,084	100.0	
Luzon								
Filipino	6	40	8,109	33.5	1,352	38,000	35.1	6,333
Spanish	3	20	5,000	21	1,667	2,000	1.9	667
American	6	40	10,913	45.5	1,819	68,000	63.0	11,333
Total	15	100	24,022	100			100	
Negros								
Filipino	11	61	33,422	63	3,038	175,000	58	15,909
Spanish	5	28	11,901	23	2,308	72,000	24	14,400
American	2	11	7,625	14	3,813	55,000	18	28,000
Total	18	100	52,948	100		302,000	100	
Other Islands								
Spanish	3	50	2,125	37	708	6,900	57	2,300
American	2	33	3,000	53	1,500	4,900	40	2,450
Cosmopolitan	1	17	542	10	542	400	3	
Total	6	100	5,667	100			100	

(1) Handbook of the Philippine Sugar Industry, 1929. Tables 1 and 2.

ings, manufacturing machinery, railroads, land upon which the factory is erected and working capital.(1) The total capital investment in the centrals of the Philippine Islands was $82,638,000 in 1928 or an average of $2,119,000 per plant. (table 20)

The investment in centrals on Negros Island was 64 per cent of the total investment for all the centrals of the Archipelago. In 1928 the average investment per central ranged from $839,000 on Panay Island to $2,942,000 on Negros. The average investment per central on Negros was nearly 84 per cent more than that for the centrals of Luzon and 250 per cent more than those of Panay Island.

Nationality of Controlling Interest in Centrals

As noted in Chapter II, it has been the policy of the American administration in the Philippines to encourage sugar growing on native holdings rather than on foreign or American controlled plantations and to aid in the establishment of the centrals cooperatively owned by the native planters. Since the action of the United States Congress in 1902 placing a limitation of 2,560 acres on individual or corporate land holdings in the Archipelago,(2) successive acts and amendments have been passed by the Philippine Government to make land available for agricultural production in the forms of homestead grants, lease holds, sales of public land, or sales of friar

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(1) Philippine Sugar Association, Facts and Statistics about the Philippine Sugar Industry, Manila, 1928, table IV.
(2) U. S. Tariff Commission, United States-Philippine Tariff and Trade Relations, Report Nov. 18, 1931, p. 29.

lands. The establishment of the Philippine National Bank in 1916, which made loans available at reasonable rates of interest to the farmer for the erection of the centrals and for production of sugar has contributed to the great progress made by the sugar industry of the Islands.(1) The investment of Filipino capital in centrals and in land has been an important factor in the Philippine sugar enterprise. This was indicated by the fact that in 1928, Filipino capital invested in centrals was $42,000,000 or 50 per cent of the total investment in all centrals, while that of the Spanish constituted 23 per cent and that of the Americans 26 per cent. The Filipinos owned 87 per cent (435,133 acres)of the cane area while 13 per cent (66,870) acres belonged to the American and other foreign sugar producers on the Islands.(2)

The sugar manufactured by the centrals and financed by Filipino capital was wholly from the native sugar plantations. Those centrals financed by American and Spanish capital manufactured sugar from cane, some of which was produced on their own plantations, but of which greater part was supplied by the natives who signed contracts with these centrals.

The situation in the Philippine Islands is in marked contrast to that existing in other countries producing cane sugar. For example, the bulk of the investment in the sugar industry in Hawaii is American, amounting to over $200,000,000 in 1934.(3)

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(1) See p. 28
(2) U. S. Tariff Commission, United States-Philippine Tarriff and Trade Relations, No. 18, Second Series, 1931, p. 63.
(3) Farr & Co., Manual of Sugar Companies, New York, 1934, pp. 65-90; Ibid., pp. 104-105.

American capital has predominated in the Cuban sugar industry since the World War. The total American investment of $800,000,000 in the sugar industry of Cuba in 1928, constituted more than half of the total investment.(1)

In recent years over 60 per cent of the production of sugar in Cuba was from American controlled centrals. In 1928 nearly two-thirds of all the sugar of Porto Rico was produced by the sugar centrals owned by Americans.(2) The Dutch East Indies sugar industry was aided by Dutch capital since its early development, although in recent years, the British, Chinese, and Japanese have invested large sums of money in the sugar industry of the Dutch territory.

Of the eighteen centrals located on Negros Island in 1928, eleven were financed by native Filipino capital. Of the remaining seven, five were financed by Spanish and two by American capital. On Luzon Island the Filipino and the Americans owned the same number of centrals (six each) while only three were controlled by Spanish interests.

The dominance of Filipino controlled centrals on Negros Island is due, mainly, to the fact that the early sugar development in the Archipelago was in Negros, where most of the plantations were already owned by the native Filipinos. It has been previously noted (Chapter I) that production of sugar for export was encouraged by these foreign merchants. Capital was advanced to farmers at high interest rates for which repayment was made in sugar after harvest. The price of sugar

(1) Max Winkler, Investment of U. S. Capital in Latin America, 1928 p. 183.
(2) Ibid, pp. 264-265.

was controlled by the leading merchants. Since the establishment of the Philippine National Bank, the planters on Negros have been independent of foreign capitalists. The cane producers have formed cooperative associations and aided financially by this bank, have constructed their own centrals. In some cases the producers have formed the local associations which have made contracts with the centrals.

Most of the American sugar centrals were located on Luzon Island because more land was available there for central operation. There were many native sugar planters who were formerly producing low grade sugar on this island but were interested in making contracts with the Americans in order to cooperate in the production of 96° centrifugal sugar which was demanded in the American market. The successful operation of the American central in Canlubang, Laguna Province (Luzon) since its establishment in 1914, gave encouragement to American capitalists in the errection of more sugar centrals in Luzon. The unsatisfactory experience of the Americans in the sugar central in Mindoro Island has discouraged other American investors in the erection of centrals there or in any other isolated agricultural regions of the Archipelago. The concentration of American centrals in Luzon Island was also due to proximity to to the American administration, to the financial and business center (Manila), accessibility to transportation facilities and availability of cheap labor.

In 1928, American capital invested in Luzon Island was $2,804,000 more than the investment of the Filipinos at $5,900,000 more than the Spanish investment (table 20).

Five of the eleven centrals controlled by Spanish interests in the Philippine Islands are located on Negros Island

because quite a few Spanish people already owned sugar plantations on this island. These plantation owners cooperated with each other in the construction of sugar centrals or entered into contracts with the owners of the centrals. Some of the Filipino planters have also made contracts with the Spanish owned centrals. Another factor accounting for localization on Negros Island is the proximity of the producing area to the exporting city of Iloilo. Spanish controlled centrals have also been established on Panay Island. The localization of of Spanish controlled centrals on Panay is also due to the fact that many landowners on this island were Spanish, as well as the fact, previously noted, that Panay Island offered many advantages for the development of sugar centrals, Spaniards have also erected one central on Leyte, due mainly to the fact that there was no competition there; no centrals having been previously established on that island.

An analysis of the sugar centrals for the Philippine Islands as a whole in 1928 shows that 17 out of a total of 39 centrals were Filipino owned. Americans owned 10 and the Spanish owned 11 plants during the same period. The Filipinos not only owned the most plants but also had a much larger investment in centrals than the American or Spanish. In fact, 50 per cent of the total investment in centrals on the Philippines in 1928 was made by Filipinos. While the total investment and the total output of the Filipino centrals exceeded that for any of the other centrals, it is worth nothing that the average output per plant was greater for the American centrals than for the others. This was true despite the fact that in 1928, average investment per plant was greater in the Filipino centrals than in the American.

The Spanish owned one more central than the Americans in 1928 but the total investment was less. Thus, the average investment per plant was approximately $400,000 less in the Spanish owned centrals than in the American plants. This naturally reflects itself in the lower average output per plant in the Spanish centrals. With better equipment and larger plants the Americans were able to turn out an average output per central that was almost double that of the Spanish controlled centrals.

CHAPTER VI

EXPORT MOVEMENT OF PHILIPPINE SUGAR

Place of Sugar in Philippine Export Trade. It was not until 1920 that sugar became the principal export of the Islands, primarily because of the extremely high prices in the principal world markets after the war-time price-fixing restrictions were removed. Since the post-war depression period, the exports of sugar have increased steadily. Sugar has been the most important product exported since 1924 except for the two years, 1926 and 1928. The recession in the upward trend of the value of other principal exports declined after 1929, the value of sugar exports remained high because of the expansion of domestic production and because Philippine sugar prices were partially protected by the United States Tariff while the world sugar prices were falling sharply. The export of sugar from the Philippines increased steadily from a value of $5,665,964 in 1908-1909 to an annual average of $56,664,667 for the period 1930-1933, or from 17 to 53 per cent of the total exports. (Table 21, Fig. 14).

On the other hand, hemp and maguey were the principal products exported during the years 1908 through 1919, constituting from 40 to 50 per cent of the total. Coconut products were the next leading export of the Archipelago in the same period except during the two years when sugar was more important. Due to the decline in demand after the war, the exports of hemp and maguey were reduced from 169,260 metric tons in 1918 to 100,000 in 1921 and the value of exports from 62 to 14 million dollars. (~~table 22~~). A revival in demand occurred

Table 21. Comparison of the Principal Exports of the Philippines.(1)

Year	Sugar		Hemp and Maguey		Coconut products		Tobacco		Other exports		Total exports
	value (dollars)	per cent	value (dollars)	per cent	value (dollars)	per cent	value (dollars)	per cent	value (dollars)	per cent	value (dollars)
1908-09	5,655,964	17.0	16,919,863	50.0	7,039,516	21.0	3,075,288	9.5	1,094,574	2.5	33,785,205
1910-14	9,238,576	19.5	19,625,524	41.4	11,672,017	24.6	4,546,989	9.59	2,359,829	4.98	47,442,935
1915-19	14,637,545	18.0	38,350,262	40.0	24,795,210	26.0	9,192,321	9.2	6,466,565	6.8	93,441,903
1920-24	35,421,552	30.0	27,493,170	27.0	32,353,484	28.4	11,452,006	9.5	10,403,814	5.1	117,124,026
1925-29	45,765,137	30.2	34,202,607	23.0	47,895,608	32.0	8,870,815	6.0	13,083,018	8.8	149,817,185
1930-33	56,664,667	52.8	10,379,782	9.1	25,323,400	23.0	6,708,794	6.3	8,972,928	8.8	108,049,571

(1) Philippine Bureau of Commerce and Industry, Statistical Bulletin No. 1, 1918, pp. 30-31; Ibid., Statistical Bulletin No. 2, 1919, pp. 126-140; Philippine Bureau of Customs, Annual Report of the Insular Collector of Customs, Manila, 1933, pp. 86-93; Facts and Statistics about the Philippine Sugar Industry, 1928, Table 11; Now, The Independent Weekly, Vol. 18, No. 49, 1932, p. 13.

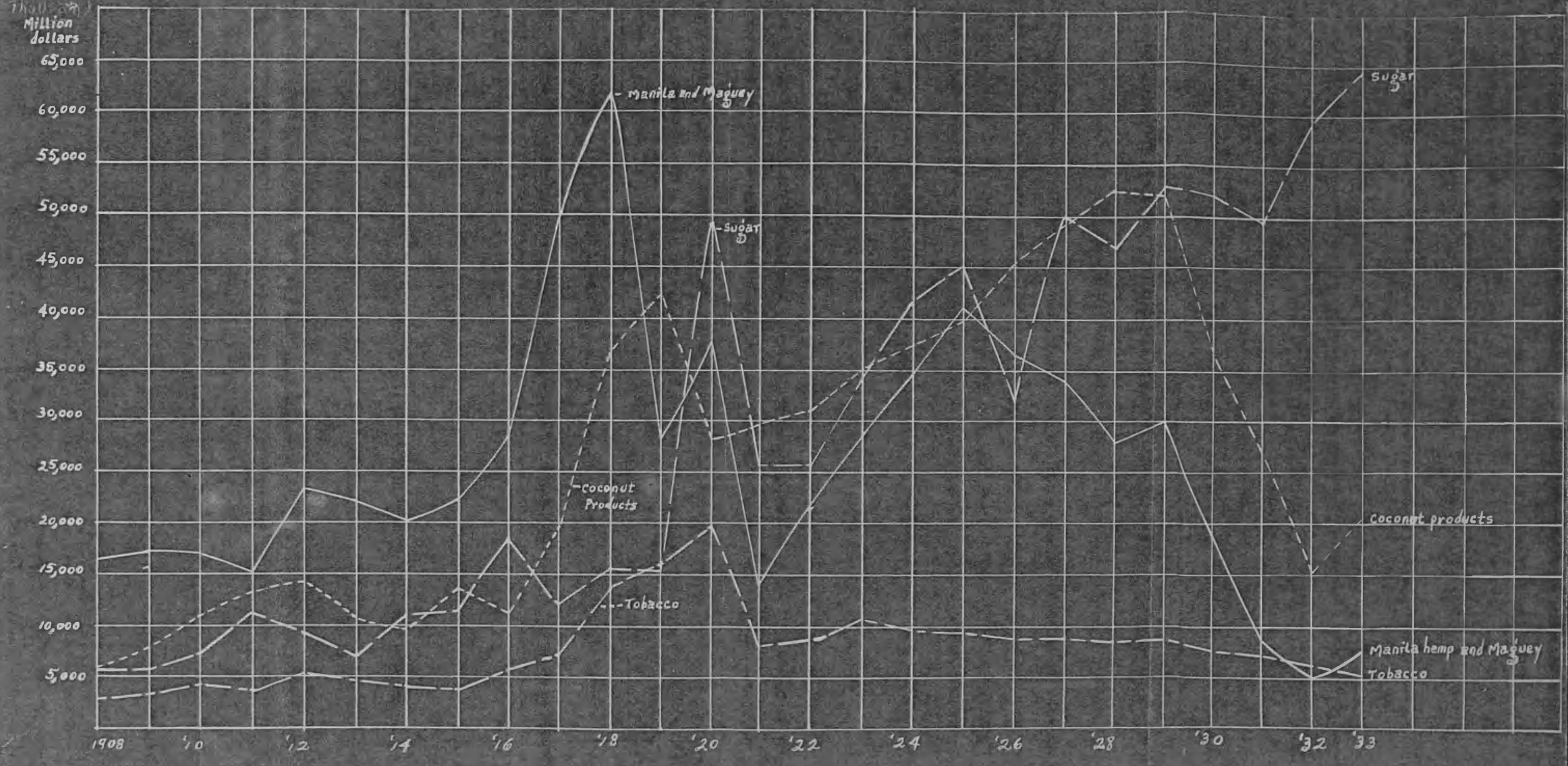

Fig. 14. Value of the Principal Exports of the Philippines

during the next few years, but after 1929 the exports of hemp and maguey were rapidly contracted. Due primarily to the decline in demand by Japan, the United States and Great Britain. Exports of these fibers amounted to only 9 per cent of the value of the total exports in 1930-1932.(1)

The value of coconut exports declined during the depression of 1920-22 but was afterwards expanded. Coconuts was the principal export in 1926 and 1928. The export value of this product declined rapidly from 52,000,000 dollars in 1929 to 15,000,000 dollars in 1932 due to the curtailment of demand for this commodity in the United States and other countries.

Proportion of Grind Exported. The proportion of grind entering the Philippine export trade was very irregular especially during the early period of the American administration in the Islands. The market in the United States for Philippine sugar was not yet stable and higher grades of suger were not produced in great quantities until after the passage of the tariff acts in 1922 and 1930. The rapid expansion in the amount of grind exported was caused, first, by the increased production of 96° centrifugal and refined sugar demanded in the American market; second, by the greater protection furnished when the tariff duty on Cuban sugar was increased; and third, by the favorable adjustment made on transportation rates from the Philippines to the United States.

The average yearly production of grind in the Philippines amounted to 267,060 metric tons for the period 1910-14. By

(1) Philippine Islands, Bureau of Customs, Annual Report of the Insular Collector of Customs, Manila, 1933 p. 25.

1930-32 the amount of grind produced had increased to an average amount of 907,480 metric tons/ (Table 22a) On a per centage basis the production of grind increased 340 per cent during the period studied. Exports of grind also increased greatly during these years. In fact on a per centage basis the increase in exports of grind was greater (415 per cent) than the per centage increase in total grind produced.

The most rapid increase in the production of grind as well as in the amount of grind exported took place following the World War (table 22).

Classes of Sugar Exported and Destinations.

The three forms of sugar exported from the Philippines are the muscovado, centrifugal and refined sugars. The raw muscovado sugar was the principal form exported during the earlier years. Since 1921 the higher grade sugars have been the most important due to the introduction of scientific methods of manufacturing in the Archipelago and the great demand of the American market for the 96° centrifugal and refined sugars.

During the nineteenth and the beginning of the twentieth century Philippine sugar was exported mainly to Great Britain, the United States, China and Japan, while in recent years the United States has been the principal market because of the existence of free trade relationships.

Muscovado. Over 94,000 short tons of muscovado sugar, (the only sugar produced in the early days,) was exported in 1899.(1) The export of this grade of sugar was increased to average of 309,351 short tons in 1900-09 representing over 99

(1) Phil. Islands, Bu. of Customs, Annual Report of the Insular Collector of Customs, Manila, 1933, p. 89.

Table 22a Proportion of Grind Entering Export Trade.[1]
Philippine

Year	Production (metric tons)	Exports (metric tons)	Exports per cent	Retained within the country (metric tons)	Retained within the country per cent
1910	152,639	121,472	80.1	31,167	19.9
1911	243,925	209,044	85.7	34,881	14.3
1912	255,243	197,076	77.3	58,167	22.7
1913	313,051	157,334	50.3	155,717	49.7
1914	370,443	236,498	63.8	133,945	36.2
1915	382,103	211,013	55.2	171,090	44.8
1916	374,013	337,490	90.2	36,523	9.8
1917	385,799	205,908	53.3	179,890	46.7
1918	430,686	273,258	63.4	157,428	36.6
1919	411,273	136,060	33.1	275,213	66.9
1920	423,580	180,341	42.4	243,239	57.6
1921	534,734	289,876	54.2	244,858	45.8
1922	483,706	362,072	74.9	121,634	25.1
1923	431,365	271,983	63.1	159,382	36.9
1924	479,988	357,830	74.3	122,158	25.7
1925	707,167	546,832	77.3	160,335	22.7
1926	550,995	411,232	74.6	139,763	25.4
1927	695,729	553,324	79.5	142,405	20.5
1928	732,844	569,938	77.8	162,906	22.2
1929	754,546[2]	695,868	92.2	58,678	7.8
1930	788,181	743,980	94.39	44,201	5.6
1931	869,121	776,210	89.2	92,911	10.8
1932	1,065,138[3]	778,338	73.0	286,800	27.0

(1) Philippine Bureau of Commerce and Industry, Statistical Bulletin No. 3, 1921, p. 244; Ibid., Statistical Bulletin No. 7, 1924, p. 113; Ibid,, Statistical Bulletin No. 12, 1929, p. 188.
(2) United States Tariff Commission Report on Sugar, 1933, p. 8.
(3) Alunan, Rafael R., Annual Report of the Dept. of Agriculture and Natural Resources, Manila, 1933, p. 142.

Table 22. Average Proportion of Grind Entering Export Trade.(1)

Year	Production	Index No.	Exported	Index No.	Amount of Grind retained
1910-14	267,060	100	184,285	100	82,775
1915-19	396,770	149	232,746	125	164,024
1920-24	470,644	176	292,420	159	178,224
1925-29	679,256	254	555,439	300	123,817
1930-32	907,480	340	766,176	415	141,304

(1) Philippine Bureau of Commerce and Industry, Manila, Sta. Bulletin No. 3, 1921, p. 244.
Ibid, Sta. Bulletin No. 7, 1924, p. 113.
Ibid, Sta. Bulletin No. 12, 1929, p. 188.
United States Tariff Commission, Report to the President on Sugar, 1933, p. 8.
R. R. Aluman, Annual Report of the Department of Agriculture and National Resources, Manila, 1933, p. 142.

per cent of the total sugar exported (table 23). China's import of this grade of sugar (including Hongkong) of 165,188 short tons constituted 53 per cent of the total export during the same period. About two-thirds of this amount was shipped to the British port, Hongkong. The United States imported only 56,730 tons or 19 per cent of the total during 1900-09. The exports averaged 254,739 tons in 1910-17, practically all of which was muscovado. During 1910-17, the United States, which was the leading market for muscovado sugar, imported 133,263 short tons or 52 per cent of the total. Some muscovado sugar was imported by the United States during these periods because of the low price. This grade could be sold to the orientals in the United States who consumed this type of sugar. In 1918, the first year when the centrifugal sugar was grouped separately in the reports, the muscovado sugar constituted about 76 per cent of the total exports. In 1918-31 China again became the principal market for muscovado sugar. After 1921 the export of muscovado sugar declined to an average of 17,978 short tons or to 2.1 per cent of the total sugar exports in 1928-32, due primarily to concentration in the production of the higher grade sugars demanded in the United States. The United Kingdom has imported a relatively small amount of muscovado sugar ranging from 6 to 9 per cent during the American administration.

Centrifugal. After the establishment of the first sugar central in 1910, the production of centrifugal sugar steadily increased until the exports amounted to 70,567 short tons or to 23 per cent of the total sugar exported in 1918. In 1921 centrifugal sugar became a more important export than the

Table 23. Destinations of Philippine Sugar, 1900-1932.[1]

Forms of sugar and country	1900-09 (short tons)	1900-09 per cent	1910-17[2] (short tons)	1910-17[2] per cent	1918-22 (short tons)	1918-22 per cent	1923-27 (short tons)	1923-27 per cent	1928-32 (short tons)	1928-32 per cent
Muscovado										
United States	56,730	18.5	133,263	52.3	29,710	19.7	1,151	1.7	42	0.22
United Kingdom	18,830	6.0	21,303	8.7	-	-	-	-	-	-
China	61,263	19.8	26,545	10.1	27,151	18.0	29,087	43.8	11,822	65.76
Hongkong	103,925	33.6	45,223	17.8	53,021	35.1	19,318	29.1	5,192	28.88
Japan	55,136	17.9	25,023	9.8	40,908	27.1	16,794	25.3	912	5.10
Egypt (1 yr.)	6,833	2.2	2,242	0.9	-	-	-	-	-	-
Spain	-	-	86	0.03	-	-	-	-	-	-
British Africa (1 yr.)	6,332	2.0	-	-	-	-	-	-	-	-
Netherlands (1 yr.)	4	-	-	-	-	-	-	-	-	-
Australie (1 yr.)	0.2	-	-	-	-	-	-	-	-	-
British East Indies (3 yr.)	297	0.09	900	0.4	115	0.07	67	0.1	2.2	0.01
Dutch East Indies (1 yr.)	1	-	-	-	-	-	-	-	-	-
Guam	-	-	7	-	12	0.01	5	0.01	4	0.02
Russia	-	-	-	-	3	0.002	-	-	-	-
Other countries	-	-	-	-	-	-	-	0.08	-	-
Total	309,351	100	254,592	100	150,920	100	66,478	100	17,974	100
Refined sugar										
United States	-	-	147	-	5,374	99.54	2,909	99.3	30,821	99.84
Hongkong (3 yr.)	461	99.6	-	-	2	0.03	-	-	-	-
Spain (1 yr.)	0.1	-	-	-	-	-	-	-	-	-
China (2 yr.)	1.4	0.4	-	-	11	0.20	0.01	-	-	-
Guam	-	-	-	-	7	0.13	21	0.7	50	0.16
Japan	-	-	-	-	0.1	-	1	0.03	-	-
Other countries	-	-	-	-	5	0.1	0.003	.01	0.1	
Total	462.5	100	147	100	5,399.1	100	2,931	100	30,871.1	100

Table 23. Destinations of Philippine Sugar, 1900-1932 (concluded).

Forms of sugar and country	1900-09 (short tons)	1900-09 per cent	1910-17(2) (short tons)	1910-17(2) per cent	1918-22 (short tons)	1918-22 per cent	1923-27 (short tons)	1923-27 per cent	1928-32 (short tons)	1928-32 per cent
Centrifugal sugar										
United States	-	-	-	-	114,172	92.40	402,926	99.99	787,257	99.99
Guam	-	-	-	-	21	0.02	5	0.001	1	0.0001
Spain	-	-	-	-	229	0.20	0.4	-	-	-
Hongkong	-	-	-	-	6,073	5.00	-	-	-	-
British East Indies	-	-	-	-	5	-	-	-	-	-
Japan	-	-	-	-	3,008	2.40	-	-	-	-
Other countries	-	-	-	-	-	-	0.2	-	-	-
Total	-	-	-	-	123,508	100	402,931.6	100	787,258.2	100
Grand Total	309,813.5	100	254,739	100	279,827	100	472,341	100	836,103	100
Per cent of the total										
Muscovado sugar		99.85		99.94		53.93		14.0		2.11
Refined sugar		0.15		0.06		1.97		0.7		3.69
Centrifugal sugar		0.00		0.00		44.10		85.3		94.20

(1) Philippine Department of Agriculture and Commerce, Division of Statistics, Manila, 1934 (arranged); Dr. O. C. Stine, U.S.D.A., Bureau of Agricultural Economics (arranged).
(2) Forms of sugar not separately reported prior to January 1, 1918. Refined sugar was not reported in 1919.

muscovado type. Centrifugal sugar averaged 123,508 short tons, or 44 per cent of the total sugar exported in 1918-22 and 402,932 or 85 per cent of the total in 1923-27. The exportation of centrifugal sugar was further increased to an average of 787,258 short tons or to 94 per cent of the total exports in 1928-32, because almost the entire export of Philippine sugar was absorbed by the refining companies in the United States as the one free market for the insular sugar. During the period 1918-22 almost 92 per cent of the total sugar exported from the Philippines went to the United States. By 1928-32 almost the entire export of the Philippine sugar was sold in the United States market (table 23). This increase in the amount of centrifugal sugar exported during the years 1922-32 was the result of the United States Tariff Acts of 1922 and 1930 which gave the Philippine producers an advantage over competitors in the sale of sugar in the United States.

Refined. Refined sugar exports occupied an insignificant position in the Philippine trade during the early part of the twentieth century. The reasons for this were: The high cost of fuel necessary in the evaporation, recrystallization, and drying of this type; the limited local demand for the refined sugar; and the long journey to the United States ports, which often resulted in the refined sugar becoming damp and deteriorating in quality. The average amount of this grade of sugar exported in 1900-06 was only 463 short tons, practically all of which went to Hongkong. This refined sugar constituted about 2 per cent of the exports during 1918-22 and less than 1 per cent in 1923-27. Since 1930 the exports of refined sugar have exceeded the exports of muscovado sugar. The average export

of refined sugar in 1928-32 was 30,871 short tons or almost 4 per cent of the total sugar exports of the Archipelago. Since 1906 almost all of the refined sugar has been sent to the United States.

Changes in Destinations. During the Spanish rule the United Kingdom was one of the leading importers of Philippine sugar but her importations declined and entirely ceased after 1919. During 1900-19 the annual amount exported to Great Britain ranged from 1,102 to 67,193 metric tons.

Great Britain was one of the great consuming countries which depended on imports. When the World War cut off Great Britain's normal beet sugar supplies from continental European countries in 1914, the British Government after the war by means of a bounty gave encouragement to the British farmers to produce sugar beets. The great cane producing countries expanded their production during the World War to provide sugar for the British markets. The average sugar production in Great Britain was increased from 2,000 short tons, in 1919-20 to 279,000 in 1929-30. This domestic output represented only a small proportion of the total consumption which amounted to 2,392,500 short tons (raw) in 1931-32.(1)

Great Britain has imported large amounts of cane sugar from Java, Cuba, and the British West Indies. Large sums of money were invested by the British financiers and exporters in some of the Javan sugar mills. These capitalists also leased land from the natives for use in producing cane. The British capitalists invested money in one of the sugar mills in Cuba.(2) The English investors have greater influence in their home

(1) A. A. Roberts, The American Sugar Refining Co., 1934 (arranged)
(2) Dr. C. C. Stine, U.S.D.A. Bu. of Agr. Econ., 1934 (arranged)

markets than the foreign exporters who deal in Philippine sugar. The high tariff duties imposed by the United Kingdom on foreign sugar[1] and the preferential treatment given by Great Britain to some sugar exporting countries in English markets have discouraged the shipping of Philippine sugar into that country.

Japan's production of sugar in 1920 was about 65,000 tons while her consumption was over 500,000 tons. Formosa which was acquired by Japan in 1894-95 produced only 30,000 tons in 1895 but in 1929-30 the production had been increased to 787,650 metric tons (estimate) because of the aid given to the industry by the Japanese Government. This expansion of production resulted in an output in Formosa and Japan almost equal to the consumption of the Japanese people which was 960,000 metric tons (raw) in 1931-32.[2]

Japan needs foreign sugar only for refining and for confectionery products which are exported in large quantities. This supply can be obtained from Java at lower prices than from Formosa because of the cost of production in Java was about 30 per cent less than that in Formosa. In 1933 Japan (including Formosa and Korea) imported only 116,894 metric tons.

The Japanese capitalists and exporters have invested in some of the Javan sugar mills and have also rented land from the natives for growing canel These Japanese traders who have been naturally influential in Japanese markets have

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(1) See table 24
(2) A. A. Roberts, The American Sugar Refining Company, 1934 (arranged)

shipped Javan rather than Philippine sugar to the home market.

China which was one of the most important markets for Philippine sugar during the early period of the American occupation, stopped inporting this sugar in 1932 because the Chinese importers and investors found a cheaper supply and more favorable commercial relationships in Java where they, also, had money invested in sugar mills. They produce cane by leasing land from the natives and by employing Chinese coolies on the plantations. Consequently Chinese traders were able to sell sugar in the Chinese markets.

Table 24 Tariff Duties Imposed on Sugar by Selected Countries, 1933.(1)

Countries	Raw Sugar : cents per lb.	Refined Sugar : cents per lb.
United Kingdom	1.765	2.532
Japan	0.94-1.848	1.994-2.780
China	1.470	1.740-3.600
British India	1.900	2.360

(1) G. G. Gordon, A Brief Review of the Phil. Sugar Industry, 1933, p. 7.

Another reason for the changes in destination of Philippine sugar is the nature of the Philippine Laws which restrict the use of land for production to Filipinos and Americans. These laws have prevented the English, Japanese and Chinese from extending their agricultural and industrial activities in the Archipelago. The Philippine Labor Laws do not allow the use of Chinese coolies and other low-paid foreign farm or factory laborers who would compete with the Filipino laborers.

Since the passage of the United States Tariff Acts of 1922 and 1930 giving greater protection to the sugar producers in the United States and Insular Possessions the American market became the principal market for Philippine sugar. This is

shown by the fact that in 1923-27 the proportion of sugar exported to the United States was 86 per cent of the total sugar exports of the Archipelago, increasing to 98 per cent in 1928-32 (Table 25).

Handling and Financing Exports.

Sugar Exporting Firms. The Philippine sugar planters have not been as progressive as the producers in Cuba, Java, Hawaii, and other cane producing countries of the world in the competitive marketing of their sugar. The latter countries established strong marketing agencies in the great sugar markets of the world before the Philippines. The principal development that has aided the marketing of Philippine sugar was the creation of a sugar marketing agency in New York by the Philippine National Bank discussed in last section. The produce department of the Manila trading center and enchange was organized in 1933 for the purpose of providing a more suitable place for dealing in sugar and other commodities. Most of the selling of sugar in foreign markets has been handled by the English, American, Spanish, and Chinese exporters although some Filipino exporters have been active in the exportation of Philippine sugar.

The annual range of the shipments of 26 exporters of Philippine sugar who handled 3,427,000 long tons or 97 per cent of the total sugar exports during 1917-27 was from 1,441 to 87,405 long tons (appendix, table D). There were five firms operating during the entire period (11 years). The six British and the seven Filipino firms exported practically the same amount of sugar during 1917-27, which was about 800,000 long tons or 23 per cent for each nationality (table

Table 25. Exports of Sugar from the Philippines, 1898-1932(1)

(1 metric ton------2,204.6 lbs.)

Year	Total to all countries: Quantity (metric tons)	Total to United States: Quantity (metric tons)	Percent
1898-02	91,680	12,443	14
1903-07	109,646	24,330	22
1908-12	160,331	104,404	65
1913-17	229,649	95,470	42
1918-22	248,321	131,521	53
1923-27	428,240	369,007	86
1928-32	755,857	742,185	98

(1) Philippine Bureau of Commerce and Industry, Sta. Bulletin No. 3, 1920, pp. 182-183. Annual Report of the Insular Collector of Customs, Manila, 1933, p. 89.

26, appendices table D). The single Chinese and seven American firms exported nearly equal amounts during 1917-27, or about 18 per cent of the total for each. The five Spanish shippers exported 16 per sent of the total during the same period.

Entry into United States Ports. The average quantity of Philippine sugar entering the custom districts of the United States each year was 425,905 short tons in 1923-28 and 710,727 in 1929 (table 27).

The Atlantic coast ports received 80 per cent, the Pacific coast ports 18 per cent, and the Gulf coast ports 2 per cent of the Philippine sugar in 1923-28. In 1929 these ports received 88, 8, and 4 per cent, respectively.

The chief ports of entry of Philippine sugar were Philadelphia, Baltimore, New York, San Francisco, and New Orleans. There was a noticeable increase in the shipment of Philippine sugar to the Atlantic coast ports and the Gulf coast ports, and a decrease to the Pacific coast ports during the same years. Most of the sugar went to the Atlantic coast ports, due to the fact that transportation costs from the Philippines to the Atlantic refineries through the Panama Canal and then to the principal consuming centers are less than from the Philippines to the Pacific refineries and then to the eastern consuming centers of the United States. The refining companies in the Pacific coast, such as the California and Hawaiian sugar Refining Corporation, Ltd., owned by thirty-one Hawaiian sugar producing companies, and the western Sugar Refinery, controlled by J. D. and A. B. Spreckles Co.[1] melt and refine raw sugar largely

(1) Farr & Co., Manual of Sugar Companies, New York, 1934, pp. 69-70; Ibid, p. 90.

Table 26. Nationality of Exporters of Philippine Sugar, 1917-27.(1)

Nationality of Exporters	No of firms	Amount (long Tons)	Per cent
British	6	799,901	23.6
Filipino	7	796,713	22.5
Chinese	1	630,998	17.9
American	7	628,623	17,8
Spanish	5	571,265	16.2
Others		107,442	3.0
Total		3,534,942	100.0

(1) Facts and Statistics about the Philippine Sugar Industry, 1928, Table 10.

Table 27. Philippine Sugar Exports Entering Custom Districts of the United States, 1923-29.

Customs District	1917-22(1) Average (short tons)	1917-22(1) (per cent)	1923-28(2) Average (short tons)	1923-28(2) (per cent)	1929(2) (short tons)	1929(2) (per cent)
Atlantic coast						
Maryland			117,383	27.6	234,672	33.0
Philadelphia			132,196	31.0	232,193	32.7
New York			91,283	21.3	156,228	22.0
Virginia			-	-	4,482	0.6
Massachusetts			267	0.1	-	-
Total	149,251	77.3	341,129	80.0	627,575	88.3
Pacific coast						
San Francisco			72,053	17.0	46,293	6.5
Los Angeles			756	0.2	5,505	0.8
Washington			1,080	0.3	2,717	0.4
Oregon			544	0.1	1,628	0.2
Hawaii(3)			-	-	-	-
Total			74,433	17.6	56,143	7.9
Gulf coast						
New Orleans			9,718	2.2	27,009	3.8
Galveston			625	0.2	-	-
Total	43,903	22.7	10,343	2.4	27,009	3.8
Grand Total	193,154	100.0	425,905	100.0	710,727	100.0

(1) Facts and Statistics about Philippine Sugar Industry, 1928, table 9.
(2) United States Tariff Commission; United States-Philippine Tariff and Trade Relations; Report No. 18, 1931, p. 103.
(3) Two hundred pounds. The quantity entering the United States in 1917-22 was not given by states.

from their sugar plantations in Hawaii.

Methods of Financing. The two primary ways of financing the sugar exports are through the aid of the Philippine National Bank, which has an agency in New York, and by the toll system.(1)

The usual method of financing through the Philippine National Bank is to have the agency borrow in New York against acceptances drawn on New York banks and indorsed by itself. The acceptances are sold in the open market. The proceeds are deposited with the New York Bank against which the Philippine National Bank in Manila sells telegraphic dollar transfers. The acceptances which are generally for 45 days, are created after the New York agency (which received the sugar) and the accepting bank receive advice of the shipment from Philippine posts. Nearly 50 per cent of the recent annual sugar exports have been financed by this method. The Philippine National Bank finances the shippers by purchasing 90 day sight drafts drawn on the shippers' selling agencies in New York.

The toll system was introduced in 1925 by bankers who were interested in the sugar industry. The raw sugar is shipped direct to the foreign tolling refiners where it is refined and the finished product is sold. After the deduction of charges for refining and selling, the balance is remitted to the shippers. By this method, the producers carry the risk in marketing the sugar until its sale by refineries.

(1) Edwin B. George, U. S. Dept. of Commerce, Phil. Trade Financing and Exchange, Trade Information Bul. No. 419 July 1926, pp 3-4.

CHAPTER VII

COMPETITIVE POSITION OF PHILIPPINES IN WORLD SUGAR TRADE

Position in World Cane Production. Within the last decade production of cane sugar has expanded at a greater rate in the Philippines than in all other cane sugar exporting countries. Among the latter, its output is exceeded now only by that of Cuba and Java.

The total world production of cane and beet expanded from an average of 16,843,439 short tons in 1907-11 to 19,773,531 in 1912-16, declined to 18,489,267 in 1917-21, and increased rapidly to 32,244,162 tons in 1930-31 (table 28). The contraction of the world production during the War period (1918-19) was due to the severe reduction in the acreage of sugar beets in Europe. Cane sugar production was slowly expanded during this period. Rapid expansion of production in the twenties was necessary to make up for the contraction during the War period. In fact, if production had continued to expand at the same rate as it did during 1906-19 (averaging 3.77 per cent per year) it would have been higher than the actual production in 1930-31, since the production for the entire period, 1906-31 expanded at the rate of only 2.72 per cent per year. The world production has declined since 1931 due to the effect of the Chadbourne Plan.

Cane sugar accounted for 52 per cent of the world sugar production in 1907-11, 71 per cent in 1916-20, 69 per cent in 1921-26, and 65 per cent in 1927-31. Cane sugar production

Table 28. World Sugar Production 1907-1933 (1)

	1907-1911	1912-1916	1917-1921	1922-1926	1927-1931	1932-1933
SUGAR CANE PRODUCTION:						
Continental U.S.	362,208	241,823	286,252	201,882	126,663	193,322
U.S.Insular Areas:						
Philippines	156,902	250,544	241,782	446,140	784,879	1,190,574
Hawaii	516,250	599,805	591,880	673,360	916,492	1,016,670
Virgin Islands	15,680	8,697	8,756	4,914	6,489	5,089
Puerto Rico	283,556	400,296	469,831	499,995	725,833	977,815
Cuba	1,610,787	2,960,347	4,056,124	4,855,551	4,808,428	2,577,604
Java	1,393,970	1,501,110	1,796,901	2,187,679	3,117,184	2,170,000
British India	2,347,206	2,782,898	3,128,043	3,229,744	3,401,440	4,412,800
Total Cane All Countries	8,739,706	11,037,146	13,416,148	16,208,848	19,456,999	18,788,023
BEET SUGAR PRODUCTION:						
United States	484,520	727,210	832,096	916,824	1,048,886	1,198,522
Canada	-	14,509	21,762	26,097	35,014	52,782
Europe	7,629,213	7,994,666	4,219,261	6,311,893	9,440,432	5,460,321
Total Beet Sugar	8,113,733	8,736,385	5,073,118	7,254,814	10,524,333	9,211,625
TOTAL CANE AND BEET SUGAR ALL COUNTRIES	16,853,439	19,773,531	18,489,267	23,463,662	29,981,332	28,000,148

(1) U.S. Tariff Commission, Statistics on Sugar, May 1933, p. 9
Based on Willet and Gray.

was expanding at a more rapid rate than beet sugar production prior to the War period but expanded less rapidly after the War on account of the recovery of the beet sugar industry of Europe.

The three principal cane sugar producing countries of the world during 1907-31 were Cuba, British India and Java, while Brazil in 1923-31[1] ranked fourth and Hawaii was the fifth leading cane sugar producer. Hawaii and Porto Rico each produced more sugar every year than did the Philippines between 1906 and 1925. Since 1926 the Philippine production has exceeded that of Porto Rico and since 1931 and 1932 that of Hawaii and Brazil respectively (Fig. 15a). Philippine production in 1932-34[2] ranked fourth in importance among the cane producing countries of the world.

The production of sugar in the Archipelago was expanded to an average of 784,879 short tons in 1927-31. This amounted to an average of 4 per cent of the world cane sugar production in the same period. (Table 29)

Table 29. Proportions Occupied by the Principal Cane Producing Countries of the World[1]

Period	Philippines	Hawaii	Porto Rico	Cuba	Virgin Islands	British India	Java
1907-11	1.8	5.9	3.24	18.4	0.2	26.85	16.0
1912-16	2.3	5.43	3.61	26.8	0.078	25.21	14.0
1917-21	1.8	4.41	3.5	30.2	0.07	23.3	13.4
1922-26	2.73	4.2	3.1	30.0	0.03	19.93	13.5
1927-31	4.03	4.71	3.73	24.7	0.033	17.48	16.9
1932-33	6.4	5.4	5.25	13.64	0.03	23.57	11.4

(1) United States Tariff Com., Statistics on Sugar, May 1933 p. 9.

(1) Farr & Co., "World's Sugar Production, Manual of Sugar Companies, 1934, pp 56-57.

(2) Ibid, pp. 56-57.

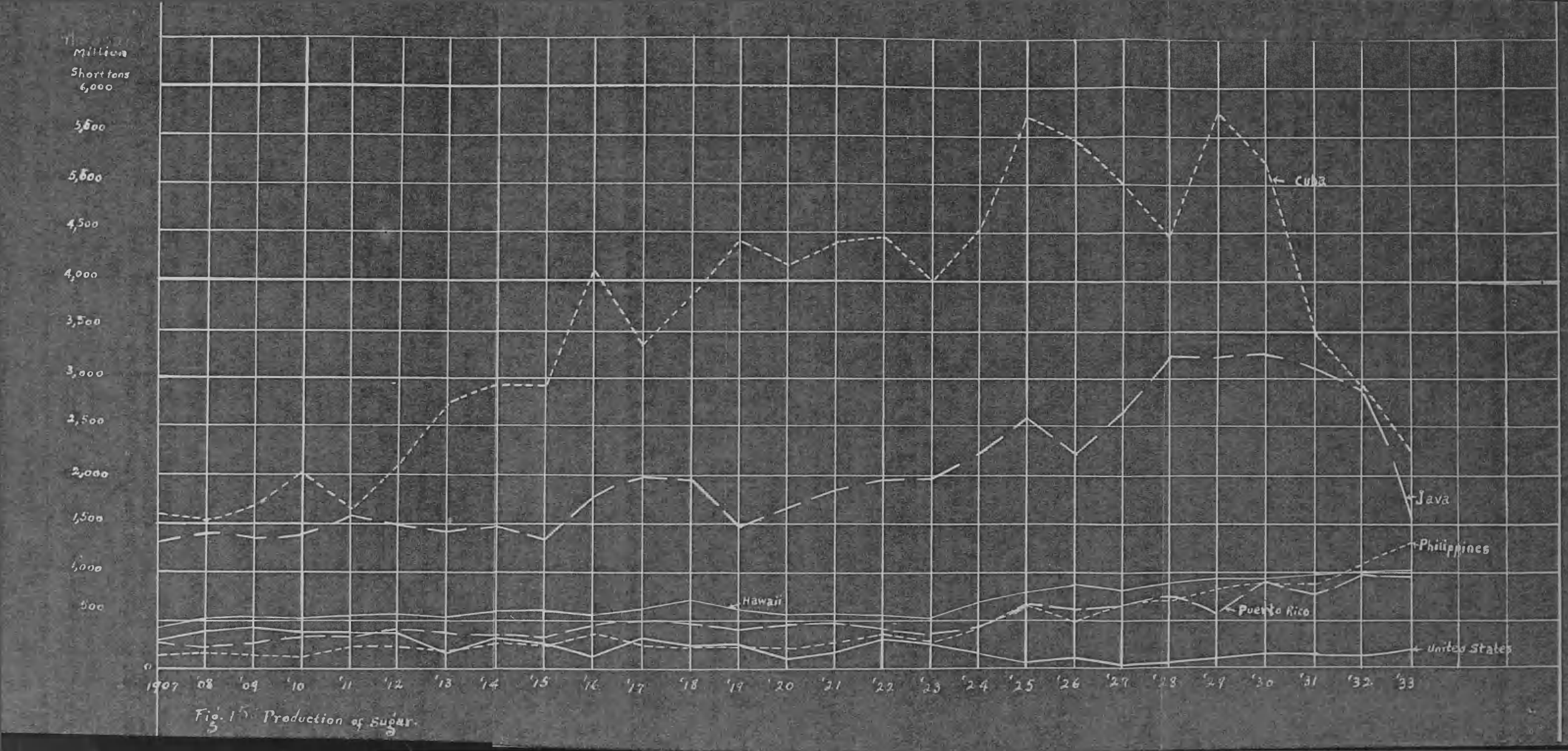


Fig. 15. Production of Sugar.

Cuban sugar production reached a high point in 1927-31 averaging 4,808,428 short tons or 24.7 per cent of the world cane sugar production.

By 1932 the Philippine Islands was producing 5.6 per cent of the world cane sugar output exceeding all other United States Insular Possessions, while on the other hand, Cuba's share had fallen from an average of 24.7 per cent during 1927 to 1931 to 14.7 per cent in 1932. The Philippines changed their international position during these years attributable primarily to increased protection accorded the Continental United States and Insular Possessions under the Smoot-Hawley Tariff, and to limitations on Cuban Javan production under the Chadbourne International Sugar Agreement approved in 1931.

The Chadbourne Plan in Relation to Philippine Exports. The fact that sugar production throughout the world expanded faster during the late twenties than the demand for sugar caused the price of sugar to decline in New York and London from 3.8 and 5.1 cents per pound in 1929 to 2.9 and 3.06 cents, respectively, in 1932.(1) The severe decline in world sugar stocks brought about a demand for some method of controlling production and exports in the surplus producing countries of the world. This demand resulted in a method of control known as the Chadbourne Plan.(2) The Plan was adopted on May 9, 1931 by the representa-

prices during this period and the great accumulation of world sugar

(1) U.S.D.A. Yearbook, 1932, p. 681; Dr. C.C.Stine, U.S.Bureau of Agri. Econ., 1934 (arranged(compiled from the Yearbook of the Int. Institute of Agriculture and "The Economist", London.

(2) The Chadbourne Plan was named after its author, Thomas L. Chadbourne, New York lawyer and representative of American sugar interests in Cuba. The two principles of the plan were: (1) that each exporting country should segregate its entire unsold surplus stocks of sugar and finance that surplus for 5 years, one-fifth of the segrated stock to be sold each year; and (2) that production and exports be reduced for 5 years on the basis of the 1931 crop. The Plan is administered by the International Sugar council which is composed of 27 members, or three members from each signatory

tives of Cuba, Java, Germany, Belgium, Czechoslovakia, Hungary, and Poland during their conference at Brussels. The objective was to limit exports and control production of stocks. Peru and Yugoslavia accepted the plan before the end of 1931. The members of the plan produced about 40 per cent of the world's sugar and nearly 90 per cent of the world's exports sold in foreign markets. The Chadbourne Plan which was adopted, became effective for the 1930-31 crop. It provided production and export quotas for the members for 1931-1935 (table 30 a.) As a result of the operation of the plan a reduction in the world sugar production took place, from over 32 million short tons in 1930-31 to less than 27 million tons in 1932 and a reduction in production of the members of the agreement from 12.7 million tons to 7 million tons for this period (Table 30, Fig. 15). However the accumulation of stock carry-over was at a faster rate of increase than that of the world sugar production. Accumulated stocks increased from 8.5 per cent in 1920-21 to 9.6 per cent in 1927 and to 28 per cent in 1933, or an increase from 4.5 million short tons in 1930-31 to 7.5 million tons in 1932-33 (Figs. 15 & 16.) In spite of the reduction in world sugar production, the accumulated stocks carried over has greatly expanded because world sugar consumption has not increased materially.

Although the total world production of sugar has declined since the inauguration of the Chadbourne Plan, sugar output in the Philippine Islands has steadily increased. The countries agreeing to the provisions of the Chadbourne Plan have suffered

(continued from 103) country. The number of members is in proportion to the importance of each country as a sugar producing nation. The council's seat is at The Hague, Holland.

Table 30. Chadbourne Plan. May 9, 1931 (1)

Sugar Export Quotas of various countries under the terms of Plan

1931-1935

Country	1931	1932	1933	1934	1935
Cuba	1,000 sh.tons	1,000 sh. tons	1,000 sh.tons	1,000 sh. tons	1,000 sh. tons
Sugar season Jan-Dec.					
To the United States	2,886	3,136	3,136	3,136	3,136
To the other countries	734	902	958	958	958
Total exports from Cuba a)	3,620	4,038	4,094	4,094	4,094
	1931-32	1932-33	1933-34	1934-35	1935-36
Java (b) beginning Apr.1st. Sugar season April-Mar.	2,535	2,645	2,756	2,866	2,976
Europe:- Sugar season Sept-Aug.	1930-31	1931-32	1932-33	1933-34	1934-35
Czecholovakia	629	629	629	629	629
Germany	551	386	331	331	331
Poland	340	340	340	340	340
Hungary	93	93	93	93	93
Belgium	33	33	33	33	33
Total Europe	1,646	1,481	1,426	1,426	1,426
Total above countries	7,801	8,164	8,276	8,386	8,496

(1) a) includes 291,000 short tons drawn each year from quantity segregated
b) includes 110,000 short tons drawn each year from quantity segregated

Lynn Ramsay Edminister, U. S. Dept. of Agr., Bureau of Agr. Economics, Agricultural Price- supporting Measures in Foreign Countries, July 1932, p. 68.

Table 30.—Production of Sugar in the World, by Members of Chadbourne Plan, United States (cane and beet) and Insular Possessions.

Year	World Sugar Production Average	Total Members of Chadbourne plan	Stocks and Carry-over	United States (cane and beet and Insular possessions	World Sugar Consumption (3)
	Quantity (1) short tons	Quantity short tons	Quantity (2) short tons	Quantity short tons	short tons
1920-21	18,808,866	9,153,497	1,600,000	2,602,124	
1921-22	19,876,586	9,518,869	2,400,000	2,697,694	
1922-23	20,590,506	9,540,584	1,200,000	2,198,010	
1923-24	22,737,937	10,440,238	1,300,000	2,612,735	
1924-25	26,867,443	13,274,598	1,000,000	3,274,896	
1925-26	27,245,839	12,680,031	1,600,000	2,932,261	27,053,000
1926-27	27,011,017	12,177,550	2,600,000	3,048,366	27,062,000
1927-28	29,210,036	12,675,481	2,400,000	3,516,492	28,370,000
1928-29	30,839,312	14,141,705	2,500,000	3,557,015	30,290,000
1929-30	30,602,126	13,944,482	2,800,000	3,873,573	29,592,000
1930-31	32,244,162	12,700,908	4,473,848	4,050,765	29,695,000
1931-32	29,250,861	9,804,000	6,951,176	4,428,634	28,770,000
1932-33	26,749,435	7,044,000	7,504,202	4,735,360	28,993,000

(1) United States Tariff Commission, Statistic on Sugar, May 1933, p. 9; U. S. Dept. of Agri. Yearbook, 1923 pp. 849-851. Ibid, 1924, pp. 806-07; Ibid, 1928, pp. 879-80; Ibid, 1930, pp. 699-700; Ibid, 1934, pp. 477-478; Foreign Crops and Markets, The World Sugar situation, vol. 26, No. 23, June 5, 1933, p. 659; Ibid, vol. 29, No. 5, July 30, 1934, pp. 107-108; Ibid, p. 111.

(2) J. W. F. Rowe, Royal Economic Society, Memorandum No. 23, No. 1 Sugar, Oct. 1930, p. 42.

(3) U. S. D. A. Foreign Crops and Markets, Vol. 22, No. 20, May 18, 1931; pp. 693-694; Ibid, Vol. 29, No. 5, July 30, 1934, pp. 113-114.

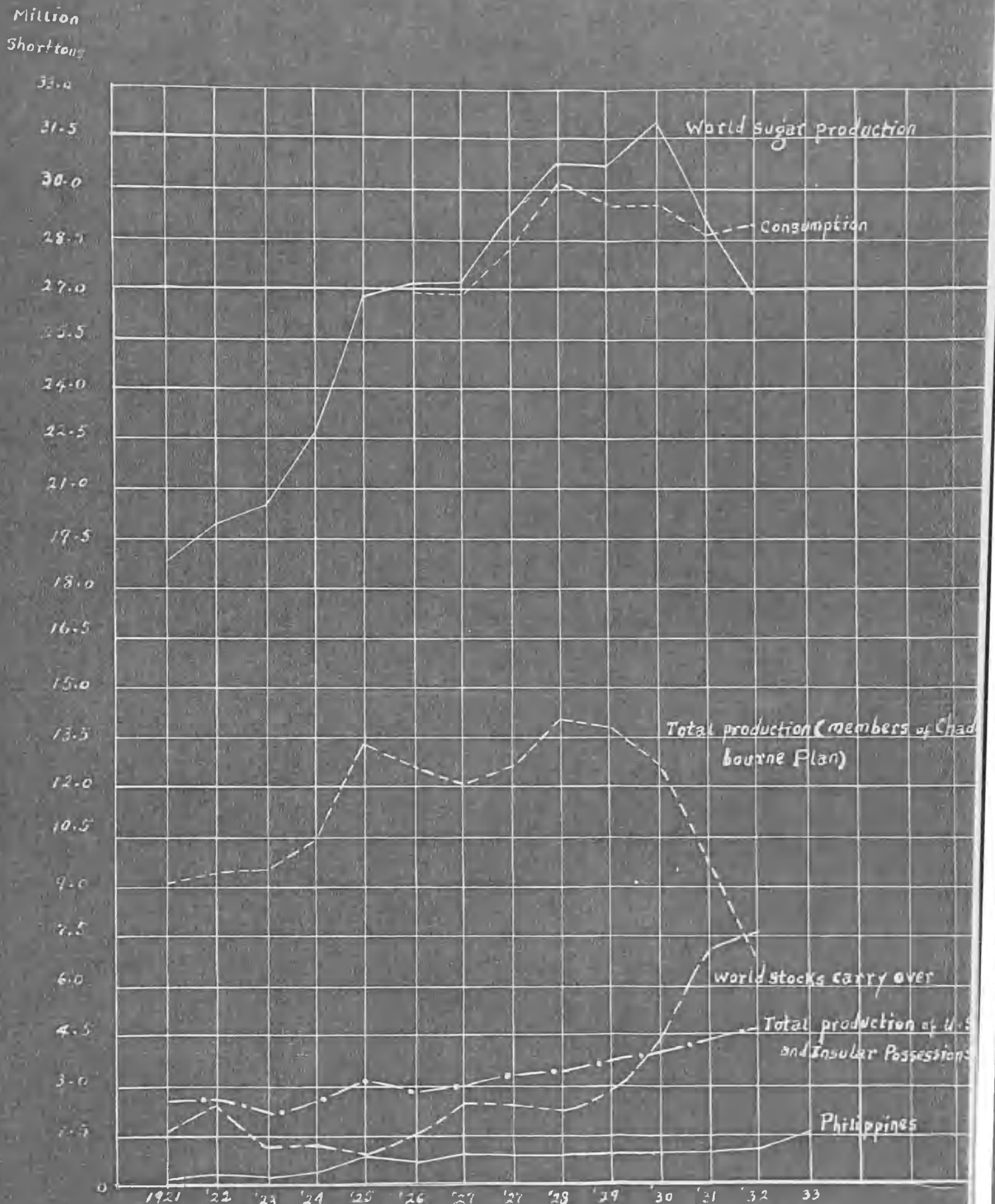


Fig. 1. Production of Sugar in the World, members of Chadbourne Plan, U.S. and Insular Possessio

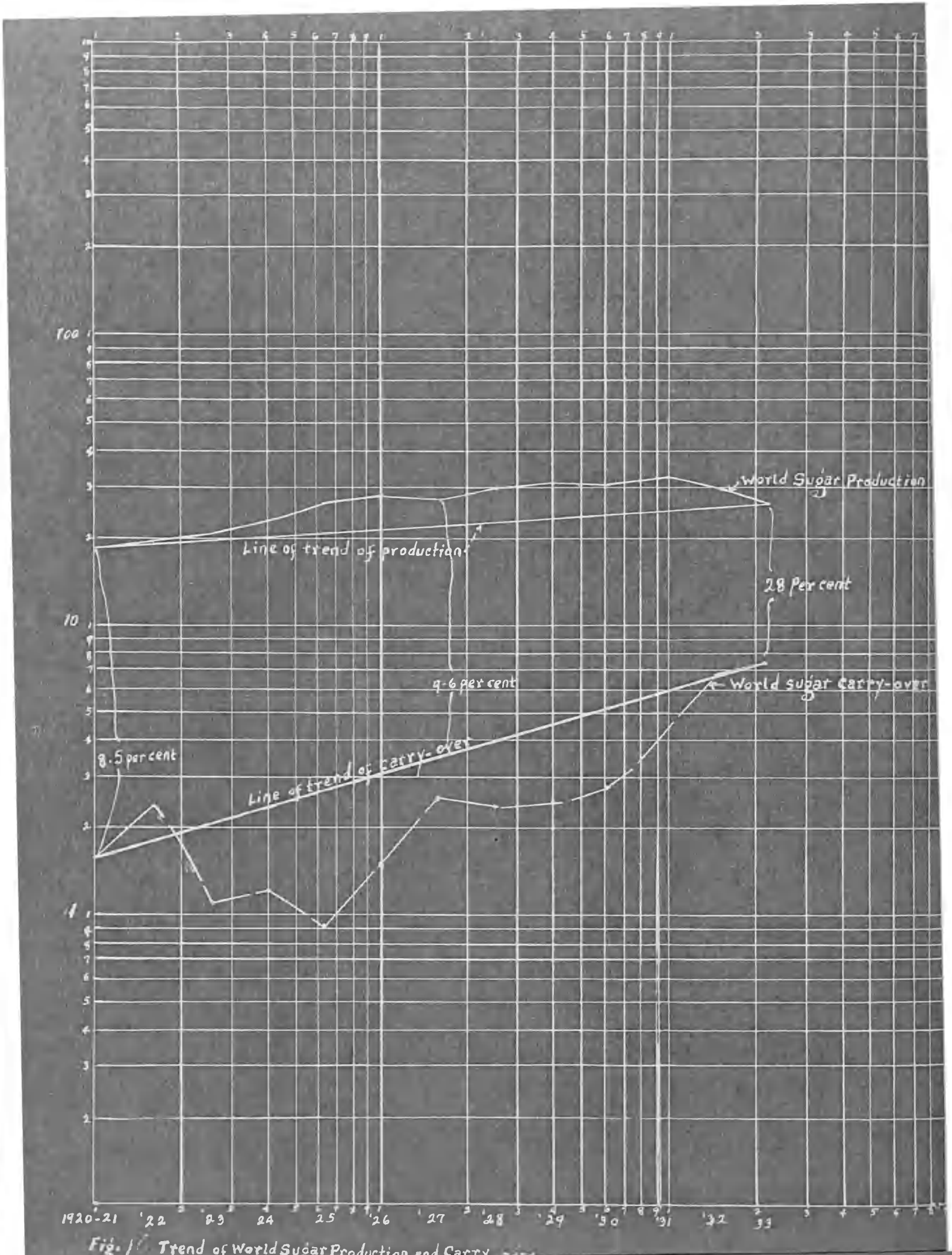


Fig. 1 Trend of World Sugar Production and Carry

serious financial difficulties during these recent years, but the Philippine sugar industry has prospered chiefly because they have enjoyed a preferential tariff position and a favorable transportation costs.

Changing Positions in the United States Sugar Import Trade. Since the existence of free trade relations between the United States and the Philippines, the importance of the American market to the Islands sugar became significant. Although in 1919-21 only 53 per cent of the annual production of the Philippines was received by the United States market, this proportion has grandually increased to 77 per cent in 1922-26 and 91 per cent in 1927-32. (Table 31)

On the other hand, Hawaii, Porto Rico and Cuba exported an even greater proportion than did the Philippines. During the period from 1919 through 1921, the proportion of the total production exported to the United States by Hawaii, was 96 per cent; Porto Rico 90 per cent and Cuba 67 per cent. (Table 31) Although Hawaii has exported the greatest proportion of her total output to the United States during the period 1927-32, the rate of increase has been more rapid for the Philippines than for Hawaii, Porto Rico or Cuba. In spite of the fact that the proportion of Cuban sugar production exported to the United States in 1927-32 has declined, the United States has remained the principal importer of Cuban sugar.

International Position as Exporters of Cane Sugar. Prior to 1924, sugar exports from the Philippines were less than from its principal competitors, Cuba, Java, Hawaii or Porto Rico. Since this year, sugar exports from the archipelago have also been greater than Porto Rican exports in every year but two. (Table 32, Fig. 17.) The Philippine sugar exports which were

Table 31. Production of Sugar(1) in The Philippines, Hawaii, Cuba and Puerto Rico and Amounts Exported to the United States

Year (2)	Philippines			Hawaii			Cuba			Puerto Rico		
	Production (Short tons)	Receipts in U.S. Markets (Short tons)	Ratio of Receipts to Production (Per cent	Production (Short tons)	Receipts in U.S. Markets (Short tons	Ratio of Receipts to Production (Per cent)	Production (Short tons)	Receipts in U.S. Markets (Short tons)	Ratio of Receipts to Production (Per cent)	Production (Short tons)	Receipts in U.S. Markets (Short tons)	Ratio of Receipts to Production (Per cent)
1919-1921	247,000	133,000	53	579,000	557,000	96	4,345,000	2,712,000	67	494,000	415,000	90
1922-1926	446,000	345,000	77	673,000	653,000	97	4,856,000	3,934,000	81	500,000	451,000	90
1927-1932	943,500	863,000	91	970,000	947,000	97.3	3,861,600	2,512,000	65	862,500	779,500	91

(1) United States Tariff Commission, Statistics on Sugar, May 1933, p. 8 (Table 6)
(2) Production is for crop years; receipts are by calendar years.

Thousand Short tons

5,750
5,500
5,250
5,000
4,750
4,500
4,250
4,000
3,750
3,500
3,250
3,000
2,750
2,500
2,250
2,000
1,750
1,500
1,250
1,000
750
500
250
0

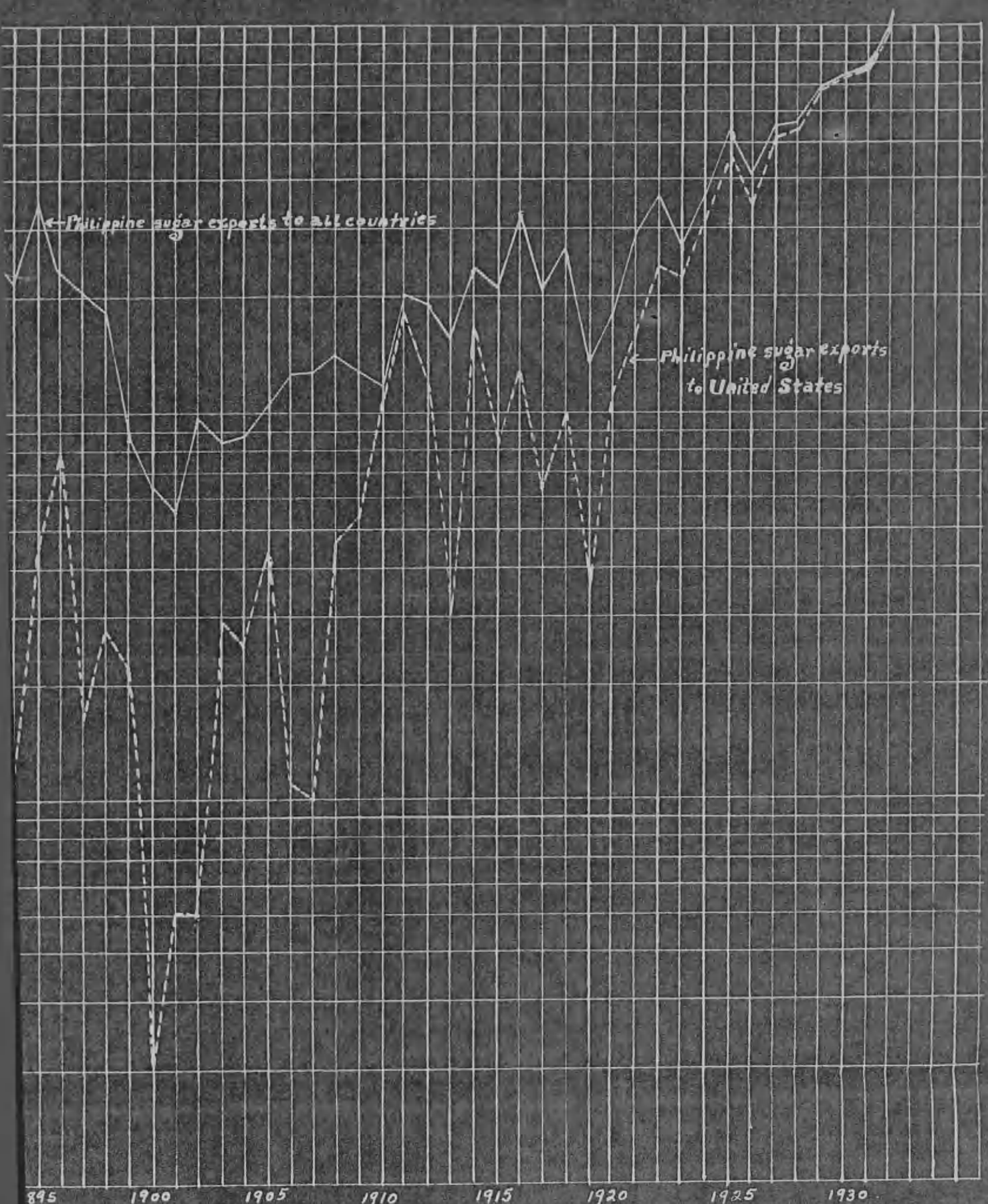
Cuba
Java
Hawaii
Puerto Rico
Philippines

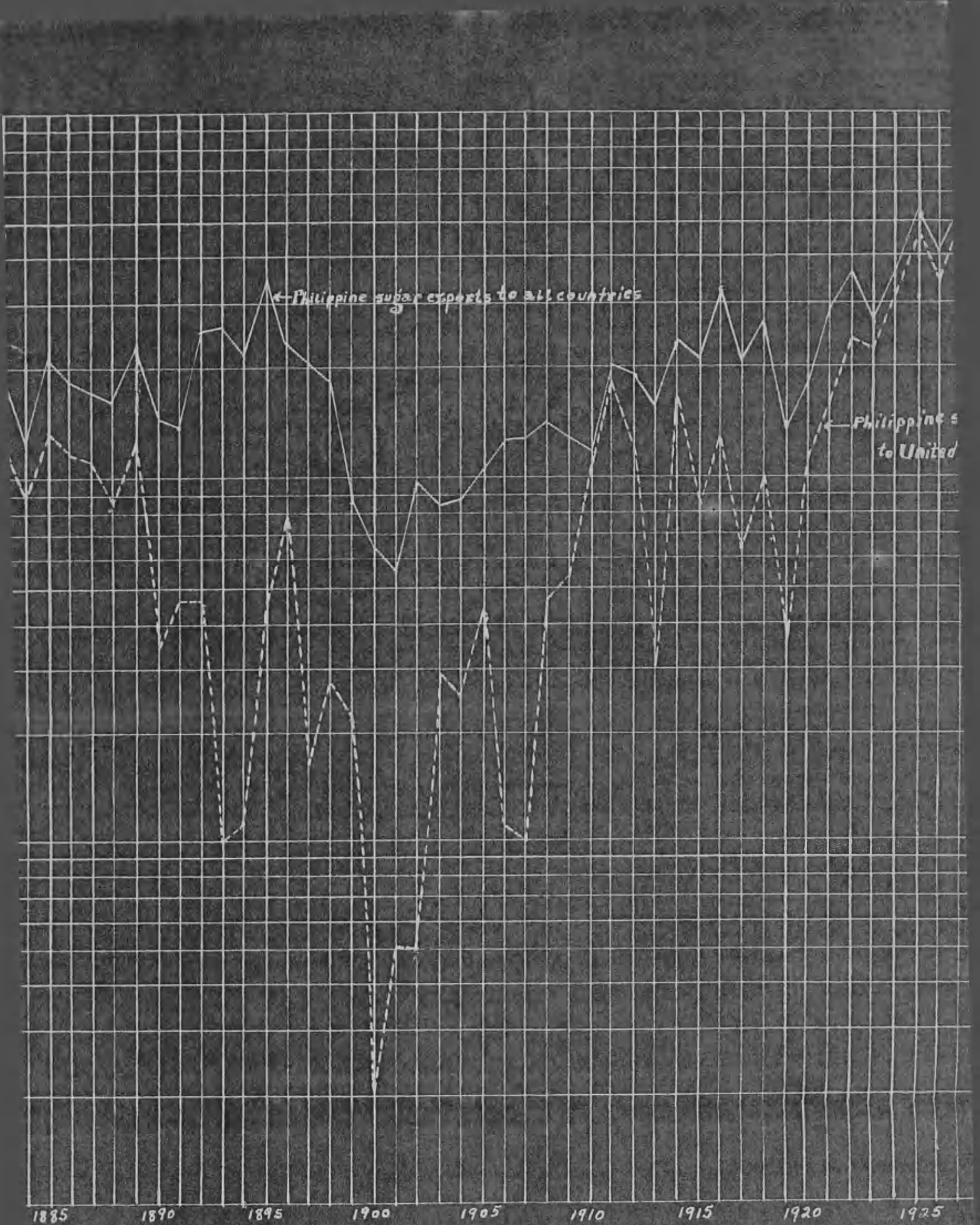
1904 '05 '06 '07 '08 '09 '10 '11 '12 '13 '14 '15 '16 '17 '18 '19 '20 '21 '22 '23 '24 '25 '26 '27 '28 '29 '30 '31

Fig. 17. Exports of Sugar from five selected Countries.

only 95,959 short tons in 1904 were consistently increased to a high of 1,120,572 in 1933 due to the free trade relation between the United States and the Philippines and the increased tariff duties on Cuban sugar. (Fig. 18) Beginning with 1932 the Philippine sugar exports have exceeded those of Hawaii every year. The average was 150,596 short tons in 1904-13,(1) 649,992 in 1924-30 and 975,265 in 1931-32 (Table 32). Cuba and Java, the two principal cane sugar exporting countries, exported, respectively, about 11 and 9 times as much, as did the Philippines in 1904-13, 7 and 4 times as much during 1924-30, but only 3.1 and 1.8 times as much in 1931-32. Hawaiian and Puerto Rican sugar exports were 233 and 72 per cent, respectively, more than that of the Philippines in 1904-13. In 1924-30 the Hawaiian sugar exports were 23 per cent more than that of the Philippines, but the latter Island exported 17 per cent more than did Porto Rico. The Philippine sugar exports in 1931-32 were practically the same as that of Hawaii but 14 per cent more than that of Porto Rico. Cuba, Java, Hawaii, and Porto Rico had the greater amount of sugar exported during the early periods under study than that of the Philippines because the former countries were already producing greater quantities of the higher grade sugar demanded by the principal markets of the world while the Philippines was just starting to produce the 96° centrifugal sugar. Hawaii, Porto Rico and Cuba had free trade and preferential treaties with the United States prior to agreements made

(1) The 1904-13 average was considered as a single period in order to correct the effect of some abnormalities in the Philippine sugar industry during the early part of the American administration.


←Philippine sugar exports to all countries
←Philippine sugar exports to United States
895
1900
1905
1910
1915
1920
1925
1930


Philippine sugar exports to all countries
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to United
1885
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1895
1900
1905
1910
1915
1920
1925

States.

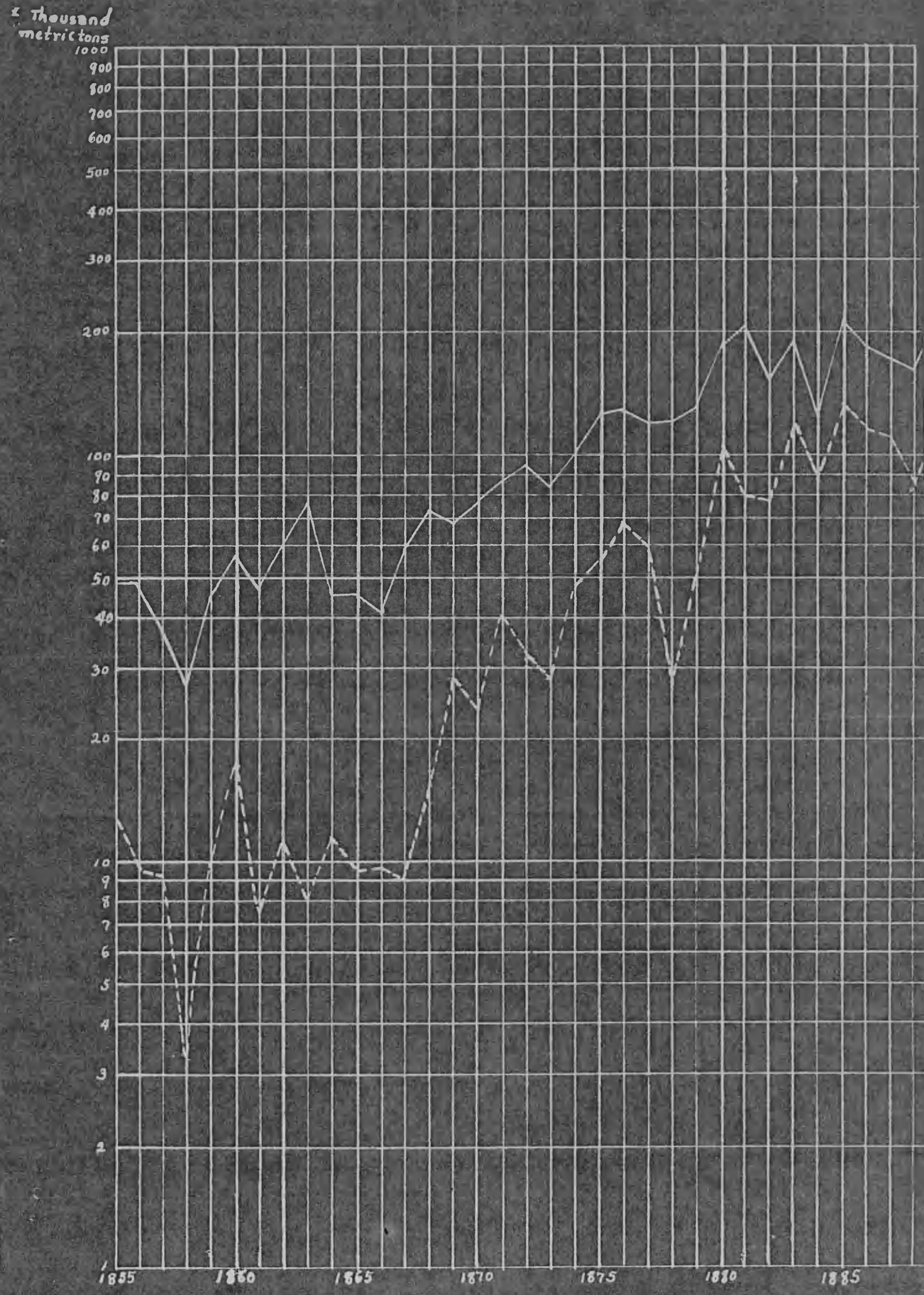

Fig. 18. Philippine Sugar exports to all Countries and to the United States.

Table 32. Export of Sugar from the Philippines and Competing Countries. (1)

Year	Philippines (short tons)	Cuba (short tons)	Dutch East Indies (short tons)	Hawaii (short tons)	Puerto Rico (short tons)
1904-08	131,760	1,241,724	1,228,603	436,858	183,785
1909-13	169,432	1,999,889	1,411,754	567,437	335,584
1914-18	278,675	3,160,680	1,419,837	602,722	373,159
1919-23	273,442	4,119,207	1,762,612	573,872	401,203
1924-30	649,992	4,693,114	2,416,789	802,598	556,315
1931-32	975,265	2,978,689	1,703,823	972,263	859,497

(1) Yearbook, Dept. of Agri. 1907, p.688
" " " " 1912, p.654
" " " " 1915, p.499
" " " " 1920, p.682
" " " " 1921, p.662
" " " " 1922, p.783
" " " " 1924, p.809
" " " " 1926, p.1013
" " " " 1928, p.882
" " " " 1930, p.702
" " " " 1933, p.492

(2) Foreign Agricultural Service, compiled from commerce and navigation of U.S., 1906-17; Foreign Commerce and Navigation of U.S. 1918. Monthly summary of Foreign Commerce of U.S., June issues 1919-1926, Jan. and June issues, 1927-1932.

(3) Information from the Custom House, arranged to U.S. Dept. of Agr. Bureau of Agr. Economics, Washington, D.C. 1934; G.G. Gordon. A Review of the Philippine Sugar Industry, 1933.

between the Philippines and the United States. Furthermore the American capitalists in Hawaii, Cuba and Porto Rico who aided the development of the sugar industry of these countries during the early periods had great influence in the American markets; thus these countries had already established a more stable market in the United States. Cuba and Java had established good markets earlier than the Philippines because the former countries have created efficient marketing organizations with agencies in foreign countries to sell sugar in domestic and foreign markets.

A comparison of the relative amount of sugar marketed in the United States, from the standpoint of source, shows that Philippine sugar has steadily gained in importance. In the period of 1897-01 Philippine sugar accounted for only 0.7 per cent of the total United States supply. In 1927-31, 10.3 per cent of the United States supply was Philippine sugar and by 1932 this figure had increased to 17 per cent (table 33). The greatest increase occurred during the last ten years of the period studied. The proportionate amount of sugar secured from Hawaii, Porto Rico and Cuba has not increased as rapidly as the amount coming from the Philippines. The proportional amount of sugar consumed in the United States, coming from Cuba, was most important during the years 1912 to 1926, when Cuban sugar constituted from 50 to 56 per cent of the total consumption. The Hawaiian, Porto Rican and Cuban sugar industry have a greater proportion of their sugar marketed in the United States than the Philippines because of the reasons mentioned previously in this section. Sugar exports from the Philippines to the United States did not attain great importance

Table 33. Sources of Sugar marketed for Consumption in the United States.(1)

Sugar Sources	Percentage of total market deliveries: 1897-1901	1902-1906	1907-1911	1912-1916	1917-1921	1922-1926	1927-1931	1932
Continental United States								
Cane	11	11	11	6	5	3	2	2.7
Beet	3	88	14	18	18	17	17	21
Total	14	19	25	23	22	20	19	23.7
U. S. Insular Possessions								
Philippines	0.7	0.8	2.3	3	2.3	5.4	10.3	17
Hawaii	12	13	14	14	12	10	13	16
Puerto Rico	2	5	7	9	9	7	10	15
Virgin Island					0.2	0.1	0.1	0.1
Total	14.7	18.8	23	26	23.2	22.1	33.1	48.1
Total U. S. Continental and Insular areas								
Foreign								
Cuba	17	38	42	50	49.1	56	47	28
Other foreign	54	23.2	9	1	3.2	1.2	0.4	0.2
Total foreign	71	61.2	51	50.5	52.3	57.2	47.4	28.2
Miscellaneous	100	100	100	100	100	100	100	100

(1) United States Tariff Commission, Statistics on sugar for 1933, p. 13. (Table 9) Based on Willet and Gray.

until a number of favorable factors developed. Among these were the expansion of production of higher grade sugars in the Archipelago, an increase in the number of investors and exporters interested in the Philippine sugar industry and the establishment of the Philippine National Bank agency. As a result of these developments, sugar exports to the United States in 1932 amounted to almost 100 per cent of the total sugar exports of the Philippines.

The proportion contributed by the United States beet sugar industry to the total sugar supplied the American people has expanded rapidly from 3 per cent in 1897-1901 to 17 per cent in 1927-31 and 21 per cent in 1932 due to the high protection and the government bounty given to the American industry. The United States cane sugar output has occupied a minor position in the total sugar consumption of the United States, being 11 per cent in 1897-01; declining to 2 per cent in 1927-31 and increasing slightly to 2.7 per cent in 1932, showing no appreciable increase in spite of tariff protection.

In general the Philippine sugar contribution to the total market deliveries in the United States had a faster rate of increase than those of competing countries although Cuba has contributed the greatest proportion during 1897-32. This increase in the sale of Philippine sugar in the United States was due to the great advantage resulting from the favorable trade relations between the Philippines and the United States in recent years and the great improvement made in the sugar industry of the Archipelago.

Competitive Advantages and Disadvantages in Supplying United States Market. It was not until after the establishment

of the first modern centrifugal sugar central, the introduction of plant breeding work, the enactment of free trade relations between the United States and the Philippines, the Establishment of the Philippine National Bank, the passage of a high protective tariff act by the United States Congress to protect the domestic and Insular sugar producers and the favorable adjustment of transportation rates from the Philippines to the United States that the Philippines attained an advantageous position in supplying sugar to the American market. Although the Philippines have favorable climate and soil for the growing of cane, as well as cheap farm labor, they could not compete in the American market with producers in Cuba, Hawaii and Porto Rico without the great encouragement given them by the United States and the Insular Governments. This conclusion is based on the fact that Cuba, Hawaii and Porto Rico had already attained a higher degree of development in the application of modern methods of production, and manufactured higher grades of sugars than the Philippines prior to the World War. After the introduction, in 1885, of the central system, 200 Paris trained engineers and machinists constructed many large and efficient modern mills in Cuba.(1) During 1906-14 American capitalists provided available credit facilities and aided the industry in scientific methods of production and manufacturing sugar. Thus in Hawaii, Cuba and Porto Rico American capitalists had invested large sums of money for the development of the sugar industry of these countries. Besides

(1) L. H. Jenks, Our Cuban Colony, Vanguard Press, New York, Mar. 1928, p. 31; Ibid, pp. 131-132.

these three countries had earlier free trade and preferential treaties than the Philippines which made it possible for the former countries to establish a market for their sugar in the United States earlier than the Philippines.

The other disadvantage of the Philippines in supplying sugar to the United States market has been the high transportation cost involved in shipping sugar. Without high tariff duties on Cuban sugar the Philippines could hardly compete with Cuban or Porto Rican sugar in American market because Cuban and Porto Rican ports are nearer to the great refining companies on the Atlantic coast of the United States than are the ports of the Philippines. (Discussed under Production and Transportation Costs) Cuban costs of production have been less than those of the Philippine Islands.

The following discussion explains further some of the advantages and disadvantages involved in supplying the United States with Philippine sugar.

Sugar Yield per acre Cultivated. The yield of sugar per acre in the Philippines, according to the report of the United States Tariff Commission in 1934, has been higher than in the United States, about the same as in Cuba, but lower than in Hawaii and Porto Rico during 1931-32 (Table 34.) While the average yield per acre from the 30 sugar centrals studied by the Tariff Commission was 2.3 tons, the average for all growers in the Philippines was 1.62 tons in the same period. The standard of production and manufacturing of 30 centrals was considerably higher than the average for the Philippines. The higher yield of sugar in the Archipelago over that of the United States was due to superior climate and soil conditions.

Table 34. Comparative Yield of Sugar per Acre.[1]

Countries	Average Yield per Acre		
	1921-22[1] (short tons)	1923-28[2] (short tons)	1931-32[3] (short tons)
Philippines	0.94[a]	1.13[a]	1.62[a]
"		1.47[b]	2.6 [b]
Cuba	2.0		2.18
Java		6. (1928)	7.00
Hawaii		5.7 (1928)	7.7
Puerto Rico	2.0		4.4
Louisiana cane	1.22[2]	0.8	1.18
United States beet	1.2 [2]	1.44	1.95

(a) Average for the Philippines

(b) Average for the 30 centrals

(1) Sugar Central and Planters News, Comparative Costs of Sugar Production from Statement of Tariff Com., Dec. 1923-24, vol. 6, no. 2, Feb. 1925, p. 105.

(2) U. S. D. A. Yearbook, 1933, p. 487; Ibid., 1934, p. 472; Ibid., p. 474.

(2) Lippert S. Ellis, The Tariff on Sugar.

(3) U. S. Tarriff Com., Report to the President on Sugar, No. 73, 1933, pp. 55-57, pp. 67-68.

Plant breeding work and the introduction of high yielding varieties of sugar cane from other sugar producing countries of the world (Java, Hawaii, etc.) have improved the yield of sugar in the Philippines. Efficient control of the plant diseases and insect pests has been effective throughout the sugar industry of the Archipelago. The high efficiency attained by the centrifugal sugar centrals in the recovery of the sucrose content and in the manufacturing of sugar have materially aided the yield of sugar per acre in the Philippines.

On the other hand, the yield of sugar in Cuba per acre cultivated has not increased materially during the last few years. With an average of 2.0 short tons in 1921-22 the increase was only to 2.2 in 1931-32. Among the sugar producing countries of the world Hawaii and Java have been leading in the yield of sugar per acre which was 6.0 and 5.7 short tons, respectively, in 1928 and 7 short tons per acre for each country in 1932. This high yield of sugar per acre in Hawaii and Java was due to breeding experiments which resulted in high yielding varieties of cane; favorable soil and climate; and a well constructed irrigation system.

Sugar Recovery per Ton of Cane. The available records in 1924 and 1929 show that the extraction of juice from the canes in the Philippines yielded 5 per cent more than that of Cuba or Java which was due to more regular feeding and higher maceration (Table 35). The waste of molasses in the Cuban and Javan sugar industry was higher than that of the Philippines while the carborate ash in refining crystals of 96° to 97° centrifugal sugar was in favor of the latter country, showing that the Philippine sugar industry was more efficient in manufacturing

Table 35. Comparative Efficiency in Manufacturing Sugar and Yield of Sugar per Ton of Cane[1]

Country	1924 - - - - 1929			1929-32[2]
	Extraction of juice	Waste of molasses	Carbonate ash	Pounds of sugar produced per ton of cane
	(per cent)	(percent)	(percent)	(lbs.)
Philippines	95	6-7	0.2-0.4	230
Java	90	8-10	0.2-0.5	
Cuba	90	8-10	0.4-0.6	243
Louisiana cane				139
United States beet				298
Hawaii				237
Puerto Rico				234

(1) Sugar Central and Planters News, Vol. 11, No. 6, June 1921, p. 231.
(2) U. S. Tariff Commission, Report to the President on Sugar, No. 73, 1934, pp. 54, 55, 59, 64, 67, 122 and 127.

sugar than Cuba and Java in 1924 and in 1929.

In 1929-32 the average extraction of sugar per ton of cane in the Philippines was only 230 pounds while Cuba, Hawaii, and Porto Rico had 13.0, 7.0, and 4.2 pounds, respectively, more than that of the Archipelago. (Table 35) The extraction of sugar per ton of beet and cane in the United States was 298 and 139 pounds, respectively, during the same period, indicating that the average yield of sugar per ton of beets is higher in the United States than in the Philippines but less sugar is secured per ton from each ton of cane refined.

Production and Transportation Costs. The study of the centrals in different countries by the United States Tariff Commission for the period 1929-32 shows that the Philippine cost of production including interest was 1.34 cents per pound while that of Cuba was only 0.77 cents and the costs for Hawaii, Porto Rico, and the United States (beet and cane) were 2.34, 2.14, 1.80 and 3.15 cents per pound, respectively, (table 36).

Table 36. Cost of Producing Raw Sugar in Selected Countries 1929-32 (1)

Cents per pound of raw sugar

	1929-30	1930-31	1931-32	Average
Philippines:				
Cost of production including interest	1.38	1.46	1.18	1.34
Transportation of cane and milling including interest	1.05	1.05	0.86	0.99
Total cost f.o.b. factory including interest	2.43	2.51	2.04	2.33
Hawaii:				
Cost of production including interest	2.50	2.32	2.19	2.34
Transportation of cane and milling including interest	0.67	0.65	0.59	0.64
Total f.o.b. factory including interest	3.17	2.97	2.78	2.98
United States beet sugar:				
Cost of production including interest	1.80	1.90	1.72	1.80
Transportation of cane and milling including interest	2.12	1.89	1.70	1.91
Total cost f.o.b. factory including interest	4.11	4.00	3.67	3.93
Puerto Rico:				
Cost of production including interest	2.17	2.35	1.89	2.14
Transportation of cane and milling including interest	0.82	0.97	0.82	0.87
Total cost f.o.b. factory including interest	2.99	3.32	2.71	3.01
Cuba:				
Cost of production including interest	1.003	0.731	0.576	0.770
Transportation of cane and milling including interest	0.216	0.28	0.296	0.264
Total cost, f.o.b. factory including interest	1.80	1.733	1.50	1.68

(1) U. S. Tariff Comm. Report to the President on Sugar, Report No. 73, 2nd series, 1934, P. 56; Ibid: pp. 69-70; Ibid: p. 74; Ibid: p. 130.

The Cuban cost of production of sugar was low due to the employment of contract laborers. Thousands of negros from Hayte and Jamaica and Chinese coolies were introduced annually by the American companies and other land and mill owners under the general regulations act which was framed on October 29, 1917.(1) The general regulations act has therefore aided the sugar industry of Cuba by the introduction of laborers receiving low wages for long hours. This has partly helped in reducing the cost of producing sugar in Cuba. Among the factors contributing to the low production cost in the Philippine sugar industry was the low cost of labor, the natural fertility of the soil, favorable climate, better tillage, the increasing use of plant breeding work in obtaining high yielding varieties, the employment of the imported high yielding types of canes and the application of modern methods of manufacturing sugar. Hawaii and Porto Rico have higher costs of production due to the higher labor costs, the employment of more expensive farm machinery, the construction of irrigation projects and the application of a great quantity of fertilizers. The beet and cane sugar industry of the United States has higher costs of production than that of the Philippines because the soil and climate are not well suited to the growth of sugar beets or sugar cane. The use of expensive farm machinery has added to the higher cost. Farm labor in the United States has been more expensive than that of the Philippines because sugar producers have had to compete for labor with the factories that pay high wages. The United States sugar industry has also employed more expensive

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(1) L. H. Jenks, Our Cuban Colony, 1928, p. 182

irrigation work and fertilizers in the growing of sugar.

The total cost of producing the cane, transporting it to the mills, and milling the raw sugar was lower in Cuba (an average of 1.68 cents per pound) than any of the other sugar producing countries in 1929-32. The total costs of producing, transporting, and milling the Philippine raw sugar was 2.33 cents per pound while Hawaii, Porto Rico, and the United States cane sugars were 0.65, 0.68, and 2.18 cents per pound, respectively more than that of the Philippines in the same period. The United States total cost of producing beets, transporting them to the mills and milling the raw sugar was 1.60 cents per pound more than that of the Philippines, Cuba and the Philippines have the lowest costs due to the reasons previously mentioned.

The average cost of transporting sugar from Philippine ports to the United States was 0.39 cents per pound which was much higher than Cuba and Porto Rico and slightly more than that of Hawaii in 1929-32 (Table 37). This is due to the fact

Table 37. Average Cost of Transportation and Total Delivered Cost Including Interest. 1929-32.(1)

Country	Average cost of Transportation (cents per pound)	Total delivered cost including interest (cents per pound)
Philippines	0.39	2.72
Hawaii	0.31	3.29
Puerto Rico	0.27	3.28
Louisiana Cane	0.13	4.64
United States beet	0.50	4.42
Cuba	0.132	1.923

(1) U. S. Tariff Commission Report to the President on Sugar, Report No. 73, 2nd Series, 1934, p. 56.

that Cuba and Porto Rico are closer to New York (approximately 1400 statute miles) while the Philippines has to bring her sugar

to New York at a distance of 14,533 (statute) miles.(1) Cuba has a much lower total delivered cost (1.923 cents per pound) than any other country competing in the United States market. The total delivered costs for Philippine sugar was also quite low amounting to 2.72 cents per pound in 1929-32.

Differential Advantage of Philippine over Cuban Sugar in United States Market. The method of computation used to determine the tariff advantage of Philippine sugar over that of Cuba is noted below.(2) The American Tariff raised the price of Philippine sugar delivered at New York city, 10.5 per cent in 1919, 206 per cent in 1932 and 154 per cent in 1933 (Table 58, Fig. 19).

In spite of Cuban sugar having an advantage over Philippine sugar in lower transportation costs to the United States ports, Philippine sugar had a differential advantage over Cuban sugar of 0.67 cents per pound in 1919 and 1.85 cents in 1933 as a result of the tariff on Cuban sugar.

In 1920 when the tariff rate was one cent per pound on Cuban sugar and the freight rate was 0.43 cents in favor of Cuban sugar, Philippine sugar had an advantage of only 0.57 cents per pound, or 4.7 per cent of the price of Cuban sugar (11.96 cents per pound) delivered at New York. During 1923-28

(1) The World Almanac and Book of Facts, 1933, p. 793.
(2) Method of Calculation: (a) Secure the c. and f. price New York of Cuban 96° centrifugal sugar (col. 1) and the specific rate of duty on Cuban sugar (col. 2); (b) add the average c. and f. price New York to that of the specific rates of duty to get the average c. and f. duty paid price, New York (col. 3); (c) Subtract the freight rate (col. 4) from the average c. and f. duty paid price New York (col. 3) equals the average Cuban price duty paid (col. 5); (d) To obtain the average net advantage of the Philippine sugar over that of Cuba, subtract the average c. and f. price New York (col. 1) from the average Cuban price duty paid (col. 5); (e) The average advalorem equivalent advantage of the Philippine over Cuban sugar is secured by dividing the net advantage

Table 38. Approximate Average Tariff Advantage of Philippines over Cuba Sugar under United States Tariff Acts.(1)

Year	Cuban Sugar, 96d. Centrifugal			Philippine Sugar, 96d. Centrifugal				
	Average c.&f. price, New York.	Specific rate of duty.	Average c.&f. duty-paid price, New York.	Average Cuban price duty paid. Column (3) less freight differential; i. e. comparative value of Philippine sugar.	Freight rate. (Disadvantage.)	Average ad valorem equivalent advantage over Cuban sugar. (Column 6 divided by Column 1.)	Net advantage over Cuban sugar tariff minus freight differential. (Column 5 minus column 1.)	Comparative tariff advantage of Philippine sugar exports. (Column 6 times the quantity exported to the U. S.)
	(1) (Cents per pound.)	(2) (Cents per pound.)	(3) (Cents per pound.)	(4). (Cents per pound.)	(5) (Cents per pound.)	(6) (per cent)	(7) (Cents per pound.)	(Dollars.)
1919	6.36	1.00	7.36	7.03	.33	10.5	.67	46,680.
1920	11.96	1.00	12.96	12.53	.43	4.7	.57	1,561,806.
1921	3.46	1.60	5.06	4.86	.20	40.3	1.40	4,645,287.
1922	3.00	1.60	4.60	4.41	.19	47.3	1.41	7,612,571.
1923	5.22	1.76	6.98	6.83	.15	30.8	1.61	8,184,818.
1924	4.17	1.76	5.83	5.74	.19	37.6	1.57	10,416,016.
1925	2.56	1.76	4.32	4.12	.20	60.9	1.56	15,960,294.
1926	2.59	1.76	4.35	4.18	.17	61.4	1.59	11,966,018.
1927	3.04	1.76	4.80	4.66	.14	55.3	1.62	18,157,592.
1928	2.45	1.76	4.21	4.03	.18	64.5	1.58	18,652,004.
1929	1.99	1.76	3.75	3.56	.19	78.9	1.57	23,227,386.
1930	1.40	2.00	3.40	3.24	.16	128.0	1.84	29,930,117.
1931	1.30	2.00	3.30	3.17	.13	138.0	1.87	31,016,669.
1932	0.90	2.00	2.90	2.76	.14	206.0	1.86	41,677,069.
1933	1.20	2.00	3.20	3.05	.15	154.0	1.85	42,853,382.

(1) U. S. Tariff Com., United States--Philippine Tariff and Trade Relations, Report no. 18, 1931, p. 104; U. S. Tariff Com. Statistics on Sugar, May 1933, p. 31; U. S. D. A. Yearbook, 1934, p. 479; G. G. Gordon, Brief Review of the Philippine Sugar Industry, 1934 (Exports of 1,050,328 metric tons).

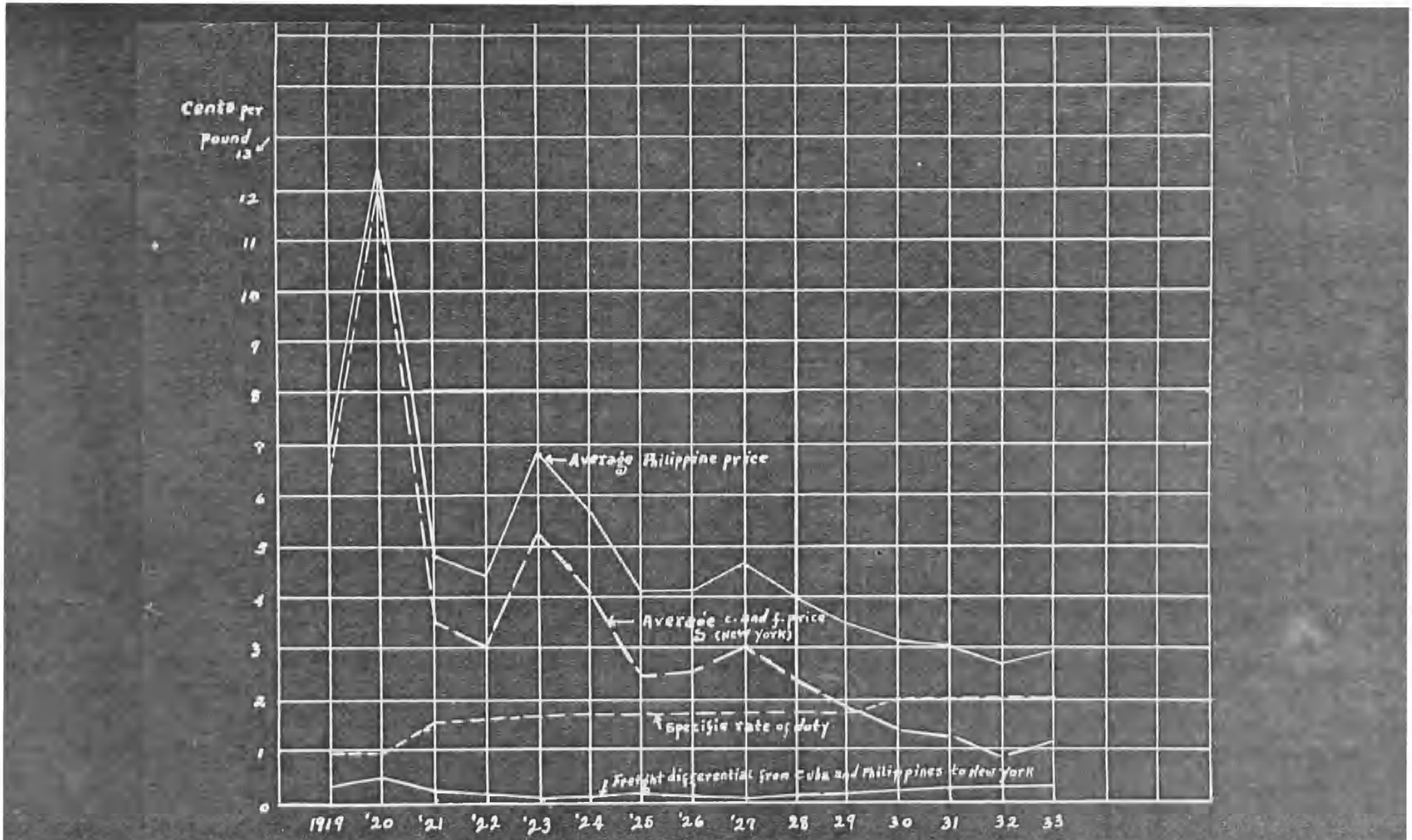

Fig. 19. Differential advantage of Philippine sugar over Cuban sugar in U.S. market

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when the import duty on Cuban sugar was 1.76 cents per pound, the price advantage of the Philippine sugar ranged from 1.56 to 1.62 cents per pound more, or from 31 to 66 per cent higher than it would have been, had it not been for the tariff protection and transportation cost differentials. After the Tariff rate was increased to 2 cents per pound on Cuban sugar in 1930 and sugar prices continued to decline the percentage advantage of the tariff to Phillppine sugar was increased. This is shown by the fact that in 1932 when the c. and f.(1) price at New York decreased to 0.90 cents per pound and the tariff duty on Cuban sugar was 2.00 cents per pound and when the comparative value of the Philippine sugar over that of Cuba was 2.76 cents, the price advantage of the Philippine sugar was 206 per cent higher than that of the Cuban sugar.

The higher the tariff protection on sugar in the Continental United States and the Insular Possessions the greater has been the tariff advantage of the Philippine sugar industry over that of Cuba in the American market. The lower the c. and f. price of sugar in New York the greater has been the relative advantage received by the Philippine sugar producers. Philippine sugar producers are of course, placed in an advantageous position when transportation rates between New York and the Philippines are lower than the rates between New York and Cuba.

(Continued from 124) (over Cuban sugar Col. 6) by the average c. and f. price New York (col. 1). (f) The comparative tariff advantage of the Philippine sugar export over that of Cuba is found by multiplying the quantity of the Philippine sugar exported into the United States annually by the net advantage over Cuban sugar (col. 6).

(1) c. and f. price is the cost plus transportation expense.

The net value of the United States Tariff duties (tariff advantage minus transportation disadvantage) of the Philippine over that of Cuba was $46,679 in 1919 and $42,853,382 in 1933 (Table 38). The net value increased as the tariff duty on Cuban sugar was raised and as the Philippine sugar exports to American market were expanded.

CHAPTER VIII

RECENT AMERICAN LEGISLATION AFFECTING THE PHILIPPINE SUGAR INDUSTRY

The Costigan-Jones Sugar Stabilization Act of 1934. The rapid expansion of sugar production in the Insular Possessions and the Continental United States; the accumulation of world sugar stocks during the latter part of the twenties; and the international business depression resulted in extremely low sugar prices which brought economic disaster to sugar producers during 1930-33. Three years after the Chadbourne Plan was adopted by a group of foreign countries to reduce production and control exports, President Roosevelt sent a special message to the United States Congress on February 8, 1934 asking for sugar legislation to remedy the situation in the United States, Cuba, and the Insular Possessions.(1) President Roosevelt in his message to Congress stated:

> "The steadily increasing sugar production in the Continental United States and in the Insular Regions has created a price and marketing situation prejudicial to virtually every one interested. Farmers in many areas are threatened with low prices for their beets and cane and Cuban purchases of our goods have dwindled steadily as her shipments of sugar to this country have declined. I believed that we can increase the returns to our own farmers, contributing to the economic rehabilitation of Cuba, the Virgin Islands, and at the same time prevent higher prices to our own consumers. The Agricultural Adjustment Act should be amended to make sugar beets and sugar cane basic agricultural commodities. It then will be possible to collect a processing tax on sugar, the proceeds of which will be used to compensate farmers for holding their production to the quota level. A tax of less than one-half cent per pound would provide sufficient funds. Consumers need not and should not bear this tax. It is already within the executive power to reduce the sugar tariff by an amount equal to the tax. In order to make certain that American consumers shall not bear an increased price due to this tax, Congress should provide that the rate of the processing tax shall in no event exceed the amount by which the tariff on sugar is reduced below the present rate of import.

(1) Farr & Co., The Costigan-Jones Control Act, Manual of Sugar Companies, New York, 1934, p. 91.

duty. The Secretary of Agriculture should be authorized to license refiners, importers, and handlers to buy and sell sugar from the various producing areas only in the proportion which recent marketings of such areas bear to total United States consumption, based upon average marketings of the three past years, but having the base period flexible enough to allow slight adjustments as between certain producing areas."

The American Congress followed the suggestions of the President and on May 9, 1934 passed the Costigan-Jones Sugar Control Act, which became effective June 8, 1934. This measure amended the Agricultural Adjustment Act to include sugar as one of the basic commodities whose production could be controlled in the United States, Philippines, Hawaii, Porto Rico, and the Virgin Islands. It determined the quantity of raw sugar required for consumption in the United States for that calendar year (1934) as 6,476,000 short tons. The Secretary of Agriculture was empowered to fix the quantity to be imported for consumption in the United States from the Philippines, Porto Rico, Hawaii, the Virgin Islands, and Cuba on the basis of the most representative 3-year average of imports during the period of 1925 to 1933 inclusive. The quotas for Porto Rico, Cuba and the Philippines were determined from the average of Continental United States consumption of sugar for the years 1931 to 1933 and the quota for Hawaiian sugar was determined from the consumption for the years 1930-1932. The 1931 to 1933 basis for all areas would mean a larger reduction from the current level of production for Hawaii than for the Philippines and Porto Rico because of the heavy expansion of production in the latter countries during 1932-33.

The Act also provides for a processing tax on sugar not to exceed the amount of the reduction in the duty on imported

96° sugar as of January 1, 1934. The proceeds collected from this tax shall be held as a separate fund in the Treasury of the United States in the name of the exporting areas, to be used for the benefit of agriculture or benefit payments in reducing the acreage or reduction in the production for sale, or is to be spent for the expansion of the markets and for removing the surplus agricultural products in the areas concerned. The Secretary of Agriculture is entitled to carry out these provisions with the approval of the President.

Application of Act to Philippines. Under the Costigan-Jones Law (1934) the Philippine sugar quota to be imported ~~in~~ to the United States amounted to 1,015,196 short tons (raw value excluding the quantity of refined sugar allowed) for 1934. This amount constituted nearly 16 per cent of the estimated total quota for consumption in the United States in the same year (Table 39). This was 29 per cent more than the proportion imported from the Philippines during 1922-32, but 8 per cent less than in 1932. Cuba's quota of 1,901,752 short tons was 29.4 per cent of the total which was 35 per cent less than the proportion she contributed to the United States consumption during 1922-32, but 5 per cent more than in 1932. The sugar quotas for Hawaii and Porto Rico, which were less than for the Philippines, were increased relative to the 1922-32 proportion but were decreased relative to the exports for 1932.

In Cuba the ownership of land under sugar production is confined to a few large proprietors having immense holdings. In fact large American companies owned over 50 per cent of the total capital investment and sugar, produced in recent years. In the Philippines the landholdings are restricted by law. Sugar

Table 39. United States General Sugar Quotas for 1934, under Costigan-Jones Act. (1)

Sources of supply of United States consumption	Quota (short tons)	1922-32 per cent contributed	1932 per cent contributed	1934 per cent contributed
United States Consumption as fixed by 1934 law.	6,476,000	100	100	100
Domestic (United States)				
Beet-sugar producing area	1,566,166	19.0	21.0	24.3
Louisiana & Florida	261,034	2.6	2.7	4.03
Insular Possessions				
Philippines	1,015,186	12.4	17.0	15.7
Hawaii	916,550	13.7	16.0	14.2
Puerto Rico	802,842	11.7	15.0	12.4
Virgin Islands	5,470	0.1	0.1	.08
Foreign Country				
Cuba	1,901,752	39.8	28.0	29.37
Miscellaneous		0.7	0.2	

(1) Farr & Co., Manual of Sugar Companies, New York, 1934, p. 93.

is produced by several thousand farmers. The quota agreement of 1934 of nearly 1,100,000 tons (raw and refined) indicates a loss of about 900,000 tons or several million dollars (approximately $63,000,000)[1] for the great number of sugar planters of the Archipelago. Many people who are employed in the sugar industry will be out of jobs and the decreasing income of the people in the Archipelago will reduce their purchasing power thus lowering the standard of living. The Philippine Government supported by a sales tax will lose a revenue of nearly $13,000,000 in the next three years. This lacking of adequate resources of revenue will naturally reduce the financial aid given to furnish such essential services as police protection, public education, and public health.

Although the Costigan-Jones Law may be regarded as a drastic measure as applied to the Philippines, the Act is not without its justification. The Philippine sugar producers have expanded their output in recent years while Cuban production was being reduced. In addition, it should not be overlooked that the Insular producers joined with the United States producers in demanding higher duties on Cuban sugar leading to the passage of the Smoot-Hawley Act which reacted adversely on the Cuban sugar industry.

The Costigan-Jones Law was designed to give greater aid to the United States sugar producers, In spite of the comparatively disadvantageous position of the United States in producing sugar shown by the fact that the cost of production in the United States has been higher than either that of Cuba

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(1) R. R. Alunan and F. B. Hawes, The Case for Philippine Sugar, The Phil. Journal of Commerce, Vol. 3, 1934, pp. 4,6,10,23.

or that of the Philippines, the sugar producers in the former country received quotas of 6.3 and 1.4 per cent, respectively, more than their contribution to the domestic consumption in 1922-32 and 5.3 and 1.3 per cent, respectively, more than in 1933 (Table 39). Furtheimore the benefit that the American producers will have when the United States consumption may exceed the 1934 quota, is that the beet and cane growers of the United States will supply 30 per cent of such excess and when consumption falls below the quota, the reduction is to be distributed among the producing countries on the basis of the proportions in the 1934 quota.

Significance of the Act for Philippine Sugar Industry. After sugar was made a basic agricultural commodity on June 8, 1934 subject to regulation under the Agricultural Adjustment Act, Secretary Wallace of the United States Department of Agriculture approved a program under which the planters of the Philippines are to be offered payments aggregating $14,000,000 for adjusting their production of sugar for the two crops 1934-35 and 1935-36.(1) This program also provides means for the Philippine

(1) The payments for reducing cane production are on the basis of $16 to $18 per short ton of sugar. This applies to the difference between the amount of sugar alloted to producers for production from 1934-35 crop, and the amount of sugar they produced in 1933-34. Benefit payments are to be made to planters in three installments. The first payment be made as soon as possible. It must equal one-third of the benefit payment. The second installment will be in an amount equal to one-half of the total benefit payment and be paid after it has proven that farmer has disposed of a reasonable portion of this excess cane in the manner prescribed. The third installment or the balance of the benefit payment, will be paid when the planter has the proof that he has complied with all the terms of the contract.
U.S.D.A., Agricultural Administration Adjustment, Press Release, 1085-35, Nov. 30, 1934, pp. 1-3.

sugar industry to cooperate with the administration in making the necessary sugar adjustment. The funds for financing the payments to producers participating in the program are to be derived from the processing taxes on Philippine sugar collected at the port of entry to the United States. The adjustment plan for the Philippines is to reduce its 1934-35 crop which without restriction would be approximately 1,430,000 tons to 715,000 of which 615,000 tons are for shipment to the United States in 1935 and 100,000 tons are for the crop carry-over. The agreement is applicable to the 1934-35 crop and to the subsequent crops which may be produced in the Philippines during the operation of the Agricultural Adjustment Act.(1)

In order that the Philippine sugar industry may successfully cooperate with the United States Agricultural Adjustment Administration in carrying out this sugar program, the Philippine Legislature passed in 1934 the Sugar Limitation Law. The declared policy of the Legislature as set forth in this Act is as follows:

> "First, to limit the production of sugar cane and sugar in the Philippine Islands to such an amount as would be sufficient to cover the quota allotment to the Philippines under the United States laws and the needs of the local consumption, plus such reserves as may be determined from time to time in accordance with the provisions of this Act.
>
> "Second, to recognize the United States sugar authority in the Philippine Islands for the control and allotment of sugar to be transported to, processed in, and marketed in continental United States under the laws of the United States seeking to effectuate the same, and to harmonize the laws of the Philippine Islands with those of the United States in so far as they affect production, manufacture and marketing of sugar cane and sugar produced in the Philippine Islands.
>
> "Third, to allot among mills and plantation owners the quantity of sugar which may be produced and marketed for direct consumption or held for reserve in the Philippine Islands, and, to make such allocation in such a way as to offset and ameliorate harships and inequalities that may result from allocations made under the laws of the United States."

The Secretary of the United States Department of Agriculture, Henry A. Wallace, has approved the three administrative rulings under the Philippine sugar cane production adjustment contract.(1) The first ruling states that two or more farmers in the same central district can sign a single-unit joint compliance agreement and pool their production and sales of sugar cane within the total of their allotments on their own plantations. This is designed to provide greater flexibility and to simplify compliance among small producers.

The second administrative ruling allows the Philippine sugar producers to raise tobacco on the land taken out of sugar production with the provision that none of the tobacco so grown may enter the United States or its territories or possessions other than the Philippines. This ruling might have been more valuable to the Philippine sugar planters if instead of tobacco other alternative crops as coffee, cocoa, cinchona, pepper, and silk not now competing with the American products could be grown. The ruling will only bring a more complicated system of administration in watching the movement of the tobacco through its channels of distribution.

The third administrative order permits the sugar planters to sell the excess sugar cane in the Islands for direct consumption in the form of sugar cane to be used in the area where grown. The amount of sugar cane being sold under this ruling is insignificant.

The contracting millers, refiners, and handlers agreed,

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(1) A A A Press Release 1679-35, Mar. 4, 1934, p. 1.

in cooperation with the Agricultural Adjustment Administration, not to ship any sugar to the United States between Oct. 18, 1934 and Dec. 31, 1934, in order to prevent the accumulation of sugar from the Philippines and other sources at United States ports in the first part of 1935. They agreed to abide by allotments to be established, to mill and handle cane or sugar produced in accordance with the allotments, to keep uniform records, and to assist in the administration of the Act. The regulations refer only to refined and raw sugars, thus excluding refiner's syrup, sugar mixture, sugar syrup, edible molasses, invert syrup and syrup of cane juice.(1)

The Philippine Independence Legislation, 1933-34. The Hare-Hawes-Cutting Act of 1933 provided for the independence of the Philippines obligatory at the end of a transition period of ten years.(2) This Act was rejected by the Philippine Legislature because it did not provide adequate preparation for independence; quota and export tax measures were not accompanied by new provisions for economic readjustments, and because the Philippine Government felt the Act would cripple the economic life of the Archipelago.

The McDuffie-Tyding's Act of 1934 passed subsequent to rejection of the Hare-Hawes-Cutting Act provides for a transition period followed by complete independence for the Philippines.(3) These Acts were the outcome of a Philippine desire

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(1) U.S.D.A., A.A.A. News Digest, Vol. 2, No. 9, Dec. 1, 1934 pp. 1-2.
(2) Committee on Foreign Policy, Recommendations regarding the Future of the Philippines, Foreign Policy Association and the World Peace Foundation, New York, Reports, No. 2, Jan. 1934, pp. 3-4.
(3) Statute of U. S. of America, 73rd Congress, Part 1, March 24, 1934, p. 456.

for political independence and a demand from the United States farmers for protection against the Philippine agricultural products.

The McDuffie-Tydings Act provides for free trade relations between the United States and the Philippines during the transition period and for a limitation of duty-free Philippine exports to the United States. There shall be levied, collected, and paid the same rates of duty required by the laws of the United States to be levied, collected, and paid upon like articles imported from foreign countries. This provision also applies to refined sugar in excess of 50,000 long tons and on unrefined sugars in excess of 800,000 long tons entering the United States ports from the Philippines. The amount of sugar from each mill which may be so exported shall be allocated each year between the mill and the planters on the basis of the sugar to which the mill and the planters are respectively entitled. The government of the Philippine Islands has passed recently the necessary laws for allocation of the sugar as pro- - vided for in the Act.

The McDuffie-Tydings Act imposes limitations on duty-free Philippine exports to the United States and requires the free admission of American goods into the Archipelago during the transition period. The amount of free-duty Philippine sugar that may be exported to the United States during the transition period is much less than the amount allowed for Cuba, in spite of the fact that the former country is still under the American administration while Cuba is a foreign country.

The Act vested treaty making powers in the Philippine Government but limited by a similar control and supervision by

the United States.(1) The Act provides that after granting of independence to the Islands there shall be levied, collected, and paid upon all articles coming into the United States from the Archipelago, the same duty collected on similar commodities from foreign countries. There is a proviso that at least one year prior to the date fixed in this Act for the independence of the Philippines a conference shall be held by the representatives of the Governments of the United States and the Philippines for the purpose of formulating recommendations respecting future trade relations between the two countries.

The limited power given to the Philippine Commonwealth to make treaty arrangements with foreign countries together with the failure of the McDuffie-Tydings Act to define the future status of the Philippine trade with that of the United States when complete independence will have been granted and the proportional export taxes(2) will discourage the exportation of Philippine sugar and other commodities to the United States during the transition period. This will no doubt be injurious to the economic conditions of the Archipelago, making the Phil-

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(1) U.S. Congressional Record, 73rd Congress, Part 5, Vol. 78, Mar. 22, 1934, pp. 5146-5147.

(2) The Act includes provisions for the Commonwealth of the Philippine Islands to impose and collect an export tax on all duty free articles that may be exported to the United States from the Philippines. During the transition period beginning with the sixth year after the inauguration of the new Government the export tax shall be five per cent of the rates of duty required by the laws of the United States. This export tax will increase to 10, 20, and 25 per cent respectively, the seventh, eight, ninth and tenth year after the inauguration of the Commonwealth of the Philippines.
The Commonwealth Government of the Philippines shall place funds received from such export taxes in a sinking fund and such funds shall, along with other funds available for that purpose, be applied solely to the payment of principal and interest on the bonded indebtedness of the Philippine Islands, its provinces, municipalities and instrumentalities until such indebtedness has been fully discharged.
Statutes of U.S. of America, 73rd Congress, Part 1, Mar. 24, 1934, pp. 459-460.

ippines less ready for complete independence. This policy of the American Congress is inconsistent with the ideas embodied in the tariff reciprocity measures proposed by the Roosevelt Administration.

The ascending scale of export taxes provided in the McDuffie-Tydings Act, without assured markets after complete independence is not a feasible means of obtaining revenue for paying the bonded indebtedness. In order to make the export tax an effective measure of raising revenue it would be a wise policy for the United States Government to let the Philippines gradually negotiate reciprocity treaties with Asiatic countries as well as with other foreign countries before obtaining complete independence, with the aim of finding markets for Philippine sugar and other commodities. This policy would also aid the development of the Philippine natural resources.

The possibility of sound economic trade relations between the two countries is rather uncertain. The changing policies of the American Congress which depends entirely on the political influence of the members is a handicap to the future destiny of the Filipino people. Experience has shown that an excessive tariff policy designed to protect a few producers of American sugar and to raise revenue for the Federal Government has been destructive to the economic life of Cuba. It would be unfortunate if such a policy should be allowed to develop with respect to the Philippine Islands. If independence of the Philippines is granted because the American Congress deems it just for the Filipino people to be independent, then it must be accompanied by favorable trade policies that will aid the Philippines to attain the objective of economic independence.

CHAPTER IX

OUTLOOK OF THE PHILIPPINE SUGAR INDUSTRY

Crisis Now Confronting Philippine Sugar Industry

During recent years the Philippine Islands has become extremely dependent upon the United States Market for her exports. The principal factors accounting for the increased export of Philippine products to the United States are; (1) The long period of free trade which has existed; (2) the high tariff on Cuban sugars since 1922. The extent of the Philippine dependence upon American markets is shown by the fact that 83.4 per cent of all Philippine exports and 99 per cent of the sugar exports went to the United States, in 1932.

Under the Costigan-Jones Act, Philippine access to the United States market has been suddenly curtailed, while legislation granting eventual independence, provides for still further contraction, not only for sugar but also for coconut oil and cordage during a transitional period that exists prior to the attainment of complete independence.

This sudden curtailment of Philippine exports has created a crisis in the Islands. Compensating outlets for Philippine sugar must be found or the national economy of the Philippine Islands will have to be reconstructed. The United States must either permit reasonable admission of Philippine products or allow the Philippine Islands to negotiate commercial treaties with other countries. This chapter examines the possible lines of adjustment.

The future of the sugar industry of the Philippines depends on the trading relationships which may be arranged with the countries

requiring products that can be produced in the Philippines and with the countries exporting commodities needed for consumption in the Philippine Islands. The Philippines could profitably make reciprocal treaties with the United States, Japan, China, Australia, and possibly Great Britain.

The Negotiation of a Long Time Reciprocity Treaty With the United States. In order to safeguard and to further develop the commercial relations between the Philippines and the United States that have existed for many years, trade agreements between these two countries could be arranged on a long time plan. In 1924-29 the average annual value of the Philippine exports to the United States constituted 74 per cent of the total exports, while the average annual value of the Philippine imports from the United States amounted to 60 per cent of the total imports of the Islands (table 40). These proportions were increased to 83 and 64 per cent, respectively, in 1931-32 showing that the trade with the United States represented an even larger proportion of imports and exports of the Islands in this period. Production of sugar and alternative products in the Archipelago could expand if trade agreements were reached by these two countries so that the Islands could produce more sugar and other products where-in the Philippines have a comparative advantage while the United States could supply more meat and dairy products, thus reducing the amount of these products imported by the Philippines from China, Australia and Switzerland (tables 41 and 42). The United States could produce more cotton goods for sale to the Philippines, reducing the Philippine imports from China and

Table 40. Philippine Foreign Trade [1]

Countries	(1924-1929 Average) Exports Value (Million dollars)	Per cent	Imports Value (Million dollars)	Per cent	1931-1932 Average Exports Value (Million dollars)	Per cent	Imports Value (Million dollars)	Per cent
United States	111.0	74.00	75.0	60.2	83.00	83.43	56.70	63.7
China (1924-27)	3.2	2.20	7.00	6.0	0.90	0.9	5.60	6.3
Hongkong (4 yrs.)	2.0	1.30			.34	.40	0.07	0.08
Japan	7.0	5.00	12.0	9.0	3.10	3.0	8.60	9.43
United Kingdom	9.0	6.00	6.0	5	2.80	2.8	2.80	3.2
Germany	3.0	2.10	4.0	3	1.07	1.0	3.20	3.64
Spain	5.0	3.40			4.01	4.0	0.53	0.61
France	3.0	2.00			1.30	1.3	0.92	1.03
British East Indies					0.31	0.30	1.90	2.10
French East Indies			5.0	4.1	0.02	0.02	0.50	0.56
Switzerland					.01	0.01	.93	1.12
Dutch East Indies			3.2	3.0	0.33	0.22	2.30	2.53
Australia			2.4	2.0	0.11	0.10	1.30	1.5
Belgium					0.30	0.30	1.00	1.2
Others	8.5	4.00	13.0	7.7	2.24	2.22	2.71	2.98
Total	151.7	100.00	127.0	100.0	99.54	100.	89.06	100

(1) Philippine Bureau of Commerce and Industry, Manila, Sta. Bulletin No. 8, 1925;
" " " " " " " " " No. 9, 1926;
" " " " " " " " " No.10, 1927;
" " " " " " " " " No.11, 1928;
" " " " " " " " " No.12, 1929; (Printed 1930)
Philippine Bureau of Customs, Annual Report of the Insular Collector of Customs, 1933, pp. 14-15.

Table 41. Sources of Philippine Imports (1)
1932

	United States	Japan	China	Great Britain	Australia	Germany	Spain	Canada	Switzer-land
	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent
Cotton goods	63.08	18.23	6.06	6.68		0.49			3.49
Meat and dairy products	57.77	0.64	14.86		14.06				3.26
Automobiles, parts and tires	97.78	0.89		0.98		0.10		0.17	
Iron and steel and manufactures	73.42	2.48	0.54	5.39		11.05			0.16
Mineral oils	85.10								
Paper and manufactures	72.06	3.29	2.42			6.94	3.26		
Tobacco products	97.55		0.38						
Wheat flour	79.24				11.22			9.05	
Silk and manufactures	38.24	36.62	18.31	2.95		0.79			0.62
Electrical machinery apparatus and appliance	86.50	1.06	4.70	0.59		3.93			
Average	75.07	9.03	8.18	3.33	12.64	3.88	3.26	4.61	1.88

(1) Philippine Bureau of Customs, Annual Report of the Insular Collector of Customs, 1933, p. 23.

Table 41. Sources of Philippine Imports (cont.)
1932

	France	Belgium	Nether-lands	Uruguay	Sweden	Norway	Dutch East Indies	Argen-tine	Denmark
	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent
Cotton goods	1.40	0.10							
Meat and dairy products			4.32	1.26				0.74	0.66
Automobiles, parts and tires									
Iron and steel and manufactures		4.77			0.64	0.21			
Mineral oils							14.79		
Paper and manufactures	3.15		1.03		1.56	2.42			
Tobacco products									
Wheat flour									
Silk and manufactures	1.63		0.13						
Electrical machinery apparatus and appliance	0.22		0.59		1.10				
Average	1.60	2.44	1.52	1.26	1.10	1.31	14.79	0.74	0.66

Table 42. Destination of Philippine Exports. (1)
(1932)

	United States	Japan	China	Great Britian	Spain	Germany	France	Netherlands	Belgium	Canada	Australia	Sweden	Hong-Kong	Brit. East Ind.
	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent	per cent
Sugar	99.98												0.01	
Cocoanut Oil	95.88		1.10	0.72				1.20						
Tobacco	50.68	4.78	1.46		35.42		0.17							0.62
Copra	59.54	1.44			23.53		15.41	0.07						
Manila hemp	29.54	32.07		18.93	2.53	1.44	2.59	1.26	3.28	1.42	1.65			
Embroideries	99.54													
Desiccated cocoanut	99.93													
Copra meal	5.29		0.15		0.06	77.94		10.20	0.23			5.30	0.47	
Lumber	20.74	43.29	12.36	15.70						1.30	1.00			
Cordage	62.39		6.28									2.70	5.28	9.57
Average	63.4	20.4	4.27	11.78	15.4	39.69	6.1	3.18	1.76	1.36	1.33	4.0	1.92	5.1

(1) Philippine Bureau of Customs, Annual Report of the Insular Collector of Customs, 1933, p. 23.

Switzerland. Wheat could be grown and manufactured into flour in the United States for export to the Archipelago, reducing Philippine imports from Australia and Canada. Labor in the United States has been efficient in the production of the goods mentioned above and especially in turning these raw products into finished ones (where labor has attained a high degree of efficiency in handling the manufacturing machinery). Consequently, costs of production for these commodities are comparatively low. The climate in the United States is not well suited to the production of cane sugar and other tropical crops, although a few states have grown sugar beets (1) (discussed previously). Another disadvantage held by the United States in producing sugar is the excessive amount of hand labor required. The wages paid in the American sugar industry are high because this industry must compete with other industries that pay high wages.

The Philippine sugar industry has a constant supply of relatively low wage Filipino labor. The cost of sugar production in the United States has been much higher and the yield of sugar per acre has been lower than that of the Philippines. In spite

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(1) The best sugar beet regions in the United States are confined to Colorado, Utah, California, Idaho and Montana. The sugar beets in Michigan suffered from uncertainty of abundant sunshine and moisture when needed. These conditions make uncertain the amount of crop and also its saccharine content. Repeated growing of beet depleats soil fertility. In 1930 the sugar beet acreage could hardly be more than doubled without changing the system of production.

F. W. Taussig, Some Aspects of the Tariff Questions, Cambridge University Press, 1931, Pp. 90-91. National Industrial Conference Board, Trends in the Foreign Trade of the United States, New York, 1930, Pp. 258-259.

of this disadvantageous situation of the American sugar planters in producing sugar, the amendment to the Agricultural Adjustment Act has given encouragement to additional production in the United States by alloting 30 per cent of any excess above the quota set for United States consumption, to American Producers. American sugar production has only survived because of high tariff protection since 1922 and recently because of benefit payments paid from the processing tax on sugar. Both of these methods of aiding the sugar industry of the United States is a burden on consumers since the result is to raise the price of sugar.

A reciprocity treaty should be concluded between the Philippines and the United States for a period of twenty or more years in which both governments should impose moderate tariff duties upon commodities from the other, following a transition period of at least two years. Certain quotas for leading products in both countries might be imposed as on sugar (provided in Costigan-Jones Sugar Control Act), coconut products, Manila hemp, maguey, tobacco, etc., from the Philippines while those from the United States are wheat flour, meat and dairy products, cotton, mineral oils, automobiles, parts and tires, paper and manufactures, etc. This would make business conditions in the Islands stable. The American Congress should grant favorable terms of trade which will tend to keep the export of Philippine products steady in the American market. Any step to diminish the import of sugar and other commodities from the Islands by the United States will decrease also the American exports to the Philippines because the Archipelago can import some of these American commodities from other countries. In the long run

tendency, imports must be paid by exports, a simple fact of foreign trade, which was over looked by the United States Cpngress when they enacted legislation designed to bar Philippine sugar from American markets.

Alternative Outlets in Other Countries. There would be some alternative markets for Philippine sugar in the Orient if reciprocity treaties could be concluded between the Philippines and some Asiatic countries. The leading Asiatic importers of sugar are British India, China, and Japan which have been importing most of their sugars from the Dutch East Indies. Java supplied about 82 percent of the average of 920,370 short tons (1) imported by British India during 1926-29 and over 99 per cent of the average of about 800,000 short tons during 1930-32, in spite of the fact that India has been one of the great sugar producing countries of the world.

China obtained 34 per cent of her annual imports of 827, 700 short tons of sugar in 1926-29 from Java, and 32 per cent (639,380 short tons) in 1930-32. The Philippines supplied only 3.2 per cent of the total Chinese imports in 1926-29, and 0.8 per cent in 1930-31. China stopped the importation of Philippine sugar in 1932.

Most of the sugar imported by Japan has come from Formosa. The Japanese sugar imports were used chiefly for confectionery products and other sweets for export. Japan received 88 per cent of her annual sugar imports of 411,798 short tons in 1926-29, and 93 per cent of her total imports of 177,568 in 1930-31 from Java. The Philippines supplied only 1.8 per cent

(1) U.S.D.A. Yearbook, 1930, p.702, Ibid, 1934, Pp. 440-481

of the total Japanese imports in 1926-29. Since 1930 Japan has imported no Philippine sugar.

The Philippines might also sell part of her sugar production to Australia and New Zealand if preferential agreements could be adopted between these countries, which would encourage the production of goods in the country having a comparative advantage.

The market has been better in British India, China and Japan for Javan sugar, than for sugar from the Philippines or Cuba, due to the great influence of the British, Chinese and Japanese sugar producers in Java who were also exporters to the above countries. Another advantage of Javan producers has been their lower costs of production compared with the Philippines.

The United Kingdom has been the most important market for Cane Sugar among the European importers of sugar, as the other countries have imported sugar from the beet-surplus areas of Europe. Of the average imports of 2,030,030 short tons into the United Kingdom in 1926-29, 10,576 tons came from Java and 748,134 from Cuba. During 1930-32 the sugar exports of Cuba and Java to the United Kingdom amounted to an average of 698, 773 and 178,945 short tons, constitutuing 3.05 and 7.8 per cent, respectively, of the total imports of 2,285,766 short tons during this period. (1)

Great Britain imported an average of only 18,830 short tons from the Philippines in 1900-09. This had increased to an average of 21,303 during 1910-17. Since 1917 imports of Philippine sugar were discontinued.

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(1)U.S.D.A. Yearbook, 1930, p.702; Ibid, 1934, Pp. 440-481; Dr. O. C. Stine, U.S.D.A., Bu. of Agr. Econ., 1934 (arranged).

Philippine sugar has not been able to compete with sugar from Java and Cuba in the British market for several reasons; first, because some of the principal English importers have had capital invested in Java and Cuba; second, because the sugar industry of Cuba and Java has had technical sales organizations with selling agencies in the large sugar marketing centers of the world; and, third, because of the low cost of producing Cuban and Javan sugar. If perferential treaties could be concluded with some of these leading markets there would be a possibility of creating new markets for Philippine sugar outside the United States, prior to the attainment of complete Philippine Independence.

Possibilities of Increasing Domestic Consumption of sugar in Philippines. There is also some possibility of increasing the domestic sale of sugar in the Philippines because the per capita consumption of sugar in the Archipelago is still quite low. A comparison of per capita consumption in sugar in various countries shows that the Philippine ranked 28th in 1932 among 51 countries studied (table 44). In 1930-32 the Philippine per capita consumption of sugar of 35 pounds was 14, 11, and 31 pounds, respectively, more than in Java, Japan and China.

The people of Oriental countries such as the Philippines, China and Japan have low consumption of sugar due partly to the effect of the climate, but mainly to the fact that the people are not in the habit of utilizing sugar in preparing their food. The use of sugar with coffee, tea, and cocoa as well as in making pastries, ice cream, soft drinks and for preservation of farm

Table 43. The Three Groups per Capita Consumption in the World.(1)
(1923-24, 1927-28 average)
(raw basis)

High consumption		Medium consumption		Low consumption	
Countries	Pounds per capita	Countries	Pounds per capita	Countries	Pounds per capita
Australia	129.0	Argentina	68	Mexico	26.0
United States	112.2	Netherlands	65	Philippines	25.4
Denmark	111.0	Austria	60	Spain	25.0
Great Britain	91.0	Czecho-slovakia	59	Hungary	23.3
New Zealand	90.2	Belgium	54	Poland	23.0
Canada	90.0	Brazil	50	Italy	19.4
Cuba	89.0	France	49.3	Peru	18.3
Switzerland	83.4	Germany	47.0	Russia	14.1
Sweden	80.0			Japan	13.2
				Java	12.1
				China	5.0

(1) C.J. Robertson; Consumption Trends and Problems, Facts about Sugar. (International Institute of Agriculture, Rome), Vol. 27, no. 9, September 1932, pp. 377-379.

Table 44. Per Capita Consumption of Sugar in Various Countries, 1930-1932.(1)
(raw basis)

High consumption		Medium consumption		Low consumption	
Countries	Pounds per capita	Countries	Pounds per capita	Countries	Pounds per capita
Hawaii	191.3	Holland	74.3	Philippines	35.0
Denmark	113.0	Puerto Rico	71.0	British West Indies	35.0
Australia	112.0	Norway	70.3	Central America	31.0
United States	109.0	Argentina	70.1	Egypt	28.6
New Zealand	107.2	Austria	67.2	Syria and Palestine	27.3
Canada	96.0	Belgium	61.2	Spain	27.2
Switzerland	96.0	Czecho-slovakia	60.0	Hungary	27.04
Great Britain	92.0	Chile	59.5	Mexico	26.4
Sweden	91.2	Finland	58.0	British India	26.0
Cuba	89.9	France	56.0	Poland	25.6
		Germany	54.2	Greece	24.4
		British South Africa	50.6	Portugal	24.32
		Latvia	50.0	Japan and Formosa	24.3
		Malay States	47.03	Java	21.2
		Uruguay	45.0	Peru	21.0
		Brazil	44.5	Persia	20.0
		Algiers, Morocco & Tunis	40.2	Italy	19.3
				Russia	19.3
				Jugo-Slavia	16.0
				Siam	14.0
				Rumania	12.2
				Turkey	12.0
				San Domingo	6.0
				China	4.3

(1) A.A. Roberts, The American Sugar Refining Company; 1934. (arranged)

products for home use or for exports could be increased by demonstrating the uses of sugar to the people. The low real income of the people in the Orient is another factor that explains partly the slightly low consumption of sugar in Asiatic countries.

That it may be possible in the future to increase the sale of Philippine sugar in domestic and other Oriental markets is indicated by the fact that the per capita consumption in the Philippines has increased from an average of 25.4 pounds in 1923-24, 1927-28, to 35 pounds in 1930-32. (Tables 43-44). Japan-Formosa's consumption also increased from an average of 13.2 pounds in 1923-24, 1927-28 to 24.3 pounds in 1930-32. (1).

Possibilities of Developing Alternative Exports. The Philippine Government, because of the present limitation of sugar production and exportation, should aid the sugar industry by developing alternative exports. The chief Philippine exports at present are sugar, coconut products, Manila hemp, maguey, tobacco, and lumber. The products most needed by the Philippinos are cottong goods, meat, dairy products, wheat flour, silk, automobiles, electrical equipment, and miscellaneous manufactures.

The best places for the Philippines to obtain cotton goods are the United States, Great Britain and Japan. The United States, Australia and Canada can supply wheat flour to the Archipelago at low prices. Meat and dairy products can best be supplied by the United States, Australia, New Zealand and Canada. Silk and manufactures can be imported from Japan, China, and the United States

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(1) C. J. Robertson, Consumption Trends and Problems, Facts about Sugar, Int. Inst. of Agr., Rome, Vol. 27, No. 9, Sept. 1932 Pp. 377-379.

at much lower prices than from other countries of the world. The United States, Japan, China, and Germany can supply paper and manufactures to meet the needs of the Filipinos.

The sugar producers in the Philippines should produce other agricultural commodities that do not compete with the American products in the domestic market. These tropical agricultural products must not be bulky and must be able to stand the long ocean journey, and at the same time have relatively high unit value as coffee, cocoa, tea, silk, rubber and cinchona. These commodities can be sent free of duty to the United States.

Coffee was imported by the United States to the total amount of $302,000,000, in 1929 from Brazil, Columbia, Venezuela, Guatemala, Mexico, the East Indies and the Netherlands. (1) The United States imports of cocoa was $49,000,000, in 1929, secured from British West Africa, Brazil, Dominican Republic, Ecuador, Trinidad, Tabago and Venezuela. The United States imports of tea amounted to $26,000,000, in 1929, coming from Great Britain (re-export); Ceylon (and other British East Indies) and Brazil, to the total value among the Agricultural products imported amounting to $427,000,000. The United States imported silk from Japan, China, Hongkong and Italy. The United States

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(1) Robert Aura Smith, Wade Preference Sought by Leaders in Philippines. The New York Times, Sept. 23, 1934, Pp. 1-2.

in the same year imported from the Dutch East Indies at monopoly prices, Cinchora bark costing $552,325.00 and $1,297,353. worth of Quinine salts. The United States bought pepper from the Dutch East Indies and British India costing $7,807,428, in 1929.

All of these imports of tropical products of the United States could be grown in the Philippines in large amounts. The production of coffee in 1912 in the Philippines was only 86 Metric tons having a total value of $34,379. but in 1932 production was increased to 1,090 Metric tons with a total value of $317,790. While Cacao, in 1912, amounted to 74 Metric tons having a total value of $33,407., production expanded to 1025 Metric tons in 1932 with a total value of $455,265.(1) The production of tea and silk has not been commercially developed in the Islands. Tea has been growing wild in the Philippines for years, while Mulberry trees were growing vigorously on the campus of the College of Agriculture, University of the Philippines when the writer was a student there several years ago.

Government aid to producers will be necessary to stimulate the cultivation of these plants in large quantities. The Philippine Government should give encouragement and assistance to her infant industries. This can be done by research and demonstration work as has been applied to the principal industries of the Philippines by the different departments of the Insular

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Government. The infant industries must be subsidized until they reach a stage of development that will enable them to compete with other producing countries. Possibly the funds created from the processing tax provided for in the Costigan-Jones Act might be used as a subsidy to encourage the development of alternative products.

Possibilities of Reciprocal Agreements with Foreign Countries. Alternative Outlets or Alternative Exports. Preferential trade agreements might be made between the Philippines and Japan. Japan will need sugar and other Philippine products for her expanding population. The sugar industry in Formosa can not expand very much because the rest of the area is devoted to the production of other products, especially rice. Although the sugar industry of Formosa has received aid from the Japanese Government, the cost of production is much higher than that of either the Philippines or Java. Japan could import more sugar from the Archipelago in exchange for Philippine imports of cotton, paper, silk, iron, steel and manufactures which will naturally decrease the Island's imports of these commodities from other countries. Silk and manufactures can be supplied by Japan at low prices because the cost of production is low, causing the Philippines to reduce her imports of them from Great Britain, the United States and China. Japan could also supply electrical machinery and appliances causing the Philippines to reduce her imports of them from China.

A reciprocity agreement could well be extended to China by the Philippine Government. China can produce more silk and manufactures and cotton goods because she is very well

suited to the production of these commodities. The Philippines could import more of these goods from China and reduce her imports from Japan and France. The Philippines can produce commodities needed by China as sugar, lumber, cordage, coconut oil, etc. at a comparative advantage.

The Philippines might sign a reciprocity treaty with Australia as the latter country is producing meat and dairy products and wheat flour under advantageous conditions because the soil, climate and labor are well adapted to these products. Australia could import sugar, Manila hemp and such products from the Archipelago wherein the Filipinos enjoy a comparative advantage in production.

A preferential treaty might be arranged between the Philippines and Great Britain. The United Kingdom, once the world's leading lenders of capital, might offer credit which could be repaid in sugar, Manila hemp, lumber, coconut oil and tobacco leaf. The United Kingdom was once a greater importer of Philippine sugar (Chapter I). She could advantageously reduce sugar production since her costs of production have been much higher than that of the Archipelago. The Islands can advantageously buy cotton, iron, steel manufactures, electrical machinery, apparatus and appliances from the United Kingdom.

C O N C L U S I O N S

This study of the sugar industry of the Philippines, its relation to producers in competing countries and the effect of recent United States Congressional Legislation upon the industry indicates that there is probably no single solution to the problem now facing the sugar industry in the Archipelago. That the industry faces a crisis is apparent, to surmount this crisis will probably require a combination of different methods.

Three possibilities suggest themselves: (1) curtailment of production of those commodities subject to export quotas; (2) producing other products to replace those whose production has been curtailed; (3) reciprocity treaties made with the United States and other countries in order to find outlets for Philippine products.

The limitation of sugar imports to the United States market and the difficulties involved in finding alternative markets to replace the American market indicates that there must be a reduction in the amount of sugar produced in the Islands. To avoid a resultant decline in National Income will require the development of substitute products that can advantageously be produced both for home consumption and for export.

Several sugar planters in the sugar producing districts of the Philippines have started to diversify and practice crop rotation. The growing of cash and food crops and the practice

of crop rotation if widely adopted will greatly benefit the sugar planters of the Islands provided proper organization and administration of agricultural production is inaugurated. Diversified agriculture would aid sugar planters by reducing the risks of total failure. The producer is so dependent on factors beyond his control; weather, insects, plant diseases as well as prices that production of sugar alone entails a high degree of risk. A sugar producer must pay his living expenses, labor, taxes, interest and other operating costs. A crop failure when sugar is the only crop raised is a serious problem.

Diversification in the Philippines through producing other agricultural products would result in advantages to the economic life of the Filipino people. It should raise the standard of living in the agricultural population because diversification provides a form of insurance against heavy losses caused by crop failure or lost markets. Consequently, farm income, wages and employment would be more stable. The larger quantity of production which would result from the fact that the laborers on the (sugar) plantations would be kept busy for a longer period of time throughout the year should increase the buying power of the Filipino people thus creating a greater demand for manufactured commodities.

The administrative ruling approved by Secretary Wallace of the United States Department of Agriculture permitting Filippino sugar planters to grow tobacco is not the best method of helping the Philippine farmers (Discussed in Chapter VIII). This is because Philippine tobacco is already competing with American tobacco. Only if markets outside of the United States can be found for Philippine, will this ruling be of aid to the Filipinos

The better solution would be to encourage Philippine planters to produce such commodities as cinchona, coffee, tea, rubber, tropical fruits and silk, that do not compete directly with products produced in the United States.

In addition to the adoption of a more diversified economy fostered by the Philippine Government, attempts should be made to modify the restrictions placed upon Philippine exports by the McDuffie-Tydings Act of 1934.

As a result of the free trade relations that has been existing between the United States and the Philippines, the Filipinos have become almost completely dependent upon the American market as an outlet for her products. Consequently, the United States is under some moral obligations to agree to a program that will not be too drastic in its effect upon the economic life of the Filipino people.

In 1933 the Archipelago ranked nith in importance as a buyer of American products. The limited quota for Philippine sugar and other products that may enter the United States during the transition period, prior to complete independence, along with the export tax placed on the export of the Philippine products to the United States will force a curtailment of Philippine purchases of American goods. The exchange of goods that has taken place between these countries has been mutually beneficial and if the above facts are kept in mind it would seem that a modified trade agreement might be enacted that could be advantageous to both parties.

Unless the United States is willing to deal reasonably with the Philippines during the transition period prior to

the granting of independence, the Archipelago will naturally feel justified in placing high tariff duties on American products subsequent to the attainment of complete independence. Not only should the United States agree to a modification of the present drastic legislation which will prove so disastrous to the Archipelago but they should also allow the Philippines to arrange reciprocity treaties with other countries. The Philippine Government could greatly aid in surmounting the present difficulties by negotiating reciprocal treaties with Japan, China, Australia, New Zealand and Great Britain, thus giving the Philippines a wider market for her exports, which would result in a more stable internal economy for the Archipelago.

A P P E N D I C E S

Public Revenue from Sugar Industry in 1931.[1]

Classes of taxes	Dollars
Sales, manufactures' and income taxes	2,239,384
Land and property taxes	1,323,669
Wharfage taxes, tonnage dues, and import duties on supplies purchased by the industry	2,646,991
Excise taxes on distilled spirits from molasses sold and on gasoline, oil, etc. purchased by the industry	3,197,975
Miscellaneous license taxes	827,800
Total taxes paid by the sugar industry	10,235,819[2]

(1) Rafael R. Alunan, Now, The Past, Present and Future of Philippine Sugar Industry, Vol. 18, No. 49, Oct. 15, 1932, p. 13.

(2) This revenue represented 0.046 cents á pound on total production, 0.05 cents per pound on exports or $6.82 per capita for the people engaged in the industry.

Appendix B - Location and Ownership of Philippine Sugar Centrals [1]

Location (By Islands)	Owner	Date of establishment	Daily capacity (metric tons)	Output 1932-1933 (long tons)
Luzon Island				
Canlubang, Laguna	Calamba Sugar Estate	1914	1,600	46,577
Calatagan, Batangas	Vda. de P.P. Roxas Y Her. de A.R. Roxas, Central Azucarera Calatagan	1914	500	4,715
Calamba, Laguna	Philippine Sugar Estates Development Company	1914	400	4,999
Del Carmen, Pampanga	Pampanga Sugar Mills	1918	3,600	72,983
Mabalacat, Pampanga	Mabalacat Sugar Co. (Central Azucarera don Pedro)	1920	200	2,402
Nasugbo, Batangas	Vda. de P. P. Roxas Y Her. de A.R. Roxas	1921	1,200	28,872
San Fernando, Pampanga	Pampanga Sugar Development Co.	1921	3,000	70,371
	Central Azucarera del Norte	-	300[2]	2,801
Murcia, Tarlac	First Luzon Farmers Association, Inc.	1923		
Calumpit, Bulacan	Luzon Sugar Co.	1925	300	5,470
Manaoag, Pangasinan	Hind Sugar Co.	1926	200	3,132
Batanga, Bataan	Bataan Sugar Co.	1927	200	4,522
Bamban, Tarlac	Central Luzon Milling Co.	1927	750	28,909
Cabiao, Mueva Ecija	Nueva Ecija Sugar Mill	1927	250	3,174
Arayat, Pampanga	Mount Arayat Sugar Co., Inc.	1929	850[2]	10,990
San Miguel, Tarlac	Central Azucarera Tarlac	1929	6,000[2]	74,301
Paniqui Sugar Mills	Paniqui, Tarlac	1929	725[2]	10,436
Total			20,075	374,654
Mindoro Island				
San Jose, Mindoro	Mindoro Sugar Co.	1910	1,100	10,150
Visayan Islands[3]				
Cebu Island				
Talisay, Cebu	Cebu Sugar Company	1928	600	10,881
Bogo, Cebu	Bogo-Medellin Milling Co., Inc.	1929	600	13,004
Total			1,200	23,885

(1) Handbook on the Sugar Industry of the Philippine Islands, 1929; G. G. Gordon, A Brief Review of the Philippine Sugar Industry, 1933.

(2) R. R. Alunan, Now, The New Independent Weekly, Vol. 18, No. 49, Oct. 15, 1932, Supplement A.

(3) Visayan Islands are composed of the following islands: Bohol, Cebu, Leyte, Mosbate, Negros, Panay, Romblon, Samar and other smaller islands.

Appendix B - (Concluded)

Location (By Islands)	Owner	Date of establishment	Daily capacity (metric tons)	Output 1932-1933 (long tons)
Leyte Island				
Ormoc, Leyte	Abotiz and Co.	1929	150	11,828
Negros Island				
Tolisay, Negros Occidental	Esteban de la Rama	1912	700	-
Escalante, Negros Occidental,	Sta. Aniceta (de la Rama) -- Central Azucarera de Danao	1913	300	11,072
Bago, Negros Occidental	Esteban de la Rama (Lumangab)	1913	300	5,291
San Carlos, Negros Occidental	San Carlos Milling Co.	1914	1,600	43,381
Kabankalan, Negros Occidental	Vidaurrazaga Y Mota (San Iidro Central)	1914	400	10,365
Kabankalan, Negros Occidental	Kabankalan Sugar Co., Inc.	1915	600	10,413
Ilog, Negros Occidental	Salvador Serra (Central Palma)	1916	400	8,783
Manapla, Negros Occidental	North Negros Sugar Co.	1918	1,300	72,597
Bais, Negros Occidental	Central Azucarera de Bais	1919	1,500	47,931
Isabela, Negros Occidental	Isabela Sugar Co., Inc.	1919	1,850	27,993
Bacolad, Negros Occidental	Bacolad-Murcia Milling Co., Inc.	1920	2,500	44,967
La Carlota, Negros Occidental	La Carlota Sugar Central	1920	3,000	75,280
Silay, Negros Occidental	Hawaiian-Philippine Co.	1920	2,000	66,000
Bago, Negros Occidental	Ma-ao Sugar Central	1920	2,250	43,608
Talisay, Negros Occidental	Talisay-Silay Milling Co., Inc.	1920	2,400	51,289
Binalbagan, Negros Occidental	Binalbagan Sugar Estate, Inc.	1921	1,675	41,379
Victorias, Negros Occidental	Victorias Milling Co.	1921	1,000	58,271
Escalante, Negros Occidental	Central de la Rama (Leonor)		400	3,735
Fabrica, Negros Occidental	Lopez Sugar Central		881	21,355
Total			25,056	643,710
Panay Island				
Dumalag, Capiz	Asturios Sugar Central, Inc.	1921	600	18,264
Pilar, Capiz	Central Azucarera de Pilar	1924	800	13,945
Sara, Iloilo	Guchausti and Co.	1929	600	6,787
Janinay, Iloilo	Philippine Starch and Sugar Co.	1929	500	8,834
Barotac Nuevo, Iloilo	Central Santos-Lopez	1929	611	15,555
Dingle, Iloilo	Hijos de F. de la Rama and Co. (Lourdes)		150	934
Total			3,261	64,319
Grand Total for All the Centrals			50,842	1,128,546

Appendix C

Exporters of Philippine Sugar, 1917-27.(1)

Shippers	Nationality	Total exports 1917-27 (long tons)	No. of years operation	Average exports 1917-27 (long tons)
Asturias Sugar Central	Spanish	5,750	1	5,750
Bank of the Philippine Islands	Filipino	11,200	1	11,200
Calamba Sugar Estate	American	115,686	6	19,281
Chinese	Chinese	630,998	10	63,100
Campania Generaral de Tabacos de Filipinas and Bais	Spanish	443,117	11	40,283
Hijos de I. de la Rama	Filipino	10,362	3	3,454
Ker & Company	British	28,818	9	3,202
Ledesma	Filipino	3,478	1	3,478
Lizarrage Hermanos & Kabankalan Sugar Company	Spanish	30,326	4	7,582
Macleod & Company	British	1,441	1	1,441
Mindoro Sugar Company	American	2,050	1	2,050
North Negros Sugar Company and Victorias Milling Company	Filipino	143,773	8	17,972
Pampanga Sugar Mills	American	148,005	6	24,668
Pampanga Sugar Planters Association (A. B. Honorio)	Filipino	13,581	1	13,581
Pacific Commercial Company	American	114,153	10	11,415
Philippine Sugar Central Agency, Philippine National Bank	Filipino	611,832	7	87,405
Quarter Master Department, U. S. A.	American	14,466	3	4,822
O. Ranft	British	13,691	2	6,846
Salvador Serra	Spanish	3,872	1	3,872
Smith, Bell & Company	British	136,025	11	12,366
W. F. Stevenson & Company	British	121,858	11	11,078
San Carlos Milling Company	American	77,114	10	7,711
Viegelman & Company	German	4,474	2	2,237
Vda. de P. P. Roxas	Filipino	2,487	1	2,487
Warner, Barnes & Company	British	498,068	11	45,279
Welch-Fairchild & Company, Hawaiian-Philippine Company	American	157,149	11	14,286
Ynchausti & Company and La Carlota	Spanish	88,200	3	29,400
Various		102,968		10,297
Total		2,534,942		321,358

(1) Facts and Statistics about the Philippine Sugar Industry, 1928, table 10.

EXPORTS OF SUGAR FROM THE PHILIPPINE ISLANDS

Year	Total to All Countries Metric tons (2204.6 lbs.)	Total to United States Metric tons (2204.6 lbs.)	Per cent to U.S.
Average 1860-69	57,343	12,720	22.1
" 1870-79	108,176	43,298	40.0
" 1880-89	181,653	104,617	57.5
" 1890-99	192,351	32,384	16.8
1900	65,191	2,153	4.0
1901	56,873	5,226	10.0
1902	98,596	5,120	5.0
1903	85,308	29,315	34.1
1904	87,053	25,898	28.1
1905	108,499	43,592	41.4
1906	129,454	11,858	9.3
1907	127,917	10,989	8.0
1908	144,735	46,707	35.0
1909	129,328	53,073	47.2
1910	121,472	100,700	85.0
1911	209,044	187,659	91.0
1912	197.076	133,879	71.4
1913	157,334	30,717	20.0
1914	236,498	169,530	74.0
1915	211,013	82,841	45.0
1916	337,490	131,885	45.0
1917	205,908	62,378	44.0
1918	273,258	106,181	52.4
1919	136,060	32,159	25.0
1920	180,341	123,937	77.0
1921	289,876	150,479	58.0
1922	362,072	244,852	70.0
1923	271,983	230,555	87.0
1924	357,830	300,867	89.0
1925	546,832	463,989	89.0
1926	411,232	341,306	88.0
1927	553,324	508,317	94.0
1928	569,938	534,229	95.1
1929	695,868	670,953	98.0
1930	743,980	737,195	99.6
1931	752,932	752,284	99.9
1932	1,016,568	1,016,266	99.9

Philippine Bureau of Commerce and Industry, Statistical Bulletin No. 3, 1920
Annual Report of the Insular Collector of Customs, Manila, 1933

Appendix E

Comparative International Exports of Sugar

(Computed from Yearbooks of U. S. Dept. of Agriculture, and monthly summaries of Foreign Commerce)

Year	Philippines	Cuba	Dutch East Indies	Hawaii	Puerto Rico
	Short tons	Short tons	Short tons	Short tons	Short tons
1904	95,959	1,229,583	1,159,122	370,434	129,647
1905	119,598	1,206,458	1,157,328	421,677	135,663
1906	142,697	1,321,850	1,098,604	385,120	205,277
1907	141,003	1,455,219	1,316,112	468,274	204,079
1908	159,541	995,509	1,411,847	538,785	244,257
1909	142,558	1,603,323	1,386,964	541,712	284,522
1910	133,898	1,932,871	1,312,899	585,297	322,919
1911	230,039	1,596,275	1,476,150	540,099	367,145
1912	217,238	2,128,525	1,471,109	602,733	382,700
1913	123,429	2,738,450	1,411,650	567,342	320,633
1914	260,690	2,787,341	1,456,317	571,631	320,633
1915	232,599	2,865,999	1,329,235	640,342	294,475
1916	372,000	3,282,242	1,595,611	598,045	424,955
1917	226,970	3,220,859	1,305,464	663,139	488,943
1918	301,213	3,646,958	1,412,556	540,454	336,788
1919	149,971	4,497,887	1,697,652	607,797	351,910
1920	198,789	3,492,623	1,669,534	528,012	419,388
1921	319,530	3,205,265	1,848,708	540,201	409,407
1922	399,112	5,581,371	1,582,691	595,812	469,889
1923	299,807	3,818,889	2,104,473	597,539	355,423
1924	394,436	4,379,014	2,070,679	585,694	372,041
1925	602,773	5,435,097	2,279,229	712,854	571,559
1926	453,301	5,227,219	1,914,463	876,388	578,811
1927	453,301	4,645,002	2,202,130	712,057	574,689
1928	628,242	4,389,253	2,827,302	823,793	605,620
1929	767,055	5,543,887	2,680,686	887,061	471,269
1930	820,089	3,598,333	2,468,948	839,017	721,217
1931	829,957	2,997,603	1,739,182	928,449	806,825
1932	1,120,572	2,959,775	1,668,463	1,016,077	912,169
1933	1,150,000	2,735,308	1,269,145	2,075,000	1,525,000

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